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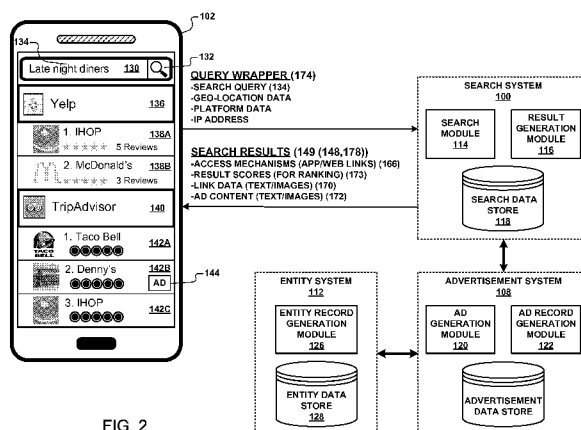


FIG. 2

(57) **Abstract:** Techniques include receiving a search query (134) from a user device (102), identifying access mechanisms (166, 166a-d, 190) based on the search query, and selecting first and second subsets of the access mechanisms. The techniques include generating search results (148) based on the first subset. The techniques also include determining whether an access mechanism included in the second subset is associated with an advertisement bid price (209). In some examples, an advertiser may associate an access mechanism with an advertisement bid price if the access mechanism references an entity specified by the advertiser. The techniques include, when an access mechanism included in the second subset is associated with an advertisement bid price, generating an advertised search result (178) based on the access mechanism, and transmitting the search results and the advertised search result to the user device, and otherwise, transmitting the search results to the user device.

GENERATING ADVERTISEMENTS FOR SEARCH RESULTS THAT ARE ASSOCIATED WITH ENTITIES

TECHNICAL FIELD

[0001] This disclosure generally relates to the field of search, and more particularly to techniques for generating advertisements to be displayed along with search results.

BACKGROUND

[0002] In recent years, the use of computers, smartphones, and other Internet-connected computing devices has grown significantly. Correspondingly, the number of available software applications for such devices has also grown. Today, many diverse applications can be accessed on a number of different devices, including, but not limited to, smartphones, personal computers, automobiles, and televisions. These applications can include, as some examples, business driven applications, games, educational applications, news applications, shopping applications, messaging applications, media streaming applications, and social networking applications.

SUMMARY

[0003] A method includes receiving a search query from a user device, identifying access mechanisms based on the received search query, wherein each access mechanism specifies an application state of an application, and selecting first and second subsets of the identified access mechanisms. The method includes generating search results based on the first subset. The method further includes determining whether an access mechanism included in the second subset is associated with an advertisement bid price. The method also includes, in the event an access mechanism included in the second subset is associated with an advertisement bid price, generating an advertised search result based on the access mechanism, and transmitting the search results and the advertised search result to the user device, and, in the event none of the access mechanisms included in the second subset is associated with an advertisement bid price, transmitting the search results to the user device.

[0004] Implementations of the disclosure may include one or more of the following optional features. In some implementations, the advertisement bid price is a highest advertisement bid price among advertisement bid prices associated with access mechanisms included in the second subset in the event the access mechanism included in the second subset is associated with the advertisement bid price. In some examples, generating the advertised search result based on the access mechanism further includes generating the advertised search result based on the determination. An access mechanism included in the second subset may be compared to each of one or more access mechanisms included in an advertisement record to determine whether the access mechanisms is associated with the advertisement bid price. In some examples, the method further includes determining whether the access mechanisms is the same as any of the one or more access mechanisms when comparing the access mechanisms included in the second subset to each of the one or more access mechanisms included in the advertisement record. Determining whether the access mechanisms is associated with the advertisement bid price based on the comparison may include determining that the access mechanisms is associated with the advertisement bid price in the event the access mechanisms is the same as any of the one or more access mechanisms and determining that the access mechanisms is not associated with the advertisement bid price. The identified access mechanisms may include a first set of access mechanisms. The advertisement record may optionally associate each of the one or more access mechanisms included in the advertisement record with the advertisement bid price.

[0005] In some implementations, the identified access mechanisms include a first set of access mechanisms. In some examples, the method also includes generating the advertisement record by receiving an entity query from an advertiser, identifying a second set of access mechanisms based on the received entity query, displaying the second set of access mechanisms to the advertiser, receiving the one or more selections of the second set of access mechanisms from the advertiser, receiving the indication of the advertisement bid price from the advertiser and generating the advertisement record. In some examples the first and second subsets of the identified access mechanisms are mutually exclusive. Optionally, the first and second subsets of the identified access mechanisms include a subset of the identified access mechanisms. The subset may include access mechanisms that are each more relevant to the received search query than each of one or more access mechanisms included in a portion of the identified access mechanisms other than the subset. The first and second subsets of the identified access

mechanisms may each optionally include at least one common access mechanisms of the identified access mechanisms.

[0006] In some implementations, the method further includes generating result scores that are associated with the identified access mechanisms and the selecting first and second subsets of the identified access mechanisms includes selecting the first and second subsets based on the generated result scores. In some examples, generating the search results based on the first subset of the identified access mechanisms includes retrieving at least one of text and image data for the first subset of the identified access mechanisms, and generating the search results based on the retrieved at least one of text and image data. The generating the advertised search results based on the access mechanisms included in the second subset may include retrieving at least one of text and image data for the access mechanism, retrieving advertisement data associated with the access mechanisms, and generating the advertised search result based on the retrieved at least one of text or image data and the retrieved advertisement data. In some examples, the retrieving the advertisement data associated with the access mechanism included in the second subset includes retrieving the advertisement data from an advertisement record that includes the access mechanism and an indication of the advertisement bid price.

[0007] In some implementations, identifying the access mechanisms based on the received search query includes identifying function records included in a data store based on the received search query and selecting the identified access mechanisms from the identified function records. Each function record may include an access mechanism specifying an application state of an application, and application state information describing the application state of the application. Identifying the function records based on the received search query may include identifying the function records based on matches between terms of the search query and terms of the application state information included in each identified function record. The method may further include generating result scores for the identified function records. The selecting the first and second subsets of the identified access mechanisms may include selecting the first and second subsets based on the generated result scores for the identified function records from which the identified access mechanisms are selected. The method may further include comparing the advertisement bid price to another advertisement bid price associated with another access mechanisms included in the second subset. The generating the advertised search result based on the access mechanisms may include generating the advertised search result based on the

comparison. In some examples, the comparing the advertisement bid price associated with the access mechanism included in the second subset to the other advertisement bid price associated with the other access mechanism included in the second subset includes determining whether the advertisement bid price is greater than the other advertisement bid price. The generating the advertised search result based on the comparison optionally includes generating the advertised search result in the event the advertisement bid price is greater than the other advertisement bid price.

[0008] Another aspect of the disclosure provides a method including receiving an entity query from an advertiser, identifying access mechanisms each specifying an application state of an application based on the received entity query, and displaying the identified access mechanisms to the advertiser. The method also includes receiving one or more selections of the identified access mechanisms from the advertiser, receiving an indication of an advertisement bid price from the advertiser, and generating an advertisement record that includes the one or more selections of the identified access mechanisms and the indication of the advertisement bid price.

[0009] This aspect may include one or more of the following optional features. In some implementations, the identified access mechanisms include a first set of access methods. The method may further include receiving a search query from a user device, identifying access mechanisms based on the received search query, wherein each access mechanism specifies an application state of an application, and selecting first and second subsets of the identified access mechanisms. The method may also include generating search results based on the first subset. The method may further include determining whether an access mechanism included in the second subset is associated with an advertisement bid price. The method may also include, in the event an access mechanism included in the second subset is associated with an advertisement bid price, generating an advertised search result based on the access mechanism, and transmitting the search results and the advertised search result to the user device, and, in the event none of the access mechanisms included in the second subset is associated with an advertisement bid price, transmitting the search results to the user device. In some examples, the determining whether an access mechanism included in the second subset is associated with the advertisement bid price based on the advertisement record includes comparing an access mechanism included in the second subset to each of the one or more selections of the first set of access mechanisms

included in the advertisement record, and determining whether the access mechanism is associated with the advertisement bid price based on the comparison. In some implementations, the comparing the access mechanism included in the second subset to each of the one or more selections of the first set of access mechanisms included in the advertisement record includes determining whether the access mechanism is the same as any of the one or more selections. In some examples, the determining whether the access mechanism is associated with the advertisement bid price based on the comparison optionally includes determining that the access mechanism is associated with the advertisement bid price in the event the access mechanism is the same as any of the one or more selections, and determining that the access mechanism is not associated with the advertisement bid price in the event the access mechanism is different than each of the one or more selections.

[0010] In yet another aspect of the disclosure provides a system including a data store that includes a plurality of access mechanisms, wherein each access mechanism specifies an application state of an application, and one or more computing devices configured to receive a search query from a user device, identify access mechanisms in the data store based on the received search query, and select first and second subsets of the identified access mechanisms. The one or more computing devices are configured to generate search results based on the first subset. The one or more computing devices are further configured to determine whether an access mechanism included in the second subset is associated with an advertisement bid price. The one or more computing devices are also configured to, in the event an access mechanism included in the second subset is associated with an advertisement bid price, generate an advertised search result based on the access mechanism, and transmit the search results and the advertised search result to the user device, and, in the event none of the access mechanisms included in the second subset is associated with an advertisement bid price, transmit the search results to the user device.

[0011] In some examples, to determine whether an access mechanism included in the second subset is associated with an advertisement bid price, the one or more computing devices are configured to compare an access mechanism included in the second subset to each of one or more access mechanisms included in an advertisement record, and determine whether the access mechanism is associated with the advertisement bid price based on the comparison. Optionally, the advertisement record also includes an indication of the advertisement bid price. In some

examples, to compare the access mechanism included in the second subset to each of the one or more access mechanisms included in the advertisement record, the one or more computing devices are configured to determine whether the access mechanism is the same as any of the one or more access mechanisms. Optionally, to determine whether the access mechanism is associated with the advertisement bid price based on the comparison, the one or more computing devices are configured to determine that the access mechanism is associated with the advertisement bid price in the event the access mechanism is the same as any of the one or more access mechanisms, and determine that the access mechanism is not associated with the advertisement bid price in the event the access mechanism is different than each of the one or more access mechanisms. In some examples, the identified access mechanisms include a first set of access mechanisms, and the one or more computing devices are further configured to generate the advertisement record. Optionally, to generate the advertisement record, the one or more computing devices are configured to receive an entity query from an advertiser and identify a second set of access mechanisms based on the received entity query. The second set may be different than the first set. Optionally, to generate the advertisement record, the one or more computing devices are further configured to display the second set of access mechanisms to the advertiser, receive one or more selections of the second set of access mechanisms from the advertiser, receive the indication of the advertisement bid price from the advertiser, and generate the advertisement record, wherein the one or more access mechanisms included in the advertisement record correspond to the one or more selections of the second set of access mechanisms received from the advertiser.

[0012] Optionally, the first and second subsets of the identified access mechanisms are mutually exclusive. In some examples, the first and second subsets of the identified access mechanisms each include at least one common access mechanism of the identified access mechanisms. The one or more computing devices may be further configured to generate result scores that are associated with the identified access mechanisms, and select the first and second subsets based on the generated result scores. In some implementations, to identify the access mechanisms based on the received search query, the one or more computing devices are configured to identify function records included in a data store based on the received search query and select the identified access mechanism from the identified function records. Each function record may include an access mechanism specifying an application state of an

application and application state information describing the application state of the application. The one or more computing devices may be configured to identify the function records based on matches between terms of the search query and terms of the application state information included in each identified function record. In some implementations, the one or more computing devices are further configured to generate result scores for the identified function records, and to select the first and second subsets of the identified access mechanisms, the one or more computing devices are further configured to select the first and second subsets based on the generated result scores for the identified function records from which the one or more computing devices select the identified access mechanisms.

[0013] In some implementations, the one or more computing devices are further configured to compare the advertisement bid price to another advertisement bid price associated with another access mechanism included in the second subset in the event an access mechanism included in the second subset is associated with an advertisement bid price, and generate the advertised search result based on the comparison. Optionally, to compare the advertisement bid price associated with the access mechanism included in the second subset to the other advertisement bid price associated with the other access mechanism included in the second subset, the one or more computing devices are configured to determine whether the advertisement bid price is greater than the other advertisement bid price, and to generate the advertised search result based on the comparison, the one or more computing devices are configured to generate the advertised search result in the event the advertisement bid price is greater than the other advertisement bid price.

[0014] In yet another aspect of the disclosure provides a non-transitory computer-readable storage medium including instructions that cause one or more computing devices to receive a search query from a user device, identify access mechanisms based on the received search query, wherein each access mechanism specifies an application state of an application, and select first and second subsets of the identified access mechanisms. The instructions cause the one or more computing devices to generate search results based on the first subset. The instructions further cause the one or more computing devices to determine whether an access mechanism included in the second subset is associated with an advertisement bid price. The instructions also cause the one or more computing devices to, in the event an access mechanism included in the second subset is associated with an advertisement bid price, generate an advertised search result based

on the access mechanism, and transmit the search results and the advertised search result to the user device, and, in the event none of the access mechanisms included in the second subset is associated with an advertisement bid price, transmit the search results to the user device.

[0015] In yet another aspect of the disclosure provides a non-transitory computer-readable storage medium including instructions that cause one or more computing devices to receive an entity query from an advertiser, and identify access mechanisms based on the received entity query. Each access mechanisms specified an application state of the application. The instructions further cause the one or more computing devices to display the identified access mechanisms to the advertiser, receive one or more selections of the identified access mechanisms from the advertiser, and generate an advertisement record that associates the one or more selections of the identified access mechanisms with the advertisement bid price.

[0016] The details of one or more implementations of the disclosure are set forth in the accompanying drawings and the description below. Other aspects, features, and advantages will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF DRAWINGS

[0017] FIG. 1A depicts an example environment including a search system, an advertisement system, an entity system, and one or more user devices, advertiser devices, and data sources.

[0018] FIG. 1B depicts another example environment including the search system, advertisement system, entity system, user devices, advertiser devices, and data sources.

[0019] FIG. 2 depicts an example of a user device in communication with a search system, an advertisement system, and an entity system.

[0020] FIG. 3A is a functional block diagram of an example search system.

[0021] FIG. 3B is a functional block diagram of an example search module.

[0022] FIGS. 3C and 3D depict example function records of a search data store.

[0023] FIG. 4A is a functional block diagram of an example search system in communication with an example advertisement system and an example entity system.

[0024] FIGS. 4B–4D depict example entity records of an entity data store.

[0025] FIGS. 4E–4G depict example advertisement records of an advertisement data store.

[0026] FIG. 5 is a data flow diagram illustrating an example flow of data among a search system, an advertisement system, and a user device.

[0027] FIG. 6 is a flow diagram illustrating an example set of operations for a method of identifying access mechanisms and generating search results and advertised search results.

[0028] FIG. 7 is a flow diagram illustrating an example set of operations for a method of performing a search for access mechanisms based on a search query received from a user device.

[0029] FIG. 8 is a flow diagram illustrating an example set of operations for a method of receiving access mechanisms as search results and advertised search results at a user device.

[0030] FIG. 9 is a flow diagram illustrating an example set of operations for a method of bidding on access mechanisms associated with an entity at an advertiser device.

[0031] FIGS. 10A and 10B depict example graphical user interfaces (GUIs) that may be generated on a user device.

[0032] FIG. 11 depicts an example GUI that may be generated on an advertiser device.

[0033] FIGS. 12A and 12B depict other example function records of a search data store.

[0034] FIG. 13 is a schematic view illustrating an example method for generating search results based on a search query.

[0035] FIG. 14 is a schematic view illustrating an example method for generating advertisement records that include one or more an advertisement bid price.

[0036] FIG. 15 is a schematic view of an example computing device executing any systems or methods described herein.

[0037] Like reference symbols in the various drawings indicate like elements.

DETAILED DESCRIPTION

[0038] The present disclosure generally relates to the field of search, and, more particularly, to techniques for generating and displaying advertisements for search results that are associated with entities (e.g., nouns) specified by advertisers. According to the techniques of this disclosure, a user device may transmit a search query to a search system and receive search results and advertised search results that are responsive to the search query. The user device may display the search results and the advertised search results to a user of the user device. The search results and the advertised search results may each include one or more user selectable links that, when selected by the user, direct the user device to one or more application states within one or more web-based applications (e.g., applications accessible from a user device via a web browser), or within one or more native applications (e.g., applications that are installed on a

user device). The user selectable links may indicate (e.g., using text and/or image data) to the user the corresponding application states within the web-based or native applications.

[0039] An application state of an application may refer to one or more web pages within a web-based application, or to one or more graphical user interfaces (GUIs), or so-called "screens," within a native application. In general, an application state of this disclosure may refer to a configuration of a web-based or native application in which the application displays content to the user, such as information related to one or more products, services, or vendors provided by, or accessible via, the application. An application state, as used herein, may also refer to a function provided by a web-based or native application. As one example, an application state of a web-based or native online shopping application may correspond to a web page or screen of the application that describes (e.g., using text and/or image data) a particular product or service sold through the application (e.g., by one or more vendors associated with the application).

[0040] According to the techniques disclosed herein, the search system may receive the search query from the user device and generate the search results based on the received search query. For example, the search system may identify one or more access mechanisms (hereinafter, "AMs") that each specify an application state of an application. As one example, the search system may identify one or more function records based on the search query, and select the AMs from the identified function records. The search system may then select first and second subsets of the identified AMs. For example, the first and second subsets of the identified AMs may be mutually exclusive, or may share one or more common AMs. Additionally, the first and second subsets may include all or a subset of the identified AMs. In some examples, the first subset may include AMs that are more relevant to the search query compared to the AMs included in the second subset. For example, the AMs included in the second subset may represent AMs that are relevant to the search query, but are less relevant than the AMs included in the first subset. As such, in these examples, the AMs of the second subset may not be transmitted to the user device along with the AMs of the first subset.

[0041] The search system may generate the search results based on the first subset of the identified AMs, and transmit the search results to the user device. The search system may also transmit the second subset of the identified AMs to an advertisement system (hereinafter, "ad system"), which may generate the advertised search results based on the second subset. For example, the ad system may determine whether any of the identified AMs of the second subset

are associated with an advertisement bid price (hereinafter, "ad bid price"). As one example, the ad system may determine whether any of the identified AMs of the second subset correspond to one or more sponsored AMs included in an advertisement record (hereinafter, "ad record") that includes an indication of the ad bid price. In the event an AM of the second subset is associated with an ad bid price, the ad system may generate an advertised search result based on the AM, and transmit the advertised search result to the user device. For example, the ad system may generate the advertised search result based on the AM if the ad bid price associated with the AM is greater than an ad bid price associated with another AM also included in the second subset. In other words, in instances where the second subset includes multiple AMs that are each associated with an ad bid price, the ad system may generate an advertised search result for an AM of the second subset that has the highest ad bid price. In this manner, the techniques of this disclosure may enable advertisers to advertise search results (i.e., AMs) that are relevant to a user's search query, but which would not be otherwise displayed to the user in response to the search query (e.g., based on search result relevance or other logic).

[0042] Also according to the disclosed techniques, an advertiser device may receive an entity query from a user (e.g., an advertiser) of the advertiser device, and transmit the entity query to the ad system. The ad system may identify one or more AMs based on the received entity query, and transmit the identified AMs to the advertiser device. For example, the ad system may identify one or more entity records included in an entity system based on the entity query, and identify the AMs based on the identified entity records. The advertiser device may receive the identified AMs that are responsive to the entity query, and display the identified AMs to the user of the advertiser device. The advertiser device may then receive one or more selections of the identified AMs, as well as an indication of an ad bid price associated with the selections, from the user. The advertiser device may transmit the selections of the identified AMs and the indication of the ad bid price to the ad system. The ad system may generate an ad record that includes the selections of the identified AMs as one or more sponsored AMs, and the indication of the ad bid price. As such, the ad record may associate the AMs specified by the selections of the identified AMs with the indication of the ad bid price. The ad system may then use the ad record to generate advertised search results in the manner described herein.

[0043] FIG. 1A is a functional block diagram that illustrates an example environment that includes a search system 100, an advertisement system 108 (hereinafter, "ad system 108"), and

an entity system 112 that communicate with one or more user devices 102, data sources 104, and advertiser devices 110 via a network 106. In the example of FIG. 1A, the search system 100, the ad system 108, and the entity system 112 also communicate with one another. The network 106 through which the above-described systems and devices communicate may include any type of network, such as a local area network (LAN), a wide area network (WAN), and/or the Internet.

[0044] In this example, the search system 100 receives a search query 134 (FIG. 2) from one of the user device(s) 102 and generates search results 148, including one or more AMs 166, in response to the search query 134. The search system 100 transmits the search results 148 to the user device 102. Upon receiving the search results 148, the user device 102 displays the search results 148 to a user of the user device 102. The ad system 108 generates advertised search results 178, including one or more AMs 166 that are also responsive to the search query 134, and transmits the advertised search results 178 to the user device 102. The user device 102 displays the advertised search results 178 to the user along with the search results 148. The search results 148 and the advertisement search results 178 are referred to as the combined search results 149 (FIG. 2). The ad system 108 generates the advertised search results 178 using advertisement data 179 (hereinafter, "ad data") (FIG. 4A) specified by an advertiser via one of the advertiser device(s) 110. The ad data 179 indicates one or more AMs 166 that are to be transmitted to the user device 102 as advertised search results 178, and conditions for transmitting the AMs 166. The advertiser may generate the ad data 179 using the ad system 108 and the entity system 112, as described herein.

[0045] The search results 148 and the advertised search results 178 include AMs 166, each of which may be rendered as a user selectable link, displayed to the user, and selected by the user via the user device 102. An AM 166 specifies an application state of a web-based or native application. Stated another way, an AM 166 includes data that references the application and indicates one or more operations for the application to perform. In response to the user selecting a user selectable link for an AM 166 included in the search results 148 or the advertised search results 178, the user device 102 launches an application referenced by the AM 166. The user device 102 also causes the application to perform a function by performing one or more operations indicated by the AM 166. As a result, the application is configured, or set, into a particular application state that corresponds to the operations. For example, the application may be configured to display one or more products, services, or vendors, to the user, e.g., via a

display device of the user device 102. In this manner, the application state of the application may refer to the operations and/or the outcome of the application performing the operations, in response to the user selecting the user selectable link.

[0046] An application may refer to computer software that causes a computing device (e.g., the user device 102) to perform a task. In some examples, an application may be referred to as an "application," an "app," or a "program." Example applications include word processing applications, spreadsheet applications, messaging applications, media streaming applications, social networking applications, and games. Applications can be executed on a variety of different computing devices, including mobile computing devices, such as smart phones, tablets, and wearable computing devices (e.g., headsets and/or watches). Applications can also be executed on other types of computing devices having other form factors, such as laptop computers, desktop computers, or other consumer electronic devices. In some examples, applications may be installed on a computing device prior to a user purchasing the device. In other examples, the user may download and install applications on the computing device.

[0047] The functionality of an application may be accessed on a computing device on which the application is installed, and/or via a remote computing device. In some examples, all of an application's functionality may be included on a computing device on which the application is installed. In these examples, the application may function without communication with other computing devices. In other examples, an application installed on a computing device may access information from other remote computing devices during operation. For example, a weather application installed on a computing device may access the latest weather information via the Internet and display the information to a user. In still other examples, an application may be partially executed by a user's computing device and partially executed by a remote computing device. For example, a web-based application may be executed, at least in part, by a web server and accessed by a user via a web browser of the user's computing device. Example web-based applications include web-based email, online auctions, and online retail sites.

[0048] A web-based or native application can perform any of a variety of different functions for the user of the user device 102. As one example, a restaurant reservation application can make reservations for restaurants. As another example, an internet media player application can stream media (e.g., a song or a movie) from the Internet to the user device 102. In some examples, a single application can perform multiple functions. As one example, a restaurant

reservation application can allow the user to retrieve information about a restaurant and read user reviews for the restaurant, in addition to making reservations for the restaurant. As another example, an internet media player application can allow the user to perform searches for digital media and generate music playlists, in addition to streaming media to the user's device.

[0049] An AM 166 as described herein may include one of a native application AM (hereinafter, "application AM," or "AAM") and a web AM (hereinafter, "WAM"). As such, the user device 102 may use an AM 166 of the present disclosure to access the functionality provided by a native or a web-based application. For example, the user may select a user selectable link that includes the AM 166 to access the functionality of the application indicated in the user selectable link.

[0050] A WAM may include a resource identifier that includes a reference to a web resource (e.g., a page of a web application, or website). For example, the WAM may include a uniform resource locator (URL) (i.e., a web address) used with the hypertext transfer protocol (HTTP). If the user of the user device 102 selects a user selectable link that includes the WAM, the user device 102 may launch a web browser application included on the user device 102 and retrieve the web resource indicated in the resource identifier. Stated another way, if the user selects the user selectable link that includes the WAM, the user device 102 may launch the web browser application and access a state (e.g., a page) of a web application, or website. In some examples, the WAM may include a URL for a mobile-optimized site and/or a full site.

[0051] An AAM may be a string that includes a reference to a native application and indicates one or more operations for the user device 102 to perform. If the user selects a user selectable link that includes the AAM, the user device 102 may launch the native application referenced in the AAM and perform the operations indicated by the AAM. In other words, the user selecting the user selectable link that includes the AAM may cause the user device 102 to launch the native application referenced in the AAM and set the application into a state (e.g., in which the application displays a GUI, or screen) specified by the AAM.

[0052] In some examples, the AAM may include an application resource identifier (ARI) that references the native application and/or indicates the operations. In these examples, the ARI may be a string that has an application specific scheme. For example, the ARI may include a reference to the native application, a domain name, and a path for the application to retrieve and display information to the user. An example ARI for an application state of a native application

"OPENTABLE®" by OpenTable, Inc. (hereinafter, "OpenTable") for the Android® OS is "vnd.opentable.deeplink://opentable.com/restaurant/profile?rid=88333&refid=1." A portion of the ARI, i.e., the substring "vnd.opentable.deeplink," references OpenTable. The ARI also indicates one or more operations for OpenTable to perform. Specifically, OpenTable may retrieve and display information included in the ARI domain and path defined by the substring "opentable.com/restaurant/profile?rid=88333&refid=1." Upon receiving the ARI, the user device 102 may launch OpenTable and display information retrieved from the location indicated in the ARI. In some examples, the ARI may be provided by an application developer.

[0053] In some examples, the AAM may include only the ARI that references the native application and/or indicates the operations. In other examples, the AAM may include only the operations, i.e., without including the ARI. In these examples, the operations indicated by the AAM may reference the native application. The operations may include instructions for at least one of a search application, an operating system (OS), and the referenced native application included on the user device 102. In these examples, in response to the user selecting a user selectable link that includes the AAM, the user device 102 may identify the native application using the operations, launch the native application, and cause the native application to perform the operations. In still other examples, the AAM may include both the ARI and the operations.

[0054] In some examples, the AAM may include one or more operations for the user device 102 to perform in addition to the operations indicated by the ARI. For example, the search application, the OS, and/or the referenced native application may perform the additional operations. In some examples, the additional operations may be included in a script. Example additional operations include launching the native application, creating and sending a search request to an application server, setting a current geographic location in the application, making a restaurant reservation, sending a text message, and adding an appointment to a calendar.

[0055] As one example, an AM 166 for a web-based or native restaurant reservation application includes data that enables the user device 102 to launch the application and make a reservation at a restaurant using the application. In this example, to make the reservation, the user device 102 causes the application to perform one or more operations indicated by the AM. Performance of the operations sets the application into an application state in which the application displays information related to the reservation to the user. The information can include a reservation time, a description of the restaurant, user reviews, as well as any other

information related to the reservation or the restaurant. As another example, an AM 166 for a web-based or native internet media player application includes data that enables the user device 102 to launch the application and stream media (e.g., music) from the Internet to the user device 102 using the application. In this example, to stream the media, the user device 102 causes the application to perform one or more operations indicated by the AM 166. Performance of the operations sets the application into an application state in which the application displays to the user information regarding the media being streamed to the user device 102, such as a song name, an artist, or an album name.

[0056] AMs 166 may have various different formats and content. The format and content of an AM may depend on the application associated with the AM and the one or more operations that are performed by the application based on the AM 166. For example, an AM 166 for an internet music player application may differ from an AM for a shopping application. For instance, the AM 166 for the internet music player application may include references to musical artists, songs, and albums. The AM 166 may also reference one or more operations, such as randomizing a list of songs and playing a song or album. The AM 166 for the shopping application may include references to one or more products that are sold via the application. The AM 166 may also reference one or more operations, such as adding one or more products to a shopping cart and proceeding to a checkout.

[0057] The search system 100 and the ad system 108 transmit the search results 148 and the advertised search results 178, including the AMs 166, to the user device 102 along with additional data. For example, the search system 100 and the ad system 108 may transmit link data 170 (e.g., text and/or image data) that the user device 102 may use to generate one or more user selectable links for the AMs 166 included in the search results 148 and the advertised search results 178. The ad system 108 may also transmit ad content 172 (e.g., text and/or image data) that the user device 102 may use to generate the user selectable links for the AMs 166 included in the advertised search results 178. A user selectable link may include text and/or image(s) that a user may select (e.g., touch, or "click on"). Each user selectable link may be associated with an AM 166, such that when the user selects a particular link, the user device 102 launches a web-based or native application specified by the corresponding AM 166 and causes the application to perform one or more operations indicated by the AM 166. The text and/or image(s) of the user selectable link may indicate the operations or function that the application

performs in response to selection of the link. For example, if the user selectable link is for a song in a music player application, the text and/or image(s) may indicate that the user device 102 will launch the application, and that the application will play the song, when the user selects the link. Example user selectable links are shown in FIGS. 2 and 10A.

[0058] Referring to FIG. 1B, the search system 100 includes a search data store 118 that the search system 100 uses to generate the search results 148 and provide data used by the ad system 108 to generate the advertised search results 178. The search data store 118 may include one or more databases, indices (e.g., inverted indices), tables, files, or other data structures that may be used to implement the techniques of the present disclosure. In some examples, the search data store 118 is included in one or more storage devices.

[0059] The search data store 118 includes one or more function records 160 (e.g., the function record 160a of FIG. 3C). Each function record 160 may include data related to a function of a web-based or native application and/or to an application state of the application resulting from the application performing the function. For example, each function record 160 may include a function identifier (ID) 162, application state information (ASI) 164, and one or more AMs 166. A function ID 162 of a function record 160 uniquely identifies the function record 160 among other function records 160 included in the search data store 118. ASI 164 of a function record includes data that describes an application state into which an application is set according to one or more AMs 166 included in the function record 160. An AM 166 of a function record 160 includes data (e.g., a string) that causes the user device 102 to launch a web-based or native application and perform a function associated with the application.

[0060] A single application can provide different functionalities. For example, a restaurant reservation application can access reviews for a variety of different restaurants and set up reservations at the restaurants. Similarly, a travel application can book hotels, book flights, and provide reviews for different travel destinations. The different functionalities associated with a single application may be accessed using different AMs. For example, with respect to the restaurant reservation application, the search data store 118 may include function records 160 having different AMs 166 for accessing different restaurant reviews and setting up reservations. Similarly, the search data store 118 may include function records 160 having different AMs 166 for booking hotels, booking flights, and accessing reviews for different travel destinations.

[0061] In some examples, a function record 160 may include multiple different AMs 166. For example, the AMs may be associated with different editions of an application. An edition of an application refers to a particular implementation or variation of the application. For example, the edition may refer to a version of the application, such as a version 1.0 or 2.0 of the application. In another example, the edition may refer to an implementation of the application for a specific platform, such as a specific OS. The AMs 166 included in the function record 160 may cause the corresponding application editions to launch and perform similar functions. Accordingly, the AMs 166 may cause the corresponding application editions to be set into similar application states. In one example, the different AMs 166 reference different editions of an information retrieval application and cause the corresponding application editions to retrieve similar information. In another example, the different AMs reference different editions of an internet music player application and cause the corresponding application editions to play the same song.

[0062] As an example, a function record 160 for an application state of an application that retrieves restaurant information may include multiple different AMs 166 for multiple different editions of the application. In this example, the function record 160 is associated with a specific Mexican restaurant. The AMs 166 for the different application editions may cause each edition to retrieve information for the same specific Mexican restaurant. For example, a first AM 166 may cause a first application edition (e.g., for a first OS) to retrieve information for the restaurant, and a second AM 166 may cause a second application edition (e.g., for a second OS) to retrieve information for the same restaurant.

[0063] In some examples, the search system 100 may identify function records 160 included in the search data store 118 that each includes multiple AMs 166. For each function record 160 including multiple AMs 166, the search system 100 may select some or all of the AMs 166 for transmission to the user device 102 as part of the search results 148, or to the ad system 108 for generating the advertised search results 178. In some examples, the search system 100 may transmit all AMs 166 of a function record 160 to the user device 102. The user device 102 may determine which of the AMs 166 to use to access an application state associated with the function record 160. Similarly, the search system 100 may transmit all AMs 166 of a function record 160 to the ad system 108. The ad system 108 may determine which of the AMs 166 to transmit to the user device 102 as part of the advertised search results 178. In other examples,

the search system 100 may determine which of the AMs 166 to transmit to the user device 102 and/or the ad system 108 based on information included in a query wrapper 174 (FIG. 2) received from the user device 102. The information may indicate various properties of the user device 102, e.g., the OS, or device type, of the user device 102. Using the information, the search system 100 may transmit one or more of the AMs 166 of the function record 160 that are likely to be compatible with the user device 102 to the user device 102 and/or the ad system 108.

[0064] In some examples, a function record 160 may also include information that describes values of one or more metrics associated with a person, place, or thing described in the function record 160. Example metrics include the popularity of a place described in the function record 160 and/or ratings (e.g., user ratings) of the place. For example, if the function record 160 describes a song, a metric associated with the song may be based on the popularity of the song and/or ratings (e.g., user ratings) of the song. The information included in the function record 160 may also be based on measurements associated with the function record 160, such as how often the function record 160 is retrieved during a search and how often user selectable links for AMs of the function record 160 are selected by a user. The information may also indicate whether the function record 160 includes an AAM for a default application state, or a deeper application state, of a native application.

[0065] As described herein, the search system 100 receives the search query 134 from the user device 102 and generates the search results 148 in response to the search query 134. The search query 134 may include text, numbers, and/or symbols (e.g., punctuation) entered into the user device 102 by the user. For example, the user may have entered the search query 134 into a search field, or "search box," 130 (FIG. 2) of a search application included on the user device 102. The user may have entered the search query 134 using a touchscreen keypad, a mechanical keypad, and/or via speech recognition techniques. As described herein, in some examples, the search application may be a native application dedicated to search, or a more general application, such as a web browser.

[0066] In some examples, the user device 102 may transmit additional data to the search system 100 along with the search query 134. The search query 134 and the additional data may be referred to as the query wrapper 174. The additional data may be associated with the search query 134 and may include geo-location data for the user device 102, platform data for the user device 102 (e.g., a type and/or a version of the user device 102, the OS, and/or the web browser),

an identity of the user (e.g., a username), partner specific data, and other data. The user device 102 transmits the query wrapper 174 to the search system 100. The search system 100 may use the search query 134 and/or the additional data included in the query wrapper 174 to generate the search results 148 and provide information to the ad system 108 to generate the advertised search results 178.

[0067] The search system 100 also includes an application search module 114 (hereinafter, "search module 114") that identifies one or more function records 160 included in the search data store 118 based on the search query 134. Initially, the search module 114 analyzes the search query 134. The search module 114 then identifies one or more function records 160 included in the search data store 118 based on the analyzed search query 134. For example, the search module 114 may identify the function records 160 based on matches (e.g., text matches) between terms of the search query 134 and terms of ASI 164 included in the identified function records 160. The search module 114 then processes (e.g., scores) the identified function records 160. For example, the search module 114 may determine how well the identified function records 160 match the search query 134. The search module 114 may then select one or more of identified the function records 160 that best match the search query 134. The search module 114 may transmit function IDs 162 associated with the selected function records 160 to a result generation module 116 also included in the search system 100 (FIG. 3A).

[0068] Referring also to FIG. 3A, the result generation module 116 may identify the function records 160 selected by the search module 114 in the search data store 118 using the received function IDs 162. The result generation module 116 may then select one or more AMs 166 from the function records 160. As described herein, the result generation module 116 may select first and second subsets of the function records 160, and select AMs 166 from the function records 160 of the first and second subsets. The result generation module 116 may transmit the AMs 166 included in the function records 160 of the first subset to the user device 102 as search results 148. The result generation module 116 may also transmit the AMs 166 included in the function records 160 of the second subset to the ad system 108 so that the ad system 108 may generate advertised search results 178, as also described herein. The ad system 108 may transmit the advertised search results 178 to the user device 102. In some examples, the result generation module 116 may transmit function IDs 162 that correspond to the function records 160 of the second subset to the ad system 108, rather than the AMs 166 selected from the function records

160. In these examples, the ad system 108 may access the function records in the search data store 118 using the received function IDs 162, and select the AMs 166 from the function records 160.

[0069] The search system 100 (e.g., the result generation module 116) may transmit additional data along with the AMs 166 to the user device 102 and the ad system 108. For example, the search module 114 may generate result scores 173 for the function records 160 from which the AMs 166 are selected (e.g., using values of metrics associated with the persons, places, or things described in the function records). As such, each AM 166 may be associated with a result score 173 that indicates the rank of the AM 166 relative to the other AMs 166. In these examples, the search system 100 may also transmit the result scores 173 to the user device 102 and the ad system 108 along with the AMs 166.

[0070] In some implementations, the search module 114 and the result generation module 116 execute on a remote system 115. The remote system may be a distributed system (e.g., cloud environment) having scalable/elastic computing resources (e.g., hardware processing device) and/or storage resources (hardware storage). In some examples, the remote system 115 may execute the advertisement system 108 and/or the entity system 112.

[0071] As described herein, the ad system 108 uses the AMs 166 (or function IDs 162) received from the search system 100 (i.e., the result generation module 116) to generate one or more advertised search results to be displayed to the user of the user device 102. Specifically, an advertisement generation module 120 (hereinafter, "ad generation module 120") of the ad system 108 generates an advertised search result for an AM 166 received from the search system 100 when the ad generation module 120 determines that the AM 166 is associated with an advertisement bid price 209 (hereinafter, "ad bid price") (FIG. 4E). For example, the ad generation module 120 may determine that the AM 166 is associated with an ad bid price 209 by identifying an ad record 200 included in an advertisement data store 124 (hereinafter, "ad data store 124") that includes a sponsored AM 204 that corresponds to the AM 166 received from the search system 100. In some examples, the ad generation module 120 may generate the advertised search result for the AM 166 when the ad generation module 120 determines that the AM 166 is associated with the highest ad bid price 209 compared to other AMs 166 received from the search system 100. The ad generation module 120 transmits the advertised search results 178 to the user device 102, e.g., directly, via the search system 100, or via another system

or device. The user device 102 displays the advertised search results 178 to the user with the search results 148 received from the search system 100 as user selectable links.

[0072] Alternatively, the ad system 108 may select one or both of the first and second subsets of the function records 160 and select the AMs 166 from the function records 160, in a similar manner as described above with reference to the result generation module 116. In these examples, the ad system 108 may transmit the AMs 166 included in the function records 160 of the first subset to the user device 102 as search results 148, and use the AMs 166 included in the function records 160 of the second subset to generate advertised search results 178.

[0073] As described herein, the ad system 108 uses the ad data store 124 to generate advertised search results 178 based on AMs 166 (or function IDs 162) received from the search system 100. In some examples, the ad data store 124 is included in one or more storage devices. The ad data store 124 includes data associated with one or more advertisements. The data associated with an advertisement may be referred to as an "an advertisement record," or "an ad record" (e.g., the ad record 200 of FIG. 4E). The ad data store 124 may include one or more ad records 200 that each includes data for a different advertisement. The ad records 200 may be generated using the advertiser device(s) 110, an ad record generation module 122 of the ad system 108, and an entity data store 128 of the entity system 112, as described with reference to FIG. 9. The ad records 200 may be generated by advertisers, by ad agencies, or by providers of any of the application search and advertisement generation functionalities described herein.

[0074] An ad record 200 may include a variety of different types of data related to an advertisement. For example, the ad record 200 may include data that identifies the ad record, such as an advertisement record name and/or ID 202 that identifies the ad record 200a–200c among other ad records 200 in the ad data store 124. The ad record 200 may also include one or more sponsored AMs 204 associated with the ad record 200. Each sponsored AM 204 may specify an application state of a web-based or native application which an advertiser has paid to have displayed to a user as an advertised search result 178. For example, the advertiser may pay to have the advertised search result 178 generated, transmitted, and displayed to the user when the sponsored AM 204 is identified based on a user's search query 134. The ad record 200 may also include an indication of an amount paid by the advertiser to advertise the sponsored AMs 204, which may be referred to herein as an ad bid price 209. In this example, the advertised search result 178 for the sponsored AM 204 may be generated, transmitted, and displayed to the

user when the ad bid price 209 is greater than an ad bid price 209 associated with each of one or more other ad records 200. The ad record 200 may also include advertisement content (hereinafter, "ad content") 206 used to generate the advertised search results 178 using the sponsored AMs 204. The ad content 206 may include text, image, and/or video data specified by the advertiser.

[0075] The entity data store 128 of the entity system 112 includes data associated with one or more different entities. The entity data store 128 may include one or more databases, indices (e.g., inverted indices), files, or other data structures storing the data. The entity data store 128 of the present disclosure includes one or more entity records 180 (e.g., the entity record 180a of FIG. 4B). Each entity record 180 includes data associated with a different entity. For example, an entity record 180 may include data that is descriptive of an entity. The term "entity" may generally refer to a noun (e.g., a person, animal, place, or thing). An entity may also include other parts of speech (e.g., verbs, adjectives, etc.). For example, an entity may correspond to a name of a business, product, service, a piece of media content, political organization/figure, public figure, destination, or any other suitable item of commerce, which may be advertised in connection with an application. Accordingly, entities that may be used to generate advertised search results 178 according to the techniques disclosed herein can include businesses, products, services, media contents, political organizations/figures, public figures, destination places (e.g., city, state, country), or any other suitable items of commerce referenced in an application.

[0076] Referring also to FIGS. 4A–4D, an entity record 180 may be a data structure that includes an entity name 182, an entity ID 184, an entity category 186, and entity information 188. An entity name 182 of an entity record 180 may include one or more words, numbers, and/or symbols (e.g., punctuation marks). An entity ID 184 of an entity record 180 may identify the entity record 180 among the other entity records 180 included in the entity data store 128. An entity category 186 of an entity record 180 may indicate a category in which the entity name 182 and the entity information 188 belong. Entity information 188 of an entity record 180 may refer to data included in the entity record 180 in addition to the entity name 182 and the entity category 186.

[0077] The entity system 112 also includes an entity record 180 generation module 126 that may be used to generate the entity records 180 included in the entity data store 128. For example, the entity system 112 may retrieve entity data from various data sources (e.g., the data

source(s) 104). The retrieved entity data may include any type of data related to entity records 180 described herein, e.g., an entity name 182, an entity category 186, entity information 188, and associated AMs 166, 190 or applications.

[0078] The entity system 112 may be configured to generate and update the entity data store 128 based on the entity data retrieved from the data sources 104. For example, the entity system 112 may use the entity data to update one or more databases, indices, files, or other data structures included in the entity data store 128. The entity system 112 may generate new entity records 180 and update existing entity records 180 based on the entity data retrieved from the data sources 104. In some examples, some data included in the entity data store 128 may be manually generated.

[0079] User device(s) 102 can be any computing devices capable of providing search queries 134 to the search system 100 and receiving search results 148 and advertised search results 178 from the search system 100 and the ad system 108. The user device(s) 102 may include smart phones, and tablet, laptop, or desktop computers. The user device(s) 102 may also include computing devices having other form factors, e.g., computing devices included in vehicles, gaming devices, televisions, or other appliances (e.g., networked home automation devices and home appliances).

[0080] The user device(s) 102 may use a variety of different operating systems or platforms. In an example where a user device 102 is a mobile device, the user device 102 may operate using an OS, such as ANDROID® by Google, Inc., IOS® by Apple, Inc., or WINDOWS PHONE® by Microsoft Corporation. In an example where the user device 102 is a laptop or desktop computing device, the user device 102 may use an OS, such as MICROSOFT WINDOWS® by Microsoft Corporation, MAC OS® by Apple, Inc., or LINUX® (LINUX® is the registered trademark of Linus Torvalds in the U.S. and other countries). The user device(s) 102 may interact with the search system 100 and/or the ad system 108 using operating systems other than those described herein, whether presently available or developed in the future.

[0081] The user device(s) 102 can communicate with the search system 100 and the ad system 108 via the network 106. In general, the user device(s) 102 may communicate with any of the systems 100, 108 using any application 101 that can transmit search queries 134 to the search system 100 and receive search results 148 and advertised search results 178 from the search system 100 and the ad system 108. In some examples, the user device 102 may include

an application 101 that is dedicated to interfacing with one or more of the systems 100, 108, such as an application 101 dedicated to searches (e.g., a search application). In other examples, the user device 102 may communicate with any of the systems 100, 108 using a more general application 101, such as a web browser. In any case, an application 101 included on the user device 102 to communicate with one or more of the systems 100, 108 may include a GUI with a search field search box 130, into which the user of the user device 102 may enter search queries 134, e.g., using a touchscreen, physical keyboard, a speech-to-text program, or other form of user input available on the user device 102.

[0082] A user device 102 may use a GUI of the search application 101, or a more general application 101, included on the user device 102 to display the search results 148 and the advertised search results 178. The user device 102 may also use the GUI to receive search queries 134 from the user and transmit the search queries 134 to the search system 100. The GUI may display the search results 148 and the advertised search results 178 to the user in a variety of different ways, depending on the information transmitted to the user device 102 from the search system 100 and the ad system 108. In examples where the search results and advertised search results 178 include one or more AMs, the search system 100 and the ad system 108 may transmit the AMs to the user device 102 along with link data and/or ad content used to generate one or more user selectable links for the AMs 166. In some examples, the GUI may display the search results 148 and the advertised search results 178 to the user as a list of the user selectable links, including text and/or image(s). For example, the text and/or images(s) may include names of applications specified by the AMs, descriptions of the AMs and/or operations indicated therein, and images associated with the applications, or application states thereof, referenced by the AMs (e.g., application, or application state, icons or "screens"). In some examples, the GUI may display the search results 148 and the advertised search results 178 as the list of the user selectable links arranged under a search field into which the user has entered a search query 134. The GUI may arrange the user selectable links by result scores 173 associated with the links, i.e., with the AMs 166 for which the links are generated, or using other logic. The GUI may also group the user selectable links by application.

[0083] The advertiser device(s) 110 can be any computing devices capable of receiving entity queries from users of the advertiser device(s) 110, providing the entity queries to the ad system 108, receiving AMs identified by the ad system 108 based on the entity queries, and

displaying the AMs to the users. The advertiser device(s) 110 can also be any computing devices capable of receiving selections of the AMs, ad bid prices 209, and additional parameters from the users, and transmitting this information to the ad system 108. For example, the advertiser device(s) 110 can be any computing devices capable of providing a GUI that enables the users of the advertiser device(s) 110 to interact with the ad system 108 in the manner described herein.

[0084] The data source(s) 104 may be sources of data, which the search system 100 may use to generate and/or update the search data store 118. For example, the search system 100 may use the data source(s) 104 to generate and/or update one or more databases, indices, tables, files, or other data structures included in the search data store 118. The search system 100 may generate new function records and update existing function records based on data retrieved from the data source(s) 104. The search system 100 may include modules that generate new function records and/or update existing function records based on the data retrieved from the data source(s) 104. In some examples, some or all of the data included in the search data store 118 (e.g., one or more function records) may be manually generated by a human operator. The entity system 112, or another system, may also use the data source(s) 104 to generate and/or update the entity data store 128.

[0085] The data source(s) 104 may include a variety of different data providers. For example, the data source(s) 104 may include data from application developers, such as application developer websites and data feeds provided by application developers. The data source(s) 104 may also include operators of digital distribution platforms configured to distribute applications to user device(s) 102. The data source(s) 104 may further include other websites, such as websites that include web logs (i.e., blogs), application reviews, or other data related to applications. Additionally, the data source(s) 104 may include social networking sites, such as "FACEBOOK®" by Facebook, Inc. (e.g., Facebook posts) and "TWITTER®" by Twitter, Inc. (e.g., text from tweets). The data source(s) 104 may also include online databases that include data related to movies, television programs, music, and restaurants. The data source(s) 104 may include other types of data sources, which may have various types of content and update rates.

[0086] In some examples, the search system 100 may retrieve data from the data source(s) 104, including any type of data related to application functionality and/or application states. The search system 100 may then generate one or more function records stored in the search data store

118 based on the data. In other examples, some or all of the data included in the function records (e.g., ASI) may be manually generated by a human operator. In any case, the data included in the function records may be updated over time so that the search system 100 and the ad system 108 provide up-to-date search results 148 and advertised search results 178.

[0087] FIG. 2 illustrates an example user device 102 in communication with the search system 100 and the ad system 108. In this example, the ad system 108 also communicates with the entity system 112. The user device 102 displays search results 148 received from the search system 100 and the ad system 108 in the form of user selectable links 136, 138A–138B, 140, and 142A–142C (collectively, the "links"). Each link includes link data, i.e., text (e.g., a name of an application, or an application state) and an image (e.g., an icon for the application, or application state) that describe the application, or application state, associated with the link. For example, the links 138A and 138B describe the application states, or entries, for "IHOP" and "McDonald's" within the application "YELP®" by Yelp, Inc. (hereinafter, "Yelp"). The link 136, which is a header, may describe the main, or default, application state within Yelp.

[0088] Each link may be associated with an AM, such that when a user of the user device 102 selects the link, the user device 102 launches the corresponding application and sets it into an application state specified by the AM. The user device 102 may receive the AMs associated with the links 138A–138B and 142A–142C as part of the search results 148. The user device 102 may generate the AMs associated with the links 136 and 140 (i.e., headers) using the received AMs (e.g., portions of the received AMs). In some examples, the links 136 and 140 may not be associated with AMs. As described below, the links 138A–138B and 142A–142C may be arranged for display to the user based on result scores 173 of function records 160 that include the AMs 166 associated with the links. Also, as shown in FIG. 2, links for the same application (e.g., Yelp) may be displayed together (e.g., grouped) using a header (e.g., the links 136 and 140).

[0089] As shown in FIG. 2, the user device 102 transmits the query wrapper to the search system 100. The query wrapper may include a search query 134 ("Late night diners"), geo-location data, platform data, and/or other data (e.g., an IP address) associated with the user, the user device 102, and/or the search query 134. The user may have entered the search query 134 into a search field 130 of a GUI of a search application included on the user device 102, and submitted the search query 134 using a search button 132 of the GUI. In response to the query

wrapper, the search system 100 and the ad system 108 transmit the combined search results 149 to the user device 102. The combined search results 149 may include AMs 166, result scores 173, link data 170, and ad content 172.

[0090] In the example of FIG. 2, the search results 149 include search results 148 received from the search system 100 and advertised search results 178 received from the ad system 108. Specifically, the search results 148 received from the search system 100 correspond to AMs 166 for the links 138A–138B, 142A, and 142C. The advertised search results 178 received from the ad system 108 correspond to the AM for the link 142B. The search system 100 transmits the AMs 166 for the links 138A–138B, 142A, and 142C to the user device 102, e.g., along with associated link data. The search system 100 transmits the AM 166 for the link 142B, as well as one or more other AMs 166, to the ad system 108. The ad system 108 determines that the AM 166 for the link 142B is associated with an ad bid price 209 (e.g., the highest ad bid price 209) based on an ad record 200 included in the ad data store 124. The ad system 108 generates the advertised search results 178 that include the AM 166, and transmits the advertised search results 178 to the user device 102. The advertised search results 178 may also include link data 170 associated with the AM 166, and ad content 172 for the AM 166 also included in the ad record 200.

[0091] In this example, the ad system 108 generates the ad record 200 based on one or more inputs from a user (e.g., an advertiser) of one of the advertiser device(s) 110. For example, the ad system 108 may receive an entity query from the advertiser device 110 and search the entity data store 128 for one or more entity records 180 based on the entity query. The ad system 108 may identify the entity records 180 in the entity data store 128 in a variety of different ways. As one example, the ad system 108 may identify the entity records 180 by detecting matches, or near matches, between terms (e.g., one or more words) of the entity query and terms included in each identified entity record 180. For example, the ad system 108 may identify each entity record 180 by detecting matches between terms of the entity query and terms included in the entity name 182, the entity category 186, and/or the entity information 188 of the entity record 180. The ad system 108 may apply various heuristics and other techniques to further filter and score the identified entity records.

[0092] The ad system 108 may identify one or more AMs 166 based on the identified entity records 180 and display the AMs 166 to the user of the advertiser device 110. In some examples,

the entity records 180 may include the AMs 166. In other examples, the ad system 108 may search the search data store 118 to identify one or more function records 160 that include the AMs 166 using data (e.g., entity name 182, category 186, and/or information 188) included in the entity records 180. The ad system 108 may receive one or more user selections of the AMs 166, including an AM 166 that corresponds to the AM 166 for the link 142B, and an indication of the ad bid price 209 from the user. The ad system 108 may generate the ad record 200 to include the selections of the AMs 166 and the indication of the ad bid price 209.

[0093] FIG. 3A illustrates an example search system 100. In this example, the search module 114 receives a search query 134 from one of the user device(s) 102 and identifies one or more function records 160 in the search data store 118 based on the search query 134. The search module 114 transmits one or more function IDs 162 associated with the identified function records 160 to the result generation module 116. The result generation module 116 generates a search result set 148 (i.e., search results) and a remainder set 150 based on the function ID(s) 162. The search result set 148 includes one or more AMs 166 selected from a first subset of the identified function records. In some examples, the remainder set 150 includes one or more AMs 166 selected from a second subset of the identified function records. Alternatively, in other examples, the remainder set 150 includes one or more function IDs 162 associated with the second subset. The result generation module 116 transmits the search result set 148 and the remainder set 150 to the user device 102 and the ad system 108, respectively.

[0094] FIG. 3B is a functional block diagram of an example of the search module 114 described above with reference to FIG. 3A. In this example, the search module 114 includes a query analysis module 152, a consideration set generation module 154 (hereinafter "set generation module 154"), and a consideration set processing module 156 (hereinafter "set processing module 156"). The query analysis module 152 receives a query wrapper that includes a search query 134, e.g., from the user device 102, and analyzes the search query 134. For example, the query analysis module 152 may perform various analysis operations on the search query 134, including tokenization, filtering, stemming, synonymization, or stop word removal.

[0095] The set generation module 154 identifies one or more function records 160 in the search data store 118 based on the search query 134. The identified function records 160 may be referred to herein as a "consideration set" 158. In some examples, the set generation module 154 may identify the function records 160 of the consideration set 158 based on one or more matches

between one or more terms of the search query 134 and one or more terms included in the function records 160. For example, the set generation module 154 may identify the function records 160 based on matches between tokens generated by the query analysis module 152 and words included in the function records 160, e.g., in the ASI 164 and/or function IDs 162 of the function records 160.

[0096] The set processing module 156 processes (e.g., scores) the function records 160 of the consideration set 158 and transmits one or more function IDs 162 associated with the processed function records 160 to the result generation module 116. In some examples, the set processing module 156 scores the function records 160 by generating a result score for each function record. In these examples, the result scores 173 may be transmitted to the result generation module 116 along with the function ID(s) 162 for the function records 160 of the consideration set 158.

[0097] The set processing module 156 may generate the result scores 173 for the function records 160 of the consideration set 158 in a variety of different ways. In some examples, the set processing module 156 generates a result score for a function record based on one or more scoring features. The scoring features may be associated with the function record and/or the search query 134 that resulted in identification of the function record by the set generation module 154. A scoring feature for the function record ("record scoring feature") may be based on any data associated with the function record, e.g., data included in ASI of the function record. Example record scoring features for the function record include the popularity and/or ratings (e.g., user ratings) of the place described in the function record, measurements associated with the function record, such as how often the function record is retrieved during a search and how often user selectable links for AMs 166 of the function record are selected by a user, whether the function record includes an AAM that specifies a default application state, or a deeper application state, of a native application, or any other data specific to the function record. A scoring feature for the search query 134 ("query scoring feature") may include any data associated with the search query 134. Example query scoring features for the search query 134 include a number of words in the search query 134, the popularity of the search query 134, and the expected frequency of the words in the search query 134. A scoring feature for the function record and the search query 134 ("record-query scoring feature") may include any data that may be generated based on data associated with both the function record and the search query 134. Example record-query scoring features for the function record and the search query 134 include

parameters that indicate how well the terms of the search query 134 match the terms of the ASI and/or the function ID of the function record. The set processing module 156 may generate the result score for the function record based on a record scoring feature, a query scoring feature, and/or a record-query scoring feature.

[0098] The set processing module 156 may determine result scores 173 for function records 160 in the consideration set 158 based on one or more of the scoring features described above and/or any additional scoring features. In some examples, the set processing module 156 may include one or more machine learned models (e.g., a supervised learning model) configured to receive one or more scoring features. The one or more machine learned models may generate the result scores 173 for the function records 160 based on one or more of the record scoring features, the query scoring features, and the record-query scoring features. For example, the set processing module 156 may pair the search query 134 with each function record in the consideration set 158 and compute a vector of features for each (query, record) pair. The vector of features may include one or more record scoring features, one or more query scoring features, and one or more record-query scoring features. The set processing module 156 may then input the vector of features into a machine-learned regression model to calculate a result score for the corresponding function record. In some examples, the machine-learned regression model may include a set of decision trees (e.g., gradient boosted decision trees). In other examples, the machine-learned regression model may include a logistic probability formula. In some examples, the machine learned task described above can be framed as a semi-supervised learning task, where a minority of training data used to create the machine-learned regression model is labeled with human curated result scores 173, and the rest of the training data is used without human curated result score labels.

[0099] The result generation module 116 may receive the function ID(s) 162 and the result scores 173 and select first and second subsets of function records 160 from the consideration set 158 based on the result scores 173 associated with the function records 160. For example, the result generation module 116 may select one or more function records 160 having the highest result scores 173 from the consideration set 158 as the first subset. The result generation module 116 may select one or more AMs 166 from the first subset and transmit the AMs 166 to the user device 102 as a search result set 148, e.g., with the result scores 173 associated with the selected AMs 166. An AM 166 may be associated with a result score of a function record from which the

AM 166 is selected. The result generation module 116 may also select one or more other function records 160 (e.g., those having relatively lower result scores 173) from the consideration set 158 as the second subset. The result generation module 116 may select one or more AMs 166 from the second subset and transmit the AMs 166 to the ad system 108 as a remainder set 150, e.g., with the associated result scores 173.

[00100] The result scores 173 associated with the AMs 166 in the search result set 148 and the remainder set 150 may be used in a variety of different ways. In some examples, the result scores 173 may be used to rank the AMs 166 within a list for display to a user of the user device 102. In these examples, a larger result score may indicate that the corresponding AM 166 (e.g., an application state) is more relevant to the user's search query 134 than an AM 166 having a smaller result score. In examples where the AMs 166 are displayed to the user as a list of user selectable links ("links"), links for AMs 166 associated with larger result scores 173 may be listed higher within the list (e.g., near the top of a screen) than links for AMs 166 associated with lower results scores. In these examples, links for AMs 166 having lower result scores 173 may be located farther down the list (e.g., off screen) and may be accessed by scrolling down a screen of the user device 102.

[00101] The result scores 173 may indicate the relevance of a particular application state described by a function record in the consideration set 158 to the search query 134, the popularity of the application state, or other properties of the application state, depending on which parameters the set processing module 156 uses to score the function records 160 of the consideration set 158.

[00102] FIGS. 3C-3D illustrate example function records 160, 160a and 160, 160b, respectively that may be included in the search data store 118. The function record 160a of FIG. 3C includes a function ID 162a, ASI 164a, and one or more AMs 166a. The function record 160a may include data related to a function of a web-based or native application. For example, the function record 160a may include data related to an application state of the application that corresponds to, or results from, the application performing the function. The search data store 118 may include one or more other function records 160 that are each similar in structure to the function record 160a. In other words, the search data store 118 may include one or more function records 160 each having a function ID 162, ASI 164, and AM(s) 166.

[00103] The function ID 162a may be used to identify the function record 160a among other function records 160 included in the search data store 118. The function ID 162a may be a string of alphabetic, numeric, and/or symbolic characters (e.g., punctuation marks) that uniquely identify the function record 160a. In some examples, the function ID 162a may describe a function and/or an application state of an application in human readable form. For example, the function ID 162a may include a name of an application referenced by the AM(s) 166a. Additionally, or alternatively, the function ID 162a may include a human readable string that describes a function performed by the application according to the AM(s) 166a, and/or an application state resulting from performance of the function. In some examples, the function ID 162a may include a string in the format of a uniform resource locator (URL), which may uniquely identify the function record 160a. In these examples, the URL may specify the same or similar application state as the AM(s) 166a within a web-based version of the application referenced by the AM(s) 166a.

[00104] In one example, the function ID 162a may include the string "www.yelp.com/biz/the-french-laundry-yountville-2?ob=1" in the format of a URL that uniquely identifies the function record 160. In another example, the function record 160a describes a function of the application Yelp. In this example, the function ID 162a may include the name "Yelp" along with a description of an application state within Yelp, e.g., as specified by the ASI 164a. In still another example, the function record 160a describes an entry for the restaurant "The French Laundry®" within Yelp. In this example, the function ID 162a may be "Yelp - The French Laundry."

[00105] The ASI 164a may include data that describes the application state into which the application referenced by the AM(s) 166a is configured according to one or more operations indicated by the AM(s) 166a. Additionally, or alternatively, the ASI 164a may include data that describes the function performed by the application according to the AM(s) 166a. The ASI 164a may include different types of data. For example, the ASI 164a may include structured, semi-structured, and/or unstructured data. The ASI 164a may be extracted or inferred from documents retrieved from the data source(s) 104. In some examples, the ASI 164a may include data that is manually generated. The ASI 164a may be periodically updated, so that up-to-date search results and advertised search results can be provided in response to the users' search queries.

[00106] In some examples, the ASI 164a may include data that may be presented to the user when the application referenced by the AM(s) 166 is in the application state specified by the

AM(s) 166. For example, the ASI 164a may include data that describes the application state of the application after the user device 102 has performed the one or more operations indicated by the AM(s) 166a. In one example, if the function record 160a is associated with a shopping application, the ASI 164a may include data that describes a product (e.g., a name and a price) that is shown when the application is configured into the application state specified by the AM(s) 166a. In another example, if the function record 160a is associated with a music player application, the ASI 164 may include data that describes a song (e.g., a name and an artist) that is played when the application is configured into the application state specified by the AM(s) 166.

[00107] The data included in the ASI 164a may depend on the type of information associated with the application state specified by the AM(s) 166a. In one example, if the function record 160 is for an application that provides reviews of restaurants, the ASI 164a may include information (e.g., text and numbers) related to a restaurant, such as a category of the restaurant, reviews of the restaurant, and a menu for the restaurant. In this example, the AM(s) 166a may cause the user device 102 to launch the application and retrieve information for the restaurant using the application. As another example, if the function record 160a is for an application that plays music, the ASI 164a may include information related to a song, such as the name of the song, the artist, lyrics, and listener reviews. In this example, the AM(s) 166a may cause the user device 102 to launch the application and play the song described in the ASI 164a using the application.

[00108] Each of the AM(s) 166a may reference a web-based or native application and indicate one or more operations for the user device 102 to perform with respect to the referenced application, as described herein. Each of the AM(s) 166a may also include edition information that indicates the edition, or version, of the application referenced by the AM, as also described.

[00109] In some examples, the function record 160a may also include an application download address that indicates a location (e.g., a digital distribution platform) where a native application can be downloaded if the application is not installed on the user device 102. If a user selects a user selectable link that includes the application download address, the user device 102 may access the digital distribution platform from which the native application may be downloaded. For example, the user device 102 may access the digital distribution platform using a web browser or another application (Google Play® by Google Inc.) included on the user device 102.

[00110] The function record 160, 160b of FIG. 3D is a function record for an application state within the application OpenTable. OpenTable is a restaurant reservation application that allows users to search for restaurants and make restaurant reservations. OpenTable also provides information about restaurants, including descriptions of restaurants and user reviews for the restaurants. The function record 160b describes an application state in which OpenTable provides information for the restaurant "The French Laundry®." In other words, the function record 160b describes an entry in OpenTable for The French Laundry.

[00111] The function record 160b includes a function ID "OpenTable - The French Laundry" 162b, which may be used as a unique identifier to identify the function record 160b among other function records in the search data store 118. In some examples, the function ID 162b may include a URL (e.g., the string "http://www.opentable.com/the-french-laundry") that serves as the unique identifier. The user device 102 can use the URL to access an entry for The French Laundry in a web-based version of OpenTable. In other examples, the function ID 162b may be a string of one or more characters, numbers, or symbols that are not in human readable form.

[00112] The function record 160b also includes ASI 164b. As shown in FIG. 3D, the ASI 164b includes data fields for a restaurant category, a restaurant description (i.e., a description of The French Laundry), user reviews, and additional data relating to The French Laundry. In this example, the data field for the restaurant category may include the text "French cuisine" or "contemporary." The data field for the restaurant description may include text that describes The French Laundry. The data field for the user reviews may include text of user reviews for The French Laundry. The data field for the additional data may include additional data not applicable to the other data fields, e.g., a menu, prices, and operating hours for The French Laundry.

[00113] The function record 160b also includes one or more AMs 166b. As described herein with respect to the AM(s) 166, each of the AM(s) 166b may reference OpenTable and indicate one or more operations to be performed by the user device 102 with respect to OpenTable. Using the AM(s) 166b, the user device 102 may access the application state for The French Laundry within OpenTable. In some examples, the function record 160b may also include edition information that may indicate a version, or edition, of OpenTable associated with one or more of the AM(s) 166b, i.e., indicate a particular edition of OpenTable for each of the AM(s) 166b.

[00114] FIG. 4A is a functional block diagram that illustrates example interactions between one of the user device(s) 102, one of the advertiser device(s) 110, the search system 100, the ad system 108, and the entity system 112. As described herein, the user device 102 transmits a search query 134 to the search module 114 of the search system 100. The search module 114 identifies one or more function IDs 162 using the search query 134 and the search data store 118 of the search system 100, and transmits the function ID(s) 162 to the result generation module 116 of the search system 100. The result generation module 116 generates a search result set 148 (i.e., search results) using the function ID(s) 162, and transmits the search result set 148 to the user device 102. The search result set 148 may include one or more AMs selected from a first subset of function records specified by the function ID(s) 162.

[00115] The result generation module 116 also generates a remainder set 150 using the function ID(s) 162 and transmits the remainder set 150 to the ad generation module 120 of the ad system 108. In some examples, the remainder set 150 may include one or more AMs selected from a second subset of the function records specified by the function ID(s) 162. In other examples, the remainder set 150 may include one or more of the function ID(s) 162 that correspond to the second subset. In these examples, the ad system 108 may access the function records of the second subset using the remainder set 150, and select the AMs from the function records. The ad generation module 120 generates one or more entity links 178 (i.e., advertised search results 178) using the remainder set 150, and transmits the entity link(s) 178 to the user device 102. The user device 102 displays the search result set 148 and the entity link(s) 178.

[00116] To generate the entity link(s) 178 using the remainder set 150, the ad generation module 120 determines whether one or more AMs included in the remainder set 150 (or corresponding to the remainder set 150 via one or more function IDs included in the set) are each associated with an ad bid price 209. The ad generation module 120 may make this determination using one or more ad records 200 stored in the ad data store 124 of the ad system 108. For example, the ad generation module 120 may determine that an AM 166 included in, or corresponding to, the remainder set 150 is associated with an ad bid price 209 if the AM 166 corresponds to a sponsored AM 204 included in an ad record that also includes an indication of the bid price. In some examples, the ad generation module 120 may generate an entity link 178 for a single AM included in (or corresponding to) the remainder set 150 upon determining that

the AM is associated with the highest ad bid price 209 compared to other AMs included in the remainder set 150.

[00117] To generate the ad record 200 described above, a user (e.g., an advertiser) of one of the advertiser device(s) 110 submits an entity query to the ad system 108 via the advertiser device 110. The ad system 108 identifies one or more entity records 180 included in the entity data store 128 using the entity query. The entity records 180 are generated using the entity record generation module 126 of the entity system 112. The ad system 108 then identifies one or more AMs using the identified entity records 180. The ad system 108 transmits the identified AMs to the advertiser device 110 to be displayed to the user. The user then submits one or more selections of the AMs, an indication of the ad bid price 209, and, optionally, one or more additional parameters to the ad system 108 via the advertiser device 110. The entity query, the selections of the AMs, the indication of the ad bid price 209, and the additional parameters may be referred to herein as ad data 179. The user may provide the ad data 179 to the ad system 108 via a GUI of the advertiser device 110, including one or more text fields, selection boxes, and/or other GUI elements. The ad record generation module 122 generates the ad record to include the selections of the AMs as one or more sponsored AMs of the ad record, and the indication of the ad bid price 209. The ad record may also include any additional parameters provided by the user. The ad record generation module 122 stores the ad record in the ad data store 124.

[00118] FIGS. 4B, 4C, and 4D illustrate example entity records 180, 180a, 180b, 180c, respectively that may be stored in the entity data store 128 of the entity system 112. The entity record 182a includes an entity name 182a, an entity ID 184a, an entity category 186a, and entity information 188a. The entity record 180a may generally represent data stored in the entity data store 128 that is related to an entity (e.g., a noun). The entity data store 128 may include data related to one or more different entities. Accordingly, the entity data store 128 may include one or more entity records 180 each having a structure that is similar to that of the entity record 180a, i.e., each having an entity name 182, an entity ID 184, an entity category 186, and/or entity information 188.

[00119] The entity name 182a may include one or more words, numbers, and/or symbols (e.g., punctuation marks). In some examples, the entity name 182a may denote a person, animal, place, thing, or idea. The entity ID 184 may identify the entity record 180a among other entity records included in the entity data store 128. For example, the entity ID 184 may uniquely

identify the entity record 180a. The entity ID 184 may be a string of alphabetic, numeric, and/or symbolic characters (e.g., punctuation marks) that uniquely identify the entity record 180a.

[00120] The entity category 186a may indicate a category in which the data of the entity record 180a belongs. For example, the entity category 186a may indicate a category in which the entity name 182a and/or the entity information 188a belong. The entity category 186a may include one or more words (e.g., nouns), numbers, and/or symbols (e.g., punctuation marks).

[00121] The entity information 188a may represent data in the entity record 180a in addition to the entity name 182a and the entity category 186a. In general, the entity information 188a may include any data that is associated with the entity name 182a and/or the entity category 186a. In some examples, the data included in the entity information 188a may be associated with both the entity name 182a and the entity category 186a. In other words, the data included in the entity information 188a may be related to the entity name 182a and described by the entity category 186a.

[00122] The entity information 188a may include various types of data (e.g., structured, semi-structured, and/or unstructured data). Structured data in the entity information 188a may refer to data included in a defined data field. Semi-structured data in the entity information 188a may refer to data that, at a broad level, is associated with a data field, but is provided in an unstructured manner. Unstructured data in the entity information 188a may include data that is not specifically associated with a defined data field.

[00123] In some examples, the defined data fields of the entity record 180a may be tailored to the entity category 186a of the entity record 180a. For example, entity records having a first entity category may include a first set of defined data fields associated with the first entity category. Entity records having a second entity category that is different than the first entity category may include a second set of defined data fields associated with the second entity category that are different than the first set of defined data fields. In other examples, the different entity records included in the entity data store 128 may have the same or similar defined data fields, even when the entity records include different entity categories.

[00124] In general, the entity information 188a may include any type of data related to an entity, including numbers or other statistics related to the entity, names, dates, text from websites, review articles, wiki articles, and/or other types of data. As one example, if the entity category 186a is "movie," the entity information 188a may include data fields for actors,

directors, producers, viewer reviews, and/or plot summaries. As another example, if the entity category 186a is "music," the entity information 188a may include data fields for an artist's name, a track name, and a track length. As yet another example, if the entity category 186a is "book," the entity information 188a may include data fields for an author's name, a publisher, and a publication date.

[00125] The example entity record 180b of FIG. 4C includes an entity name "The French Laundry" 182b, an entity ID "#1" 184b, an entity category "Restaurant" 186b, and entity information 188b. Thus, the entity record 180b represents an entity record for an entity "The French Laundry." The example entity record 180c of FIG. 4D includes data that is similar to that of the entity record 180b. Specifically, the entity record 180c includes an entity name "The French Laundry" 182c, an entity ID "#1" 184c, an entity category "Restaurant" 186c, and entity information 188c. The entity category 186c includes an optional entity subcategory field, which may include data that describes a subcategory of the category "Restaurant," e.g., "French cuisine." The entity record 180c also includes one or more optional AMs 166, 190, each of which may be the same, or similar to, the AM(s) 166 described herein with reference to the function record 160. For example, each of the AM(s) 166, 190 may specify an application state of a web-based or native application by including a reference to the application and indicating one or more operations for the application to perform.

[00126] FIGS. 4E, 4F, and 4G illustrate example ad records 200, 200a, 200a, 200c, respectively that may be included in the ad data store 124 of the ad system 108. An ad record may include a variety of different types of data related to an advertisement. For example, as shown in FIG. 4E, the ad record 200a includes an ad record name/ID 202a, one or more sponsored AMs 204a, ad content 206a, and one or more entity bid parameters 208a. The ad record 200a may represent data stored in the ad data store 124 that is related to an advertisement. The ad data store 124 may include one or more other ad records each having a structure that is similar to that of the ad record 200a. In other words, the ad data store 124 may include one or more ad records 200 each including an ad record name/ID 202, 202a, 202b, 202c, sponsored AM(s) 204, 204a, 204b, 204c ad content 206, 206a, 206b, 206c, and entity bid parameter(s) 208, 208a, 208b, 208c.

[00127] The ad record name/ID 202a identifies the ad record 200a among other ad records in the ad data store 124. For example, the ad record name/ID 202a may uniquely identify the ad

record 200a. The ad record name/ID 202a may be a string of alphabetic, numeric, and/or symbolic characters (e.g., punctuation marks) that uniquely identify the ad record 200a. In some examples, an advertiser may generate the ad record name/ID 202a. The advertiser may access and update the ad record 200a using the ad record name/ID 202a.

[00128] The sponsored AM(s) 204a correspond to one or more sponsored application states of one or more web-based or native applications associated with the ad record 200a. As described herein, the ad content 206a and the entity bid parameter(s) 208a may be used to generate advertisements for the sponsored AM(s) 204a. Each of the sponsored AM(s) 204a may be the same as, or similar to, the AM(s) 166 described herein with reference to the function record 160. For example, each of the sponsored AM(s) 204a may specify an application state of a web-based or native application by including a reference to the application and indicating one or more operations for the application to perform.

[00129] The sponsored AM(s) 204a may be associated with the ad record 200a included in the ad data store 124 and one or more function records (e.g., the function record 160) included in the search data store 118. For example, a function record included in the search data store 118 may also include one or more of the sponsored AM(s) 204a. In some examples, the sponsored AM(s) 204a may correspond to one or more selections of AMs received by the ad system 108 from an advertiser using one of the advertiser device(s) 110, as described herein. For example, the AMs may have been displayed to the advertiser in response to the advertiser submitting an entity query. As also described, the ad content 206a and the entity bid parameter(s) 208a may also correspond to one or more inputs by the advertiser of the advertiser device 110 that are received by the ad system 108.

[00130] The ad record 200b shown in FIG. 4F includes an ad record name "Advertisement for OpenTable – The French Laundry" having an ID "ID#1" 202b. The ad record 200b also includes a sponsored AM "OpenTable – The French Laundry" 204b. In this example, the application associated with the ad record 200b is OpenTable. The sponsored AM 204b associated with the ad record 200b is an entry in OpenTable for The French Laundry. As such, the ad record 200b is an ad record for the application state, or entry, within OpenTable for The French Laundry.

[00131] In this example, the search data store 118 may include a function record that includes an AM that specifies the application state, or entry, within OpenTable for The French Laundry. For example, with reference to FIG. 3D, the search data store 118 may include the function

record 160b having the function ID "OpenTable – The French Laundry" 162b and AM(s) 166b, one or more of which may correspond to the sponsored AM 204b of the ad record 200b. As such, the function record 160b and the ad record 200b may both include the sponsored AM 204b or its equivalent.

[00132] Referring back to FIG. 4E, the ad content 206a may include data that is used by the ad system 108 (e.g., by the ad generation module 120) to generate one or more advertised search results 178 based on the sponsored AM(s) 204a. For example, the ad system 108 may use link data associated with the sponsored AM(s) 204a and the ad content 206a to generate one or more user selectable links for some or all of the sponsored AM(s) 204a. For instance, the ad system 108 may generate an advertised search result (e.g., a user selectable link) for one of the AM(s) 204a in the event the ad system 108 receives the AM from the search system 100 and if the AM is associated with an ad bid price 209 (e.g., the highest bid price), as indicated by the entity bid parameter(s) 208a. In some examples, the ad content 206a may include text and/or image data (e.g., "SPONSORED," or "AD") that, when incorporated into the user selectable link, indicates to the user that the user selectable link is for an advertised search result.

[00133] The entity bid parameter(s) 208a may specify when the ad system 108 (e.g., the ad generation module 120) generates an advertisement for one or more of the sponsored AM(s) 204a. For example, the entity bid parameter(s) 208a may specify an ad bid price 209 that is associated with one or more of the sponsored AM(s) 204a. The ad system 108 may generate an advertised search result based on one of the sponsored AM(s) 204a when the ad system 108 receives the AM from the search system 100 and determines that the AM is associated with the ad bid price 209 based on the entity bid parameter(s) 208a. For example, the ad system 108 may generate the advertised search result if the ad system 108 also determines that the AM is associated with the highest ad bid price 209 compared to other AMs also received from the search system 100. The entity bid parameter(s) 208a may also specify other parameters, as described with reference to FIG. 4G. Additionally, the ad content 206b and the entity bid parameter(s) 208 may serve the same or similar functions as the ad content 206a and the entity bid parameter(s) 208a described herein.

[00134] The ad record 200c shown in FIG. 4G includes data that is similar to that of the ad record 200b described with reference to FIG. 4F. Specifically, the ad record 200c includes an ad record name "Advertisement for OpenTable – The French Laundry" having an ID "ID#1" 202c, a

sponsored AM "OpenTable – The French Laundry" 204c, ad content 206c, and one or more entity bid parameters 208c. The entity bid parameter(s) 208c of the ad record 200c include one or more additional parameters. The additional parameters may include budget, timing, user, and/or platform parameters. The budget parameters may define one or more budgets associated with advertising the sponsored AM 204c. The timing parameters may define start and stop dates for advertising the sponsored AM 204c, and/or time(s) of day during which the sponsored AM 204c is to be advertised. The user and/or platform parameters may specify one or more user, device, and/or platform (e.g., OS) types for which the sponsored AM 204c is to be advertised.

[00135] FIG. 5 is a data flow diagram that illustrates an example flow of data among the search system 100, the ad system 108, and one of the user device(s) 102. As shown in FIG. 5, the search system 100 receives a search query 134 from one of the user device(s) 102. As described herein, the search query 134 may be included in a query wrapper (not shown). As also shown, the search system 100 identifies multiple AMs ("AM1–AMN") based on the search query 134. For example, the search system 100 may perform a search of the search data store 118 using the search query 134, and identify one or more function records during the search. In this example, the search system 100 may select the AM1–AMN from the identified function records.

[00136] In the example of FIG. 5, the AM1–AM10 are included in the search result set 148, and the AM11–AMN are included in the remainder set 150. In this example, N represents an integer value that is greater than or equal to 11. The AM1–AM10 of the search result set 148 may represent search results that are transmitted by the search system 100 to the user device 102. For example, the AM1–AM10 may correspond to the highest ranked (e.g., most relevant to the search query 134) function records identified during the search. The AM11–AMN of the remainder set 150 may represent one or more AMs that may be used by the ad system 108 to generate advertised search results 178 that are transmitted to the user device 102. In some examples, the AM11–AMN may correspond to relatively lower ranked (e.g., less relevant to the search query 134) function records identified during the search compared to the AM1–AM10. As one example, the AM11–AMN may correspond to one or more function records that each fall below a specified relevance threshold. In this example, the AM1–AM10 meet or exceed the threshold. As another example, the AM11–AMN may correspond to one or more function records that are not included within a predetermined number of the most relevant function records identified based on the search query. In this example, the AM1–AM10 are included

within the predetermined number of the most relevant function records. In other examples, the AM1–AM10 and the AM11–AMN may correspond to other groupings of the function records.

[00137] As shown in FIG. 5, the search system 100 transmits the search result set 148 (i.e., the search results) to the user device 102. The search system 100 also transmits the remainder set 150 to the ad system 108. The ad system 108 determines whether any of the AMs included in the remainder set 150 are associated with ad bid prices 209. For example, the ad system 108 may determine whether any one of the AM11–AMN included in the remainder set 150 is also included in an ad record that indicates an ad bid price 209. In the event one or more of the AMs included in the remainder set 150 are each associated with an ad bid price 209, the ad system 108 may transmit the AMs as the one or more entity link(s) 178 (i.e., advertised search result(s)) to the user device 102. For example, the ad system 108 may transmit one of the AMs to the user device 102 as an advertised search result if the AM is associated with the highest ad bid price 209 compared to the other AMs (i.e., compared to the ad bid prices 209 associated with the other AMs).

[00138] FIG. 6 illustrates an example method 600 of identifying AMs (e.g., the AM(s) 166) based on a search query (e.g., the search query 134) and generating search results (e.g., the search result set 148) and advertised search results 178 (e.g., the entity link(s) 178) using the identified AMs. In block 602, the search system 100 receives a search query 134 from one of the user device(s) 102. In block 604, the search system 100 identifies one or more AMs based on the received search query 134. For example, the search system 100 (e.g., the search module 114) may identify one or more function records (e.g., one or more function IDs of the function records) included in the search data store 118 based on the search query 134, and select the AMs from the identified function records.

[00139] In block 606, the search system 100 (e.g., the result generation module 116) selects a first subset of the identified AMs to transmit as one or more search results (e.g., the search result set 148) to the user device 102. In other words, in block 606, the search system 100 generates the search results based on the first subset. In block 608, the search system 100 (e.g., the result generation module 116) selects a second subset of the identified AMs to transmit as one or more potentially advertised search results 178 (e.g., the entity link(s) 178) to the user device 102. In this example, the search system 100 may transmit the second subset to the ad system 108. The ad system 108 may determine whether an AM included in the second subset is associated with an

ad bid price 209. In the event an AM included in the second subset is associated with an ad bid price 209, the ad system 108 may generate an advertised search result based on the AM. The ad system 108 may make the above-described determination and generate an advertised search result 178 for one or more of the AMs included in the second subset. In some examples, the ad system 108 may generate an advertised search result based on a single AM included in the second subset if the ad system 108 determines that the AM is associated with the highest ad bid price 209 compared to one or more other AMs included in the second subset. As explained herein, the first and second subsets of the identified AMs may be mutually exclusive, or may each include one or more common AMs of the identified AMs. As also explained herein, the first and second subsets of the identified AMs may correspond to all or a subset of the identified AMs.

[00140] In block 610, the search system 100 and/or the ad system 108 transmits the search results and the advertised search results 178, including the first subset and one or more AMs of the second subset of the identified AMs, to the user device 102 that generated the search query 134. As explained herein, the search system 100 and the ad system 108 may also transmit link data and ad content to the user device 102 along with the search results and the advertised search results 178. As also explained herein, the user device 102 may use the link data and the ad content to generate one or more user selectable links for the AMs of the search results and the advertised search results 178. The user device 102 may then display the user selectable links to the user.

[00141] FIG. 7 illustrates an example method 700 of performing a search for AMs (e.g., the AM(s) 166) based on a search query (e.g., the search query 134) and generating search results (e.g., the search result set 148) and advertised search results 178 (e.g., the entity link(s) 178) using the AMs. In block 702, the query analysis module 152 receives a search query 134 from one of the user device(s) 102. In this example, the query analysis module 152 may perform an analysis of the search query 134. In block 704, the set generation module 154 identifies a consideration set 158 of one or more function records based on the search query 134. In this example, the set processing module 156 may process (e.g., score) the consideration set 158.

[00142] In block 706, the result generation module 116 selects first and second subsets of the function records included in the consideration set 158. For example, the result generation module 116 may select the first and second subsets of the function records based on the result

scores 173 associated with the function records 160. As one example, the result generation module 116 may select one or more function records 160 in the consideration set 158 that have the highest result scores 173 as the first subset. In this example, the result generation module 116 may select some or all of the remaining function records in the consideration set 158 as the second subset. As another example, the result generation module 116 may select the first and second subsets such that they include at least one common function record of the consideration set 158.

[00143] In block 708, the result generation module 116 selects one or more AMs from the first subset of the function records. In block 710, the result generation module 116 generates search results (e.g., the search result set 148) based on the AMs selected from the first subset. In this example, the search results include the selected AMs. As described above, the search results may also include the result scores 173 associated with the function records from which the AMs were selected, and/or link data (e.g., text and/or image data) for each selected AM.

[00144] In block 712, the result generation module 116 selects one or more AMs from the second subset of the function records. In this example, the result generation module 116 may transmit the selected AMs to the ad system 108. In block 714, the ad system 108 determines whether an AM selected from the second subset is associated with an ad bid price 209. In the event an AM selected from the second subset is associated with an ad bid price 209, the method 700 proceeds to blocks 716, 718, and 720. In block 716, the ad system 108 generates an advertised search result based on the AM selected from the second subset that is associated with the ad bid price 209. For example, the ad system 108 may generate the advertised search result based on the AM if the ad system 108 determines that the AM is associated with the highest ad bid price 209 compared to one or more other AMs included in the second subset, as described herein. In block 718, the ad system 108 transmits the advertised search result, including the selected AM associated with the ad bid price 209, to the user device 102 that generated the search query 134. As described herein, the advertised search result may also include link and/or ad content (e.g., text and/or image data) associated with the selected AM. In block 720, the result generation module 116 transmits the search results, including the AMs selected from the first subset, to the user device 102. Alternatively, in the event an AM selected from the second subset is not associated with an ad bid price 209, the method 700 proceeds to block 720.

[00145] FIG. 8 illustrates an example method 800 of receiving AMs (e.g., the AM(s) 166) as search results (e.g., the search result set 148) and advertised search results 178 (e.g., the entity link(s) 178) at a user device (e.g., one of the user device(s) 102). The user device 102 described with reference to the method 800 may include a search application (e.g., a web-based or native application) that is configured to receive user inputs and communicate with the search system 100 and/or the ad system 108. The search application may generate a GUI that receives search queries (e.g., the search query 134) from users of the user device 102 and displays search results (e.g., the search result set 148) and/or advertised search results 178 (e.g., the entity link(s) 178) received from the search system 100 and/or the ad system 108 in response to the search queries.

[00146] In block 802, one of the user device(s) 102 receives a search query 134 from a user of the user device 102. For example, the user may have entered the search query 134 into the GUI (e.g., into a search field of the GUI) of the search application included on the user device 102. In block 804, the user device 102 transmits the search query 134 to the search system 100. For example, the user may have caused the user device 102 to transmit the search query 134 to the search system 100 (e.g., by selecting a search button of the GUI). In block 806, the user device 102 waits to receive one or more search results (e.g., the search result set 148) that are responsive to the search query 134 from the search system 100. In this example, the search results include one or more AMs that each specify an application state of an application. The method 800 proceeds from block 806 to block 808 when the user device 102 receives the search results.

[00147] In block 808, the user device 102 waits to receive one or more advertised search results 178 (e.g., the entity link(s) 178) from the ad system 108. For example, the search system 100 may have transmitted one or more AMs that are responsive to the search query 134 to the ad system 108. As one example, the AMs transmitted to the ad system 108 may be relatively less relevant to the search query 134 (e.g., associated with relatively lower result scores 173) compared to the AMs transmitted to the user device 102 by the search system 100. In this example, the ad system 108 may determine that one or more of the AMs transmitted to the ad system 108 are each associated with an ad bid price 209. The ad system 108 may transmit the advertised search results 178, including the one or more AMs associated with ad bid prices 209, to the user device 102. For example, the advertised search results 178 may include a single AM associated with the highest ad bid price 209 among the AMs transmitted to the ad system 108, as described herein.

[00148] In the event the user device 102 receives the advertised search results 178 from the ad system 108, the method 800 proceeds from block 808 to block 810, and then to block 812.

Alternatively, in the event the user device 102 does not receive the advertised search results 178 from the ad system 108, the method 800 proceeds from block 808 directly to block 812, thereby bypassing block 810. Blocks 810 and 812 are described below.

[00149] In the event the user device 102 receives the advertised search results 178, in block 810, the user device 102 displays the advertised search results 178, including the one or more AMs received by the user device 102 from the ad system 108, to the user. In block 812, the user device 102 also displays the search results, including the one or more AMs received by the user device 102 from the search system 100, to the user. For example, the search application included on the user device 102 may display the advertised search results 178 and the search results to the user via the GUI of the search application. In this example, the GUI may display one or more user selectable links generated for the AMs received by the user device 102 from the ad system 108 and the search system 100. As explained herein, the search application may generate the user selectable links using link data and/or ad content for the AMs received by the user device 102. Alternatively, in the event the user device 102 does not receive the advertised search results 178, the user device 102 does not display the advertised search results 178 to the user. Instead, in block 812, the user device 102 displays the search results to the user as one or more user selectable links.

[00150] In block 814, the user device 102 waits to receive a selection of one of the user selectable links from the user. The method 800 proceeds from block 814 to block 816 when the user device 102 receives the selection of the user selectable link. In block 816, the user device 102 launches the application specified by an AM associated with the user selectable link selected by the user. In block 818, the user device 102 sets the application into the application state specified by the AM.

[00151] FIG. 9 illustrates an example method 900 of bidding on AMs (e.g., AM(s) 166) associated with an entity (e.g., the entity name 182a) at an advertiser device (e.g., one of advertiser device(s) 110). The advertiser device 110 described with reference to the method 900 may include a bidding application (e.g., a web-based or native application) that is configured to receive user inputs and communicate with the ad system 108 and/or the entity system 112. The bidding application may generate a GUI that receives entity queries (e.g., the entity query 252

depicted in FIG. 11) from users (e.g., advertisers) of the advertiser device 110 and displays AMs (e.g., the AM(s) 166) received from the ad system 108 and/or the entity system 112 in response to the entity queries. The bidding application may also receive selections of the displayed AMs, indications of ad bid prices 209 associated with the selections, and other parameters, from the users.

[00152] In block 902, the ad system 108 receives an entity query (e.g., the entity query 252) from one of the advertiser device(s) 110. For example, a user (e.g., an advertiser) of the advertiser device 110 may have entered the entity query into a search field of the GUI of the bidding application and caused the advertiser device 110 to submit the entity query to the ad system 108. In block 904, the ad system 108 identifies one or more AMs based on the received entity query. For example, the ad system 108 may perform a search of the entity system 112 (e.g., the entity data store 128) using the entity query. In this example, the ad system 108 may identify one or more entity records (e.g., the entity record 180a) during the search. For example, the ad system 108 may identify one or more entity records that each include an entity name, an entity ID, an entity category, and/or entity information that match one or more terms of the entity query. As one example, the ad system 108 may select the AMs from the identified entity records. Alternatively, as another example, the ad system 108 may identify one or more function records using the identified entity records, and select the AMs from the identified function records. For example, the ad system 108 may identify function records that reference the identified entity records, e.g., function records that include entity IDs of the identified entity records. Alternatively, the ad system 108 may identify function records that include terms (e.g., in function IDs and/or ASI) that match terms of the identified entity records.

[00153] In block 906, the ad system 108 transmits the identified AMs to the advertiser device 110. In some examples, the advertiser device 110 may display the identified AMs to the user via the GUI of the bidding application, as described with reference to FIG. 11. For example, the advertiser device 110 may display the identified AMs to the user as one or more advertiser selectable AMs (hereinafter, "selectable AMs"). In some examples, the ad system 108 may transmit additional information to the advertiser device 110 along with the identified AMs, such as text and/or image data that advertiser device 110 may use to generate the selectable AMs.

[00154] In block 908, the ad system 108 receives one or more selections of the identified AMs from the advertiser device 110. For example, the user may select (e.g., touch, or click on) one or

more of the selectable AMs used to display the identified AMs to the user. In block 910, the ad system 108 also receives an indication of an ad bid price 209 from the advertiser device 110. For example, the user may specify the ad bid price 209 via the GUI of the bidding application included on the advertiser device 110. In some examples, the ad system 108 may receive one or more additional parameters from the advertiser device 110. As explained herein, the additional parameters may include one or more user, platform, timing, and/or budget parameters. The ad system 108 may use the additional parameters to generate an ad record, as also described herein.

[00155] In block 912, the ad system 108 generates an ad record (e.g., the ad record 200a) that includes the one or more selections of the identified AMs and the indication of the ad bid price 209 received from the advertiser device 110. In some examples, the generated ad record may also include the additional parameters (e.g., budget, timing, user, and platform parameters) received from the advertiser device 110. In other examples, the ad system 108 may store the generated ad record in the ad data store 124, e.g., along with one or more other ad records.

[00156] FIGS. 10A-10B illustrate example GUIs that may be generated on the user device 102 according to the present disclosure. Specifically, FIG. 10A shows an example GUI of a search application included on the user device 102. FIG. 10B, in turn, shows an example GUI of a native application included on the user device 102 after the application has been set into a particular application state. In FIG. 10A, a user has entered a search query 134 ("Late night diners") into a search field 130 of the GUI of the search application. The user has selected (e.g., touched, or clicked on) a search button 132 of the GUI, causing the user device 102 to transmit the search query 134 to the search system 100 as part of a query wrapper. The search system 100 has received the query wrapper from the user device 102, and has identified multiple AMs based on the search query 134 included in the query wrapper.

[00157] In the example of FIG. 10A, the search system 100 has identified AMs that specify application states within native applications Yelp and TRIPADVISOR®. Specifically, the search system 100 has identified AMs that correspond to entries in Yelp for "IHOP®" and "MCDONALD'S®." The search system 100 has also identified AMs that correspond to entries in TRIPADVISOR® for "TACO BELL®," "DENNY'S®," and "IHOP®." In this example, the search system 100 has transmitted the AMs that correspond to the entries in Yelp and the entries in TRIPADVISOR® for "TACO BELL®" and "IHOP®" to the user device 102 as part of search results. The search system 100 has transmitted the AM that corresponds to the entry in

TRIPADVISOR® for "DENNY'S®" to the ad system 108. The search system 100 may have also transmitted one or more other AMs identified based on the search query 134 to the ad system 108. The ad system 108 has determined that the AM that corresponds to the entry in TRIPADVISOR® for "DENNY'S®" is associated with an ad bid price 209, and, as a result, has transmitted the AM to the user device 102 as part of advertised search results 178. The ad system 108 may have also determined that none of the other AMs identified based on the search query 134 is associated with an ad bid price 209, or with an ad bid price 209 that is greater than the ad bid price 209 associated with the transmitted AM, and has thus refrained from transmitting the other AMs to the user device 102 as part of the advertised search results 178.

[00158] In this example, the AMs transmitted to the user device 102 as part of the search results may correspond to a first subset of the AMs identified by the search system 100 based on the search query 134 and the AMs transmitted to the ad system 108 may correspond to a second subset of the identified AMs. The search system 100 may have selected the first and second subsets of the identified AMs based on result scores 173 associated with the identified AMs. For example, the result scores 173 may indicate how relevant each of the AMs is to the search query 134. As one example, the first subset may include AMs that are relatively more relevant to the search query 134 compared to the AMs included in the second subset, as indicated by the corresponding result scores 173. In other examples, the first and second subsets may include one or more common AMs and/or all or a subset of the identified AMs, as described herein.

[00159] In this example, the search system 100 has also transmitted link data (e.g., text and/or image data) associated with each AM included in the search results to the user device 102. The search system 100 has also transmitted link data associated with the AM that corresponds to the entry in TRIPADVISOR® for "DENNY'S®" to the ad system 108. After determining that the AM is associated with an ad bid price 209 (e.g., the highest ad bid price 209), the ad system 108 has transmitted the link data to the user device 102 as part of the advertised search results 178. The ad system 108 has also transmitted ad content (e.g., text and/or image data) to the user device 102 as part of the advertised search results 178. The user device 102 has generated user selectable links ("links") 136, 138A–138B, 140, and 142A–142C shown in FIG. 10A using the AMs and the associated link data and the ad content. Specifically, the user device 102 has generated the links 136 and 138A–138B for the received AMs that specify the above-described entries in Yelp, and links 140 and 142A–142C for the received AMs that specify the above-

described entries in TRIPADVISOR®. The user device 102 has generated a portion of the link 142B (the GUI element 144 with the string "AD") that indicates that the link 142B is for an advertised search result using the received ad content.

[00160] Although FIG. 10A depicts the link 142B as being the second link under the link 140 (i.e., the header) for TRIPADVISOR®, in other examples, the link 142B may be located in any other position with respect to the link 140. For example, the link 142B may be shown as the first link, the last link, or as any other link other than the second link, under the link 140.

[00161] In this example, the user device 102 may have generated the link 136 (i.e., the header) for Yelp and/or the link 140 (i.e., the header) for TRIPADVISOR® without having received AMs that were identified by the search system 100 based on the search query 134. Instead, the user device 102 may have generated the links 136, 140 using one or more of the AMs that correspond to the links 138A–138B and 142A–142C, or portions thereof. In some examples, the user selecting the link 136 or the link 140 may cause the user device 102 to launch Yelp or TRIPADVISOR®, and set Yelp or TRIPADVISOR® into a default (e.g., main) application state.

[00162] As shown in FIG. 10A, each of the links 136, 138A–138B, 140, and 142A–142C includes text and/or image data (e.g., the text "IHOP" and the image of pancakes included in the link 138A for the entry in Yelp for "IHOP"). As also shown, some of the links include other data, such as user ratings data (e.g., in the form of one to five stars or circles), user review data, and application state enumeration data. The text and/or image data and other data for each link may be included in link data associated with the corresponding AM. The user may select (e.g., touch, or click on) any of the links 136, 138A–138B, 140, and 142A–142C to cause the user device 102 to access the corresponding application state within a web-based or native application using the associated AM. For example, the user may select an area of the example GUI of FIG. 10A that includes the link to cause the user device 102 to access the application state.

[00163] In the example GUI of FIG. 10A, the links 136, 138A–138B, 140, and 142A–142C are grouped according to the applications associated with the links. For example, the links 136 and 138A–138B are grouped together under the header "Yelp," with the link 136 corresponding to the header. Similarly, the links 140 and 142A–142C are grouped together under the header "TRIPADVISOR®," with the link 140 corresponding to the header. In other examples, the links 136, 138A–138B, 140, and 142A–142C, or one or more other links, may be distributed

differently than shown in FIG. 10A (e.g., the links may not be grouped according to the associated applications).

[00164] Although only user selectable links for Yelp and TRIPADVISOR® are shown in the GUI of FIG. 10A, the search system 100 may have identified additional AMs that specify application states within these applications, or within other web-based or native applications. The search system 100 may have transmitted the additional AMs to the user device 102. The user device 102 may generate user selectable links not shown in FIG. 10A for the additional AMs.

[00165] In the example of FIGS. 10A-10B, the user selects the link 142B that corresponds to the entry in TRIPADVISOR® for a particular "DENNY'S®" restaurant and/or the GUI element 144 associated with the link 142B. In response to the user selecting the link 142B and/or the GUI element 144, the user device 102 launches TRIPADVISOR® and sets it into the application state specified by the AM associated with the link 142B. In this example, the AM may reference TRIPADVISOR® and indicate a path (e.g., within the user device 102, or via a remote server) for TRIPADVISOR® to find information for the DENNY'S® restaurant associated with the link 142B. For example, the AM may be an AAM that includes an ARI that references TRIPADVISOR® and indicates one or more operations for TRIPADVISOR® to perform, such as retrieving data using the path indicated by the AAM. Accordingly, the ARI of the AAM may cause TRIPADVISOR® to perform the function of retrieving and displaying the information for the Denny's restaurant.

[00166] FIG. 10B illustrates an example GUI 244 of a native application version of TRIPADVISOR® that corresponds to the application state within TRIPADVISOR® indicated by the link 142B. In other words, the application state within TRIPADVISOR®, as depicted in FIG. 10B, is specified by the AM associated with the link 142B. The user device 102 may set TRIPADVISOR® into the application state shown in FIG. 10B by causing TRIPADVISOR® to perform the one or more operations specified by the AM. As described herein, the user device 102 sets TRIPADVISOR® into the application state shown in FIG. 10B in response to the user selecting the link 142B and/or the GUI element 144 within the GUI shown in FIG. 10A. As shown in FIG. 10B, the GUI 244 includes information regarding the particular Denny's restaurant associated with the link 142B.

[00167] FIG. 11 illustrates an example GUI 246 that may be generated on one of the advertiser device(s) 110 according to the present disclosure. The GUI 246 includes an entity search field 248 and an entity search button 250. In the example of FIG. 11, the entity search field 248 includes an entity query 252 ("RESTAURANTS"), which has been entered into the entity search field 248 by a user (e.g., an advertiser) of the advertiser device 110. In this example, the user has submitted the entity query 252 to the advertiser device 110 by selecting (e.g., touching, or clicking on) the entity search button 250. In response to the user submitting the entity query 252, the advertiser device 110 has transmitted the entity query 252 to the ad system 108. The ad system 108 has received the entity query 252, has identified one or more AMs based on the entity query 252 (e.g., using entity record(s) and/or function record(s)), and has transmitted the identified AMs to the advertiser device 110. The advertiser device 110 has received the AMs that are responsive to the entity query 252 from the ad system 108, and has displayed the AMs to the user within the GUI 246 as one or more selectable AMs.

[00168] As shown in FIG. 11, the GUI 246 includes a result GUI element 254 that lists some of the identified AMs ("AM1–AM4") as selectable AMs 260A–260D under a header 258 that indicates a web-based or native application (in this example, "Yelp") associated with the AMs. The result GUI element 254 also includes a scroll bar that enables the user to navigate the selectable AMs 260A–260D and/or additional selectable AMs for other received identified AMs associated with Yelp that are not visible within the result GUI element 254. As also shown, the GUI 246 includes a selection box 256 proximate to the result GUI element 254. In this example, the user may select (e.g., touch, or click on) the selection box 256 to include or exclude the AMs that correspond to the selectable AMs 260A–260D from the user's advertisement bid, as explained herein. As one example, the user selecting the selection box 256 may include all AMs associated with Yelp in the user's advertisement bid. As another example, the user selecting the selection box 256 may remove all AMs associated with Yelp from consideration for the user's advertisement bid. In this manner, the user may remove AMs associated with a particular application that the user feels is not relevant for the user's advertising purposes. The user may also individually select (e.g., touch, or click on) one or more of the selectable AMs 260A–260D to include the corresponding one or more AMs 166 in the user's advertisement bid, as also explained herein. In some examples, the GUI 246 may also include a geo-location filter to assist the user in selecting AMs that are relevant to certain geo-locations. For example, using the filter,

the user may view only the identified AMs that are relevant to the user's current location (e.g., obtained via GPS), or to a user-specified location (e.g., a city, state, or country). In other examples, the user's advertisement bid may include all of the identified AMs that are responsive to the entity query 252, without the user selecting any selectable AMs or specifying a geo-location.

[00169] In the example of FIG. 11, the advertiser device 110 has also received other identified AMs that are responsive to the entity query 252, in addition to the identified AMs AM1–AM4 that are rendered as the selectable AMs 260A-260D. The additional AMs ("AM5-AM12") correspond to the applications TRIPADVISOR® and URBANSPOON® and are also rendered as selectable AMs. As shown in FIG. 11, the GUI 246 includes result GUI elements, headers, scroll bars, and selection boxes for the selectable AMs corresponding to the additional AMs received by the advertiser device 110.

[00170] As shown in FIG. 11, the GUI 246 also includes a preview GUI element 262. The preview GUI element 262 provides a preview of an application state that is accessed using an AM (in this example, AM2 corresponding to the selectable AM 260B) selected by the user. For example, the user may select (e.g., touch, or click on, to highlight) a selectable AM included in a result GUI element of the GUI 246 (e.g., the result GUI element 254) that corresponds to an AM. In response to the user selecting the selectable AM, the preview GUI element 262 may display a preview of an application state that is accessed using the AM. For example, the preview GUI element 262 may display a web page within a web-based application, or a GUI, or screen, within a native application, referenced by the AM. Additionally, or alternatively, the preview GUI element 262 may display a user selectable link for the AM as it will appear in search results responsive to a user's search query. In this manner, the preview GUI element 262 enables the user to preview an application state specified by a particular one of the identified AMs, and/or a user selectable link for the AM, prior to including the AM in the user's advertisement bid, as described herein.

[00171] As also shown in FIG. 11, the GUI 246 includes additional GUI elements, namely an entity bid amount field label 264, an entity bid amount field 266, and a bid button 268 that enable the user to associate an advertisement bid amount value (e.g., an ad bid price 209) with the one or more AMs included in the user's advertisement bid. As described herein, the user may select one or more of the identified AMs to be included in the user's advertisement bid by selecting one

or more selectable AMs associated with the AMs. For example, the user may select each of the selectable AMs 260A–260D by selecting the selection box 256, or some of the selectable AMs 260A–260D by selecting the corresponding selectable AMs individually. In this manner, the user may select one or more of the AMs AM1–AM4 to be included in the user's advertisement bid. In some examples, the user may not own, or be required to own the AMs included in the user's advertisement bid. In other words, in these examples, the user may not own the AMs (e.g., URLs) on which the user is bidding. As also explained herein, prior to selecting the AMs, the user may preview any of the AMs AM1–AM4 within the preview GUI element 262 by selecting the corresponding ones of selectable AMs 260A–260D.

[00172] Upon selecting the one or more AMs, the user may enter an entity bid amount value into the entity bid amount field 266. The entity bid amount value may specify an amount of money the user is willing to pay to advertise the AMs selected by the user. The user may select (e.g., touch, or click on) the bid button 268 to submit the user's advertisement bid, including the one or more selected AMs and the entity bid amount value specified by the user. Upon selecting the bid button 268, the ad system 108 may generate an ad record that includes the one or more selected AMs and the entity bid amount value specified by the user.

[00173] FIGS. 12A and 12B depict other example function records 160, 160c, 160d that may be included in the search data store 118 according to the present disclosure. FIG. 12A illustrates a general example of a function record 160, 160c that includes data that is similar to that of the function record 160, namely a function ID 162c, ASI 164c, and one or more AMs 166c. The function ID 162c, the ASI 164c, and the AM(s) 166c may serve the same or similar functions as those of the function ID 162, the ASI 164, and the AM(s) 166 of the function record 160 as described herein. The function record 160c also includes one or more entity IDs 168, 168c. FIG. 12B illustrates a specific example of a function record 160, 160d for an application state (i.e., an entry for "The French Laundry") within the application OpenTable. The function record 160d includes data that is similar to that of the function record 160b, i.e., a function ID 162d, ASI 164d, and one or more AMs 166d. As shown in FIG. 12B, the function record 160d also includes one or more entity IDs 168, 168d.

[00174] The function records 160c and 160d illustrate example techniques for generating ad records using entity records and function records. Specifically, the entity ID(s) 168, 168c included in the function record 160c indicate one or more entity records associated with the

function record 160c. In this example, the entity ID(s) 168, 168c correspond to one or more entity records included in the entity data store 128. As explained herein, each entity record included in the entity data store 128 includes an entity name, an entity ID, an entity category, and entity information that describe an entity associated with the entity record. In this manner, the entity ID(s) 168, 168c included in the function record 160c indicate one or more entities associated with the function record 160c, i.e., with the application state described by the function record 160c. With reference to the function record 160d, the entity ID(s) 168, 168d included in the function record 160d may correspond to one or more entity records for entities associated with the entry for "The French Laundry" within OpenTable. An example entity specified by an entity record (i.e., by one of the entity ID(s) 168, 168d) associated with the function record 160d may be "The French Laundry."

[00175] According to the disclosed techniques, the ad system 108 may receive an entity query (252) from one of the advertiser device(s) 110. The ad system 108 may identify one or more AMs based on the entity query. For example, the ad system 108 may perform a search of the entity system 112 using the entity query (252) and identify one or more entity records included in the entity data store 128 as a result of the search. For instance, the ad system 108 may identify entity records that each include an entity name, an entity ID, an entity category, and/or entity information that match terms of the entity query. The ad system 108 may identify one or more function records (e.g., the function record 160c) included in the search data store 118 that include entity IDs (e.g., the entity ID(s) 168, 168c) that correspond to the entity IDs of the identified entity records 180.

[00176] The ad system 108 may select one or more AMs 166 from the identified function records 160 and transmit the identified AMs 166 to the advertiser device 110. The advertiser device 110 may display the identified AMs 166 to the user of the advertiser device 110 using a GUI, e.g., as one or more selectable AMs 166. The ad system 108 may then receive one or more selections of the identified AMs and an indication of an ad bid price 209 from the advertiser device 110. The ad system 108 may generate an ad record that includes the one or more selections of the identified AMs and the indication of the ad bid price 209 received from the advertiser device 110, thereby associating the AM selections and the ad bid price 209.

[00177] The modules and data stores included in the search systems 100, the ad system 108, and the entity system 112 represent features or functionality that may be included in these

systems 100, 108, 112 as they are described in the present disclosure. For example, the search module 114, the result generation module 116, the search data store 118, and the components thereof may represent features included in the search system 100. Similarly, the ad generation module 120, the ad record generation module 122, the ad data store 124, and the components thereof may represent features included in the ad system 108. Likewise, the entity record generation module 126, the entity data store 128, and the components thereof may represent features included in the entity system 112. The modules and data stores described herein may be embodied by electronic hardware, software, firmware, or any combination thereof. Depiction of different features or functionality as separate modules or data stores does not necessarily imply whether the modules or data stores are embodied by common or separate electronic hardware, software, or firmware components. In some implementations, the features or functionality associated with one or more of the modules and data stores depicted herein may be realized by common electronic hardware, software, or firmware components. In other implementations, the features or functionality may be realized by separate components.

[00178] FIG. 13 illustrates a method 1300 for generating search results based on a search query. At block 1310, the method 1300 includes receiving a search query 134 from a user device 102. At block 1320, the method 1300 includes identifying access mechanisms 166, 166a–d, 190 based on the received search query 134, wherein each access mechanism 166, 166a–d, 190 specifies an application state of an application. At block 1330, the method 1300 includes selecting first and second subsets of the identified access mechanisms 166, 166a–d, 190. At block 1340, the method 1300 includes generating search results 148 based on the first subset. At block 1350, the method 1300 further includes determining whether an access mechanism 166, 166a–d, 190 included in the second subset is associated with an advertisement bid price 209. At block 1360, the method 1300 also includes, in the event an access mechanism 166, 166a–d, 190 included in the second subset is associated with an advertisement bid price 209, generating an advertised search result 178 based on the access mechanism 166, 166a–d, 190, and at block 1370, transmitting the search results 148 and the advertised search result 178 to the user device 102. In the event none of the access mechanisms 166, 166a–d, 190 included in the second subset is associated with an advertisement bid price 209, at block 1380, the method 1300 includes transmitting the search results 148 to the user device 102.

[00179] In some implementations, the advertisement bid price 209 is a highest advertisement bid price 209 among advertisement bid prices 209 associated with access mechanisms 166, 166a–d, 190 included in the second subset in the event the access mechanism 166, 166a–d, 190 included in the second subset is associated with the advertisement bid price 209. In some examples, generating the advertised search result 178 based on the access mechanism 166, 166a–d, 190 further includes generating the advertised search result 178 based on the determination. An access mechanism 166, 166a–d, 190 included in the second subset may be compared to each of one or more access mechanisms 166, 166a–d, 190 included in an advertisement record 200, 200a–c to determine whether the access mechanism 166, 166a–d, 190 is associated with the advertisement bid price 209. In some examples, the method 1300 further includes determining whether the access mechanism 166, 166a–d, 190 is the same as any of the one or more access mechanisms 166, 166a–d, 190 when comparing the access mechanisms 166, 166a–d, 190 included in the second subset to each of the one or more access mechanisms 166, 166a–d, 190 included in the advertisement record 200, 200a–c. Determining whether the access mechanism 166, 166a–d, 190 is associated with the advertisement bid price 209 based on the comparison may include determining that the access mechanism 166, 166a–d, 190 is associated with the advertisement bid price 209 in the event the access mechanism 166, 166a–d, 190 is the same as any of the one or more access mechanisms 166, 166a–d, 190 and determining that the access mechanism 166, 166a–d, 190 is not associated with the advertisement bid price 209. The identified access mechanisms 166, 166a–d, 190 may include a first set of access mechanisms 166, 166a–d, 190. The advertisement record 200, 200a–c may optionally associate each of the one or more access mechanisms 166, 166a–d, 190 included in the advertisement record 200, 200a–c with the advertisement bid price 209.

[00180] In some implementations, the identified access mechanisms 166, 166a–d, 190 include a first set of access mechanisms 166, 166a–d, 190. In some examples, the method 1300 also includes generating the advertisement record 200, 200a–c by receiving an entity query 252 from an advertiser, identifying a second set of access mechanisms 166, 166a–d, 190 based on the received entity query 252, displaying the second set of access mechanisms 166, 166a–d, 190 to the advertiser, receiving the one or more selections of the second set of access mechanisms 166, 166a–d, 190 from the advertiser, receiving the indication of the advertisement bid price 209 from the advertiser and generating the advertisement record 200, 200a–c. In some examples the first

and second subsets of the identified access mechanisms 166, 166a-d, 190 are mutually exclusive. Optionally, the first and second subsets of the identified access mechanisms 166, 166a-d, 190 include a subset of the identified access mechanisms 166, 166a-d, 190. The subset may include access mechanisms 166, 166a-d, 190 that are each more relevant to the received search query 134 than each of one or more access mechanisms 166, 166a-d, 190 included in a portion of the identified access mechanisms 166, 166a-d, 190 other than the subset. The first and second subsets of the identified access mechanisms 166, 166a-d, 190 may each optionally include at least one common access mechanism 166, 166a-d, 190 of the identified access mechanisms 166, 166a-d, 190.

[00181] In some implementations, the method 1300 further includes generating result scores 173 that are associated with the identified access mechanisms 166, 166a-d, 190 and the selecting first and second subsets of the identified access mechanisms 166, 166a-d, 190 includes selecting the first and second subsets based on the generated result scores 173. In some examples, generating the search results 148 based on the first subset of the identified access mechanisms 166, 166a-d, 190 includes retrieving at least one of text and image data 170 for the first subset of the identified access mechanisms 166, 166a-d, 190, and generating the search results 148 based on the retrieved at least one of text and image data 170. The generating the advertised search results 178 based on the access mechanisms 166, 166a-d, 190 included in the second subset may include retrieving at least one of text and image data 170 for the access mechanism 166, 166a-d, 190, retrieving advertisement data 172 associated with the access mechanisms 166, 166a-d, 190, and generating the advertised search result 178 based on the retrieved at least one of text or image data 170 and the retrieved advertisement data 172. In some examples, the retrieving the advertisement data 172 associated with the access mechanism 166, 166a-d, 190 included in the second subset includes retrieving the advertisement data 172 from an advertisement record 200, 200a-c that includes the access mechanism 166, 166a-d, 190 and an indication of the advertisement bid price 209.

[00182] In some implementations, identifying the access mechanisms 166, 166a-d, 190 based on the received search query 134 includes identifying function records 160, 160a-d included in a data store 118 based on the received search query 134 and selecting the identified access mechanisms 166, 166a-d, 190 from the identified function records 160, 160a-d. Each function record 160, 160a-d may include an access mechanism 166, 166a-d, 190 specifying an

application state of an application, and application state information 164, 164a-d describing the application state of the application. Identifying the function records 160, 160a-d based on the received search query 134 may include identifying the function records 160, 160a-d based on matches between terms of the search query 134 and terms of the application state information 164, 164a-d included in each identified function record 160, 160a-d. The method 1300 may further include generating result scores 173 for the identified function records 160, 160a-d. The selecting the first and second subsets of the identified access mechanisms 166, 166a-d, 190 may include selecting the first and second subsets based on the generated result scores 173 for the identified function records 160, 160a-d from which the identified access mechanisms 166, 166a-d, 190 are selected. The method 1300 may further include comparing the advertisement bid price 209 to another advertisement bid price 209 associated with another access mechanism 166, 166a-d, 190 included in the second subset. The generating the advertised search result 178 based on the access mechanisms 166, 166a-d, 190 may include generating the advertised search result 178 based on the comparison. In some examples, the comparing the advertisement bid price 209 associated with the access mechanism 166, 166a-d, 190 included in the second subset to the other advertisement bid price 209 associated with the other access mechanism 166, 166a-d, 190 included in the second subset includes determining whether the advertisement bid price 209 is greater than the other advertisement bid price 209. The generating the advertised search result 178 based on the comparison optionally includes generating the advertised search result 178 in the event the advertisement bid price 209 is greater than the other advertisement bid price 209.

[00183] FIG. 14 illustrates a second method 1400 for generating advertisement records that include one or more an advertisement bid price. At block 1410, the method 1400 includes receiving an entity query 252 from an advertiser. At block 1420, the method 1400 includes identifying access mechanisms 166, 166a-d, 190, each specifying an application state of an application based on the received entity query 252, and at block 1430, displaying the identified access mechanisms 166, 166a-d, 190 to the advertiser. At block 1440, the method 1400 also includes receiving one or more selections of the identified access mechanisms 166, 166a-d, 190 from the advertiser, at block 1450, receiving an indication of an advertisement bid price 209 from the advertiser, and at block 1460, generating an advertisement record 200, 200a-c that

includes the one or more selections of the identified access mechanisms 166, 166a-d, 190 and the indication of the advertisement bid price 209.

[00184] In some implementations, the identified access mechanisms 166, 166a-d, 190 include a first set of access mechanisms 166, 166a-d, 190. The method 1400 may further include receiving a search query 134 from a user device 102, identifying access mechanisms 166, 166a-d, 190 based on the received search query 134, wherein each access mechanism 166, 166a-d, 190 specifies an application state of an application, and selecting first and second subsets of the identified access mechanisms 166, 166a-d, 190. The method 1400 may also include generating search results 148 based on the first subset. The method 1400 may further include determining whether an access mechanism 166, 166a-d, 190 included in the second subset is associated with an advertisement bid price 209. The method 1400 may also include, in the event an access mechanism 166, 166a-d, 190 included in the second subset is associated with an advertisement bid price 209, generating an advertised search result 178 based on the access mechanism 166, 166a-d, 190, and transmitting the search results 148 and the advertised search result 178 to the user device 102, and, in the event none of the access mechanisms 166, 166a-d, 190 included in the second subset are associated with an advertisement bid price 209, transmitting the search results 148 to the user device 102. In some examples, the determining whether an access mechanism 166, 166a-d, 190 included in the second subset is associated with the advertisement bid price 209 based on the advertisement record 200, 200a-c includes comparing an access mechanism 166, 166a-d, 190 included in the second subset to each of the one or more selections of the first set of access mechanisms 166, 166a-d, 190 included in the advertisement record 200, 200a-c, and determining whether the access mechanism 166, 166a-d, 190 is associated with the advertisement bid price 209 based on the comparison. In some implementations, the comparing the access mechanism 166, 166a-d, 190 included in the second subset to each of the one or more selections of the first set of access mechanisms 166, 166a-d, 190 included in the advertisement record 200, 200a-c includes determining whether the access mechanism 166, 166a-d, 190 is the same as any of the one or more selections. In some examples, the determining whether the access mechanism 166, 166a-d, 190 is associated with the advertisement bid price 209 based on the comparison optionally includes determining that the access mechanism 166, 166a-d, 190 is associated with the advertisement bid price 209 in the event the access mechanism 166, 166a-d, 190 is the same as any of the one or more selections, and determining that the access mechanism

166, 166a–d, 190 is not associated with the advertisement bid price 209 in the event the access mechanism 166, 166a–d, 190 is different than each of the one or more selections.

[00185] FIG. 15 is schematic view of an example computing device 1500 that may be used to implement the systems and methods described in this document. The computing device 1500 is intended to represent various forms of digital computers, such as laptops, desktops, workstations, personal digital assistants, servers, blade servers, mainframes, and other appropriate computers. The components shown here, their connections and relationships, and their functions, are meant to be exemplary only, and are not meant to limit implementations of the inventions described and/or claimed in this document.

[00186] The computing device 1500 includes a processor 105, 115, 1510, memory 1520, a storage device 107, 1530, a high-speed interface/controller 1540 connecting to the memory 1520 and high-speed expansion ports 1550, and a low speed interface/controller 1560 connecting to low speed bus 1570 and storage device 107 1530. Each of the components 1510, 1520, 1530, 1540, 1550, and 1560, are interconnected using various busses, and may be mounted on a common motherboard or in other manners as appropriate. The processor 105, 115 1510 can process instructions for execution within the computing device 1500, including instructions stored in the memory 1520 or on the storage device 107, 1530 to display graphical information for a graphical user interface (GUI) on an external input/output device, such as display 1580 coupled to high speed interface 1540. In other implementations, multiple processors and/or multiple buses may be used, as appropriate, along with multiple memories and types of memory. Also, multiple computing devices 1500 may be connected, with each device providing portions of the necessary operations (e.g., as a server bank, a group of blade servers, or a multi-processor system).

[00187] The memory 1520 stores information non-transitorily within the computing device 1500. The memory 1520 may be a computer-readable medium, a volatile memory unit(s), or non-volatile memory unit(s). The non-transitory memory 1520 may be physical devices used to store programs (e.g., sequences of instructions) or data (e.g., program state information) on a temporary or permanent basis for use by the computing device 1500. Examples of non-volatile memory include, but are not limited to, flash memory and read-only memory (ROM) / programmable read-only memory (PROM) / erasable programmable read-only memory (EPROM) / electronically erasable programmable read-only memory (EEPROM) (e.g., typically

used for firmware, such as boot programs). Examples of volatile memory include, but are not limited to, random access memory (RAM), dynamic random access memory (DRAM), static random access memory (SRAM), phase change memory (PCM) as well as disks or tapes.

[00188] The storage device 107, 1530 is capable of providing mass storage for the computing device 1500. In some implementations, the storage device 107, 1530 is a computer-readable medium. In various different implementations, the storage device 107, 1530 may be a floppy disk device, a hard disk device, an optical disk device, or a tape device, a flash memory or other similar solid state memory device, or an array of devices, including devices in a storage area network or other configurations. In additional implementations, a computer program product is tangibly embodied in an information carrier. The computer program product contains instructions that, when executed, perform one or more methods, such as those described above. The information carrier is a computer- or machine-readable medium, such as the memory 1520, the storage device 107, 1530, or memory on processor 105, 115, 1510.

[00189] The high speed controller 1540 manages bandwidth-intensive operations for the computing device 1500, while the low speed controller 1560 manages lower bandwidth-intensive operations. Such allocation of duties is exemplary only. In some implementations, the high-speed controller 1540 is coupled to the memory 1520, the display 1580 (e.g., through a graphics processor or accelerator), and to the high-speed expansion ports 1550, which may accept various expansion cards (not shown). In some implementations, the low-speed controller 1560 is coupled to the storage device 107, 1530 and low-speed expansion port 1570. The low-speed expansion port 1570, which may include various communication ports (e.g., USB, Bluetooth, Ethernet, wireless Ethernet), may be coupled to one or more input/output devices, such as a keyboard, a pointing device, a scanner, or a networking device, such as a switch or router, e.g., through a network adapter.

[00190] The computing device 1500 may be implemented in a number of different forms, as shown in the figure. For example, it may be implemented as a standard server 1500a or multiple times in a group of such servers 1500a, as a laptop computer 1500b, or as part of a rack server system 1500c.

[00191] The modules and data stores may be embodied by electronic hardware, software, and/or firmware components including, but not limited to, one or more processing units, one or more memory components, one or more input/output (I/O) components, and one or more

interconnect components. The interconnect component(s) may be configured to provide communication between the processing unit(s), the memory component(s), and the I/O component(s). For example, the interconnect component(s) may include one or more buses that are configured to transfer data between electronic components. The interconnect component(s) may also include one or more control circuits (e.g., a memory controller and/or an I/O controller) that are configured to control communication between electronic components.

[00192] The processing unit(s) may include one or more central processing units (CPUs), graphics processing units (GPUs), digital signal processing units (DSPs), application specific integrated circuits (ASICs), field programmable gate arrays (FPGAs), or other processing units. The processing unit(s) may be configured to communicate with the memory component(s) and the I/O component(s). For example, the processing unit(s) may be configured to communicate with the memory component(s) and the I/O component(s) via the interconnect component(s).

[00193] A memory component as described herein may include any volatile or non-volatile media. For example, a memory component may include, but is not limited to, electrical media, magnetic media, and/or optical media, such as random access memory (RAM), non-volatile RAM (NVRAM), read-only memory (ROM), electrically-erasable programmable ROM (EEPROM), Flash memory, solid state drives (SSDs), hard disk drives (HDDs), magnetic tape drives, optical storage technology (e.g., compact disc, digital versatile disc, and/or Blu-ray Disc), or any other equivalent or similar memory components.

[00194] As such, the one or more memory component(s) may include (e.g., store) various types of data. For example, the memory component(s) may store data included in one or more of the function records(s) of the search data store 118, the ad record(s) of the ad data store 124, and the entity record(s) of the entity data store 128. The memory component(s) may also include one or more instructions that may be executed by the processing unit(s). For example, the memory component(s) may include one or more computer-readable instructions that, when executed by the processing unit(s), cause the processing unit(s) to perform the various functions attributed to the modules and data stores described herein.

[00195] The I/O component(s) may refer to electronic hardware, software, and/or firmware that provide communication with a variety of different devices. For example, the I/O component(s) may provide communication between other devices and the processing unit(s) and the memory component(s). In some examples, the I/O component(s) may be configured to

communicate with a computer network, such as the network 106. For example, the I/O component(s) may be configured to exchange data over a computer network using any of a variety of different physical connections, wireless connections, and protocols. The I/O component(s) may include, but are not limited to, one or more network interface components (e.g., a network interface controller), repeaters, network bridges, network switches, routers, and firewalls. In some examples, the I/O component(s) may include hardware, software, and/or firmware that is configured to communicate with various human interface devices, including, but not limited to, display screens, keyboards, pointer devices (e.g., a mouse), touchscreens, speakers, and microphones. In other examples, the I/O component(s) may provide communication with additional devices, such as external memory (e.g., external HDDs).

[00196] In some implementations, one or more of the search system 100, the ad system 108, and the entity system 112 may be a system of one or more computing devices (e.g., a computer-based search system that includes an advertisement system or component) that are configured to implement the techniques described herein. In other words, the features or functionality attributed to the modules and data stores described herein may be implemented by one or more computing devices. Each of the computing device(s) may include any combination of electronic hardware, software, and/or firmware, as described above. Additionally, each computing device may include any combination of processing units, memory components, I/O components, and interconnect components, as also described above. The computing device(s) of any of the systems 100, 108, and 112 may also include various human interface devices, including, but not limited to, display screens, keyboards, pointing devices (e.g., a mouse), touchscreens, speakers, and microphones. The computing device(s) may also be configured to communicate with additional devices, such as external memory (e.g., external HDDs).

[00197] The computing device(s) of any of the search system 100, the ad system 108, and the entity system 112 may be configured to communicate with the network 106. The computing device(s) may also be configured to communicate with one another (e.g., within any of, or between, the systems 100, 108, and 112) via a computer network. In some examples, the computing device(s) may include one or more server computing devices configured to communicate with user devices, such as the user device(s) 102 or the advertiser device(s) 110 (e.g., receive search queries and transmit search results, or receive ad content and related data, generate advertisements, and transmit the advertisements). The server computing device(s) may

also gather data from the data source(s) 104, index the data, and store the data, as well as gather, index, and/or store other documents or information. The computing device(s) of any of the systems 100, 108, and 112 may reside within a single machine or within multiple machines at a single geographic location, or may be distributed across a number of geographic locations.

[00198] Additionally, the various implementations of the search system 100, the ad system 108, and the entity system 112 described above (e.g., using one or more computing devices that include one or more processing units, memory components, I/O components, and interconnect components) are equally applicable to any of the user device(s) 102 and the advertiser device(s) 110, as well as to the various components thereof, as described herein.

WHAT IS CLAIMED IS:

1. A method (1300) comprising:

receiving, at a computing device (115), a search query (134) from a user device (102);
identifying, by the computing device (115), access mechanisms (166,166a-d, 190) based on the received search query (134), wherein each access mechanism (166,166a-d, 190) specifies an application state of an application;

selecting, by the computing device (115), first and second subsets of the identified access mechanisms (166,166a-d, 190);

generating, by the computing device (115), search results (148) based on the first subset;
determining, by the computing device (115), whether an access mechanism (166,166a-d, 190) included in the second subset is associated with an advertisement bid price (209);

when an access mechanism (166,166a-d, 190) included in the second subset is associated with an advertisement bid price (209):

generating, by the computing device (115), an advertised search result (178) based on the access mechanism (166,166a-d, 190) ; and

transmitting, by the computing device (115), the search results (148) and the advertised search result (178) to the user device (102); and

when none of the access mechanisms(166,166a-d, 190) included in the second subset is associated with an advertisement bid price (209), transmitting the search results (148) from the computing device (115) to the user device (102).

2. The method (1300) of claim 1, further comprising, when the access mechanism (166,166a-d, 190) included in the second subset is associated with the advertisement bid price (209), determining, by the computing device (115) that the advertisement bid price (209) is a highest advertisement bid price (209) among advertisement bid prices (209) associated with access mechanisms (166,166a-d, 190) included in the second subset, wherein generating the advertised search result (178) based on the access mechanism (166,166a-d, 190) further comprises generating the advertised search result (178) based on the determination.

3. The method (1300) of claim 1, wherein determining whether an access mechanism (166,166a-d, 190) included in the second subset is associated with an advertisement bid price (209) comprises:

comparing an access mechanism (166,166a-d, 190) included in the second subset to each of one or more access mechanisms (166,166a-d, 190) included in an advertisement record (200, 200a-c), wherein the advertisement record (200, 200a-c) also includes an indication of the advertisement bid price (209); and

determining whether the access mechanism (166,166a-d, 190) is associated with the advertisement bid price (209) based on the comparison.

4. The method (1300) of claim 3, wherein comparing the access mechanism (166,166a-d, 190) included in the second subset to each of the one or more access mechanisms (166,166a-d, 190) included in the advertisement record (200, 200a-c) comprises determining whether the access mechanism (166,166a-d, 190) is the same as any of the one or more access mechanisms (166,166a-d, 190), and wherein determining whether the access mechanism (166,166a-d, 190) is associated with the advertisement bid price (209) based on the comparison comprises:

when the access mechanism (166,166a-d, 190) is the same as any of the one or more access mechanisms (166,166a-d, 190), determining that the access mechanism (166,166a-d, 190) is associated with the advertisement bid price (209); and

when the access mechanism (166,166a-d, 190) is different than each of the one or more access mechanisms (166,166a-d, 190), determining that the access mechanism (166,166a-d, 190) is not associated with the advertisement bid price (209).

5. The method (1300) of claim 3, wherein the identified access mechanisms (166,166a-d, 190) comprise a first set of access mechanisms (166,166a-d, 190), the method (1300) further comprising:

receiving an entity query (252) from an advertiser;

identifying a second set of access mechanisms (166,166a-d, 190) based on the received entity query (252), wherein each access mechanism (166,166a-d, 190) specifies an application state of an application, and wherein the second set is different than the first set;

displaying the second set of access mechanisms (166,166a-d, 190) to the advertiser;

receiving one or more selections of the second set of access mechanisms (166,166a–d, 190) from the advertiser;

receiving the indication of the advertisement bid price (209) from the advertiser; and

generating the advertisement record (200, 200a–c), wherein the one or more access mechanisms (166,166a–d, 190) included in the advertisement record (200, 200a–c) correspond to the one or more selections of the second set of access mechanisms (166,166a–d, 190) received from the advertiser.

6. The method (1300) of claim 3, wherein the advertisement record (200, 200a–c) associates each of the one or more access mechanisms (166,166a–d, 190) included in the advertisement record (200, 200a–c) with the advertisement bid price (209).

7. The method (1300) of claim 1, wherein the first and second subsets of the identified access mechanisms (166,166a–d, 190) are mutually exclusive.

8. The method (1300) of claim 7, wherein the first and second subsets of the identified access mechanisms (166,166a–d, 190) comprise a subset of the identified access mechanisms (166,166a–d, 190), and wherein the subset includes access mechanisms (166,166a–d, 190) that are each more relevant to the received search query (134) than each of one or more access mechanisms (166,166a–d, 190) included in a portion of the identified access mechanisms (166,166a–d, 190) other than the subset.

9. The method (1300) of claim 1, wherein the first and second subsets of the identified access mechanisms (166,166a–d, 190) each include at least one common access mechanism (166,166a–d, 190) of the identified access mechanisms (166,166a–d, 190).

10. The method (1300) of claim 1, further comprising generating, by the computing device (115), result scores (173) that are associated with the identified access mechanisms (166,166a–d, 190), wherein selecting the first and second subsets of the identified access mechanisms (166,166a–d, 190) comprises selecting the first and second subsets based on the generated result scores (173).

11. The method (1300) of claim 1, wherein generating the search results (148) based on the first subset of the identified access mechanisms (166,166a–d, 190) comprises:

retrieving at least one of text and image data (170) for the first subset of the identified access mechanisms (166,166a–d, 190); and

generating the search results (148) based on the retrieved at least one of text and image data (170).

12. The method (1300) of claim 1, wherein generating the advertised search result (178) based on the access mechanism (166,166a–d, 190) included in the second subset comprises:

retrieving at least one of text and image data (170) for the access mechanism (166,166a–d, 190);

retrieving advertisement data (172) associated with the access mechanism (166,166a–d, 190); and

generating the advertised search result (178) based on the retrieved at least one of text and image data (170) and the retrieved advertisement data (172).

13. The method (1300) of claim 12, wherein retrieving the advertisement data (172) associated with the access mechanism (166,166a–d, 190) included in the second subset comprises retrieving the advertisement data (172) from an advertisement record (200, 200a–c) that includes the access mechanism (166,166a–d, 190) and an indication of the advertisement bid price (209).

14. The method (1300) of claim 1, wherein identifying the access mechanisms (166,166a–d, 190) based on the received search query (134) comprises:

identifying function records (160, 160a–d) included in a data store (118) based on the received search query (134), wherein each function record (160, 160a–d) includes an access mechanism (166,166a–d, 190) specifying an application state of an application, and application state information (164,164a–d) describing the application state of the application, and wherein identifying the function records (160, 160a–d) based on the received search query (134) comprises identifying the function records (160, 160a–d) based on matches between terms of the

search query (134) and terms of the application state information (164,164a-d) included in each identified function record (160, 160a-d); and

selecting the identified access mechanisms (166,166a-d, 190) from the identified function records (160, 160a-d).

15. The method (1300) of claim 14, further comprising generating, by the computing device (115), result scores (173) for the identified function records (160, 160a-d), wherein selecting the first and second subsets of the identified access mechanisms (166,166a-d, 190) comprises selecting the first and second subsets based on the generated result scores (173) for the identified function records (160, 160a-d) from which the identified access mechanisms (166,166a-d, 190) are selected.

16. The method (1300) of claim 1, further comprising, when an access mechanism (166,166a-d, 190) included in the second subset is associated with an advertisement bid price (209), comparing, by the computing device (115), the advertisement bid price (209) to another advertisement bid price (209) associated with another access mechanism (166,166a-d, 190) included in the second subset, wherein generating the advertised search result (178) based on the access mechanism (166,166a-d, 190) comprises generating the advertised search result (178) based on the comparison.

17. The method (1300) of claim 16, wherein comparing the advertisement bid price (209) associated with the access mechanism (166,166a-d, 190) included in the second subset to the other advertisement bid price (209) associated with the other access mechanism (166,166a-d, 190) included in the second subset comprises determining whether the advertisement bid price (209) is greater than the other advertisement bid price (209), and wherein generating the advertised search result (178) based on the comparison comprises generating the advertised search result (178) when the advertisement bid price (209) is greater than the other advertisement bid price (209).

18. A method (1400) comprising:
receiving, at a computing device (110, 115), an entity query (252) from an advertiser;

identifying, by the computing device (110, 115), access mechanisms (166,166a-d, 190) based on the received entity query (252), wherein each access mechanism (166,166a-d, 190) specifies an application state of an application;

displaying, by the computing device (110, 115), the identified access mechanisms (166,166a-d, 190) to the advertiser;

receiving, at the computing device (110, 115), one or more selections of the identified access mechanisms (166,166a-d, 190) from the advertiser;

receiving, at the computing device (110, 115), an indication of an advertisement bid price (209) from the advertiser; and

generating, by the computing device (110, 115), an advertisement record (200, 200a-c) that includes the one or more selections of the identified access mechanisms (166,166a-d, 190) and the indication of the advertisement bid price (209).

19. The method (1400) of claim 18, wherein the identified access mechanisms (166,166a-d, 190) comprise a first set of access mechanisms (166,166a-d, 190), the method (1400) further comprising:

receiving, at the computing device (110, 115), a search query (134) from a user device (102);

identifying, by the computing device (110, 115), a second set of access mechanisms (166,166a-d, 190) based on the received search query (134), wherein each access mechanism (166,166a-d, 190) specifies an application state of an application, and wherein the second set is different than the first set;

selecting, by the computing device (110, 115), first and second subsets of the second set of access mechanisms (166,166a-d, 190) ;

generating, by the computing device (110, 115), search results (148) based on the first subset;

determining, by the computing device (115), whether an access mechanism (166,166a-d, 190) included in the second subset is associated with the advertisement bid price (209) based on the advertisement record (200, 200a-c);

when an access mechanism (166,166a-d, 190) included in the second subset is associated with the advertisement bid price (209), generating, by the computing device (110, 115), an

advertised search result (178) based on the access mechanism (166,166a-d, 190), and transmitting the search results (148) and the advertised search result (178) from the computing device (110, 115) to the user device(102); and

when none of the access mechanisms (166,166a-d, 190) included in the second subset is associated with the advertisement bid price (209), transmitting the search results (148) from the computing device (110, 115) to the user device (102).

20. The method (1400) of claim 19, wherein determining whether an access mechanism (166,166a-d, 190) included in the second subset is associated with the advertisement bid price (209) based on the advertisement record (200, 200a-c) comprises:

comparing an access mechanism (166,166a-d, 190) included in the second subset to each of the one or more selections of the first set of access mechanisms (166,166a-d, 190) included in the advertisement record (200, 200a-c); and

determining whether the access mechanism (166,166a-d, 190) is associated with the advertisement bid price (209) based on the comparison.

21. The method (1400) of claim 20, wherein comparing the access mechanism (166,166a-d, 190) included in the second subset to each of the one or more selections of the first set of access mechanisms (166,166a-d, 190) included in the advertisement record (200, 200a-c) comprises determining whether the access mechanism (166,166a-d, 190) is the same as any of the one or more selections, and wherein determining whether the access mechanism (166,166a-d, 190) is associated with the advertisement bid price (209) based on the comparison comprises:

when the access mechanism (166,166a-d, 190) is the same as any of the one or more selections, determining that the access mechanism (166,166a-d, 190) is associated with the advertisement bid price (209); and

when the access mechanism (166,166a-d, 190) is different than each of the one or more selections, determining that the access mechanism (166,166a-d, 190) is not associated with the advertisement bid price (209).

22. A system comprising:

a non-transitory data store (118) that includes a plurality of access mechanisms (166,166a-d, 190), wherein each access mechanism (166,166a-d, 190) specifies an application state of an application; and

one or more computing devices (115) in communication with the non-transitory data store (118) and configured to:

receive a search query (134) from a user device (102);

identify access mechanisms (166,166a-d, 190) in the data store (118) based on the received search query (134);

select first and second subsets of the identified access mechanisms (166,166a-d, 190) ;

generate search results (148) based on the first subset;

determine whether an access mechanism (166,166a-d, 190) included in the second subset is associated with an advertisement bid price (209);

when an access mechanism (166,166a-d, 190) included in the second subset is associated with an advertisement bid price (209), generate an advertised search result (178) based on the access mechanism (166,166a-d, 190), and transmit the search results (148) and the advertised search result (178) to the user device (102); and

when none of the access mechanisms (166,166a-d, 190) included in the second subset is associated with an advertisement bid price (209), transmit the search results (148) to the user device (102).

23. The system of claim 22, wherein to determine whether an access mechanism (166,166a-d, 190) included in the second subset is associated with an advertisement bid price (209), the one or more computing devices (115) are configured to:

compare an access mechanism (166,166a-d, 190) included in the second subset to each of one or more access mechanisms (166,166a-d, 190) included in an advertisement record (200, 200a-c), wherein the advertisement record (200, 200a-c) also includes an indication of the advertisement bid price (209); and

determine whether the access mechanism (166,166a-d, 190) is associated with the advertisement bid price (209) based on the comparison.

24. The system of claim 23, wherein to compare the access mechanism (166,166a-d, 190) included in the second subset to each of the one or more access mechanisms (166,166a-d, 190) included in the advertisement record (200, 200a-c), the one or more computing devices (115) are configured to determine whether the access mechanism (166,166a-d, 190) is the same as any of the one or more access mechanisms (166,166a-d, 190), and wherein to determine whether the access mechanism (166,166a-d, 190) is associated with the advertisement bid price (209) based on the comparison, the one or more computing devices (115) are configured to:

when the access mechanism (166,166a-d, 190) is the same as any of the one or more access mechanisms (166,166a-d, 190), determine that the access mechanism (166,166a-d, 190) is associated with the advertisement bid price (209); and

when the access mechanism (166,166a-d, 190) is different than each of the one or more access mechanisms (166,166a-d, 190), determine that the access mechanism (166,166a-d, 190) is not associated with the advertisement bid price (209).

25. The system of claim 23, wherein the identified access mechanisms (166,166a-d, 190) comprise a first set of access mechanisms (166,166a-d, 190), and wherein the one or more computing devices (115) are further configured to generate the advertisement record (200, 200a-c), wherein to generate the advertisement record (200, 200a-c), the one or more computing devices (115) are configured to:

receive an entity query (252) from an advertiser;

identify a second set of access mechanisms (166,166a-d, 190) based on the received entity query (252), wherein each access mechanism (166,166a-d, 190) specifies an application state of an application, and wherein the second set is different than the first set;

display the second set of access mechanisms (166,166a-d, 190) to the advertiser;

receive one or more selections of the second set of access mechanisms (166,166a-d, 190) from the advertiser;

receive the indication of the advertisement bid price (209) from the advertiser; and

generate the advertisement record (200, 200a-c), wherein the one or more access mechanisms (166,166a-d, 190) included in the advertisement record (200, 200a-c) correspond to the one or more selections of the second set of access mechanisms (166,166a-d, 190) received from the advertiser.

26. The system of claim 22, wherein the first and second subsets of the identified access mechanisms (166,166a-d, 190) are mutually exclusive.

27. The system of claim 22, wherein the first and second subsets of the identified access mechanisms (166,166a-d, 190) each include at least one common access mechanism (166,166a-d, 190) of the identified access mechanisms (166,166a-d, 190).

28. The system of claim 22, wherein the one or more computing devices (115) are further configured to generate result scores (173) that are associated with the identified access mechanisms (166,166a-d, 190), wherein to select the first and second subsets of the identified access mechanisms (166,166a-d, 190), the one or more computing devices (115) are configured to select the first and second subsets based on the generated result scores (173).

29. The system of claim 22, wherein to identify the access mechanisms (166,166a-d, 190) based on the received search query (134), the one or more computing devices (115) are configured to:

identify function records (160, 160a-d) included in a data store (118) based on the received search query (134), wherein each function record (160, 160a-d) includes an access mechanism (166,166a-d, 190) specifying an application state of an application, and application state information (164,164a-d) describing the application state of the application, and wherein to identify the function records (160, 160a-d) based on the received search query (134), the one or more computing devices (115) are configured to identify the function records (160, 160a-d) based on matches between terms of the search query (134) and terms of the application state information (164,164a-d) included in each identified function record (160, 160a-d) ; and

select the identified access mechanisms (166,166a-d, 190) from the identified function records (160, 160a-d).

30. The system of claim 29, wherein the one or more computing devices (115) are further configured to generate result scores (173) for the identified function records (160, 160a-d), wherein to select the first and second subsets of the identified access mechanisms (166,166a-d,

190), the one or more computing devices (115) are configured to select the first and second subsets based on the generated result scores (173) for the identified function records (160, 160a–d) from which the one or more computing devices (115) select the identified access mechanisms (166,166a–d, 190).

31. The system of claim 22, wherein the one or more computing devices (115) are further configured to, when an access mechanism (166,166a–d, 190) included in the second subset is associated with an advertisement bid price (209), compare the advertisement bid price (209) to another advertisement bid price (209) associated with another access mechanism (166,166a–d, 190) included in the second subset; and

wherein to generate the advertised search result (178) based on the access mechanism (166,166a–d, 190), the one or more computing devices (115) are configured to generate the advertised search result (178) based on the comparison.

32. The system of claim 31, wherein to compare the advertisement bid price (209) associated with the access mechanism (166,166a–d, 190) included in the second subset to the other advertisement bid price (209) associated with the other access mechanism (166,166a–d, 190) included in the second subset, the one or more computing devices (115) are configured to determine whether the advertisement bid price (209) is greater than the other advertisement bid price (209), and wherein to generate the advertised search result (178) based on the comparison, the one or more computing devices (115) are configured to generate the advertised search result (178) when the advertisement bid price (209) is greater than the other advertisement bid price (209).

33. A system comprising:

a non-transitory data store (118) that includes a plurality of access mechanisms (166,166a–d, 190), wherein each access mechanism (166,166a–d, 190) specifies an application state of an application; and

one or more computing devices (115) in communication with the non-transitory data store (118) and configured to:

receive an entity query (252) from an advertiser;

identify access mechanisms (166,166a-d, 190) in the data store (118) based on the received entity query (252);
display the identified access mechanisms (166,166a-d, 190) to the advertiser;
receive one or more selections of the identified access mechanisms (166,166a-d, 190) from the advertiser;
receive an indication of an advertisement bid price (209) from the advertiser; and
generate an advertisement record (200, 200a-c) that associates the one or more selections of the identified access mechanisms (166,166a-d, 190) with the advertisement bid price (209).

34. A computer program product encoded on a non-transitory computer readable storage medium comprising instructions that when executed by a data processing apparatus cause the data processing apparatus to perform operations comprising:

receiving a search query (134) from a user device (102);
identifying access mechanisms (166,166a-d, 190) based on the received search query (134), wherein each access mechanism (166,166a-d, 190) specifies an application state of an application;
selecting first and second subsets of the identified access mechanisms (166,166a-d, 190);
generating search results (148) based on the first subset;
determining whether an access mechanism (166,166a-d, 190) included in the second subset is associated with an advertisement bid price (209);
when an access mechanism (166,166a-d, 190) included in the second subset is associated with an advertisement bid price (209), generating an advertised search result (178) based on the access mechanism (166,166a-d, 190), and transmitting the search results (148) and the advertised search result (178) to the user device (102); and
when none of the access mechanisms (166,166a-d, 190) included in the second subset is associated with an advertisement bid price (209), transmitting the search results (148) to the user device (102).

35. A computer program product encoded on a non-transitory computer readable storage medium comprising instructions that when executed by a data processing apparatus cause the data processing apparatus to perform operations comprising:

receiving an entity query (252) from an advertiser;

identifying access mechanisms (166,166a-d, 190) based on the received entity query (252), wherein each access mechanism (166,166a-d, 190) specifies an application state of an application;

displaying the identified access mechanisms (166,166a-d, 190) to the advertiser;

receiving one or more selections of the identified access mechanisms (166,166a-d, 190) from the advertiser;

receiving an indication of an advertisement bid price (209) from the advertiser; and

generating an advertisement record (200, 200a-c) that associates the one or more selections of the identified access mechanisms (166,166a-d, 190) with the advertisement bid price (209).

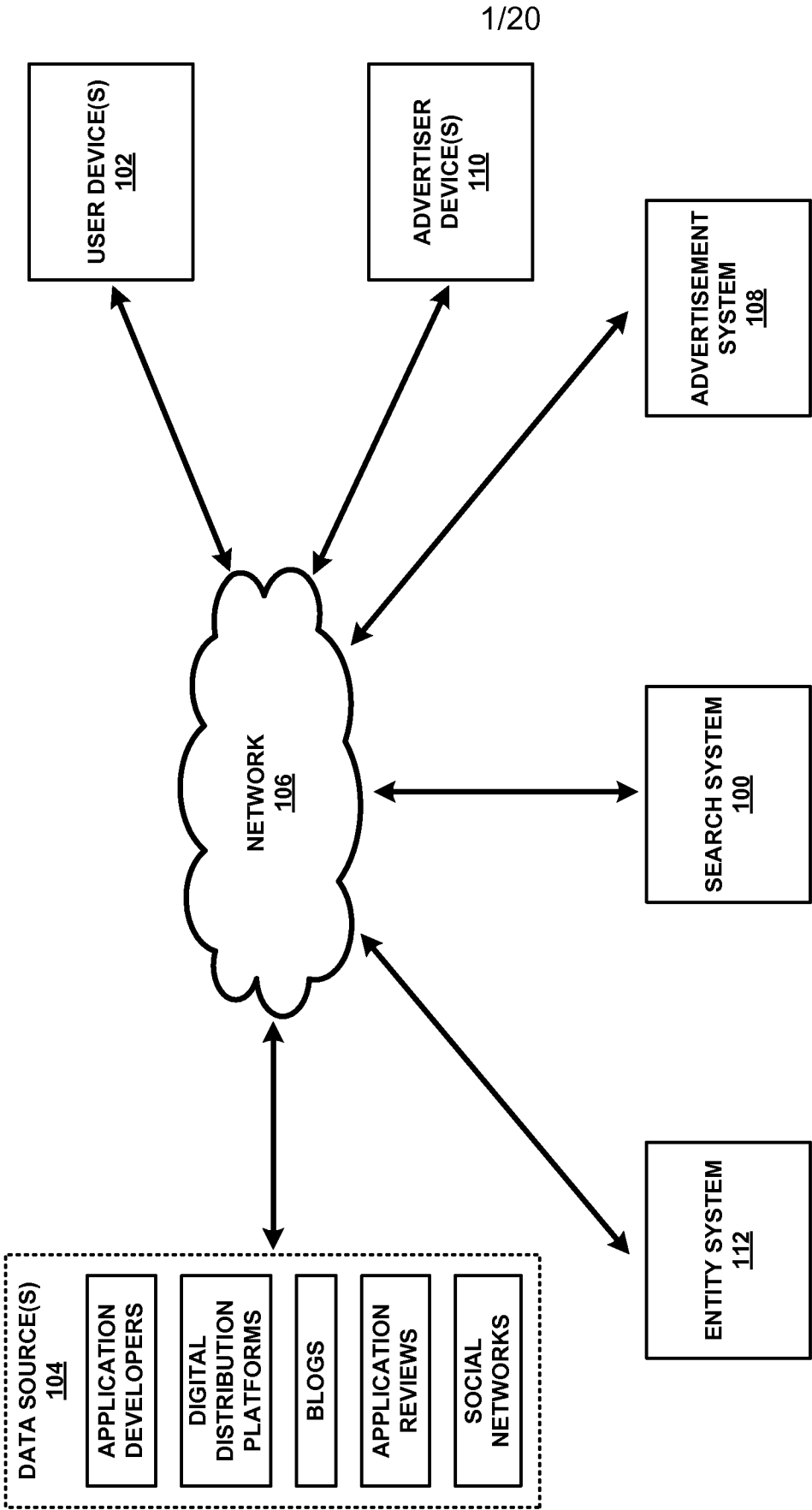


FIG. 1A

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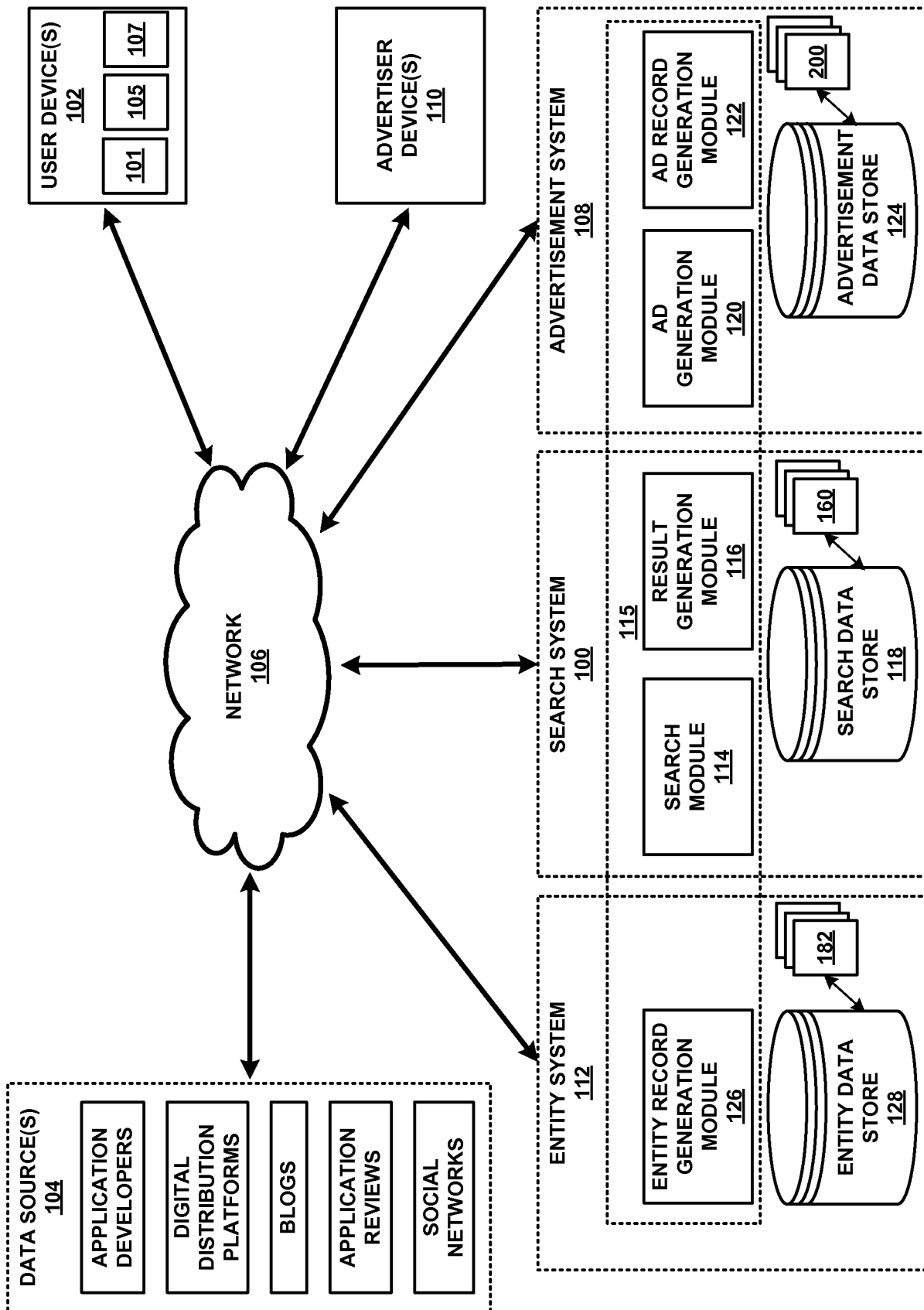
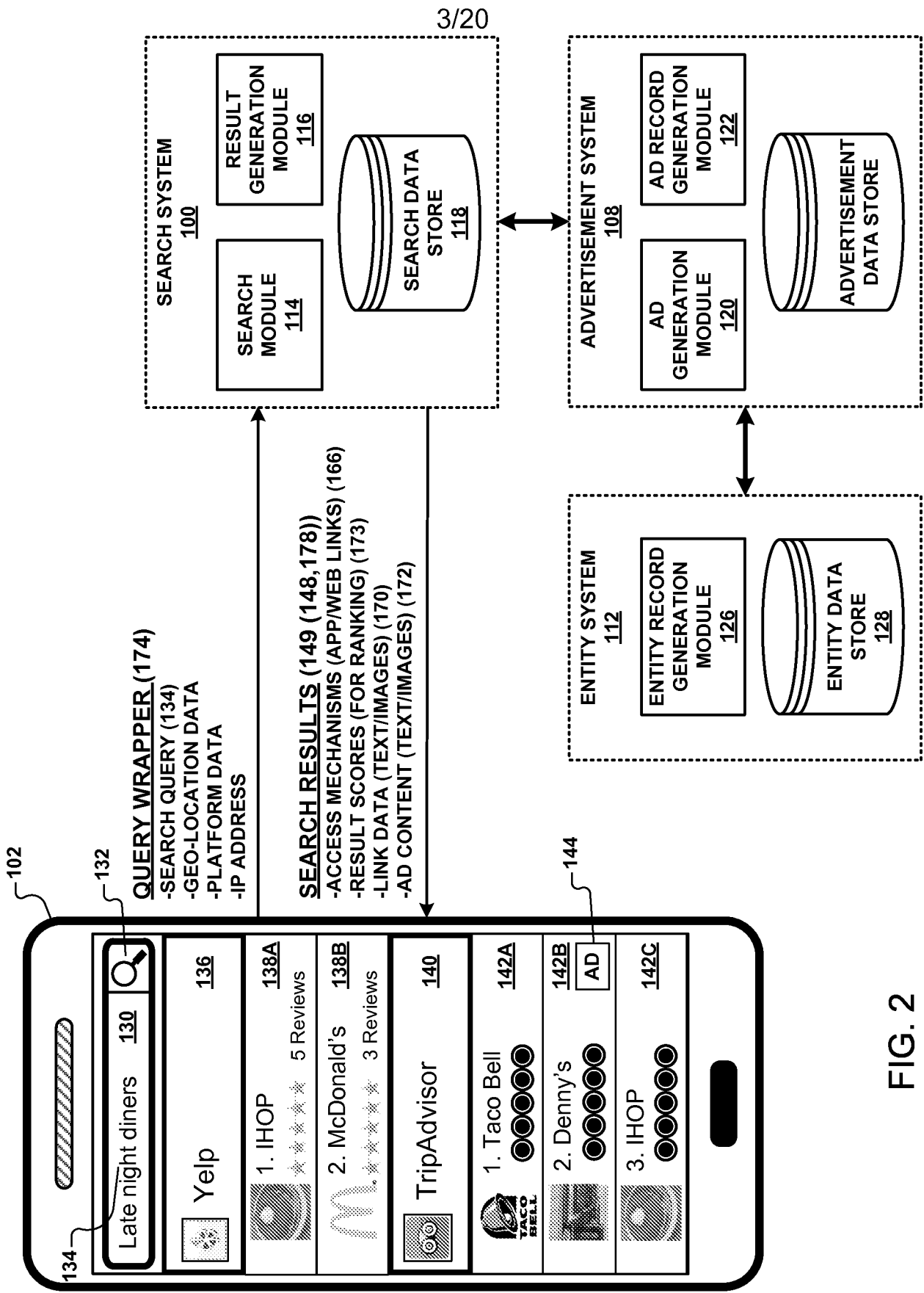


FIG. 1B



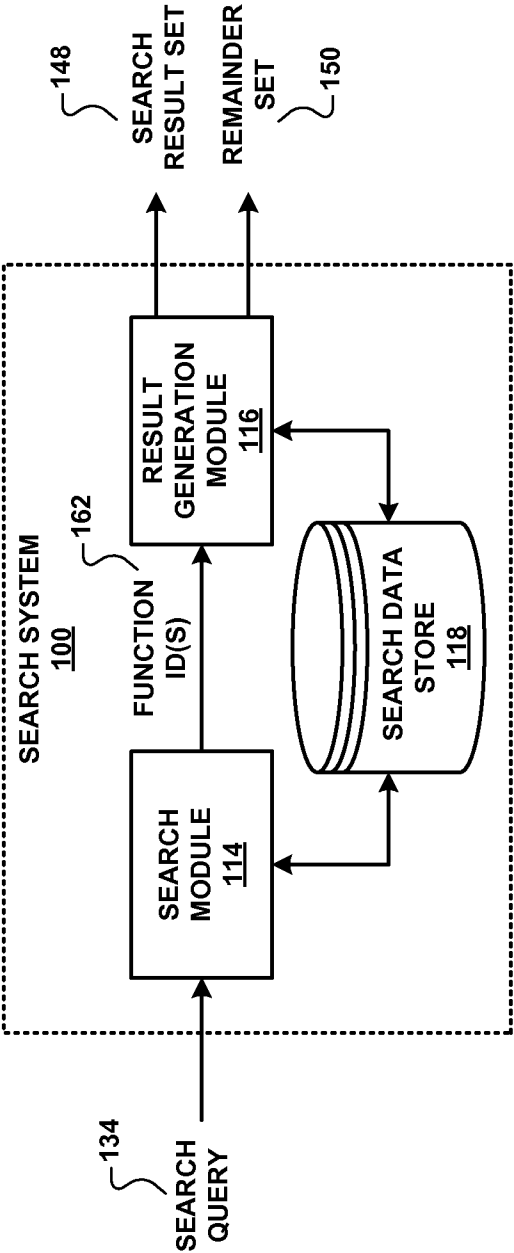


FIG. 3A

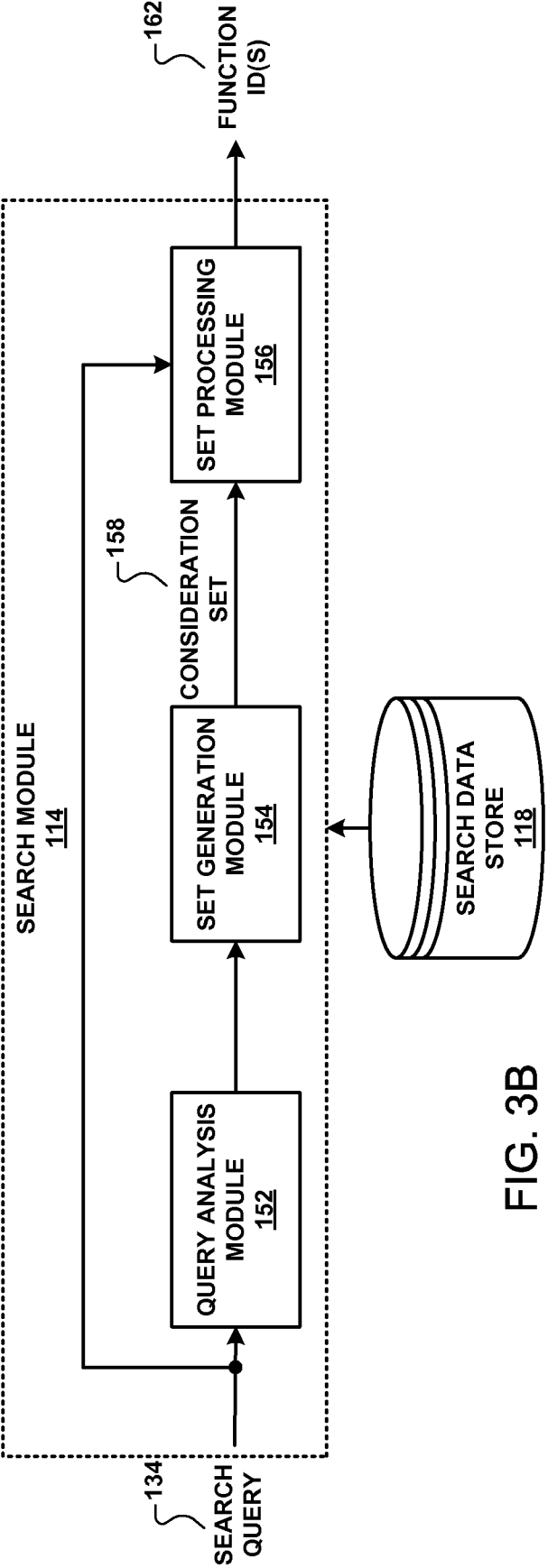


FIG. 3B

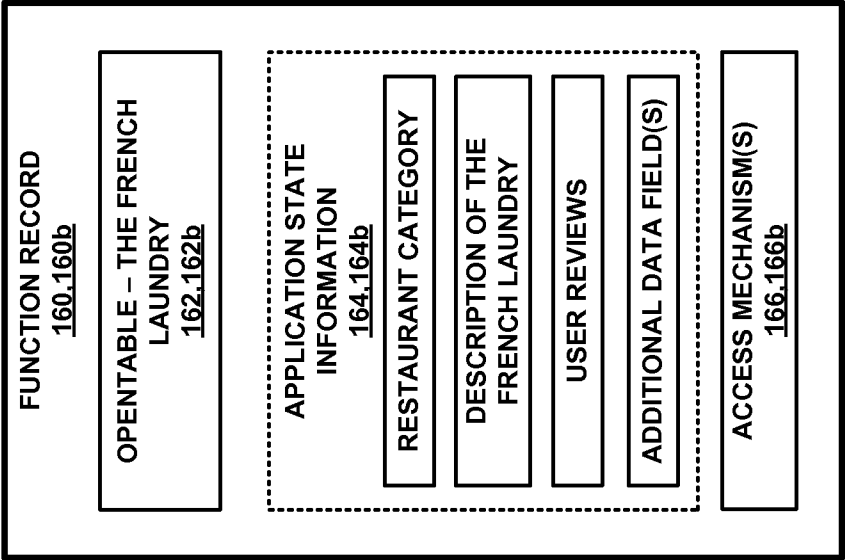


FIG. 3D

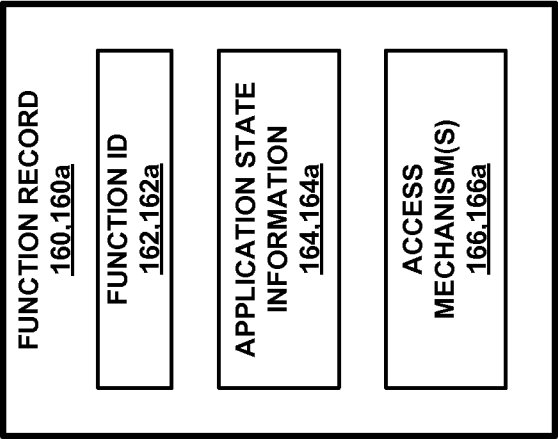


FIG. 3C

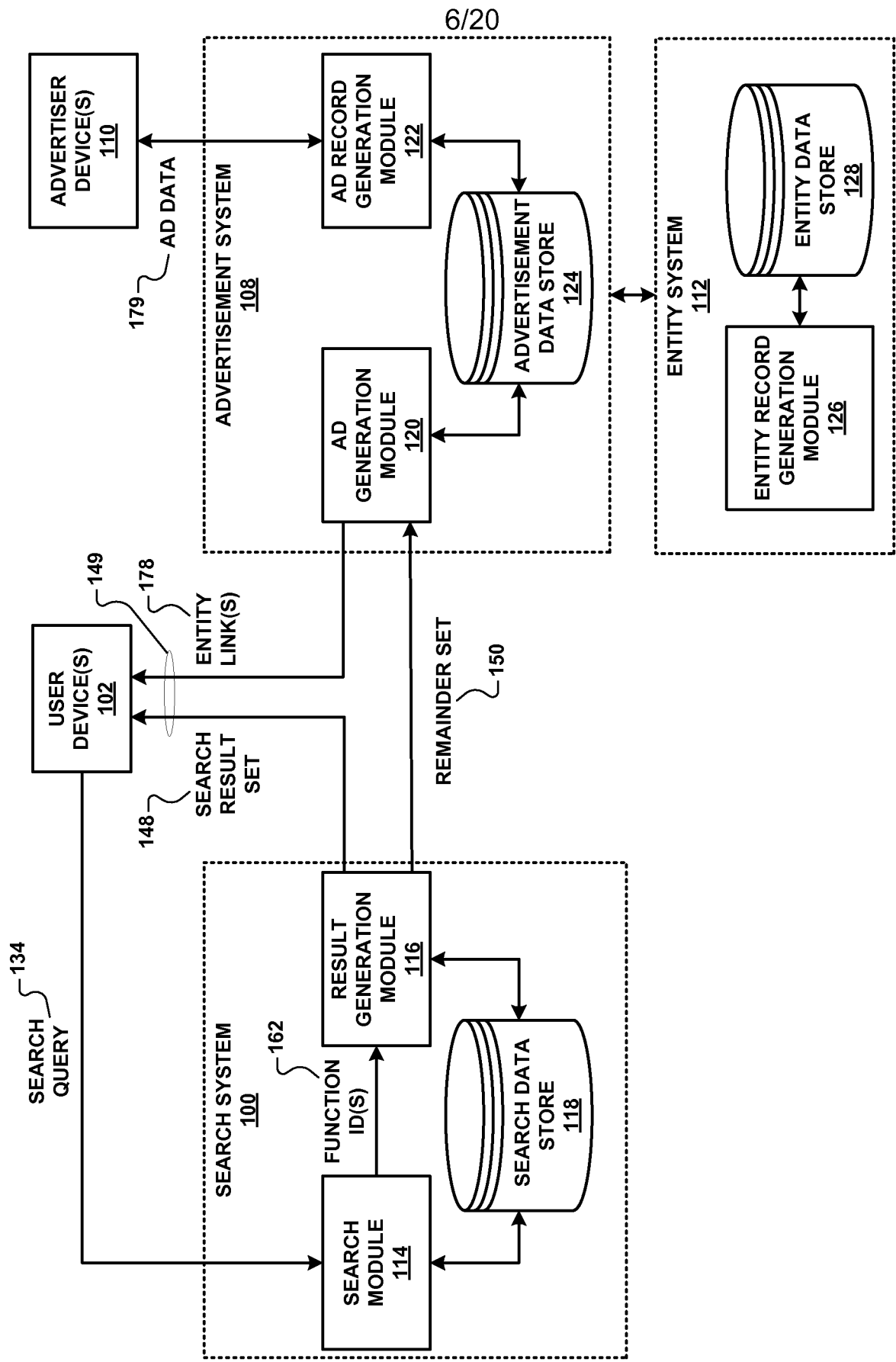


FIG. 4A

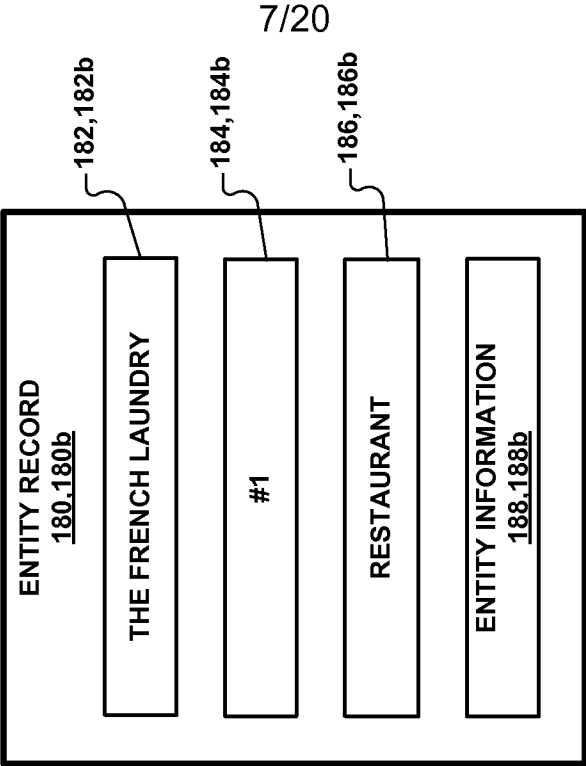


FIG. 4C

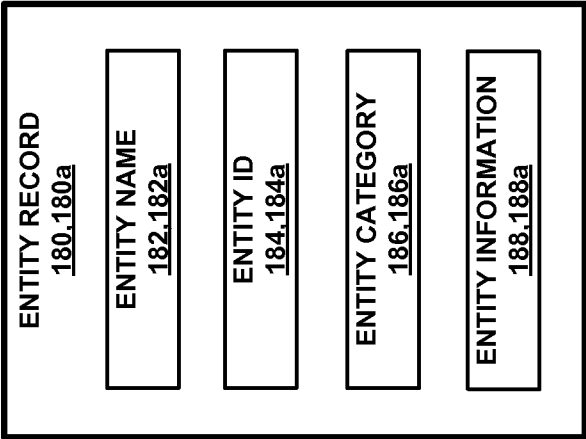


FIG. 4B

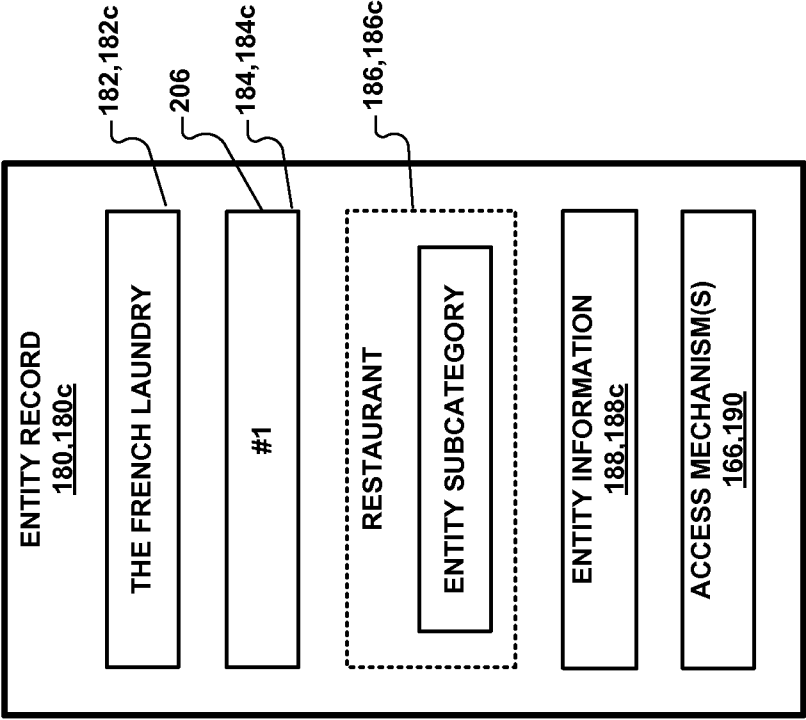


FIG. 4D

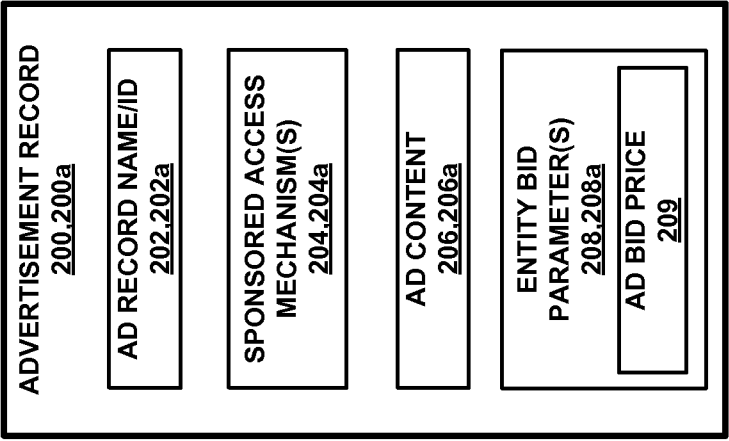


FIG. 4E

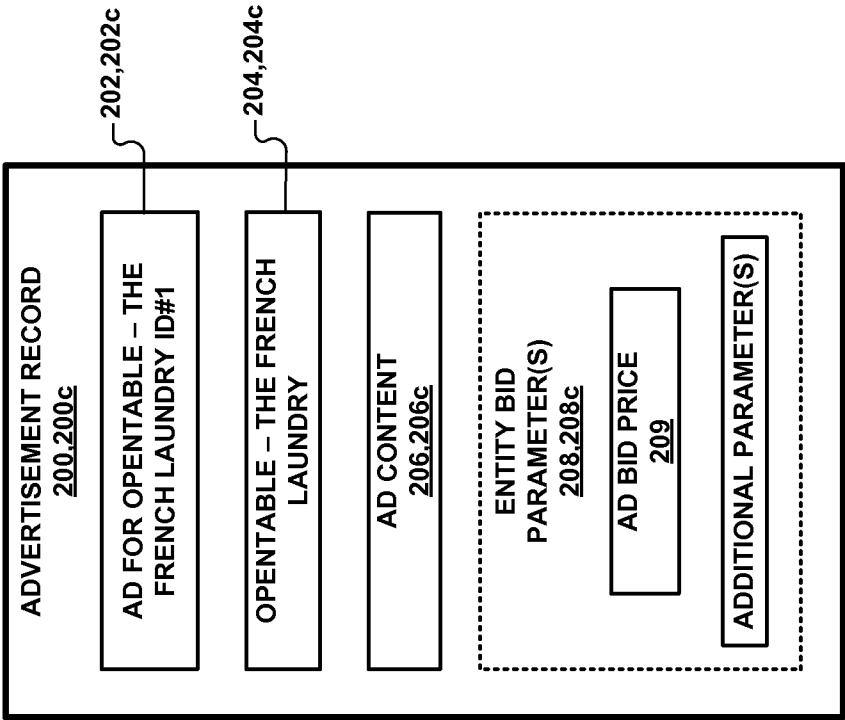


FIG. 4G

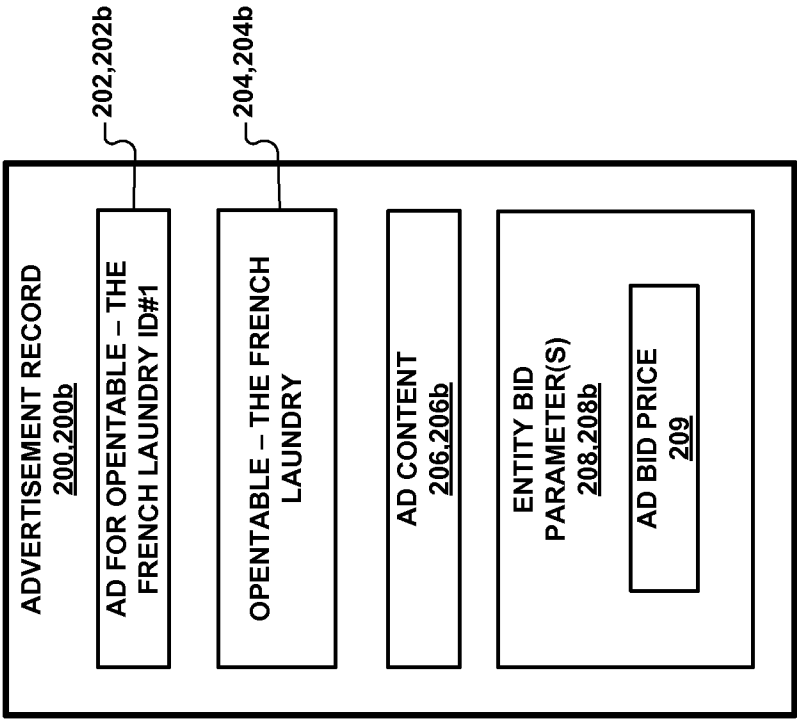


FIG. 4F

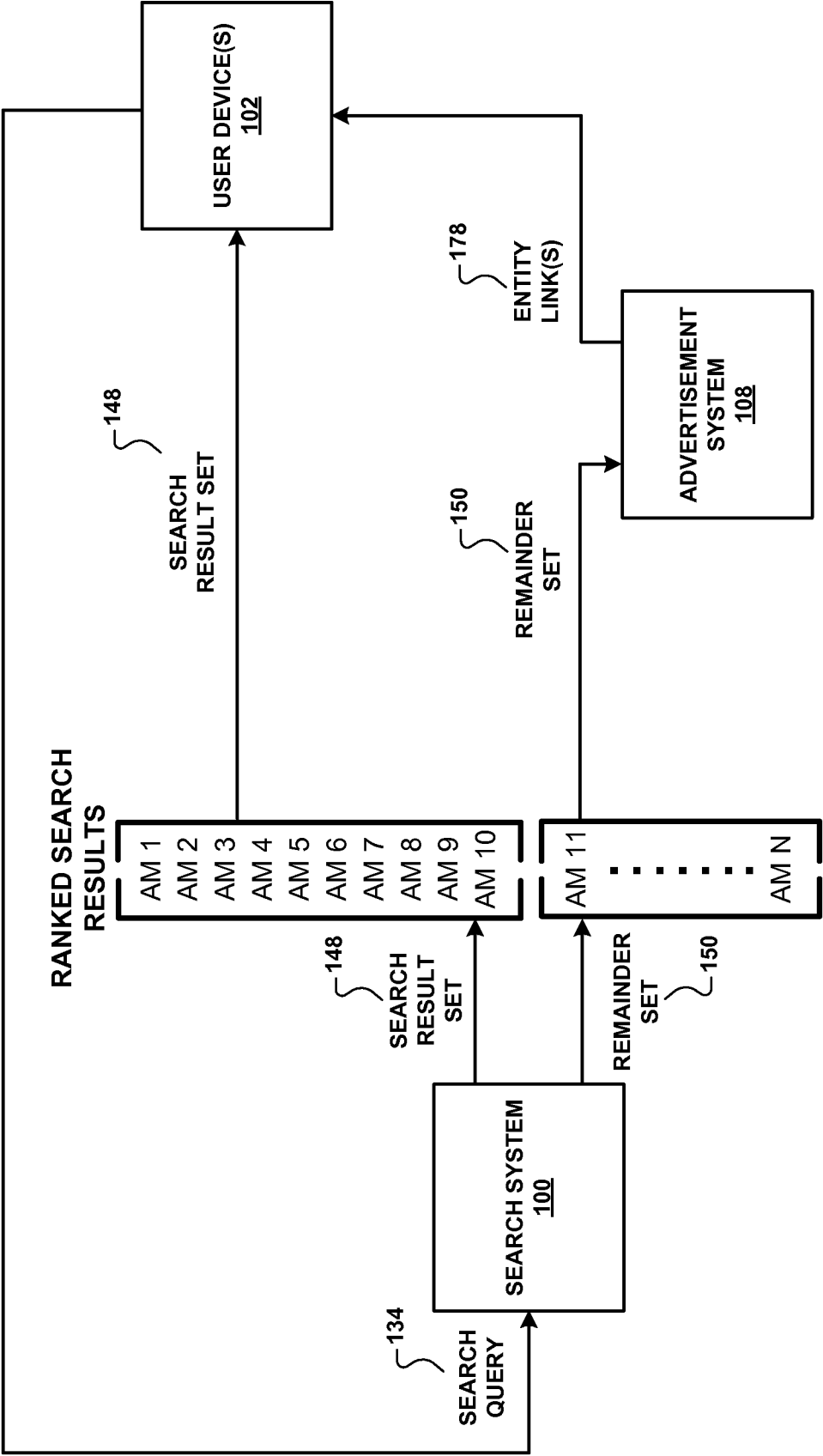


FIG. 5

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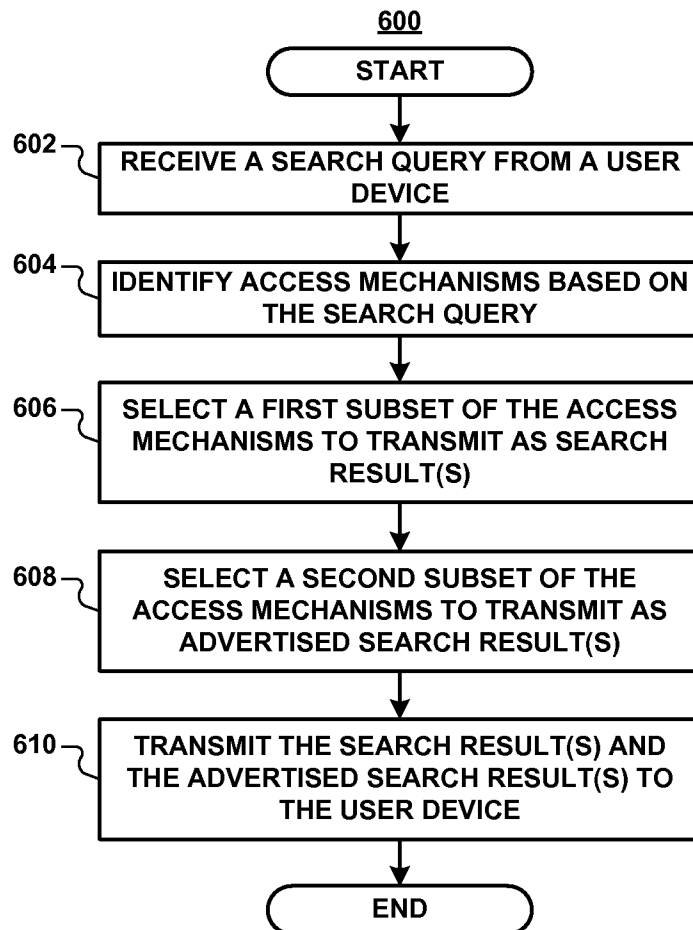


FIG. 6

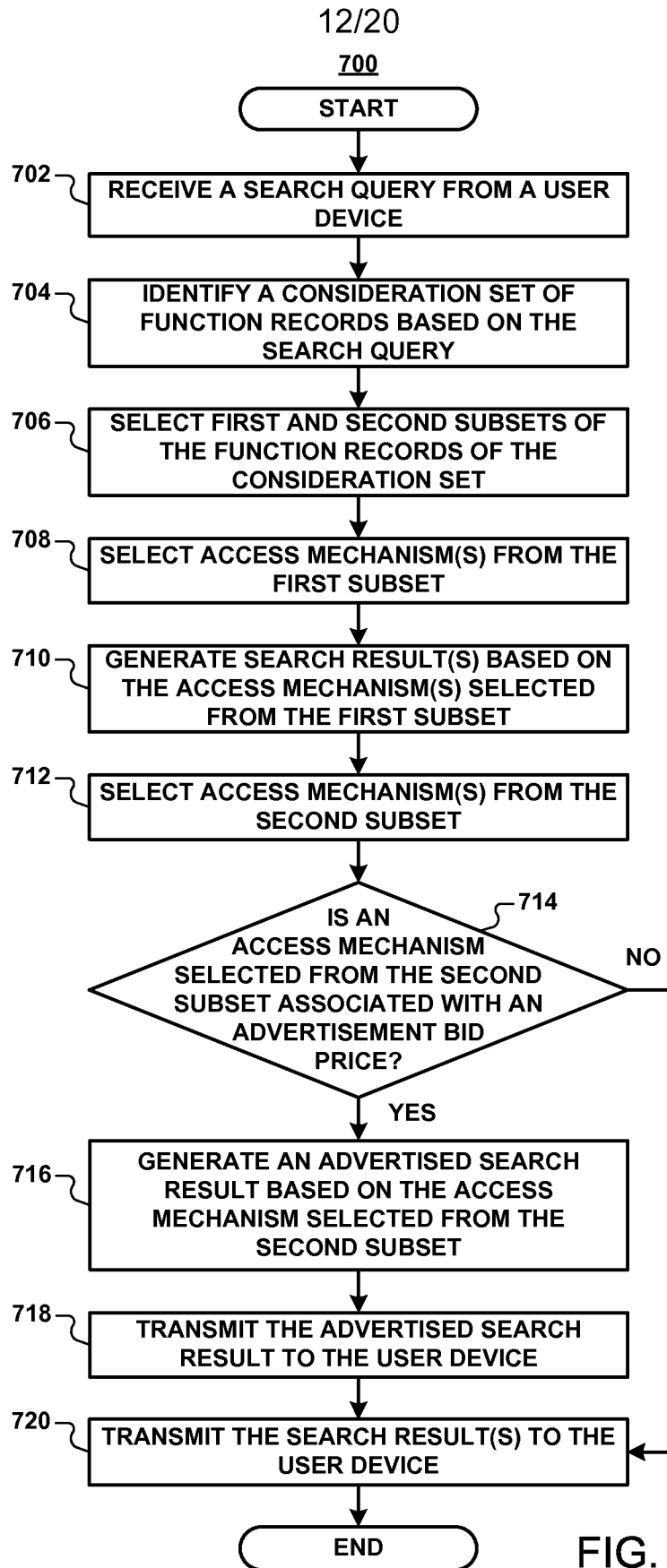


FIG. 7

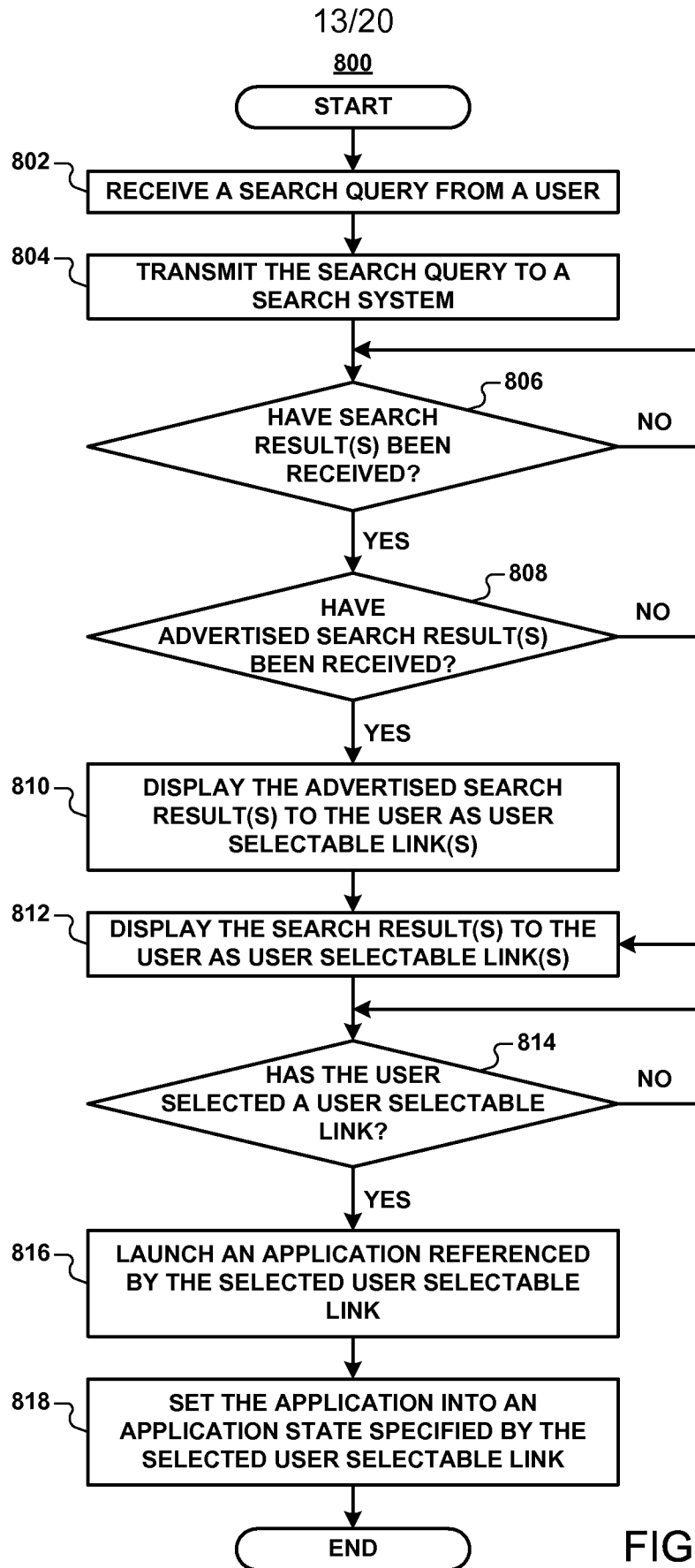


FIG. 8

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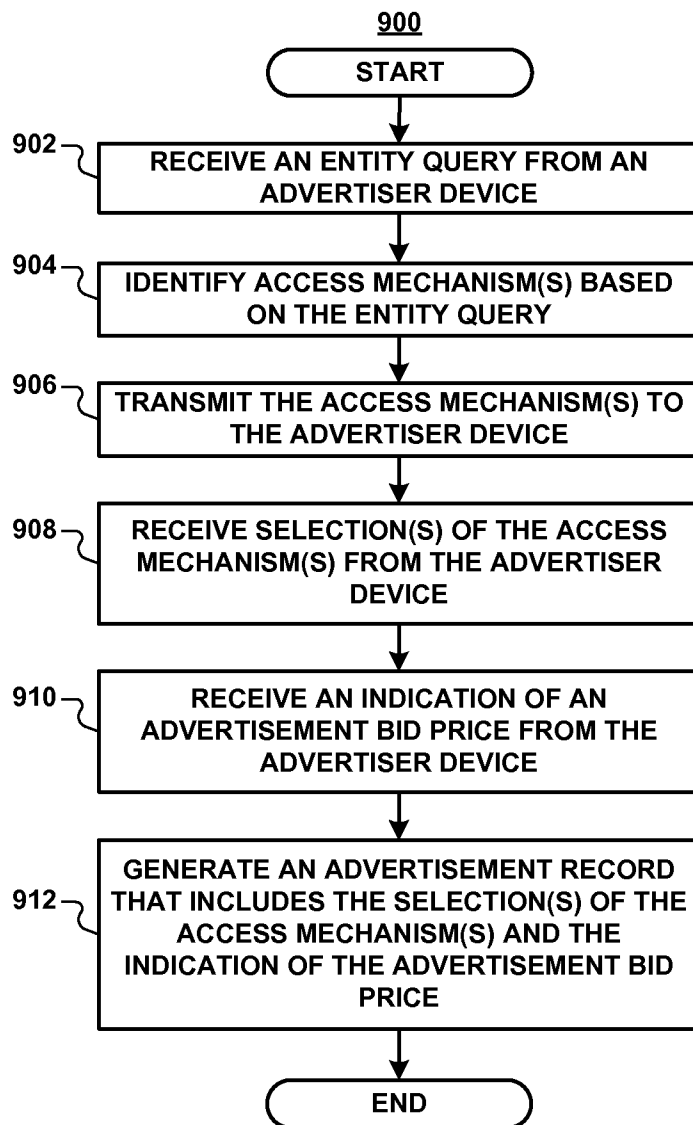
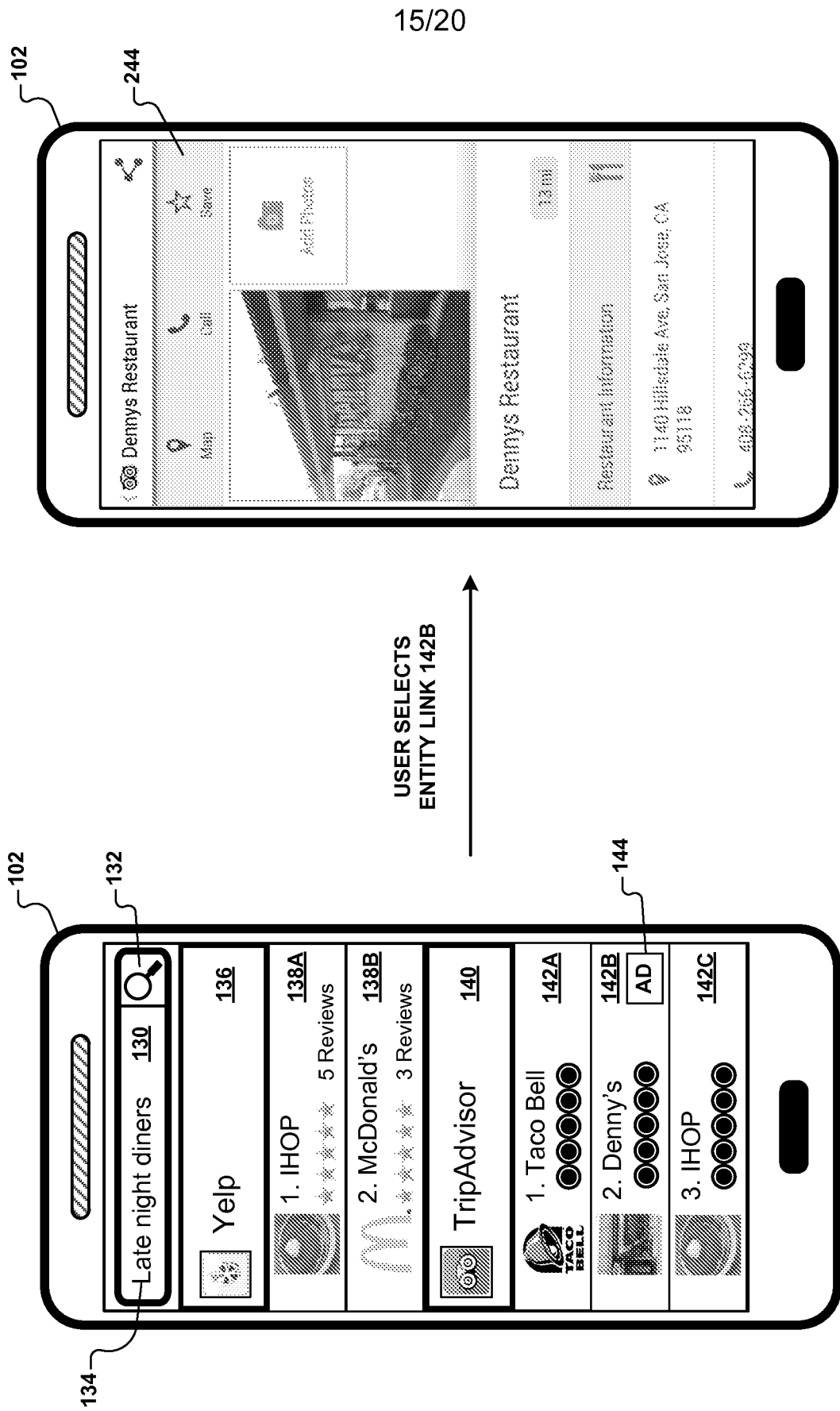


FIG. 9



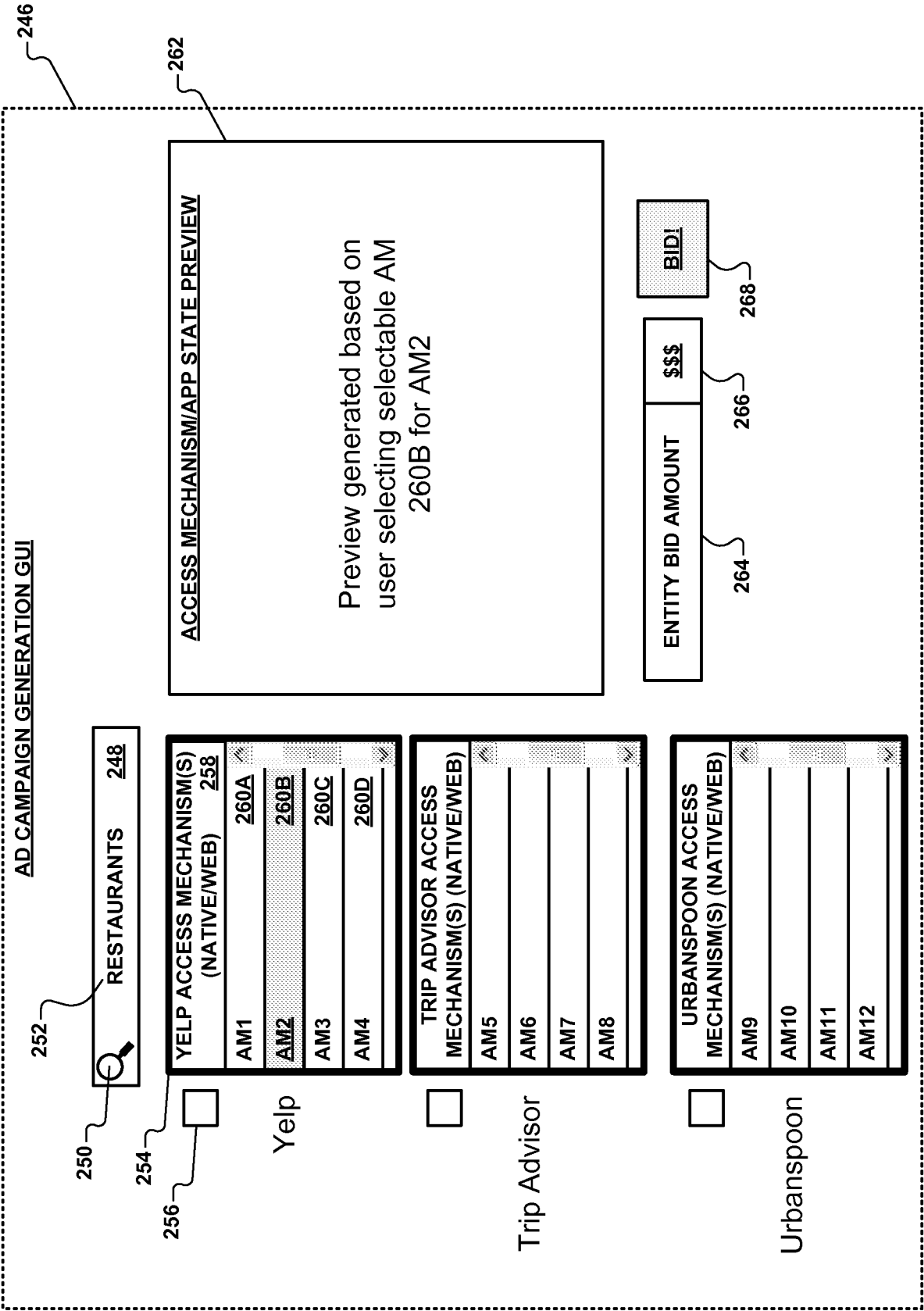


FIG. 11

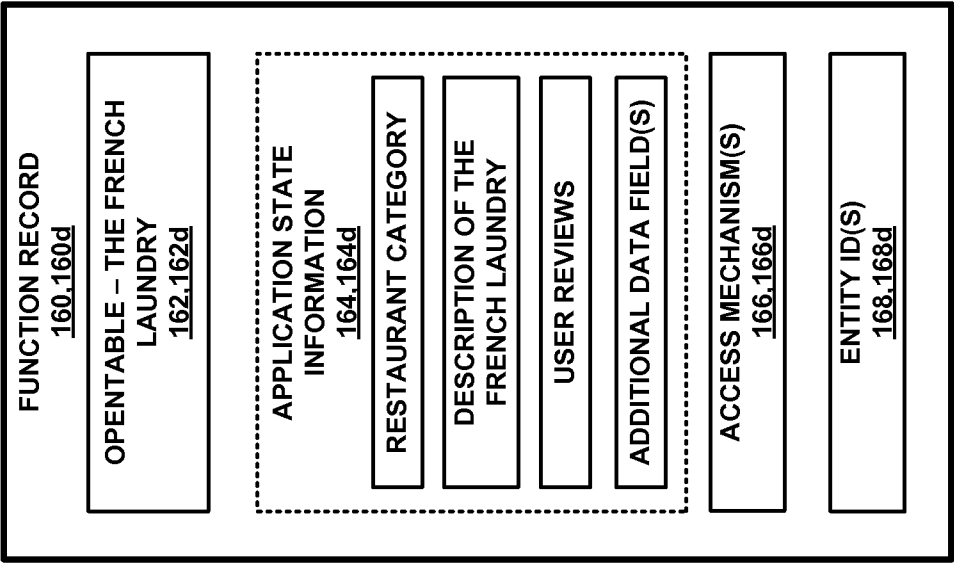


FIG. 12B

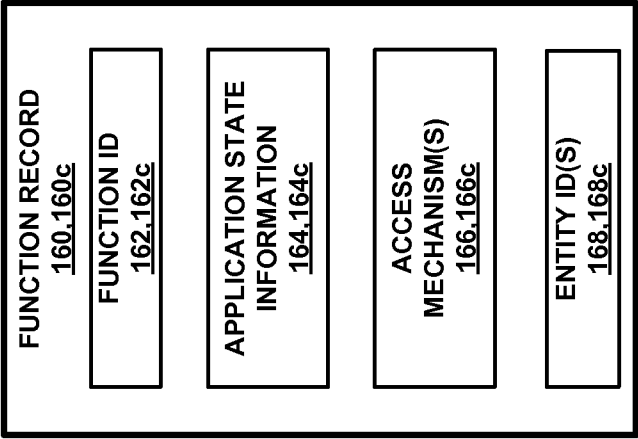


FIG. 12A

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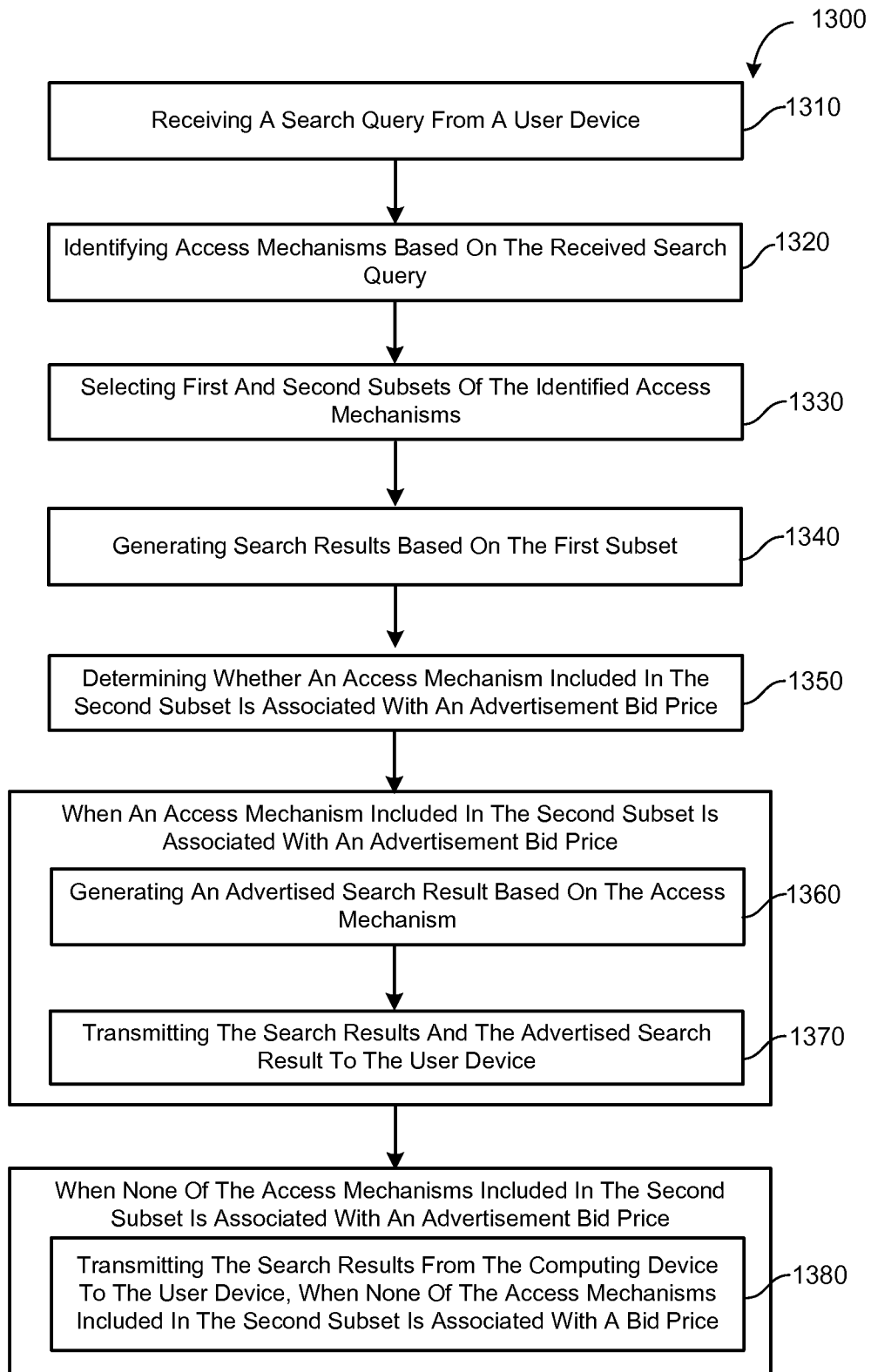


FIG. 13

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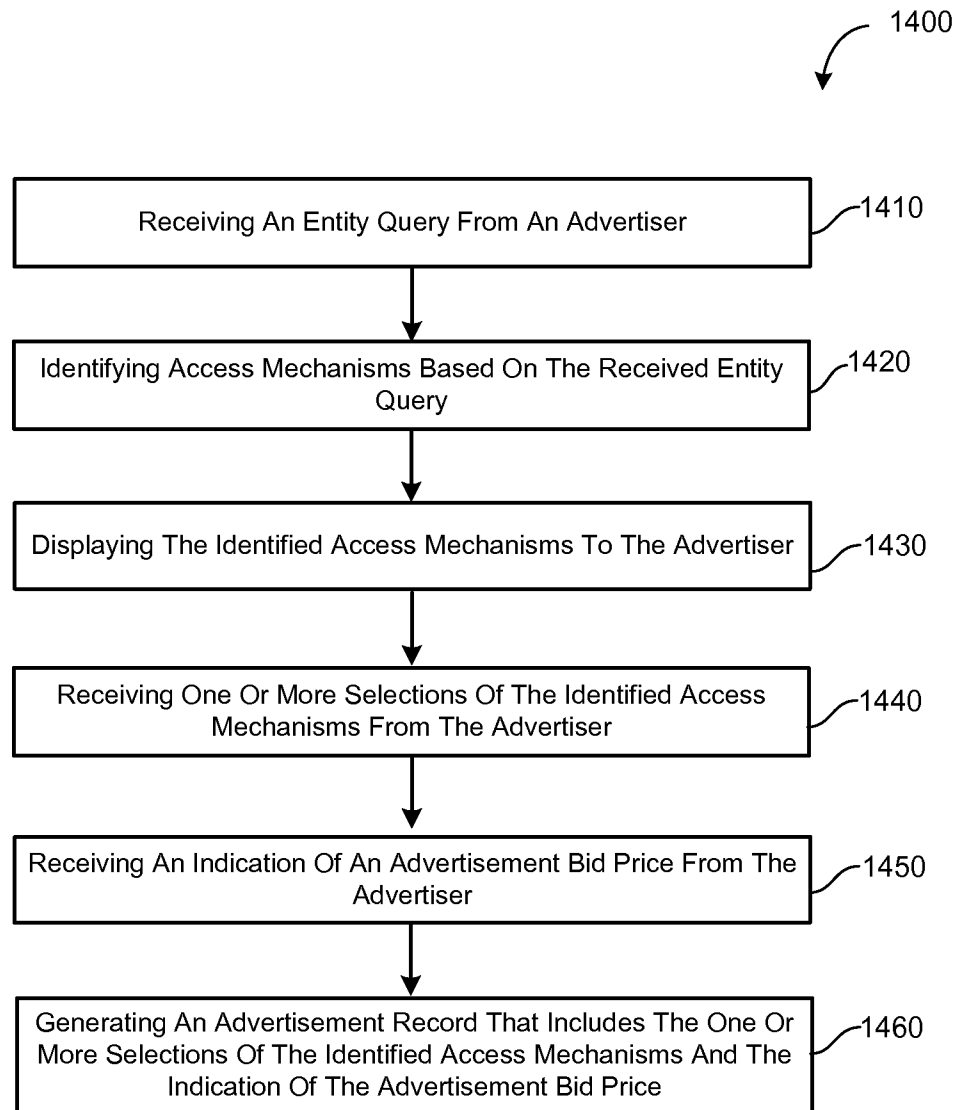
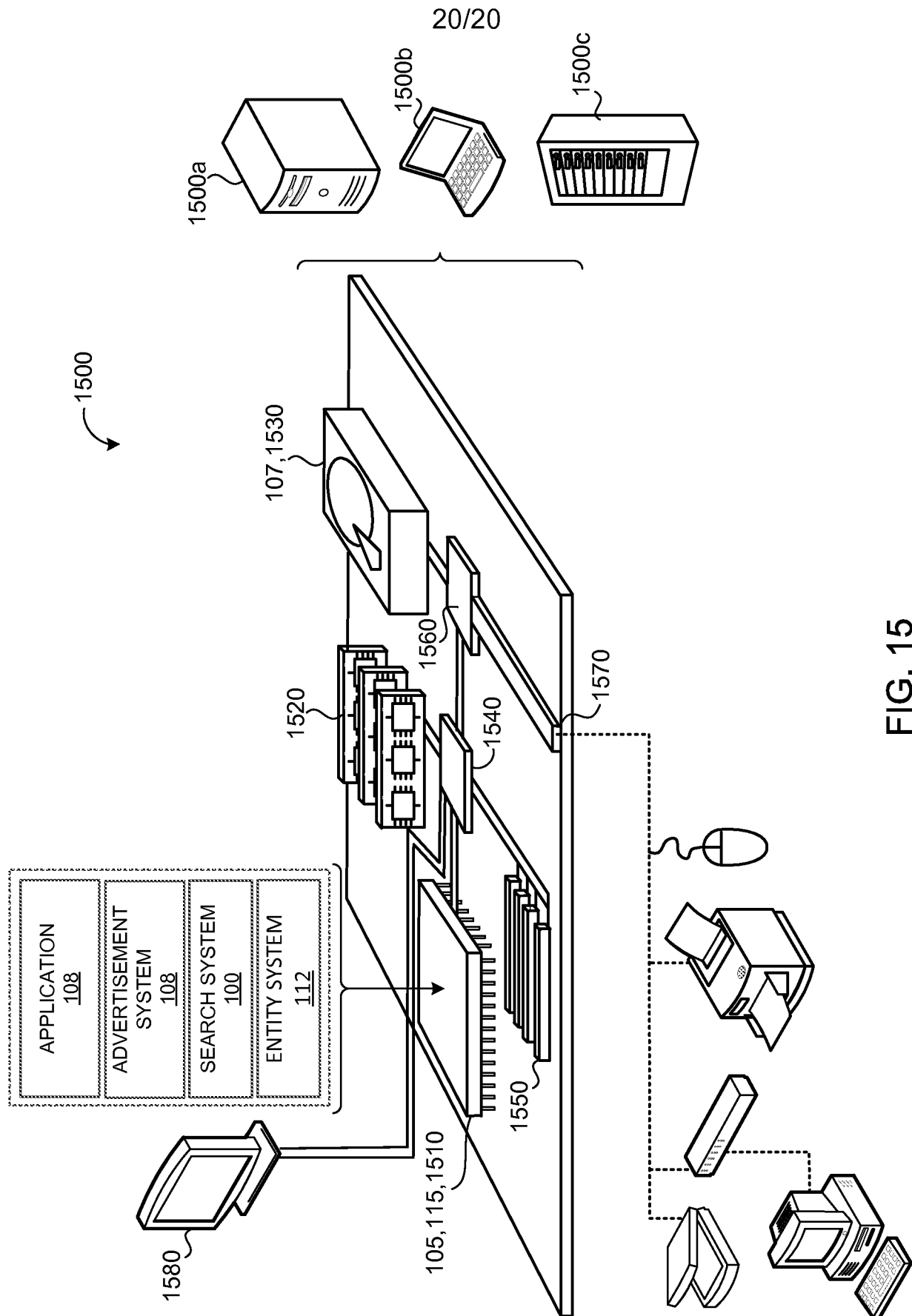


FIG. 14



A. CLASSIFICATION OF SUBJECT MATTER**G06Q 30/02(2012.01)i, G06Q 30/08(2012.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06Q 30/02; G06F 9/445; G06F 17/30; G06Q 30/08

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: advertisement, record, application, access, search

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2011-0072001 A1 (AMIT JYOTI BASU et al.) 24 March 2011 See abstract, paragraphs [0025], [0055], [0067], [0071], [0091], claims 1, 18 and figures 5a, 7.	1-17, 19-32, 34
A		18, 33, 35
X	KR 10-0469824 B1 (NHN CORPORATION) 03 February 2005 See abstract, page 6, lines 17-20, 57-59, page 8, lines 19-26, claims 1, 5, 7 and figure 2.	18, 33, 35
Y		1-17, 19-32, 34
Y	US 2012-0316955 A1 (ANIL PANGULURI et al.) 13 December 2012 See abstract, paragraph [0115] and figure 21.	14-15, 29-30
A	US 2013-0290319 A1 (ERIC GLOVER et al.) 31 October 2013 See abstract, claims 1, 3, 5-6, 8 and figures 1-2, 4, 6.	1-35
A	US 8732696 B2 (ROMAN BUKARY) 20 May 2014 See abstract, claims 1-2, 7, 10, 13 and figures 4-5.	1-35



Further documents are listed in the continuation of Box C.



See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search

30 September 2015 (30.09.2015)

Date of mailing of the international search report

30 September 2015 (30.09.2015)

Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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