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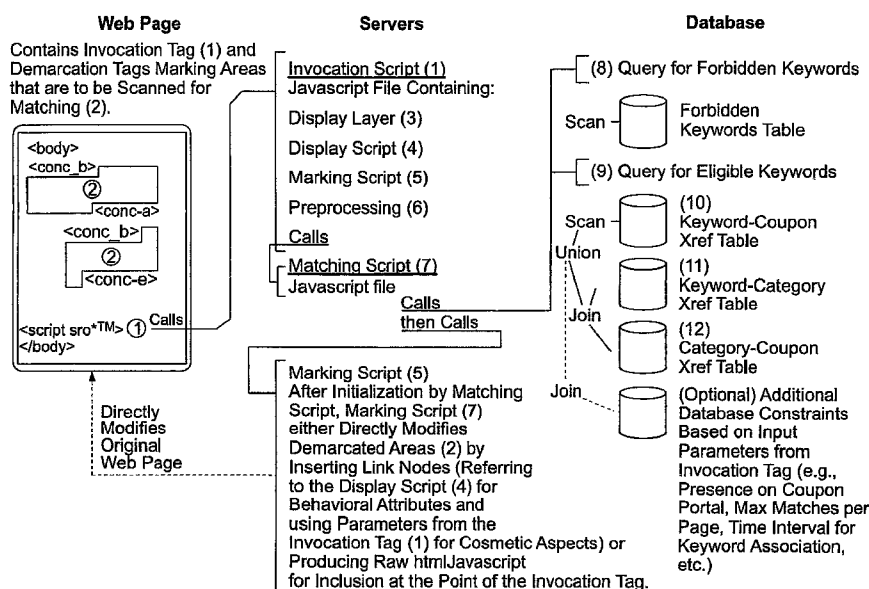
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(54) Title: SYSTEM AND METHOD FOR AUGMENTING CONTENT IN ELECTRONIC DOCUMENTS WITH LINKS TO CONTEXTUALLY RELEVANT INFORMATION



(57) Abstract: An electronic document and associated system, methods and apparatus is described. The electronic document is loaded in a user device configured to communicate with an external device that generates instructions for augmenting content contained in the electronic document with links to contextually relevant information. The content can be augmented with one or more user interface elements, and the augmented content can be displayed with one or more attributes which can be selected by a document author. The document author can mark or otherwise designate one or more portions of the electronic document to be excluded from the augmenting process.

System and Method For Augmenting Content In Electronic Documents With Links To Contextually Relevant Information

BACKGROUND

5 An electronic coupon distribution system that takes into account user demographics is described in U.S. Patent Application No. 09/451,160, entitled “Electronic Coupon Distribution System,” filed November 30, 1999, which application is incorporated herein by reference. The selection of electronic coupons for distribution can be based on various criteria, such as the number of times a given coupon is printed or
10 redeemed, as described in U.S. Patent Application No. 11/134,048, entitled “Searching A Database Including Prioritizing Results Based on Historical Data,” filed May 19, 2005, which application is incorporated herein by reference.

 Some conventional electronic coupon distribution systems present coupon offers on web pages. Coupon offers are matched with the general content of the web page, and
15 are typically presented in an advertisement (ad) space (e.g., ad box, banner ad or pop-window). The ad space tends to clutter the user’s display screen and interfere with the readability of the web page content. Moreover, some users may be annoyed by such presentation devices making them less inclined to use the coupons or the web page. Other users may simply ignore the coupons because they do not appear relevant to the
20 content of the web page.

SUMMARY

 An electronic document (e.g., web page) at a user device (e.g., computer, media player, mobile phone, email device, personal digital assistant (PDA), etc.) configured to communicate with an external device (e.g., network server) that generates instructions for
25 augmenting content (e.g., text, graphical objects, etc.) contained in the electronic document with links to contextually relevant information (e.g., coupons and/or other offerings) is described.

 In some implementations, the content is also augmented with one or more user interface elements (e.g., buttons, menus, etc.) In some implementations, the augmented
30 content is displayed with one or more attributes (e.g., color, highlights, fonts, style, size,

rollover effects, etc.) which can be selected by a document author (e.g., web page author). In some implementations, the document author can mark or otherwise designate one or more portions of the electronic document to be excluded from the augmenting process.

5 The details of one or more embodiments of the invention are set forth in the accompanying drawings and the description below. Other features, objects, and advantages of the invention will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF DRAWINGS

10 Figure 1 is screen shot of an electronic document, including content that is linked to contextually relevant information.

Figure 2 is a screen shot of the web page shown in Figure 1, including a display window for providing contextually relevant information.

Figure 3 is a flow diagram of a content augmentation process.

15 Figure 4 is a block diagram of a exemplary system for augmenting web pages with links to contextually relevant information.

Figure 5A is a screen shot of an exemplary display window for providing contextually relevant information of a coupon.

20 Figure 5B is a screen shot of an exemplary display window in which additional coupons are displayed.

Figure 6 shows an exemplary process for generating instructions for augmenting content selected for augmentation.

25 Figure 7 shows an exemplary process for associating unique words in an electronic document with predetermined keywords in an electronic coupon distribution system.

Figure 8 shows an exemplary process for locating keywords in an electronic document.

DETAILED DESCRIPTION

Figure 1 is screen shot of an electronic document 100 (e.g., web page), including content 102 (e.g., words, graphical objects, etc.) that is augmented with links to contextually relevant information (e.g., coupons and/or other offerings). The web page 100 is typically presented in a browser window (e.g., Microsoft® Internet Explorer). The browser receives a text file containing Hypertext Markup Language (HTML) and/or other known languages (e.g., Dynamic HTML), and interprets the HTML statements to render the web page 100.

The augmented words 102 (e.g., sandwich, butter, milk) are generated by a content augmentation process 300, as described with respect to Figure 3. The augmented words 102 can be located anywhere on the web page 100, including in an ad space 104 (e.g., ad box, banner ad, pop-window, etc.). The augmented words 102 include links that are activated in response to user input, such as a mouse click or cursor movement. The augmented words 102 can also include one or more user interface elements 106 for providing additional functionality or control (e.g., buttons, menus, etc.). In some implementations, the augmented words 102 are displayed with one or more attributes (e.g., highlights, underline, bold, animations, effects, etc.) to attract the attention of the user. The augmented words 102 can be individual terms or phrases or other portions of text.

Figure 2 is a screen shot of the web page 100 shown in Figure 1, including a window 200 for displaying a coupon offer 202. In some implementations, the window 200 is displayed in response to user input, such as clicking a user interface element 106 associated with an augmented word 102 or rolling a cursor over the augmented word 102.

Although the window 200 is shown displaying a coupon offer 202, it should be apparent that the window 200 can present or display any kind of information (including graphical objects) that is contextually relevant to the augmented word 102. The window 200 can be formatted as desired, including its shape, color, style, fonts, etc. The window 200 can display text, graphical objects or a combination of both. In this particular implementation, if the user clicks on the coupon offer 202, a coupon (e.g., 40 cents off any bread product) will be downloaded to the user's computer or directly to the user's

printer.' The printed coupon can be redeemed at a participating retailer for associated products or services.

In some implementations, the format of each coupon can include an identification of an offer type and an offer value of an item of interest in the window 200. Figure 5A is a screen shot of an exemplary display window 500 for providing contextually relevant information of a coupon 502.

Referring to Figure 5A, a description of the item (e.g., product name, brand name, food category and the like) associated with the coupon 502 can be placed in a primary text field 504. The description can be brief to fit into the size of the window 500. The offer value of the coupon 502 (e.g., \$0.50 off) can be arranged together with the description of the item in the primary text field 502. Alternatively, the offer value can be positioned anywhere on the coupon 502 separate from the primary text field 504. This allows the primary text field 504 to be utilized for additional information regarding the particular offer. For example, the additional information can include an offer type that identifies the item as qualifying for a buy-one-get-one-free or two-for-the-price-of-one offer. The offer value of the coupon 502 can be expressed as a reduced price for the item (e.g., \$3.99 after savings), a reduction in the price of the item (e.g., save \$1.00) or a reduction in the overall transaction when multiple items are purchased (e.g., save \$2.00 when you buy two or more). As shown, a consumer can use the coupon 502 to deduct \$0.50 from the purchase of an "Carapelli Pasta and Sauce" item. The reduction can be expressed in other mathematical fashions, such as a percentage discount (e.g., 10% off).

The window 500 also includes a secondary text field 506 that can be utilized to provide a textual link to a similar or affiliated item. For example, if the primary text field 504 describes an item of a particular brand, the secondary text field 506 can be used to provide a textual link to one or more coupon offers associated with a similar or identical item of another brand. As another example, if the primary text field 504 describes a breakfast item (e.g., bagels), the secondary text field 504 can be used to provide a textual link to one or more coupon offers for an affiliated item (e.g., cream cheese).

If desired, the coupon 502 can additionally include an expiration statement separate from the primary text field 502 and the secondary text field 504 for indicating the duration of the promotional offer, or a computer-generated bar code that electronically

identifies the item and value of the coupon 502. An image field 508 for visually and graphically identifying the item associated with the coupon 502 also can be displayed in the window 500. The image field 508 can be placed in the vicinity of the primary text field 502 or the secondary text field 504, and accommodate an image of the item associated with the coupon 502. The image can include a text portion that supplements the item description in the primary text field 502 or the secondary text field 504.

In some implementations, if the user clicks on the print-coupon link 512, the coupon 502 can be downloaded to the user's computer or directly to the user's printer. Use of a printer connected to the user's computer provides the ability to produce a hardcopy of the coupon 502 that can be redeemed at a participating retailer for associated products or services.

Figure 3 is a flow diagram of a content augmentation process 300. Some of the steps of process 300 can be performed in parallel in multi-threading environments. In some implementations, the steps of process 300 are instructions in a computer-readable medium (e.g., hard drive, memory, buses, waveforms), which, when executed by a processor causes the processor to perform the steps of process 300.

In some implementations, the process 300 begins by selecting content in one or more electronic documents to augment with one or more links to contextually relevant information (step 302). The content can be words, phrases, graphical objects and the like. The term "link" means to electronically associate content with information, such that user interaction with the augmented content results in access to or display of contextually relevant information. A link can also result in an operation performed on the content (e.g., printing or electronic-forwarding to an interested party).

The selected content is associated with contextually relevant information (step 304). The contextually relevant information can be any type of information that is relevant to the content. In some implementations, the contextually relevant information is stored in a database coupled to a network (e.g., the Internet) and is accessed through a network server. In some implementations, the content is a list of unique words selected from a web page. The list is sent to a network server where the words are matched with keywords that have been associated with information. For example, a list of unique words (e.g., sandwich, butter, milk, etc.) can be sent to a coupon server which associates

the unique words with keywords (e.g., sandwich, butter, milk). In another implementations, the image of the item in the image field 508 is identified, and if the image contains a text portion, the text portion is searched for unique words. The unique words are then compared with the keywords in the network server. The keywords, each being associated with contextually relevant information (e.g., coupon offers), are used to perform a search query on a database of coupons. The query results include a list of coupons that are relevant to the keywords and may take into account other relevance criteria (e.g., price, availability or inventory). Any coupons that are not available to the web page publisher will be excluded from the process 300.

If desired, each keyword can be configured to associate with a corresponding image such that the process 300 can proceed with comparing the image in the image field 508 with the corresponding images of the keywords to identify contextually relevant information or relevant coupons.

In some implementations, the coupons are prioritized based on one or more ranking criteria, such as the number of times a coupon is printed or redeemed. Contextual relevance may also be scored using counts of words on a page. The ranked coupons can then be arranged in a form of a priority list with, for example, the first coupon in the priority list being a coupon determined to be the most relevant or affiliated to the selected content. Temporarily referring back to Figure 5A, the window 500 can be configured to display a coupon with the highest rank. Due to dimension limitation of the window 500, in some implementations, additional coupons are not displayed in the window 500 but can be accessed by clicking (e.g., mouse click or cursor movement) on the text contained in a third text field 510. For example, a user can click on "Plus 92 more" to access additional coupons associated with the coupon being displayed. The user also can access other coupons (e.g., randomly or in order of relevance) or coupons that are in a particular category using the third text field 510. The third text field 510 can provide a textual link to a separate display window in which additional coupons can be retrieved. Figure 5B illustrates a screen shot of an exemplary display window 520 in which additional coupons are displayed.

Referring to Figure 5B, the window 520 displays one or more additional coupons 522. In some implementations, coupons 522 are organized by their respective

dimensions (e.g., resolution). For example, coupons that have a dimension size of 468 x 60 are organized into the same cluster (e.g., ad box 524) and coupons that have a dimension size of 125 x 125 are organized into a different cluster (e.g., ad box 526). In another implementations, coupons 522 are displayed only in text (i.e., without ad boxes 524 and 526). In these implementations, the window 520 can be configured to display a total number of coupons being displayed in text. For example, text 528 indicates that a total of nine coupons (coupon 1 to coupon 9) are displayed in text links. Coupons can be printed by clicking on an associated "Print Coupons" link. For example, the "Print Coupons" link 530 allows a user to print a hardcopy of the "\$1.00 off Nature's Bounty Printable Coupon" and "\$0.40 off Land O Lakes Creamer Printable Coupon" in the ad box 524, and the "Print Coupons" link 532 allows a user to print a hardcopy of the "\$1.00 off Nature's Bounty Printable Coupon" in the ad box 526.

Referring back to Figure 3, the process 300 generates instructions (e.g., JavaScript) for augmenting the selected content (step 306) with links. The selected content and the link can be highlighted, italicized or implemented with color to differentiate the augmented content from the normal text.

In some implementations, the instructions are dynamically included in the web page on-the-fly using known HTML (or DHTML) methods, properties and objects (e.g., document object model (DOM)) (step 308). The browser interprets the instructions which causes the selected content (e.g., sandwich, butter, milk) to be augmented with links to the contextually relevant information (step 310). Using the example of Figure 2, if a user rolls their cursor across the word "sandwich," then a window 200 is presented which includes a coupon offer 202 for bread.

Figure 4 will be described in conjunction with Figure 6. Figure 4 is a block diagram of an exemplary system for performing the content augmentation process 300, as described with respect to Figure 3, and figure 6 shows an exemplary process 600 for generating instructions for augmenting content selected for augmentation. The exemplary system is an electronic coupon distribution system. It should be apparent, however, that the process 300 can be used in combination with a variety of applications other than electronic coupon distribution systems.

In some implementations, a web page author enables a web page to invoke an external device (e.g. a server for a coupon distribution service) in real-time by including an invocation tag (1) near the end of (and within) the <body> section of the web page's HTML code. By invoking the external source after all other <body> instructions have
5 been interpreted, the author can ensure that the process 300 will not interfere with other <body> instructions. In some implementations, the invocation tag (1) further includes customization parameters affecting the display and context of any links (e.g., color, font, style, etc.) used to augment content.

The author can specify which sections of the web page will be subject to the
10 process 300 by using demarcation tags (2) within the <body> of the web page (step 602). When the web page is rendered, the invocation tag (1) is inserted (step 604) and the external source is invoked (step 606). The invocation tag (1) writes into the containing document a display layer (3) for use by links provided by the distribution service, a display script (4) for displaying link information, and a marking script (5) for augmenting
15 words in the web page with links at a later time (step 608). The display script (4) rendered by the invocation tag (1) parses the containing web page, preprocesses (6) the visible text nodes in the <body> section into a list of unique words, and uses a subset of this list in a call to a matching script (7) located at the external source.

Figure 7 shows an exemplary process 700 for associating unique words in an
20 electronic document with predetermined keywords in an electronic coupon distribution system. As shown, after a list of unique words is generated (step 702), The matching script (7) compares the submitted list to at least two lists of keywords at the external source (step 704). If any words in the submitted list match words in a list of forbidden words (8) ("Yes" branch of step 706), the process 300 is halted and the calling web page
25 will not receive content augmentation (step 708). If the words in the submitted list do not match words in the list of forbidden words ("No" branch of step 706), process 700 proceeds to verify if the words in the submitted list match words in a predetermined list of eligible keywords ("No" branch of step 706). If any words in the submitted list match words in the list of eligible keywords (9) ("Yes" branch of step 710), the matching script
30 (7) generates instructions (e.g., JavaScript) for initializing the marking script (5) and

executes the marking script (5) (step 712). Else, process 700 is terminated (“No” branch of step 710).

The contents of the matching script (7) includes links to various coupons and/or other offerings from the distribution service. In some implementations, the offerings are selected by matching an eligible keyword to a coupon offering directly via a keyword-coupon cross-reference table (10). In other implementations, the offerings are selected by matching an eligible keyword to a coupon offering indirectly through an association of the eligible keyword to a category via a keyword-category cross-reference table (11), then associating the category with a coupon offering via a category-coupon cross-reference table (12).

Figure 8 shows an exemplary process 800 for locating keywords in an electronic document. The marking script (5), when executed, scans the visible text within the demarcation tags (2) for keywords (step 802). For each keyword found (“Yes” branch of step 804), the containing document is augmented by replacing the first text node found containing the keyword with new nodes: a text node including any text in the original text node that occurs before the keyword, and a link node (or “A”-tag) containing the keyword as its text and a linking via its HREF property to the display script (4) (step 806). The marking script (5) scans the visible text within the demarcation tags (2) until all matched keywords in all text nodes have been processed (“Yes” branch of step 808), or until a preset limit on the number of matches has been reached. At this point, the matching script (7) and the invocation tag (1) are fully rendered and the augmentation process 300 is complete (step 810). The augmentation process 300 is terminated when no keyword is found (“No” branch of step 804 or step 808).

The invention and all of the functional operations described herein can be implemented in digital electronic circuitry, or in computer hardware, firmware, software, or in combinations of them. The invention can be implemented as a computer program product, i.e., a computer program tangibly embodied in an information carrier, e.g., in a machine readable storage device or in a propagated signal, for execution by, or to control the operation of, data processing apparatus, e.g., a programmable processor, a computer, or multiple computers. A computer program can be written in any form of programming language, including compiled or interpreted languages, and it can be deployed in any

form, including as a stand alone program or as a module, component, subroutine, or other unit suitable for use in a computing environment. A computer program can be deployed to be executed on one computer or on multiple computers at one site or distributed across multiple sites and interconnected by a communication network. Apparatus of the invention can be implemented in a computer program product tangibly embodied in a machine-readable storage device for execution by a programmable processor; and method steps of the invention can be performed by a programmable processor executing a program of instructions to perform functions of the invention by operating on input data and generating output.

The invention can be implemented advantageously in one or more computer programs that are executable on a programmable system including at least one programmable processor coupled to receive data and instructions from, and to transmit data and instructions to, a data storage system, at least one input device, and at least one output device. Each computer program can be implemented in a high-level procedural or object-oriented programming language, or in assembly or machine language if desired; and in any case, the language can be a compiled or interpreted language.

Suitable processors include, by way of example, both general and special purpose microprocessors. Generally, a processor will receive instructions and data from a read-only memory and/or a random access memory. Generally, a computer will include one or more mass storage devices for storing data files; such devices include magnetic disks, such as internal hard disks and removable disks; a magneto-optical disks; and optical disks. Storage devices suitable for tangibly embodying computer program instructions and data include all forms of non-volatile memory, including by way of example semiconductor memory devices, such as EPROM, EEPROM, and flash memory devices; magnetic disks such as internal hard disks and removable disks; magneto-optical disks; and CD-ROM disks. Any of the foregoing can be supplemented by, or incorporated in, ASICs (application-specific integrated circuits).

A number of embodiment of the invention have been described. Nevertheless, it will be understood that various modifications may be made without departing from the spirit and scope of the invention. Accordingly, other embodiments are within the scope of the following claims.

What is claimed is:

1. A method of augmenting content with links to contextually relevant
5 information, comprising:
 receiving content;
 associating the content with contextually relevant information; and
 generating instructions, which, when executed by a processor, links the content
with the contextually relevant information.
10
2. The method of claim 1, where associating the content with contextually
relevant information includes:
 identifying one or more unique words in the content; and
 receiving one or more keywords, the one or more keywords being associated with
15 the contextually relevant information.
3. The method of claim 2, where generating instructions includes:
 comparing the one or more unique words with the one or more keywords based on
a predetermined criteria; and
20 linking the content with the contextually relevant information if at least one
unique word matches a keyword based on the predetermined criteria.
4. The method of claim 1, where associating the content with contextually
relevant information includes:
25 identifying one or more unique words in the content; and
performing a search query in contextually relevant information.
5. The method of claim 4, where generating instructions includes:
linking the content with the contextually relevant information if the search query
30 indicates a predetermined relationship between at least one unique word and the
contextually relevant information.

6. The method of claim 1, further comprising displaying a link that links the content with the contextually relevant information, the link being displayed with the content.

5 7. A method of augmenting content with links to contextually relevant information, comprising:

 selecting content contained in an electronic document;

 associating the selected content with contextually relevant information;

 generating instructions for augmenting the selected content; and

10 executing the instructions in the electronic document to effectuate content augmentation of the selected content.

 8. The method of claim 7, where generating instructions includes generating a display script configured to display link information, and a marking script configured to
15 augment the selected content with contextually relevant information.

 9. The method of claim 7, where associating the selected content with contextually relevant information includes:

 parsing the selected content;

20 identifying one or more elements from the parsed content;

 comparing the one or more identified elements with a predetermined number of keywords; and

 associating the selected content with contextually relevant information if at least one element matches a keyword.

25 10. The method of claim 9, wherein at least one element includes a unique word.

 11. The method of claim 9, wherein at least one element includes an image that contains a text portion having one or more unique words; and

30 wherein comparing the one or more identified elements includes comparing the one or more unique words in the text portion with a predetermined number of keywords.

12. The method of claim 11, further comprising halting the execution of the instructions if at least one unique word matches a forbidden word.

5 13. The method of claim 9, wherein at least one element includes an image; and wherein comparing the one or more identified elements includes comparing the image with images associated with the keywords.

10 14. The method of claim 9, where comparing the one or more identified unique words with a predetermined number of keywords includes comparing the one or more identified unique words with words in a list of forbidden words.

15 15. The method of claim 13, further comprising halting the execution of the instructions if at least one unique word matches a forbidden word.

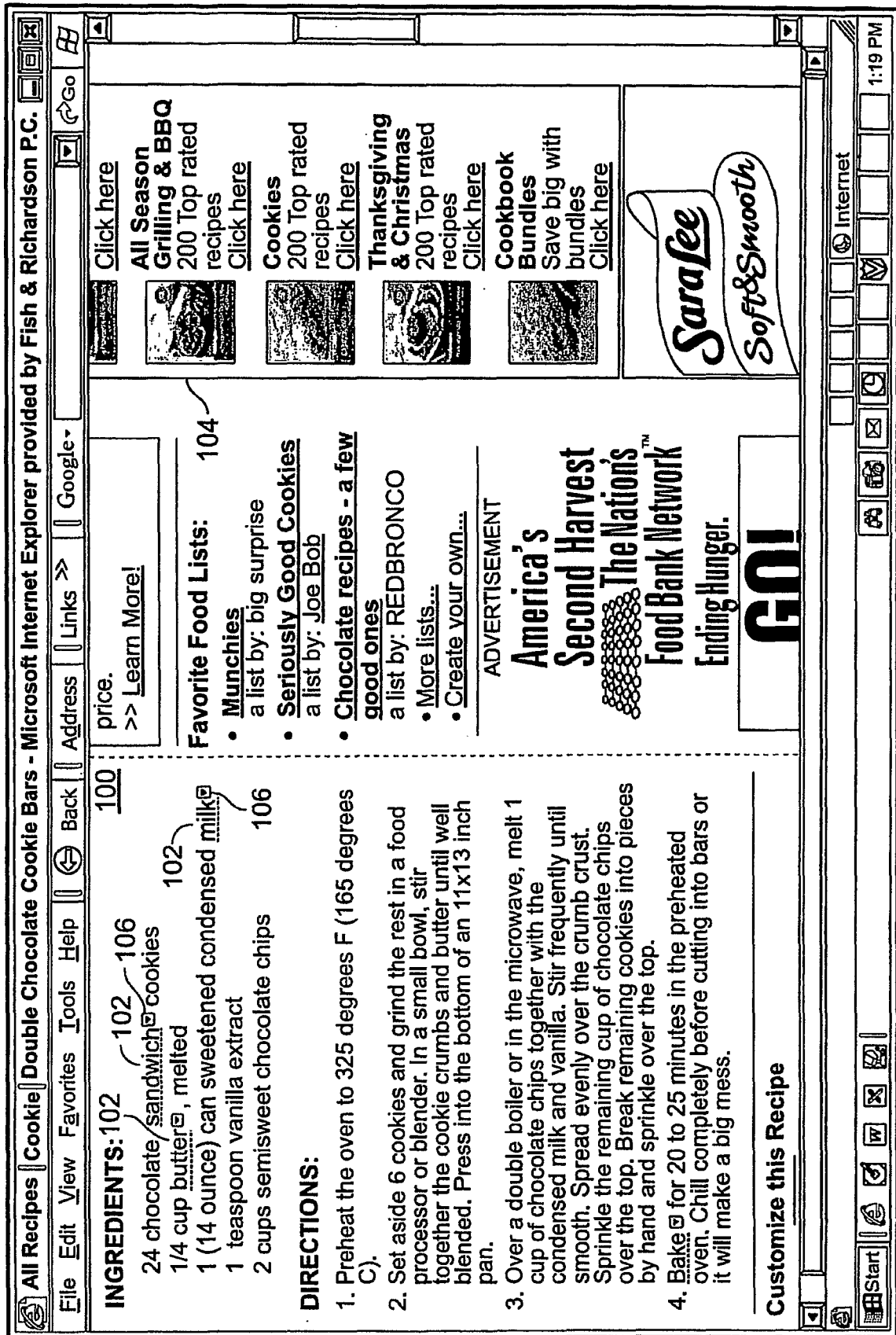
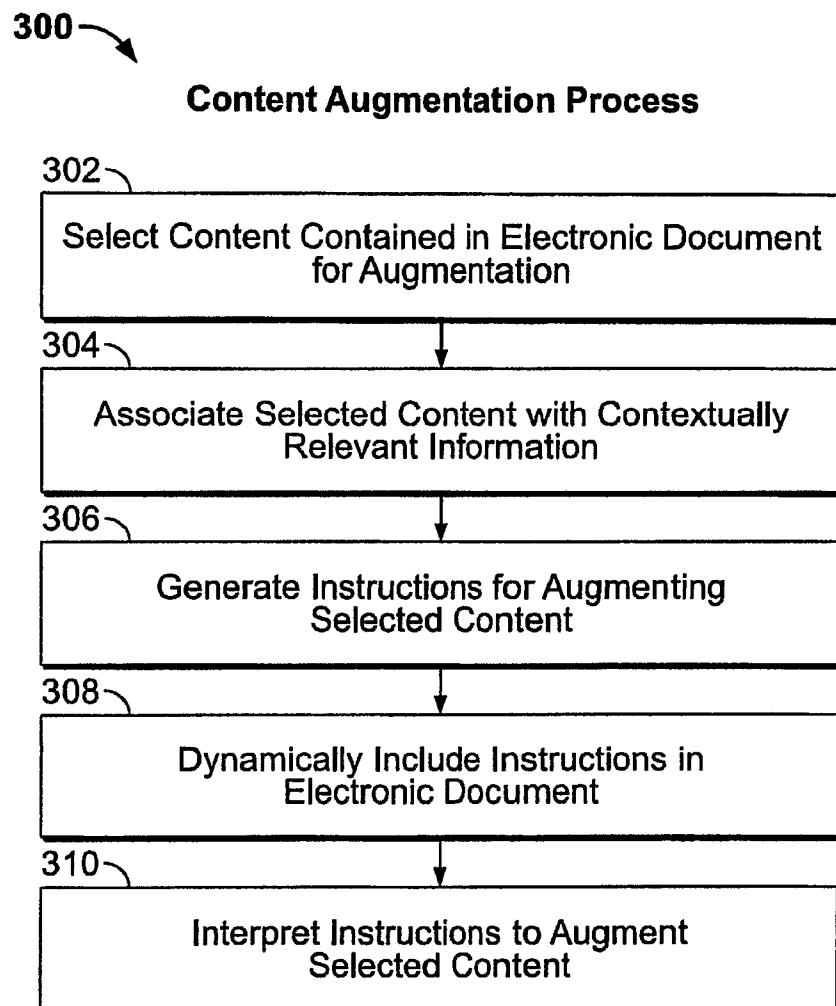


FIG. 1



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**FIG. 3**

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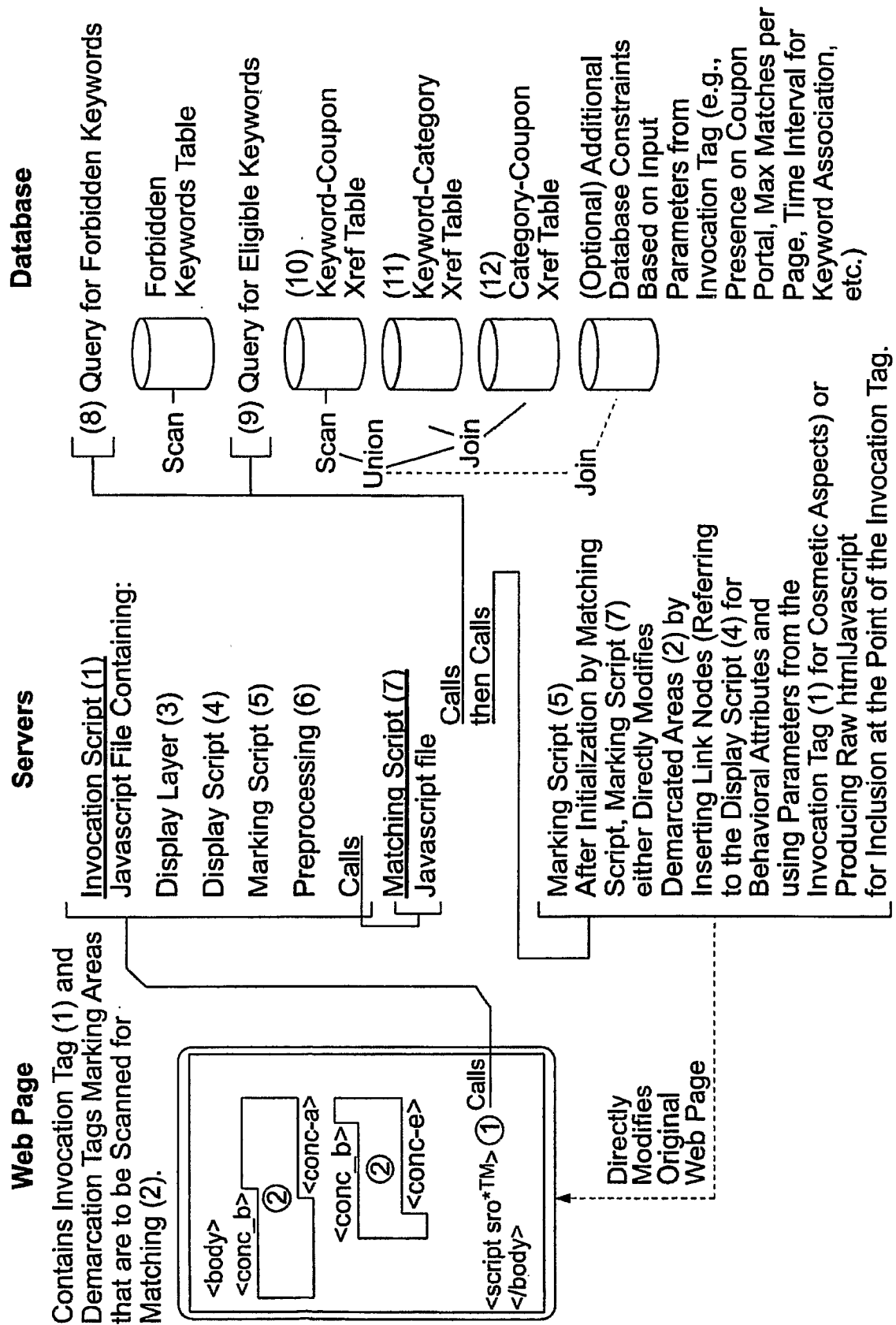


FIG. 4

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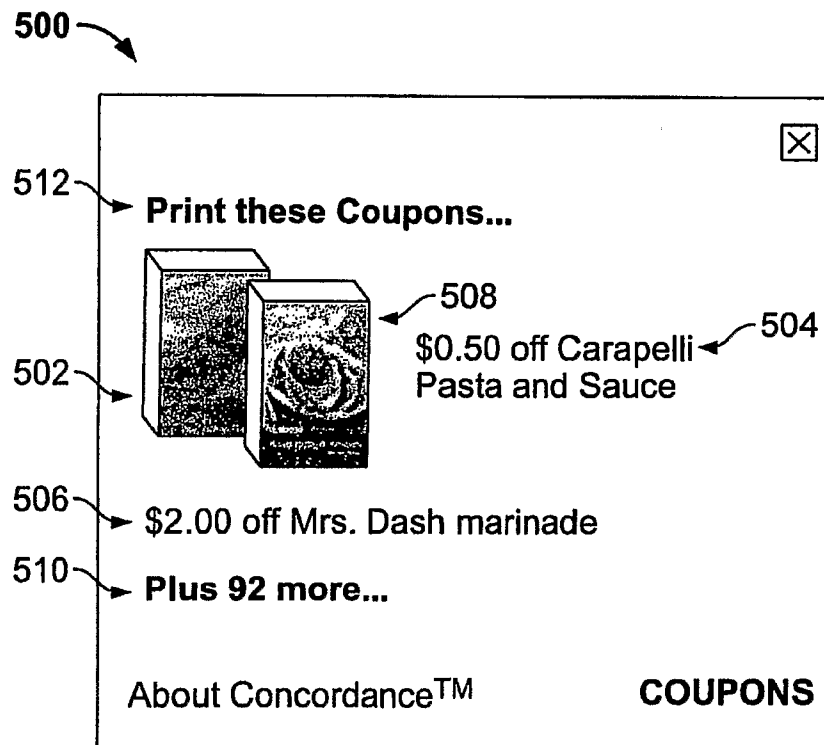


FIG. 5A

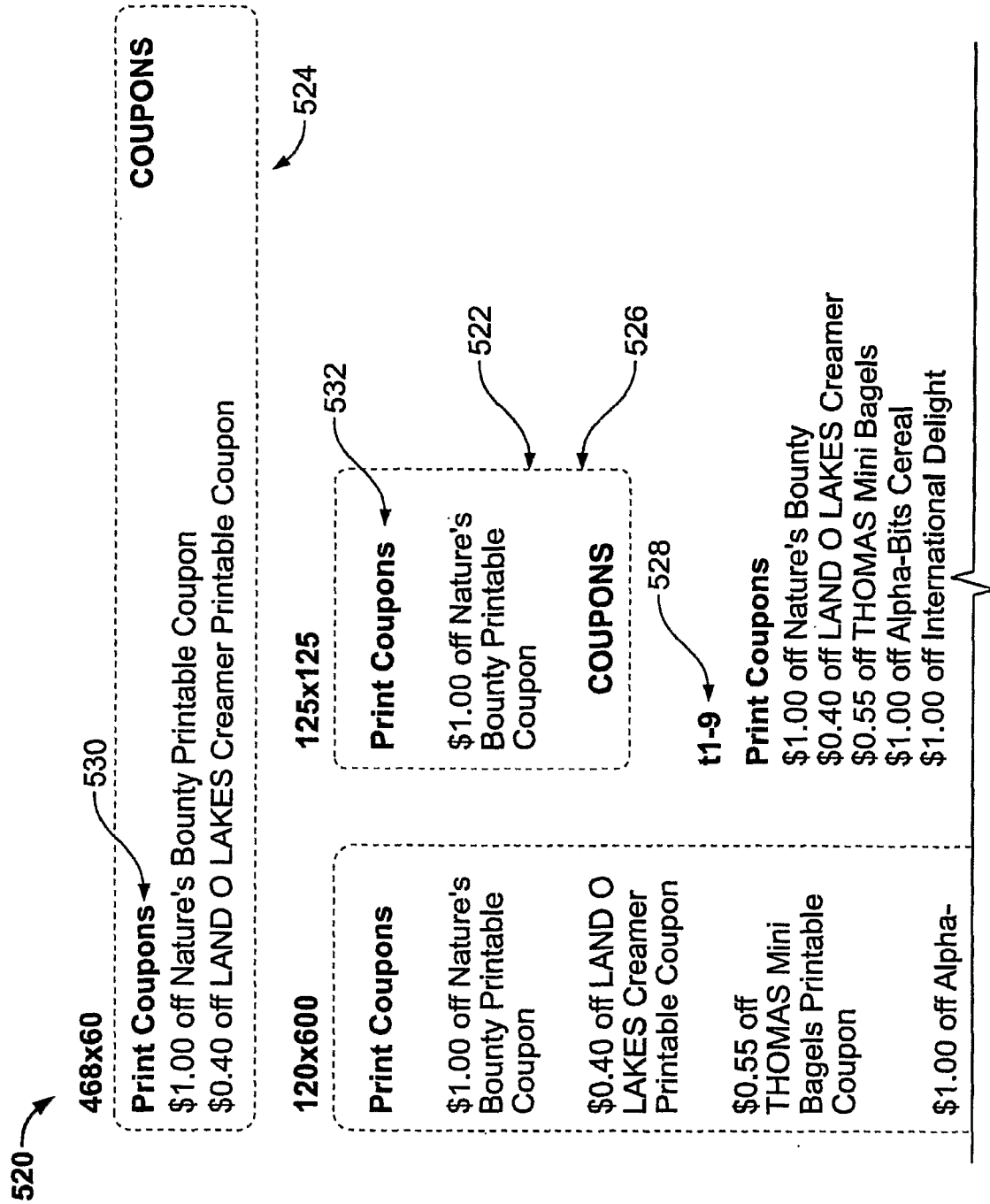


FIG. 5B

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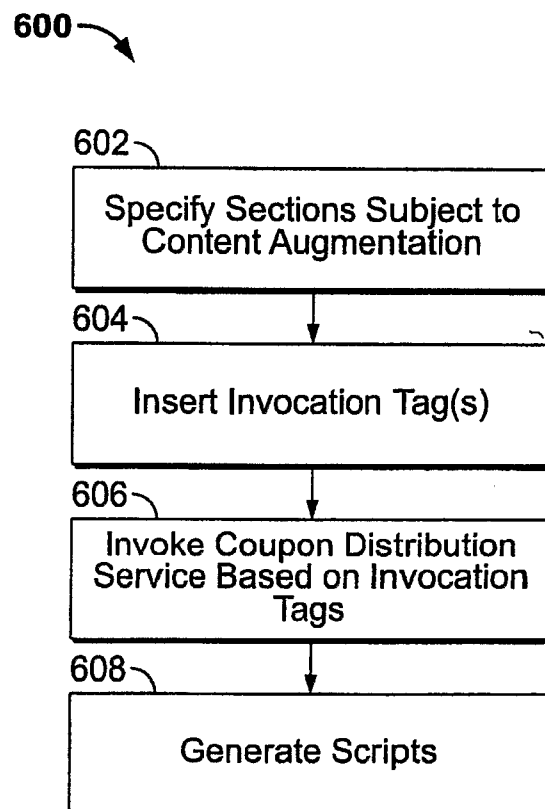


FIG. 6

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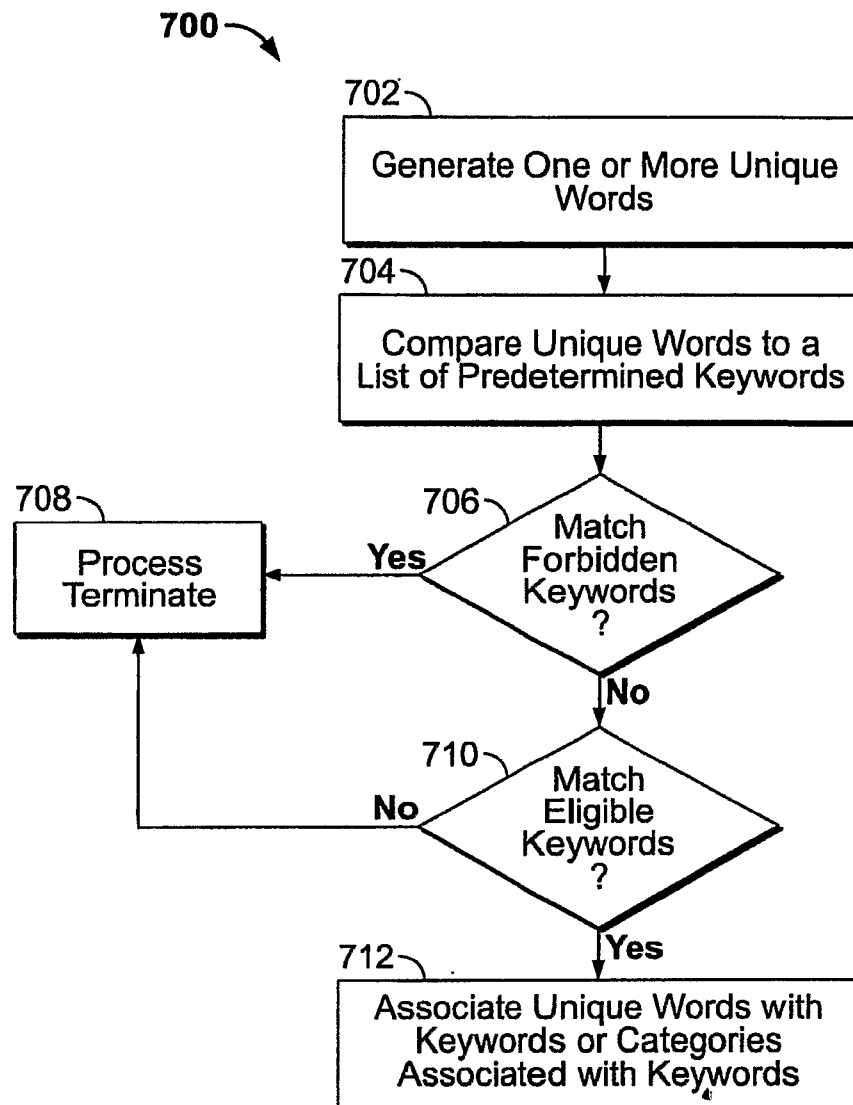


FIG. 7

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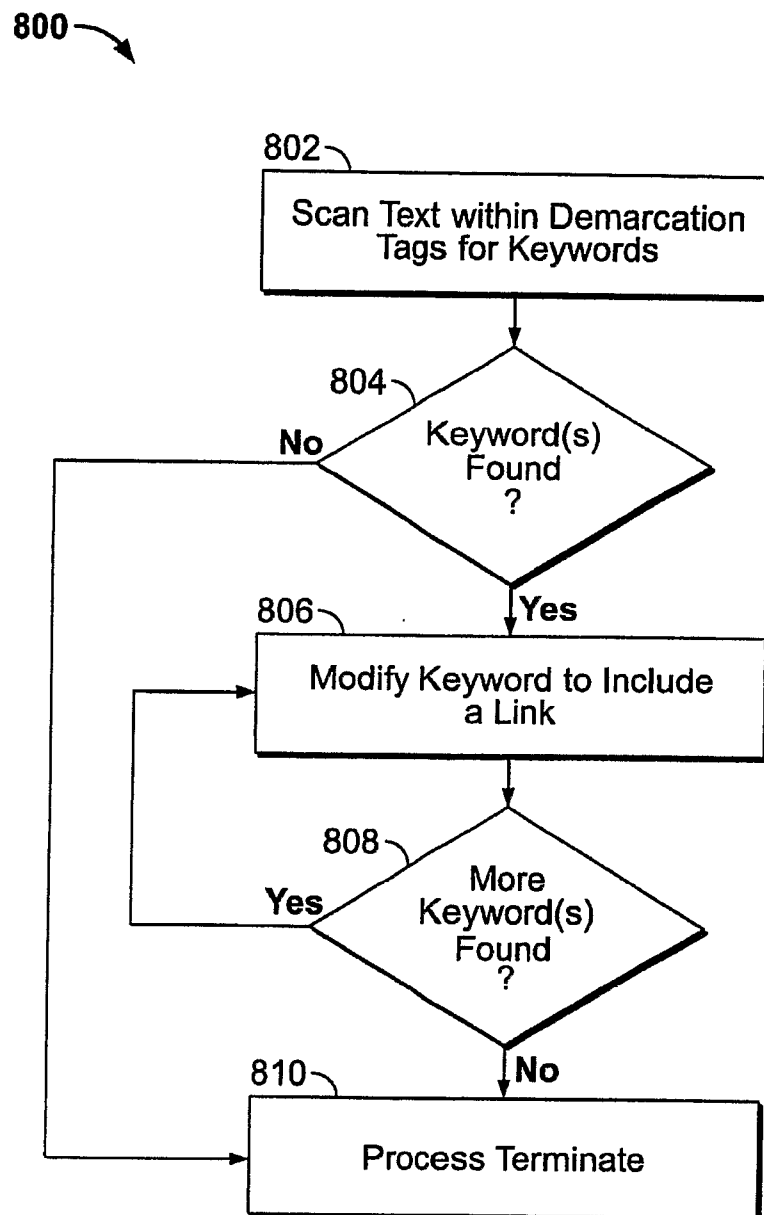


FIG. 8