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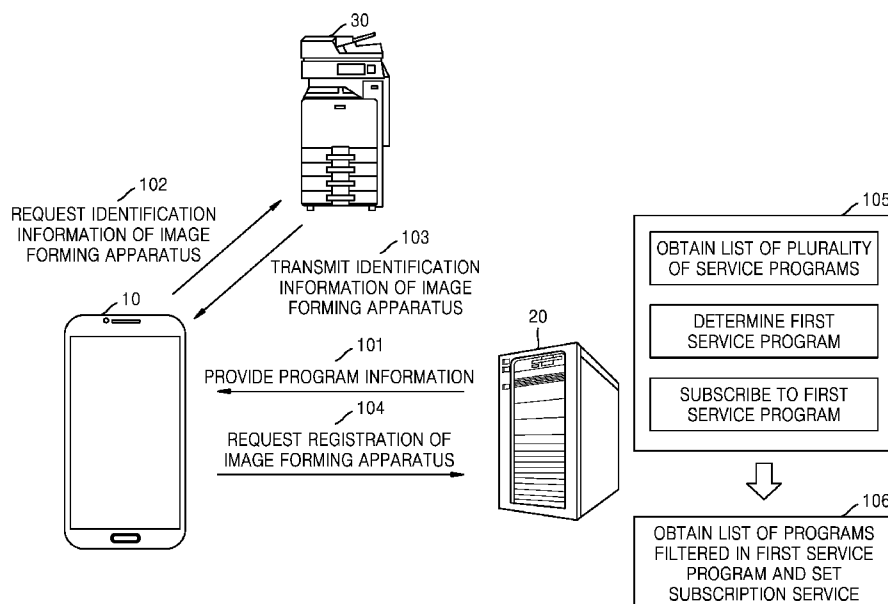
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(54) **Title:** PROVIDING SERVICE PROGRAM BASED ON INFORMATION OF IMAGE FORMING APPARATUS AND USER

FIG. 1



(57) **Abstract:** An example client device includes a communication unit, a user interface unit, a processor, and a memory to store instructions executable by the processor. The processor, by executing the instructions, is to obtain, through the communication unit from a server providing at least one service program, subscription information of a first image forming apparatus for at least one service in a first service program determined based on identification information of the first image forming apparatus and registration information of a user of the first image forming apparatus, and display, through the user interface unit, the subscription information of the first image forming apparatus.



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- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
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PROVIDING SERVICE PROGRAM BASED ON INFORMATION OF IMAGE FORMING APPARATUS AND USER

BACKGROUND

[0001] An image forming apparatus performs an image forming operation such as printing, copying, scanning, faxing, storage, transmission, and coating. As the image forming operation is performed, a consumable in the image forming apparatus is consumed. The consumable may be replaced periodically according to the workload of the image forming apparatus. Accordingly, the image forming apparatus may need to provide a maintenance service and a service for increasing user convenience.

BRIEF DESCRIPTION OF THE DRAWINGS

[0002] FIG. 1 illustrates a process of providing a subscription service to an image forming apparatus and a user based on identification information of an image forming apparatus and registration information of a user according to an example.

[0003] FIG. 2 is a flowchart illustrating a method of a client device that obtains subscription information of an image forming apparatus and displays the subscription information according to an example.

[0004] FIG. 3 is a flowchart illustrating a method of a server that sets a subscription service of an image forming apparatus and provides subscription information to a client device according to an example.

[0005] FIG. 4 is a flowchart illustrating a method of a server that determines a first service program from among a plurality of service programs and sets a service in the first service program as a subscription service according to an example.

[0006] FIG. 5 is a diagram illustrating a service program according to an example.

[0007] FIG. 6 is a diagram illustrating a process of determining a service

program based on identification information of an image forming apparatus and registration information of a user according to an example.

[0008] FIG. 7 is a flowchart illustrating a method of a server that sets a subscription service of an image forming apparatus when a user registers the image forming apparatus according to an example.

[0009] FIG. 8 is a diagram illustrating a process of determining a class of a service program to which a user may subscribe in an image forming apparatus when an event in which the image forming apparatus is registered occurs according to an example.

[0010] FIG. 9 is a diagram illustrating a service in a service program according to an example.

[0011] FIG. 10 is a diagram illustrating an operation between a plurality of servers, the operation being performed to register a subscription to a service program provided to an image forming apparatus according to an example.

[0012] FIG. 11 is a diagram illustrating an operation between a plurality of servers, the operation being performed to provide a list of services in a service program according to an example.

[0013] FIG. 12 is a diagram illustrating an operation between a client device and a plurality of servers, the operation being performed to set, as a subscription service, a first service selected by a user according to an example.

[0014] FIG. 13 is a block diagram of a client device according to an example.

[0015] FIG. 14 is a block diagram of a server according to an example.

[0016] FIG. 15 is a diagram illustrating instructions stored in a computer-readable storage medium according to an example.

[0017] FIG. 16 is a diagram illustrating instructions stored in a computer-readable storage medium according to an example.

DETAILED DESCRIPTION

[0018] A subscription service related to an image forming apparatus may include a service that supplies ink or toner cartridges according to consumption

of consumables such as ink and toner cartridges. Because the types of consumables may be different for different models of image forming apparatus, a service suitable for each of the image forming apparatuses is required. In addition, because policies are different according to countries or regions using the image forming apparatus, the types of services that may be provided may be different for each country or region. Accordingly, by considering identification information of the image forming apparatus and country information of a user, a service to which a user may subscribe through the image forming apparatus may be efficiently provided.

[0019] Examples of the present disclosure will be described more fully hereinafter with reference to the accompanying drawings so that they may be easily implemented by one of ordinary skill in the art. However, the present disclosure may be implemented in various different forms and is not limited to the examples described herein.

[0020] A "client device" may be a device that receives a user's command and displays information processed according to the user's command. For example, the client device may be a device such as a computer, a personal computer (PC), a tablet PC, a personal digital assistant (PDA), a laptop, a smart phone, a mobile phone, or the like. A program related to the operation of an image forming apparatus or a server may be installed in the client device. In addition, the client device may transmit and receive information to and from an image forming apparatus or a server through a program installed in the client device. In addition, the client device may transmit information received from an image forming apparatus to a server, and may transmit information received from a server to an image forming apparatus.

[0021] The term "image forming apparatus" may refer to any type of apparatus, such as a printer, a copier, a scanner, a fax machine, a multi-function printer (MFP), or a display device, which may perform an image forming operation. In addition, the image forming apparatus may be a two-dimensional (2D) image forming apparatus or a three-dimensional (3D) image forming apparatus. An "operation performed by an image forming apparatus" may involve printing, copying, scanning, faxing, storing, transmitting, coating, or the like.

[0022] A "server" may be a device that provides a service to which a user may subscribe through an image forming apparatus, and may provide information on the set service to a client device. The server may create, search, change, delete, or store information or data related to a service to which a user may subscribe.

[0023] A "service" may be an act of providing a consumable, a maintenance operation, a service operation, or the like to an image forming apparatus to support various operations of the image forming apparatus. For example, the service may include a paper delivery service, a toner supply service, an image forming apparatus inspection service, a consumable replacement service, a fixed-rate service related to the image forming apparatus, or the like. In addition, the service may be classified as a paid service or a free service according to whether the user is charged or not.

[0024] A "service program" may refer to services set as one group to satisfy a certain condition or a certain purpose. For example, the service program may be a group of services consisting of at least two services according to a certain criterion. For example, the certain criterion may be a criterion related to information on an image forming apparatus and information on a user.

[0025] The term "subscription" may denote that a user pays a fixed amount and receives a product or service on a regular basis. The term "subscription information" may refer to information on a service program or service to which a user subscribes through an image forming apparatus. For example, the subscription information may be information on a list of services to which a user subscribes, information on a list of services to which a user may subscribe, or the like. For example, the subscription information may include a name of a certain service, a service to be provided, the presence or absence of billing for the provision of a service, a service provision time, or the like.

[0026] FIG. 1 illustrates a process of providing a subscription service to an image forming apparatus and a user based on identification information of an image forming apparatus and registration information of a user according to an example.

[0027] Referring to FIG. 1, a server 20 may provide program information to

a client device 10 in operation 101. For example, the program information may be information on a program to which a user may subscribe through the client device 10. In operation 102, the client device 10 may request identification information of an image forming apparatus 30 from the image forming apparatus 30. In this case, the identification information of the image forming apparatus 30 may include information that is not unique such as model information of the image forming apparatus 30, or the like, and may include information capable of uniquely identifying the image forming apparatus 30 such as serial number information, media access control (MAC) address information of the image forming apparatus, or the like. In operation 103, the image forming apparatus 30 may transmit identification information of the image forming apparatus 30 to the client device 10.

[0028] In operation 104, the client device 10 may request the server 20 to register the image forming apparatus 30 based on the identification information of the image forming apparatus 30 while transmitting the identification information of the image forming apparatus 30 to the server 20.

[0029] In operation 105, the server 20 may obtain a list of a plurality of service programs based on the identification information of the image forming apparatus 30 and the registration information of a user of the image forming apparatus 30. For example, the registration information of the user may include information on a country or a region in which the user uses the image forming apparatus 30. In addition, the registration information of the user may include identification (ID) information of a program to which the user subscribes through the image forming apparatus 30.

[0030] The server 20 may determine a first service program that satisfies a condition from a list of a plurality of service programs. For example, the first service program may include a plurality of services that are available in the image forming apparatus 30. The server 20 may set the first service program as a service program to which a user will subscribe.

[0031] In operation 106, the server 20 may obtain a list of programs, which is filtered in the first service program. The server 20 may set a service included in the filtered list of programs as a subscription service.

[0032] FIG. 2 is a flowchart illustrating a method of a client device that obtains subscription information of an image forming apparatus and displays the subscription information according to an example.

[0033] Referring to FIG. 2, the client device 10 may obtain identification information of a first image forming apparatus from the first image forming apparatus in operation 210. For example, the client device 10 may request the identification information of the first image forming apparatus from the first image forming apparatus. The client device 10 may receive the identification information of the first image forming apparatus from the first image forming apparatus. For example, the identification information of the first image forming apparatus may include model information of the first image forming apparatus, information capable of uniquely recognizing the first image forming apparatus, or the like.

[0034] In operation 220, the client device 10 may request registration of the first image forming apparatus from the server 20 that provides at least one service program for image forming apparatuses, based on the identification information of the first image forming apparatus. For example, the registration of the first image forming apparatus may refer to registering ID information of a first user, ID information of the first image forming apparatus, ID information of a service program supported by the first image forming apparatus together, or the like.

[0035] For example, the at least one service program may include a service that may be supported by an image forming apparatus. For example, the service that may be supported by the image forming apparatus may include a toner supply service, a paper delivery service, an image forming apparatus inspection service, or the like.

[0036] In operation 230, the client device 10 may obtain, from the server 20, subscription information of the first image forming apparatus for at least one service included in a first service program determined based on the identification information of the first image forming apparatus and registration information of a user of the first image forming apparatus.

[0037] For example, the registration information of the user may include information on a country in which the user uses the first image forming apparatus,

information on a region in which the user uses the first image forming apparatus, user identification information, ID information of a service program used by the user or a group to which the user belongs, or the like.

[0038] For example, the first service program may be a service program that satisfies a certain condition from among a plurality of service programs. For example, the certain condition may be a condition corresponding to model information included in the identification information of the first image forming apparatus, type information of the first image forming apparatus set according to a certain criterion, country information included in the registration information of the user, or the like. For example, the type information may include information on consumables allowed to be used in the first image forming apparatus.

[0039] For example, because conditions respectively corresponding to a plurality of service programs are different from one another, services in each of the plurality of service programs are not the same as one another among the plurality of service programs. Accordingly, each service program may provide a list of services set as one group, and the plurality of service programs may provide lists of different services, respectively.

[0040] In operation 240, the client device 10 may display the subscription information of the first image forming apparatus.

[0041] For example, the client device 10 may display a list of at least one service included in the first service program. In addition, the client device 10 may display at least one service included in the first service program by distinguishing between a free service and a paid service.

[0042] For example, the client device 10 may receive an input for selecting a first service in the list. The client device 10 may display subscription information on the first service based on the input for selecting the first service.

[0043] When a second image forming apparatus different from the first image forming apparatus is registered in the server 20, the client device 10 may obtain subscription information of the second image forming apparatus. In an example, the subscription information of the second image forming apparatus may be determined based on a result of comparing the class of a second service program, to which a user may subscribe in the second image forming apparatus,

with the class of the first service program. The client device 10 may display the subscription information of the second image forming apparatus.

[0044] For example, when the class of the second service program is lower than the class of the first service program, the subscription information of the second image forming apparatus may include information on a service within the class of the first service program.

[0045] For example, when the class of the second service program is higher than the class of the first service program, the subscription information of the second image forming apparatus may include information on a service within the class of the second service program.

[0046] FIG. 3 is a flowchart illustrating a method of a server that sets a subscription service of an image forming apparatus and provides subscription information to a client device according to an example.

[0047] Referring to FIG. 3, the server 20 may obtain identification information of a first image forming apparatus and registration information of a user who uses the first image forming apparatus in operation 310.

[0048] In operation 320, the server 20 may set at least one service in a first service program as a subscription service provided to the first image forming apparatus, based on the identification information of the first image forming apparatus and the registration information of the user. An example process of setting a subscription service of a first image forming apparatus will be described with reference to FIG. 4.

[0049] In operation 330, the server 20 may provide subscription service information of the first image forming apparatus to the client device 10 of the user.

[0050] FIG. 4 is a flowchart illustrating a method of a server that determines a first service program from among a plurality of service programs and sets a service in the first service program as a subscription service according to an example.

[0051] Referring to FIG. 4, the server 20 may determine at least one service program, which satisfies conditions corresponding to model information included in identification information of a first image forming apparatus, and country information of a user, from among a plurality of service programs in

operation 410.

[0052] For example, the server 20 may store a plurality of service programs in advance. Each of the plurality of service programs may include services set as one group based on model information of an image forming apparatus, type information set according to information on consumables allowed to be used in the image forming apparatus, information on a country in which a certain service is provided, or the like. In addition, each of the plurality of service programs may provide a list of services set as one group.

[0053] In operation 420, the server 20 may determine a first service program from among at least one service program, based on type information of the first image forming apparatus set according to information on consumables allowed to be used in the first image forming apparatus.

[0054] In operation 430, the server 20 may set a service in the first service program, which is available in the first image forming apparatus, as a subscription service of the first image forming apparatus.

[0055] FIG. 5 is a diagram illustrating a service program according to an example.

[0056] A service may refer to an activity related to production or consumption in addition to material goods. The service may refer to a series of actions for a service provider to meet a user's desired needs. For example, the service may be an action for providing convenience for a user to use an image forming apparatus. For example, the service may be an act of providing a service or a material for the image forming apparatus to operate efficiently, for user convenience, or the like. As an example, the service may include a paper delivery service, a toner supply service, an image forming apparatus inspection service, a consumable replacement service, a fixed-rate service related to the image forming apparatus, or the like. In addition, the service may be classified into a paid service or a free service according to whether to charge the user.

[0057] A service program may refer to services set as one group to satisfy a certain condition or a certain purpose. Groups in which a plurality of services are respectively included are different from one another depending on whether at least one condition is satisfied, and when the groups are different from one

another, service programs in the groups are also different from one another. Each of the service programs may provide a list of services set as one group. Therefore, when the service programs are different, lists of services to be provided are also different.

[0058] For example, each of the service programs may be a group of services that may be determined according to a certain condition and supported by the image forming apparatus. For example, the certain condition may include identification information of the image forming apparatus, type information of the image forming apparatus, registration information of a user using the image forming apparatus, or the like.

[0059] For example, the identification information of the image forming apparatus may include model information of the image forming apparatus, information by which the image forming apparatus may be distinguished from other image forming apparatuses, or the like.

[0060] For example, the type information of the image forming apparatus may be information set according to information on a consumable allowed to be used in the image forming apparatus. For example, the consumable may include a toner cartridge, an organic photo conductor (OPC) drum, a roller, or the like. As an example, the type information of the image forming apparatus may be set according to whether a model uses only consumables distributed through a preset route.

[0061] For example, the registration information of a user may include information on a country and a region in which the user uses the image forming apparatus, identification information of the user, identification information of a service program used by the user, or the like.

[0062] Referring to FIG. 5, the plurality of service programs may be classified into a first service program, a second service program, and a third service program. For example, for the plurality of service programs, conditions for satisfying country information of the user, model information of the image forming apparatus, type information of the image forming apparatus, or the like may be different.

[0063] In addition, the plurality of service programs may be classified

according to the classes of the service programs. For example, a service program having a higher class may include a service included in a service program having a lower class. For example, the class of the first service program may be a first class, the class of the second service program may be a second class, and the class of the third service program may be a third class.

[0064] An image 510 of FIG. 5 is a diagram illustrating condition information for subscribing to the first service program. For example, first country information corresponding to the first service program may be information indicating a certain country (e.g., the United States). For example, first model information corresponding to the first service program may be information indicating a model number (e.g., 6GW99A or 6GX01A). For example, first type information may be information indicating a type of an image forming apparatus using only consumables allowed to be used in the image forming apparatus. For example, an image forming apparatus included in the first model information may be set among image forming apparatuses having the first type information. In this case, the type of image forming apparatus that satisfies condition information for subscribing to the first service program may be a first type.

[0065] An image 520 of FIG. 5 is a diagram illustrating condition information for subscribing to a second service program. For example, second country information corresponding to the second service program may be information indicating a plurality of countries (e.g., the United States, the Czech Republic, and Poland). For example, second model information corresponding to the second service program is not limited to a specific model number and may be information indicating an arbitrary model number. For example, second type information may be information indicating a type of an image forming apparatus that allows the use of compatible consumables in the image forming apparatus. For example, third type information may be information indicating a type of an image forming apparatus in which country information of a user indicates a specific country. For example, the specific country may be the Czech Republic or Poland.

[0066] An image 530 of FIG. 5 is a diagram illustrating condition information for subscribing to a third service program. For example, third country

information corresponding to the third service program may be information indicating an arbitrary country. Third model information corresponding to the third service program may be information indicating an arbitrary model number. For example, fourth type information may be information indicating a type of an image forming apparatus that does not correspond to a first type, a second type, or a third type.

[0067] FIG. 6 is a diagram illustrating a process of determining a service program based on identification information of an image forming apparatus and registration information of a user according to an example.

[0068] Referring to an image 610 of FIG. 6, country information of a first user indicates the United States, and model information of a first image forming apparatus indicates a model number 6GW99A. In addition, when bizModel is E2E, it indicates that the first image forming apparatus has first type information.

[0069] The server 20 may detect, from a plurality of service programs, a service program that satisfies conditions of the model information of the first image forming apparatus and the country information of the first user. Referring to condition information of a plurality of service programs described with reference to FIG. 5, the server 20 may detect a first service program, a second service program, and a third service program. The server 20 may detect a first service program having the first type information from among detected service programs. The server 20 may determine as the first service program a service program to which the first user may subscribe through the first image forming apparatus.

[0070] Referring to an image 620 of FIG. 6, country information of a second user indicates the United States, and model information of a second image forming apparatus indicates a model number 5GF01A. In addition, when bizModel is Flex, it indicates that the second image forming apparatus has second type information.

[0071] The server 20 may detect, from a plurality of service programs, a service program that satisfies conditions of the model information of the second image forming apparatus and the country information of the second user. Referring to condition information of a plurality of service programs described with reference to FIG. 5, the server 20 may detect a second service program and a

third service program. The server 20 may detect a second service program having second type information from among the detected service programs. The server 20 may determine as the second service program a service program to which the second user may subscribe through the second image forming apparatus.

[0072] Referring to an image 630 of FIG. 6, country information of a third user indicates the Czech Republic, and model information of a third image forming apparatus indicates a model number 1GH05A. Because the country information indicates the Czech Republic, the third image forming apparatus has third type information.

[0073] The server 20 may detect, from a plurality of service programs, a service program that satisfies conditions of the model information of the third image forming apparatus and the country information of the third user. Referring to condition information of a plurality of service programs described with reference to FIG. 5, the server 20 may detect a second service program and a third service program. The server 20 may detect a second service program having the third type information from among detected service programs. The server 20 may determine as the second service program a service program to which the third user may subscribe through the third image forming apparatus.

[0074] Referring to an image 640 of FIG. 6, country information of a fourth user indicates Korea, and a model number of a fourth image forming apparatus indicates 0GK88A. The fourth image forming apparatus has fourth type information.

[0075] The server 20 may detect, from a plurality of service programs, a service program that satisfies conditions of model information of the fourth image forming apparatus and country information of the fourth user. Referring to condition information of a plurality of service programs described with reference to FIG. 5, the server 20 may detect a third service program. The server 20 may determine as the third service program a service program to which the fourth user may subscribe through the fourth image forming apparatus.

[0076] FIG. 7 is a flowchart illustrating a method of a server that sets a subscription service of an image forming apparatus when a user registers the image forming apparatus according to an example.

[0077] Referring to FIG. 7, the server 20 may detect an event of registering a second image forming apparatus based on registration information of a user and identification information of the second image forming apparatus in operation 710. In this case, the second image forming apparatus may be an image forming apparatus registered after the user has previously registered a first image forming apparatus in the server 20.

[0078] In operation 720, the server 20 may obtain class information of a second service program to which a user may subscribe in the second image forming apparatus, and class information of a first service program to which the user subscribes in the first image forming apparatus.

[0079] In operation 730, the server 20 may determine whether the class of the first service program is higher than the class of the second service program. When the class of the first service program is higher than the class of the second service program, the server 20 may set a subscription service of the second image forming apparatus within the class of the first service program in operation 740.

[0080] On the other hand, when the class of the second service program is higher than the class of the first service program, the server 20 may set a subscription service of the second image forming apparatus within the class of the second service program in operation 750.

[0081] FIG. 8 is a diagram illustrating a process of determining a class of a service program to which a user may subscribe in an image forming apparatus when an event in which the image forming apparatus is registered occurs according to an example.

[0082] Referring to FIG. 8, when a user registers in the server 20 a first image forming apparatus through which the user may subscribe to a certain service program having a certain class, in a state in which no image forming apparatus is registered in the server 20, the server 20 may update ID information of a program included in registration information of the user to a certain class. In addition, the highest class of a service program to which a user may subscribe in the first image forming apparatus may be a certain class.

[0083] For example, when a user registers a second image forming

apparatus through which the user may subscribe to a service program having a second class, in a state in which the user has subscribed to a third service program having a third class through the first image forming apparatus, the server 20 may update the class of ID information of a program included in registration information of the user to the second class. In addition, the highest class of a service program to which the user may subscribe in the second image forming apparatus may be the second class. In this case, the highest class of a service program to which the user may subscribe in the first image forming apparatus may be the third class.

[0084] For example, when a user registers a second image forming apparatus through which the user may subscribe to a service program having a first class, in a state in which the user has subscribed to a third service program having a third class through the first image forming apparatus, the server 20 may update the class of ID information of a program included in registration information of the user to the first class. In addition, the highest class of a service program to which the user may subscribe in the second image forming apparatus may be the first class.

[0085] For example, when a user registers a second image forming apparatus through which the user may subscribe to a service program having a first class, in a state in which the user has subscribed to a second service program having a second class through the first image forming apparatus, the server 20 may update the class of ID information of a program included in registration information of the user to the first class. In addition, the highest class of a service program to which the user may subscribe in the second image forming apparatus may be the first class. Afterward, when a user registers a third image forming apparatus through which the user may subscribe to a service program having a third class, the server 20 may maintain the class of ID information of a program included in registration information of the user as the first class. In addition, the highest class of a service program to which the user may subscribe in the third image forming apparatus may be the first class.

[0086] For example, when a user registers a second image forming apparatus through which the user may subscribe to a service program having a

third class, in a state in which the user has subscribed to a second service program having a second class through the first image forming apparatus, the server 20 may maintain the class of ID information of a program included in registration information of the user as the second class. In addition, the highest class of a service program to which the user may subscribe in the second image forming apparatus may be the second class.

[0087] Similarly, when a user registers a second image forming apparatus through which the user may subscribe to a service program having a second class or less, in a state in which the user has subscribed to a first service program having a first class through the first image forming apparatus, the server 20 may maintain the class of ID information of a program included in registration information of the user as the first class. In addition, the highest class of a service program to which the user may subscribe in the second image forming apparatus may be the first class.

[0088] That is, the ID information of a program included in the registration information of a user may be determined according to a service program having the highest class from among service programs to which an image forming apparatus registered by the user subscribes. In addition, when ID information of a program is updated, the updated ID information of the program may be applied only to an image forming apparatus registered after the update.

[0089] FIG. 9 is a diagram illustrating a service in a service program according to an example.

[0090] FIG. 9 is a diagram illustrating an example of a second service program and services constituting the second service program. Referring to an image 910 of FIG. 9, second country information corresponding to a second service program may be information indicating the United States, the Czech Republic, and Poland. For example, second model information corresponding to the second service program is not limited to a specific model number and may be information indicating an arbitrary model number.

[0091] An image 920 of FIG. 9 shows condition information for subscribing to an unlimited paper service. Country information corresponding to the unlimited paper service may be information indicating an arbitrary country, and model

information corresponding to the unlimited paper service may be information indicating a model number 5GF01A or 1GH05A. Because there is information corresponding to pricingPlanIdList, the unlimited paper service may be a paid service.

[0092] An image 930 of FIG. 9 shows condition information for subscribing to an automatic toner supply service. Country information corresponding to the automatic toner supply service may indicate the United States, and model information corresponding to the automatic toner supply service may be information indicating a model number 1GH05A. Because there is information corresponding to pricingPlanIdList, the automatic toner supply service may be a paid service.

[0093] For example, country information of a first user may indicate the United States, and model information of a first image forming apparatus may indicate a model number 1GH05A. In this case, the model information of the first image forming apparatus and the country information of the first user satisfy a condition for subscribing to the second service program and satisfy a condition for subscribing to the unlimited paper service and the automatic toner supply service included in the second service program. Accordingly, the first user may subscribe to both the unlimited paper service and the automatic toner supply service, which are included in the second service program, through the first image forming apparatus. The server 20 may obtain a first list including an unlimited paper service and an automatic toner supply service and provide the first list to the client device 10 of the first user. For example, the client device 10 may receive an input for selecting the automatic toner supply service from the first list and transmit the received input to the server 20. The server 20 may perform subscription setting for the automatic toner supply service.

[0094] For example, country information of a second user may indicate the Czech Republic, and model information of a second image forming apparatus may indicate a model number 5GF01A. In this case, the model information of the second image forming apparatus and the country information of the second user satisfy a condition for subscribing to the second service program and satisfy a condition for subscribing to the unlimited paper service included in the second

service program. Accordingly, the second user may subscribe to the unlimited paper service, which is included in the second service program, through the second image forming apparatus. The server 20 may obtain a second list including an unlimited paper service and provide the second list to the client device 10 of the second user.

[0095] For example, country information of a third user may indicate the United States, and model information of a third image forming apparatus may indicate a model number 5GF01A. In this case, the model information of the third image forming apparatus and the country information of the third user satisfy a condition for subscribing to the second service program and satisfy a condition for subscribing to the unlimited paper service included in the second service program. Accordingly, the third user may subscribe to the unlimited paper service, which is included in the second service program, through the third image forming apparatus. The server 20 may obtain a third list including an unlimited paper service and provide the third list to the client device 10 of the third user.

[0096] The example operations of the server 20 described with reference to FIGS. 1 to 9 may be performed by a plurality of servers, that is, first to third servers 20-1, 20-2, and 20-3, to be described with reference to FIGS. 10 to 12.

[0097] FIG. 10 is a diagram illustrating an operation between a plurality of servers, the operation being performed to register a subscription to a service program provided to an image forming apparatus according to an example.

[0098] Referring to FIG. 10, the first server 20-1 may provide program information to the client device 10 in operation 1001. For example, the program information may be information on a program to which a user may subscribe through the client device 10. In operation 1002, the first server 20-1 may receive, from the client device 10, a request for registration of a first image forming apparatus based on identification information of the first image forming apparatus.

[0099] In operation 1003, the first server 20-1 may request information for setting a subscription to a service program of the first image forming apparatus from the second server 20-2. In operation 1004, the second server 20-2 may obtain information for setting a subscription to the service program of the first image forming apparatus and transmit the obtained information to the first server

20-1.

[00100] For example, the first server 20-1 may obtain a token generated as a user logs in from the client device 10. The first server 20-1 may request user information from the second server 20-2 based on the token. The second server 20-2 may identify a user based on information extracted from the token and transmit registration information of the user stored in the second server 20-2 to the first server 20-1. The registration information of the user may include identification information of the user and country information of the user. In addition, the first server 20-1 may request type information of the first image forming apparatus from the second server 20-2 based on the identification information of the first image forming apparatus. The second server 20-2 may transmit the type information of the first image forming apparatus to the first server 20-1.

[00101] In operation 1005, the first server 20-1 may request a list of service programs from the second server 20-2, based on the identification information of the first image forming apparatus and the registration information of the user. In operation 1006, the second server 20-2 may obtain a list of service programs and provide the obtained list to the first server 20-1. For example, the second server 20-2 may obtain a list including a service program that satisfies conditions corresponding to the identification information of the first image forming apparatus and the country information included in the registration information of the user, and may transmit the list to the first server 20-1.

[00102] In operation 1007, the first server 20-1 may select a first service program that satisfies a certain condition from the list. For example, the certain condition may be a condition in which type information of an image forming apparatus satisfies preset type information. In operation 1008, the first server 20-1 may request the setting of a subscription to the first service program from the second server 20-2.

[00103] In operation 1009, the second server 20-2 may provide subscription information of the first service program to the first server 20-1. In operation 1010, the second server 20-2 may request the third server 20-3 to register a subscription event of the first service program for the first image forming apparatus.

[00104] FIG. 11 is a diagram illustrating an operation between a plurality of servers, which is performed to provide a list of services in a service program according to an example.

[00105] Referring to FIG. 11, the first server 20-1 may request information on a subscription event of the first service program from the third server 20-3 in operation 1101. In operation 1102, the third server 20-3 may check whether a subscription event of the first service program has occurred, and may provide the first server 20-1 with information on the subscription event that has occurred. The third server 20-3 may be a device that asynchronously transmits and receives information on an event between the first server 20-1 and the second server 20-2.

[00106] In operation 1103, the first server 20-1 may request the second server 20-2 to update ID information of a service program included in registration information of a user. In operation 1104, the second server 20-2 may update the ID information of the service program included in the registration information of the user, based on a result of comparing ID information of a program, which is included in the information on a subscription event obtained from the third server 20-3, with ID information of a service program which is included in the registration information of the user. The second server 20-2 may provide the first server 20-1 with the updated ID information of the service program included in the registration information of the user.

[00107] In operation 1105, the first server 20-1 may request a list of services included in the service program from the second server 20-2. In operation 1106, the second server 20-2 may provide, to the first server 20-1, a list of services included in the service program.

[00108] In operation 1107, the first server 20-1 may filter a list of services according to a certain criterion and obtain the filtered list of services. For example, the certain criterion may be a criterion for detecting a service provided for free.

[00109] In operation 1108, the first server 20-1 may request the second server 20-2 to add a service to the filtered list of services. In operation 1109, the second server 20-2 may add a service to the filtered list of services and provide an updated list of services to the first server 20-1.

[00110] FIG. 12 is a diagram illustrating an operation between a client device and a plurality of servers, which is performed to set, as a subscription service, a first service selected by a user according to an example.

[00111] Referring to FIG. 12, the client device 10 may request a list of services included in a service program from the first server 20-1 in operation 1201. In operation 1202, the first server 20-1 may request a list of services included in the service program from the second server 20-2. In operation 1203, the second server 20-2 may provide a list of services included in the service program to the first server 20-1. In operation 1204, the first server 20-1 may provide a list of services included in the service program to the client device 10.

[00112] In operation 1205, the client device 10 may display a list of services. The client device 10 may receive an input for selecting a first service from the list. In operation 1206, the client device 10 may request the first server 20-1 to set a subscription to the first service.

[00113] In operation 1207, the first server 20-1 may request the second server 20-2 to set a subscription to the first service with respect to a user and a first image forming apparatus. In operation 1208, the second server 20-2 may provide the first server 20-1 with subscription information including a result of setting a subscription to the first service. In operation 1209, the first server 20-1 may provide subscription information of the first service to the client device 10.

[00114] FIG. 13 is a block diagram of a client device according to an example.

[00115] Referring to FIG. 13, the client device 10 may include a communication unit 1310, a user interface unit 1320, a memory 1330, and a processor 1340. However, the illustrated components may be not essential components. The client device 10 may include more or fewer components than the illustrated components. Hereinafter, examples of the components will be described.

[00116] The communication unit 1310 (e.g., transceiver) may perform communication with an external device. For example, the communication unit 1310 may be connected to a network by wire or wirelessly to perform communication with the external device. In this case, the external device may be

an image forming apparatus or a server.

[00117] The user interface unit 1320 may include an input unit for receiving an input for controlling an operation of the client device 10 from a user, and an output unit for displaying information such as a result of the operation of the client device 10 or a state of the client device 10. For example, the user interface unit 1320 may include an operation panel for receiving a user input, a display panel for displaying a screen, or the like.

[00118] For example, the input unit may include a device capable of receiving various types of user input, such as a keyboard, a physical button, a touch screen, a camera, a microphone, or the like. In addition, the output unit may include, for example, a display panel, a speaker, or the like.

[00119] The memory 1330 may store software or programs. The memory 1330 may store at least one program related to the operation of the client device 10 that obtains and displays subscription information of an image forming apparatus for a service in a service program determined based on identification information of the image forming apparatus and registration information of a user of the image forming apparatus.

[00120] The processor 1340 may execute a program stored in the memory 1330, read data or a file stored in the memory 1330, or store a file in the memory 1330. The processor 1340 may execute instructions stored in the memory 1330.

[00121] The processor 1340 may obtain identification information of a first image forming apparatus from the first image forming apparatus through the communication unit 1310. For example, the processor 1340 may request identification information of the first image forming apparatus from the first image forming apparatus through the communication unit 1310. The processor 1340 may receive identification information of the first image forming apparatus from the first image forming apparatus through the communication unit 1310. For example, the identification information of the first image forming apparatus may include model information of the first image forming apparatus, information capable of uniquely recognizing the first image forming apparatus, or the like.

[00122] The processor 1340 may request, through the communication unit 1310, registration of the first image forming apparatus from a server that provides

at least one service program for image forming apparatuses, based on the identification information of the first image forming apparatus. For example, the registration of the first image forming apparatus may refer to registering ID information of a first user, ID information of the first image forming apparatus, ID information of a service program supported by the first image forming apparatus together, or the like.

[00123] For example, the at least one service program may include a service that may be supported by an image forming apparatus. For example, the service that may be supported by the image forming apparatus may include a toner supply service, a paper delivery service, an image forming apparatus inspection service, or the like.

[00124] Through the communication unit 1310, the processor 1340 may obtain, from the server, subscription information of the first image forming apparatus for at least one service included in a first service program determined based on the identification information of the first image forming apparatus and the registration information of the user of the first image forming apparatus.

[00125] For example, the registration information of the user may include information on a country in which the user uses the first image forming apparatus, information on a region in which the user uses the first image forming apparatus, user identification information, ID information of a service program used by the user or a group to which the user belongs, or the like.

[00126] For example, the first service program may be a service program that satisfies a certain condition from among a plurality of service programs. For example, the certain condition may be a condition corresponding to model information included in the identification information of the first image forming apparatus, type information of the first image forming apparatus set according to a certain criterion, country information included in the registration information of the user, or the like. For example, the type information may include information on consumables allowed to be used in the first image forming apparatus.

[00127] For example, because conditions respectively corresponding to a plurality of service programs are different from one another, services in each of the plurality of service programs are not the same as one another among the

plurality of service programs. Accordingly, each service program may provide a list of services set as one group, and the plurality of service programs may provide lists of different services, respectively.

[00128] The user interface unit 1320 may display subscription information of the first image forming apparatus. For example, the user interface unit 1320 may display a list of at least one service included in the first service program. In addition, the user interface unit 1320 may display at least one service included in the first service program by distinguishing between a free service and a paid service.

[00129] For example, the processor 1340 may receive an input for selecting a first service from the list through the user interface unit 1320. The processor 1340 may display, through the user interface unit 1320, subscription information on the first service based on the input for selecting the first service.

[00130] When a second image forming apparatus different from the first image forming apparatus is registered in the server, the processor 1340 may obtain, through the communication unit 1310, subscription information of the second image forming apparatus, which is determined based on a result of comparing the class of a second service program, to which a user may subscribe in the second image forming apparatus, with the class of the first service program. The user interface unit 1320 may display subscription information of the second image forming apparatus.

[00131] For example, when the class of the second service program is lower than the class of the first service program, the subscription information of the second image forming apparatus may include information on a service within the class of the first service program.

[00132] For example, when the class of the second service program is higher than the class of the first service program, the subscription information of the second image forming apparatus may include information on a service within the class of the second service program.

[00133] FIG. 14 is a block diagram of a server according to an example.

[00134] Referring to FIG. 14, the server 20 may include a communication unit 1410, a storage 1420, a memory 1430, and a processor 1440. However, the

illustrated components are not essential components. The server 20 may be include more or fewer components than the illustrated components. Hereinafter, examples of the components will be described.

[00135] The communication unit 1410 (e.g., transceiver) may perform communication with an external device. For example, the communication unit 1410 may be connected to a network by wire or wirelessly to perform communication with the external device. In this case, the external device may be a client device or an image forming apparatus.

[00136] The storage 1420 may store a plurality of service programs. Each of the plurality of service programs may include services set as one group based on model information of an image forming apparatus, type information set according to information on consumables allowed to be used in the image forming apparatus, information on a country in which a certain service is provided, or the like. In addition, each of the plurality of service programs may provide a list of services set as one group.

[00137] The memory 1430 may store software or programs. The memory 1430 may store at least one program related to the operation of the server 20 that sets a service included in a service program as a subscription service of the image forming apparatus based on the identification information of the image forming apparatus and the registration information of the user and provides subscription information on the subscription service to a client device.

[00138] The processor 1440 may execute a program stored in the memory 1430, read data or a file stored in the memory 1430, or store a file in the memory 1430. The processor 1440 may execute instructions stored in the memory 1430.

[00139] The processor 1440 may obtain identification information of a first image forming apparatus and registration information of a user who uses the first image forming apparatus.

[00140] The processor 1440 may set at least one service in a first service program as a subscription service provided to the first image forming apparatus, based on the identification information of the first image forming apparatus and the registration information of the user.

[00141] The processor 1440 may determine at least one service program,

which satisfies conditions corresponding to model information included in the identification information of the first image forming apparatus, and country information of the user, from among a plurality of service programs.

[00142] The processor 1440 may determine a first service program from among at least one service program, based on type information of the first image forming apparatus set according to information on consumables allowed to be used in the first image forming apparatus.

[00143] The processor 1440 may set a service in the first service program, which is available in the first image forming apparatus, as a subscription service of the first image forming apparatus.

[00144] The processor 1440 may provide subscription service information of the first image forming apparatus to a client device of the user.

[00145] FIG. 15 is a diagram illustrating instructions stored in a computer-readable storage medium according to an example.

[00146] Referring to FIG. 15, the computer-readable storage medium 1500 may store instructions related to an example operation of a client device described with reference to FIGS. 1 to 14. For example, the computer-readable storage medium 1500 may store instructions 1510, instructions 1520, instructions 1530, and instructions 1540. The instructions 1510 are used to receive identification information of a first image forming apparatus from the first image forming apparatus, and the instructions 1520 are used to request registration of the first image forming apparatus from a server that provides at least one service program for image forming apparatuses, based on the identification information of the first image forming apparatus. The instructions 1530 are used to obtain subscription information of the first image forming apparatus for at least one service included in a first service program determined based on the identification information of the first image forming apparatus and the registration information of the user of the first image forming apparatus, and the instructions 1540 are used to display the subscription information of the first image forming apparatus.

[00147] FIG. 16 is a diagram illustrating instructions stored in a computer-readable storage medium according to an example.

[00148] Referring to FIG. 16, the computer-readable storage medium 1600

may store instructions related to an example operation of a server described with reference to FIGS. 1 to 14. For example, the computer-readable storage medium 1600 may store instructions 1610, instructions 1620, and instructions 1630. The instructions 1610 are used to obtain identification information of a first image forming apparatus and registration information of a user using the first image forming apparatus, and the instructions 1620 are used to set at least one service in a first service program as a subscription service provided to the first image forming apparatus, based on the identification information of the first image forming apparatus and the registration information of the user. The instructions 1630 are used to provide subscription service information of the first image forming apparatus to a client device of the user.

[00149] The example operation methods of the client device 10, the servers 20, 20-1, 20-2, and 20-3, and the image forming apparatus 30 may be implemented in the form of a non-transitory computer-readable storage media having stored therein instructions or data that can be executed by a computer or processor. The operation methods can be recorded in programs that can be executed on a computer and be implemented through general-purpose digital computers which can run the programs using computer-readable storage media. Examples of the non-transitory computer-readable storage media may include read-only memory (ROM), random-access memory (RAM), flash memory, compact disk (CD)-ROMs, CD-recordables (CD-Rs), CD+Rs, CD-rewritables (CD-RWs), CD+RWs, digital video disk-ROMs (DVD-ROMs), DVD-Rs, DVD+Rs, DVD-RWs, DVD+RWs, DVD-RAMs, Blu-ray disk-ROMs (BD-ROMs), BD-Rs, BD-R low to high (BD-R LTHs), BD-rewritables (BD-REs), magnetic tapes, floppy disks, magneto-optical data storage devices, optical data storage devices, hard disks, solid-state disks (SSDs), and any device capable of storing instructions or software, associated data, data files, and data structures and providing the instructions or software, the associated data, the data files, and the data structures to a processor or computer such that the processor or computer may execute the instructions.

[00150] It should be understood that examples described herein should be considered in a descriptive sense only and not for purposes of limitation.

Descriptions of features or aspects within each example should typically be considered as available for other similar features or aspects in other examples. While one or more examples have been described with reference to the figures, it will be understood by those of ordinary skill in the art that various changes in form and details may be made therein without departing from the spirit and scope as defined by the following claims.

WHAT IS CLAIMED IS:

1. A client device comprising:

a communication unit;

a user interface unit;

a processor; and

a memory to store instructions executable by the processor,

wherein the processor, by executing the instructions, is to:

obtain, through the communication unit from a server providing at least one service program, subscription information of a first image forming apparatus for at least one service in a first service program determined based on identification information of the first image forming apparatus and registration information of a user of the first image forming apparatus, and display, through the user interface unit, the subscription information of the first image forming apparatus.

2. The client device of claim 1,

wherein the first service program includes a service program satisfying a condition from among a plurality of service programs, the condition corresponding to model information included in the identification information of the first image forming apparatus, type information of the first image forming apparatus set according to a certain criterion, or country information included in the registration information of the user, and

wherein the at least one service includes a service available in the first image forming apparatus.

3. The client device of claim 2, wherein the type information includes information on a consumable for use in the first image forming apparatus.

4. The client device of claim 1, wherein the processor, by executing the instructions, is to:

obtain subscription information of a second image forming apparatus in a

case where the second image forming apparatus, which is different from the first image forming apparatus, is registered in the server, and

display, through the user interface unit, the subscription information of the second image forming apparatus.

5. The client device of claim 1, wherein the processor, by executing the instructions, is to:

obtain, through the communication unit, the identification information of the first image forming apparatus from the first image forming apparatus, and

request the server, through the communication unit, to register the first image forming apparatus based on the identification information of the first image forming apparatus.

6. The client device of claim 1, wherein the processor, by executing the instructions, is to perform, through the user interface unit, an operation of displaying a list of the at least one service included in the first service program or an operation of separately displaying a free service and a paid service for the at least one service included in the first service program.

7. The client device of claim 1, wherein the processor, by executing the instructions, is to:

display, through the user interface unit, a list of the at least one service included in the first service program,

receive, through the user interface unit, an input for selecting a first service from the list, and

display, through the user interface unit, subscription information on the first service based on the input.

8. The client device of claim 1,
wherein the at least one service program includes a service supportable by the image forming apparatus, and

wherein the service supportable by the image forming apparatus includes

a toner supply service, a paper delivery service, or an image forming apparatus inspection service.

9. A computer-readable storage medium that stores instructions executable by a processor, the computer-readable storage medium comprising:

instructions to obtain identification information of a first image forming apparatus from the first image forming apparatus;

instructions to request registration of the first image forming apparatus at a server that provides at least one service program, based on the identification information of the first image forming apparatus;

instructions to obtain, from the server, subscription information of the first image forming apparatus for at least one service in a first service program determined based on the identification information of the first image forming apparatus and registration information of a user of the first image forming apparatus; and

instructions to display the subscription information of the first image forming apparatus.

10. A server comprising:

a communication unit;

a storage;

a processor; and

a memory to store instructions executable by the processor,

wherein the processor, by executing the instructions, is to:

obtain identification information of a first image forming apparatus and registration information of a user using the first image forming apparatus,

set at least one service in a first service program as a subscription service provided to the first image forming apparatus based on the identification information of the first image forming apparatus and the registration information of the user, and

provide subscription service information of the first image forming

apparatus to a client device of the user.

11. The server of claim 10, wherein the processor, by executing the instructions, is to:

determine at least one service program that satisfies conditions corresponding to model information included in the identification information of the first image forming apparatus and country information included in the registration information of the user,

determine the first service program from among at least one service program based on type information of the first image forming apparatus set according to information on consumables allowed to be used in the first image forming apparatus, and

set a service in the first service program, which is available in the first image forming apparatus, as a subscription service of the first image forming apparatus.

12. The server of claim 10,

wherein the processor, by executing the instructions, is to store a plurality of service programs in the storage, and

wherein each of the plurality of service programs includes services set as one group based on model information of an image forming apparatus, type information set according to information on consumables allowed to be used in the image forming apparatus, or information on a country in which a certain service is provided.

13. The server of claim 10, wherein the processor, by executing the instructions, is to:

detect an event of registering a second image forming apparatus based on the registration information of the user and identification information of the second image forming apparatus, and

set a subscription service of the second image forming apparatus based on a result of comparing a class of a second service program, to which the user

is capable of subscribing in the second image forming apparatus, with a class of the first service program.

14. The server of claim 13, wherein the processor, by executing the instructions, is to:

set the subscription service of the second image forming apparatus within the class of the first service program in a case where the class of the second service program is lower than the class of the first service program, and

set the subscription service of the second image forming apparatus within the class of the second service program in the case where the class of the second service program is higher than the class of the first service program.

15. The server of claim 10, wherein the processor, by executing the instructions, is to:

transmit, through the communication unit, a list of the at least one service in the first service program to the client device,

receive, through the communication unit from the client device, an input for selecting a first service in the list, and

transmit, through the communication unit, completion information on subscription application for the first service.

FIG. 1

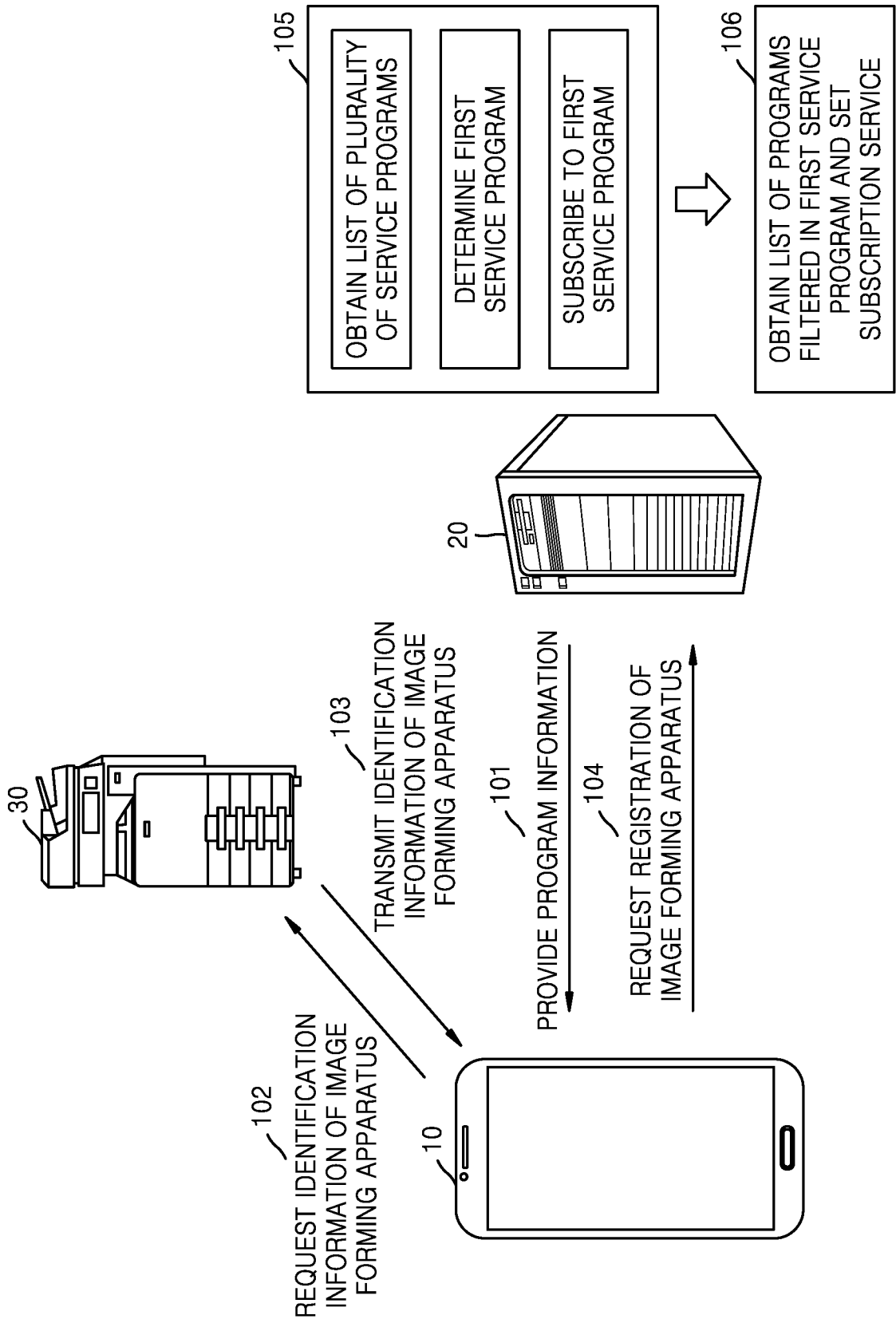


FIG. 2

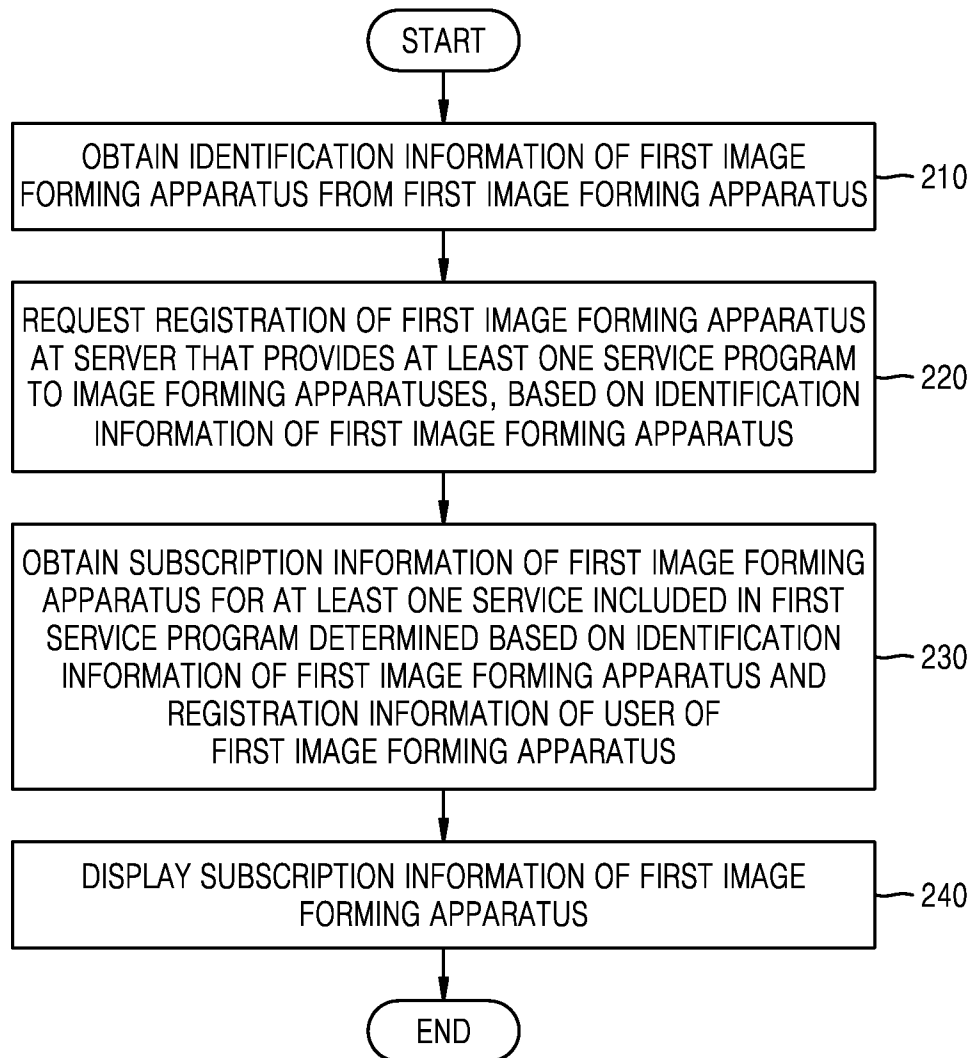


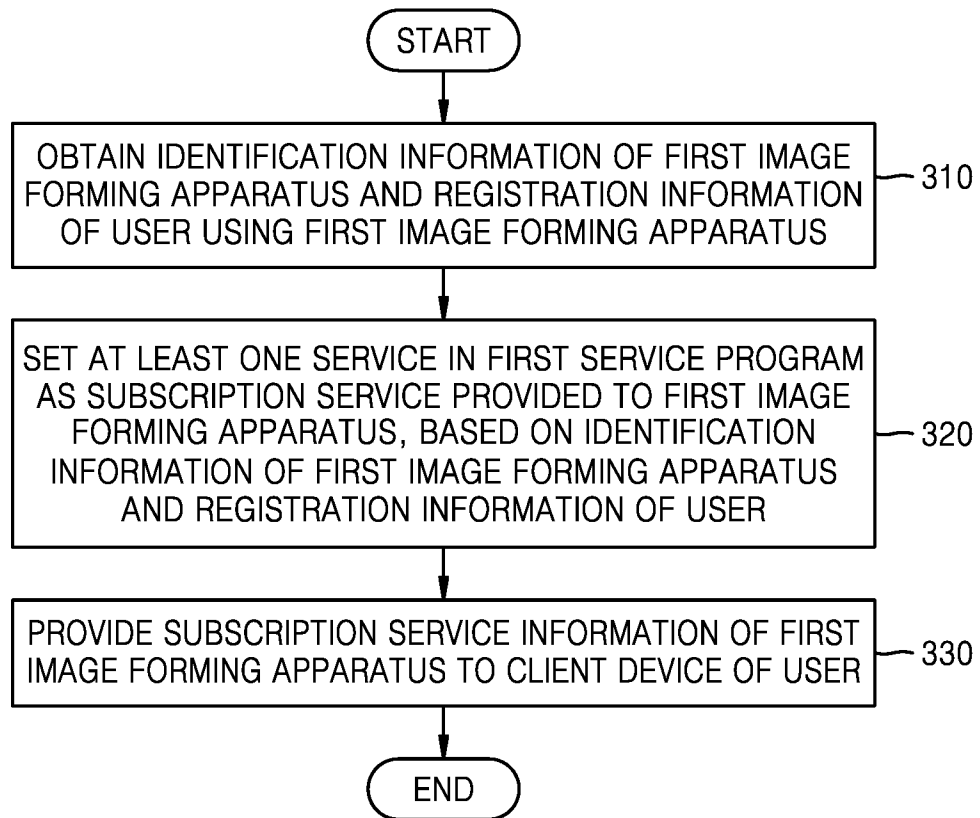
FIG. 3

FIG. 4

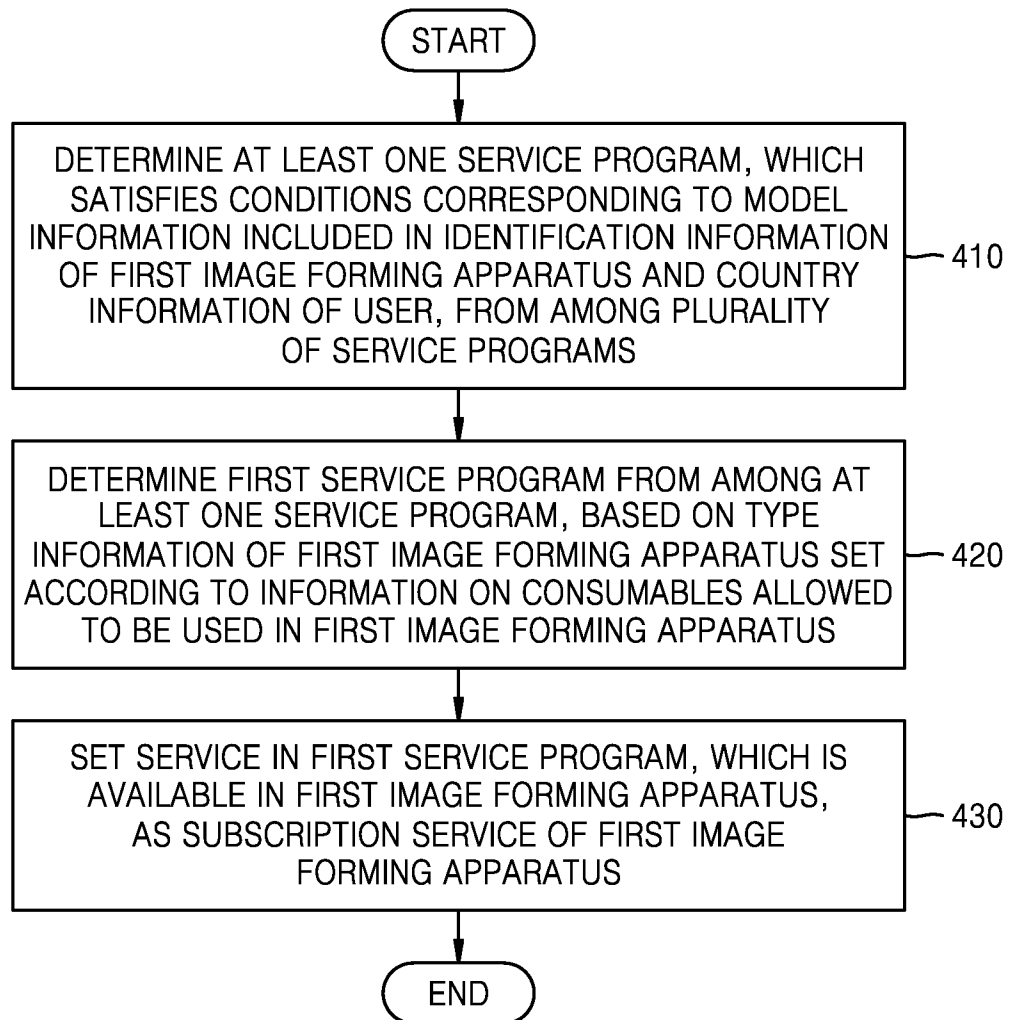


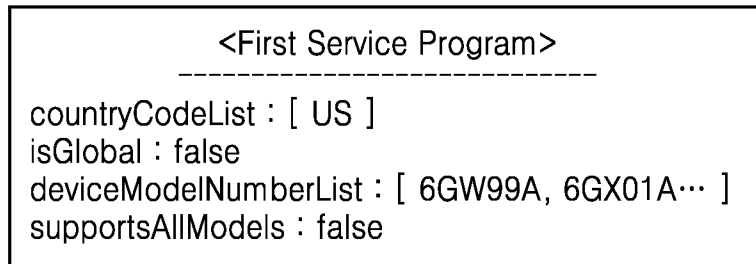
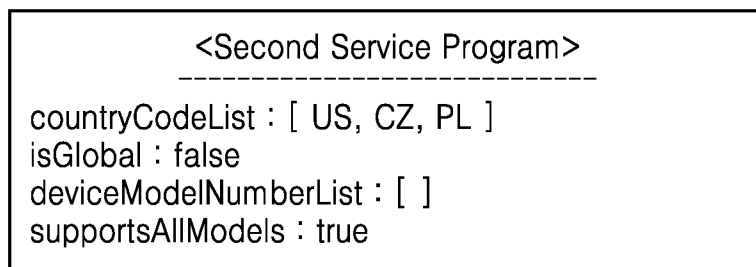
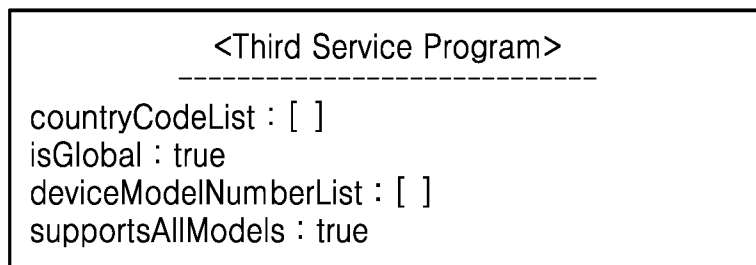
FIG. 5510520530

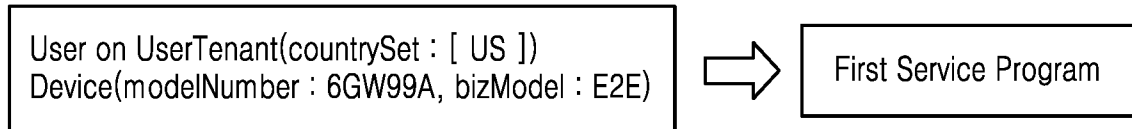
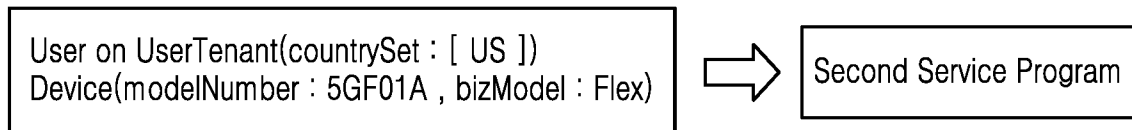
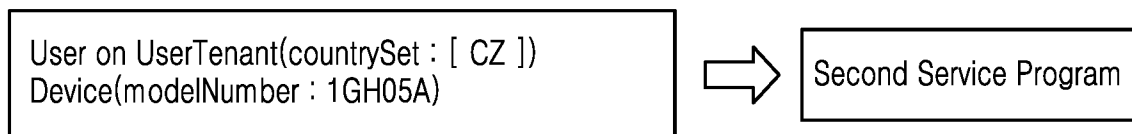
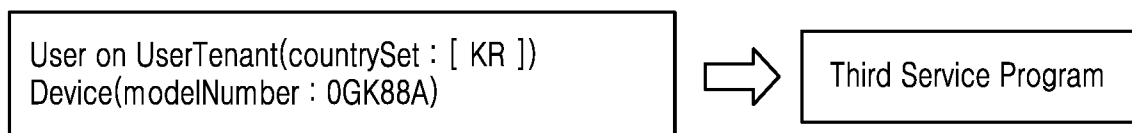
FIG. 6610620630640

FIG. 7

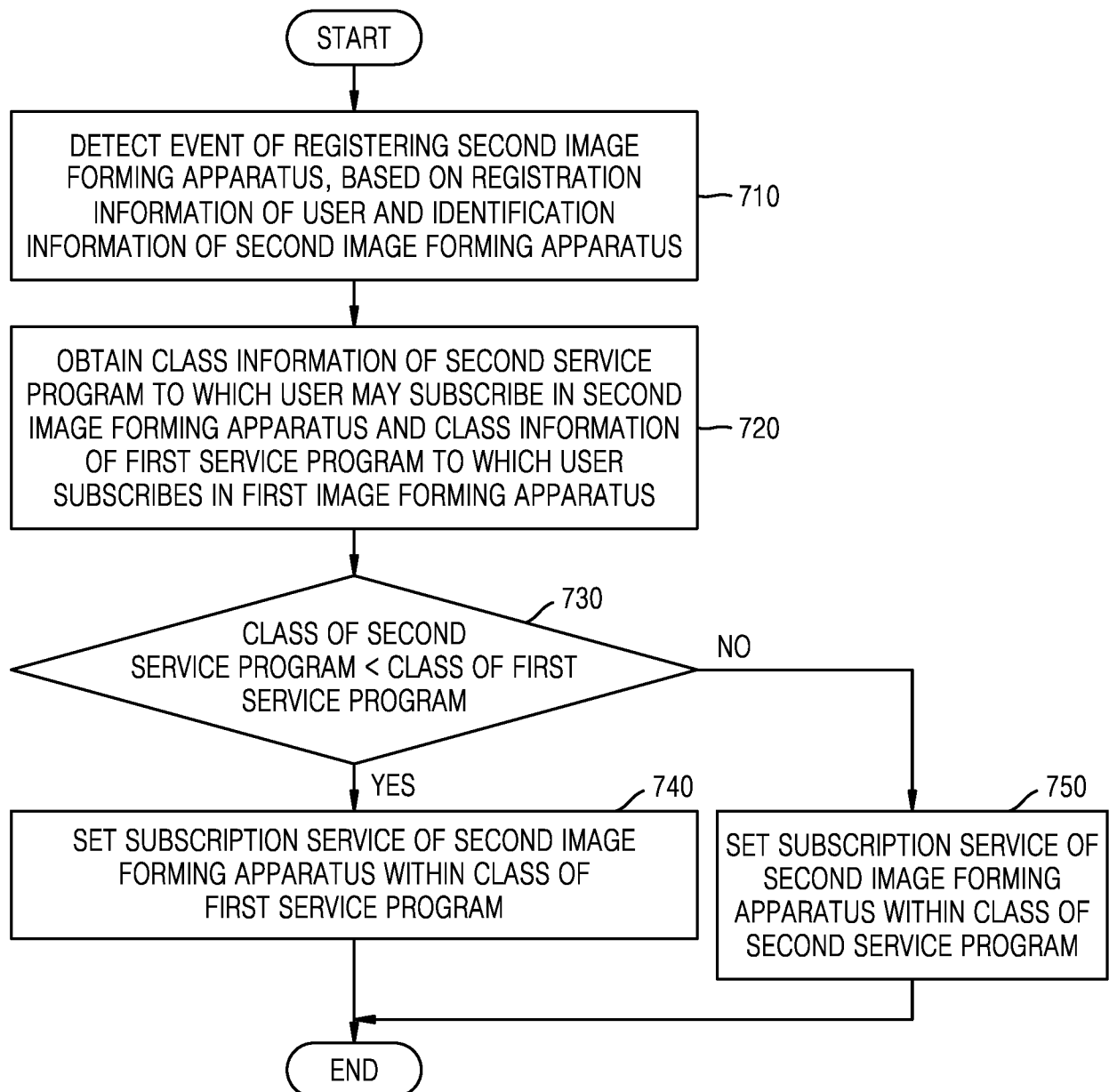


FIG. 8

current programId \ event's programId	Third Class	Second Class	First class
EMPTY	Third Class	Second Class	First class
Third Class	–	Second Class	First class
Second Class	–	–	First class
First class	–	–	–

FIG. 9

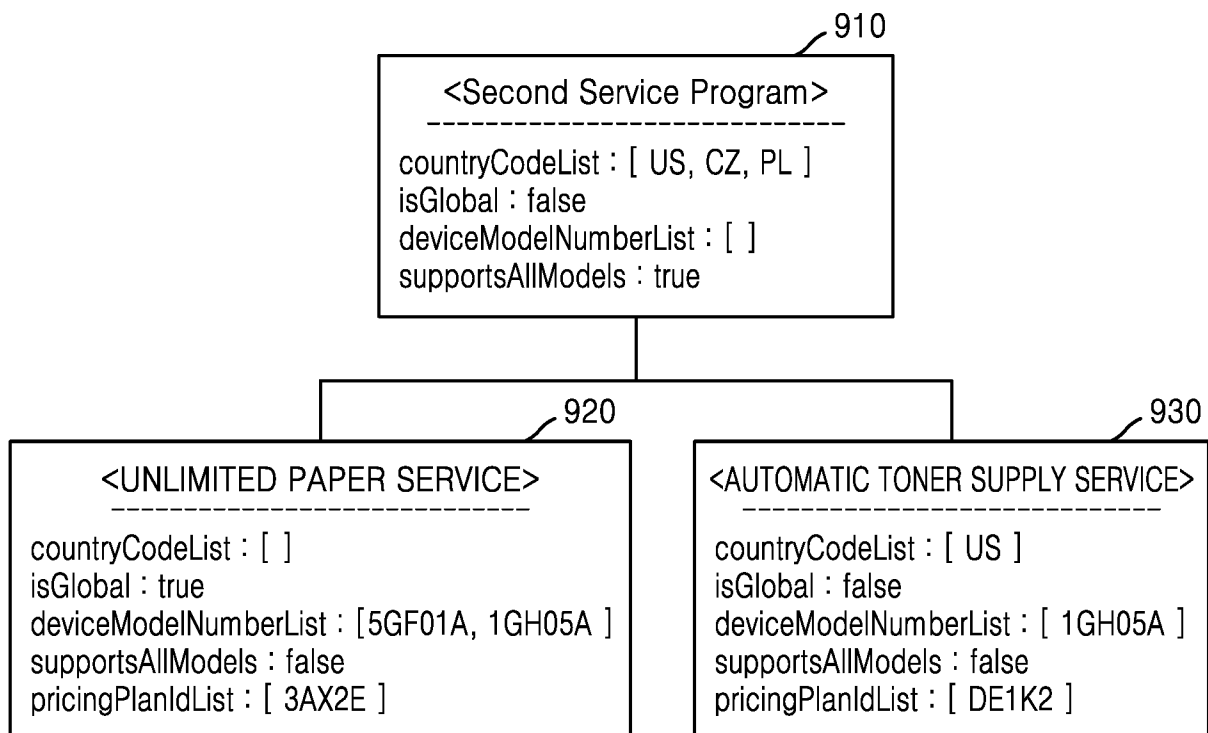


FIG. 10

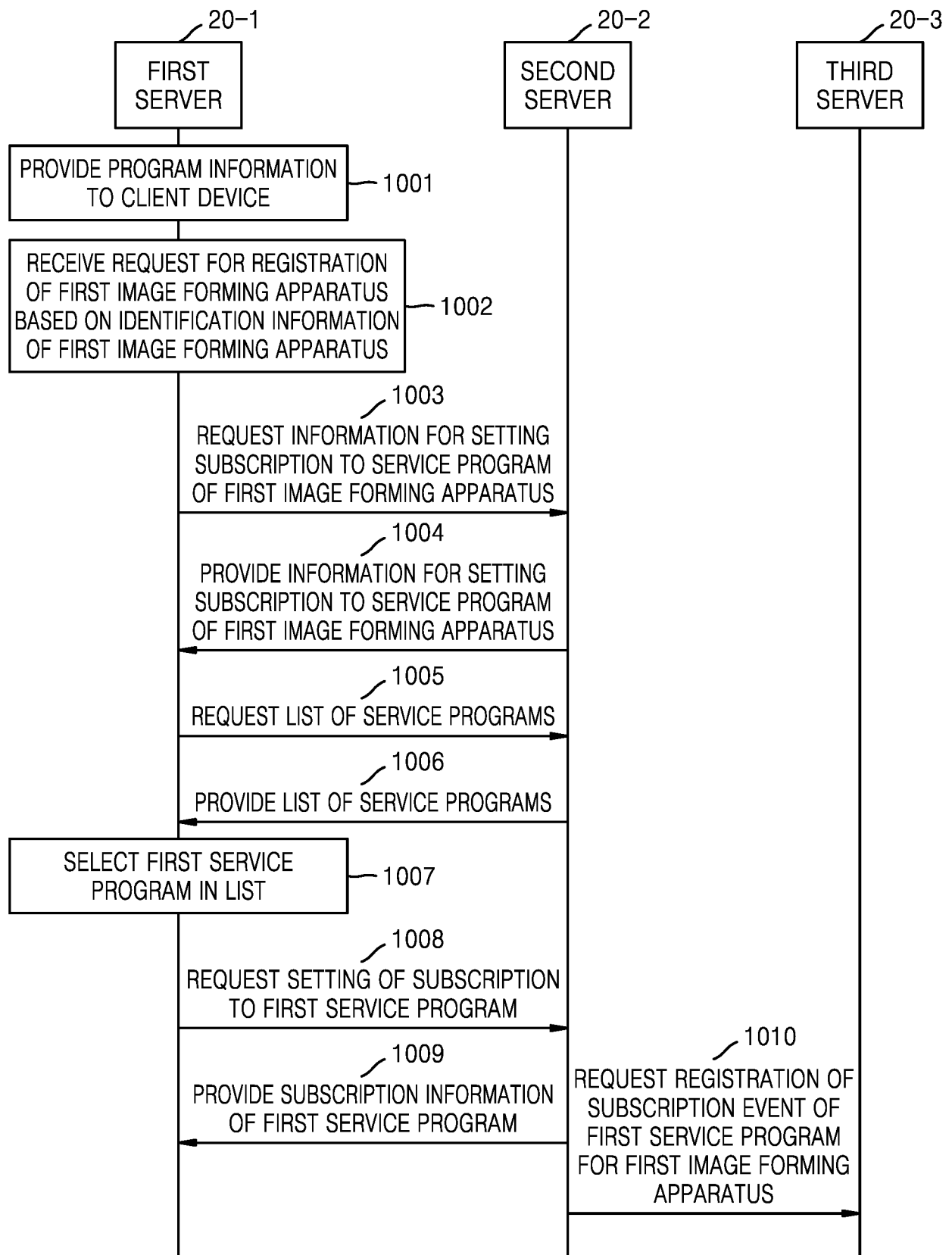


FIG. 11

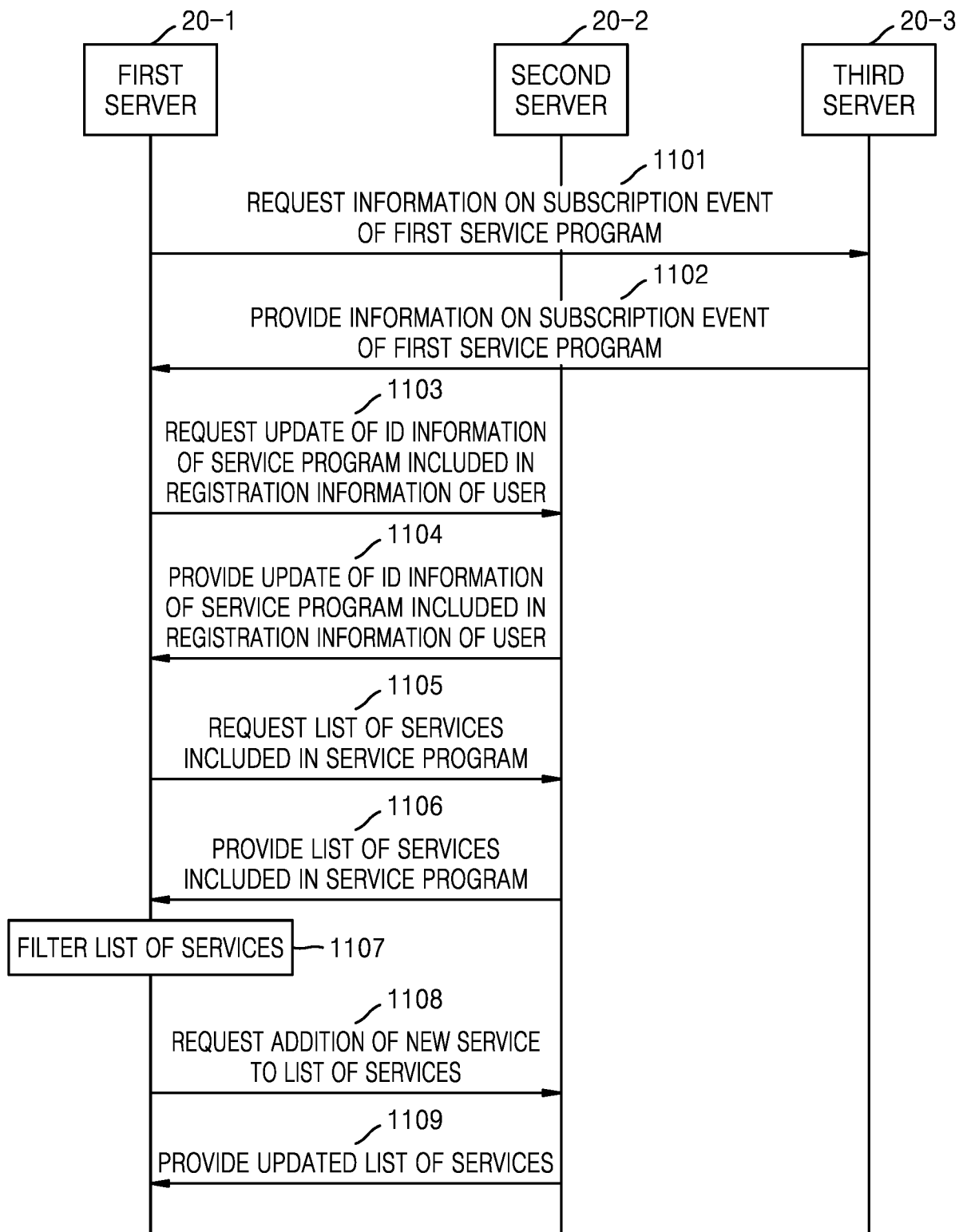


FIG. 12

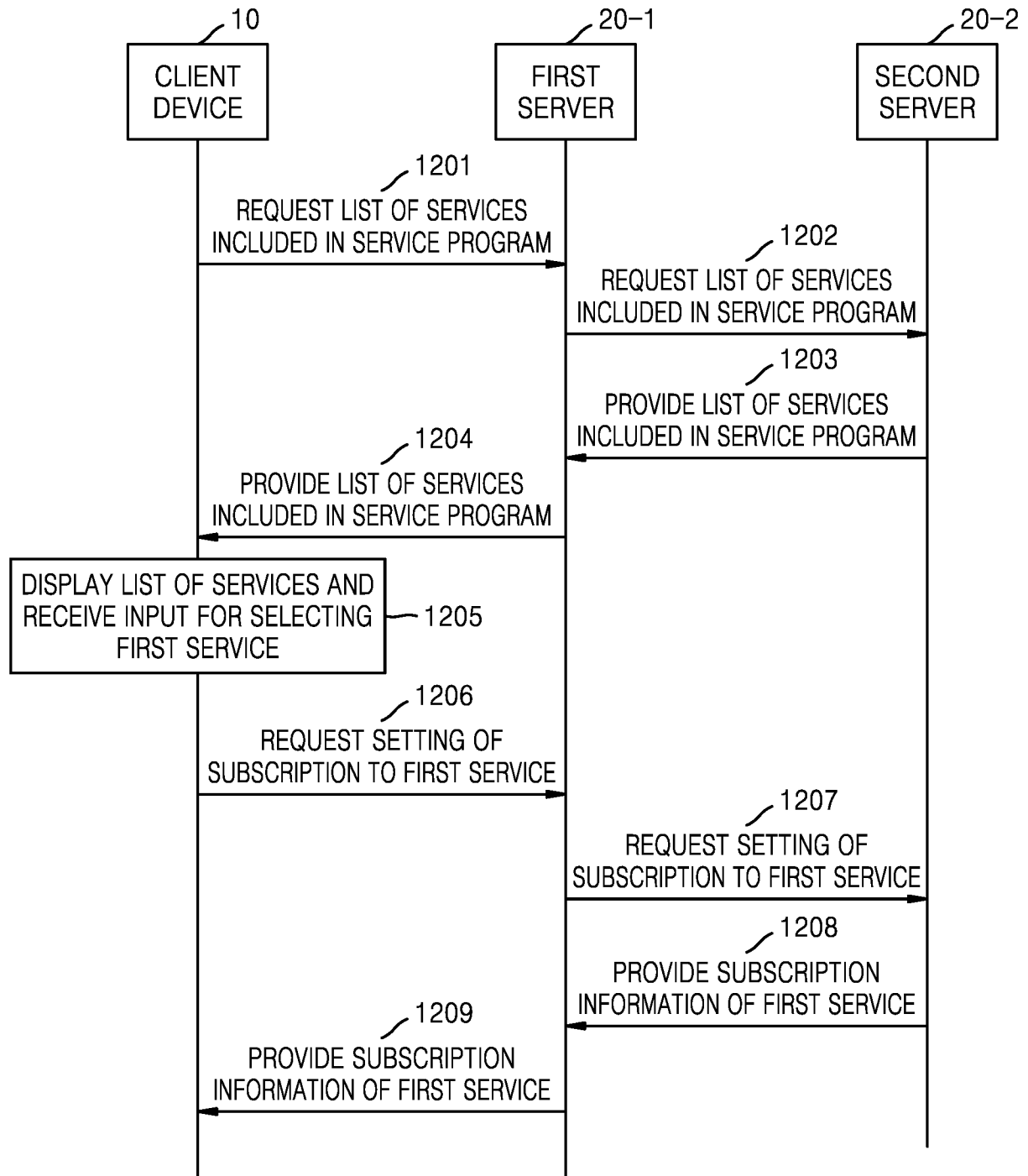


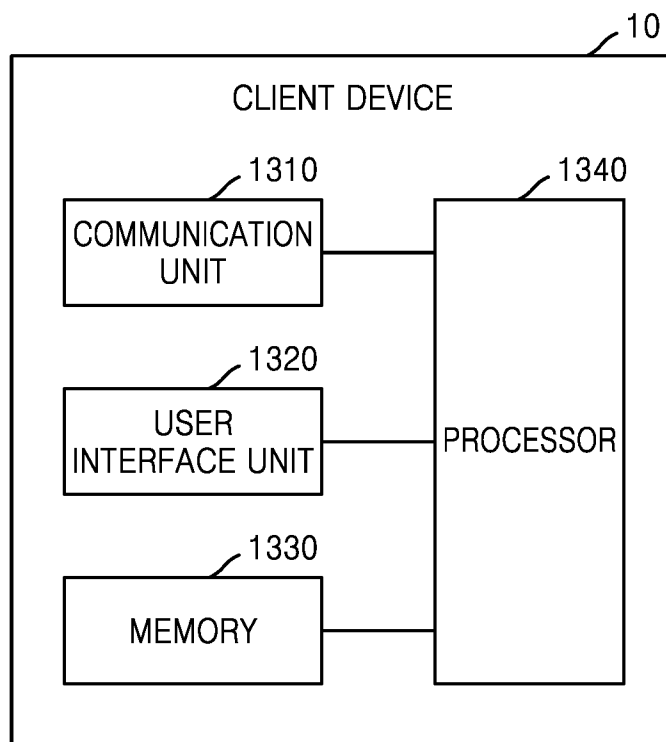
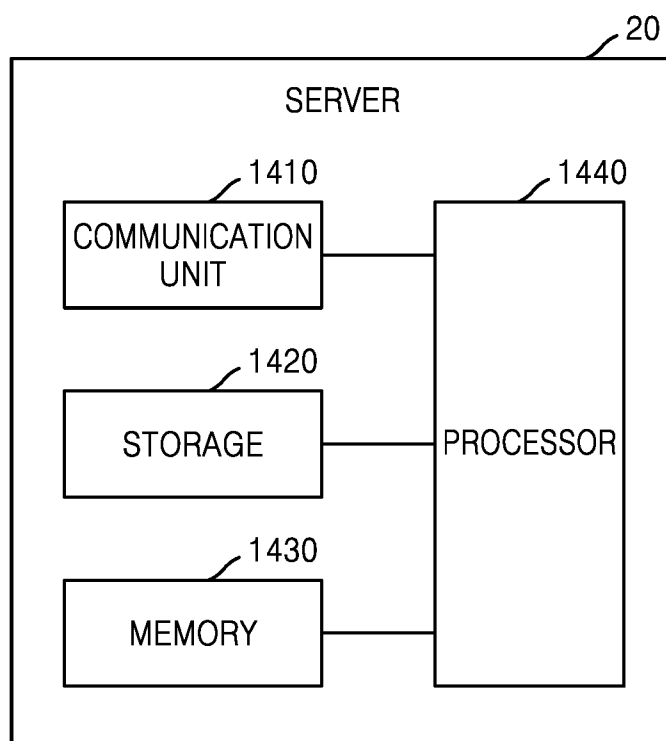
FIG. 13**FIG. 14**

FIG. 15

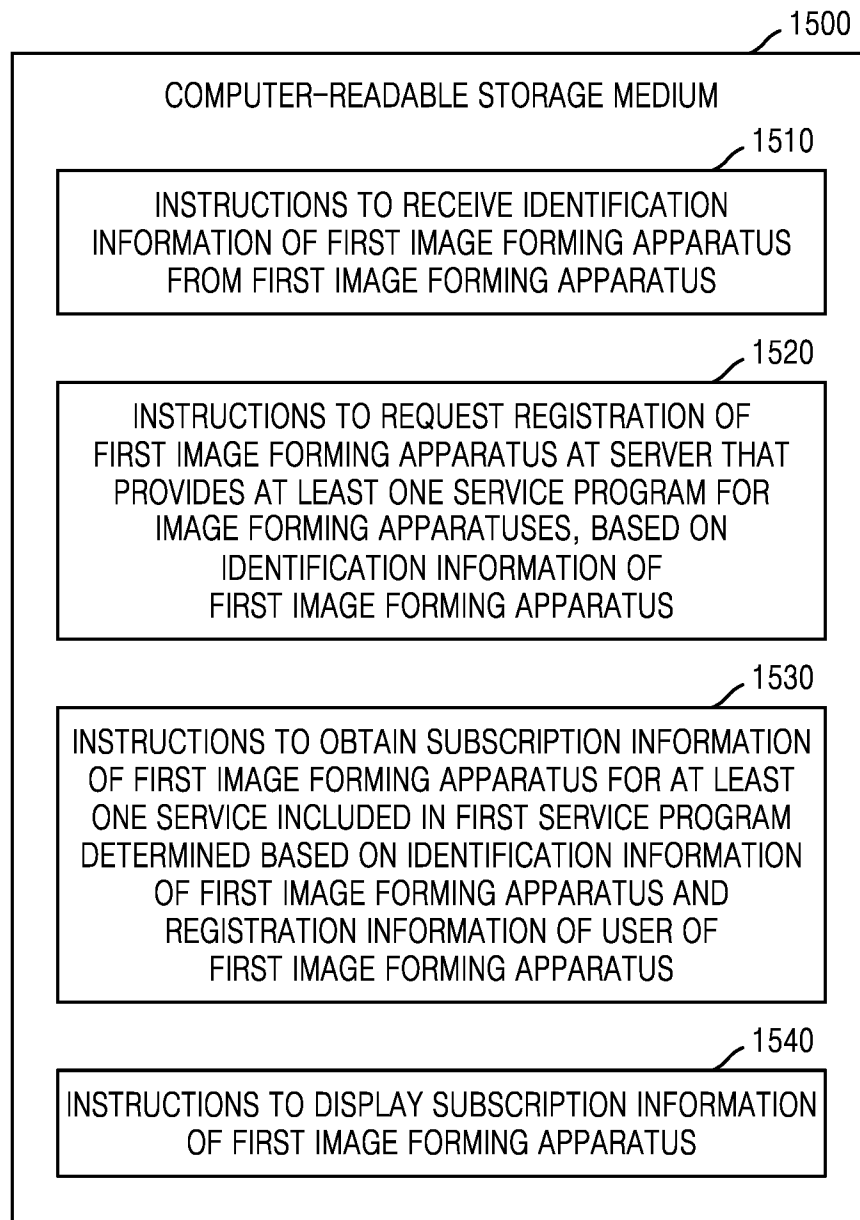
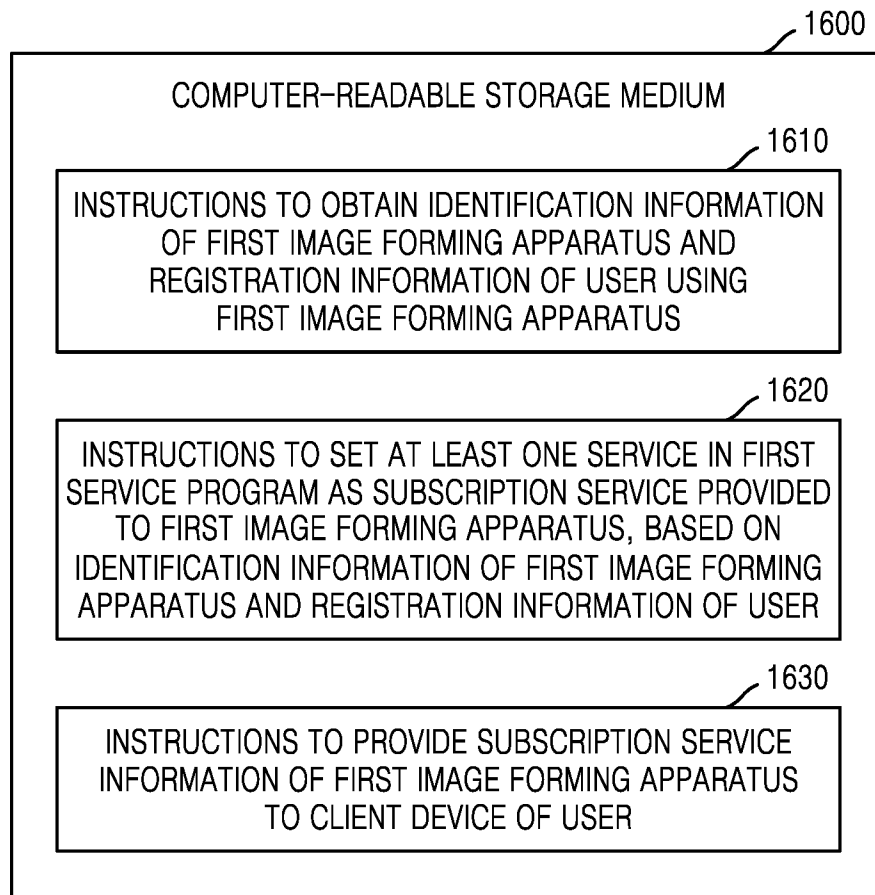


FIG. 16

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 2021/018149

A. CLASSIFICATION OF SUBJECT MATTER

G06F 3/12 (2006.01)**G06Q 20/32 (2012.01)**

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)

G06F 3/00-3/12, G06Q 20/00-20/42, G06F 15/00, G06F 16/00, G06F 17/00, G06K 15/00, 15/02

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

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

PatSearch (RUPTO internal), USPTO, PAJ, Esp@cenet, DWPI, EAPATIS, PATENTSCOPE, Information Retrieval System of FIPS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2017/0161719 A1 (HEWLETT-PACKARD DEVELOPMENT COMPANY, L.P) 08.06.2017, [0008], [0016], [0020]-[0022], [0028], [0029], [0031], [0032], [0034], [0038], [0044], [0048], [0051], [0056]-[0059], [0066], [0078]-[0081]	1-15
A	US 2012/0057193 A1 (GOOGLE INC.) 08.03.2012	1-15
A	US 2010/0171973 A1 (CANON KABUSHIKI KAISHA) 08.07.2010	1-15
A	US 2003/0011801 A1 (SHELL STERLINH SIMPSON et al) 16.01.2002	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"E" earlier document but published on or after the international filing date	"&" document member of the same patent family
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

14 May 2021 (14.05.2021)

Date of mailing of the international search report

27 May 2021 (27.05.2021)

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