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(54) **Titre : Method, apparatus and computer storage medium for plug-in management and control.**

(57) **Abrégé :**

A method, apparatus and computer storage medium for plug-in management and control are described, for solving technical problems in the related art that plug-ins integrated in a system or application are managed and controlled independently and the management process is over-fussy, complicated and inefficient, and it is unable to manage and control general attributes of the plug-ins uniformly. The present disclosure performs deep and complete control on the plug-ins in the system or application software by utilizing a plug-in list module and a plug-in function controlling module, and the control includes on and off of the plug-ins, ways of reminding, types of receivable messages and so on. In the present disclosure, the continuously increasing plug-ins can be managed in a uniform and standardized way in a program. Thus, the present disclosure can improve the efficiency of the control and management of plug-ins and enhance the simplicity and manipulation of software.

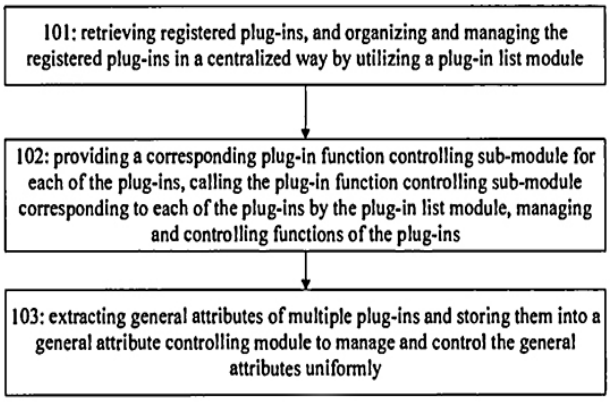

Fig. 1

METHOD, APPARATUS AND COMPUTER STORAGE MEDIUM FOR PLUG-IN MANAGEMENT AND CONTROL

The present application claims priority from Chinese Patent Application No. 201210071067.5, filed March 16, 2012, entitled "Method, apparatus and computer storage medium for plug-in management and control", the disclosure of which is hereby incorporated by reference in its entirety.

Field of the invention

The present disclosure relates to software and internet technologies, and more particularly to a method, apparatus and computer storage medium for plug-in management and control.

Background art

In many software based on personal computers or mobile intelligent terminals, the plug-in technology is used. A plug-in is a program written out following a certain standard application program interface. Each plug-in is usually used to perform a certain specific function. For example, common plug-ins in a browser include a Flash plug-in, a RealPlayer plug-in, an ActiveX, etc. after a related plug-in is installed in the browser, a WEB browser can directly call the plug-in program to complete a certain specific function.

In software development for mobile Internet, many plug-ins are usually integrated in application software of a mobile user terminal or a mobile terminal. However, for management of these plug-ins, there is not an effective and unified management control method in the related art. Usually, each plug-in provides its own setting interface for controlling interface displaying manner, message prompt manner (such as sound, vibration, mark), loading manner (such as whether to automatically load), system data utilization (such as whether geographic information provided by a system can be used), etc. of the individual plug-in. Such an independent fragmented management control method has a lower efficiency, and cannot make a completely effective control for one plug-in with no management interface or an imperfect management interface. For example, the above method can only control some functions of one plug-in, and cannot control features such as opening, closing, hiding the plug-in.

Summary

In view of this, a main object of one embodiment of the present disclosure is to provide a method, apparatus and computer storage medium for plug-in management and control, which can solve technical problems in the related art that plug-ins integrated in a system or application are managed and controlled independently and the management process is over-fussy, complicated and inefficient, and it is unable to manage and control general attributes of the plug-ins uniformly.

One embodiment of the present disclosure provides a method for plug-in management and

control, which includes:

retrieving registered plug-ins, and organizing and managing the registered plug-ins in a centralized way by utilizing a plug-in list module;

providing a corresponding plug-in function controlling sub-module for each of the plug-ins, calling the plug-in function controlling sub-module corresponding to each of the plug-ins by the plug-in list module, managing and controlling functions of each of the plug-ins through the plug-in function controlling sub-module corresponding to each of the plug-ins;

extracting general attributes of multiple plug-ins, and managing and controlling the general attributes uniformly through a general attribute controlling sub-module.

One embodiment of the present disclosure also provides an apparatus for plug-in management and control, which includes:

a plug-in list module configured to retrieve registered plug-ins, and organize and manage the registered plug-ins in a centralized way;

a plug-in function controlling module configured to provide a container for a general attribute controlling sub-module and a plug-in function controlling sub-module of each of the plug-ins;

the plug-in function controlling sub-module configured to manage and control functions of each of the plug-ins;

the general attribute controlling sub-module configured to manage and control general attributes of multiple plug-ins uniformly.

One embodiment of the present disclosure also provides a computer storage medium storing computer-executable instructions for implementing the method for plug-in management and control of one embodiment of the present disclosure.

One embodiment of the present disclosure performs deep and complete control on plug-ins in a system or application software by utilizing a plug-in list module and a plug-in function controlling module, and the control includes on and off of the plug-ins, ways of reminding, types of receivable messages and so on. In one embodiment of the present disclosure, continuously increasing plug-ins can be managed in a uniform and standardized way in a program. Thus, the efficiency of the control and management of plug-ins can be improved and the simplicity and manipulation of software can be enhanced.

Brief description of the drawings

Fig. 1 is an implementation step flowchart of a method for plug-in management and control provided in one embodiment of the present disclosure;

Fig. 2 is a plug-in management interface of a plug-in list module of a social application provided in one embodiment of the present disclosure;

Fig. 3 is an interface of a plug-in function controlling sub-module of an email reminder plug-in provided in one embodiment of the present disclosure;

Fig. 4 is an interface of a plug-in function controlling sub-module of a microblogging private message plug-in provided in one embodiment of the present disclosure;

Fig. 5 is an interface of a plug-in function controlling sub-module of an offline message plug-in provided in one embodiment of the present disclosure;

Fig. 6 is a schematic diagram of an apparatus for plug-in management and control provided in one embodiment of the present disclosure.

Detailed description

In order to make the objectives, technical solutions and advantages of the present disclosure more clear, various embodiments of the present disclosure will be described in detail with reference to the accompanying drawings.

Fig. 1 is an implementation step flowchart of a method for plug-in management and control provided in one embodiment of the present disclosure, and the method includes:

Step 101: retrieving registered plug-ins, and organizing and managing the registered plug-ins in a centralized way by utilizing a plug-in list module.

For a system or application software, the present disclosure provides an entry module, i.e., the plug-in list module, for managing and controlling the registered plug-ins of the system or application software in a centralized way. The plug-in list module organizes and manages the registered plug-ins by utilizing data structure such as queue, linked list, object array, etc., and displays basic information of the registered plug-ins in the form of a list, an icon or other display form. An example that the plug-in list module displays the basic information of the plug-ins is shown in Fig. 2. The basic information of each of the plug-ins at least includes a name of each of the plug-ins, and can further include state of each of the plug-ins, for example, a plug-in is now in an enabled state or a non-enabled state.

A user can call a plug-in function controlling sub-module corresponding to each of the plug-ins through the plug-in list module. For example, each list item in a plug-in list can include a corresponding plug-in function controlling sub-module handle; when the user clicks on a corresponding item, a corresponding plug-in function controlling sub-module is called by an event response function.

Further, the plug-in list module can also provide functions of opening a plug-in or closing the plug-in. For example, opening or closing functions can be provided for a corresponding plug-in in manner of a menu or a switch button, without the need for calling a plug-in function controlling sub-module.

Preferably, in one embodiment of the present disclosure, in order to provide for the user a chance of choosing whether to install a corresponding plug-in according to the user's wish, an issued plug-in can first be displayed in a group which is not installed or enabled of the plug-in list module, and the user can choose to enable or not enable one plug-in according to the user's wish. In case that a corresponding plug-in is not installed, when enabling the plug-in, the system can prompt the user whether to install; if the user agrees, the corresponding plug-in is downloaded and installed in the local, and then the plug-in is enabled.

In one embodiment of the present disclosure, the registration refers to register in a operating system or a plug-in publishing platform; only registered plug-ins can be displayed and managed in the plug-in list module.

Preferably, the plug-in list module can also provide functions of installing or uninstall plug-ins. for example, the functions of adding and deleting plug-ins can be provided in manner of a menu.

Step 102: providing a corresponding plug-in function controlling sub-module for each of the plug-ins, calling the plug-in function controlling sub-module corresponding to each of the plug-ins by the plug-in list module, managing and controlling functions of the plug-ins through the plug-in function controlling sub-module corresponding to each of the plug-ins.

In one embodiment of the present disclosure, a plug-in function controlling module is taken as a container to provide a load space for a general attribute controlling sub-module and a plug-in function controlling sub-module of each plug-in. Installing or uninstalling of each sub-module are processed by the plug-in function controlling module, and the plug-in function controlling module maintains and manages each plug-in function controlling sub-module.

In one embodiment of the present disclosure, a corresponding plug-in function controlling sub-module is provided for each plug-in. The plug-in function controlling sub-module of each plug-in can perform deep and complete management and control on functions of each plug-in, for example, providing one or more of following functions of management and control:

(1) opening or closing a plug-in;

Here, the opening or closing functions are provided by a plug-in function controlling sub-module for an individual plug-in, and are different from the centralized management control mode provided by the plug-in list module. Closing one plug-in is equivalent to setting a state of the

plug-in to be an inactive state in the plug-in function controlling module; when the system or software is started up, the plug-in which is in the inactive state will not be loaded in a memory. When enabling one plug-in, the corresponding plug-in is accordingly activated in the plug-in function controlling module.

(2) managing displaying positions and modes of plug-ins;

For example, whether to display a plug-in in a main interface or an address book can be controlled; font size, color, etc. of plug-in displaying can be controlled.

(3) capable of controlling a plug-in to send a message to a server or receive a message sent from the server;

For example, for an email reminder plug-in, as shown in Fig. 3, whether to receive an email reminder sent from the server can be controlled. For a microblogging private message plug-in, as shown in Fig. 4, whether to receive and send a microblogging private message and/or a microblogging private notification. For an offline message plug-in, as shown in Fig. 5, whether to receive an offline message, etc. sent from the server can be controlled.

(4) capable of viewing and managing specific information related to a plug-in through the plug-in function controlling module. For example, for the microblogging private message plug-in, as shown in Fig. 4, a microblogging friend list can be viewed through the plug-in function controlling module corresponding to the plug-in. For the email reminder plug-in, as shown in Fig. 3, an email can be viewed through the plug-in function controlling module corresponding to the plug-in. For the offline message plug-in, as shown in Fig. 5, an offline message can be viewed through the plug-in function controlling module corresponding to the plug-in.

Step 103: extracting general attributes of multiple plug-ins and storing them into a general attribute controlling module to manage and control the general attributes uniformly.

In one embodiment of the present disclosure, the general attributes of multiple plug-ins are extracted, and these general attributes are managed and controlled uniformly, so as to avoid separate control of same functions of each plug-in, reduce redundant complicated operations and improve efficiency of management and control. The general attributes include but not limited to, scene mode, message prompt manner, etc. For example, many plug-ins need to receive a message pushed by the server or some prompt messages generated by themselves. In one embodiment of the present disclosure, the general attribute controlling module provides a scene mode and/or message prompt manner setting function, to control in what way to remind a user when a plug-in receives a message pushed by the server or when the plug-in itself generates a prompt message. For example, the prompt manner can include any one or more of following: sound,

vibration and displaying prompt mark. Preferably, setting functions such as choosing alert tone can also be provided.

Implementation of the management of the general attributes can include: assigning different priorities to settings made for different modules, assigning higher priorities to general attribute control parameters set by the general attribute controlling module, assigning lower priorities to general attribute control parameters set by the plug-in function controlling sub-module, and giving priority to a high-priority setting.

The technical solution of the present disclosure is explained hereinafter by taking a social application as an example. The social application is mobile communication software which can integrate a plurality of plug-ins, support sending a voice message, video, images and text, realize multi-user group chat, and is mainly used in a mobile intelligent terminal such as a mobile phone, iPad, etc. Plug-ins registered or integrated in the social application include but not limited to: an email reminder plug-in, a microblogging private message plug-in, an offline message plug-in of an instant messaging system, a microblogging sending picture assistant plug-in, a find friend plug-in based on geographical positions, a friend recommend plug-in, a voice note, etc.

Fig. 2 is a plug-in management interface of a plug-in list module of the social application. It can be seen from the interface, plug-ins registered in the social application can be displayed in a tabular form. A plug-in queue can be managed in the plug-in list module. The plug-in queue can flexibly increase or decrease, open or close plug-ins. When a new plug-in is registered, the new plug-in can be directly inserted into the queue. When it is needed to uninstall a plug-in, the plug-in can be directly deleted from the queue. Thus, the plug-in queue has very good extensibility. A corresponding relationship between the plug-in list and the plug-in queue can facilitate realization of opening and closing operation of a specified plug-in.

Fig. 3 is an interface of a plug-in function controlling sub-module of an email reminder plug-in. The email reminder plug-in can be used to achieve docking with an email system, so that the user can timely know whether an email is received. The plug-in function controlling sub-module can perform deep and complete control on functions of the email reminder plug-in, the control functions include but not limited to: whether to receive an email reminder, receiving an email reminder from which of email accounts, view an email and an email box, whether to display the plug-in in an address book, etc.

Fig. 4 is an interface of a plug-in function controlling sub-module of a microblogging private message plug-in. The microblogging private message plug-in can be used to achieve docking with a microblogging system, so that the user can timely know whether there is a private microblogging message sent to the user from a microblogging friend. The plug-in function controlling sub-module

can perform deep and complete control on functions of the microblogging private message plug-in, the control functions include but not limited to: whether to receive and send a microblogging private message, whether to receive a microblogging private notification, view microblogging friends, whether to display the plug-in in an address book, etc.

Fig. 5 is an interface of a plug-in function controlling sub-module of an offline message plug-in. The offline message plug-in can be used to achieve docking with an instant messaging system, so that the user can timely know whether there is an offline message sent to the user from an instant messaging friend. The plug-in function controlling sub-module can perform deep and complete control on functions of the offline message plug-in, the control functions include but not limited to: whether to receive an offline message pushed by a server, view an offline message, whether to display the plug-in in an address book, etc.

Fig. 6 is a schematic diagram of function modules of an apparatus for plug-in management and control based on the method for plug-in management and control provided in one embodiment of the present disclosure. The apparatus 600 includes:

a plug-in list module 610 configured to retrieve registered plug-ins, and organize and manage the registered plug-ins in a centralized way;

a plug-in function controlling module 620 configured to provide a container for a general attribute controlling sub-module and a plug-in function controlling sub-module of each plug-in;

at least one plug-in function controlling sub-module 1~n, configured to manage and control functions of each plug-in; the lug-in function controlling sub-modules being corresponding to the plug-ins in a one-to-one manner;

the general attribute controlling sub-module configured to manage and control general attributes of multiple plug-ins uniformly.

The organization and management of the registered plug-ins in a centralized way performed by the plug-in list module 610 include one or more of following: opening plug-in, closing plug-in, adding plug-in, deleting plug-in.

The management and control of functions of the plug-ins performed by the plug-in function controlling sub-modules include one or more of the following:

(1) opening or closing a plug-in;

(2) managing displaying positions and modes of plug-ins;

(3) controlling a plug-in to send a message to a server or receive a message sent from the server;

(4) viewing and managing specific information related to a plug-in;

(5) the general attributes at least contain scene mode and/or message prompt manner.

Each plug-in function controlling sub-module can provide different management control functions according to different functions of each plug-in. the above functions are only examples, and specific situations can be determined according to requirements.

Preferably, the plug-ins can contain one or more of an email reminder plug-in, a microblogging private message plug-in, an offline message plug-in of an instant messaging system, a microblogging sending picture assistant plug-in, a find friend plug-in based on geographical positions, a friend recommend plug-in, etc.

If the modules described in embodiments of the present disclosure are implemented in the form of software function modules and sold or used as an independent product, they can also be stored in a computer-readable storage medium.

Based on this, the essential part of the technical solution of one embodiment of the present disclosure or the part contributed to the prior art can be in the form of a software product. The computer software product is stored in a storage medium and includes a plurality of instructions to make a computer apparatus (such as a personal computer, a server, a network equipment, etc.) to execute all or parts of the method described in each of the embodiments of the present disclosure. The aforementioned storage medium includes U disk, mobile hard disk, Read-Only Memory (ROM), Random Access Memory (RAM), Disk or CD or other medium which can store program codes. Thus, one embodiment of the present disclosure is not limited to any specific combination of hardware and software.

Accordingly, one embodiment of the present disclosure also provides a computer storage medium which stores computer programs for implementing the method for adding friends in the above embodiments of the present disclosure.

The foregoing are only preferred embodiments of the present disclosure, and are not used to limit the present disclosure.

Claims

1. A method for plug-in management and control comprising:

retrieving registered plug-ins, and organizing and managing the registered plug-ins in a centralized way by utilizing a plug-in list module;

providing a corresponding plug-in function controlling sub-module for each of the plug-ins, calling the plug-in function controlling sub-module corresponding to each of the plug-ins by the plug-in list module, managing and controlling functions of each of the plug-ins through the plug-in function controlling sub-module corresponding to each of the plug-ins; and

extracting general attributes of multiple plug-ins, and managing and controlling the general attributes uniformly through a general attribute controlling sub-module.

2. The method of claim 1, wherein the managing the registered plug-ins in a centralized way comprises content containing one or more of opening plug-in, closing plug-in, adding plug-in, deleting plug-in.

3. The method of claim 1, wherein the managing and controlling functions of each of the plug-ins through the plug-in function controlling sub-module corresponding to each of the plug-ins comprises one or more of:

opening or closing each of the plug-ins;

managing displaying positions and modes of each of the plug-ins;

controlling each of the plug-ins to send a message to a server or receive a message sent from the server;

viewing and managing specific information related to each of the plug-ins.

4. The method of claim 1, wherein the general attributes at least contain scene mode and/or message prompt manner.

5. The method of any one of claims from 1 to 4, wherein the plug-ins comprise one or more of an email reminder plug-in, a microblogging private message plug-in, an offline message plug-in of an instant messaging system, a microblogging sending picture assistant plug-in, a find friend plug-in based on geographical positions, a friend recommend plug-in and a voice note.

6. An apparatus for plug-in management and control comprising:

a plug-in list module configured to retrieve registered plug-ins, and organize and manage the registered plug-ins in a centralized way;

a plug-in function controlling module configured to provide a container for a general attribute

controlling sub-module and a plug-in function controlling sub-module of each of the plug-ins;

the plug-in function controlling sub-module configured to manage and control functions of each of the plug-ins;

the general attribute controlling sub-module configured to manage and control general attributes of multiple plug-ins uniformly.

7. The apparatus of claim 6, wherein organizing and managing the registered plug-ins in a centralized way performed by the plug-in list module comprises one or more of opening plug-in, closing plug-in, adding plug-in, deleting plug-in.

6. The apparatus of claim 6, wherein the plug-in function controlling sub-modules are corresponding to the plug-ins in a one-to-one manner.

9. The apparatus of claim 6, wherein managing and controlling functions of each of the plug-ins performed by the plug-in function controlling sub-module comprises one or more of:

opening or closing each of the plug-ins;

managing displaying positions and modes of each of the plug-ins;

controlling each of the plug-ins to send a message to a server or receive a message sent from the server;

viewing and managing specific information related to each of the plug-ins.

10. The apparatus of claim 6, wherein the general attributes at least contain scene mode and/or message prompt manner.

11. The apparatus of any one of claims from 6 to 10, wherein the plug-ins comprise one or more of an email reminder plug-in, a microblogging private message plug-in, an offline message plug-in of an instant messaging system, a microblogging sending picture assistant plug-in, a find friend plug-in based on geographical positions, a friend recommend plug-in and a voice note.

12. A computer storage medium storing computer-executable instructions for implementing the method of any one of claims from 1 to 5.

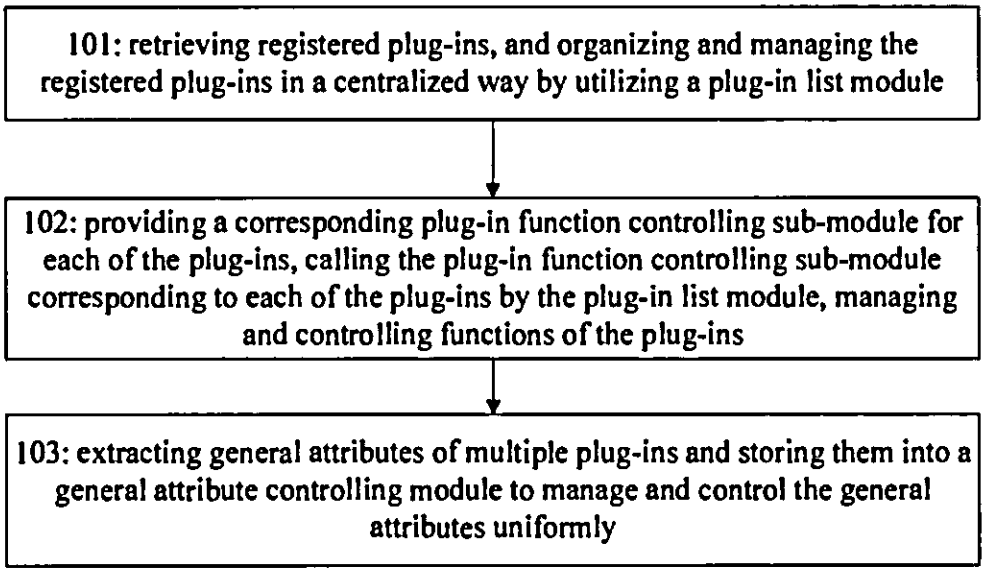
101: retrieving registered plug-ins, and organizing and managing the registered plug-ins in a centralized way by utilizing a plug-in list module
102: providing a corresponding plug-in function controlling sub-module for each of the plug-ins, calling the plug-in function controlling sub-module corresponding to each of the plug-ins by the plug-in list module, managing and controlling functions of the plug-ins
103: extracting general attributes of multiple plug-ins and storing them into a general attribute controlling module to manage and control the general attributes uniformly

Fig. 1

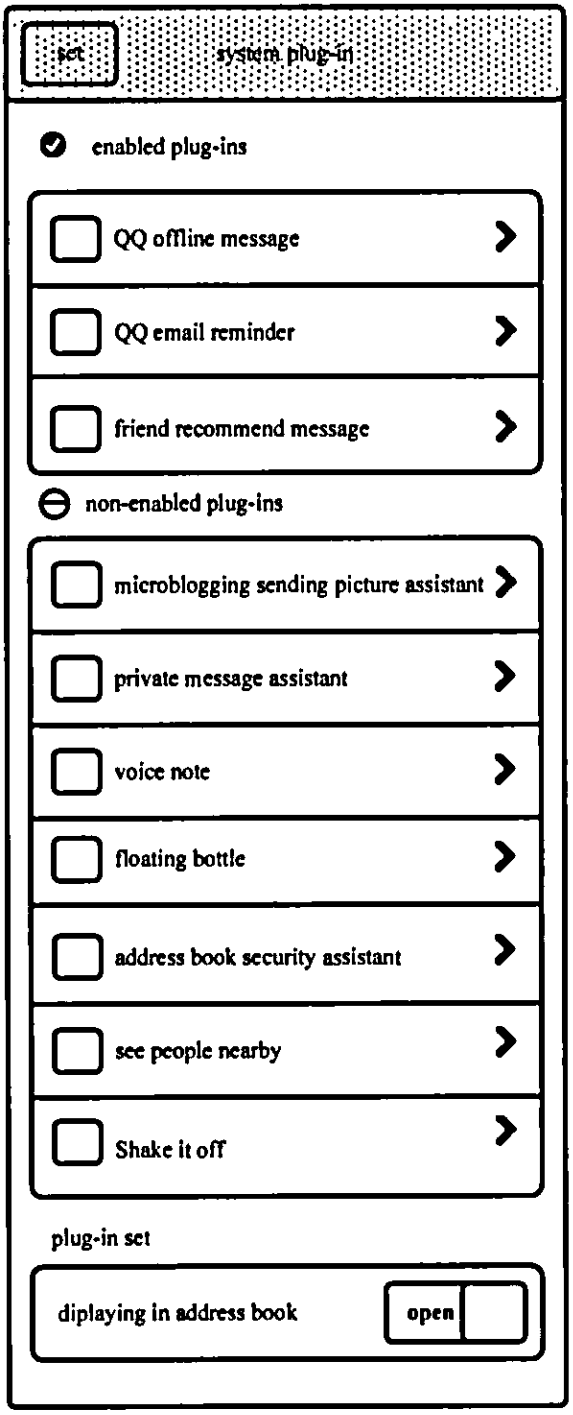
set
system plug-in
enabled plug-ins
QQ offline message
QQ email reminder
friend recommend message
non-enabled plug-ins
microblogging sending picture assistant
private message assistant
voice note
floating bottle
address book security assistant
see people nearby
Shake it off
plug-in set
diplaying in address book
open

FIG. 2

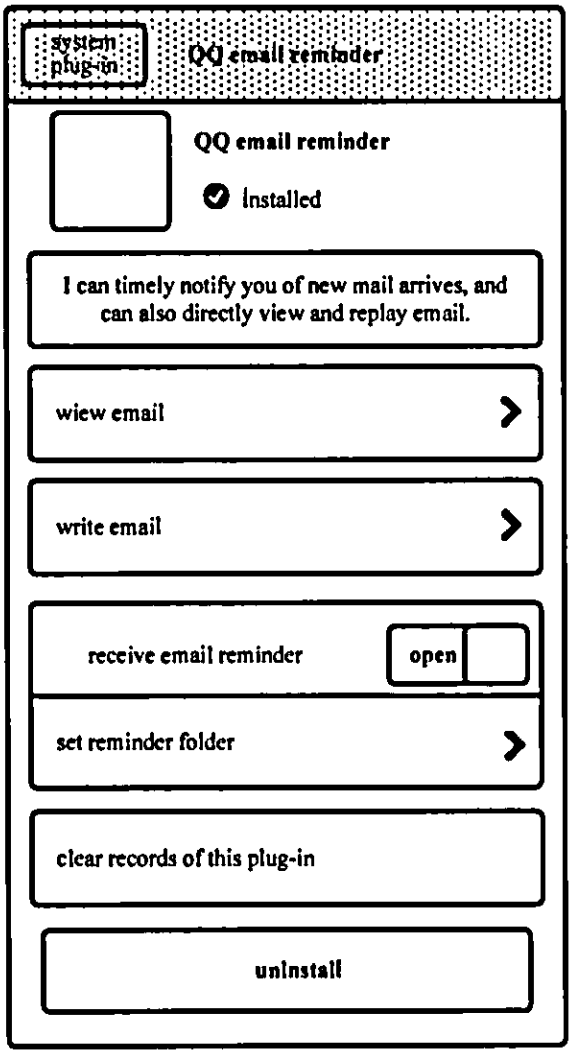
system plug-in
QQ email reminder
QQ email reminder
Installed
I can timely notify you of new mail arrives, and can also directly view and replay email.
wiew email
write email
receive email reminder
open
set reminder folder
clear records of this plug-in
uninstall

FIG. 3

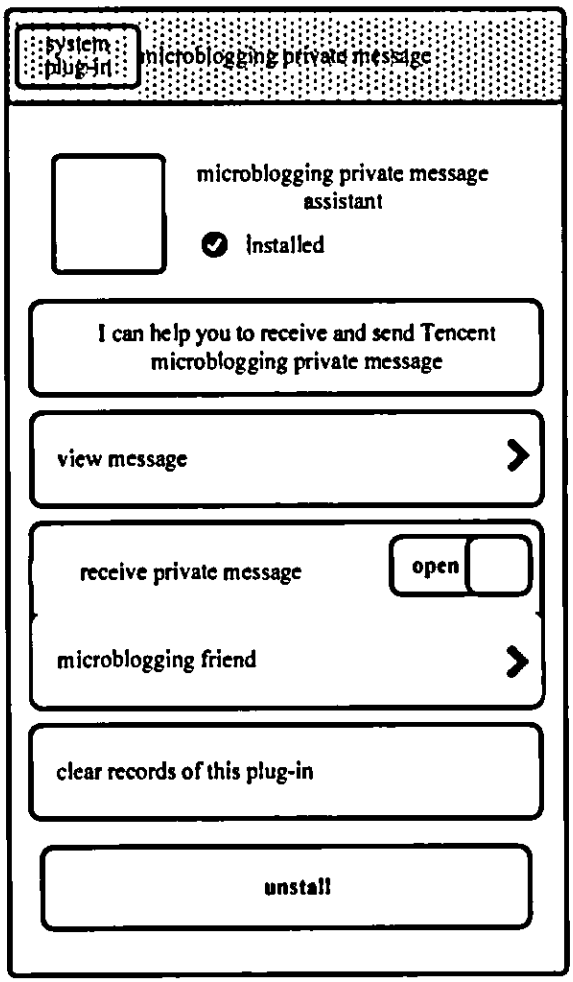
system plug-in
microblogging private message
microblogging private message assistant
installed
I can help you to receive and send Tencent microblogging private message
view message
receive private message
open
microblogging friend
clear records of this plug-in
unstall

FIG. 4

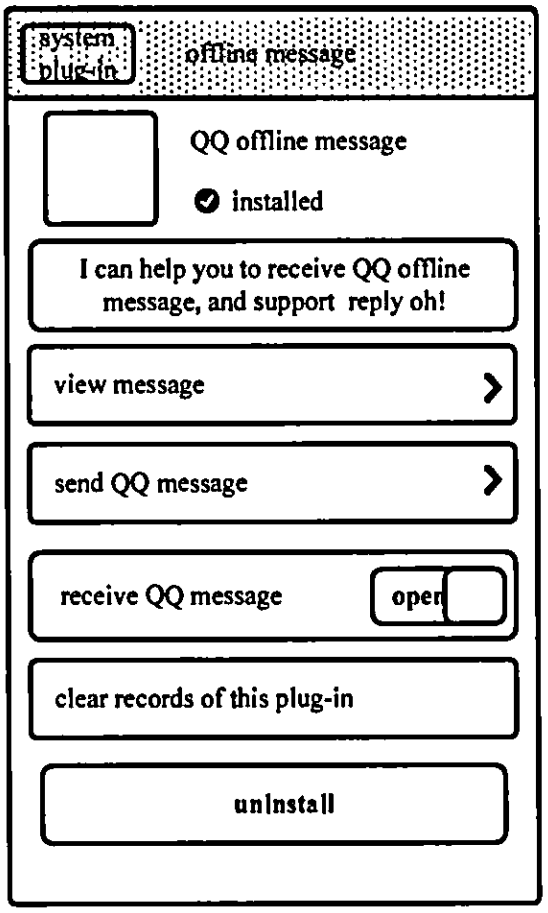
system plug-in
offline message
QQ offline message
installed
I can help you to receive QQ offline message, and support reply oh!
view message
send QQ message
receive QQ message
oper
clear records of this plug-in
uninstall

FIG. 5

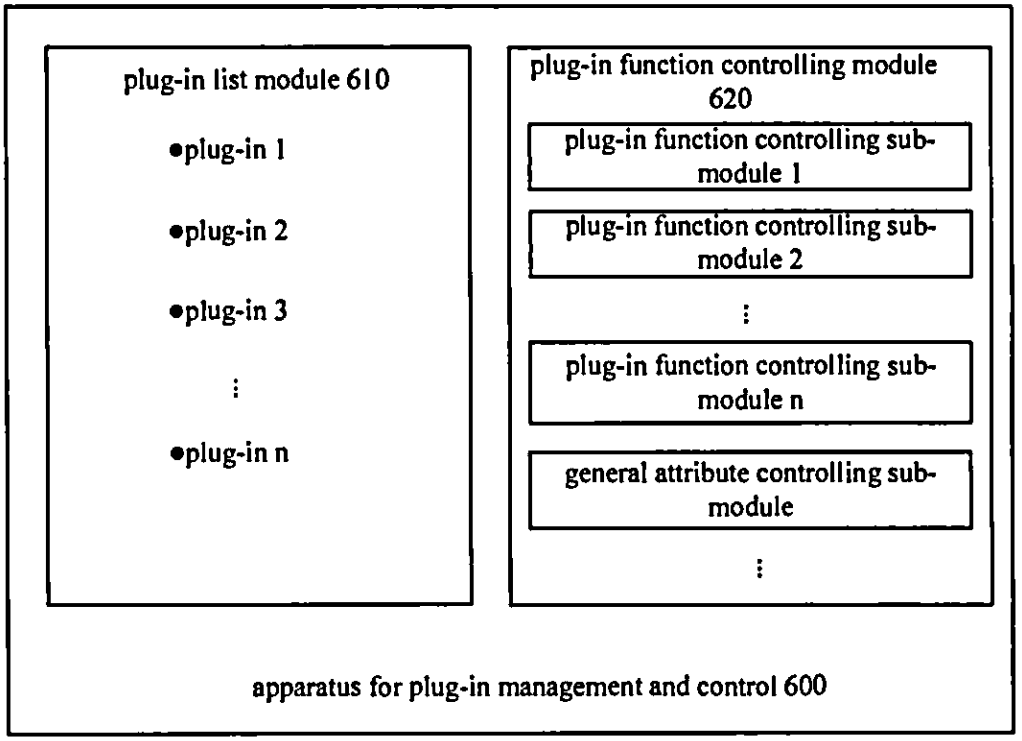
plug-in list module 610
•plug-in 1
•plug-in 2
•plug-in 3
•plug-in n
plug-in function controlling module 620
plug-in function controlling sub-module 1
plug-in function controlling sub-module 2
plug-in function controlling sub-module n
general attribute controlling sub-module
apparatus for plug-in management and control 600

FIG. 6