SWITCHING BETWEEN APPLICATIONS OF AN ELECTRONIC DEVICE

Field of the Invention

This invention relates to electronic devices such as personal digital assistants and organizers. In particular, this invention relates to, but is not necessarily limited to, switching between user selectable applications in an electronic device and method thereof.

Background of the Invention

Electronic devices, such as personal digital assistants and organisers, are known to operate with different applications. Such applications include expense management, appointment schedulers and message editing. As is known in the art, some of these electronic devices do not have sufficient processing power to support concurrent use of two or more applications. For such electronic devices, a user can only select one application to work with at any one time.

With electronic devices that are limited in processing power, a user has to exit from or close an application before selecting another application. In selecting another application as such, the user typically has to actuate a sequence of steps before getting to a desired application.

Selecting applications can be confusing when too many actuating steps are required. Consequently, a user who wants to return to a preceding application may forget the sequence of actuating steps to do so. To alleviate this problem, a back button can be implemented to help the user trace each of the actuating steps back to the preceding application. However, using the back button to return to the preceding application is time consuming when the steps are done one at a time. At other times, the user may want to switch between two specific applications after accessing one or more other applications in between these two specific applications. These situations can frustrate users who cannot remember the sequence of actuating steps

to get to a desired preceding application and do not have the time or the inclination to do so.

As electronic devices continue to operate faster and have more user selectable applications, it is desirable for users to switch easily and quickly between different desired applications.

Summary of the Invention

It is an object of this invention to overcome or at least alleviate the problems associated with switching between user selectable applications of electronic devices.

According to one aspect of the invention, there is provided an electronic device having user selectable applications, said device comprising:

a display;

at least one user input; and

a controller coupled to said display and said user input,

wherein, in response to detecting an actuation of said user input, said controller initiates storage of the name of a current application and, thereafter, switches said device to another application.

Preferably, said user input can be adapted to display name of said another application prior to said actuation.

Suitably, said user input can be adapted to display said name of said current application after said actuation.

Preferably, said display can be a touch screen.

Suitably, said user input can comprise one or more software keys displayed on said display.

Preferably, said software keys can include a history key.

Suitably, said software keys can include a home key.

Preferably, said user input can comprise circuitry for sensing actuation of said software keys.

Alternatively, said user input can comprise one or more buttons.

Preferably, said controller can be adapted to verify a password prior to switching to said another application.

According to another aspect of the invention, there is provided a method for switching between user selectable applications in an electronic device comprising the steps of:

detecting an actuation of at least one user input;

storing, in a memory, the name of a current application; and

switching to another application indicated on said user input prior to said actuation.

Preferably, said method can further comprise the step of indicating said current application on said user input after said actuation.

Suitably, said step of detecting can comprise the step of sensing an actuation of a history key.

Preferably, said step of detecting can further comprise the step of verifying a password in response to said step of sensing.

Suitably, said step of verifying can occur after lapse of a predetermined time period.

Alternatively, said step of detecting can comprise the step of sensing an actuation of a home key, said home key being indicative of a home screen for displaying at least one other application.

Brief Description of the Drawings

In order to describe the invention and to put it into practical effect, reference will now be made to embodiments as illustrated with reference to the accompanying drawings in which:

FIG. 1 is a block diagram of an electronic device in accordance with a preferred embodiment of the invention; and

FIG. 2 is a flow diagram of a method for switching between user selectable applications of the electronic device of FIG. 1.

Detailed Description of the Invention

In accordance with a preferred embodiment of the invention, FIG. 1 is a block diagram of an electronic device 10. Device 10 has user selectable applications and can be, for example, an electronic organizer or a personal digital assistant. Device 10 comprises a display 12, at least one user input 14 and a controller 16. Controller 16 comprises a memory 18 and couples to display 12 and user input 14. Display 12 and user input 14 together form a touch screen 20. User input 14 comprises one or more software keys and circuitry for sensing actuation of the software keys by a user. These software keys are displayed on display 12. As shown in FIG. 1, the software keys include a history key 22 and a home key 24. Home key 24 is indicative of a home screen. When actuated, display 12 will switch from displaying a user selectable application to the home screen. The home screen displays at least one other user selectable application of device 10. Alternatively,

user input 14 can be one or more buttons (not shown) coupled to controller 16 and disposed on housing (not shown) for device 10.

In this specification, user selectable applications are referred to as applications and a user selectable application that is currently in use and displayed on display 12 is referred to as a current application. When a current application is displayed, a portion of display 12 also concurrently displays history key 22 and home key 24. History key 22 indicates the name of the current application or of another application. Which of these two names that history key 22 indicates depends on whether more than one application of device 10 has been used. For example, on power up and for a first application, history key 22 will indicate the name of the first application. This is because no other application has been used prior to this first application.

During use of this first application, a user may wish to select another application or actuate history key 22 or actuate home key 24. Selecting another application will result in history key 22 continuing to indicate the name of the first application. Actuation of history key 22 or home key 24 during use of device 10 within this first application will also result in history key 22 retaining the name of the first application. However, in addition to this, such a name will also be stored in memory 18. Thereafter, device 10 remains within the first application when history key 22 is actuated or, when home key 24 is actuated, switches to a home screen. Within the home screen, history key 22 will indicate the name of the first application.

Going forward in the use of device 10, when the user selects another application from the first application, history key 22 within such an application will still indicate the first application. Actuation of history key 22 or home key 24 within the another application causes its name to be stored in memory 18. Upon storage of the name of the another application, controller 16 then switches device 10 to the first application or to the home screen when, respectively, history key 22 or home key 24 is actuated. Thereafter, while within the first application or the home screen, history key 22 now displays the name of the another application that has been stored in memory 18.

Advantageously, history key 22 and home key 24 enable a user to return directly to a desired preceding application after selecting another application. With this invention, there is no need for the user to actuate the sequence of steps in a reverse order or to actuate a new sequence of steps to get back to the desired preceding application. Selecting the desired preceding application for device 10 is a simple process of actuating a single software key i.e. history key 22. Such selecting is much easier than in conventional devices that require, for example, pull down menus to select one out of different options to return to preceding applications. Furthermore, it is easy for the user to recall the name of the desired preceding application as history key 22 provides an indication of such a name.

To further illustrate the use of history key 22 and switching between applications of device 10, reference will now be made to FIG 2.

FIG. 2 is a flow diagram of a method 30 for switching between applications of device 10. Starting at step 31, method 30 proceeds to decision step 32 in which controller 16 detects whether user input 14 has been actuated. With a "Yes" from decision step 32, controller 16 further determines at decision step 33 whether history key 22 has been actuated.

If controller 16 has sensed an actuation of history key 22, method 30 proceeds to check at decision step 34 whether a password feature is enabled for device 10. This password feature is a security feature to prevent unauthorised use of some applications of device 10. When enabled by the user, decision step 34 may require the user to provide a password before proceeding with method 30. Whether a password is required also depends on a security time-out period that is measured from a screen time-out period. In device 10, display 12 will turn off after the screen time-out period to save power. Both the screen time-out period and the security time-out period are predetermined time periods that can be varied.

Upon lapse of the security time-out period after the screen time-out period, and if the password feature is enabled, then method 30 will prompt the user to provide the password for verification. At decision step 35, controller 16 checks to verify the password when provided. If no password is required at decision step 34 or when the password is verified correctly at decision step 35, method 30 proceeds to step 36. When the password

provided is incorrect, method 30 returns to decision step 32 to thereby prevent entry to the preceding application indicated by history key 22.

Following storage of the name of the current application at step 36, controller 16 switches device 10 to another application at step 37. This another application is indicated on history key 22 prior to its actuation. Upon switching to the another application, method 30 proceeds to step 38 in which controller 16 then controls history key 22 to now display the application stored in memory 18 at step 36 (i.e. the current application when history key 22 was actuated).

Method 30 ends with the displaying of step 38 and returns to decision step 32 to detect actuation of user input 14.

From decision step 33, actuation of user input 14 can be for operations of device 10 other than history key 22. Hence, controller 16 checks at decision step 39 whether home key 24 is actuated. When home key is not actuated, controller 16 controls device 10 to perform operation of actuated user input 14 at step 40. Otherwise, when controller 16 senses an actuation of home key 24, the name of the current application is stored in memory at step 41. Method 30 then proceeds to step 42 to switch display 12 to the home screen. Thereafter, method 30 proceeds to step 38 as described above.

Advantageously, method 30 enables users of device 10 to switch easily and quickly from a current application to a desired preceding application when history key 22 is actuated. It is important to note that the desired preceding application need not necessarily be an application used just before the current application. For example, history key 22 will indicate the first application when the user goes from the first application to a second application and, subsequently, from the second application to a third application. When in the third application, history key 22 still indicates the first application and not the second application. This is because the user did not update history key 22 when using the second application.

With this invention, applied with method 20, switching to the desired preceding application is via a one step actuation of history key 22. This

simplifies selection of desired preceding applications. Application of method 30 in device 10 is therefore a desirable feature and improves on conventional devices using menus or tedious back tracking methods of returning to a desired preceding application.

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We claim:

Claims

1. An electronic device having user selectable applications, said device comprising:

a display;

at least one user input; and

a controller coupled to said display and said user input,

wherein, in response to detecting an actuation of said user input, said controller initiates storage of the name of a current application and, thereafter, switches said device to another application.

2. The electronic device as claimed in Claim 1 wherein said user input is adapted to display name of said another application prior to said actuation.

3. The electronic device as claimed in Claim 1 wherein said user input is adapted to display said name of said current application after said actuation.

4. The electronic device as claimed in Claim 1 wherein said display is a touch screen.

5. The electronic device as claimed in Claim 1 wherein said user input comprises one or more software keys displayed on said display.

6. The electronic device as claimed in Claim 5 wherein said software keys include a history key.

7. The electronic device as claimed in Claim 5 wherein said software keys include a home key.

8. The electronic device as claimed in Claim 5 wherein said user input comprises circuitry for sensing actuation of said software keys.

9. The electronic device as claimed in Claim 1 wherein said user input comprises one or more buttons.

10. The electronic device as claimed in Claim 5 wherein said controller is adapted to verify a password prior to switching to said another application.

11. A method for switching between user selectable applications in an electronic device comprising the steps of:

detecting an actuation of at least one user input;

storing, in a memory, the name of a current application; and

switching to another application indicated on said user input prior to said actuation.

12. The method as claimed in Claim 11 and further comprising the step of indicating said current application on said user input after said actuation.

13. The method as claimed in Claim 11 wherein said step of detecting comprises the step of sensing an actuation of a history key.

14. The method as claimed in Claim 13 wherein said step of detecting further comprises the step of verifying a password in response to said step of sensing.

15. The method as claimed in Claim 14 wherein said step of verifying occurs after lapse of a predetermined time period.

16. The method as claimed in Claim 11 wherein said step of detecting comprises the step of sensing an actuation of a home key, said home key

being indicative of a home screen for displaying at least one other application.

17. An electronic device, having user selectable applications, comprising a display, at least one user input and a controller substantially as described herein with reference to and as illustrated by the accompanying drawings.

18. A method for switching between user selectable applications in an electronic device substantially as described herein with reference to and as illustrated by the accompanying drawings.