The embodiment of the disclosure provides a password input method and a password input device, which are applied to products or systems including input of password. The method includes: when a password character is input, acquiring an input serial number of the current input character; determining whether the input serial number is one more than an integer multiple of a group length, if so, displaying the current input character, and displaying input characters before the current input character as hidden characters. Through the group display of the input password characters, users could check whether there is an error input character. Compared with the prior art, the disclosure greatly avoids the situation of having to clear all characters and input the password once again due to error input of characters, which realizes group-based password display mode during the password input process, thereby improving the usability of products or systems including input of password and improving user experience.
Fig. 1

Fig. 2

setting a group length, wherein the group length is of more than 2 characters

when a password character is input, acquiring an input serial number of the current input character; determining whether the input serial number is one more than an integer multiple of group length or not; if so, displaying the current input character, and displaying input characters before the current input character as hidden characters; if not, displaying the current input character, and keeping the display mode of other input characters unchanged
Fig. 3

301

setting a group length, wherein the group length is of two or more characters

302

when a password character is input, acquiring an input serial number of the current input character and determining whether the input serial number is one more than an integer multiple of group length

No

Yes

303

displaying the current input character directly, and displaying input characters before the current input character as hidden characters

304

displaying the current input character directly, and keeping the display mode of other input characters unchanged
Fig. 5

Deleting Unit

Setting Unit

Acquisition Unit

Determining Unit

Displaying Unit
PASSWD INPUT MTH & DVC

[0001] The present application claims priority to the patent application No. 201110261759.1, entitled “Password input method and device” and filed on Sep. 6, 2011.

TECHNICAL FIELD

[0002] The disclosure relates to the field of the computer technology or electronics, and in particular to a password input method and a password input device.

BACKGROUND

[0003] When a password is inputting, in order to prevent a password input by a user from being seen by other persons to avoid theft, conventional systems are designed to display characters input by the user as special characters “*” on a display screen. However, since the input characters cannot be seen in this password input mode, if the user inputs one or two error characters during the password input process, the user cannot determine the error input character definitely and has to clear all characters and input the password once again to correct the error character.

[0004] At present, in order to protect the safety of password, many websites or users often set a very long password, which includes various special characters, thus, the possibility of error input is further increased. This password input mode hiding input characters cannot make users learn error input characters effectively; once an error character is input, the user has to clear all input password characters and perform the input again, thus, the time of the user is wasted. Moreover, for mobile terminal, which already has a poor password input experience, this password input mode further reduces the usability of products or systems including input of password.

[0005] In order to overcome the above problem, another password input mode is proposed, in which, when a user inputs a character, the input character becomes a hidden character asterisk “*” automatically after waiting a short time such as 0.5 seconds, or, the previous character becomes an asterisk “*” when a next character is input. As shown in FIG. 1, the character “S” last input by a user is displayed in the input box, but all characters input before the character “S” are displayed as hidden characters “*”. This method can make users learn what the current input character is; if the user finds that the current input character is an error character, he can correct it in time. However, this method still has certain drawbacks, that is, the user probably does not see the temporarily displayed character in time, or when the user inputs two or more error characters, he still cannot learn which character is the error character; therefore, this password input mode also would cause the occurrence of situation of having to clear all input password characters and perform the input once again, thus reducing the usability of products or systems including input of password.

SUMMARY

[0006] The purpose of the embodiment of the disclosure is to provide a password input method and a password input device, so as to realize group-based password display during the password input process. The embodiment of the disclosure adopts the technical solutions as follows.

[0007] The embodiment of the disclosure provides a password input method, which includes the following steps:
[0008] when a password character is input, acquiring an input serial number of the current input character;
[0009] determining whether the input serial number is one more than an integer multiple of group length or not;
[0010] if so, displaying the current input character, and displaying input characters before the current input character as hidden characters, wherein the group length is a preset length of two or more characters;
[0011] if not, displaying the current input character, and keeping a display mode of other input characters unchanged.
[0012] In the above method, the displaying the input characters before the current input character as hidden characters includes: refreshing non-hidden characters before the current input character to display them as hidden characters.
[0013] The above method further includes: after a password character is deleted, acquiring an input serial number of a last input character, and determining whether the input serial number is an integer multiple of the group length; if so, recovering a last string of input characters, of which the number is equal to the group length, to plaintext to display.
[0014] The above method further includes: after all password characters are input, displaying all input password characters when a password authentication fails.
[0015] Preferably, the group length is of 3 or 4 or 5 characters.
[0016] The embodiment of the disclosure provides a password input device, which includes:
[0017] an acquisition unit configured to acquire, when a password character is input, an input serial number of the current input character;
[0018] a determining unit configured to determine whether the input serial number acquired by the acquisition unit is one more than an integer multiple of group length, wherein the group length is a preset length of two or more characters;
[0019] a displaying unit configured to: display the current input character, and display input characters before the current input character as hidden characters, when a result of the determining unit is Yes; and display the current input character and keep a display mode of other input characters unchanged, when the result of the determining unit is No.
[0020] The displaying unit of the determining unit is No.
[0021] The above device further includes a deleting unit.
[0022] The deleting unit is configured to: after a password character is deleted, acquire an input serial number of a last input character, and determine whether the input serial number is an integer multiple of the group length; if so, recover the last string of input characters, of which the number is equal to the group length, to plaintext to display.
[0023] The displaying unit is further configured to, after all password characters are input and a password authentication is implemented, display all input password characters when the password authentication fails.
[0024] The above device further includes a setting unit.
[0025] The setting unit is configured to set the group length, wherein the group length is of two or more characters.
[0026] In the above scheme, the group length is of 3 or 4 or 5 characters.
[0027] In the embodiment of the disclosure, when a password character is input, an input serial number of the current...
input character is acquired; then, it is determined whether the input serial number is one more than an integer multiple of group length or not; if so, the current input character is displayed, and input characters before the current input character are displayed as hidden characters. Through the group display of the input password characters, users could check whether there is an error input character. Compared with the prior art, the embodiment of the disclosure greatly avoids the situation of having to clear all characters and input the password once again due to error input of characters. The manner of group-based password display during the password input process improves the usability of products or systems including input of password, and improves user experience.

In addition, since the group length is set to be of two or more characters, the user has sufficient time and information to determine where error input occurs, so as to perform correction conveniently. Moreover, when the password is relatively short, if the group length is set to be of three characters, the password information of the user can be protected while giving the user sufficient time and information to correct input error, so that an optimum balance is achieved in the two aspects. When the password is relatively long, the user can also modify the group length appropriately (for example, five characters) according to the principle of the embodiment of the disclosure, to achieve an optimum balance.

In addition, if the serial number of the last character after deleting is an integer multiple of the group length, the last string of input characters, of which the number is equal to the group length, is recovered to plaintext to be displayed, so that the user can check the previous input error one by one conveniently without deleting all input characters.

**BRIEF DESCRIPTION OF THE DRAWINGS**

**FIG. 1** shows a diagram of password input implementation in prior art;

**FIG. 2** shows a first flowchart of a password input method in the embodiment of the disclosure;

**FIG. 3** shows a second flowchart of the password input method in the embodiment of the disclosure;

**FIG. 4** shows a diagram of password input implementation in the embodiment of the disclosure; and

**FIG. 5** shows a structure diagram of a password input device in the embodiment of the disclosures.

**DETAILED DESCRIPTION**

The embodiment of the disclosure provides a password input method and a password input device, which are applied to products or systems including input of password. Hereinafter, the embodiment of the disclosure is described in detail in conjunction with accompanying drawings.

In the embodiment of the disclosure, when a password character is input, an input serial number of the current input character is acquired; then, it is determined whether the input serial number is one more than an integer multiple of group length; if so, the current input character is displayed, and input characters before the current input character are displayed as hidden characters, wherein the group length is a preset length of two or more characters; if not, the current input character is displayed and the display mode of other input characters is kept unchanged.

**FIG. 2** shows a flowchart of the password input method provided by the embodiment of the disclosure. As shown in FIG. 2, the method may include the following steps:  

1. **Step 201**: Setting a group length.
2. **Step 202**: When a password character is input, acquiring an input serial number of the current input character; determining whether the input serial number is one more than an integer multiple of group length; if so, displaying the current input character, and displaying input characters before the current input character as hidden characters; if not, displaying the current input character and keeping the display mode of other input characters unchanged.
3. **Step 301**: Setting a group length.
4. **Step 302**: When a password character is input, acquiring an input serial number of the current input character and determining whether the input serial number is one more than an integer multiple of group length; if so, executing Step 303; if not, executing Step 304.
5. **Step 303**: Displaying the current input character directly, and displaying input characters before the current input character as hidden characters.
6. **Step 304**: Besides displaying the current input character, it is needed to refresh the previous input characters displayed as characters to display them as hidden characters. There can be many specific refreshing methods as follows:
7. **Step 305**: All input characters before the current input character can be refreshed to display as hidden characters; or a plurality of input characters before the current input character can be refreshed to display as hidden characters, wherein the number of the plurality of input characters is equal to the
group length. For example, if the group length is of 3 characters, when the seventh character is input, the previous 6 input characters can be refreshed to display as hidden characters, or, the previous input characters from the fourth character to the sixth character can be refreshed to display as hidden characters.

0050 Step 304: Displaying the current input character directly and keeping the display mode of other input characters unchanged.

0051 Preferably, the embodiment of the disclosure can further include the following steps:

0052 a) after all password characters are input, displaying all input password characters when a password authentication fails, that is, recovering all input password characters to plaintext to display. Here, all input characters are displayed after the password authentication fails, so that the user can correct the error input character conveniently.

0053 Preferably, the embodiment of the disclosure can further include:

0054 After a password character is deleted, acquiring the input serial number of the last input character, and determining whether the input serial number is an integer multiple of the group length; if so, recovering the last string of input character, of which the number is equal to the group length, to plaintext to display; if not, keeping the display mode of other input characters unchanged.

0055 In the embodiment of the disclosure, a group length is set; when a password character is input, an input serial number of the current input character is acquired; then, it is determined whether the input serial number is one more than an integer multiple of group length; if so, the current input character is displayed, and input characters before the current input character are displayed as hidden characters. Through the group display of the input password characters, users could check whether there is an error input character. The embodiment of the disclosure greatly avoids the situation of having to clear all characters and input the password once again due to error input of characters. Through the password input method provided by the embodiment of the disclosure, the usability of products or systems including input of password is improved, and user experience is improved. In addition, since the group length is set to be of two or more characters, the user has sufficient time and information to determine where error input occurs, so as to perform correction conveniently.

0056 To describe the embodiment of the disclosure more clearly, a specific example is provided below.

0057 As shown in FIG. 4 (a), the group length is set to be of three characters. When a user inputs the first three input characters “123”, since the input serial number of each input character is not one more than an integer multiple of group length, the input characters “123” are displayed directly. As shown in FIG. 4 (b), when the fourth character is input, at this time, since the input serial number of the fourth character is 4, which is one more than an integer multiple of group length, the current input character “4” is displayed, and the input characters before the current input character are displayed as hidden characters “*”. Then, the password in the password box is displayed as “****”. As shown in FIG. 5 (c), when the fifth character is input, at this time, since the input serial number of the fifth character is not one more than an integer multiple of group length, the current input character is displayed directly and the display mode of other input characters is not changed; when the sixth character is input, since 6 is not one more than an integer multiple of group length either, the current input character “6” is displayed directly and the display mode of other input characters is not changed, so the password is displayed as “****456”. Next, when the seventh character “7” is input, since the input serial number of the current input character is one more than an integer multiple of group length, the three characters “456” before the current input character are displayed as hidden characters, so the password is displayed as “********”. If the user continues inputting password characters, same process is conducted.

0058 Based on the same technical concept as that of the method embodiment, the embodiment of the disclosure further provides a password input device, which can be implemented through software.

0059 FIG. 5 shows a password input device provided by the embodiment of the disclosure. The password input device includes an acquisition unit 12, a determining unit 13 and a displaying unit 14. The password input device may further include a setting unit 11.

0060 The setting unit 11 is configured to set a group length.

0061 The acquisition unit 12 is configured to acquire, when a password character is input, an input serial number of the current input character.

0062 The determining unit 13 is configured to determine whether the input serial number acquired by the acquisition unit 12 is one more than an integer multiple of group length.

0063 The displaying unit 14 is configured to display the input characters according to a result of the determining unit 13. If the result is Yes, the displaying unit 14 is configured to display the current input character, and to display input characters before the current input character as hidden characters; if the result is No, the displaying unit 14 is configured to display the current input character, and to keep the display mode of other input characters unchanged.

0064 In the above password input device, the displaying unit 14 is configured to refresh non-hidden characters before the current input character to display them as hidden characters when displaying the input characters before the current input character as hidden characters.

0065 The above password input device further includes a deleting unit 15.

0066 The deleting unit 15 is configured to: after a password character is deleted, acquire the input serial number of the last input character, and determine whether the input serial number is one more than an integer multiple of group length; if so, recover the last string of input characters, of which the number is equal to the group length, to plaintext to display; if not, no step is performed.

0067 In the above device, the displaying unit 14 is further configured to, after all password characters are input and a password authentication is implemented, display all input password characters when the password authentication fails.

0068 In the above device, the group length is of 2 or 3 or 4 or 5 or more characters.

0069 In the password input device provided by the embodiment of the disclosure, a group length is set; when a password character is input, an input serial number of the current input character is acquired; then, it is determined whether the input serial number is one more than an integer multiple of group length; if so, the current input character is displayed, and input characters before the current input character are displayed as hidden characters. Through the group display of the input password characters, users could check
whether there is an error input character. The password input device provided by the embodiment of the disclosure greatly avoids the situation of having to clear all characters and input the password once again due to error input of characters. Through the password input device provided by the embodiment of the disclosure, the usability of products or systems including input of password is improved, and user experience is improved. In addition, since the group length is set to be of two or more characters, the user has sufficient time and information to determine where error input occurs, so as to perform correction conveniently.

[0070] Those skilled in the art should understand that the modules included in the device provided in the embodiment can be deployed in the device provided in the embodiment according to the description of the embodiment, or can be deployed in one or more devices in different embodiments after subjecting to corresponding changes. The modules in the above embodiment can be combined into one module, or can be further divided into a plurality of sub-modules.

[0071] Through the description of the above embodiments, those skilled in the art can understand that the disclosure can be implemented through software plus necessary general hardware platform, and of course can be implemented through hardware; however, the former one is a better implementation in many conditions. Based on this understanding, the technical solution of the disclosure essentially or the part making a contribution to prior art can be embodied in the form of software product. This computer software product is stored in a storage medium, including a plurality of instructions used for enabling a terminal device (which can be a mobile phone, a personal computer, a server, or a network device) to execute the method described in each embodiment of the disclosure.

[0072] The above are only the preferred embodiments of the disclosure. It should be noted that, for those skilled in the art, changes and modifications can be made without departing from the principle of the disclosure, and these changes and modifications are deemed to be included within the scope of protection of the disclosure.

1. A password input method, comprising:
   when a password character is input, acquiring an input serial number of the current input character;
   determining whether the input serial number is one more than an integer multiple of a group length or not;
   if so, displaying the current input character, and displaying input characters before the current input character as hidden characters, wherein the group length is a preset length of two or more characters; and
   if not, displaying the current input character, and keeping a display mode of other input characters unchanged.
2. The method according to claim 1, wherein the displaying the input characters before the current input character as hidden characters comprises:
   refreshing non-hidden characters before the current input character to display them as hidden characters.
3. The method according to claim 1, further comprising:
   after a password character is deleted, acquiring an input serial number of a last input character, and determining whether the input serial number is an integer multiple of the group length or not; if so, recovering a last string of input characters, of which the number is equal to the group length, to plaintext to display.

4. The method according to claim 1, further comprising:
   after all password characters are input, displaying all input password characters when a password authentication fails.
5. The method according to claim 1, wherein the group length is of 3 or 4 or 5 characters.
6. A password input device, comprising:
   an acquisition unit configured to acquire, when a password character is input, an input serial number of the current input character;
   a determining unit configured to determine whether the input serial number acquired by the acquisition unit is one more than an integer multiple of a group length or not, wherein the group length is a preset length of two or more characters; and
   a displaying unit configured to: display the current input character, and display input characters before the current input character as hidden characters when a result of the determining unit is Yes; and display the current input character, and keep a display mode of other input characters unchanged when the result of the determining unit is No.
7. The device according to claim 6, wherein the displaying unit is configured to, when displaying the input characters before the current input character as hidden characters, refresh non-hidden characters before the current input character to display them as hidden characters.
8. The device according to claim 6, further comprising:
   a deleting unit configured to: after a password character is deleted, acquire an input serial number of a last input character, and determine whether the input serial number is an integer multiple of the group length; if so, recover a last string of input characters, of which the number is equal to the group length, to plaintext to display.
9. The device according to claim 6, wherein the displaying unit is further configured to, after all password characters are input and a password authentication is implemented, display all input password characters when the password authentication fails.
10. The device according to claim 6, wherein the group length is of 3 or 4 or 5 characters.
11. The device according to claim 6, further comprising:
    a setting unit configured to set the group length, wherein the group length is of two or more characters.
12. The method according to claim 2, wherein the group length is of 3 or 4 or 5 characters.
13. The method according to claim 3, wherein the group length is of 3 or 4 or 5 characters.
14. The method according to claim 4, wherein the group length is of 3 or 4 or 5 characters.
15. The device according to claim 7, wherein the group length is of 3 or 4 or 5 characters.
16. The device according to claim 8, wherein the group length is of 3 or 4 or 5 characters.
17. The device according to claim 9, wherein the group length is of 3 or 4 or 5 characters.
18. The device according to claim 7, further comprising:
    a setting unit configured to set the group length, wherein the group length is of two or more characters.
19. The device according to claim 8, further comprising:
    a setting unit configured to set the group length, wherein the group length is of two or more characters.
20. The device according to claim 9, further comprising:
   a setting unit configured to set the group length, wherein
   the group length is of two or more characters.

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