

AUTOMATIC ROTATION OF DIGIT LOCATION IN DEVICES USED IN PASSWORDS

BACKGROUND OF THE INVENTION

1. Technical Field

The present invention relates generally to an improved keypad and in particular to a method for improving the security of a keypad which provides access to a system via a security code punched into the keypad. Still more particularly, the present invention relates to a method for improving the security of a keypad by reducing the chances of determining the security code of the keypad.

2. Description of the Related Art

Security of systems has always been a major concern where limited access to information (or a location) is desired. In many modern systems, restricted access is provided to a select group of users/customers via an alphanumeric keypad which include or are connected to a decoder circuit of some form. These keypads typically have the set of characters exposed to the user's/customer's side for interfacing. These characters are connected to an electronic component with intelligence to recognize the characters entered (decode) and compare it to the code required to provide entrance to the system. The users/customers access the system by punching in an access code or password specifically chosen for that system. Examples of such keypads are those utilized at Automatic Teller Machines (ATM) or cipher locks to secure areas.

Regular keypads have static number configurations. They generally consist of numbered buttons ranging from 0 through 9 and an "*" and a "#" button much like a typical telephone punchpad. The numbers exist in a common pattern and hence the user or anyone with knowledge of the pattern can enter the code without looking at numbers on the keypad.

One example of the utilization of such keypads is in plants which have gated entrances which are accessed via a security code. Individuals with permission to enter the facility are provided with a security/access code which opens the gate and allows entry on to the premises. A more specific and common example of this is gated communities or apartment complexes.

In single code/password systems, the numbers or range of possible numbers (i.e. the number of possible combinations) which make up a user's password is finite and can be deduced in several ways. A non-authorized user may observe a user and the patterns typed in, significantly reducing the security of the system. Additionally, the non-authorized user may acquire the password by analyzing the physical keypads for wear. Wear indicates high utilization and would also significantly narrow down the range of possibilities.

In statistical measure, if we assume a typical keypad with digits 0 through nine and an "*" and "#" button, if the access code is four digits, then the probability of guessing the correct code is $(1/9! * 1/4!)$ or 1 chance in 157,464. However, assume that the user can reduce the coded digits to the four most commonly utilized digits based on the wear of the keypad numbers. This probability then reduces to $(1/4!)$ or 1 chance in 24.

Security codes generally are numeric but may also be symbolic. There is therefore a security problem with alphanumeric keypads that are utilized for security passwords. Presently some areas provide for the manual change of the digit locations on the security pads at set intervals. However, this is time consuming and inefficient. Additionally, it does not protect the system immediately after the user has been observed entering the security code.

Therefore, it would be desirable to have an improved method for increasing security of systems accessed utilizing security keypads. Additionally, it would be desirable to have such an improved method for increasing security of systems wherein the keypad configuration changes automatically after each or a series of user interfaces.

SUMMARY OF THE INVENTION

It is one object of the present invention to provide an improved keypad.

It is another object of the present invention to provide a method for improving the security of a keypad which provides access to a system via a security code punched into the keypad.

It is yet another object of the present invention to provide a method for improving the security of a keypad by reducing the chances of determining the security code of the keypad.

The above features are achieved as follows. A method is disclosed for ensuring security of a system accessed utilizing a keypad wherein access is provided to said system via a security code entered on the keypad. A security code is entered on the keypad utilizing a first character configuration of the keypad. Following this, the location of one or more access characters on the keypad is repositioned to present a second character configuration of the keypad. The repositioning of the character configuration is completed electronically in a generally random manner. The change in configuration may take place immediately after each user interface, or after a predetermined number of user interfaces.

The above as well as additional objectives, features, and advantages of the present invention will become apparent in the following detailed written description.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

FIG. 1 depicts a series of diagrams depicting the physical layout of a keypad in accordance with one embodiment of the present invention;

FIG. 2 is a series of diagrams depicting translation decoding according to one embodiment of the present invention; and

FIG. 3 is a logic flow diagram according to one embodiment of the present invention.

DETAILED DESCRIPTION

The present invention is implemented on a reprogrammable surface such as a touchscreen surface or button