

44 to data processor 26. The list of CRC values is stored in system memory 34. At event 380, the ID string list compression operation is completed. It should be noted that, in certain embodiments, the events 300 through 370 may be carried out on data processor 26 provided that memory 34 has sufficient capacity. In such cases, the downloading or transfer of the completed list of compressed ID strings in event 370 may be omitted.

[0080] Referring now to FIG. 6B, at event 400, programming in memory 34 is started for comparison of a user-entered ID string to the stored list of compressed ID strings prepared as described above. This programming carries out operations associated with the transfer of a data stream corresponding to the entered ID string from memory 34 to CRC circuit 38 for compression, searching of the list of compressed ID strings for a match with the compressed, entered ID string, and making a validation decision for the compressed, entered ID string. Event 400 may in certain embodiments be triggered by event 410 described below.

[0081] Referring also to FIG. 1 and FIG. 2, at event 410 a user enters a string of alphanumeric characters corresponding to a user ID string by selective actuation of appropriate first keys 12 and second keys 14 on keypad 10 in the manner described above.

[0082] At event 420, the input ID string entered by the user is converted to a compressed input ID string in the form of a corresponding CRC value. Event 420 encompasses the events 110 through 170 described above with reference to FIG. 4. That is, the CRC circuit 38 is seeded with a desired initial value, DMA controller 36 is set up for transfer of the data stream corresponding to the input ID string of event 410 from memory 34 to CRC circuit 38, the CRC value for the input ID string is calculated by CRC circuit 38, and the calculated CRC value for the input ID string is read from the CRC circuit 38 back to memory 34.

[0083] At event 430, the list of CRC values for authorized ID strings in RAM 34, created in 310-360 as described above, is searched for matches with the CRC value for the input ID string calculated in event 420. The CRC value for the input ID string is compared to individual stored CRC values in the list until a match is found.

[0084] At event 440, a query is made as to whether a match has been found, i.e., whether the CRC value for the input ID string is found in the list of stored CRC values for authorized strings. If the CRC value for the input ID string is found in the list, event 450 is carried out. If the CRC value for the input ID string is not found in the list, event 460 is carried out. Event 440 may be carried out for each comparison between the CRC value of the input ID string and the individual stored CRC values for authorized strings, such that the determination in event 440 can occur upon detection of a match, and prior to search of the entire list.

[0085] At event 450, the input user ID string entered in event 410 is authorized according to a match between the CRC value for the input ID string and one of the stored CRC values for authorized ID strings. Following event 450, the validation of the user ID string is complete at event 470. Additional events associated with user ID string validation (not shown), may also occur, such as programming operations associated with providing access to stored secure information to the user.

[0086] At event 460, the user ID string entered in event 410 is not authorized. Any subsequent events that may occur with authorization of the user ID string, as provided in event 450, are not carried out, and event 470 occurs. In certain embodiments, event 410 may be repeated by a user to allow re-entry of an ID string, followed by events 420-440 again to determine the validity of the re-entered user ID string.

[0087] While the present invention has been described with reference to the specific embodiments thereof, it should be understood by those skilled in the art that various changes may be made and equivalents may be substituted without departing from the true spirit and scope of the invention. In addition, many modifications may be made to adapt a particular situation, material, composition of matter, process, process step or steps, to the objective, spirit and scope of the present invention. All such modifications are intended to be within the scope of the claims appended hereto.

What is claimed is:

1. A data entry apparatus, comprising:

- (a) a keypad including a plurality of first keys and a plurality of second keys;
- (b) said first keys each having at least one primary alphanumeric character associated therewith,
- (c) at least one of said first keys having at least one secondary alphanumeric character associated therewith; and

(c) said first key with said secondary alphanumeric character being operable upon actuation to selectively display said secondary alphanumeric character in association with one of said second keys.

2. The apparatus of claim 1, further comprising a display field operatively coupled to said keypad, said display field configured to selectively display said primary and secondary alphanumeric characters according to actuation of said first and second keys.

3. The apparatus of claim 1, wherein second keys are configured to display one said secondary alphanumeric character on each said second key.

4. The apparatus of claim 3, further comprising a touch screen in a superimposed relationship with said keypad.

5. The apparatus of claim 1, further comprising:

- (a) a memory operatively coupled to said keypad
- (b) a direct memory access controller operatively coupled to said memory;
- (c) a cyclic redundancy check circuit operatively coupled to said direct memory access controller;
- (d) said direct memory access controller configured to transfer data from said memory to said cyclic redundancy check circuit; and
- (e) said cyclic redundancy check circuit configured to calculate a check value for said data.

6. The apparatus of claim 5, further comprising:

- (a) stored programming configured to seed said cyclic redundancy check circuit with a selected initial value;
- (b) stored programming configured to set up said direct memory access controller with a source address for a data stream, a destination address for said data stream, and a size for said data stream; and