Uni-Card for accessing ATM, Driver's License and RC book

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Abstract— This paper discusses uni-card for accessing Automated Teller Machine system, driving license and RC Book of vehicles; pointing out the hassles of carrying multiple cards for ATM, Driver's license and RC Book. It also concentrates on security of the system by providing multi-level security for accessing the different services. Password provision will be provided to access the whole card and for ATM second level security will be the PIN that is being used presently.

Keywords— ATM, Driver's license, RC book, Uni-card, Authentication, PIN, TFT

I. INTRODUCTION

In recent days all the services are becoming electronic in nature. ATM (Automatic Teller Machine) and RTO related documents are all being collected in databases by the respective banks and authorities. This creates the challenge for maintaining database of customers by individual authorities. But this creates the database of each customer separately for different services. The system of UNI-CARD will make it easier maintain the databases for the authorities and at the user end it will free them from the hassle of maintaining multiple card for different services.

This system has multiple benefits over the existing system. It results in reduction in cost for inter banking transactions since interfacing between different banks consumes resource and at the user end charges are applied. It also collectively stores the data of each individual using the services and their details can be accessed under one card or ID. The UNI-CARD system has multi-level security, a password for accessing the card and PIN for accessing the banking facilities. This makes this system more secure. In present system, there is limitation of number of transactions that can be made. Due to linking of database, this issue is solved. The RTO related data can be easily accessed by the authorities especially for the cases like national or international permits for vehicles, renewal of license, RC Book updates, etc.

II. EXISTING SYSTEM

In the existing system, services like ATM, Driver's license and RC Book are accessed using their individual service cards. Due to this, users need to carry separate cards for separate services. Security of the present system provides only PIN protection for the ATM and for License and RC Book only data is displayed without any security. In present ATMs, the customer is identified by inserting a plastic card fitted with a magnetic strip or a chip that contains the user's account number. The user then verifies his / her identity by entering their passcode or personal identification number (generally a four-digit number). If the pin is entered incorrectly consecutively several times (usually three), most of the ATMs retain the card for security precaution to prevent unauthorized users form discovering the passcode/PIN by guessing or any other way. Moreover, there is limitation in transaction among different banks. Using ATM of other banks have limitation in transaction or user has to pay extra transaction fees.

III. PROPOSED SYSTEM

Idea behind using UNI- card is that the customers can use a single card to operate their bank accounts, driving license and RC Book instead of using separate cards for each service, maintaining their pins, carrying their ATMs, license and RC books separately and safely which is a tedious job. The idea behind the product is to add all the bank accounts, driving license and RC book in a single card for the user. In this, the user will swipe his/her uni-card in the machine, then he/she will be requested for authentication by entering PIN /password in the machine. Upon correct authentication, three options for the services will be shown on screen. On selecting a service, further details of that particular service will be displayed. In case of ATM, it will display the list of all bank accounts the user is holding. Now, the user can select the bank from which he/she wants to perform transaction. On selecting the bank, request is sent to the respective bank server for accessing the database of the customer for the transaction to be processed. Similarly, for driver's license and RC book upon correct authentication, details of the license and the vehicles are displayed on the screen.

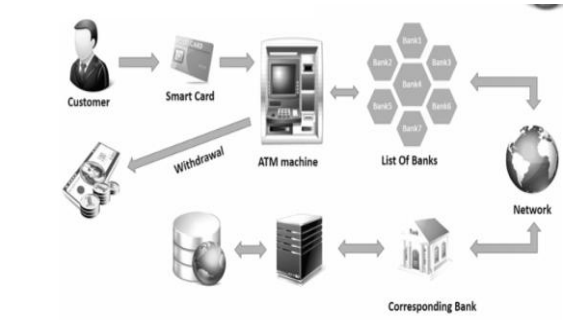

Fig.1 Flow of withdrawal and networking of bank system

Authentication of Uni-Card

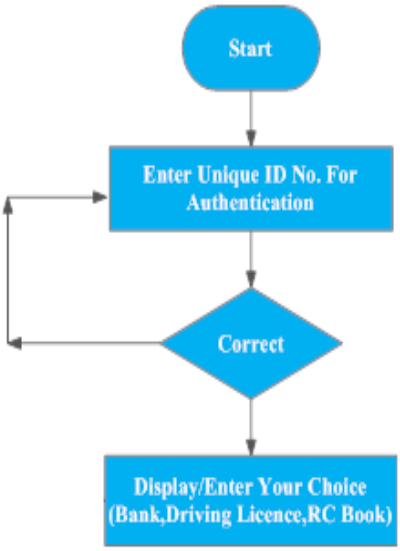

Fig.2 Flow diagram for authentication of Uni-card

After swiping the card in machine the user will enter nine-digit unique id number. If the entered ID is correct then authentication is given and three options as Bank, Driving License & RC Book are displayed. And the user is asked to enter his/her choice.

Selection of service

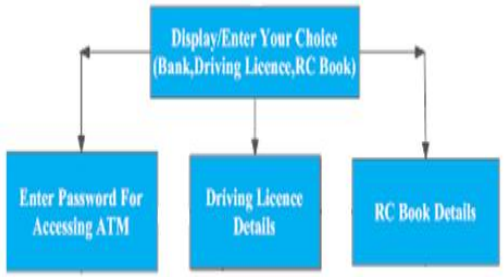

Fig.3 Flow for selection service

If user give choice as 1 then he/she will be asked to select the bank. when user select the bank then it will ask to enter the ATM Card 4-digit pin no. If the choice is 2 then all the Driving License details will display. If choice is 3 then all the RC Book details will display.

ATM authentication

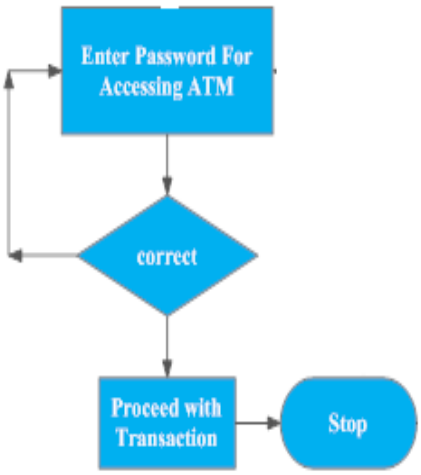

Fig.4 ATM authentication upon selection

If the entered pin no is correct then authentication is given and he/she can proceed with transaction. Otherwise user need to enter his/her pin no again.

Displaying driver's license details

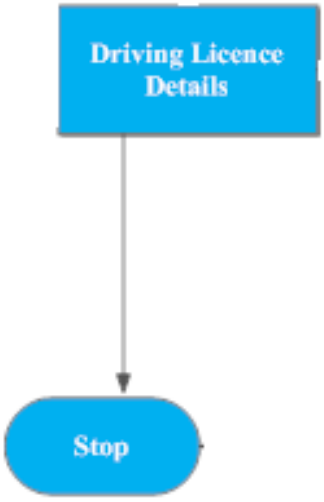

Fig.5 Displaying details of driving license

Here all the Driving License details are displayed.

Displaying details of RC book

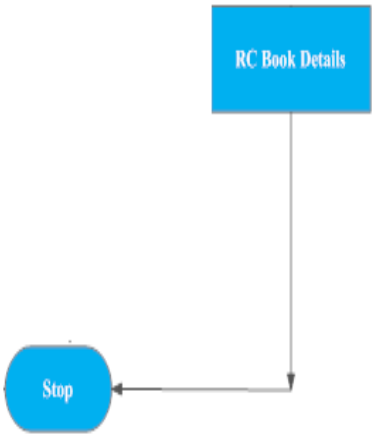

Fig.6 Displaying details of RC book

Here all the RC Book details are displayed upon selection.

IV. TFT INTERFACING WITH SPARTAN6 FPGA

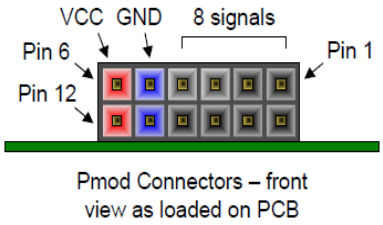

Fig.7 Pin connection of TFT

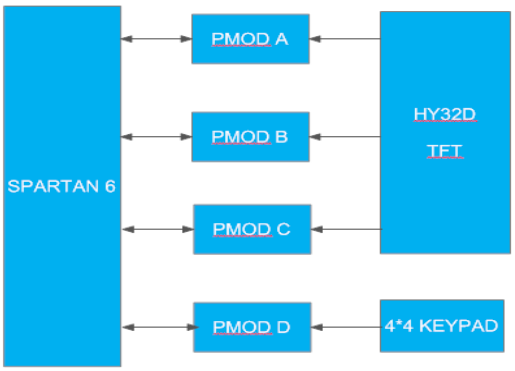

Fig.8 Spartan 6 interfacing with TFT and Keypad

Here HY32D tft is interfaced with SPARTAN 6 FPGA kit. SPARTAN 6 have 4 PMOD ports as PORT JA, PORT JB, PORT JC, PORT JD. HY32D TFT is interfaced to port JA, JB, JC. Each port has 12 pins in which pin 6 & pin 12 provides 3.3 volt. Pin 5 & pin 11 are grounded & remaining 8 pins are logic signals. The JA, JB, JC Ports are used to connect the HY32D TFT with NEXYS 3 Board. The connections are made with use of male-female connectors. The TFT is not directly connected to the ports of Nexys 3 Board, one driver circuit is used for interfacing. The TFT driver circuit consists of two IC's, one is 74HC573D and another one is sn74alvc164245.

The Pins of PMOD Ports are connected as follows:

Table 1 FOR JA PORT -

PORT NO	TFT PIN	PORT NO	TFT PIN
JA1	DIN0	JA7	DIN4
JA2	DIN1	JA8	DIN5
JA3	DIN2	JA9	DIN6
JA4	DIN3	JA10	DIN7
JA5	-	JA11	-
JA6	-	JA12	-

Table 2 FOR JB PORT -

PORT NO	TFT PIN	PORT NO	TFT PIN
JB1	RD	JB7	BL
JB2	RS	JB8	DEN
JB3	WR	JB9	DDIR
JB4	CS	JB10	DLE
JB5	GND	JB11	-
JB6	VDD	JB12	-

Table 3 FOR JC PORT -

PORT NO	TFT PIN	PORT NO	TFT PIN
JC1	TCS	JC7	RST
JC2	TDI	JC8	-
JC3	TDO	JC9	-
JC4	TSCK	JC10	-
JC5	-	JC11	-
JC6	-	JC12	-

IC 74HC573D - This is a transparent latch of D type which has output having three states with D type input for each latch. It is 20 pin IC. When LE(latch Enable) is high & (Output Enable) is low then data at each latch is available at output.

Table 4 Operation of IC74HC573D

INPUTS VOLTAGE			OUTPUT STATE
(OUTPUT ENABLE)	LATCH ENABLE	DATA	**Q_0 to Q_7**
Low	High	Low	Low
Low	High	High	High
Low	Low	I	Low
Low	Low	h	High
High	Low	I	High Impedance
High	Low	h	High Impedance

h- High voltage level one set up time before high-to-low Latch Enable Transition.

I - Low voltage level one set up time before the high-to-low Latch Enable Transition.

IC SN74ALVC164245 -This is a 48 pin IC and can output 24 mA drive at 3.3V VCC. This device allows down voltage translations and accepts input voltages to VCC + 0.5V. This device is useful for high-speed application. This device can transmit & receive either as two 8 bit or one 16 bit. It can transmit data bidirectional between A & B bus. This data transfer depends upon direction input. To make the buses isolated high logic must be given to output enable input.

The function model of IC is as follows:

Table 5 : Operation of ICN74ALVC164245

CONTROL INPUTS LOGIC(VOLTAGE)		RESULT
(OUTPUT ENABLE)	DIRECTION	
Low	Low	B =>A
Low	High	A =>B
High	Don't Care	Isolation between A&B

V. FUTURE ENHANCEMENT

Since different services are merged together, the uni-card is provided with multilevel security. Password / PIN authentication is provided to access the uni-card. Upon proper authentication system will avail the user with options to select ATM, RC book or License. Since there are multiple bank accounts, the existing single level security is not sufficient. Biometric scanner can be embedded along with the uni-card. No one other than the user and the people he/she has authenticated can use the card. Applications can be developed for the system to be used without the need of card to access the system. Database can be stored in cloud and the system can be made more real time for application. Instead of presently used hardware keyboard, virtual keypad/keyboard can be used which will reduce hardware.

VI. CONCLUSIONS

User can manage their accounts in different banks, driver's license and RC book details by using uni-card which provides easy access and reduces hassles of managing separate cards and their PINs. This also leads to reducing the transaction charges and limitations that were levied on the users/customers for transaction and reduce the usage of plastic for production of cards. System is made more secure with multilevel security for accessing services like ATM, Driver's license or RC Book and also the PIN to access further ATM options upon selection.

VII. ACKNOWLEDGMENT

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