Chapter 4

Results

4.1 Introduction

Display unit is an important part of this device. Here, we use 16*2 LCD (Liquid Crystal Display) for our device. In this chapter an overview of display unit is shown in brief with necessary screenshots. We will also discuss about how voters can verify their votes and what are the functions of MicroSD card Adapter & GSM Module in our voting device.

4.2 Voter Access

First a voter needs to show his/her smart card on smart card reader to get access in the voting room. We have done it by RFID (Radio Frequency Identification) card and reader as a sample version.

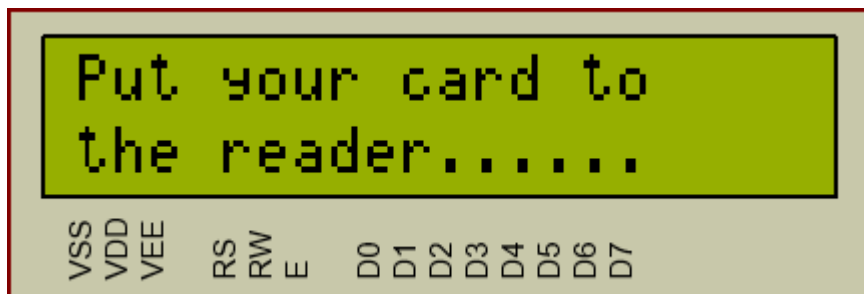First the following instruction will be shown on LCD,

Figure 4.1: Display shows the instruction to put the ID card on the reader.

If the voters ID are valid, the basic information of the voters will show on the LCD display including ID number, voter's name and date of birth (shown in Figure 4.2 & 4.3).
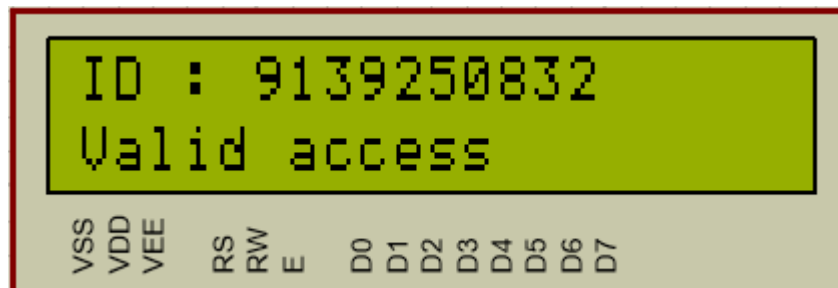

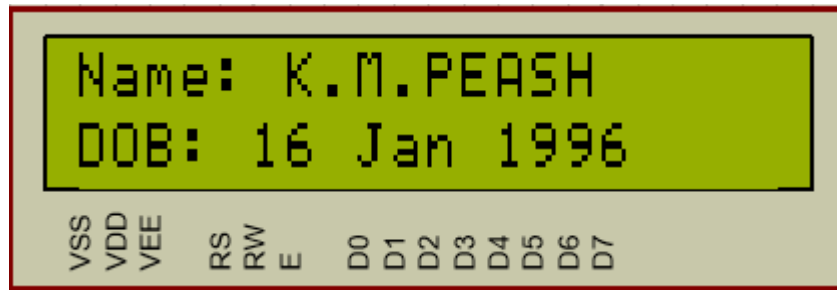Figure 4.2: Display shows the ID of a valid voter.

Figure 4.3: Display shows the name of the voter with DOB.

If the voter ID is not valid, the display will show the following information which is shown in Figure 4.4 & 4.5. If a voter from one center accidently goes to another center, he/she will not be able to vote. He/She will not be considered as a valid voter for this center.
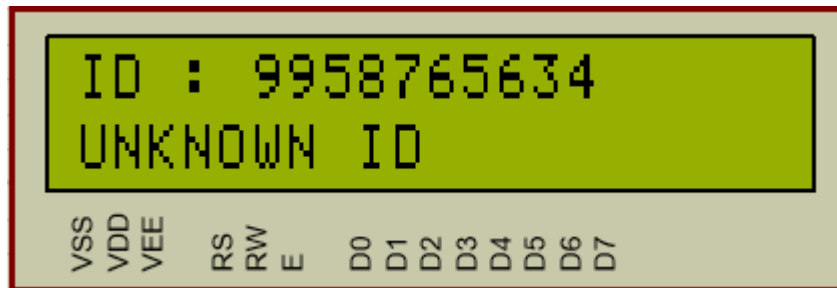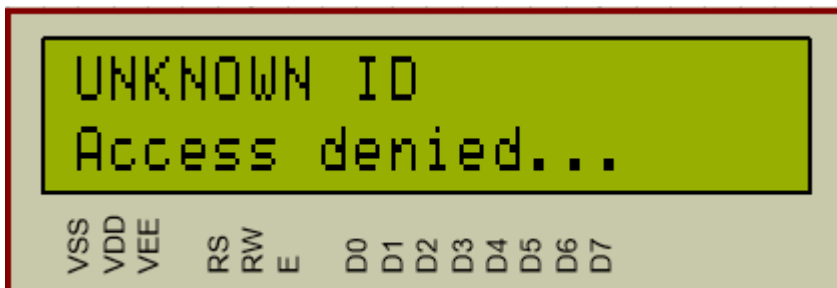

Figure 4.4: Display shows an invalid ID.

Figure 4.5: Display shows access is denied for an invalid voter.

If a voter is considered to be an invalid voter for the center, he/she will not be able to vote and the alarm will make sound.

4.3 Biometric Authentication

After getting access to give vote, a voter needs to put his/her finger on fingerprint module. If fingerprint is authenticated then a voter will be able to give his/her vote to their desirable candidate. Instruction will be shown on the LCD.

By pressing "Match Key" button voters have to place their finger on fingerprint module.
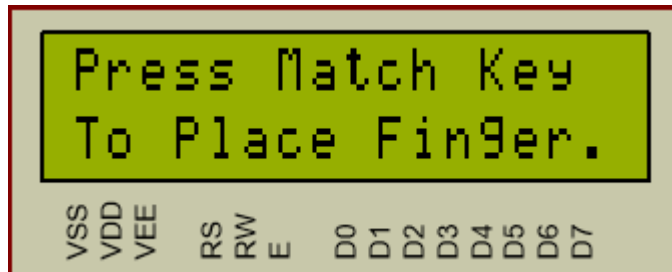

Figure 4.6: Instruction for pressing Match Key button.

If fingerprint module is unable to find the finger of a voter, following instruction will be shown on display.
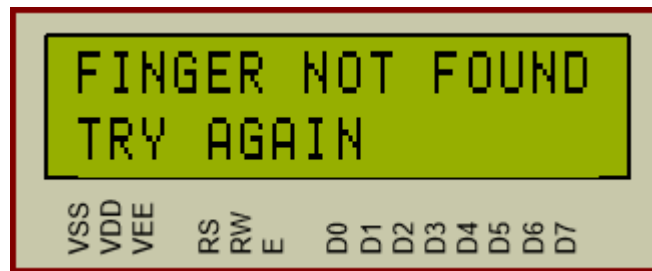

Figure 4.7: Instruction for placing finger again.

If fingerprint is matched with the stored fingerprint, a voter will able to cast his/her vote.
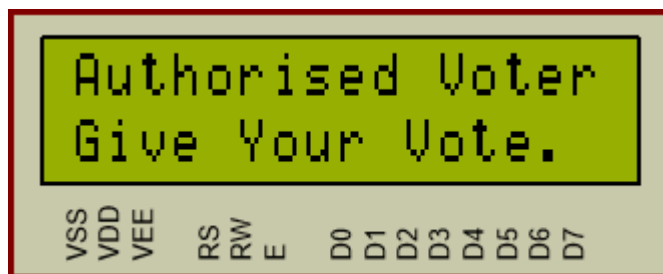

Figure 4.8: Asking an authorized voter to vote.

4.4 Vote Casting

There are three buttons for three candidates. Voters can see on the monitor which candidate they have voted for.

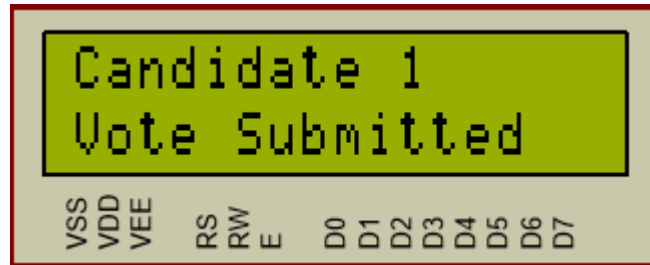If the voter votes for number 1 candidate, display will show-

Figure 4.9: Display shows "Vote Submitted for candidate 1".

On the other hand, if fingerprint isn't matched with the stored fingerprint then buzzer will alarm and voters will not be able to vote. This is the main advantage of biometric authentication. Without fingerprint authentication a voter will not be able to give vote. A voter can't vote twice.

If a voter tries to vote twice, buzzer will alarm and following information will be shown on display.
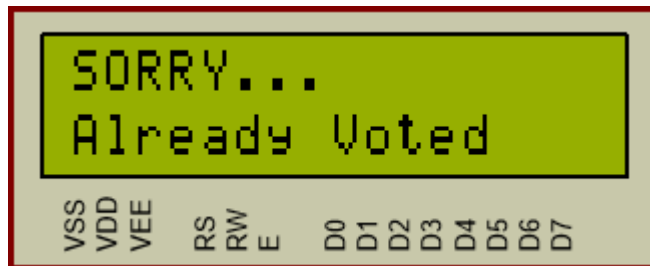

Figure 4.10: Display shows "A voter is already submitted his/her vote".

4.5 Vote Counting & Result

After completion the entire voting process, counter unit counts the stored votes for different candidates and it is also responsible for publishing result. Result will publish after a specific time. There is no chance of partial result.

The number of votes a candidate receives will be displayed on the display separately which is shown in Figure 4.11. The candidate who gets the maximum vote will be shown as the winner (shown in Figure 4.12).
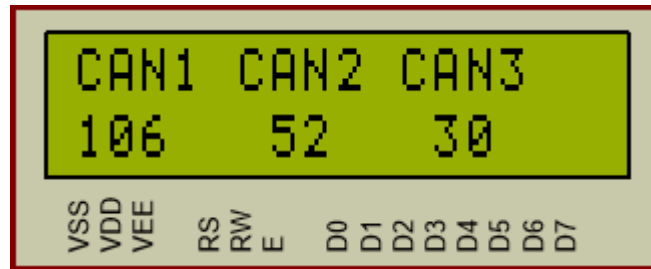
Figure 4.11: Display shows the number of votes that the candidates have received.

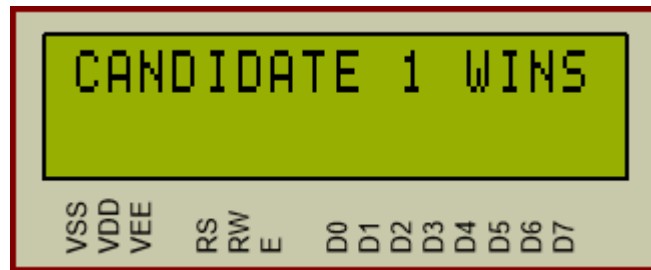The number 1 candidate will win because of maximum vote.

Figure 4.12: Display shows "candidate 1 is the winner".

If two candidates get the equal number of votes, the result will be tie and the display will show-
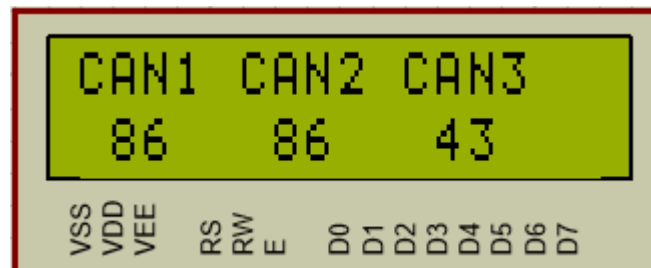

Figure 4.13: Display shows the number of votes that the candidates have received.
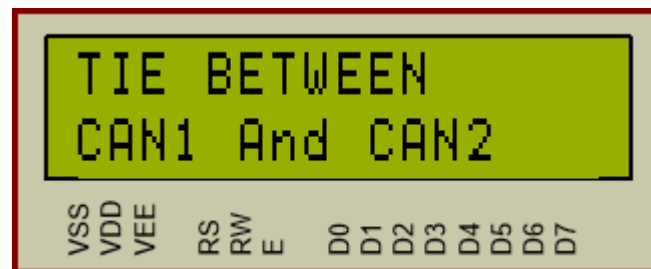

Figure 4.14: Display shows "Tie between Candidate 1 & Candidate 2".

4.6 Vote Verifiability

4.6.1 Function of MicroSD Card Adapter

After completion the entire voting process, voters will be able to verify of their voting with the vote reference number. A random vote reference number will produce for every voter while casting their vote and it will store in the SD card according to the sequence of their vote casting along with their NID, phone number and the candidate name for which the voters will vote.

The following information including voters ID, phone number, vote reference number and the candidate name for which a voter voted will be saved in SDcard as a text file.

Sample:

- 1541544484; +8801515445155; 454544; voted for candidate 1
- 5545451515; +8801444515515; 115151; voted for candidate 2
- 1894654224; +8801648456654; 289826; voted for candidate 3
- 8722487982; +8801498279879; 498798; voted for candidate 1
- 4654672497; +8801729846879; 289498; voted for candidate 2
- 7846249779; +8801615646246; 922928; voted for candidate 3
- 7298426165; +8801878416492; 327879; voted for candidate 1
- 6132564945; +8801949462659; 626595; voted for candidate 1
- 6287165971; +8801527897914; 878916; voted for candidate 2
- 8498279872; +8801978178752; 787795; voted for candidate 3
- 6656135879; +8801468976484; 156259; voted for candidate 1
- 2259298989; +8801898228987; 979818; voted for candidate 2
- 4132481987; +8801897916542; 897132; voted for candidate 3
- 4546595635; +8801929983325; 417983; voted for candidate 1
- 9734943941; +8801974752865; 895835; voted for candidate 2
- 8285858258; +8801659743146; 197275; voted for candidate 1
- 7568657976; +8801526544877; 621316; voted for candidate 2
- 4497976324; +8801766976565; 454594; voted for candidate 1
- 6546545006; +8801995659359; 229829; voted for candidate 1
- 8928982498; +8801448928765; 992283; voted for candidate 3

4.6.2 Function of GSM Module:

The vote reference number will be sent to every voter with the help of a GSM Module after one/two days of election. Election Commission will publish a cart/table showing the vote reference numbers according to the candidate name on their website. By checking this, voters will be able to verify of their voting with the vote reference number. A sample table is given below as Table 4.1.

Table 4.1: Sample Table

Candidate-1	Candidate-2	Candidate-3
454544	115151	289826
498798	289498	922928
327879	878916	787795
626595	979818	897132
156259	895835	992283
417983	621316	
197275		
454594		
229829		