**FINAL YEAR CAPSTONE PROJECT**

**LOG BOOK**

**Tiered Voting System**

**Submitted By –**

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**Week 1 (1st December – 7th December) ->**

1. Searched for various topics like Automated Fruit Harvester, Tiered Voting System and Automated Toll System.
2. Selected Tiered Voting System as our capstone project topic.
3. Thought about the basic working of our project.
4. Submitted abstract and Data Flow Diagram.
5. Multiple meetings with our guide (Dr. Prabhakar Rao) to discuss various issues regarding voting.

**Week 2 (8th December – 15th December) ->**

1. Developed our project design and figured out the components that are required for our project.
2. Studied about how voting takes place in our country as well as how it takes place in other countries (United States, United Kingdom, Kazakhstan).
3. Concluded with the problems that these countries are facing.
4. Prepared a 3-4 page report with all our findings (Literature Survey).
5. Went out to buy components and ordered some online.

**Week 3 (16th December – 23rd December) ->**

1. Received all the components. Components are –

|  |  |  |  |
| --- | --- | --- | --- |
| S. No. | Components | Quantity | Cost (Rs.) |
| 1 | Raspberry Pi | 1 | 3000 |
| 2 | Arduino | 2 | 1500 |
| 3 | PI Camera | 1 | 800 |
| 4 | Wi-Fi Module | 2 | 600 |
| 5 | LCD Display | 3 | 600 |
| 6 | Keypad | 3 | 600 |
| 7 | Large Breadboard | 3 | 360 |
| 8 | USB Serial Adapter | 1 | 300 |
| 9 | Small Breadboard | 3 | 130 |
| 10 | Miscellaneous | 1 | 500 |
|  |  | **Total** | 8390 |

1. Watched online tutorial videos and websites to figure out the working of basic components like Arduino, Raspberry PI, display screen and keypad.
2. Made different circuits to learn more about these components.
3. Divided work between ourselves –
4. **Abhilash Gupta** –
5. Setting up Raspberry PI (Installing Operating System, Setting up Python, Installing face\_recognition and other libraries onto Python).
6. Setting up PI Camera with the desired resolution.
7. Making Raspberry PI run as an Access Point.
8. Configuring PI workings with buttons and lights.
9. Writing programs for Face Detection and fetching results from Database on Python.
10. Designing database to store Voting data, Passwords and Security PIN.
11. **Shayan Saha** –
12. Learning basics about both Raspberry PI and Arduino.
13. Setting up display on Raspberry PI to show Password generated.
14. Setting up connection between Arduino and Raspberry PI through WiFi.
15. Data transfer (Passwords) between these modules.
16. Setting up back-end server on PI to match, store and delete passwords.
17. **Sarvansh Prasher** –
18. Designing circuit for Electronic Voting Machine (EVM) on Arduino with help of LEDs.
19. Working with buttons to detect input from the voter.
20. Locking EVM after a single vote or multiple wrong password attempts.
21. Setting up displays and keypads on Arduino.
22. Sending encrypted voting and password data between database on Raspberry PI and Arduino.

**Week 4 (24th December – 31th December) (Holidays) ->**

1. Set up trial circuit for design of EVMs.
2. Tested face\_recognition library and wrote additional code for interface with button and LEDs.
3. Tried to set up Wi-Fi module on Arduino without any success.

**Week 5 (1st January – 7th January) ->**

1. Designed database to store voter information such as Aadhaar Photograph, Aadhaar Number, Name and Flags (already voted and number of trials).
2. Wrote code on Python to make a web server on Raspberry PI for connection and data transfer with Wi-Fi module of Arduino.
3. Set up Raspberry PI as an Access Point to accept connections from other Arduino.

**Week 6 (8th January – 15th January) ->**

1. Soldered pins on LCD Displays. 2 LCDs working and one is not working.
2. Wrote code on C++ for Arduino to run LCD display.
3. Wrote code on C++ for Arduino to interface keypad and run it along with LCD display.
4. Completed circuit of EVM. Small problems still occur sometimes.

**Week 7 (16th December – 23rd December) ->**

1. Repeated circuit for EVM for 2nd Arduino as well.
2. Added LCD display and keypad on 2nd Arduino as well.
3. Merged all the code for Arduino to support all modules together. Wi-Fi module still not working.
4. Added boot support on Raspberry PI to run Camera as well as web server on startup without user intervention.
5. Removed some bugs in Python code on Raspberry PI.