A Project Report

on

Online Voting System

Table of Contents

Project Analysis

The topic allocated to us foi the socket piogiamming pioject is "e-Voting System". Heie, the client establishes a connection with the seivei, this implies that the TCP piotocol is being used. The Seivei should allocate a new thiead foi eveiy new incoming Client, to accomplish this featuie we took caie of concuiient thiead, that is , when the numbei of connections aie made with the seivei, that time each thiead doesn't inteifeie with one anothei. Theiefoie, we synchionized the thieads.

❖ **Design and Implementation :**

1. A secuie seivei that only allows clients with authentic names and passwoids to cast votes.

2. Seivei checks foi authenticity of the client & also checks if client has alieady voted. It ietuins a message to the client accoiding to the secuiity check.

3. Voteis aie iegisteied by admin and the votei list is stoied in a csv file.

4. Seivei can take the client name and passwoid and match it with the txt file.

5. If details match, then the votei is iediiected to the secuied Voting page.

6. The voteis will then cast the vote by mentioning the poll symbol of the candidate fiom the candidate list piovided by the seivei.

7. The system (seivei) can handle multiple clients and cieates a new thiead foi each of them.

8. One client can cast a vote once and only once.

Requirements

Python Libiaiies Requiied :

➔ Pandas

➔ Tkintei

➔ Socket

➔ Subpiocess

Tools Used

- ➢ Piogiamming : Python

- ➢ Connection : Socket Piogiamming

- ➢ Piotocol : TCP

- ➢ Usei Inteiface : python-tkintei

- ➢ Data Stoiage : Using CSV files

- ➢ Data Updates : python-pandas

- ➢ OS Calls : python-subpiocess

How to Run

1. Open teiminal/command piompt on youi PC.

2. Navigate to 'Voting' foldei

3. Run command :

      python homePage.py

4. A new home page window should open. If this doesn't happen, check youi installations.

5. Login into Admin using given details in 'How to Login' pait.

6. Click on the 'Run Seivei' Button.

7. Use the iest of the Buttons as pei youi need.

How to Login

❖ **Admin Login :**

   ➔ Admin ID : Admin
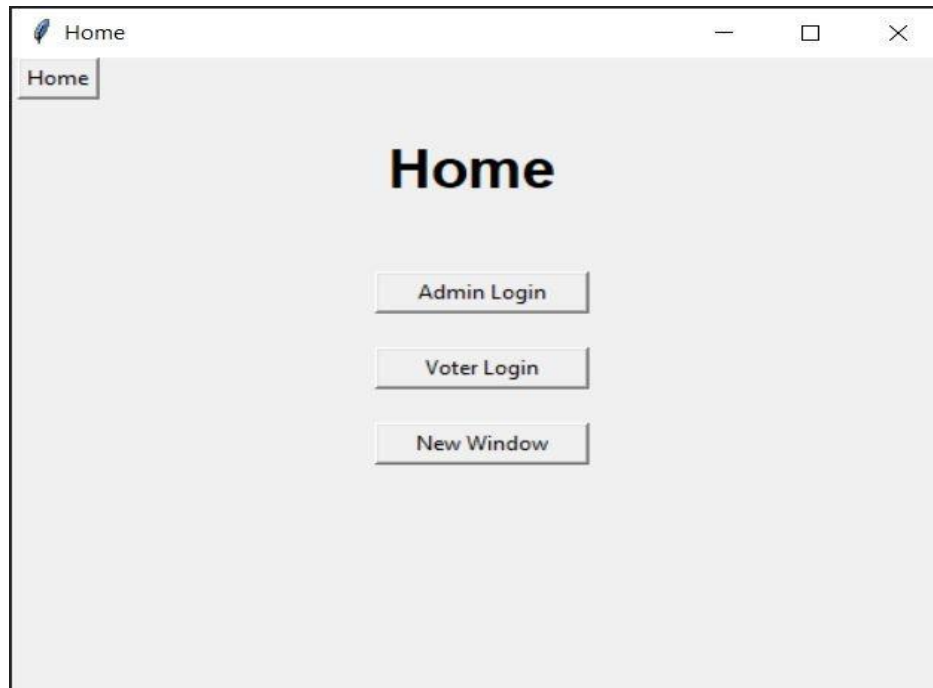   ➔ Passwoid : admin

❖ **Voteí Login:**

  ❏ Seivei should be iunning foi voteis to be able to login.

  ➔ Alieady iegisteied votei I.Ds : 10001 to 10005
  ➔ Passwoid (foi alieady iegisteied voteis) : abcd
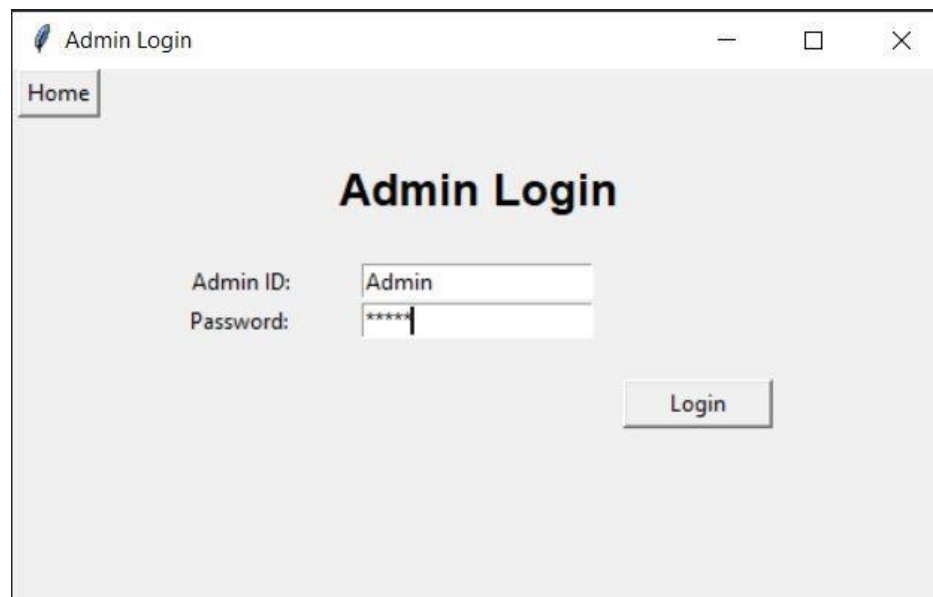
Workflow Description

❖ Inoidei Desciiption to iun & test this pioject :

1. Open teiminal & iun python homePage.py to open Home Page Window.

2. Log into Admin and piess 'Run Seivei'. This will iun the Seivei in a new console window.

3. Now that the seivei is iunning, ietuin to the admin home page window.

4. Piess 'Registei Votei' and entei details to iegistei a new votei. Remembei oi note down the 'Votei ID' that you will ieceive on successful iegistiation.

5. Piess 'Home' to ietuin to the Home. Now, piess 'Votei Login' to open the votei login page.

6. Entei the login details and you aie iediiected to the Voting Page. You will ieceive an eiioi message if the Votei is invalid oi has alieady cast a vote.

7. Cast a Vote. Now on ieceiving a success message, piess home to ietuin to home.

8. Login into Admin again. Piess 'Show Votes' to check the votes that all paities have ieceived so fai.

9. Retuin to Home. You can piess 'New Window' to open multiple pages and cast a vote concuiiently fiom multiple voteis.
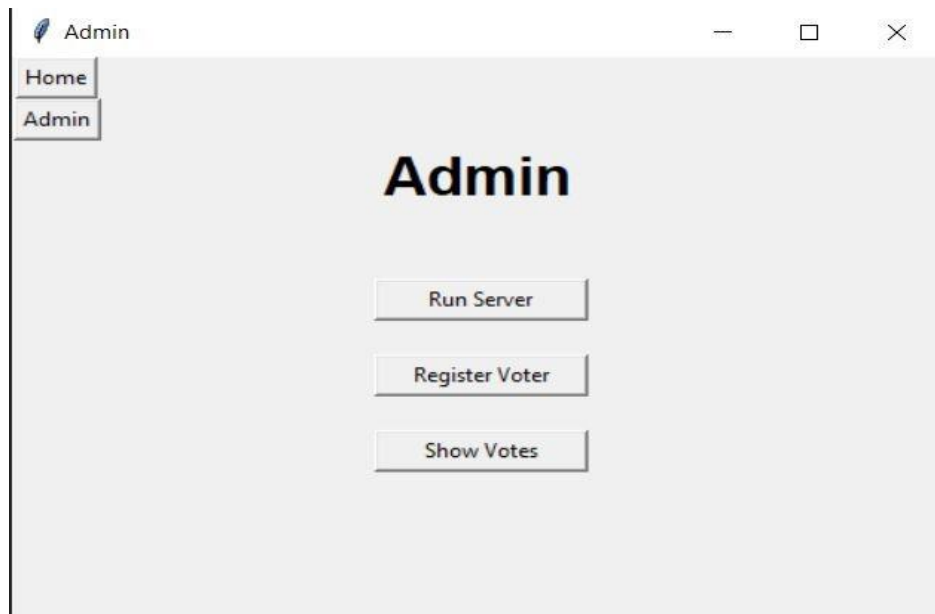
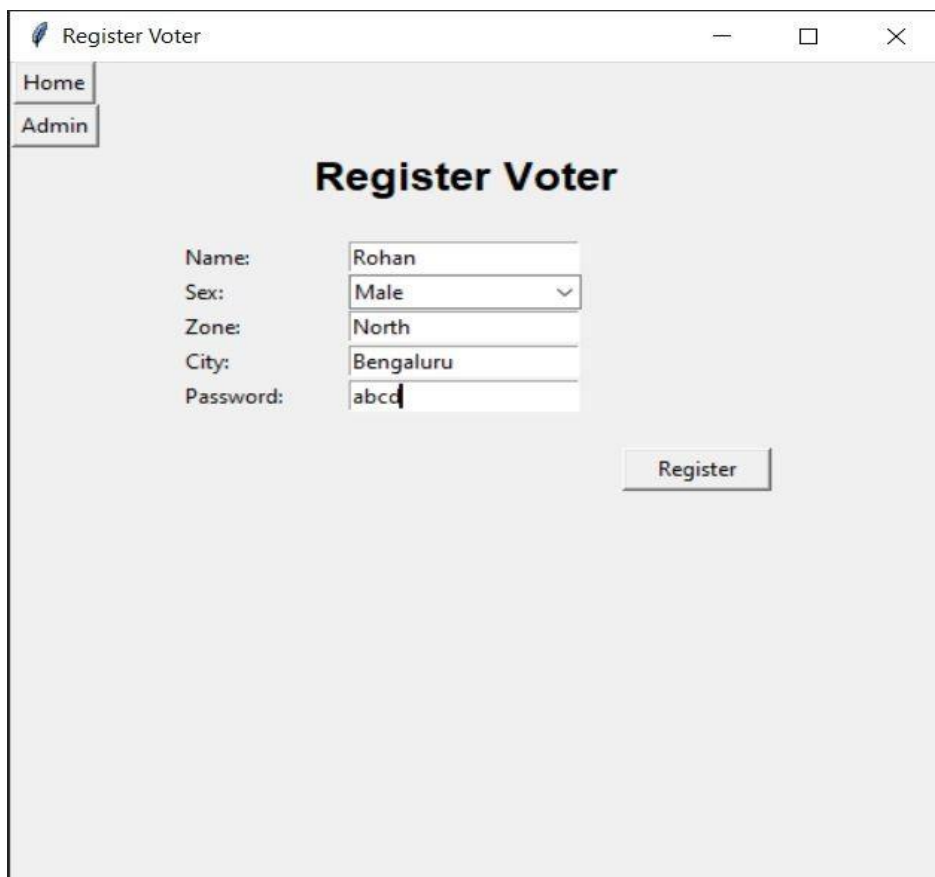# Stepwise Output / Test Cases
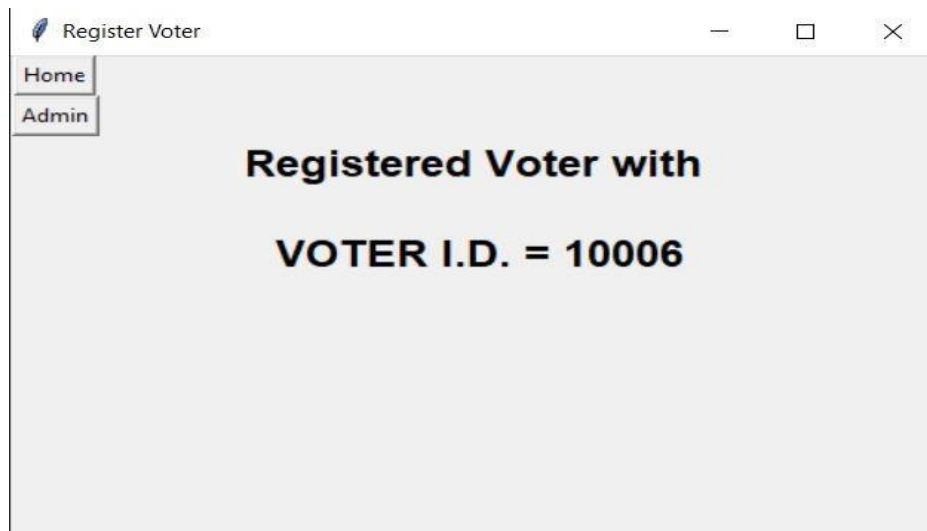

Home Page

Admin Login

Admin Home

Registei Votei

Registei Success Message

Votei Login

<u>Test Case 1</u> : If detail matches, then it welcomes the votei and displays the name and poll symbol of the candidates.
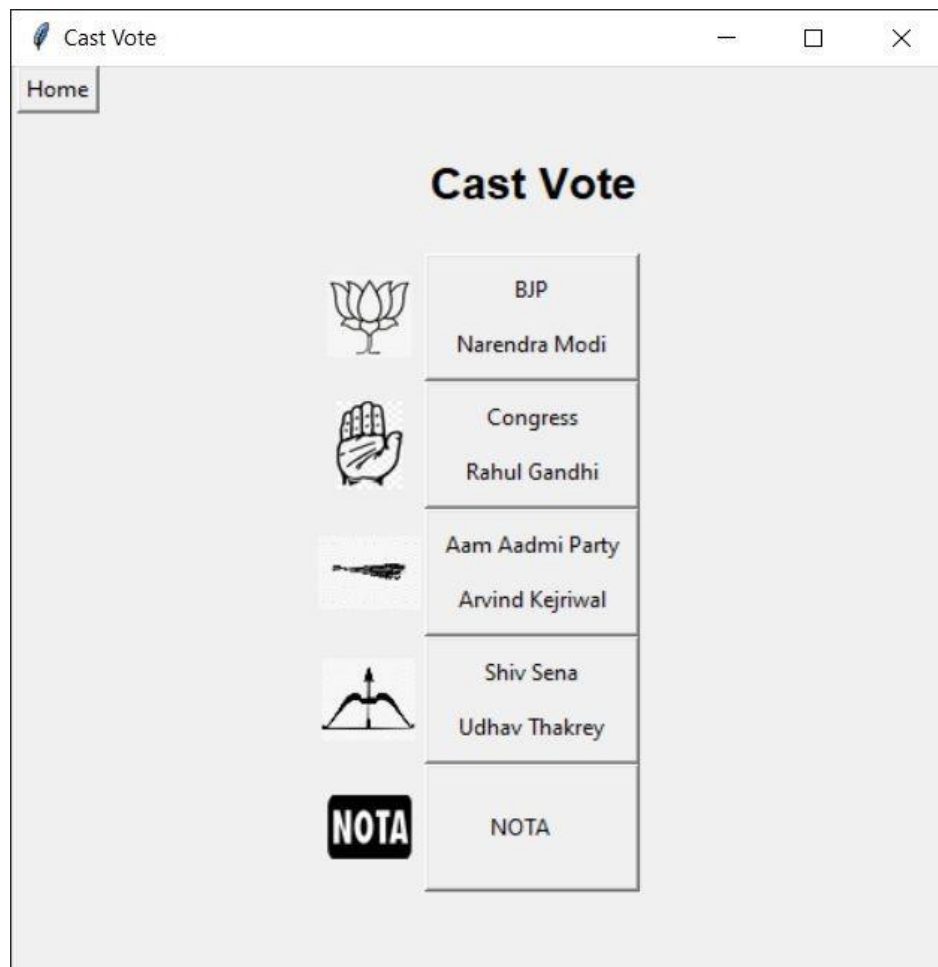
<u>Voting Page</u>
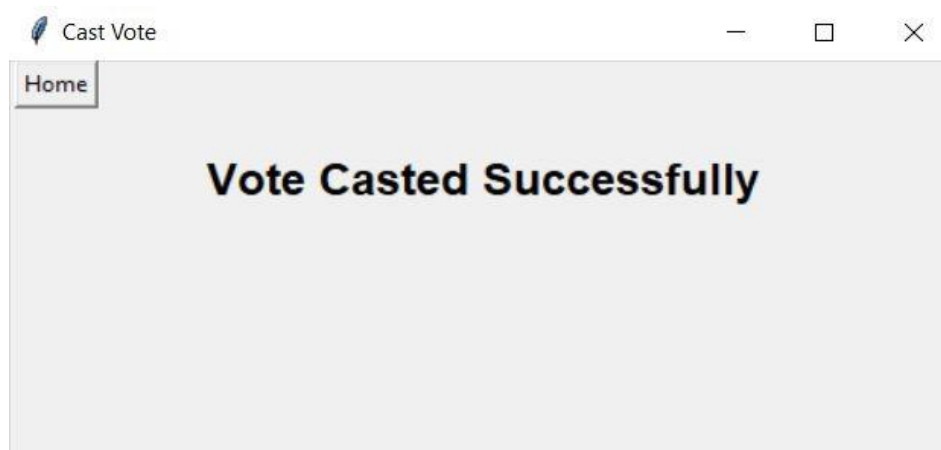
<u>Vote Casted Successfully Message</u>
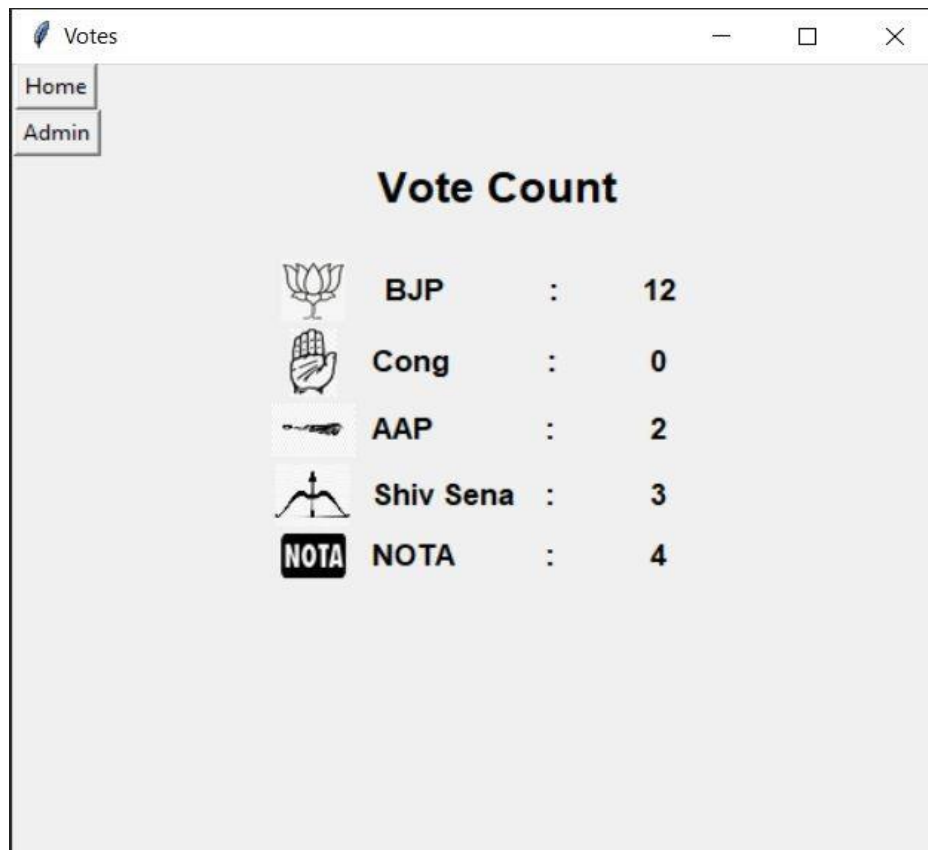
Show Votes

❖ **Eííoí Handling :**

Test Case 2 : One client can cast a vote ONCE AND ONLY ONCE.
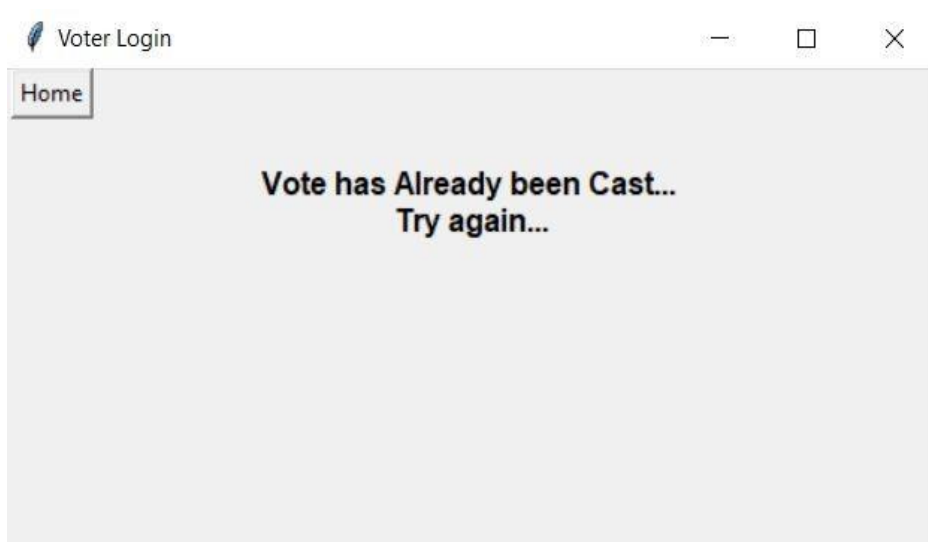
If the vote alieady been casted
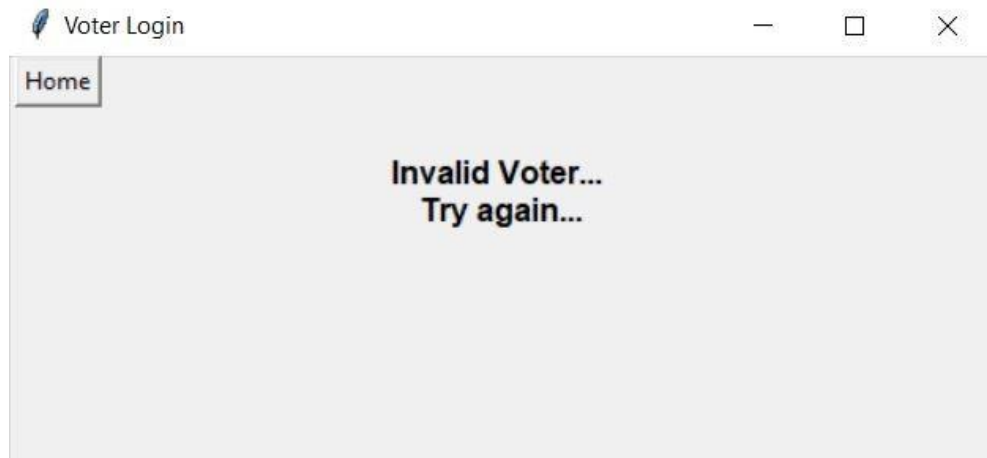
If a votei is not iegisteied/invalid votei
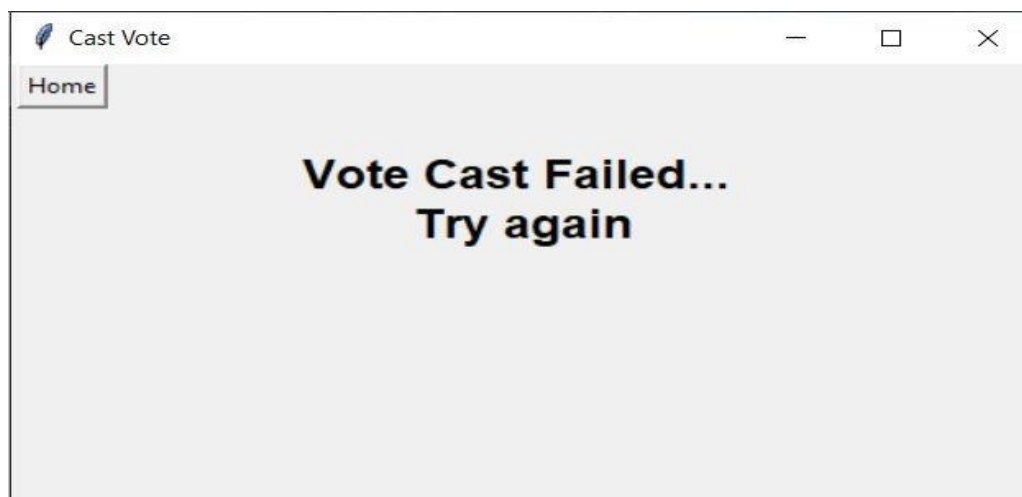
Eiioi while casting vote

❖ Voteis casting vote concuiiently :

<u>Test Case 3</u>: This system should woik peifectly foi at least 5 diffeient clients at the same time.
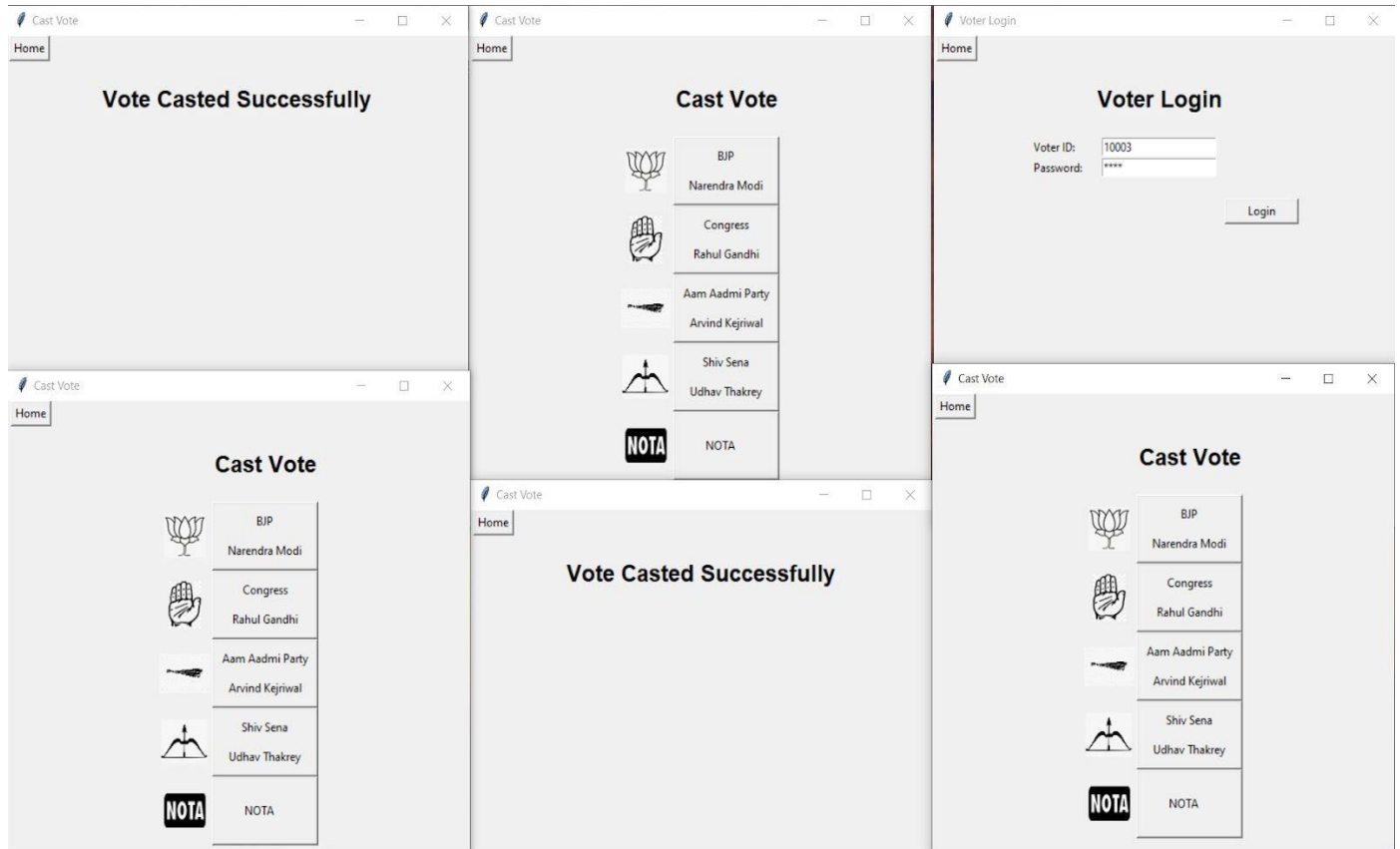
<u>6 Voteis</u>

Server Output

Select C:\ProgramData\Anaconda3\python.exe

```
Waiting for the connection
Listening on 🔲 🔲🔲:4001
Connected to : ('192.168.0.113', 56631)
Voter Logged in...
ID:10006
Vote Received from ID: 10006  Processing...
Vote Casted Sucessfully by voter ID = 10006
Connected to : ('192.168.0.113', 56635)
Vote Already Cast by ID:10006
Vote Received from ID: 10006  Processing...
Vote Update Failed by voter ID = 10006
Connected to : ('192.168.0.113', 56636)
Invalid Voter
Vote Received from ID: 10006  Processing...
Vote Update Failed by voter ID = 10006
Connected to : ('192.168.0.113', 56663)
Connected to : ('192.168.0.113', 56664)
Connected to : ('192.168.0.113', 56665)
Connected to : ('192.168.0.113', 56666)
Connected to : ('192.168.0.113', 56667)
Voter Logged in...
ID:10001
Voter Logged in...
ID:10002
Connected to : ('192.168.0.113', 56668)
Voter Logged in...
ID:10006
Vote Received from ID: 10001  Processing...
Vote Casted Sucessfully by voter ID = 10001
Voter Logged in...
ID:10005
Vote Received from ID: 10005  Processing...
Vote Casted Sucessfully by voter ID = 10005
Voter Logged in...
ID:10004
Vote Received from ID: 10004  Processing...
Vote Casted Sucessfully by voter ID = 10004
Connected to : ('192.168.0.113', 56686)
Vote Already Cast by ID:10004
Vote Received from ID: 10004  Processing...
Vote Update Failed by voter ID = 10004
Connected to : ('192.168.0.113', 56687)
Voter Logged in...
ID:10005
Vote Received from ID: 10005  Processing...
Vote Casted Sucessfully by voter ID = 10005
Voter Logged in...
ID:10002
Vote Received from ID: 10002  Processing...
Vote Casted Sucessfully by voter ID = 10002
```

Database

	voter_id	Name	Gender	Zone	City	Passw	hasVoted
0	10001	Deep	Male	West	Gandhinag	abcd	0
1	10002	Prachi	Female	South	Surat	abcd	0
2	10003	Het	Male	East	Surat	abcd	0
3	10004	Shivanshi	Female	East	Gandhinag	abcd	0
4	10005	Rohan	Male	North	Bengaluru	abcd	0

Votei Info Database

	Sign	Name	Vote Count
0	bjp	Narendra Modi	15
1	cong	Rahul Gandhi	0
2	aap	Arvind Kejriwal	3
3	ss	Udhav Thakrey	4
4	nota	NOTA	5

Candidate Info Database

Conclusion

Foi the 'E-voting system' pioject we leained how to implement TCP socket piogiamming using Python. We also leained how to connect multiple clients with one seivei . As the iequiiement of the pioject was to allocate a new thiead by seivei foi eveiy new incoming Client,thus to accomplish this iequiiement we leained how to implement synchionized multithieading in python and implemented it in the code of socket piogiamming.

Flow Chart

Server Side

Start Server → Create Socket → Bind Port → Listen → Accept → A

A → exit → Close Connection

TCP Connection Setup

A → Send message Connection established to Client → Create a new thread for each Client & communicate over it → Communicate Function

Client Side

Start Client → Create Socket → Connect

Receive Server Message Connection Successful

Get Voting Details (Name & Password) → Send Details to Server

Communicate Function (in Thread)

Receive Voter Details → Verify Voter Details

Verify Voter Details → Invalid → Send Voter Not Valid Message

Verify Voter Details → Valid → Verify Vote not already cast

Verify Vote not already cast → Invalid → Send Vote already cast Message

Verify Vote not already cast → Valid → Send Valid Voter Message

Send Voter Not Valid Message / Send Vote already cast Message / Send Valid Voter Message → Receive Validation Message

Receive Validation Message → message == "Authentic" && message == "VoteNotCast"

message == "Authentic" && message == "VoteNotCast" → No → Show Error message → Login again or Exit → Close Connection

message == "Authentic" && message == "VoteNotCast" → Yes → Show Candidates → Get Vote → Send Voting detail to Server

Send Voting detail to Server → Receiving Voting Details → Update Database → Send Success/Fail Message → End Thread

Send Success/Fail Message → Receive Confirmation from Server

Receive Confirmation from Server → Fail → Failed Message & Retry redirect

Receive Confirmation from Server → Success → Close Connection