OBJECT ORIENTED PROGRAMMING LAB

(3+1 Credit Hours)

CSL-210

--Online Voting Management System--

Project Report

Couse Instructor: **Sameena Javed**
Lab Instructor: **Hafsa Munawar**

Class Section: **BSCS 2B**
Semester: **Fall 2023**

Group Members:

Enrollment	Name
02-134231-026	Ayesha
02-134231-086	Nida
02-134231-096	Maha Siddiqui

DEPARTMENT OF COMPUTER SCIENCE

BAHRIA UNIVERSITY, KARACHI, PAKISTAN

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Abstract:

The Online Voting Management System is a sophisticated Java-based application meticulously crafted to revolutionize the conventional voting processes. By integrating advanced security measures and user-friendly interfaces, this system aims to offer an efficient and reliable platform for conducting elections, ensuring the integrity of the electoral process.

Introduction:

In an era where technology plays a pivotal role in shaping societal systems, the need for a modern and secure voting system is crucial. The Voting Management System addresses this need by harnessing the power of Java programming to create a comprehensive solution that ensures the accuracy, transparency, and accessibility of the voting process.

Objectives:

The Online Voting Management System is guided by the following key objectives:

- User Authentication: Develop a robust login and registration system to verify the authenticity of voters and protect against unauthorized access.
- Candidate Registration: Allow aspiring candidates to register their candidacy, ensuring a comprehensive and accurate list of choices for the electorate.
- Voting Mechanism: Design an intuitive and user-friendly interface for voters to cast their ballots electronically, making the voting process accessible and convenient.
- Result Viewing: Implement a transparent result display mechanism, enabling voters to access and verify election outcomes with ease.

Project Scope:

The scope of the project encompasses the development of a secure, web-based application accessible to eligible voters. By facilitating a convenient and verifiable voting process, the system aims to empower users to participate in elections from the comfort of their locations, provided they have an internet connection.
The project scope includes:

- User Accessibility: The system is designed to be accessible to a diverse range of users, ensuring inclusivity and ease of use.
- Scalability: The system architecture is scalable to accommodate varying numbers of users and candidates for different elections.
- Security Measures: Implementation of robust security features to protect against unauthorized access and ensure the integrity of the voting process.
- Result Transparency: The system guarantees transparent and tamper-proof presentation of election results.

Project Overview:

The Online Voting Management System comprises the following integral components:

- Login Page: Users undergo a secure authentication process through the login page, ensuring the legitimacy of their participation.
- Registration Page: New users can register by providing necessary information, establishing a robust system for voter verification and management.
- Voting Page: The heart of the system, where users can cast their votes electronically for their preferred candidates among the three registered contestants.
- Result Page: Once the voting period concludes, the system transparently displays the election results, upholding the principles of fairness and accountability.

Methodology:

❖ Tools and Technologies:

The Online Voting Management System leverages the following tools and technologies:

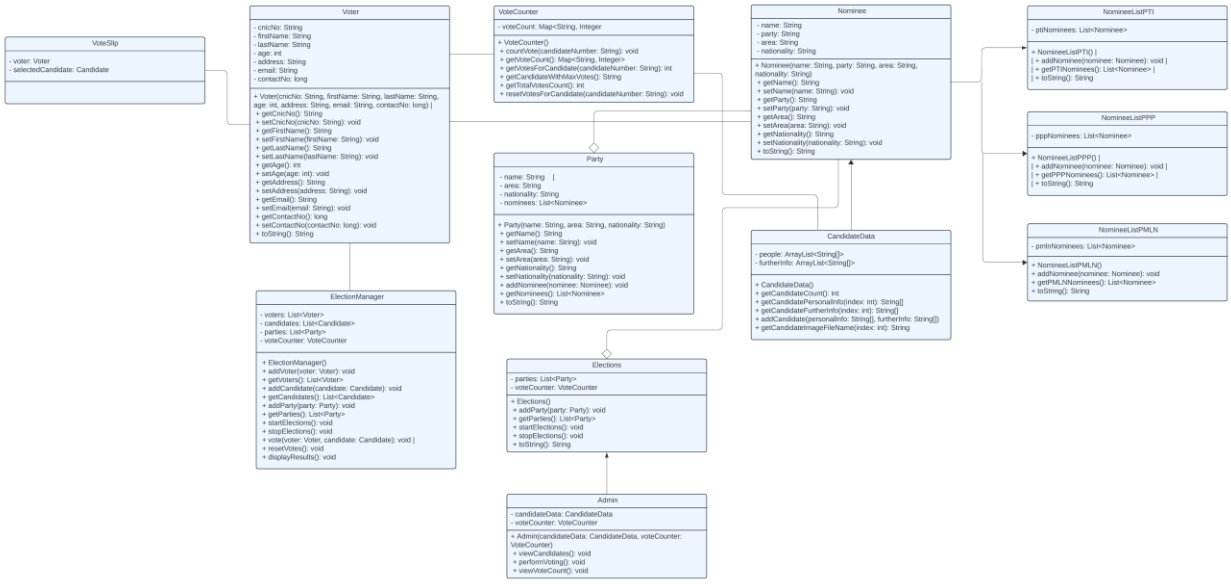
- Programming Language: Java
- Database: MS Access
- GUI: JFrame

- Details of the design and architecture of your project (Updated UML diagram)

❖ BASIC CONCEPTS USED:

- The code defines several classes such as , 'registeration','leader'`chairman`, `project`, `result`, and `win`.
- Objects are created using the `new` keyword, like `Facing f = new Facing();`
- Polymorphism allows objects of different types to be treated as objects of a common type. This concept is not explicitly demonstrated in the provided snippets, but it can be applied through method overriding or interfaces.
- Abstraction involves hiding the complex reality while exposing only the necessary parts.
- Classes in your project may be associated with each other through method calls or by using objects of one class within another. For example, the `VotingPage` class uses an instance of the `event` class (`event e = new event();`).
- The code includes exception handling using `try`, `catch`, and `finally` blocks, demonstrating the importance of handling potential runtime errors gracefully.

UML DIAGRAM



Implementation:

❖ SOFTWARE REQUIREMENTS:

The software requirements for this project are as follows

- **Netbeans IDE**
- **JDE and JDK**
- **Windows 10**

❖ Key Functionalities:

The key functionalities of the provided code include:

- Allows users to select a candidate from a combo box and vote.
- Utilizes Java Swing components (`JFrame`, `JLabel`, `JComboBox`, `JButton`) for the graphical user interface.
- Establishes a connection to the Access database using JDBC (`DriverManager` and `Connection`).
- Handles various database operations such as inserting user data, querying, and checking user credentials.
- Displays the results of the election, including party-wise and leader-wise votes.
- Uses Java Swing `JTable` to present the data fetched from the database.
- Identifies and displays the winning party and winning leader based on the highest votes.
- Allows users to go back to the home screen.
- Users can vote on the voting page (`VotingPage`).
- -Results can be viewed on the results page (`result`).
- Winners are displayed on the winners page (`win`).
- Navigation is provided through buttons.
- Implements the `ActionListener` interface to handle button clicks.
- Displays a confirmation message when a user votes.
- User slips are stored as text files in Notepad.
- A mechanism for user authentication and verification during login is there.

DriverManager.getConnection.

```
// Inside DisplayTable method
Connection conn = DriverManager.getConnection("jdbc:ucanaccess:///C:\\Users\\AALIYAN'Z COMPUTER\\Documents\\NetBeansProjects\\JavaApplication1\\src\\dbmsproject\\jdbc.accdb");
// Inside DisplayTable1 method
Connection conn = DriverManager.getConnection("jdbc:ucanaccess:///C:\\Users\\AALIYAN'Z COMPUTER\\Documents\\NetBeansProjects\\JavaApplication1\\src\\dbmsproject\\jdbc.accdb");
```

Inserts user ‘s data into the database.

```
// Inside the actionPerformed method of the 'event' class
String candidate = (String) candidates.getSelectedItem();
String insertQuery = "INSERT INTO user_votes (candidate) VALUES ('" + candidate + "')";
```

DBOperations.executeUpdate(conn, insertQuery);

Querying SELECT operations, displaying a message, and returning the ResultSet:

```
public class VotingPage {

// Inside the DisplayTable method
String selectQuery = "SELECT party, vote FROM party_vote ORDER BY vote DESC";
ResultSet rs = DBOperations.executeQuery(conn, selectQuery);
```

```
// Further code to display the ResultSet or process the data as needed
```

SELECT query to confirm user credentials at login:

```
public class Login {
// Inside the loginButtonActionPerformed method
String username , selectQuery, password;
ResultSet rs = DBOperations.executeQueryWithParameters(conn, selectQuery, username, password);
Connection conn = /* your code to establish a database connection */;
String query = "SELECT * FROM users WHERE username = ?";
PreparedStatement pstmt = conn.prepareStatement(query);
pstmt.setString(1, username);
ResultSet rs = pstmt.executeQuery();

return rs.next(); // Returns true if user exists, false otherwise
```

Query to get the party with the highest votes

```
String sql = "SELECT Party FROM leaders ORDER BY VOTE DESC LIMIT 1";
PreparedStatement pstmt = conn.prepareStatement(sql);
ResultSet rs = pstmt.executeQuery();
```

FILE HANDLING :

```
(FileWriter fileWriter = new FileWriter("user_" + userID + "_slip.txt")) {
fileWriter.write("VOTE SLIP\n");
```

CATCHING ERRORS WHILE REGISTERATION:

```
catch (SQLException e) {
JOptionPane.showMessageDialog(null, "Error during registration: " + e.getMessage());
}
```

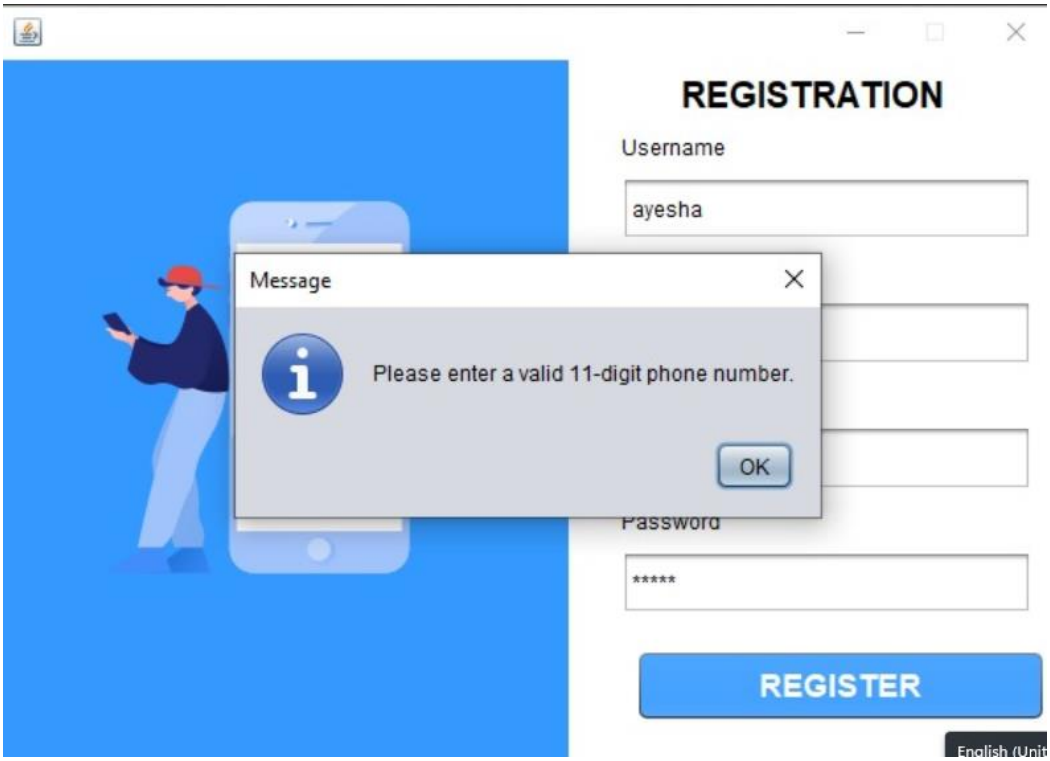
Conclusion:

In conclusion, the development and implementation of the Online Voting Management System in Java has proven to be a resounding success, achieving the set objectives, and providing a robust platform for efficient and secure online voting. The system's key features, including user-friendly interfaces, robust security measures, and scalability considerations, contribute significantly to an enhanced voting experience. Throughout the project, we successfully navigated challenges, ensuring that the system meets the highest standards of security and functionality. User feedback has been positive, indicating a favorable user experience. Looking forward to the system holds promise in revolutionizing the democratic process by improving accessibility and inclusivity. While we celebrate the achievements, there is a recognition of the need for ongoing improvements and adaptations to meet evolving demands. The project not only showcases the capabilities of the Java programming language but also underscores the importance of integrating technology responsibly into sensitive domains like online voting. As we conclude, the

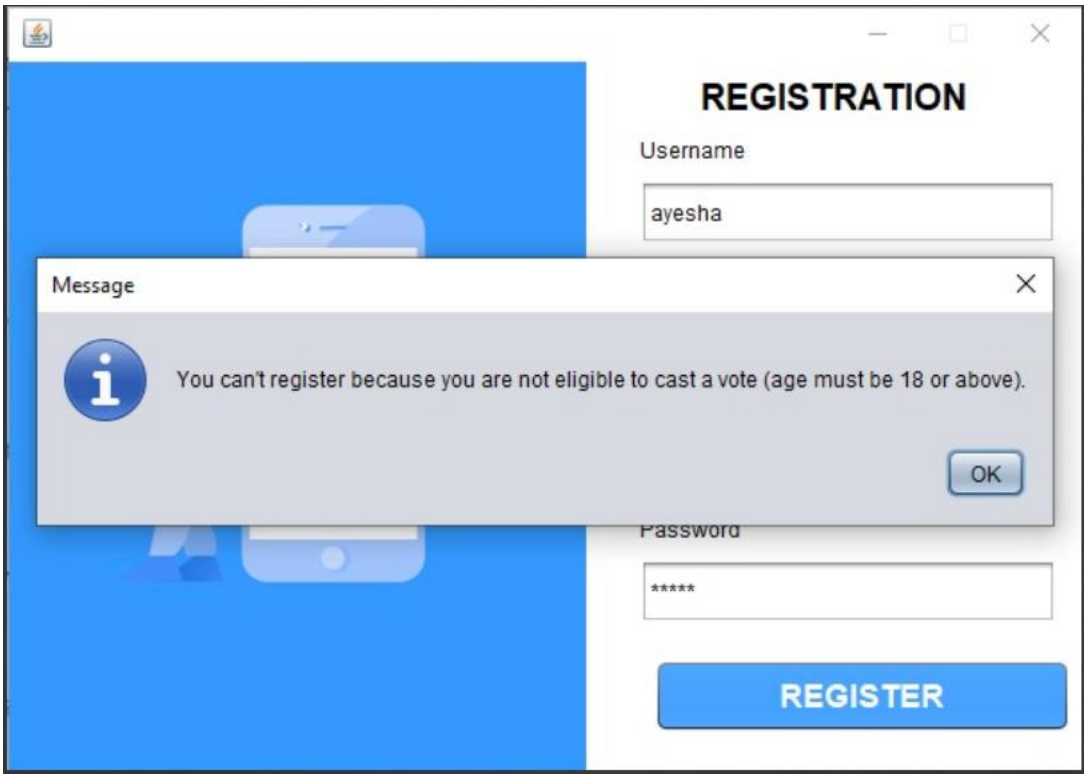
Online Voting Management System stands as a testament to the potential of technology in advancing democratic practices, with an eye toward continuous refinement and innovation in future iterations.

- **Outputs:**

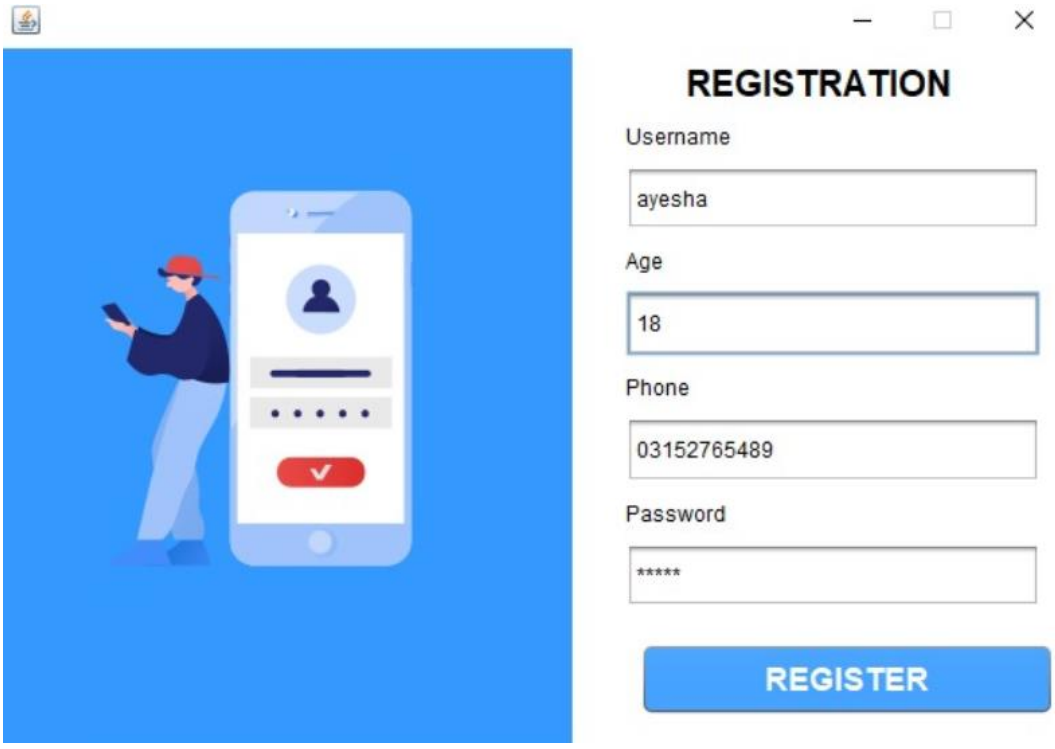
HOME PAGE



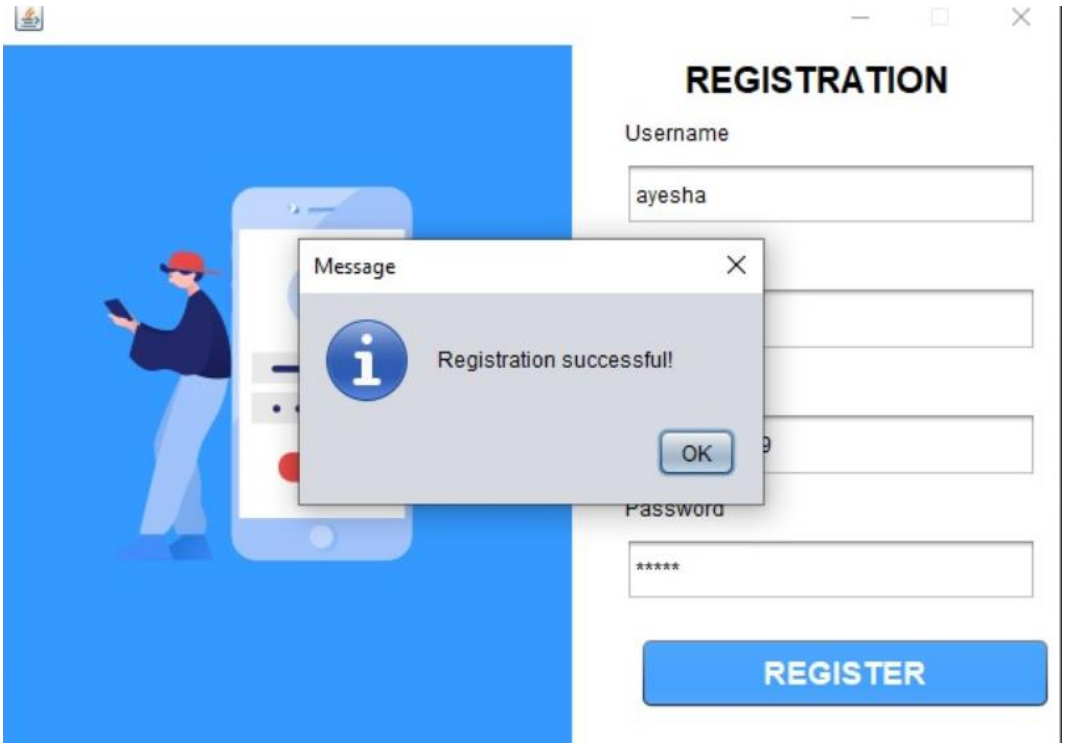
DESCLAIMER : ENTER VALID PHONE NUMBER



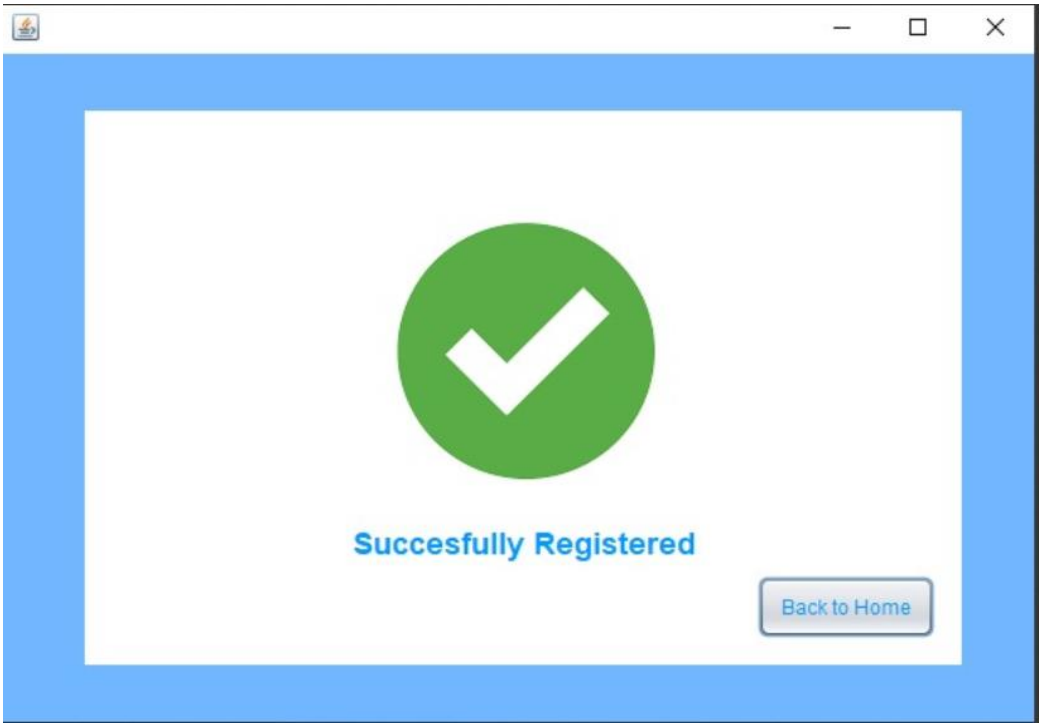
IF AGE BELOW 18

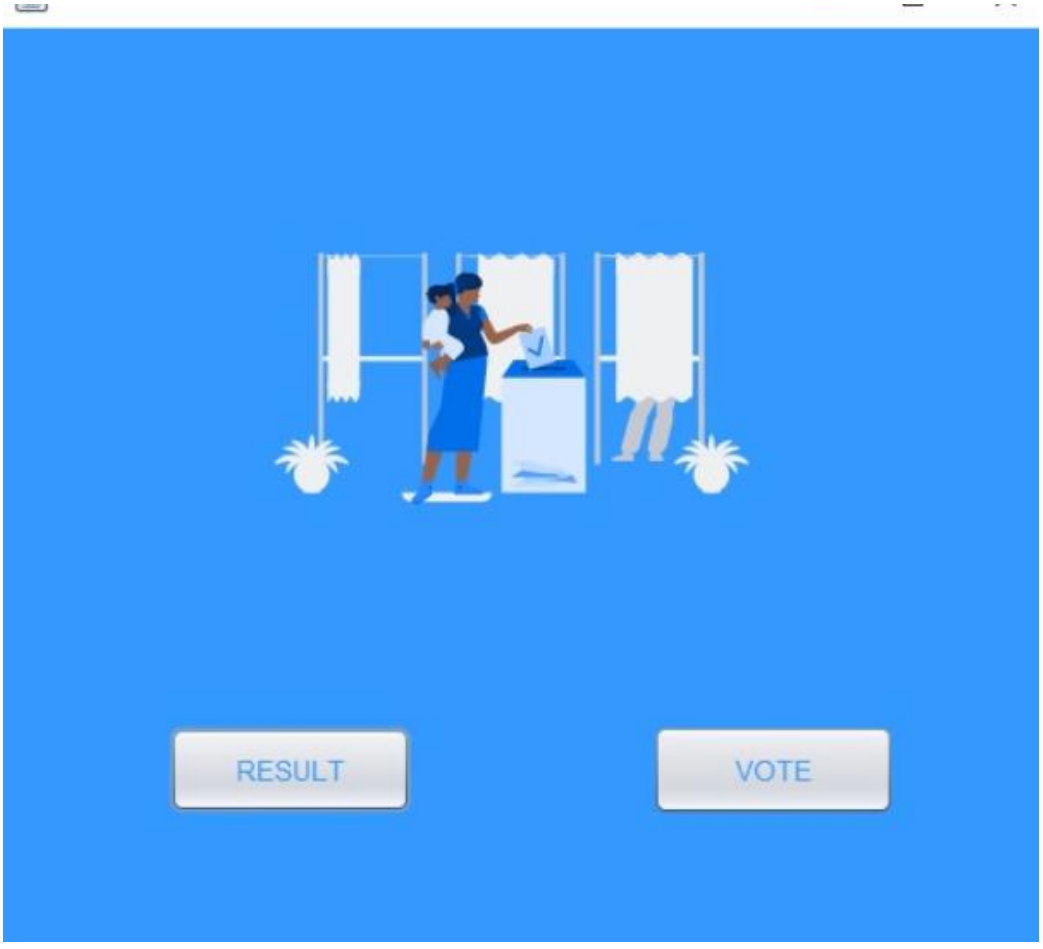


REGISTRATION

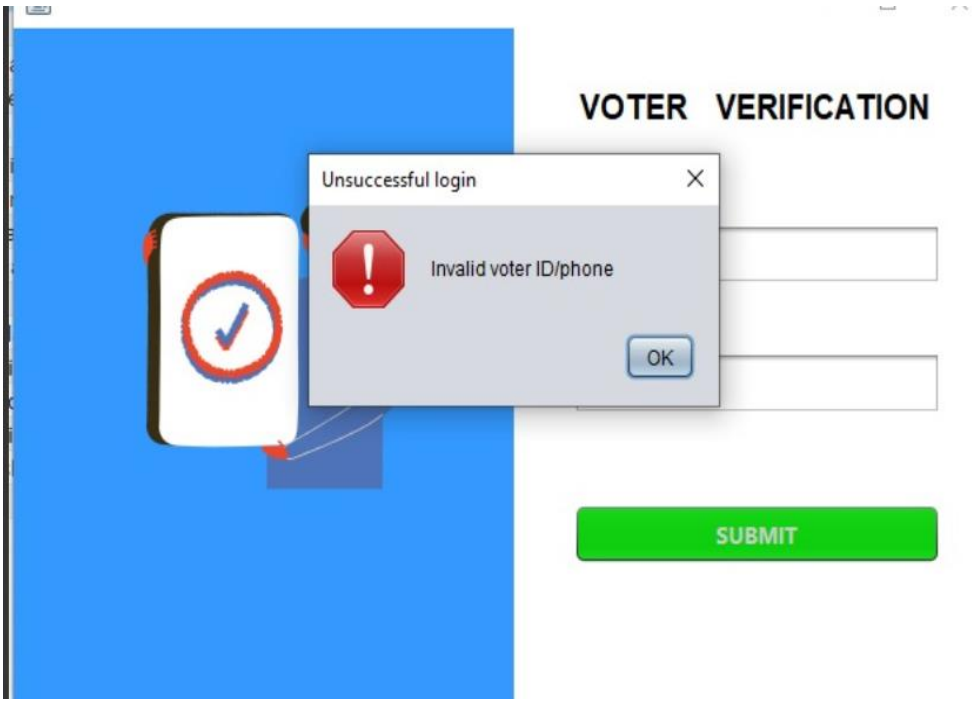


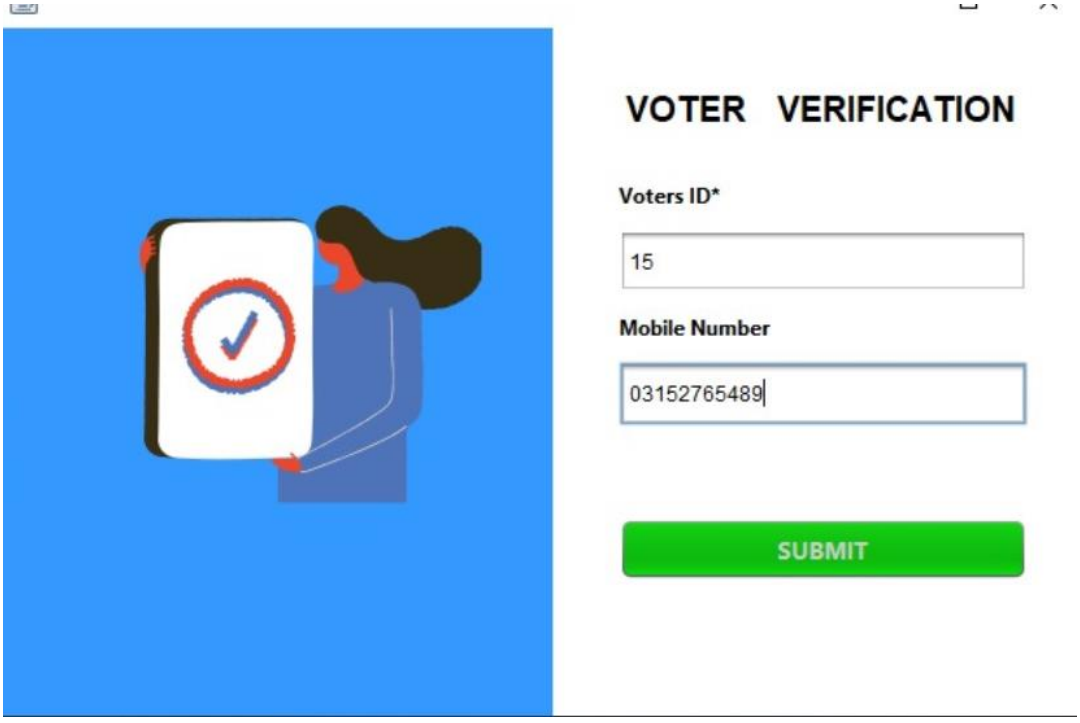
REGISTERED SUCCESSFULLY

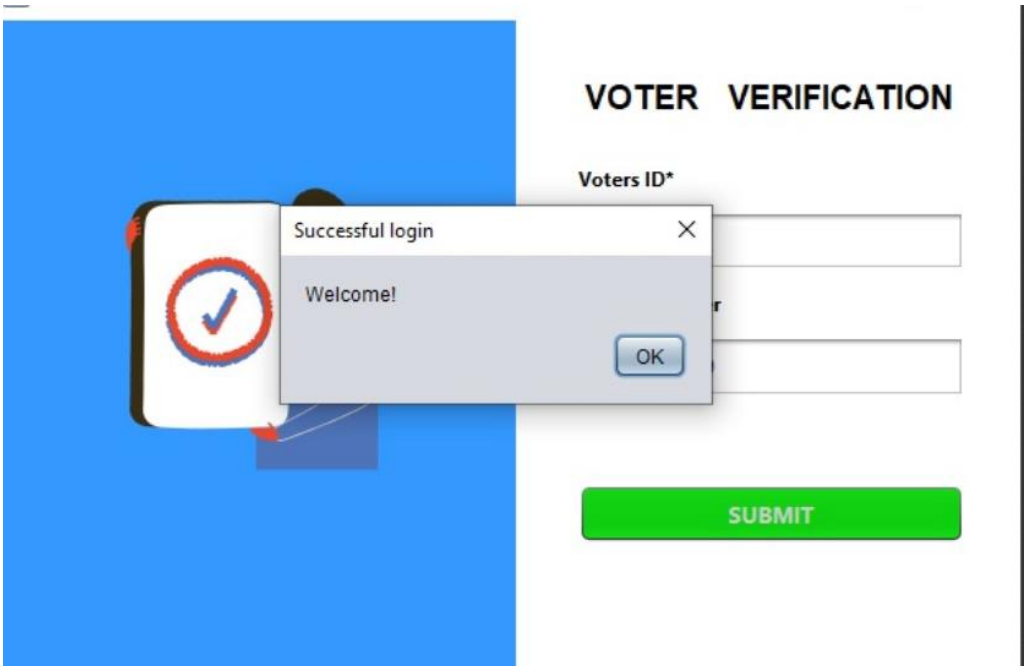

Succesfully Registered
Back to Home


RESULT
VOTE

WHEN CLICK ON VOTE






VOTER VERIFICATION
Voters ID*
Successful login
Welcome!
OK
SUBMIT


Select Your Party
PTI
select
PPP
select
PMLN
select


Select Your Party
Message
Voting for PTI. Proceed to Select your leader.
OK
PMLN
select


PTI LEADERS
Imran Khan
Vote
Shah Mehmood Qureshi
Vote

PPP LEADERS

Bilawal Bhutto

Vote

Mutaza Wahab

Vote

PMLN LEADERS

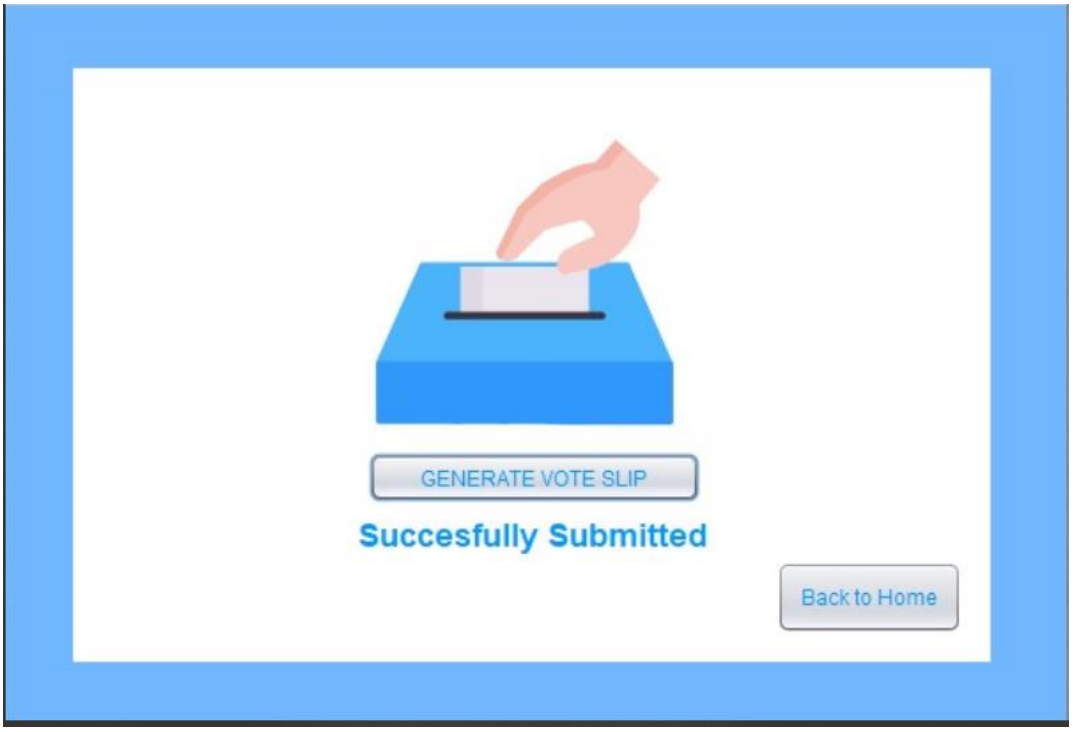
Shahbaz Sharif

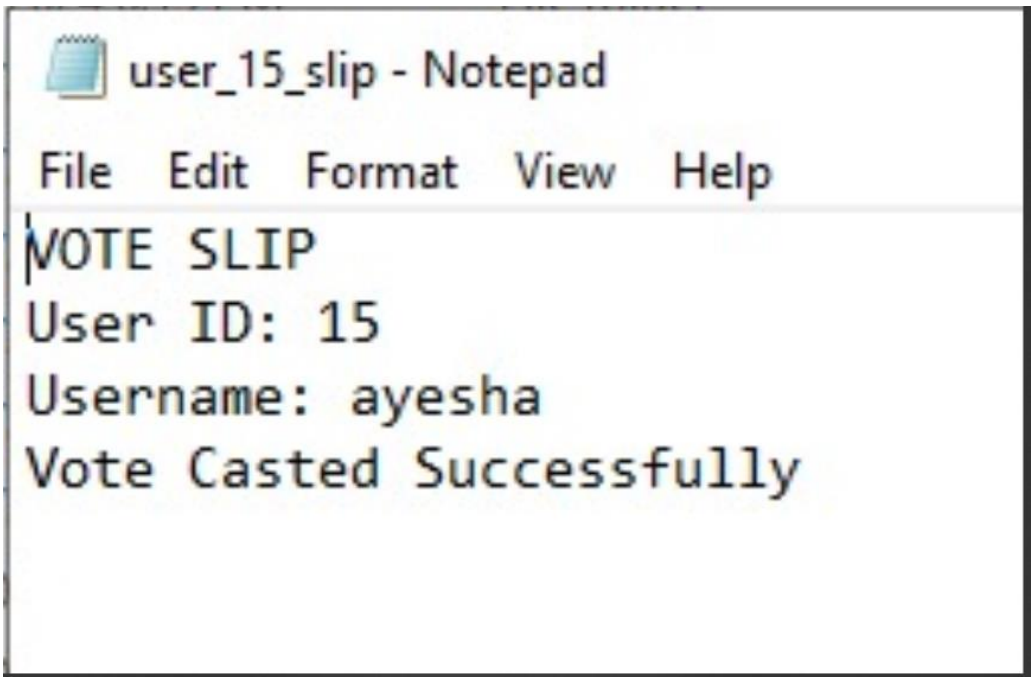
Vote

Maryum Nawaz Sharif

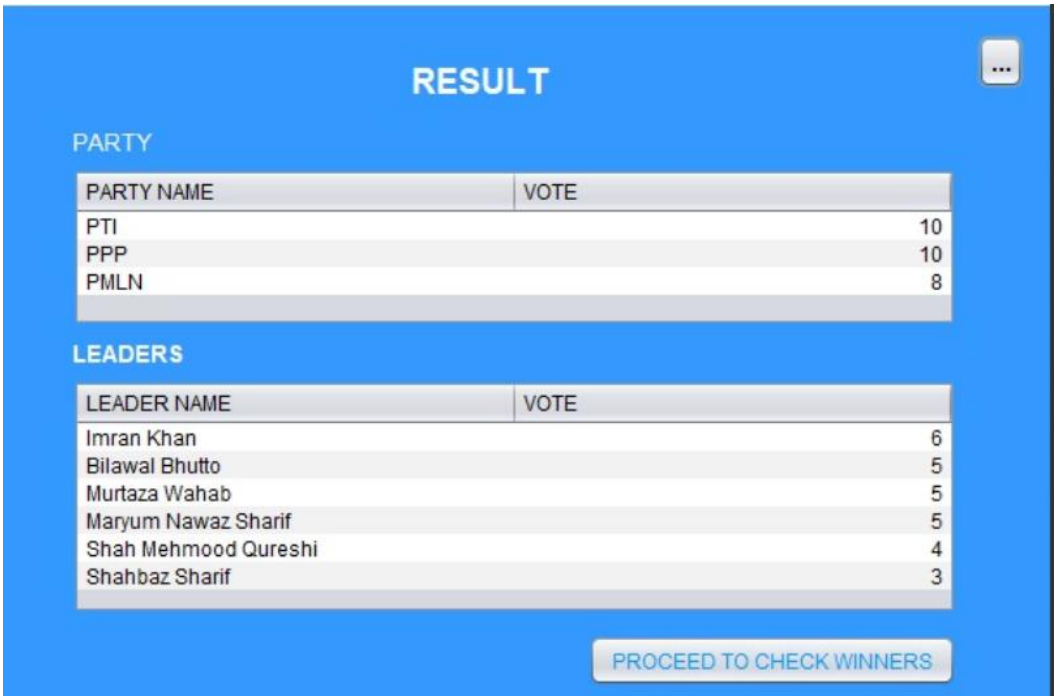
Vote


PTI LEADERS
Message
Vote for Imran Khan casted successfully
OK
Vote
Shah Mehmood Qureshi
Vote

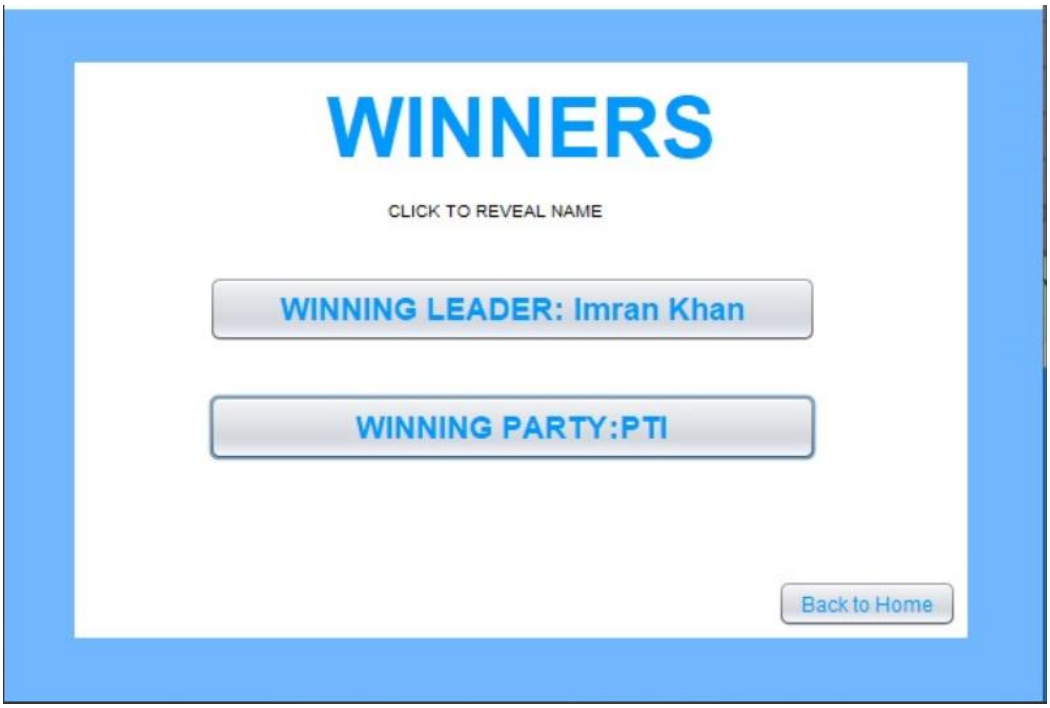

GENERATE VOTE SLIP
Succesfully Submitted
Back to Home



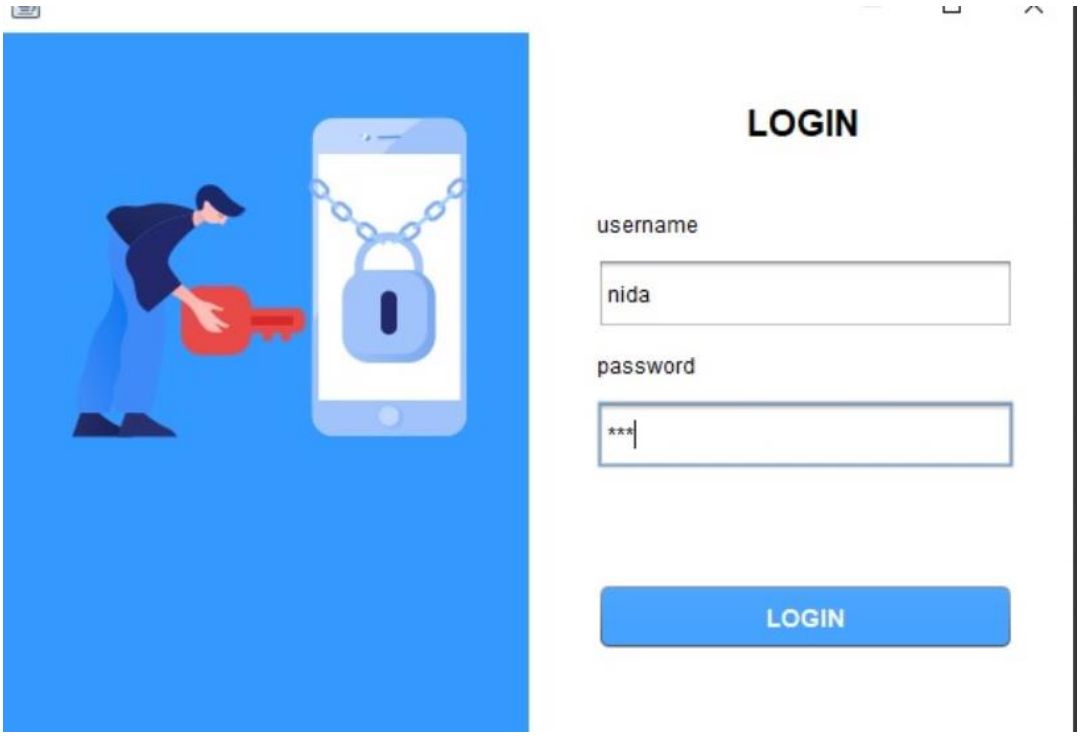
VOTE SLIP



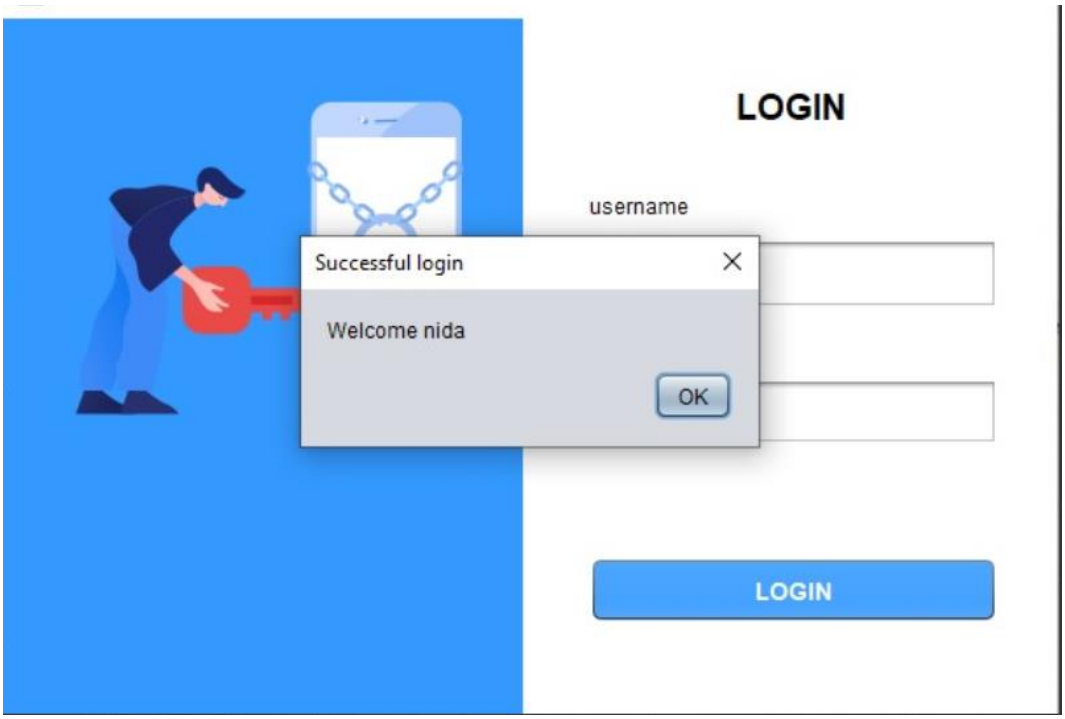
RESULT

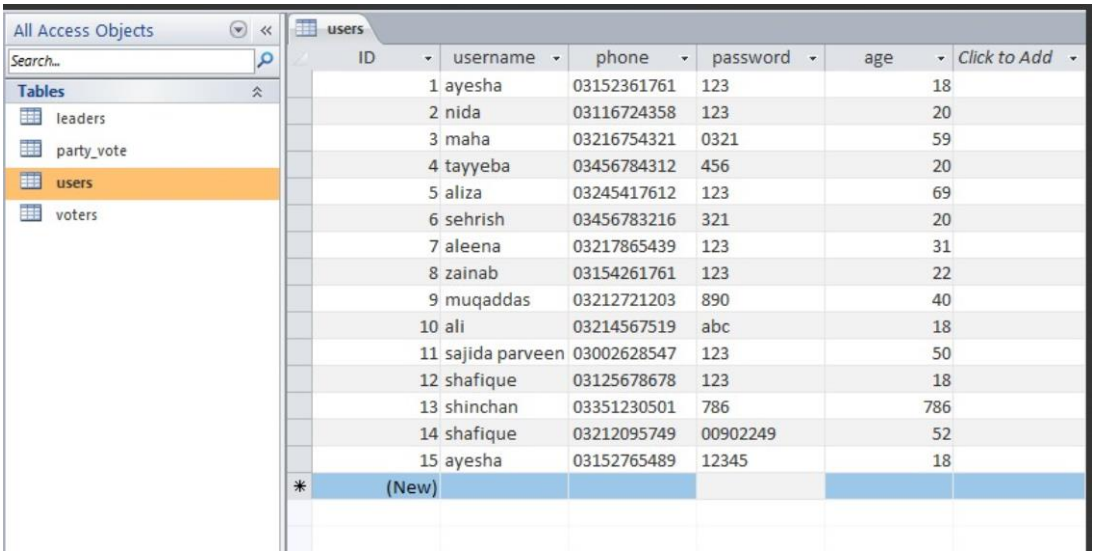


WINNERS



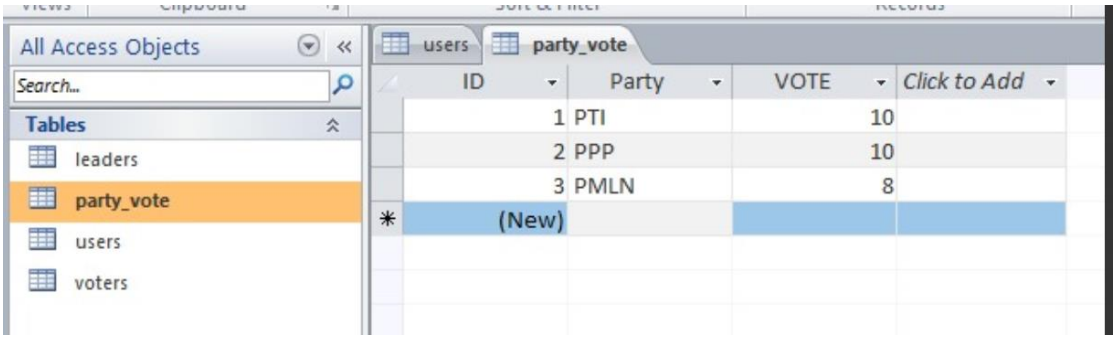
ALREADY REGISTERED CANDIDATE LOGGING IN



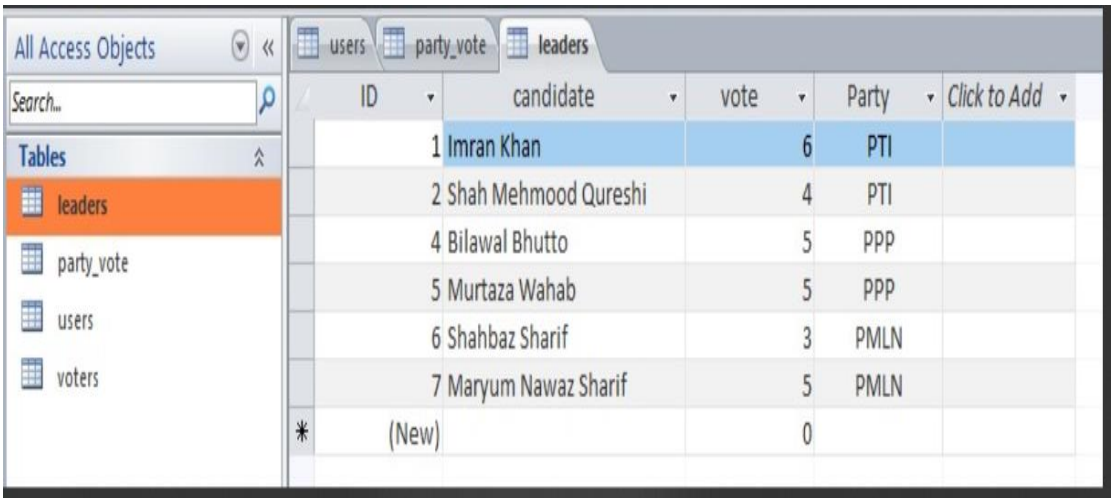


ID	username	phone	password	age	Click to Add
1	ayesha	03152361761	123	18	
2	nida	03116724358	123	20	
3	maha	03216754321	0321	59	
4	tayyeba	03456784312	456	20	
5	aliza	03245417612	123	69	
6	sehrish	03456783216	321	20	
7	aleena	03217865439	123	31	
8	zainab	03154261761	123	22	
9	muqaddas	03212721203	890	40	
10	ali	03214567519	abc	18	
11	sajida parveen	03002628547	123	50	
12	shafique	03125678678	123	18	
13	shinchan	03351230501	786	786	
14	shafique	03212095749	00902249	52	
15	ayesha	03152765489	12345	18	
(New)					

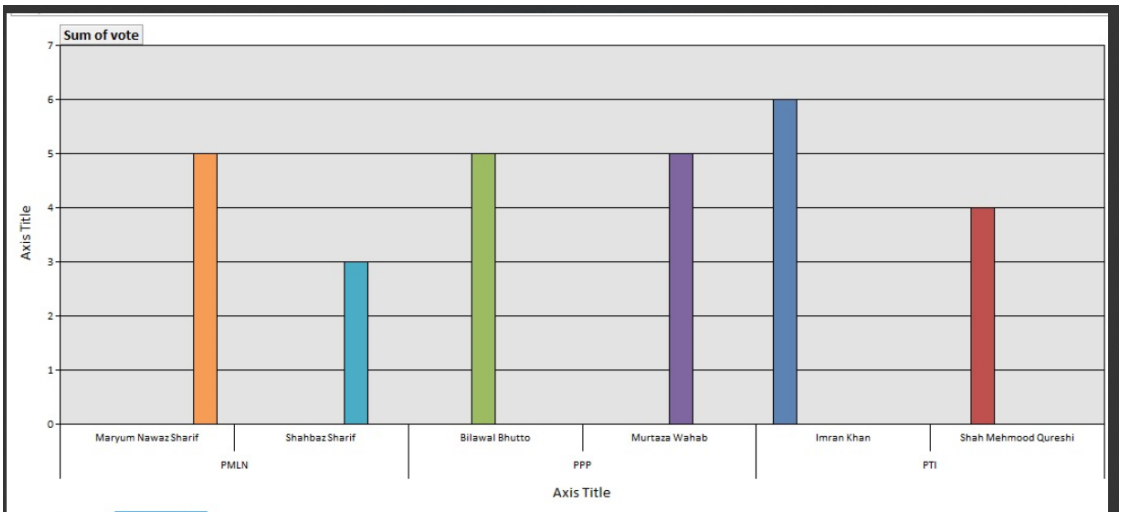
DATABASE TABLE (REGISTERED VOTERS)



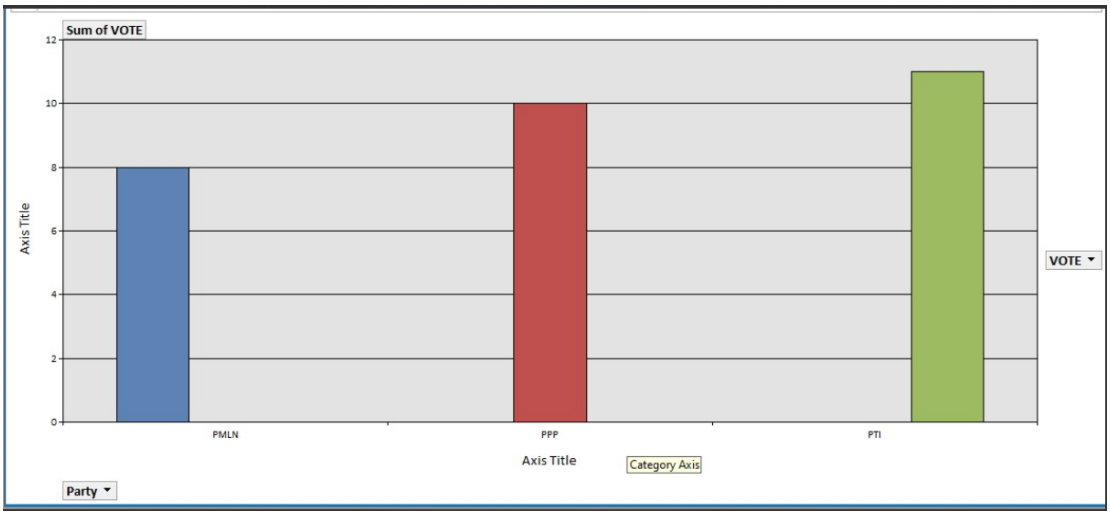
PARTY VOTES



LEADERS



LEADERS CHART



PARTY VOTE CHART