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ONLINE VOTING SYSTEM – MAC

A Project Report of Capstone Project 2

Submitted by

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BONAFIDE CERTIFICATE

Certified that this project report **"ONLINE VOTING SYSTEM – MAC"** is the bonafide work of **"VISHAL GOSWAMI (1613101834)"** who carried out the project work under my supervision.

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ABSTRACT :-

Online voting system is Android application used to securely conduct votes and elections. As a digital platform, they eliminate the need to cast your votes using paper or having to gather in person. They also protect the integrity of your vote by preventing voters from being able to vote multiple times.

Our System Make the use of Firebase as backend, for login, registration and for storage purpose which make our system highly secured and reliable. It also uses Firebase ML kit for face detection which allows us to vote, one person at a time.

This application also verify biometric with the help of finger print sensor.

Technologies Used -

- Android Studio

- Firebase

- OpenCv

- Biometrics

- Firebase ML Kit

CHAPTER 1 :

INTRODUCTION

1.1   Project Plan

1.1.1   About the Project

Online Voting System is android application which allows user to vote remotely without going to anywhere. This Application is user friendly and easy to use for online voting securely and conveniently. This Application allows user to create account with their number, which will be used for login purpose and also, account will be create only after authentication by sending OTP on that number.

This Application also ensure that only those person are allows to vote who are eligible for vote, this task accomplish by allow user to enter their ID, which will check their Date of Birth that are stored in firebase database.

1.1.2   Purpose And Scope

➢ **The main purposes of OVS include:**

• Provision of improved voting services to the voters through fast, timely and convenient voting.

• Reduction of the costs incurred by the Electoral Authority during voting time in paying the very many clerks employed for the sake of the success of the manual system.

• Check to ensure that the members who are registered are the only ones to vote.

• Online voting system will require being very precise or cost cutting to produce an effective election management system.

- Increased number of voters as individual will find it easier and more convenient to vote, especially those abroad.

➢ **Scope of OVS:**

It is focused on studying the existing system of voting and to make sure that STUDY the peoples vote is counts, for fairness in the elective positions.

This also will produce:

• Less effort and less labor intensive, as the primary cost and focus primary on creating, managing, and running a secure web voting portal.

• Increasing number of voters as individuals will find it easier and more convenient to vote, especially those abroad.

1.2 Front End

1.2.1   Introduction of XML

Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable .The design goals of XML focus on simplicity, generality, and usability across the Internet. It is a textual data format with strong support via Unicode for different human languages. Although the design of XML focuses on documents, the language is widely used for the representation of arbitrary data structures such as those used in web services.

1. XML stands for extensible Markup Language

2. XML is a markup language like HTML

3. XML is designed to store and transport data

4. XML is designed to be self-descriptive

1.3   Back End

1.3.1   Firebase

Firebase is a mobile and web app development platform that provides developers with a plethora of tools and services to help them develop high-quality apps, grow their user base, and earn more profit. The Firebase Realtime Database is a cloud-hosted NoSQL database that lets you store and sync between your users in realtime. The Realtime Database is really just one big JSON object that the developers can manage in realtime.

With just a single API, the Firebase database provides your app with both the current value of the data and any updates to that data.

1.3.2   Firebase ML Kit

Firebase ML Kit was introduced to us at Google I/O '18. It is a mobile SDK that

enables Android and iOS app developers to have advanced machine learning capabilities into their apps with ease. ML Kit APIs works both on the device and on the cloud. The on-device APIs are designed to work fast with no internet connection.

On the other hand, cloud-based APIs uses Google Cloud Platform's machine learning technology which gives more accurate results but requires an internet connection.

Feature	On-device	Cloud
Text recognition	✓	✓
Face detection	✓	
Barcode scanning	✓	
Image labeling	✓	✓
Landmark recognition		✓
Custom model inference	✓	

1.3.3   Java

Java is a popular programming language, created in 1995. It is owned by Oracle, and more than 3 billion devices run Java.

It is used for :

- Mobile applications (specially Android apps)

- Desktop applications

- Web applications

- Web servers and application servers

- Games

- Database connection

- And much, much more!

1.4   Login Activity Sample Coding

package com.onlie.voting01.onlinevotingsystem;

import androidx.annotation.NonNull;

import androidx.appcompat.app.AppCompatActivity;

import android.app.ProgressDialog;

import android.content.Intent;

import android.os.Bundle;

import android.text.TextUtils;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import android.widget.Toast;

import com.google.firebase.database.DataSnapshot;

import com.google.firebase.database.DatabaseError;

import com.google.firebase.database.DatabaseReference;

import com.google.firebase.database.FirebaseDatabase;

import com.google.firebase.database.ValueEventListener;

```java
import com.onlie.voting01.onlinevotingsystem.Model.Users;

import com.onlie.voting01.onlinevotingsystem.Prevalent.Prevalent;

public class LoginActivity extends AppCompatActivity {

    private EditText Phone,Password;

    private Button Login;

    private DatabaseReference mref;

    private ProgressDialog LoadingBar;

    String myphone,mypassword;

    TextView Newuser;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_login);

        Phone=(EditText)findViewById(R.id.loginphone);

        Password=(EditText)findViewById(R.id.loginpassword);

        Login=(Button)findViewById(R.id.loginbutton);

        Newuser=(TextView)findViewById(R.id.Newuser);

        LoadingBar=new ProgressDialog(this);
```

```java
mref= FirebaseDatabase.getInstance().getReference();

    mypassword=Password.getText().toString();

    myphone="+91"+Phone.getText().toString();

    Newuser.setOnClickListener(new View.OnClickListener() {

      @Override

      public void onClick(View v) {

        Intent i=new Intent(LoginActivity.this,RegisterActivity.class);

        startActivity(i);

      }

    });
```

CHAPTER 2 :-

PROPOSED AND EXISTING SYSTEM

2.1 Proposed System :-

To overcome the drawbacks of the existing system, the proposed system has been evolved. This project aims to reduce the paper work and saving time to generate accurate results from **Online Voting System (OVS)**. The system provides with the best user interface. The efficient voting can be done by using this proposed system.

2.1.1   Feasibility Study:-

Feasibility analysis begins once the goals are defined. It starts by generating broad possible solutions, which are possible to give an indication of what the new system should look lime. This is where creativity and imagination are used. Analysts must think up new ways of doing things- generate new ideas. There is no need to go into the detailed system operation yet. The solution should provide enough information to make reasonable estimates about project cost and give users an indication of how the new system will fit into the organization. It is important not to exert considerable effort at this stage only to find out that the project is not worthwhile or that there is a need significantly change the original goal.

Feasibility of a new system means ensuring that the new system, which we are going to implement, is efficient and affordable. There are various types of feasibility to be determined. They are –

i) Economically Feasibility

Development of this application is highly economically feasible. The only thing to be done is making an environment with an effective supervision. It is cost effective in the sense that has eliminated the setup of voting booth and paper work completely. The system is also time effective because the voting is conducted by voter at anywhere in the world.

ii) Technical feasibility

The technical requirement for the system is internet service and it does not use any other additional Hardware and software. Technical evaluation must also assess whether the existing systems can be upgraded to use 6 the new technology and whether the organization has the expertise to use it. This application depends on Google's Firebase and internet service.

iii) Operational Feasibility

The system working is quite easy to use and learn due to its simple but attractive interface. User requires no special training for operating the system. Technical performance include issues such as determining whether the system can provide the right information for the voter personal details, and whether the system can be organized so that it always delivers this information at the right place and on time using internet services.

iv) Behavioural Feasibility

This includes the following questions

- Is there sufficient support for the users?
- Will the proposed system cause harm?

The project would be beneficial because it satisfies the objectives when installed. Online Voting System is behaviourally feasible and there will be no harm for the users.

2.2 Existing System :-

- The existing system does not provide combination of face detection and biometric to identify person. Our System Achieve this with the help of **Image Processing** and Use of **finger print recognition**.

- Existing System does not provide high security, as in our system there use of firebase that make OVS more secure and reliable.

- Risk of Vote Redundancy and formatting as with the traditional method it may be possible that there will be redundancy in the votes and formatting.

- High In cost, as traditional system of voting is very high in cost, because there is need to setup voting booth at every place and cost of machines is also increase whole cost.

- Time Consuming, as traditional system of voting takes lot of time to complete whole process of voting, there are lots of plans are prepare to conduct voting which is time consuming process also in setting up voting booth and categories the regions and also rest process after voting that is counting vote is also time consuming.

CHAPTER 3 :-

LITERATURE REVIEW

3.1. Shivendra Katiyar, Kullai Reddy Meka, Ferdous A. Barbhuiya, Sukumar Nandi Used Cryptography and Steganography at the same time, they try to provide Biometric as well as Password security to voter accounts. The scheme uses images as cover objects for Steganography and as keys for Cryptography. The key image is a Biometric measure, such as a fingerprint image. Proper use of Cryptography greatly reduces the risks in these systems as the hackers have to find both secret key and the template. The basic idea is to merge the secret key with the cover image on the basis of key image. The result of this process produces a stego image which looks quite similar to the cover image but not detectable by human eye. "Online Voting System Powered By Biometric Security using Steganography" Second International Conference on Emerging Applications of Information Technology, 2011.

3.2. Firas I. Hazzaa, Seifedine Kadr Their paper deals with the design and development of a web-based voting system using fingerprint in order to provide a high performance with high security to the voting system also we use web technology to make the voting system more practical. The new design is proposed an election for a university for selecting the president of the university. The proposed EVS allows the voters to scan their fingerprint, which is then matched with an already saved image within a database. Developed Web-based Voting System using Fingerprint Recognition. This system has provided an efficient way to cast votes, free of fraud, and make the system more trustable, economic and fast. We have used Minutiae-based fingerprint identification and matching with high accuracy.

3.3. Shridharan Implemented a three models such as, Authentication model, franchise excising model, distributed database and central server model. In authentication model voter with smart card and voter identification number and also gives the biometric information this all information is used in future election voting process. After verification and validation voting interface means candidate name and sign are displayed, this is verified by vote casting database, and then votes are counted and declared the result. In this system security and traceability also ensures to auditing the vote and voter information.

3.4. Himanshu Agarwal and G.N.Pandey proposed aadhar id based online voting system for Indian election is proposed for the first time in this paper. The proposed model has a greater security in the sense that voter high security password is confirmed before the vote is accepted in the main database of Election Commission of India. The additional feature of the model is that the voter can confirm if his/her vote has gone to correct candidate/party. In this model a person can also vote from outside of his/her allotted constituency or from his/her preferred location "Online Voting System for India based on Aadhar ID", Eleventh Intellational Confernce on ICT and Knowledge Engineering 2013.. .

3.5. K. P. Kaliyamurthie1, R. Udayakumar, D. Parameswari and S. N. Mugunthan The aim of this is people who have citizenship of India and whose age is above 18 years and of any sex can give their vote through online without going to any physical polling station. Election Commission Officer (Election Commission Officer who will verify whether registered user and candidates are authentic or not) to participate in online voting. This online voting system is highly secured, and its design is very simple, ease of use and also reliable. The proposed software is developed and tested to work on Ethernet and allows online voting. It also creates and manages voting and an election detail as all the users must login by user name and password and click on his favorable candidates to register vote. This will increase the voting percentage in India. By applying high security it will reduce false votes.

3.6. Gianluca Dini This proposed system is based on replication and tolerates both benign and fully arbitrary failures of servers. If enough servers are correct, service availability and security are ensured despite the presence of faulty servers and any number of faulty voters. A voter that suffers a crash failure can vote after recovery. The proposed service satisfies common voting requirements including voter eligibility and privacy, and tally accuracy. In addition, the service satisfies a further important requirement, namely tally verifiability without any intervention of voters. Anyone, including an external observer, can easily be convinced that the election outcome is fairly computed from the ballots that were correctly cast. It follows that the proposed voting scheme strengthens the security properties of the electronic voting procedure, and simplifies the interaction of voters with the electronic voting system.

CHAPTER 4 :-

DIAGRAM AND OUTPUT

4.1 Data Flow Diagram (DFD)

A data flow diagram is a graphical representation that depicts information flow and the transforms that are applied as data move from input to output. The basic form of a data flow diagram, also known as a data flow graph or a bubble chart, The data flow diagram may be used to represent a system or software at any level of abstraction. As information moves through software, it is modified by a series of transformations. A data flow diagram is a graphical representation that depicts information flow and the transforms that are applied as data move from input to output. The basic form of a data flow diagram, also known as a data flow graph or a bubble chart. DFD is an abstract description of the system. The data flow diagram may be used to represent a system or software at any level of abstraction. DFDs may be partitioned into levels that represent increasing information flow and functional detail. Therefore, the DFD provides a mechanism for functional modeling as well as information flow modeling. DFDs are very useful in understanding a system and can be effectively used during analysis. DFDs can be hierarchically organized, which helps in progressively partitioning and analyzing large systems. Such DFDs are called leveled DFDs. Context diagram is a diagram in which the entire system is treated as a single process and all its inputs, outputs, sinks, and sources are identified and shown.

Level 0 DFD
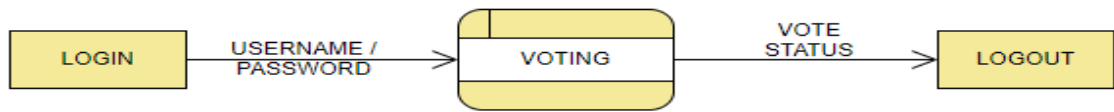

Level 1 DFD
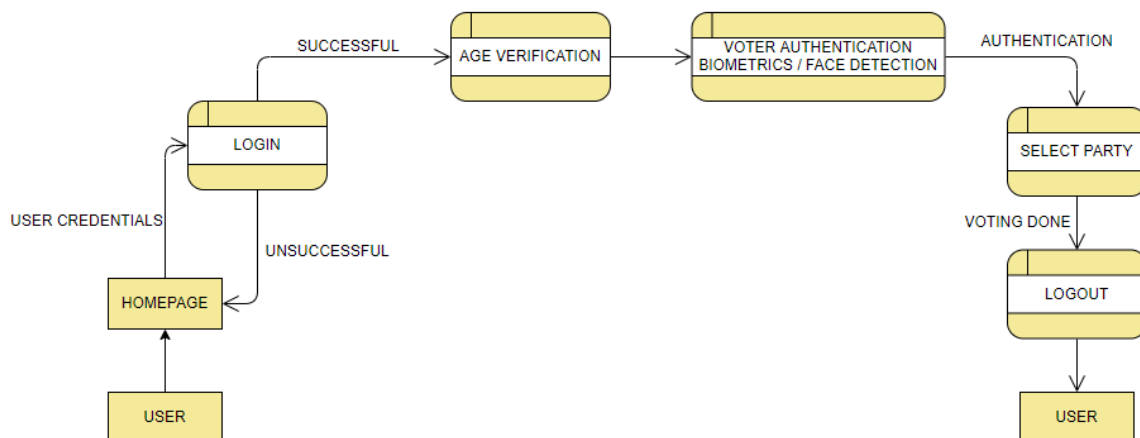
4.2 ER DIAGRAM

An entity–relationship model (ER model) describes interrelated things of interest in a specific domain of knowledge. A basic ER model is composed of entity types (which classify the things of interest) and specifies relationships that can exist between instances of those entity types. In software engineering, an ER model is commonly formed to represent things that a business needs to remember in order to perform business processes. Consequently, the ER model becomes an abstract data model, that defines a data or information structure which can be implemented in a database, typically a relational database.

Entity–relationship modeling was developed for database design by Peter Chen and published in a 1976 paper. However, variants of the idea existed previously. Some ER models show super and subtype entities connected by generalization-specialization relationships, and an ER model can be used also in the specification of domain-specific ontologies.
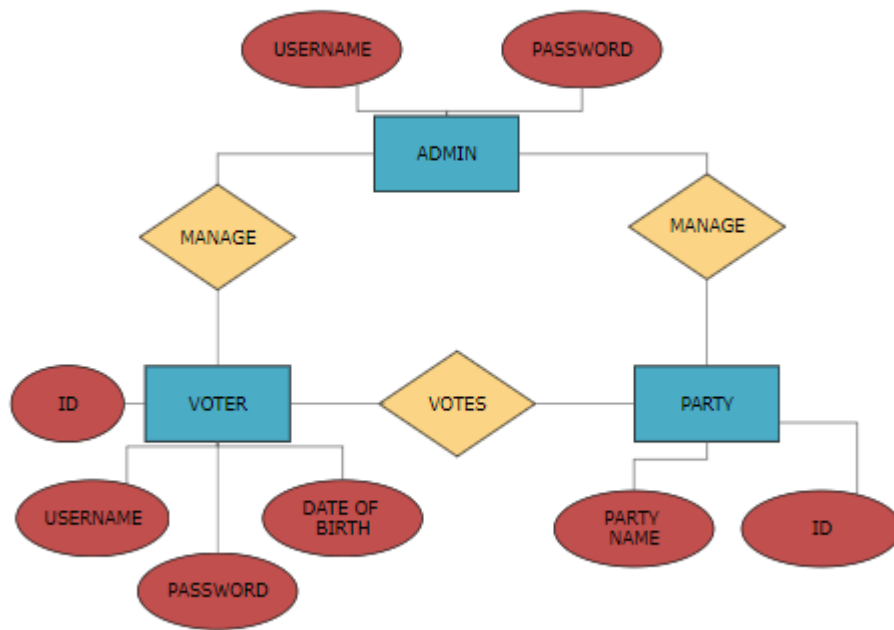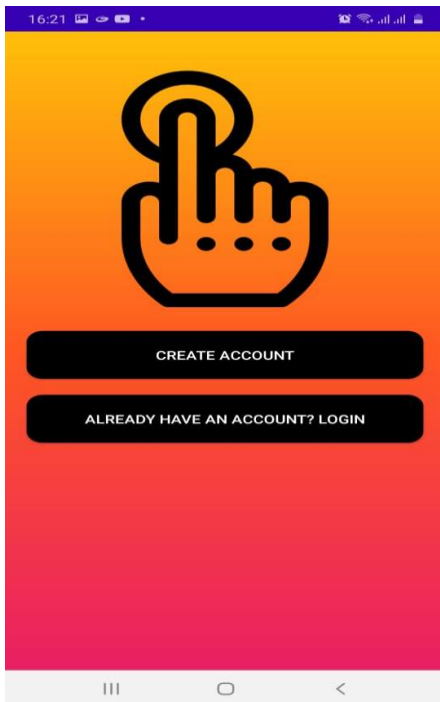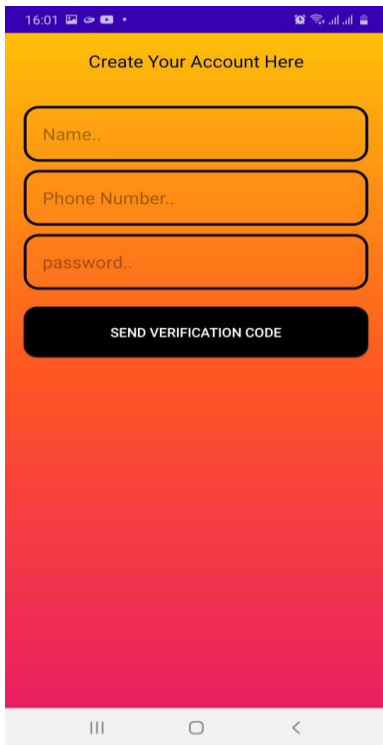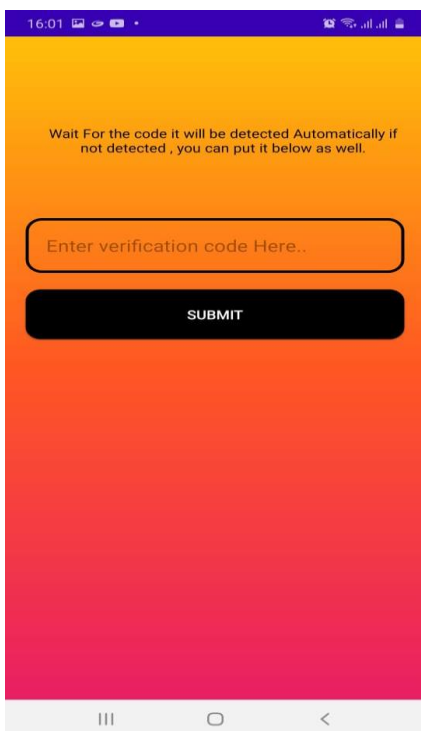
4.3 Output Snapshots :-
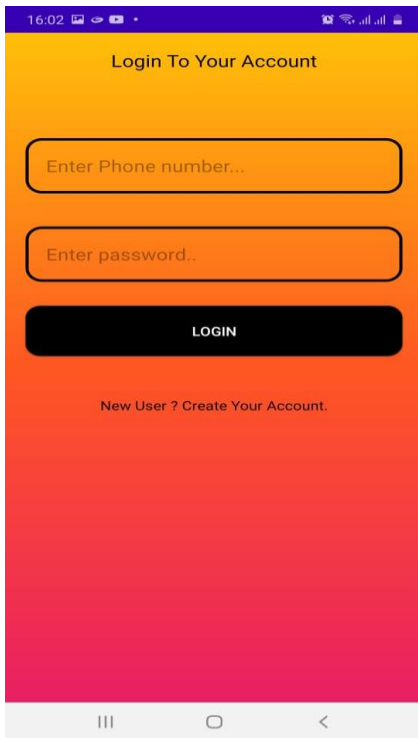
4.3.1 Welcome Page
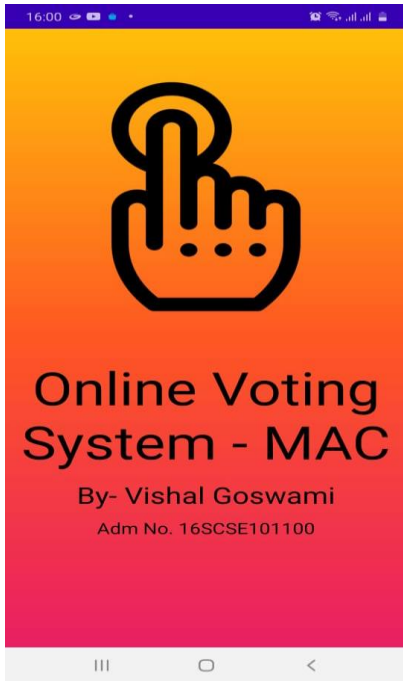
4.3.2 Home Page

4.3.3 Registration Page

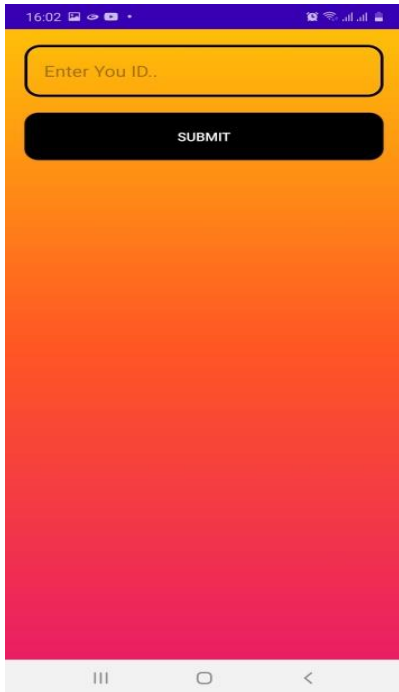

4.3.4 OTP Verfication Page
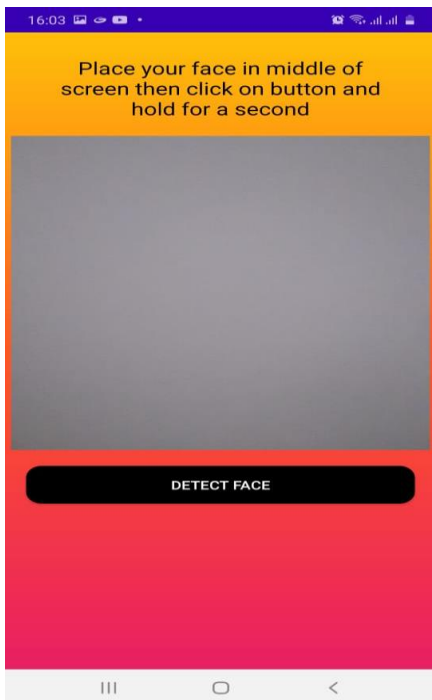
4.3.5 Login Page

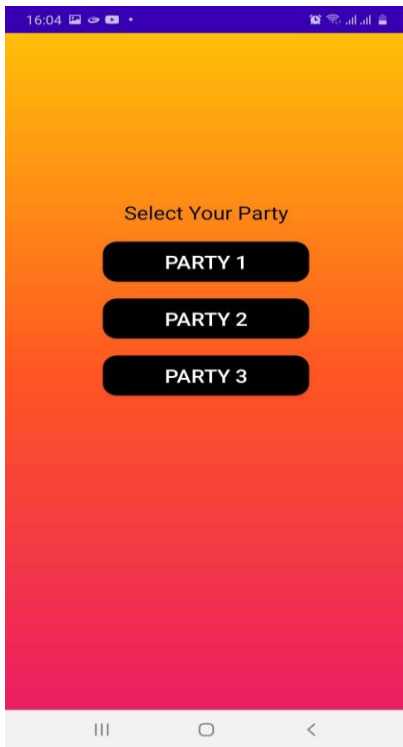

4.3.6 Vote Page / Fingerprint Sensor

4.3.7 Age Verification Page

4.3.8 Face Detection Page / Image Processing

4.3.9 Select Party Page

4.3.10 Final Status Page

CHAPTER 5 :-

CONCLUSION / FUTURE ENHANCEMENT

- This Online Voting system will manage the Voter's information by which voter can login and use his voting rights. The system will incorporate all features of voting system. It provides the tools for maintaining voter's vote to every party. There is a Database which is maintained on platform that is Firebase in which all the names of voter with complete information is stored.

- In this user who is above 18 year's register his/her information on the database and when he/she want to vote he/she has to login by his id and password and can vote to any party only single time. Voting details store in database. By online voting system percentage of voting is increases. It decreases the cost and time of voting process. It is very easy to use and It is very less time consuming.

- In future we will enhance our system by integrate AADHAAR Card detail API so that, we can match actual Biometrics of user with input biometrics and also, we will add face recognition feature with face detection that will make our system more reliable.

CHAPTER 6 :-

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