

Android Application for Online Voting System

*Submitted in partial fulfillment of the
requirement for the award of the degree of*

BACHELORS OF COMPUTER APPLICATION



**GALGOTIAS
UNIVERSITY**

Session 2023-24

By

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Under the guidance of

Ms. Preeti

(Assistant Professor)

SCHOOL OF COMPUTER APPLICATION AND TECHNOLOGY

GALGOTIAS UNIVERSITY, GREATER NOIDA, INDIA

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CANDIDATE'S DECLARATION

We hereby certify that the work which is being presented in the project, entitled "**Android App for Online Voting System**" in partial fulfillment of the requirements for the award of the BCA (Bachelors of Computer Application) submitted in the School of Computer Application and Technology of Galgotias University, Greater Noida, is an original work carried out during the period of Jan, 2024 to April and 2024, under the supervision of Ms. Preeti, Department of Computer Science and Engineering School of Computer Application and Technology , Galgotias University, Greater Noida.

The matter presented in the project has not been submitted by us for the award of any other degree of this or any other places.

Vineet Singh (21SCSE1430028)

Devansh Agarwal (21SCSE1430026)

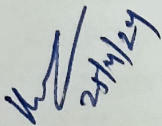
Kunal Gupta (21SCSE141430018)

This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

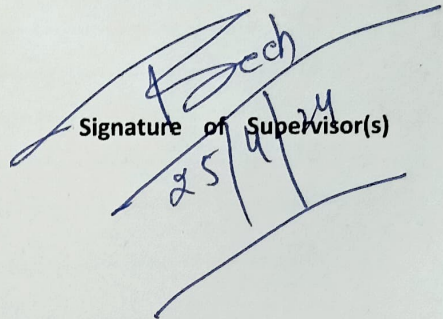
Ms. Preeti
24/4/24
Assistant Professor

CERTIFICATE

This is to certify that Project Report entitled "Android App for Online Voting System." which is submitted by Vineet Singh, Devansh Agarwal and Kunal Gupta in partial fulfillment of the requirement for the award of degree BCA. in Department of Computer Application of School of Computer Application and Technology Galgotias University, Greater Noida, India is a record of the candidate own work carried out by him/them under my supervision. The matter embodied in this thesis is original and has not been submitted for the award of any other degree



Signature of Examiner(s)



Signature of Supervisor(s)

Date: April, 2024

Place: Greater Noida

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CHAPTER 1

INTRODUCTION

PROJECT PLAN

1.1 ABOUT THE PROJECT

Introducing the Online Voting System, a user-friendly Android application designed for remote voting convenience. This innovative platform empowers users to cast their votes securely from anywhere, eliminating the need to physically visit polling stations.

With a seamless interface, the Online Voting System ensures a hassle-free voting experience. Users can easily create accounts using their phone numbers, undergoing authentication via OTP for added security. This process guarantees that only eligible individuals can participate in the voting process.

Moreover, the system verifies voter eligibility by prompting users to input their IDs, cross-referencing their date of birth with records stored in the Firebase database. This stringent validation process upholds the integrity of the voting system, ensuring fair and accurate results.

1.2 PURPOSE AND SCOPE

1.2.1 The main purposes of OVS include:

- Enhancing voting services by offering fast, timely, and convenient voting options to voters.
- Minimizing costs for Electoral Authorities by reducing the need for numerous clerks required for manual voting procedures.
- Implementing checks to guarantee that only registered members are eligible to cast their votes.
- The online voting system necessitates precision and cost efficiency to establish an effective election management system.
- Enabling a higher voter turnout as individuals, particularly those residing abroad, will find it easier and more convenient to participate in the voting process.

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. It will also 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.

1.3 Front End

1.3.1 Introduction of XML

Extensible Markup Language (XML) is a versatile markup language that establishes guidelines for encoding documents in a format that is both human-readable and machine-readable. Its design principles prioritize simplicity, generality, and usability across the Internet.

XML serves as a textual data format, offering robust support for various human languages through Unicode. While originally intended for document structuring, XML finds widespread application in representing diverse data structures, including those utilized in web services.

1. XML stands for Extensible Markup Language.
2. XML functions as a markup language similar to HTML.
3. XML is tailored for storing and transporting data.
4. XML is inherently self-descriptive, facilitating clear interpretation of its content.

1.4 Back End

1.4.1 Firebase

Firebase serves as a comprehensive platform for mobile and web app development, equipping developers with a wide array of tools and services to create top-notch applications, expand their user community, and enhance profitability.

The Firebase Realtime Database, a cloud-based NoSQL database, enables seamless storage and real-time synchronization among users. Functioning essentially as a large JSON object, developers can efficiently manage data in real-time within the database.

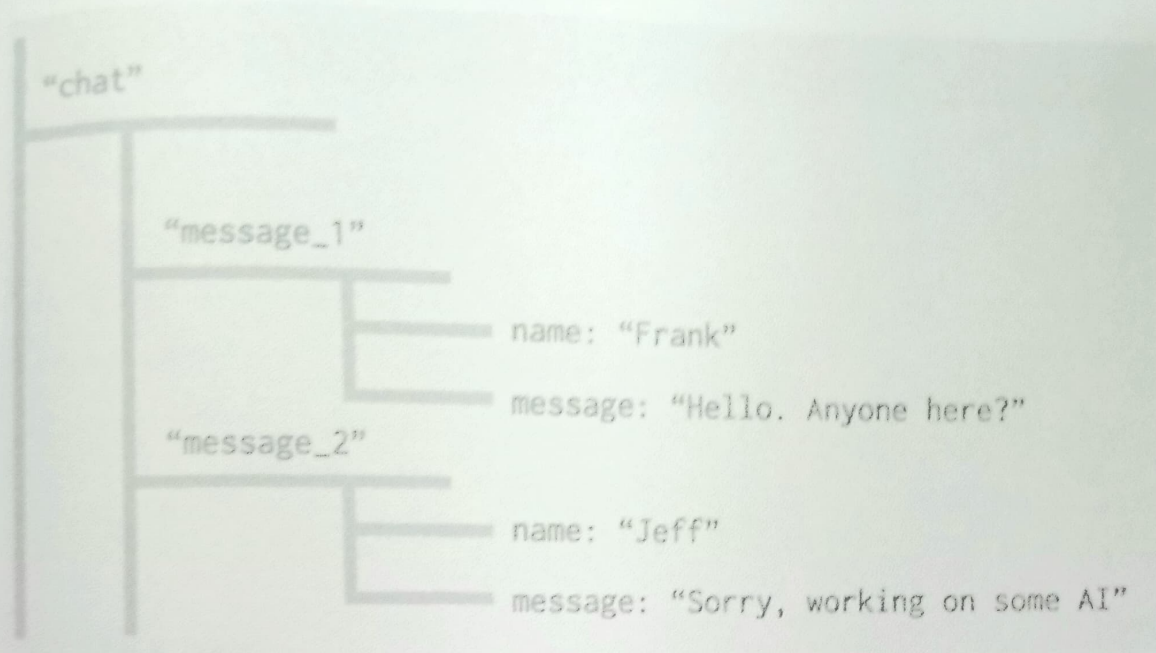


Figure 1

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.

1.4.2 Firebase ML Kit

At Google I/O '18, Firebase ML Kit made its debut. This mobile SDK empowers Android and iOS app developers to seamlessly integrate advanced machine learning features into their applications.

ML Kit APIs function both on-device and in the cloud. On-device APIs operate swiftly, even without an internet connection. In contrast, cloud-based APIs leverage Google Cloud Platform's machine learning capabilities for enhanced accuracy, albeit necessitating an internet connection.

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

Figure 2

1.4.3 Java

Java, a widely-used programming language established in 1995, is under the ownership of Oracle. With over 3 billion devices running Java, it stands as one of the most prevalent languages in the programming landscape.

It is used for:

- Mobile applications (especially Android apps)
- Desktop applications
- Web applications
- Web servers and application servers
- Games
- Database connection
- And much, much more!

CHAPTER 2

PROPOSED AND EXISTING SYSTEM

2.1 Proposed System

In response to the limitations of the current system, the proposed solution has been developed. This project strives to streamline processes, minimize paperwork, and expedite the generation of precise results within the Online Voting System (OVS).

Featuring an optimized user interface, this system facilitates efficient voting procedures, enhancing overall user experience and participation.

2.2 Advantages of Proposed System

- User-friendly and hassle-free.
- Offers a speedy and reliable method for voting, ensuring accurate results with the best user interface and efficient outcomes.

2.3 Feasibility Study

The feasibility analysis commences following the definition of project goals. It initiates by brainstorming a range of potential solutions to provide insight into the envisioned system's structure and functionality.

This phase encourages creativity and innovation, prompting analysts to explore novel approaches and generate fresh ideas. While detailed system operations are not yet scrutinized, the proposed solution should furnish adequate information for making reasonable cost estimates and offering stakeholders a glimpse of how the new system aligns with organizational objectives.

It's crucial not to invest significant effort prematurely, only to discover later that the project lacks viability or requires substantial goal adjustments. Ensuring the feasibility of the new system entails verifying its efficiency and affordability, which involves assessing various feasibility factors.

2.3.1 Economic 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.

2.3.2 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 the new technology and whether the organization has the expertise to use it.

This application depends on Google's Firebase and internet service.

2.3.2 Operational Feasibility

The system's operation is straightforward and user-friendly, thanks to its uncomplicated yet visually appealing interface. Users can navigate the system without the need for specialized training.

Technical performance considerations encompass ensuring that the system effectively retrieves voter personal details and delivers them accurately and promptly via internet services to the appropriate location.

2.3.3 Behavioral Feasibility

This encompasses the following inquiries:

- Is there ample user support available?
- Could the proposed system potentially cause any harm?

The project's viability hinges on its ability to fulfill objectives once developed and implemented. With thorough consideration of all behavioral aspects, it is determined that the project is behaviorally feasible.

The Online Voting System (OVS) demonstrates behavioral feasibility, ensuring no adverse effects on users.

2.4 Existing System

- The existing system lacks the integration of face detection and biometric recognition for individual identification. Our system accomplishes this through Image Processing and fingerprint recognition technologies.
- Security concerns in the current system are addressed in our solution by implementing Firebase, enhancing the Online Voting System (OVS) with increased reliability and security measures.

- Risks such as vote redundancy and formatting issues are prevalent in traditional methods. Our system mitigates these risks by streamlining processes and ensuring data integrity.
- The traditional voting system incurs high costs due to the need for setting up voting booths and acquiring voting machines at multiple locations. Our system offers a cost-effective alternative by leveraging digital technologies.
- The time-consuming nature of traditional voting processes, including setting up booths, categorizing regions, and counting votes, is alleviated by our system's efficient and automated procedures, reducing overall time expenditure.

CHAPTER 3

DIAGRAM AND OUTPUT

Implementation or Architecture Diagrams

3.1 Data Flow Diagram (DFD)

A data flow diagram (DFD) serves as a visual representation illustrating the flow of information and the transformations applied as data transitions from input to output. Often referred to as a data flow graph or a bubble chart, it offers a fundamental framework for understanding system or software architectures at various levels of abstraction.

DFDs provide an abstract depiction of the system, showcasing how information is altered through a series of transformations as it traverses through the software. These diagrams can be partitioned into different levels, each representing increasing levels of information flow and functional detail, thus offering a means for both functional and information flow modeling.

DFDs are instrumental in comprehending system operations and are invaluable during the analysis phase. They can be organized hierarchically, enabling the progressive partitioning and analysis of complex systems, known as leveled DFDs.

A context diagram, on the other hand, treats the entire system as a single process, identifying and displaying all its inputs, outputs, sinks, and sources, providing a high-level overview of the system's architecture and interactions.

Level 0 DFD

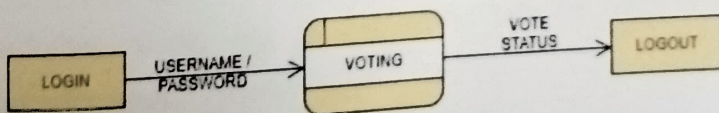


Figure 3

LEVEL 1 DFD

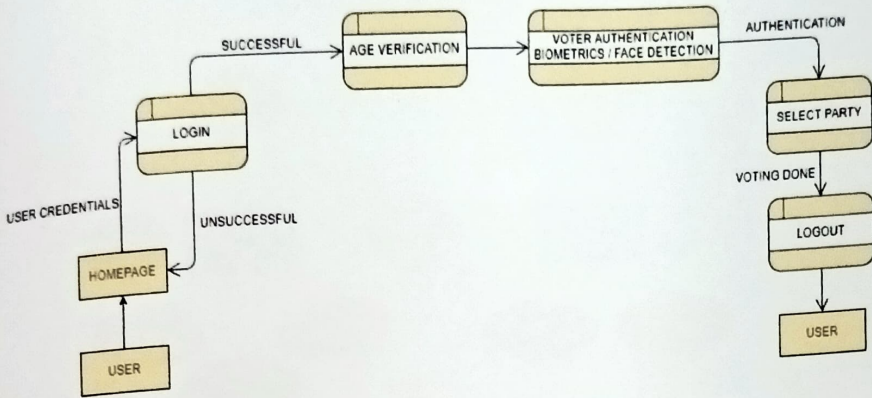


Figure 4

3.2 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.

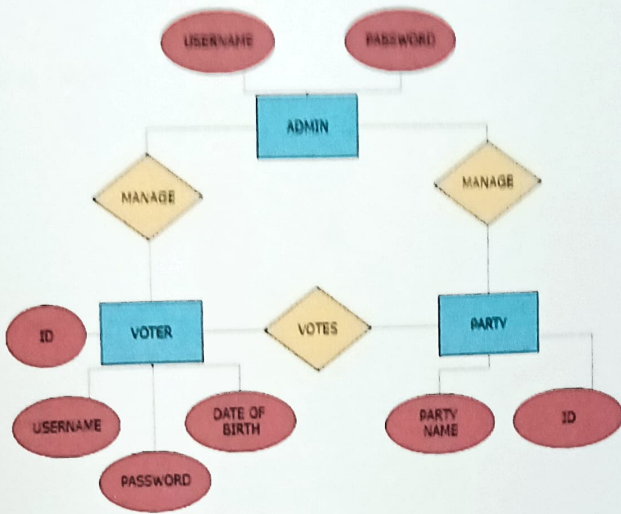
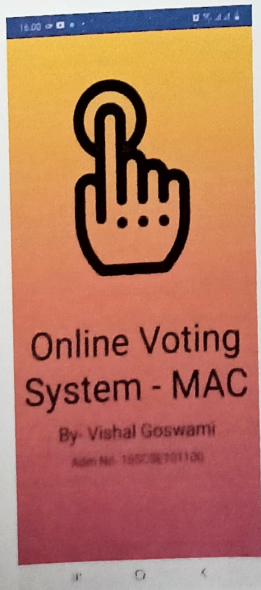


Figure 5

3.3 Output/Screenshot

1. Welcome Page



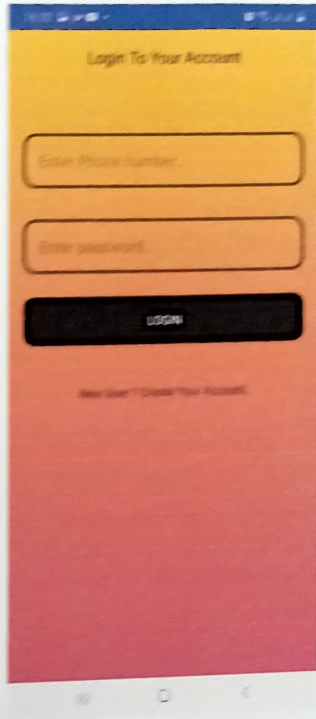
2. Home Page



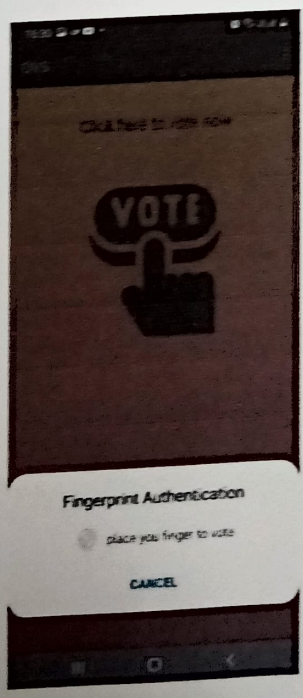
3. Registration Page



4. Login Page



4. Vote Page/Fingerprint Sensor



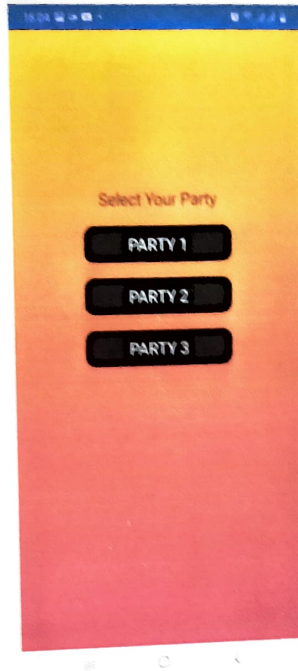
6. ID Verification Page



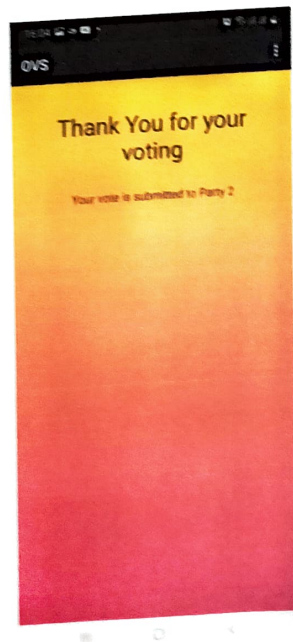
7. Face Detection Page/Image Processing



8. Select Party Page



9. Final Status Page



CHAPTER 4

CONCLUSION / FUTURE ENHANCEMENT

The Online Voting System presented here effectively manages voter information, enabling users to exercise their voting rights securely. Incorporated with comprehensive features, the system facilitates voter participation and provides tools for recording votes for each party. Leveraging the Firebase platform, a robust database stores detailed voter information.

Users aged 18 and above register their information in the database and securely access their voting privileges through a login system. Each voter can cast a single vote for their chosen party, with all voting details meticulously stored in the database. This online voting system contributes to an increased percentage of voter turnout while simultaneously reducing the costs and time associated with traditional voting processes.

Looking ahead, future enhancements will integrate AADHAAR Card detail APIs to verify users' biometric information, enhancing system reliability. Additionally, the integration of face recognition technology alongside face detection will further fortify the system's security and integrity.

REFERENCES

BOOKS:

- Ian Somerville 'Software engineering'
- Rajeev mall 'Software engineering'

ONLINE REFERENCE:

1. www.google.co.in
2. www.stackoverflow.com
3. firebase.google.com/docs
4. W3 school

