# Online Voting Machine

A Major Project-II (AL-805)

Submitted in partial fulfillment of the requirements for the

Award of Degree of

Bachelor of Technology in CSE-AIML

Submitted to

# RAJIV GANDHI PROUDYOGIKI VISHWAVIDHYALAYA, BHOPAL (M.P.)

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#### DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

TECHNOCRATS INSTITUTE OF TECHNOLOGY, BHOPAL

**SESSION: Jan-June 2025** 

#### TECHNOCRATS INSTITUTE OF TECHNOLOGY, BHOPAL

DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING



#### **CERTIFICATE**

This is to certify that the work embodies in this Major Project-II (AL 805) work entitled "ONLINE VOTING MACHINE" being submitted by Ayaan Masood - (0111AL211047) in partial fulfillment of the requirement for the award of Bachelor of Technology in COMPUTER SCIENCE & ENGINEERING to Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal (M.P.) during the academic year 2024-25 is a record of bonafide piece of work, carried out by them under my supervision and guidance in the CSE-AIML, Technocrats Institute of Technology, Bhopal

#### TECHNOCRATS INSTITUTE OF TECHNOLOGY, BHOPAL

#### DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING



#### **DECLARATION**

I Ayaan Masood (0111AL211047) Student Of Bachelor Of Technology in DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING, session 2024-2025 Technocrats Institute of Technology, Bhopal (M.P) hereby declare that the work presented in this project Report entitled "Online Voting Application" is the outcome of our own work, is bona fide and correct to the best of our knowledge and this work has been carried out taking care of Engineering Ethics.

Ayaan Masood (0111AL211047)

#### Acknowledgement

I deem it's my privilege to extent my profound gratitude and appreciation towards all those who have directly or indirectly involved themselves in making this project a great success. It gives me immense pleasure to express my deepest sense of gratitude and sincere thanks to my respected guide Prof. Madhuri Sahu for her valuable guidance, encouragement and help for this work.

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I am also thankful to all the staff members of the Institute for their cooperation in my work.

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#### **ABSTRACT**

In today's fast-paced world, mental wellness and stress management have become critical aspects of a healthy lifestyle. The "Relax" project is an innovative solution designed to address the growing need for mental relaxation and emotional well-being through technology. This project utilizes principles of Artificial Intelligence and Machine Learning to create a user-friendly platform that assists users in managing stress through guided meditations, personalized recommendations, and mood tracking.

The system analyzes user input—such as mood ratings, activity patterns, and preferences—to suggest relaxation techniques and activities best suited to individual needs. Key features include real-time feedback, mood-based music or content suggestions, and analytics to track improvement over time. The project leverages natural language processing (NLP) and classification models to enhance user experience and provide meaningful insights into mental health trends.

The platform features a combination of guided meditation modules, mood and activity tracking, AI-powered suggestions, and stress-reducing exercises. Using machine learning algorithms, the system learns from user behavior and preferences to recommend the most effective relaxation techniques, whether it's deep breathing exercises, mindfulness sessions, or calming multimedia content. It employs Natural Language Processing (NLP) to analyze textual feedback and emotional input, enabling real-time personalization. From a technical standpoint, the project follows a modular architecture with secure backend support, responsive front-end design, and integration with cloud-based storage for user data. Tools and frameworks such as Python, TensorFlow, Flask/Django, and Android SDK (if mobile-based) are employed to develop a seamless user experience. The system is scalable and designed with potential extensions like wearable device integration and real-time emotion recognition.

Through this application, we aim to provide a supportive tool for users to manage their emotional well-being conveniently. This report discusses the system's design, development methodology, and implementation, along with the tools and technologies used. It also presents the challenges faced during development and potential areas for future enhancement.

The Relax project ultimately strives to contribute to a healthier society by using technology for positive behavioral change and wellness promotion.

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# **Must Read**

# **Guidelines for Project Report**

The Headings should have font size 16 (Bold) and font style "Times new roman".
The Subheadings should have font size 14 (Bold) and font style "Times new roman"
The text body should have font size 12 and font style "Times new roman".
The text body should have line spacing 1.5
The text alignment should be "justified".
The Name of guide should be edited according to allotment list.
Figures & Tables If used should be given name and number.
Page Number should be mentioned below every page
Headings should have capitalized each word.
The Margin should be maintained as below:
Top: 1' Bottom: 1'
Domonii, 1

Right: 1' Left: 1.5'

# **INTRODUCTION**

- 1.1 Motivation The motivation behind the development of the Online Voting application is deeply rooted in addressing the inherent challenges of traditional voting systems. With the world becoming increasingly interconnected, there is a growing demand for a more accessible, efficient, and secure method of conducting elections. Traditional voting methods often face limitations such as geographical constraints, timeconsuming processes, and the potential for manual errors in counting. The Online Voting application aims to revolutionize the electoral process by leveraging digital technologies to create a platform that facilitates convenient and inclusive participation. By allowing voters to cast their ballots from any location with internet access, the application not only eliminates geographical barriers but also streamlines the entire voting process. This motivation is aligned with the broader goal of enhancing democratic practices by making the electoral system more responsive and adaptable to the needs of a technologically advanced society.
- 1.2 Scope The scope of the Online Voting application is extensive, covering various aspects of the electoral process to ensure a comprehensive and effective solution. The system's primary focus is on providing a user-friendly platform that enables eligible voters to participate securely. It encompasses the development of features such as robust voter authentication mechanisms, secure vote casting, and real-time monitoring to maintain the confidentiality and

1.3.1 User-Friendly Interface Create an intuitive and userfriendly interface that caters to voters of varying technical abilities. The design should prioritize accessibility and inclusivity to encourage widespread participation. 1.3.2 Strong Authentication Mechanisms Implement robust authentication mechanisms to verify the identity of voters, mitigating the risk of fraudulent activities and ensuring that only eligible individuals can cast their votes. 1.3.3 Prevention of Fraudulent Activities Incorporate features and protocols to detect and prevent fraudulent activities, maintaining the integrity and fairness of the electoral process. 1.3.4 Administrative Tools Develop comprehensive administrative tools that empower election organizers to manage voter registration, monitor voting activities, and generate accurate and timely election results. Businesses, non-profit organizations, and other entities can leverage the application for internal polls, decision-making processes, and board elections, enhancing efficiency and transparency. 1.4.3 Public Decision-Making The application can be employed for public referendums and decision-making processes, allowing citizens to actively participate in shaping policies and initiatives. In conclusion, the Online Voting application's application is diverse, making it a valuable tool for fostering democratic practices and improving the efficiency of electoral processes across various domains. Furthermore, the examination of legal and regulatory frameworks has emphasized the need for the Online Voting application to align with established standards and comply with jurisdictionspecific requirements. This understanding of the legal landscape is essential for building trust in the system and facilitating its acceptance within the broader electoral context. 1

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Moreover, the survey assesses the legal and regulatory frameworks governing online

voting.

Understanding the legal implications and regulatory requirements is essential for ensuring compliance and building trust in the proposed system. Analyzing the challenges faced by jurisdictions with established online voting regulations provides valuable guidance for designing a system that aligns with legal standards.

In summary, the literature survey serves as a foundation for the Online Voting application, offering a thorough exploration of the historical context, security considerations, user experiences, and legal aspects of online voting systems. By synthesizing existing knowledge, the survey provides valuable insights to inform the design, implementation, and evaluation of

the proposed Online Voting application.

#### 2.2 Conclusion

The literature survey concludes with a synthesis of key findings and insights gleaned from

the

extensive exploration of existing research and practices in online voting systems. This comprehensive review has provided a solid foundation for the development of the Online Voting application, offering valuable perspectives on historical developments, security considerations, user experiences, and legal frameworks.

By examining the evolution of voting systems, the survey has shed light on the motivations behind the transition from traditional paper-based methods to online voting.

**Understanding** 

the benefits and challenges associated with this shift is crucial for developing a system that addresses current needs while mitigating potential risks.

The in-depth analysis of security measures employed in previous online voting systems has informed the security objectives of the proposed application. Lessons learned from case studies and real-world examples have provided insights into the practical challenges faced by

early adopters, guiding the development of robust and resilient security features.

The exploration of user experiences and human-computer interaction studies has highlighted the importance of designing an intuitive and accessible interface for the Online Voting

application. This user-centric approach aims to ensure that the voting platform caters to individuals with varying levels of technological proficiency, promoting inclusivity and widespread participation.

# **Chapter 3: Problem Statement**

#### 3.1 Introduction

The development of the Online Voting application is driven by the imperative to address critical challenges and inefficiencies inherent in traditional voting systems. As societies evolve and embrace digital transformation, the limitations of manual, paper-based voting processes become increasingly apparent. This problem statement elucidates the core issues motivating the creation of the Online Voting application and articulates the need for a modernized, secure, and accessible electoral platform.

## 3.2 Challenges in Traditional Voting Systems

Traditional voting systems, while time-tested, face inherent limitations that hinder the efficiency and inclusivity of the democratic process. Geographical constraints often restrict citizens' ability to physically cast their votes, leading to reduced voter turnout and representation. Moreover, manual counting processes are susceptible to errors, and the overall logistics of organizing and managing elections prove to be resource-intensive and time-consuming.

# 3.3 The Digital Imperative

In light of the contemporary digital landscape, there is a growing demand for a more agile and technologically advanced approach to elections. The traditional voting paradigm, reliant on physical presence and manual operations, does not align with the expectations of a society accustomed to seamless digital experiences. The need for a solution that transcends geographical barriers, enhances accessibility, and leverages the efficiency of digital technologies becomes evident.

## 3.4 Security Concerns in Online Voting

While the transition to online voting presents a compelling solution to the challenges of traditional systems, it introduces a new set of concerns, particularly in terms of security. Ensuring the integrity, confidentiality, and authenticity of votes in an online environment is paramount. The risk of cyber threats, including unauthorized access, tampering, and fraudulent activities, necessitates the implementation of robust security measures to instill trust in the electoral process.

#### 3.5 Inclusivity and User-Friendly Design

The adoption of online voting should not inadvertently create barriers for certain demographic groups. Designing an interface that is intuitive, accessible, and inclusive is a crucial aspect of the problem statement. Overcoming challenges related to technological proficiency and ensuring that the voting platform accommodates diverse user needs are essential considerations for the successful implementation of the Online Voting application.

#### 3.6 Legal and Regulatory Compliance

As the Online Voting application aims to become an integral part of democratic processes, it must adhere to established legal and regulatory frameworks. Compliance with jurisdiction-specific requirements is essential for gaining acceptance and trust from both electoral authorities and the voting populace. Navigating the complex legal landscape is a key challenge that the project must address.

#### 3.7 Conclusion

In conclusion, the problem statement articulates the multifaceted challenges faced by traditional voting systems and the imperative for a modernized, secure, and accessible solution. The transition to online voting introduces opportunities for efficiency and inclusivity, but it also demands vigilant attention to security, user experience, and legal compliance. The subsequent chapters of the Software Requirement Specification will elaborate on the proposed solutions and design considerations that address these challenges,

paving the way for the development of a robust and dependable Online Voting application.

# Chapter 4 : Minimum Hardware and Software Requirements

#### 4.1 Hardware Requirements

Processor:

• Pentium RAM: 4GB

Hard Disk: 1TB

• Speed: 1.1GHz

#### 4.2 Software Requirements

· Operating System: Windows

• Scripting Language: JSP Back-End: MYSQL.

Front-End: HTML5 and CSS3

 Supporting Tools: NetBeans IDE, JQUERTY Type: Web Application.

• Server: TOMCAT 8.0(cross platform, Apache, MYSQL, JSP)

• Java Version: J2SDSK1.5

#### 4.1 Introduction to NetBeans IDE

NetBeans IDE is a free, open source, integrated development environment (IDE) that enables you to develop desktop, mobile and web applications. The IDE supports application development in various languages, including Java, HTML5, PHP and C++. The IDE provides integrated support for the complete development cycle, from project creation through debugging, profiling and deployment. The IDE runs on Windows, Linux, Mac OS X, and other UNIX-based systems.

#### 4.2 Introduction to CSS(Cascading Style Sheet)

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#### 4.2 Introduction to CSS(Cascading Style Sheet)

CSS is a style sheet language used for describing the look and formatting of a document written in a markup language While most often used to style web pages and interfaces written in HTML and XHTML, the language can be applied to any kind of XML document. One of the favored features is its ability to allow the sorting of document content written in markup languages (like HTML) from document presentation written in CSS. Here are more advantages of CSS in website design:

- 1. Search Engine Optimization And Appearance
- 2. Maintainability and Browser Compatibility

#### 4.3 Introduction to HTML(Hyper Text Markup Language)

HTML refers to the Hypertext Markup Language. HTML is used to create webpages. It uses many tags to make a webpage. So it is a tag based language. The tags of HTML are surrounded by angular bracket. It can use

wide ranges of colors, objects and layouts. Very useful for beginners in web designing field.

#### Advantages of HTML

- 1. First advantage it is widely used.
- 2. Every browser supports HTML language.
- 3. Easy to learn and use.
- 4. It is by default in every window so you don't need to purchase extra software.

#### 4.4 JSP Description

JavaServer Pages (JSP) is a technology for developing Webpages that supports dynamic content. This helps developers insert java code in HTML pages by making use of special JSP tags, most of which start with <% and end with %>.

A JavaServer Pages component is a type of Java servlet that is designed to fulfill the role of a user interface for a Java web application. Web developers write JSPs as text files that combine HTML or XHTML code, XML elements, and embedded JSP actions and commands.

In JSP there are three types of scripting elements:

- JSP Expressions: It is a small java code which you can include into a JSP page. The syntax is "<%= some java code %>"
- JSP Scriptlet: The syntax for a scriptlet is "<% some java code %>". You can add 1 to many lines of Java code in here.
- JSP Declaration: The syntax for declaration is "<%! Variable or method declaration %>", in here you can declare a variable or a method for use later in the code.

#### 4.5 What is TOMCAT

Apache Tomcat is a long-lived, open source Java servlet container that implements several core Java enterprise specs, namely the Java Servlet, JavaServer Pages (JSP), and WebSockets APIs.

An Apache Software Foundation project, Tomcat was first released in 1998, just four years after Java itself. Tomcat started as a reference implementation for the first Java Servlet API and the JSP spec. While it's no longer the reference implementation for either of these technologies, Tomcat remains the most widely used Java server, boasting a well-tested and proven core engine with good extensibility.

#### What kind of server is Tomcat

The Java ecosystem supports several kinds of application server, so let's disambiguate them and see where Tomcat fits in:

- A servlet container is an implementation of the Java Servlet specification, used primarily for hosting Java servlets.
- A web server is a server designed to serve files from the local system, like Apache.
- A Java enterprise application server is a full-blown implementation of the Java EE (now Jakarta EE) specification.

Tomcat consists of the three main things that you need to know when starting web development.

# 6. Design Framework

# 6.1 Data Flow Diagram

The data flow diagram(DFD) is a graphical tool used for expressing system requirements in a graphical form. The DFD also known as the "bubble chart" as the purpose of clarification system requirements and identification major transformation that will become program in system design. Thus DFD can be stated as the starting point of the design phase that functionality decomposes the requirements specification down to the lowest level of details. The DFD consists of series of bubble joined by lines. The bubble represents data transformation and the lines represents the data flows in the system. A DFD describes what data flow is does not to construct a Data Flow Diagram, we use

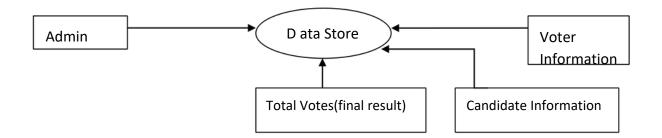
Arrow: An arrow identifies the data flow in motion. It is a pipeline through which information is flow like the rectangle in the flowchart.

Circle: A circle stands for process that converts data into information

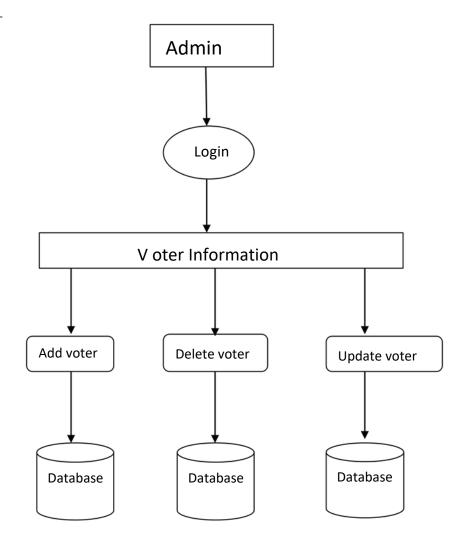
Open End Box: An open ended box represents a data store, data at rest or a temporary repository of data.

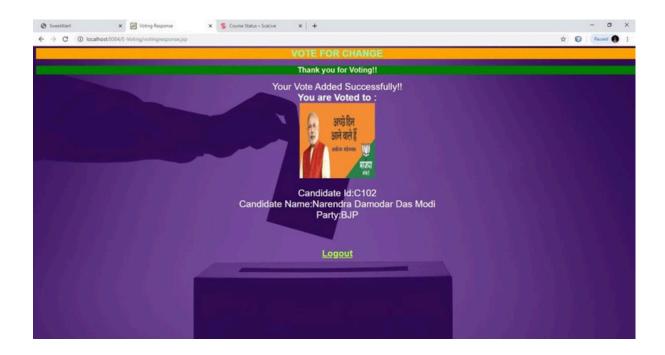
Squares: A square defines a source or destination of system.

# Level 0



# Level 1

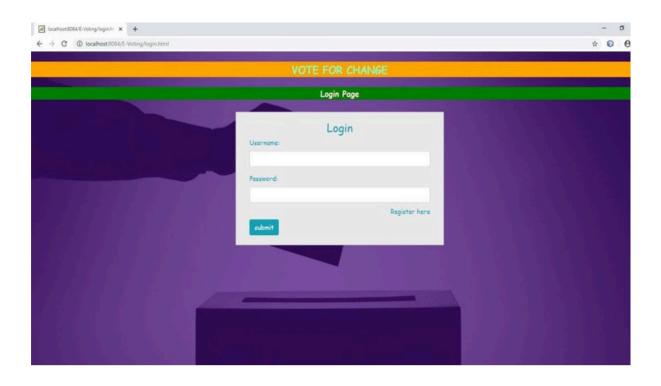


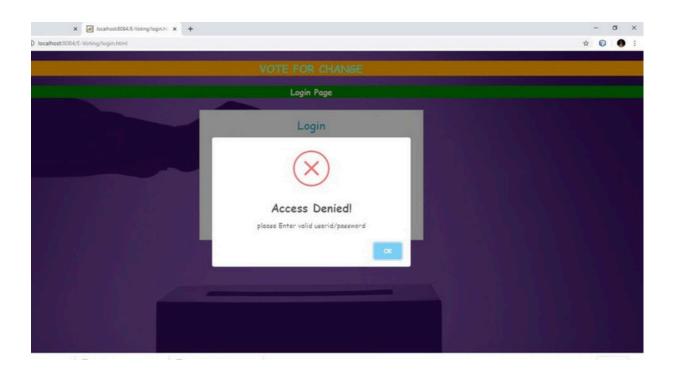


#### • Result Module:



# • Login Module





## **Chapter 8 Testing**

Following are few of the testing strategies used for the testing purpose:

- · Unit testing.
- · Validation testing.
- · Output testing.
- User acceptance testing.

#### 8.2.1 Unit Testing

Unit testing focuses effort on the smallest unit of software design of the module. This is also known as 'Module Testing'. The module of FSA system is tested separately. This testing was carried out during programming stage itself in this testing each module is found to be working satisfactorily with regards to the expected output from the module.

#### 8.2.2 Validating Testing

At the culmination of integration testing, software is completely assembled as a package, interfacing errors have been uncovered and corrected and final series of software test begins. Validation testing can be defined in many ways, but a simple definition is that validation succeeds when the software function in a manner that can be reasonably expected by the customer.

After validation test has been conducted, one of the two possible conditions exists, the functions are performance characteristics confirm to specification and are accepted or a deviation from specification is uncovered and deficiency list is created. Proposed system under consideration has been tested using validation testing and found to be working satisfactorily.

#### 8.2.3 Output Testing

After performing the validation testing the next test is output testing of the proposed system since no system could be useful if it does not produce the required output in the specified format. Asking the user about the format required by them tests the outputs generated or displayed by the system under consideration. Here, the output format is considered in two ways.

One on-screen and other is printed format. The output format on the screen is found to be correct as the format was designed in the system phase according to the user's needs. Hence, output testing does not result in any correction in the system.

#### 8.2.4 User Acceptance Testing

User acceptance of a system is the key factory for the success of any system. The system under consideration is tested for user acceptance by constantly keeping in touch with the perspective system. Users at time of developing can make changes wherever required.

This is done in regards to the following points:

- · Input screen design.
- Output Screen design.
- Menu driven system.
- Format of reports and other outputs

Taking various kinds of test data does the above tests. Preparation of the test data places a vital role in system testing. After preparing the test data the system under study is tested using the same. While testing the system by using the test, errors are uncovered. They are then corrected and noted down for future use.

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#### 8.3 Testing Guidelines

Testing guidelines are hints for the testing team to help them choose tests that will reveal defects in the system.

- Choose inputs that force the system to generate all error messages;
- Design inputs that cause buffers to overflow;
- Repeat the same input or input series several times;
- · Force invalid outputs to be generated;
- Force computation results to be too large or too small.

#### 8.4 Test Case Design

- Involves designing the test cases (inputs and outputs) used to test the system.
- The goal of test case design is to create a set of tests that are effective in validation and defect testing.
- Design approaches:
  - Requirements-based testing;
  - Partition testing;
  - Structural testing.

#### 8.4.1 Requirements based testing

- A general principle of requirements engineering is that requirements should be testable.
- Requirements-based testing is a validation testing technique where you consider each requirement and derive a set of tests for that requirement.

#### 8.4.2 Partition testing

• Input data and output results often fall into different classes where all members of a class are related.

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# Chapter 9 Conclusion & Future Scope

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 and it count total no. of every party. There is a DATABASE which is maintained by the ELECTION COMMISION OF INDIA in which all the names of voter with complete information is stored.

In this user who is above 18years'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 detail store in database and the result is displayed by calculation. 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. It is very easy to debug.

The traditional method of manual voting system has few drawbacks. This method is obviously not efficient as it wastes the voter's energy and quite slow in term of completion. This smart system involves the voter's can cast their vote easily, and can be implemented to the entire India.

#### **FUTURE ENHANCEMENT**

Data can be managed on cloud so that it will be secured and managed efficiently. We have developed the online system for only one particular booth, this should be extended to all the polling booths in India.