COUNCIL FOR TECHNICAL EDUCATION AND VOCATIONAL TRAINING (CTEVT)

BUDHANILKANTHA SECONDARY SCHOOL

DEPARTMENT OF COMPUTER ENGINEERING

BUDHANILKANTHA -03, KATHMANDU

A Minor Project Final Defense Report

On "ONLINE VOTING SYSTEM"

SUBMITTED BY:

Aashif Rain	01
Baliram Sah Kanu	03
Ram Abtar Mandal	12

SUPERVISED BY:

Er Supreme Adhikari

A Major Project report submitted to the department of Civil and computer Engineering in the partial fulfillment of the requirements for degree of Diploma of Engineering in Computer Engineering

kathmandu , Nepal

Date

BUDHANILKAHTA SECONDARY SCHOOL

DEPARTMENT OF COMPUTER AND CIVIL ENGINEERING

APPROVAL LETTER

The undersigned certify that they have read and recommended to the Institute of Engineering for acceptance, a project report entitled
"Online voting system"

Submitted by:

Aashif Rain	01
Baliram SahKanu	03
Ram Abtar Mandal	12

In partial fulfillment for the Diploma in Computer Engineering.

.....
Er Supreme Adhikari
Project Supervisor

.....
External Examiner

.....
Raju Dhakal
Head of Department
Department of Computer and Electronics Engineering

Date

COPYRIGHT

The author has agreed that the library, Budhnailkantha secondary school, may make this report freely available for inspection. Moreover, the author has agreed that permission for extensive copying of this report for scholarly purpose may be granted by the supervisor, who supervised the project work recorded herein or, in their absence, by the Head of the Department wherein this project was done. It is understood that due recognition will be given to the author of this report and to the Department of Computer and civil Engineering, Budhanilkhanta secondary school in any use of the material of this report. Copying or publication or other use of this report for financial gain without approval of the Department of Computer and Civil Engineering.

Request for premisssion to copy or to make any other use of the material in this report in whole or in part should be addressed to:

Head

Budhanilkantha Secondary School Engineering Department

Budhanilkantha-3, Kathmandu

Nepal

ACKNOWLEDGEMENT

We take this opportunity to express our deepest and sincere gratitude to our Project Supervisor Er supremi Adhikra, for his insightful advice, motivating suggestions, invaluable guidance, help and support in successful completion of this project and also for his/her constant encouragement and advice throughout our Diploma program. We express our deep gratitude toEr Supreme Adhikari, Head of Department of Civil and Computer Engineering, Raju Dhakal, Deputy Head, Department of Civil and Computer Engineering, Er.Sagar Bhandari , Academic Project Coordinator, Department of Civiland Computer Engineering for their regular support, cooperation, and coordination.

The in-time facilities provided by the department throughout the Bachelors program are also equally acknowledgeable.

We would like to convey our thanks to the teaching and non-teaching staff of the Department of Civil and Computer Engineering,Budhanilkantha secondary School for their invaluable help and support throughout the period of Diploma Degree. We are also grateful to all our classmates for their help, encouragement and invaluable suggestions.
Finally, yet more importantly, I would like to express our deep appreciation to my grandparents, parents, siblings for their perpetual support and encouragement throughout the
Diploma degree period.

Aashif Rain 01

Baliram SahKanu 03

Ram Abtar Mandal 12

ABSTRACT

With rapid growth in technologies the old voting methods can change to advanced voting methods. Online voting software is a modern solution that can efficiently and securely facilitate the voting process for various groups and organizations. The use of such software eliminates the need for physical polling stations, as voters can cast their ballots from anywhere with an internet connection. The benefits of using online voting software are many; it increases accessibility, saves time and resources, ensures accuracy and transparency, and supports a more democratic decision-making process. Eligibility verification and accurate voter information are essential components of a successful online voting platform. While several countries have already implemented online voting software, this approach still faces challenges and limitations that must be addressed before universal adoption. In the following sections, we will delve further into the various types of electronic voting methods and examine successful global examples of online voting. We will also discuss current trends and future developments in online voting software provide a comparison between online and traditional voting methods.

Keywords*:* PHP ,Mysql,Html,Css

TABLE OF CONTENT

Contents

ACKNOWLEDGEMENT ..... **iii**

ABSTRACT ..... **iv**

TABLE OF CONTENT ..... **v**

LIST OF FIGURE ..... **vii**

CHAPTER 1 ..... **1**

INTRODUCTION **1**

1.1 BACKGROUND 1

1.2 STATEMENT OF THE PROBLEM 2

1.3 PROJECT OBJECTIVE 2

1.3 SIGNIFICANCE OF THE STUDY 3

CHAPTER 2 ..... **4**

LITERATURE REVIEW **4**

CHAPTER 3 ..... **5**

REQUIREMENTS ANALYSIS **5**

3.1 SOFTWARE REQUIREMENTS 5

3.2 HARDWARE REQUIREMENTS 6

3.3 FUNCTIONAL REQUIREMENTS 6

3.4 NON-FUNCTIONAL REQUIREMENTS 8

CHAPTER 5 ..... **11**

METHODOLGY **11**

5.1 SOFTWARE DEVELOPMENT MODEL 11

5.2.SYSTEM DESIGN AND DEVELOPMENT 12

CHAPTER 6 ..... **19**

RESULTS **19**

CHAPTER 7 ..... **20**

7.1 CONCLUSION 20

7.2 FUTURE SCOPE 20

REFERENCES **21**

SAMPLESCREENS **22**

LIST OF FIGURE

CHAPTER 1
INTRODUCTION

1.1 BACKGROUND

The introduction of an online voting system aims to provide a more convenient and efficient way for citizens to participate in elections. With paper-based voting systems, it can be difficult to locate specific candidates and ensure voter eligibility. It also made hectic and rush for voters to visit the Centre and vote the candidate. An online voting system addresses these issues by providing secure authentication and verification mechanisms, making the voting process more automated and streamlined. It made easy for authorized person to login in from its own device and vote. Furthermore, online voting systems can also increase transparency and provide faster results. While there are concerns regarding security and privacy, the benefits of an online voting system cannot be denied. In this context, the purpose and scope of the system are to ensure that every citizen can participate in the democratic process in a secure and hassle-free manner.

An online voting system is a digital platform that enables individuals to cast their votes for elections, surveys, or polls over the internet, making the voting process more accessible and efficient. It allows voters to participate from anywhere, removing the need to physically visit polling stations, which can increase voter turnout and make elections more inclusive. The system typically involves secure authentication methods, such as multi-factor verification or biometric scanning, to ensure that only eligible voters can vote. Security is paramount in online voting, with encryption and other cryptographic techniques used to protect voter anonymity and prevent tampering. Additionally, online voting systems provide real-time results, reduce costs associated with organizing traditional elections, and offer a more environmentally sustainable alternative by eliminating paper ballots. However, challenges such as security risks, the digital divide, and legal considerations must be addressed to ensure the integrity and fairness of online elections. Overall, an online voting system has the potential to transform the democratic process by offering a more convenient and cost-effective voting method, though careful implementation is key to its success.

1.2 STATEMENT OF THE PROBLEM

The problem with traditional voting systems is that they are often time-consuming, costly, and inaccessible, particularly for people with disabilities, those living in remote areas, or individuals facing mobility challenges. Additionally, the reliance on physical polling stations can lead to logistical difficulties, long wait times, and potential human error in vote counting. Furthermore, concerns about election fraud, vote tampering, and the security of personal data persist in many electoral processes. With the increasing reliance on digital technologies, there is a growing need for an online voting system that addresses these issues by providing a secure, efficient, and accessible platform for voters. However, the development and implementation of such a system come with significant challenges, including ensuring the privacy and security of votes, protecting the system from hacking or manipulation, providing equal access to all voters, and complying with legal frameworks and regulations. The problem, therefore, is creating an online voting system that is secure, transparent, legally compliant, and inclusive, while overcoming technical, ethical, and logistical challenges.

1.3 PROJECT OBJECTIVE

The objective of the online voting system project is to create a secure, efficient, and accessible platform for electronic voting. It aims to ensure voter privacy and integrity through robust security measures like encryption and authentication. The system seeks to improve accessibility by allowing voters to participate remotely, increase efficiency by providing real-time results, and reduce costs associated with traditional voting methods. Additionally, it strives to maintain transparency and auditability, while complying with legal standards, ensuring a fair and trustworthy voting process.

1.3 SIGNIFICANCE OF THE STUDY

online voting system lies in its potential to revolutionize the democratic process by making voting more accessible, secure, and efficient. With increasing reliance on technology, an online voting system can improve voter turnout by allowing individuals to vote from anywhere, at any time, thus overcoming barriers such as distance, time constraints, and physical disabilities. It can also reduce the costs and logistical challenges of traditional voting methods, such as setting up polling stations and handling paper ballots. Moreover, the system's ability to provide real-time results and ensure the integrity of the voting process through secure encryption can increase trust in election outcomes. Studying this system helps identify the technical, legal, and social challenges that need to be addressed to ensure its successful implementation, making it a critical step toward modernizing elections and promoting broader democratic participation.

CHAPTER 2
LITERATURE REVIEW

The literature on online voting systems highlights both the potential benefits and challenges associated with their implementation. Security is a primary concern, with studies emphasizing the need for robust encryption and secure authentication to prevent fraud and protect voter anonymity. Researchers, such as Chaum (2004), argue that online voting systems must incorporate technologies like blockchain and Public Key Infrastructure (PKI) to ensure vote integrity. Accessibility is another key advantage, as online voting can increase voter turnout, particularly for marginalized groups like people with disabilities or those in remote areas, as noted by Bernhard et al. (2019). However, legal and regulatory challenges remain, with Anderson & Fuloria (2011) stressing the importance of aligning online voting systems with national and international legal standards. Despite the promise of blockchain technology in providing secure and transparent voting processes, Ghosh & Chakraborty (2020) highlight the complexity of integrating these technologies effectively. Additionally, challenges such as the digital divide, which may exclude certain populations from participating, have been identified by López et al. (2018). Pilot projects, such as the Estonian e-voting system, have provided valuable insights, demonstrating the feasibility of online voting while also highlighting issues related to security and system reliability. Overall, the literature suggests that while online voting holds great potential, it requires careful attention to security, legal, and technological factors to ensure its successful implementation.

CHAPTER 3
REQUIREMENTS ANALYSIS

3.1 SOFTWARE REQUIREMENTS

3.1.1XAMPP (Web Server & Database)

XAMPP is a software package that includes:
Apache: Web server for running PHP applications locally.
MySQL: Database server to store votes and other data.
PHP: Server-side scripting language to process user requests and interact with the database.

3.1.2. PHP (Server-Side Scripting)

PHP is a widely used server-side scripting language that works seamlessly with MySQL to handle user requests and store data.
PHP Version: It is recommended to use PHP 7.x or higher for better performance and security. XAMPP comes pre-installed with PHP, so no additional installation is required if you are using XAMPP.

3.1.3. HTML (Frontend)

HTML is used for creating the structure and layout of web pages (forms, buttons, and data display areas).
CSS and JavaScript can also be used alongside HTML for styling and adding interactivity.

3.1.4 Database Management System (MySQL)

MySQL is used to manage and store data, such as votes and candidate information. MySQL is included with XAMPP.
You can manage the database using phpMyAdmin, which is bundled with XAMPP for easy database management via a web interface.

3.1.5Text Editor / IDE for Coding

Text Editors: A text editor is required to write HTML, PHP, javascript and CSS files. Some popular choices include:

3.2 HARDWARE REQUIREMENTS

1. Operating system - Windows 10/11
2. Processor- Dual Core 2 GHz (i3 or i5 series Intel processor or equivalent AMD)
3. RAM- 16GB or more.

3.3 FUNCTIONAL REQUIREMENTS

1. User Authentication and Authorization

i. Login System: The system must allow users (voters, administrators) to log in using their unique credentials (e.g., username, password, student ID).

- Voters: Must authenticate with their student IDs and passwords (or other methods like multi-factor authentication).
- Administrators: Must have privileged access to manage elections, view results, and perform other administrative tasks.

ii. Password Recovery: The system should allow users to reset their passwords securely through email or other methods.

iii. Session Management: The system must maintain user sessions securely to prevent unauthorized access and timeout inactive sessions.

2. Voter Registration and Profile Management

i. Voter Registration: Voters must be able to register or confirm their eligibility through the system (for example, by linking the system to a student database or institutional system).

ii. Profile Management: Voters should be able to update their profile information, such as contact details or other required information (if allowed).

iii. Eligibility Verification: The system must check if a voter is eligible to participate in a given election (based on their student ID, role, or other criteria).

iv. One Vote Per Voter: Once registered and authenticated, each voter should only be allowed to cast one vote per election to prevent duplicate voting.

3. Election Management

Election Creation: Administrators must be able to create, configure, and manage elections. This includes specifying the election date, type (e.g., presidential election, referendum), candidates, and voting options.

i. Election Scheduling: Administrators must be able to set start and end times for elections, ensuring that voting is only possible within the specified timeframe.
ii. Election Settings: The system must allow administrators to define the type of voting method (e.g., single-choice, multiple-choice, ranked-choice, etc.) and specify ballot options.
iii. Election Preview: Administrators should be able to preview the election setup before it goes live to ensure that all data is correctly configured.

4. Vote Casting and Validation

i. Voting Interface: Voters must be presented with a clear and user-friendly voting interface that allows them to select candidates or options for the election.
ii. Vote Confirmation: After casting their vote, voters should be able to review their selection before submitting, ensuring they have voted correctly.
iii. Vote Validation: The system must validate votes to ensure that voters have selected valid options and not voted multiple times.
iv. Confirmation Message: Once the vote is successfully cast, the system must display a confirmation message to the voter (e.g., "Your vote has been successfully submitted").

5. Voting Security

i. Vote Encryption: All votes must be encrypted to ensure confidentiality and prevent tampering or unauthorized access.
ii. Voter Anonymity: The system must ensure that votes remain anonymous, meaning that the identity of voters cannot be linked to the votes they cast.
iii. Anti-Tampering Measures: The system should incorporate mechanisms to prevent tampering with the voting process (e.g., through vote integrity checks, logging, and audit trails).
iv. Security Protocols: The system must adhere to best practices for secure communication (e.g., HTTPS, SSL/TLS encryption).

6. Vote Tallying and Result Generation

- Real-Time Tallying: The system should automatically tally votes in real-time as they are cast, enabling quick result generation at the end of the election.
- Result Display: After the election is closed, the system must generate and display the election results, showing the total number of votes cast and the results for each candidate or option.

- Result Exporting: Administrators should be able to export election results (e.g., in CSV, Excel, or PDF format) for reporting and auditing purposes.
- Election History: The system must store and display past election results, allowing users and administrators to view historical data.

7. Voter Interface Features

i. Voting Dashboard: Voters should have a personalized dashboard where they can view upcoming elections, vote status, and election results.
ii. Election Instructions: The system must provide clear instructions on how to participate in each election, including eligibility requirements, voting procedures, and deadlines.
iii. Multi-Language Support: The system should support multiple languages (if applicable), allowing voters from different linguistic backgrounds to participate in the election process.

8. Post-Election Processes

i. Election Closure: Once voting is closed, the system must disable access to the voting interface and prevent further votes from being cast.
ii. Result Verification: The system must provide verification mechanisms, such as an independent audit trail, to ensure the results are accurate and tamper-proof.
iii. Feedback: After the election, the system may allow voters to provide feedback on the voting process, improving future election designs.

3.4 NON-FUNCTIONAL REQUIREMENTS

1. Performance

The system must provide a fast and responsive user experience, with minimal latency. A user's request (e.g., voting, login, accessing results) should be processed in less than 2 seconds, even under normal load.

2. Availability

The system should be available 24/7 during election periods, with 99.9% uptime (or higher). This ensures that voters can access the system and cast their votes at any time during the election period.

3. Security

The system must ensure voter anonymity and privacy, preventing any unauthorized party from linking a voter’s identity to their vote. This includes protecting voter data from being exposed or accessed by malicious actors.

4. Usability

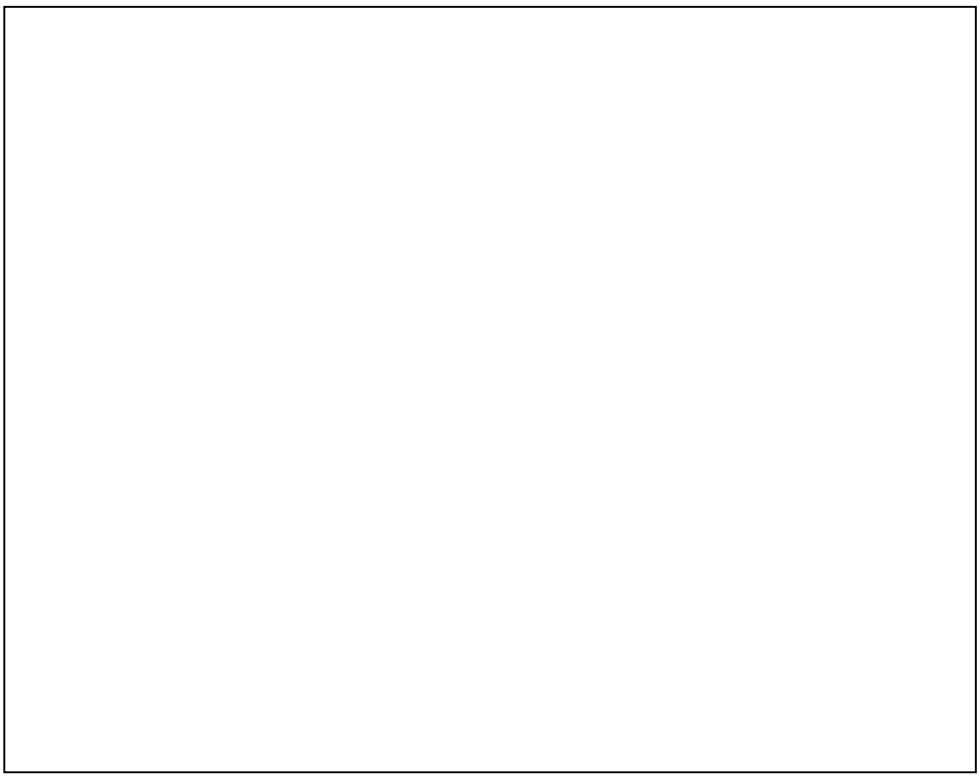
The system must be accessible to all users, including those with disabilities. It should comply with WCAG 2.0 standards for web accessibility, providing features like screen reader compatibility and keyboard navigation.

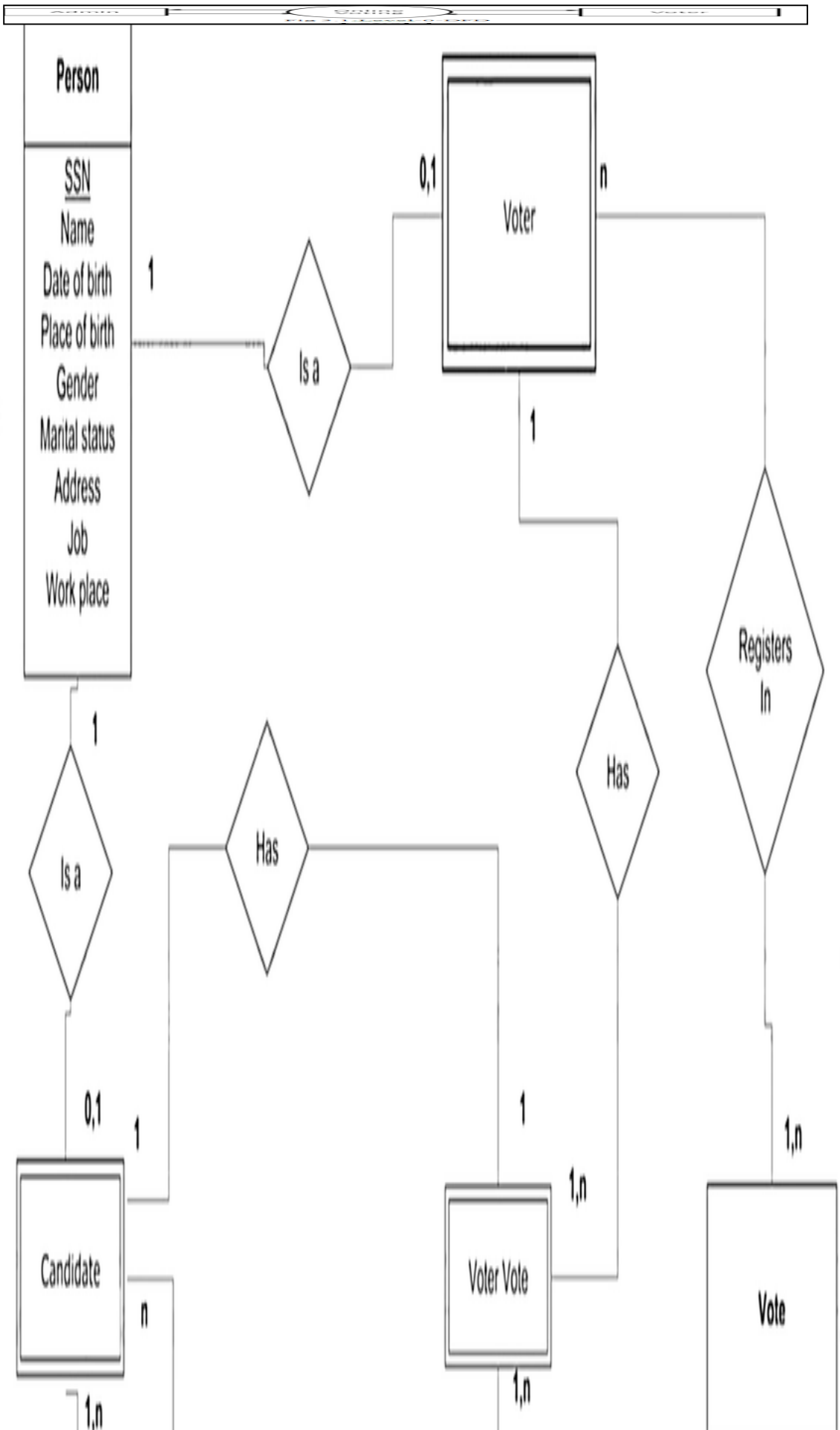
5. Reliability

The system must operate reliably without crashes or unexpected failures, even when handling heavy traffic or complex operations (e.g., vote tallying).

6. Maintainability

The codebase must be clean, modular, and well-documented, making it easy for developers to maintain and extend the system. This is crucial for future updates and bug fixes.




Person
SSN
Name
Date of birth
Place of birth
Gender
Marital status
Address
Job
Work place
1
Is a
0,1
Voter
n
1
Has
Registers In
1
Is a
Has
0,1
1
Candidate
n
1,n
1
1,n
Voter Vote
1,n
1,n
Vote

CHAPTER 5
METHODOLGY

5.1 SOFTWARE DEVELOPMENT MODEL

Using the Incremental Model for software development is an excellent choice, especially for projects that require ongoing improvement and flexibility as development progresses. In the context of the online voting system, the incremental model allows you to gradually build and refine the system while testing it at each phase. This methodology helps identify and address issues early on, ensuring a more robust final product. Let's break down the phases you mentioned and how they would apply to the development of the online voting system:

Required Analyis ;

To understand the system requirements thoroughly before moving to the design phase. The analysis should identify what the system is expected to do, who will use it, and what constraints must be met.

Design

To create a blueprint for the system that will guide the development team in creating the software. This phase ensures that the system's architecture, components, and interfaces align with the requirements.

Code test

To translate the design into actual working code. This phase involves writing the frontend, backend, and database code to create a functional online voting system.

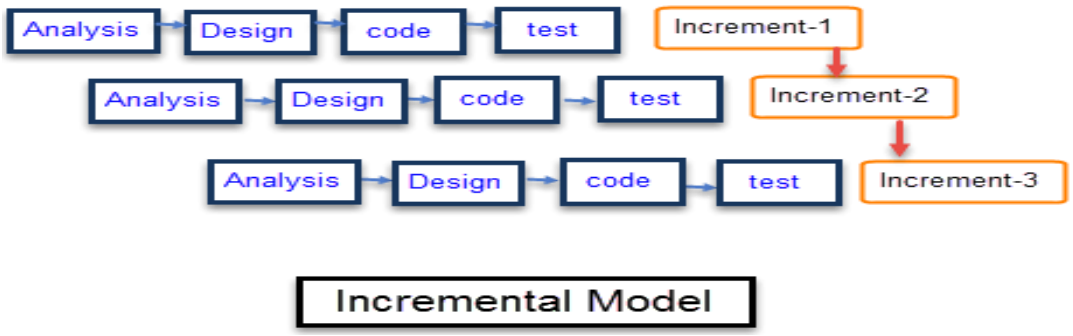


Figure 5.1 Increment model

Source : https://www.guru99.com/images/6-2015/052615_1049_WhatisIncre2.png

5.2.SYSTEM DESIGN AND DEVELOPMENT

5.2.1 INPUT DESIGN

Input design is an essential aspect of system design. It involves creating a user-friendly and efficient method for gathering data from users. The input design needs to ensure that the system captures the correct information, while minimizing errors, enhancing accuracy, and improving user experience.

Key Objectives of Input Design:

- Cost-effective input method: Ensuring that the design minimizes any unnecessary costs.
- Accuracy: Ensuring high levels of accuracy in the data collected.
- Acceptability: The data input should be easy to understand and user-friendly.

The following are the various input forms used in the system:

1. LOGIN DETAILS

- Purpose: This form enables both users and admins to log into the system.
- Inputs:
  - Username
  - Password
- Action: Upon entering valid credentials, the user or admin is redirected to the homepage.
- Design Features:
  - Secure password field (masked input).
  - Option for password recovery in case of forgotten passwords.
  - Easy-to-use interface for login and error handling for incorrect inputs.

2. REGISTRATION DETAILS

- Purpose: This form is used to capture the registration details of users.
- Inputs:
  - Username
  - Password
- Action:
  When the user fills out these fields and submits the form, the details are stored in the system for future login access.
- Design Features:
  - Password strength indicator.

- Confirmation of password and email to prevent errors.
- Email verification to ensure validity.

3 CANDIDATE DETAILS

- Purpose: Used to store the candidate's information, which will be available for voters during the election.
- Inputs:
  - Candidate First Name
  - Candidate Last Name
  - Candidate Position
  - Party Name
  - Candidate Image
  - Election Choice (Elect/Not Elect)
- Action: The system stores this data and makes the candidate details available to voters during the voting process.
- Design Features:
  - Form validation to ensure all fields are completed correctly.
  - Image upload feature for the candidate's photo.
  - Dropdown or text fields for gender and position selection.

4. VOTER DETAILS

- Purpose: This form stores the voter's personal details.
- Inputs:
  - Voter ID
  - Voter Name
- Action: These details are stored for voter validation and tracking during the voting process.

5.2.2 OUTPUT DESIGN

Output design refers to the presentation of results and information generated by the system for the end users. The output is the primary way users interact with the system and the key factor in evaluating the usefulness and efficiency of the application. In the context of an online voting system, the output should be attractive, convenient, and informative. Proper output design will enhance user experience and help in decision-making.

1. Candidate Details (Admin View)

- Purpose: Allows the admin to view detailed information about the candidates running for election.
- Output Details:
  - Candidate ID
  - Candidate Name
  - Position
  - Party Name
  - Gender
  - Candidate Image (Profile picture)
- Design Features:
  - Table or grid layout to display all candidate details.
  - Search or filter functionality to allow admins to find a specific candidate by name, position, or party.
  - Displaying candidate images alongside textual information to make the profile more engaging.

2. Voter Details (Admin View)

- Purpose: Allows the admin to view the details of voters who have registered and cast their votes.
- Output Details:
  - Voter ID
  - Voter Name
  - Selected Candidate ID
  - Selected Candidate Name
  - Selected Candidate Position
  - Selected Candidate Party Name
- Design Features:
  - A user-friendly table format displaying all voter data.
  - Option to search or filter voter data by Voter ID, candidate selected, or other parameters.
  - Display of selected candidate details for each voter to see which candidate received their vote.

3. Result Analysis (Admin View)

- Purpose: Allows the admin to view the overall voting results and detailed analysis of the votes cast for each candidate.
- Output Details:
  - Candidate ID
  - Candidate Name
  - Party Name
  - Vote Count (Total number of votes received by each candidate)
- Design Features:
  - A table or graphical chart showing the vote count for each candidate.
  - Use of bar charts, pie charts, or other visualizations to make it easier to compare vote counts.
  - A clear presentation of total votes cast and percentage breakdowns by candidate and party.

4. Result Form (User View)

- Purpose: This form allows users to view the selected candidate's details after the election has closed and results are finalized.
- Output Details:
  - Selected Candidate ID
  - Candidate Position
  - Party Name
  - Candidate Image
  - Election Results Date and Time
- Design Features:
  - A clean layout that shows the winning candidate’s information.
  - Display candidate’s image alongside their name, position, and party for quick identification.
  - A message or indicator informing the user that results are final after a predefined date and time.

5.3 SYSTEM DEVELOPMENT DESCRIPTION MODULES

1 .Admin Module

- Purpose: Responsible for managing the administration and authentication of users, including admins and voters.
- Key Features:
  - User Authentication: Secure login for both administrators and voters.

- Admin Privileges: Full control for admins to manage the database of candidates and voters.
- Candidate Management: Add, update, or delete candidates from the election list.
- Voter Management: Admins can add, update, or remove voters.
- Election Configuration: Admin configures various settings, including voting start/end time and result declaration time.

- Flow:

  - Admin logs in using credentials.
  - Admin manages the database of candidates and voters.
  - Admin configures election settings.

2. Configuration Module

- Purpose:
  This module allows administrators to configure election details, candidates, and voter information.
- Key Features:

  - Candidate Configuration: Admin can add and configure details for each candidate (e.g., name, party, position).
  - Voter Database Setup: Admin can create and manage the voter database, ensuring only valid voters are included.
  - Election Settings: Configure election details such as voting period, start/end times, and result announcement.

- Flow:

  - Admin configures candidates for the election.
  - Admin adds voter information and sets eligibility.
  - Admin sets election settings, such as voting times and result intervals.

3.Voting Module

- Purpose:Manages the voting process by displaying candidates and processing votes from users.
- Key Features:

  - Candidate Listing: Displays the list of candidates running in the election.
  - Vote Casting: Voters select a candidate and cast their vote.
  - Vote Change: Allows voters to change their selection before final submission.
  - Vote Validation: Ensures that each voter can only cast a single vote, preventing duplicates.

- Flow:

  - Voters view the candidate list.
  - Voters cast their vote by selecting a candidate.
  - System prevents duplicate voting and confirms the vote submission.

4. Timer Module

- Purpose:
  Manages the timing of the election, ensuring that results are only displayed after the configured timer interval.
- Key Features:

  - Configurable Voting Period: Admin configures the duration for voting.
  - Result Declaration Delay: Results are displayed only after the configured time has passed.
  - Denial Message: If a user attempts to view results before the set time, the system will display a denial message.

- Flow:

  - Admin sets the timer for voting and result declaration.
  - Voting can only occur within the configured time.
  - Results are revealed after the configured delay.

5. Report Module

- Purpose:
  Provides detailed reports of the election, displaying candidate votes and statistics.
- Key Features:

  - Candidate-wise Report: Displays the number of votes each candidate received.
  - Election Overview: A summary of the election, including total votes, voter participation, and results.
  - Exportable Reports: Allows admins to export election results in various formats.
  - Organized Format: Reports are displayed in a clear, user-friendly layout.

- Flow:

  - Admin generates the report after the election results are available.
  - Admin views and analyzes results by candidate and overall.
  - Admin exports the report for further use.

4 TESTING AND IMPLEMENTATION SYSTEM TESTING

The implementation of the Online Voting System involves a structured and modular approach to ensure that each component functions seamlessly. The system is designed to allow both administrators and voters to interact efficiently. Initially, the development environment is set up, with a clear technology stack comprising of frontend technologies like HTML, CSS, and JavaScript, and backend technologies like PHP or Python, connected to a robust database such as MySQL. The database is configured to store user information, candidate data, votes, and election configurations, ensuring data integrity and security.

The Admin Module provides administrators with the ability to manage candidates, voters, and election configurations. Administrators can configure election details, add or remove candidates, and maintain the voter database. The Voting Module ensures that voters can securely log in, view the candidate list, and cast their votes, with safeguards in place to prevent duplicate voting. The Timer Module manages the voting period, ensuring that election results are only revealed after the designated time. The Report Module allows administrators to generate detailed reports of the election, including candidate votes and overall results.

Once the system is implemented, thorough testing is conducted. Unit testing checks individual modules for functionality, while integration testing ensures that the system's components work together smoothly. System testing validates the overall performance, and user acceptance testing ensures the system meets the end-users' expectations. Security and performance testing are also performed to safeguard sensitive data and ensure the system can handle high traffic during elections. Through this careful implementation and testing process, the Online Voting System is ensured to be reliable, secure, and efficient, ready for deployment in real-world election scenarios.

CHAPTER 6
RESULTS

The results of the Online Voting System are a culmination of the voting process, where the system calculates and displays detailed election outcomes. Once the voting period ends, the system calculates the number of votes received by each candidate, along with the percentage of the total votes they secured. This ensures that every vote cast is accurately counted, and the candidate who receives the highest number of votes is declared the winner. The results include important information, such as the candidate names, their corresponding party names, the number of votes received, and the percentage of votes in relation to the total count.

The Online Voting System is designed to display election results in a user-friendly and organized manner. After the voting period concludes and the timer reaches its end, the results are made available to authorized users, such as administrators or the public, depending on the election setup. The system ensures that the candidates' names, vote counts, and the election winner are presented clearly. For example, if Candidate A secures 3500 votes and Candidate B receives 3000 votes, the system will announce Candidate A as the winner based on the vote tally, with the percentage displayed alongside each candidate’s results.

In addition to individual vote counts, the system also generates a comprehensive election summary. This summary provides essential metrics, including total voter participation, the percentage of registered voters who actually voted, and the total number of votes cast. This helps administrators and stakeholders understand voter engagement and assess the election's reach. For instance, if 4000 out of 4700 registered voters participate, the voter turnout percentage is 85%, offering a clear insight into the election’s success in reaching its intended audience.

CHAPTER 7

7.1 CONCLUSION

The Online Voting System is a robust and secure platform designed to streamline the voting process, ensuring efficiency, accuracy, and transparency. By leveraging modern technology, this system enables a seamless experience for both administrators and voters. With a modular design, the system allows for flexibility in managing candidates, voters, and election configurations, while also providing real-time results and reports for detailed analysis.

The system's implementation and testing phases have demonstrated its capability to accurately capture votes, prevent fraudulent activity, and ensure data integrity. The secure login, voting process, and result declaration provide assurance that elections are conducted fairly. Additionally, the system's user-friendly interface and detailed reporting features make it a valuable tool for modern-day elections, offering comprehensive insights into voter participation and candidate performance.

In conclusion, the Online Voting System is an effective solution that addresses the challenges of traditional voting methods. Its flexibility, security, and transparency make it a reliable choice for future elections, ensuring that all participants can engage in the democratic process with confidence in the system's fairness and accuracy.

7.2 FUTURE SCOPE

The future scope of the Online Voting System offers numerous possibilities for enhancement and expansion to meet the evolving demands of modern electoral processes. One promising development is the integration of blockchain technology, which would provide greater security, transparency, and tamper-proof record-keeping by storing votes in a decentralized ledger. Additionally, expanding the system to include mobile application support would allow voters to cast their votes from anywhere, making the system more accessible and convenient for a broader range of users.

Biometric authentication, such as fingerprint or facial recognition, could also be implemented to enhance security and ensure voter identity, reducing the risk of fraud. The inclusion of multi-language support would make the system more inclusive, enabling voters from diverse linguistic backgrounds to participate. Real-time voter analytics and reporting tools could be developed to provide administrators with insights into voter behavior and participation, improving decision-making and targeted outreach.

As the system is adopted for larger elections, scalability will be a critical factor. Enhancing the infrastructure to handle millions of concurrent users and large datasets will ensure the system's reliability during national elections. Furthermore, the introduction of AI-powered fraud detection could help identify irregularities and suspicious behavior during the voting process, improving security and trustworthiness.

REFERENCES

1. Ahuja, V., & Tiwari, R. (2020). Online Voting System Using Blockchain Technology: A Secure Solution for Modern Elections. International Journal of Computer Science and Information Technology, 11(3), 45-59.
2. Bourgeois, M. (2021). Digital Democracy: The Future of Voting Systems. Journal of Political Technology, 17(2), 98-112.
3. Chen, H., & Wang, X. (2019). E-Voting Systems: Security Issues and Solutions. International Journal of Advanced Computer Science and Applications, 10(4), 52-64.
4. Fischer, S. (2018). Blockchain for Elections: How Blockchain Could Revolutionize E-Voting Systems. Journal of Cybersecurity and Technology, 4(1), 30-41.
5. Jain, S., & Sharma, A. (2021). Design and Implementation of a Secure Online Voting System. International Journal of Engineering and Advanced Technology, 12(6), 210-217.
6. Lau, H., & Li, M. (2020). Ensuring Integrity in Online Voting Systems: An Overview of Emerging Technologies. Cybersecurity Review, 7(2), 120-133.
7. Ponomarev, A. (2020). Authentication and Verification in Online Voting Systems: A Survey of Techniques. Journal of Information Security, 22(1), 66-78.
8. Stark, T., & McGowan, J. (2019). Advancements in E-Voting: A Look at the Future of Secure Digital Elections. Technology and Society Journal, 15(3), 44-59.
9. Umar, M., & Siddiqui, M. (2021). Mobile-Based Online Voting Systems: Security and Usability Challenges. International Journal of Mobile Computing, 8(4), 101-114.
10. Vasilenko, I., & Petrova, K. (2021). Enhancing the Security of E-Voting Systems with Biometric Authentication. International Journal of Information Security, 14(5), 215-228.

SAMPLESCREENS

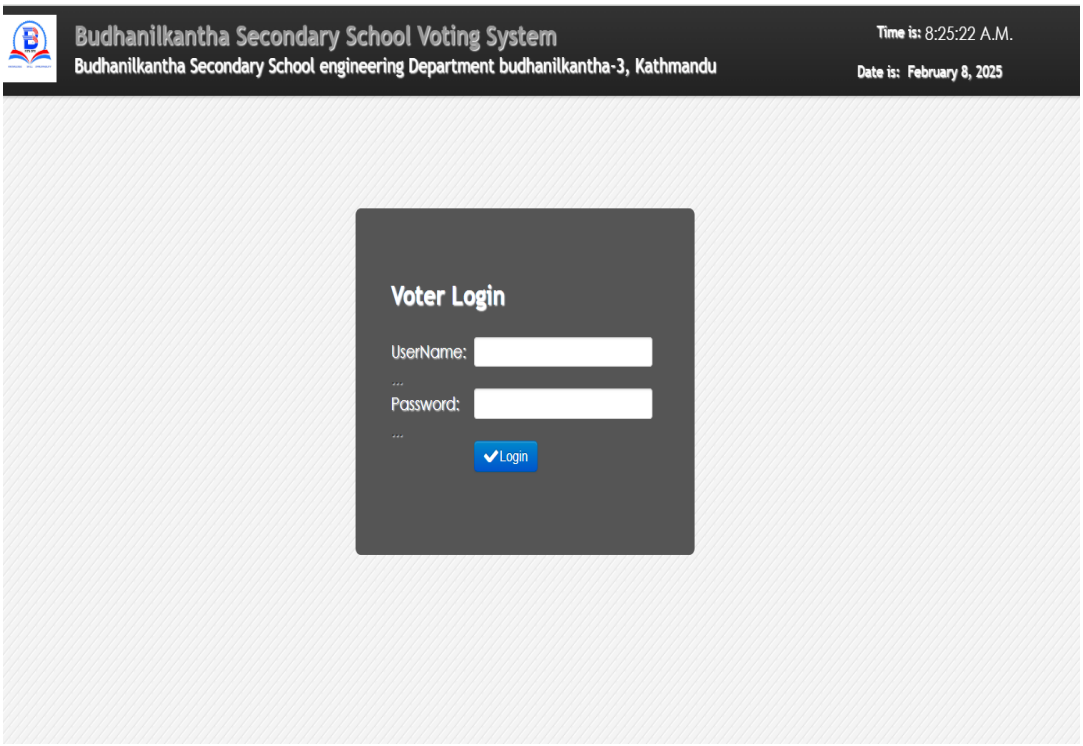


Fig1:Loginform

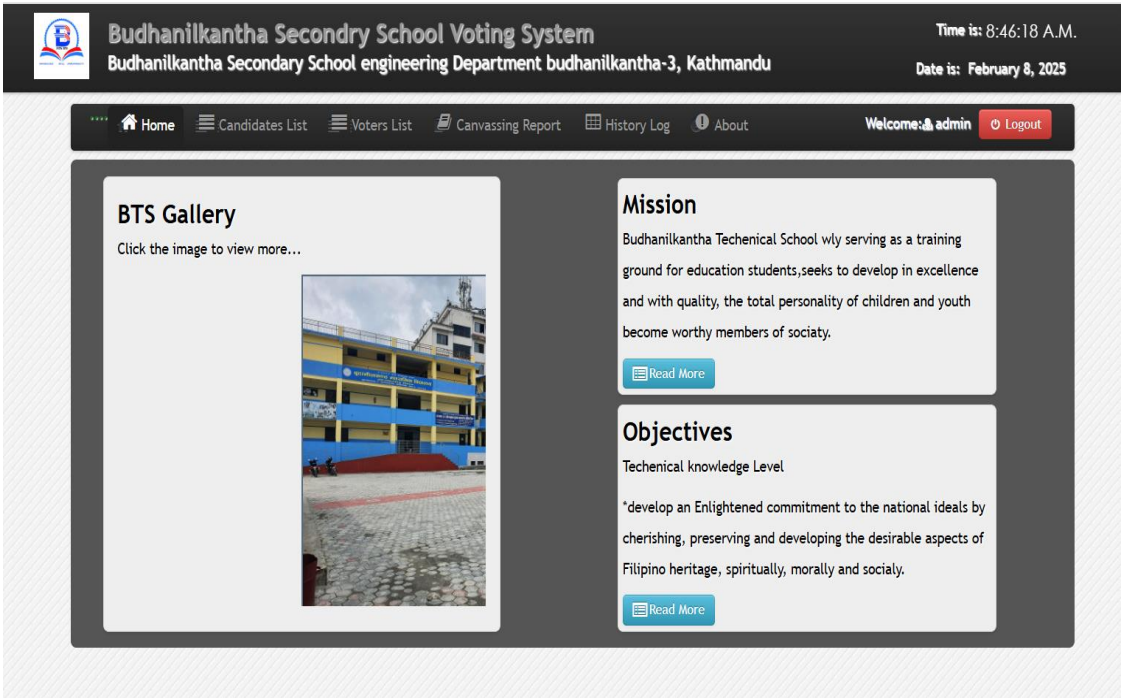


Fig2:Homepage

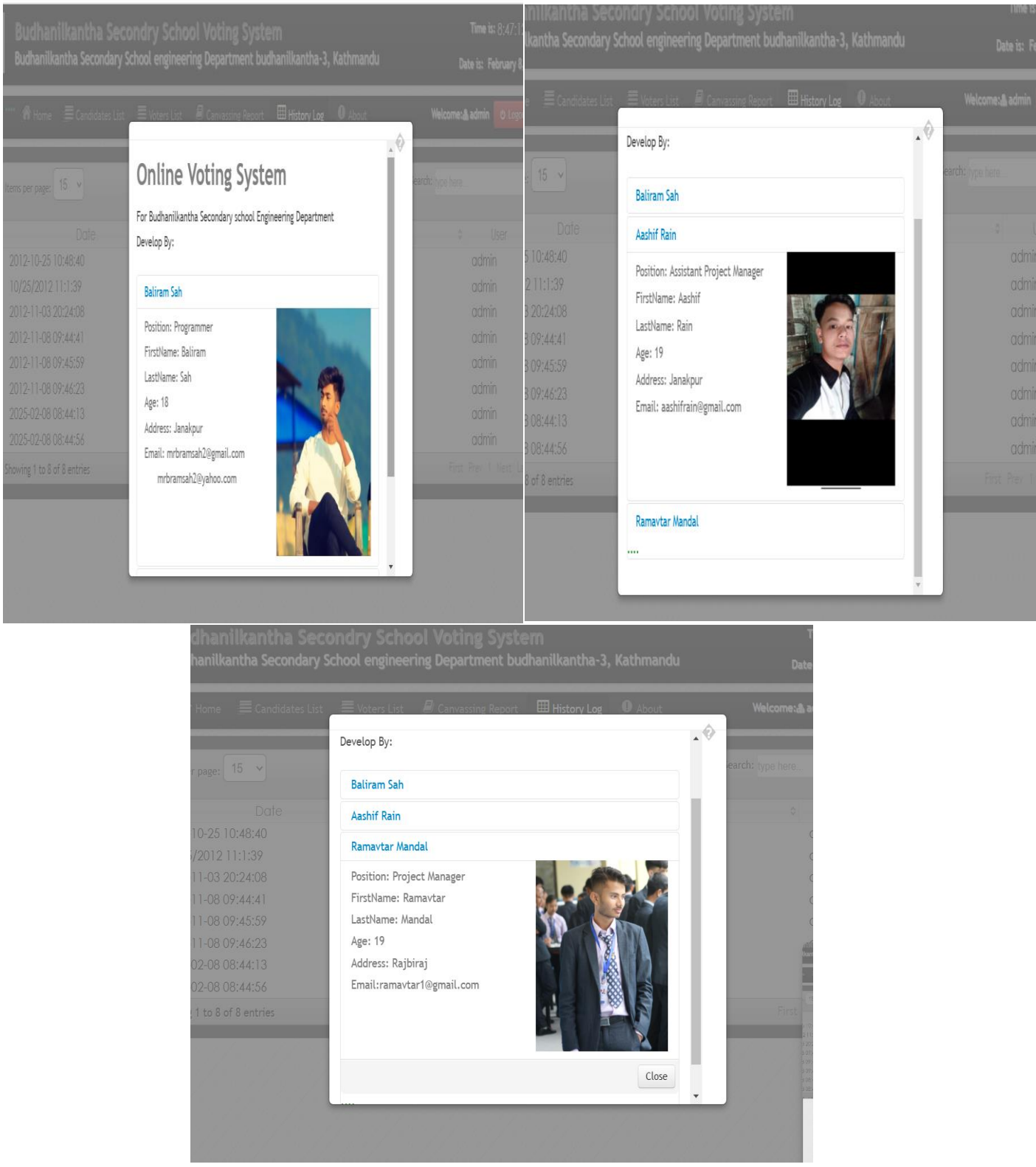

Budhanilkantha Secondry School Voting System
Budhanilkantha Secondary School engineering Department budhanilkantha-3, Kathmandu
Online Voting System
For Budhanilkantha Secondary school Engineering Department
Develop By:
Baliram Sah
Position: Programmer
FirstName: Baliram
LastName: Sah
Age: 18
Address: Janakpur
Email: mrbramsah2@gmail.com
mrbramsah2@yahoo.com
Develop By:
Baliram Sah
Aashif Rain
Position: Assistant Project Manager
FirstName: Aashif
LastName: Rain
Age: 19
Address: Janakpur
Email: aashifrain@gmail.com
Ramavtar Mandal
Develop By:
Baliram Sah
Aashif Rain
Ramavtar Mandal
Position: Project Manager
FirstName: Ramavtar
LastName: Mandal
Age: 19
Address: Rajbiraj
Email:ramavtar1@gmail.com
Close

Fig :About