1. **Project-title:**  Web based voting system using email/fingerprint authentication.
2. **Introduction:**   
   Voting is fundamental to democracy, but traditional methods face issues like inefficiencies, accessibility challenges, and fraud risks. In response to digital advancements, there is a growing need for secure, accessible online voting systems. This project proposes a web-based voting platform that uses dual-factor authentication—email and fingerprint verification—to enhance security and prevent fraud. Email serves as a familiar verification method, while fingerprint scanning provides a unique, secure identifier, together creating a reliable, user-friendly system suitable for large-scale elections in both public and private settings
3. **Statement of problem:**The current traditional and digital voting systems have the challenge of maintaining voter participation, security, and authenticity. Traditional systems involve the use of papers, leading to long queues and manual errors. On the other hand, the digital system is prone to security threats such as hacking and identity frauds. More so, web-based voting systems struggle to ensure that only legitimate voters participate without risking breaches to individual privacy and identity theft. This project, therefore, introduces a two-factor authentication strategy through email and fingerprint verification as one of the ways to increase security. This is so because it involves techniques that are easily accessible yet combines in biometric security to ensure only registered voters vote, which maintains election integrity.
4. **Research Questions:**

Research questions include the following:

1. How can a web-based voting system ensure secure and reliable voter authentication using email and fingerprint technologies?
2. What are the potential security risks associated with email and fingerprint authentication in online voting systems, and how can they be mitigated?
3. How does the use of dual-factor authentication (email and fingerprint) impact voter participation, security, and trust in a web-based voting system?
4. **Objectives of the study**  
   · **To design a secure authentication mechanism** that utilizes both email verification and fingerprint biometrics to ensure that only legitimate voters can cast votes.

· · **To develop a user-friendly web-based voting platform** that can accommodate voters with varying technical abilities, ensuring ease of use while maintaining strict security protocols.

· · **To evaluate the effectiveness of dual-factor authentication** in enhancing the security of online voting systems and reducing the likelihood of voter impersonation, fraud, and unauthorized access.

· · **To investigate the technical challenges** involved in the integration of email and fingerprint authentication in web-based voting systems, including scalability, performance, and reliability.

· · **To test the system under real-world conditions**, measuring its performance, usability, and security, and making necessary improvements based on feedback from users and experts.

1. **Significance of the study**· **Improved Election Security:** The combination of email and fingerprint authentication will grant this research study an advanced set of voting that may minimize or totally eliminate the risks of identity theft, unauthorized voting, and other frauds related to electorates involved in the election process. This may be an essential contribution towards the increasing call for more secure and dependable digital solutions on voting.

· **Improving Voter Accessibility and Participation:** A web-based voting system enables the voters to participate in remote balloting, which allows for more accessibility in elections where, for example, one may have physical disabilities, time constraints, or even challenges in geographical outreach. For this reason, there could be an increase in voter turnout and a wider democratic participation.

· **Efficiency and Cost-Effectiveness:** It, therefore, reduces high logs of costs developed from the traditional ways of elections, such as printing ballots, personnel to staff the polling station, and physical counting. The system with automated vote counting is also preferred in immediate result outputs of elections, which largely diminishes human error.

· **A Model for Future Online Voting Systems:** This research will probably act as a blueprint for governments, organizations, or institutions that wish to set up a secure online voting system. It will provide an insight into the advantages and risks in using dual-factor authentication in online voting and also facilitate further advancements in voting technologies.

· **Contribution to the Academic Research of E-Voting Systems:** The current study features in the growing domain of existing research into e-voting systems, authentication, and security. The results can be useful to future researchers, policymakers, and developers in their work on enhancing robustness and scalability for web-based voting systems.