E-Voting System

Abstract

The **E-Voting System** is a software application designed to automate and secure the voting process using fundamental concepts of Object-Oriented Programming (OOP) and core Data Structures. The system provides a digital platform where voters can cast their votes, administrators can manage elections, and results are generated efficiently.

The project implements a **Singly Linked List** to manage voter records, an **Array-based Circular Queue** to handle voting requests, and an **Array-based Stack** to maintain audit logs, ensuring transparency and accountability. Core algorithms such as **searching** are used to validate voters and candidates, while **sorting** is applied to display results in order of votes.

The application is built with a **clear class hierarchy**, featuring entities such as *Voter*, *Admin*, *Candidate*, and *ElectionController*, and it uses meaningful **exception handling** to manage invalid operations like duplicate voting, invalid candidate selection, or non-registered voter access.

A **Graphical User Interface (GUI)** developed using **Java Swing** provides an interactive experience, including modules for voter login, vote casting, and result display. By combining OOP design, custom data structure implementation, and user-friendly interfaces, this project ensures reliability, security, and efficiency in conducting elections digitally.