SCHOOL OF TECHNOLOGY

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

UNIT: BIT 04105

TITLE:KCAU ONLINE VOTING SYSTEM

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(**System Design Specification (SDS))**

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Contents

Introduction

The KCAU Online Voting System is designed to replace the current manual desktop-based voting system with a secure and accessible web-based solution. The system allows students to vote remotely, ensuring increased voter participation, enhanced security, and real-time vote tallying. Developed using **Android Studio and Firebase**, it provides authentication via **passwords** ensuring voter eligibility and data integrity. The system follows an **Agile development approach** to facilitate iterative enhancements.

Business Rules

- Only registered **KCAU students** are allowed to vote.
- Each student must log in using their **student ID and password**.
- Voting is **anonymous** and cannot be modified once cast.
- The system will prevent **multiple votes** by the same user.
- Election results will be displayed **in real time** after the voting period ends.
- Only **authorized administrators** can manage candidates and elections.

Process Modeling

Context Diagram

- **External Entities:** Students, Candidates, Election Committee
- **System Processes:** Registration, Authentication, Vote Casting, Tallying, Results Display
- **Data Flow:** User credentials, Votes, Election Results

Data Flow Diagrams (DFDs)

Level 0: Overall Voting System
Level 1:

- Student Registration
- Authentication & Login
- Vote Casting
- Election Administration
- Results Display

Data Modeling

Major Entities & Attributes

1. **Students** (Student_ID, Name, Email, Password, OTP)
2. **Candidates** (Candidate_ID, Name, Position, Votes_Count)
3. **Votes** (Vote_ID, Student_ID, Candidate_ID, Timestamp)
4. **Admin** (Admin_ID, Username, Password)

Entity Relationship Diagram (ERD)

- One student can cast **one vote**.
- A candidate belongs to **one election category**.
- Admin manages **election setup** and **results tallying**.

Data Dictionary

Table Name	Field	Data Type	Data Type
Students	Student_ID	Short Text (Primary Key)	Unique student identifier
Candidates	Candidate_ID	Short Text (Primary Key)	Unique Candidates identifier
Admin	Admin_ID	Short Text (Primary Key)	Unique Admin identifier

Website Structure

Layout & Components

- **Login Page:** Student authentication with OTP verification.
- **Dashboard:** Displays election details and candidates.
- **Voting Page:** Allows students to select and submit votes.
- **Admin Panel:** Election management and candidate registration.
- **Results Page:** Displays real-time voting results.

Design Methodology

- **Incremental Development:** Continuous improvements through testing and feedback.
- **Hierarchical Page Structure:** Dashboard → Voting Page → Confirmation → Results Page.

Web Components

Component	Technique	Purpose
Forms	Database Access	Student Registration
Tables	Database Access	Store Votes & Results
Password	Email API	Secure Authentication