**Polling System Database Design Document**

**Overview**

The Polling System is a database system designed to manage the voting process for elections. The system allows voters to register, log in, and vote for candidates. The system also provides features for administrators and polling officers to manage the election, including adding and removing candidates, resetting user passwords, and declaring the winner.

**Entity-Relationship Diagram**

Diagram

Description automatically generatedThe following Entity-Relationship Diagram (ERD) represents the structure of the Polling System database:

**Entity Descriptions**

**Voters**

The Voters table stores information about registered voters.

* voter\_id: A unique identifier for each voter.
* username: The username of the voter used for logging in.
* password: The password of the voter used for logging in.
* has\_voted: A flag indicating whether the voter has already cast a vote (0 = no, 1 = yes).

**Admins**

The Admins table stores information about users with administrative privileges.

* admin\_id: A unique identifier for each administrator.
* username: The username of the administrator used for logging in.
* password: The password of the administrator used for logging in.

**Polling Officers**

The Polling Officers table stores information about users with polling officer privileges.

* officer\_id: A unique identifier for each polling officer.
* username: The username of the polling officer used for logging in.
* password: The password of the polling officer used for logging in.

**Candidates**

The Candidates table stores information about registered candidates.

* candidate\_id: A unique identifier for each candidate.
* name: The name of the candidate.
* votes: The number of votes received by the candidate.

**Data Types**

The following data types are used in the Polling System database:

* INT: Used to store integer values for unique identifiers, flags, and vote counts.
* VARCHAR: Used to store string values for usernames, passwords, and candidate names.

**Constraints**

The following constraints are used in the Polling System database:

* PRIMARY KEY: Used to ensure uniqueness of the primary key fields for each table.
* NOT NULL: Used to ensure that required fields are not left blank.

**Transactions**

Transactions are used in the Polling System database to ensure data consistency and integrity. The following transactions are used in the database:

* BEGIN TRANSACTION: Used to mark the beginning of a transaction.
* COMMIT TRANSACTION: Used to commit a transaction, saving the changes made to the database.
* ROLLBACK TRANSACTION: Used to undo a transaction and revert the changes made to the database.

**Conclusion**

The Polling System database is designed to store and manage data related to the voting process for elections. The database includes tables for voters, administrators, polling officers, and candidates, along with transactions to ensure data consistency and integrity. The design of the database is flexible and can be expanded to include additional features and functionality as needed.