Design Document

DBAS 4002 – Final Project

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# Introduction

The following script showcases my solution for a database design using T-SQL and a couple of entries in each table as sample data. Basing the following information on the Polling Station Program currently being created in C, I’ve created a structure of three tables to house the information for the candidates, the regular users that will be voting, and the Administration users that can create other user accounts for both normal users, admin, and candidates. The admin accounts will also have the ability to modify users accounts including changing names, addresses, usernames, passwords, etc.

A few portions of the script below will also include functions to determine who has the most votes between the candidates, who has the least, and a few other functions to sort through the data, especially when the program is in full use and has hundreds if not thousands of users and votes to sort through. Some of the functions below make sure of the rollback feature of T-SQL to prevent any accidental deletion of data, but the functions themselves act to reset the system of any inputted data while still having the general schema intact.

# SQL Script

## Initial Table Creation

USE PollingStation

GO

CREATE TABLE Candidate (

CandidateID int PRIMARY KEY,

FirstName varchar(30),

LastName varchar(30),

Votes Int,

);

CREATE TABLE UserVoter(

VoterID int PRIMARY KEY,

FirstName varchar(30),

LastName varchar(30),

Username varchar(20) UNIQUE,

Password varchar(30),

UserAddress varchar(50),

PhoneNum varchar(10),

HasVoted tinyint,

CandidateID int,

FOREIGN KEY (CandidateID) REFERENCES Candidate(CandidateID)

);

CREATE TABLE UserAdmin(

AdminID int PRIMARY KEY,

FirstName varchar(30),

LastName varchar(30),

Username varchar(20) UNIQUE,

Password varchar(30),

UserAddress varchar(50),

PhoneNum varchar(10),

PollingOfficer tinyint

);

## Sample Data / Values

USE PollingStation

GO

SET XACT\_ABORT ON

BEGIN TRAN

GO

IF @@TRANCOUNT= 0

BEGIN

INSERT INTO Candidate

VALUES (1, 'Jim', 'Briar', '123 Maple Lane', '9029891225', 45),

(2, 'Poppy', 'Brande', '54 YellowStone Drive', '9029995555', 67),

(3, 'Jim', 'Briar', '123 Maple Lane', '9029891225', 5);

INSERT INTO UserVoter

VALUES (1, 'Jamie', 'Gold','JGold','Password1', '3345 Yore Street', '9029384756',1,2),

(2, 'Kennedy', 'Burgess','KBurg','Password2', '99 Red Stone Drive', '9029384006',0,null),

(3, 'Amari', 'Joyce','AJoyce','Password3', '66 Coast Lane', '902774756',1,1),

(4, 'Heath', 'Lin','HLin','Password4', '23 Blue River Path', '9029987356',0,null),

(5, 'Alanna', 'Cole','ACole','Password5', '3443 Belle Wind Drive', '9029789756',1,3);

INSERT INTO UserAdmin

VALUES(1,'Blaine', 'White', 'BWhite', 'AdminPass1','223 Oak Way', '9026568558',1),

(2, 'Dave','Brown', 'DBrown','AdminPass2', '232 Grey Stone Drive', '9024548778', 0),

(3, 'Louise', 'Vert', 'LVert', 'AdminPass3', '6549 Jubilee Street', '9024878788', 1);

END;

## DML Transactional Statements

/\*Register Candidate Information\*/

USE PollingStation

GO

BEGIN TRAN

INSERT INTO Candidate

VALUES(4, 'Lily', 'Spence', '56 Highwind Lane', '9029851234', 0);

COMMIT TRAN

/\*Update Candidate Information\*/

USE PollingStation

GO

BEGIN TRAN

UPDATE Candidate

SET TotalVotes = 27, Address = '32 Longwind Drive'

WHERE CandidateID = 4;

COMMIT TRAN

/\*Register New User\*/

USE PollingStation

GO

BEGIN TRAN

INSERT INTO UserVoter

VALUES(6, 'Rae', 'Larson','RLarson','Password6', '23 Trunk Hwy', '9029554844',0,NULL);

COMMIT TRAN

/\*Update User Information\*/

USE PollingStation

GO

BEGIN TRAN

UPDATE UserVoter

SET Password = 'NewPasswordUser6', UserAddress = '255 Trunk Hwy'

WHERE VoterID = 4;

COMMIT TRAN

/\*Update Login Info for Valid User/Admin\*/

USE PollingStation

GO

BEGIN TRAN

UPDATE UserAdmin

SET Username = 'LouiseV', Password = 'AdminPass12345'

WHERE AdminID = 3;

COMMIT TRAN

/\*Delete Specific User From Database\*/

USE PollingStation

GO

DECLARE @DeleteUserTran varchar(30) = 'DeleteUserTransaction';

BEGIN TRAN @DeleteUserTran

DELETE FROM UserVoter

WHERE VoterID = 4

ROLLBACK TRAN @DeleteUserTran

/\*Delete all records without deleteing the schema\*/

USE PollingStation

GO

DECLARE @DeleteAllRecords varchar(20) = 'DeleteAllRecords';

BEGIN TRAN @DeleteAllRecords

TRUNCATE TABLE UserAdmin

TRUNCATE TABLE UserVoter

TRUNCATE TABLE Candidate

ROLLBACK TRAN @DeleteAllRecords

## Script reports

/\*Candidates with the top 2 highest voting record\*/

USE PollingStation

GO

SELECT TOP 2 FirstName, LastName, TotalVotes

FROM Candidate

ORDER BY TotalVotes DESC;

/\*Candidate with least voting record\*/

USE PollingStation

GO

SELECT TOP 1 FirstName, LastName, TotalVotes

FROM Candidate

ORDER BY TotalVotes ASC;

/\*Candidates who got votes between 5 to 15\*/

USE PollingStation

GO

SELECT FirstName, LastName, TotalVotes

FROM Candidate

WHERE TotalVotes > 4 AND TotalVotes < 16;

/\*Voting Record for each Candidate\*/

USE PollingStation

GO

SELECT FirstName, LastName, TotalVotes

FROM Candidate;

/\*Candidate Winner with Highest Votes\*/

USE PollingStation

GO

SELECT TOP 1 FirstName, LastName, TotalVotes

FROM Candidate

ORDER BY TotalVotes DESC;