Systems Analysis and Design

SAAD1001 – Final Project Design Document

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# Overview

*This System Design Document describes the Polling Station program, it’s use cases, several diagrams explaining and walking through the program to describe the logic of the software and how to interact with it.*

# Purpose and Scope

The purpose of the Polling Station software is to employ a program written in C that will allow users to vote for their chosen candidate, administrators to create and modify new accounts, as well as maintain a list of candidates. The software will also allow administrators to tally the votes and declare a winner of the election.

# Project Executive Summary

The main purpose of the project is to allow both voters and staff to have a seamless voting experience. Staff at the polling station will only need to input the essentials for each voter to assign them a username and password that they can use to vote, and the voters will only need to input these credentials to access the voting system. Once the voting has concluded, the system will allow administrators to tally the votes and declare a winner, or access any other information that has been stored in the accompanying database.

# System Overview

The staff/admin of the polling station will enter in a username and password when prompted at the sign in screen. This will then give the staff the option of registering a new voter or staff member or adjust any usernames or passwords from the two groups.

The voter will be able to use their username and password to access the voting system and place one vote for a candidate of their choice. Once the vote has been cast the user will exit the system.

# Design Constraints

The largest design constraint the project faces is the lack of a graphical user interface. Having no GUI will make the user interface and experience to suffer while both the voters and staff are using the system.

# Future Contingencies

A potential issue to keep in mind would be the lack of security the system currently has between the program itself and the accompanying database. At the time of this documents production, the program is still in a rudimentary form and may have security issues if implemented at this time.

# Points of Contact

The developer of this project is Gregory Pomeroy and can be reached at the following email:

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# Project References

The main reference for this project has been supplied to us over BrightSpace learning environment from the Nova Scotia Community College in terms of specifications and goals of the program and accompanying database.

# SWOT Analysis

|  |  |  |
| --- | --- | --- |
|  | Helpful | Harmful |
| Internal | There is complete control over the program and how it works, as well as how the database behaves and interact with the system as whole. | Security can be improved upon. This will ensure that the confidentiality of the voters will be kept safe, and the staff will trust the system. |
| External | The program can be converted and modified to suit the needs of various situations and environments, making it portable and efficient. | Competing voting software may have a leg up in terms of features and established security and trust. |

# System Architecture

# System Hardware Architecture

The hardware used in this polling software is a program created with the C programming that will be connected to a database that has been created using Microsoft SQL Server Tools.

# System Software Architecture

In the program there are various functions that act as a menu for both admin and voting users. Both users will start in the *main()* function. The main function includes a text menu that can be navigated by entering the corresponding number to the desired menu selection. Depending on if the user is an admin or a voter, they will come to their own menu. Admin users will go to a function labelled *adminFunc()* and voters will enter a menu function titled *userFunc().* Like the menu function found in main, the menus can be navigated with a numerical choice. From here (for voters and admins), each selection has its own separate function that is called upon. For example, admin users will create new username and passwords for users and admins in functions titled *newAdmin()* and *newUser().* To further demonstrate this point, please find an Activity UML diagram featured on page 6.

# Use Case Diagram



# Activity UML Diagram



# Test Case Scenarios

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Test Case ID | Test Case Description | Test Steps | Test Data | Expected Results | Actual Results | Pass/Fail |
| TC1 | Test User Login with valid credentials | * Turn on Polling station software * Enter Username and Password * Press enter | Username:  *abcd*  Password:  *1234* | Should be able to log into the system | Results are as expected | Pass |
| TC2 | Test User Login with invalid username, but valid password. | * Turn on Polling station software * Enter Username and Password * Press enter | Username:  *xyz* Password:  *1234* | Should be rejected from system and asked to log in again. | Results are as expected | Pass |
| TC3 | Test casting a vote for candidate as a voter | * Log into Polling station system as voter * Select option “1” * Select option “1” to vote for 1st Candidate | Casting 1 vote for assigned Candidate 1 | One vote should be added to total tally for Candidate 1 | Results are as expected | Pass |
| TC4 | Test creation of Admin account | * Log into Polling Station Software as Admin * Select Option “3” * Enter new username and password * Select enter to save new admin | New username:  newAdmin1  New password:  newPassword1 | A new admin user should be created and able to log into the admin side of the system | Results are as expected | Pass |