**Project 5 Design Document**

**Program Requirements**

The Hogwarts Potions Club recently held elections for President, Vice-President, Secretary, and Treasurer. All of the students’, teachers’, ghosts’ and paintings’ votes were stored in a text file. You have been tasked with writing a program that reads from that file and figures out who the winners of each election were.

The file is formatted with one persons’ (or former persons’) ballot on each line. Each line of the file contains four integers (each separated by a space).

For each election, there are only two candidates. The first number represents a vote for a candidate in the Presidential Election, the second number represents a vote for a candidate in the Vice-Presidential Election, the third number is for the Secretary Election, and the fourth integer is a vote for the Treasurer Election.

The first number on each line will either be a 1 or a 2, the second number on that line a 3 or a 4, the third a 5 or a 6, the fourth a 7 or a 8. Each number encountered represents one vote for the corresponding candidate. The key, for tallying votes is as follows:

Presidential Race  
 1 – Cedric Diggory  
 2 – Harry Potter

Vice-Presidential Race  
 3 – Hermione Granger  
 4 – Vincent Crabbe

Secretary Race  
 5 – Luna Lovegood   
 6 – Susan Bones

Treasurer Race  
 7 – Draco Malfoy  
 8 – Neville Longbottom

**Program Inputs**

* Vote count
  + temp
  + Integer Value

**Program Outputs**

* Winner Percentages
  + Percent 1-8
* Number of Votes
  + Num 1-8

**Test Plan**

* Check that all votes are tallied correctly
  + Ex Using votesimple.txt:

Presidential Election Winner:

Cedric Diggory – 3 votes – WINNER (60%)

Harry Potter – 2 votes – (40%)

Vice Presidential Election Winner:

Vincent Crabbe – 4 votes – WINNER (80%)

Hermione Granger – 1 vote – (20%)

Secretary Election Winner:

Luna Lovegood – 3 votes – WINNER (60%)

Susan Bones – 2 votes – (40%)

Treasurer Election Winner:

Draco Malfoy – 4 votes – WINNER (80%)

Neville Longbottom – 1 vote – (20%)

* + Ex 2 Using votes1.txt:

Presidential Election Winner:

Cedric Diggory – 5784 votes – WINNER (50.2957%)

Harry Potter – 5716 votes – (49.7043%)

Vice Presidential Election Winner:

Hermione Granger – 8253 votes – (71.7652%)

Vincent Crabbe – 3247 votes – (28.2348%)

Secretary Election Winner:  
Luna Lovegood - 8281 votes - WINNER (72.0087%)  
Susan Bones - 3219 votes - (27.9913%)

Treasurer Election Winner:  
Neville Longbottom - 5770 votes - WINNER (50.1739%)  
Draco Malfoy - 5730 votes - (49.8261%)

* Test for correct position of vote winner
  + Ex using votesimple.txt

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* Check that percentage calculations are correct
  + Ex using votesimple.txt

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**Solution Overview**

First, you will start by including all necessary libraries. In this case, it will be <iostream> and <fstream>. Then, you will use the standard namespace to save time on input and output statements. Then, you will include all necessary variables (int temp, int counter, and int num1 – int num 8). You will then include an ifstream variable named inFile. You will then open a given file with the tally of the names within the program. You will then input the inFile values into ‘temp’. Then, within a while loop, set the whiles condition to read the file until the end of the file. Within this while loop, you will have an if/ if else conditional statement system that will tally the votes. Within these if statements, you will put another if statement saying if ‘temp’ equals a certain value, you will update the value of num based on the condition of said if statement. Then, outside of this loop you will calculate for the percentages of the vote. You will calculate the percentages between 1 and 2, 3 and 4, 5 and 6, then 7 and 8 all in their separate calculations. You will then create an if statement system that will determine which value of the 4 votes is higher, thus placing the winner first within the output. You will then print out the results of the vote by including the vote numbers, the vote percentage, and you will label the winner. You will then close the file within the program.

**Algorithm Flowchart**

*Provided by Prompter*