

## Programming Fundamentals

### Assignment #2

## The Voting Machine

Write a main program and any necessary methods required to implement a scrutineer's voting machine. The scrutineer is the one that counts the votes and figures out who won, from a recent election.

You are writing the program for just the scrutineer to use. Design your program so that it determines the vote counts and finds out who won the election.

Begin the program by asking how many candidates are running in the election. Then, ask for the last names belonging to each candidate. Next, begin entering the votes. The scrutineer will open the ballot box and will take out each ballot one by one. The scrutineer will enter the index number of the person who was voted for on the ballot.

Before handing in this assignment,

- i) go through the **assignment's rubric** to ensure that you haven't missed any marks available.
- ii) be sure to show a test case for all cases, including any special cases.

### Sample Session(s)

```
How many candidates are running (e.g. 3) > 1  
Thank you - good bye. You need more than 1 candidate to continue.
```

### Issues to Consider

- a) The program will only work for 2 or more candidates.
- b) There could be ties. Deal with the case where more than 1 candidate is tied for the win.
- c) Guard against invalid vote entries, (i.e. indices which are out of range)
- d) Keep track and report on the number of valid votes cast.
- e) Keep track and report on the number of spoiled ballots. A spoiled ballot is not a valid vote cast.
- f) Conclude your program by announcing who won the election and with how many votes the winner received.
- g) You can ASSUME that the scrutineer will enter a *valid integer data type* when requested by the program.

## Sample Session(s)

```
How many candidates are running (e.g. 3) > 3
Enter lastname of candidate #1 > Trump
Enter lastname of candidate #2 > Biden
Enter lastname of candidate #3 > Smith

List of Candidates

-1 for a spoiled ballot
0 Trump
1 Biden
2 Smith
999 to quit
Enter a vote using the index number beside each candidate.
Enter a vote (e.g. 0 or 999 to quit) > -1
Enter a vote (e.g. 0 or 999 to quit) > 3
Error: 3 is an invalid vote
Enter a vote (e.g. 0 or 999 to quit) > 0
Enter a vote (e.g. 0 or 999 to quit) > 1
Enter a vote (e.g. 0 or 999 to quit) > 1
Enter a vote (e.g. 0 or 999 to quit) > 1
Enter a vote (e.g. 0 or 999 to quit) > 2
Enter a vote (e.g. 0 or 999 to quit) > 999
Election Results-----
Trump 1
Biden 3
Smith 1
number spoiled: 1
total valid votes cast: 5
The winner is Biden with 3 votes.
```