



CPSC 1620 A – Fundamentals of Programming I – Fall 2021

Assignment 8 [25 points]

Due November 29th, 2021 at 11:59 PM

General Instructions

- Go to Assignment 8 A on `gitlab.cs.uleth.ca`.
- Fork Assignment 8 A.
- Clone it in Atom.
- Create a file `vote.cc` that contains your program.
- Work on your assignment. Each time you go back to work on your assignment, make sure to follow the standard: `fetch/pull` → `work` → `stage all/commit/push` procedure.
- Make sure to make the last push before the assignment deadline as the last push before the deadline will be graded.
- Once you are done:
 - Go to your assignment on Gitlab
 - Check if you are satisfied with your solutions
 - From the left sidebar choose `Project information - Members`
 - Switch from `Invite member` to `Invite group`,
 - Enter the group name `Team1620` in the `Select a group to invite` field,
 - Leave `Max` role as `Maintainer`,
 - Click the `Invite` button.

Problems

1. **[25 points]** Write a program `vote.cc` that allows to read from a file `vote.in` the last names of the candidates in an election and the number of votes received by each candidate. The program should then output each candidate's name, the number of votes received, and the percentage of the total votes received by the candidate in descending order. Your program should also output the winner of the election. A sample output is:

Candidate	Votes Received	% of Total Votes
Johnson	6000	31.09
Brown	5000	25.91
Miller	4000	20.73
Duffy	2500	12.95
Robson	1800	9.33
Total	19300	

The Winner of the Election is Johnson

Your program should have the following functions:

- (a) Write a function `openFile` that prompts a user to enter a file name and opens it.
- (b) Write a function `getData` that reads from the file the candidate names and their number of votes received and returns them in 2 separate arrays.
- (c) Write a function `computePercentages` that takes as its parameters an array of number of votes and returns an array of percentages of votes.
- (d) Write a function `sortVotes` that takes as its parameters the three arrays (i.e., the array of names, the arrays of the number of votes, and the array of percentages), and sort them in descending order of the number of votes or percentages.
- (e) Write a function `display` that displays the candidate names, their number of votes received, their percentages in descending order, and the total number of votes, as formatted above.
- (f) Write a function `displayWinner` that displays the winner of the election.