**CISP 1010 Lab 7, Chapters 10 (Structures)**

**General Information**

This program manipulates polling data regarding the 2016 presidential election.

**Detailed Information**

This application reads data from a file by asking the user for the name of the file, opening it, reading from it into an array of structures and closing the file. The file has results in it from a poll of voters.

After reading in poll data from a file, the program asks the user for an option and computes either 1) candidate percentages (who won?), 2) percentage of voters who are male/female or 3) average age.

1 Candidate percentages

2 Percent male/female

3 Average age

4 Quit

Option:

* If the user chooses Candidate percentages, print a **formatted** table as shown in Sample Execution 3.
* If the user chooses Percent male/female, print a **formatted** table as shown in Sample Execution 3.
* If user chooses Average age, print a table **formatted** as shown in Sample Execution 3.

A small sample input file might look like:

trump 1 0 S 37 37923 M C A

clinton 1 1 S 19 37922 M O H

clinton 1 1 S 18 37931 F S H

tRUMP 1 1 S 19 37849 M C H

Johnson 1 0 S 18 37934 M C H

Trump 1 0 S 19 37849 M C H

The fields in the input file are 1) candidate last name, 2) whether the voter is a citizen, 3) whether the voter is registered, 4) whether the voter is a student or a faculty/staff, 5) the voter’s age, 6) the voter’s zip code, 7, the voter’s gender, 8) the voter’s ethnicity and 9) the voter’s educational attainment.

* S = student; F = faculty/staff
* Ethnicity (C = Caucasian, A = African American, N = Native American/Alaskan, , S = Asian, H = Hispanic, P = Hawaiian/Pacific Islander, O = other)
* Educational attainment (N = non-high school graduate, H = high school graduate, A = associate degree or graduate of a technology center, B = bachelor degree, M = master degree, P – higher degree than masters)
* If a voter left a field blank, then that field has a zero in it. In the actual sample test file, there are candidate names of “0” and there’s a zip code of “0”. Candidate names of 0 are to be counted as undecided.

You must use an array of the following structures:

struct Voter {

char candidate[NAME\_LENGTH];

int citizen; // true or false

int registered; // ""

char status; // F = faculty/staff, S = student

int age;

char zip[6]; // in 5 chars only

char gender; // F or M

char ethnicity; // A, C, N, S, H, I

char degree; // N, H, A, B, M, P

};

The name of the input file is obtained from the user. The data is read into an array of structures. There will be at most 50 voter data in the input file. The longest candidate name is 20 characters. Use a constant for the array size so the program could be changed easily to accommodate more voters.

Candidate names in the input file will not necessarily have proper capitalization. Correct the capitalization before printing. Hint: lowercase all characters in a name right after reading them then uppercase the first letter (so when the program compares “Stein”, for example, it compares same case).

* Get the input file name from the user.
* If the input file doesn’t exist, print the error message: Input file \_\_\_\_ does not exist (where \_\_\_ is the name of the input file).
* If the input file exists but is empty, print the error message: Input file \_\_\_ is empty. (where \_\_\_ is the name of the input file).
* If the input file has fewer than 50 entries, partially fill your array of structures and process these. If the input file has more than 50 entries, just process the first 50. (This is not an error. You will print a table with the first 50 entries in the file)
* **YOU MUST CREATE YOUR OWN STRUCTURE AND USE AN ARRAY OF STRUCTURES. YOU MUST WRITE AND USE YOUR OWN FUNCTIONS. IF YOU PUT ALL OF YOUR CODE IN main AND DON’T USE AN ARRAY OF STRUCTURES YOU WILL NOT RECEIVE ANY CREDIT ON THIS LAB.**
* Use constants where appropriate.

**Sample Execution 1:**

Welcome to the Pellissippi Polling Report

Enter input file name: data.dat

Input file data.dat does not exist.

**Sample Execution 2:**

Welcome to the Pellissippi Polling Report

Enter input file name: emptyFile

Input file emptyFile is empty.

**Sample Execution 3:**

Welcome to the Pellissippi Polling Report

Enter input file name: pollingData.txt

1 Candidate percentages

2 Percent male/female

3 Average age

4 Quit

Option: 1

Candidate Percentage Polled

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Clinton 23.3%

Johnson 1.3%

Stein 1.0%

Trump 23.3%

Undecided 51.1%

1 Candidate percentages

2 Percent male/female

3 Average age

4 Quit

Option: 2

Candidate Male Female

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Clinton 63.3% 36.7%

Johnson 33.3% 66.7%

Stein 100.0% 0.0%

Trump 88.8% 11.2%

Undecided 0.0% 100.0%

1 Candidate percentages

2 Percent male/female

3 Average age

4 Quit

Option: 3

Candidate Average Age

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Clinton 25.3

Johnson 33.3

Stein 19.0

Trump 21.2

Undecided 19.0

1 Candidate percentages

2 Percent male/female

3 Average age

4 Quit

Option: 4

Thank you for using the Pellissippi Poling Report.

**Due Dates**

1. **See our online Course Content in D2L for the due date.** Turn in a printout of your code and attach the lab coversheet. Also, copy your executable file to my turn-in directory, renaming it to your username, with the following command (***substituting your username for c1010a01***):  
   cp a.out /export/home/students/Arnold\_turnin/c1010a01