CS265 - Introduction to Programming Languages
Program 2
Spring 2023

Objectives
Work with input and output
Work with decision making
Work with iteration

Assignment
Write a program that surveys the majors of students in some unnamed class. For this program the only majors I'm concerned with are Computer Science, Data Science, and Cyber Security. To simplify data entry, we will use the terms "CS" for Computer Science, "Data" for Data Science, and "Cyber" for Cyber Security. Anything other than those three majors will be considers as "Other Major." Continue to ask for majors until the user enters a major of "Done". Make sure that this entry is not counted towards the "Other Majors" category. Total up all the entries for each of the specified major, along with the total for other Majors.

For *only the CS majors* we want to ask about their minor. The only minors we are interested in tracking are Data Science, Cyber Security, and Mathematics. Again, to simplify the input, we will accept "Data" for the Data Science Minor, "Cyber" for the Cyber Security minor, and "Math" for the Mathematics minor. If a student is a Computer Science major ask for their minor immediately, before asking for the next student's major.

Specifics:

- Write each of the following programs in C, C++, Python, and Java. Make sure to use the appropriate extension for each file (.c, .cpp, .py, and .java, respectively). Name each file prog2ABC.extension, where ABC are your initials. My 4 files would be Prog2TLS.c, Prog2TLS.cpp, Prog2TLS.py, and Prog2TLS.java.
- All strings entered will be mentioned above ("CS", "Data", "Cyber", "Math"). While we will not enter test data with mixed cases, entering "DATA" for the major or minor would place that entry in the other category.
- When comparing strings you may convert a string to an upper or lower case string. If you do so then check for majors/minors in the converted case. You do not need to do this, but if you do implement the program such that case does not matter it needs to be implemented properly.
- Only ask for the minor for Computer Science majors
- "Other Majors" is not a major, it is just a means of referring to anything other than the specified majors.
- Your programs should include a comment section with your name, lab time, lecture time, and email address.
- Write this program in all four languages.
- Do not create menus, or anything else other than the questions specified in the program description.

Output

After all of the data has been entered print out the following information:

- The number of students entering their major
- The number and percentage of students from the class for each of the three specified major, and for other (anything other than the three specified majors). Note that it is possible for the summation of the four percentages to not add up to 100 due to round off error. If this happens, the summation, which is not required to be printed, should be 99.99. The majors should be left justified, with the number of students and the percentages right justified. The percentage should have two places after the decimal point.
- The number and percentage of each minor. As with the table created for the majors, the name of the minors should be left justified, with the number of students and the percentages right justified. The percentage should have two places after the decimal point.

For example, if the following data was entered this is what the program might display. Note that this output is typed, not actual output from running the program, so there may be typos.

```
Enter major: CS
Enter minor: Data

Enter major: Data

Enter major: Cyber

Enter major: Econ

Enter major: None

Enter major: Done
```

This could be the output from the above data:

```
Total number of students 5

Majors of students in CS160
Computer Science    1   20.00
Data Science        1   20.00
Cyber Security      1   20.00
Other Majors        2   40.00


Minors for Computer Science Majors in CS160
Data Science        1  100.00
Cyber Security      0    0.00
Mathematics         0    0.00
Other Minors        0    0.00
```