
COMP 115 Robots, Games, and Problem Solving

Lab #8

In this lab, you will practice reading files, writing to files, and processing information from files.

1. For the first exercise, you can save the file `in.txt` I posted on the schedule, or copy-paste it in a text editor for your operating system (something like Notepad if you use Windows, Textedit if you use a Mac – but make sure you save it as a text file) and save that file in the folder in which you save the other files for this lab.

Write a program that does the following:

- (a) ask the user for the name of an input file
- (b) ask the user for a number
- (c) open the input file in read mode
- (d) assume that each line of the input file contains three integers between 0 and 999,999. If the number given by the user at the beginning is one of the numbers in the line, print the line on screen.
- (e) after reading the whole file, your program should print the number of lines that contained the number entered by the user.

For example, if you use `in.txt` as your input file, the number 122568 should cause 1 line to be printed on screen, the number 10712 should cause 2 lines to be printed on screen, then number 348229 should cause 3 lines to be printed on screen and the number 56027 should cause 4 lines to be printed on screen.

_____ Show me the result when you are done.

2. Write another program that does the following:
 - (a) ask the user for the name of an input file and for the name of an output file
 - (b) open the input file in read mode and open the output file in write mode.
 - (c) assuming that each line in the input file contains three integers between 0 and 999,999, do the following for each line in the file
 - store the three numbers from the line into a list of integers
 - print the three numbers in 3 neat columns in the output file in increasing order (from smallest to biggest). The numbers should all be aligned to the right of their column, with their least significant digit aligned. Make sure that you sort them as *numbers*, and not as strings, the resulting order will be different.

To get the numbers in increasing order, you may or may not want to use the list method `list.sort()`, which replace the list by a list with its elements in increasing order. You will know that you reached the last line of the file if the function `readline` returns an empty string. You should read the file using a sentinel loop.

_____ Show me the result when you are done.

3. Write a program that would produce an input file similar to `in.txt`. To do this, you will need to use the function `randrange` from the `random` library. You can bring the `random` library into your program the same way you would use the `math` library, I'll let you read about the function `randrange` in the Python documentation and try to see if you can figure out how to use it (call me if you have trouble though...).

_____ Show me the result when you are done.

When you are done, write your name on the sheet and hand it to the lab instructor.

Name: _____