

ASSIGNMENT 2

GENE-121-2017-3F-ASSN-02-Description

Fall 2017

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INTRODUCTION

This assignment is to be completed in pairs. You have been automatically with a partner. To see who your partner is for each week, check the lists posted on Learn. The lists also indicate the TA who will be marking your assignments for the term.

In this assignment, you will:

- Use if statements
- Use for loops

QUESTION 1 – NUMBER REFORMAT

In this question, you will demonstrate that you can use if statements to solve a problem.

The user will enter an integer whose **magnitude** is less than 1,000,000. Your program will re-display the number using a comma to separate the thousands digits.

For example, if the user enters:

123456

the program will display:

123,456

Submit your code with output for at least three test cases. The test cases should demonstrate how capable your program is.

HINT

Consider all possible values that the user might enter and **test your program using the trickiest cases you can think of**. If your program has fewer than four if statements, it likely has not addressed all the cases.

QUESTION 2 – GUESS A NUMBER

In this exercise, you will implement a search algorithm to find a secret number that the user is thinking of.

The user is to think of a number between 1 and 7 (inclusive). The program will then display a guess of the number. With each guess the user will input whether or not the computer's guess was correct, too high, or too low. The program must be able to guess the number within 3 guesses.

Submit your code and output for three test cases:

- 1) Number guessed correctly within two tries or less.
- 2) Number guessed correctly on the third try.
- 3) User is not truthful and therefore the program is not able to guess the number after three tries.

SAMPLE OUTPUT

Think of a number between 1 and 7. Enter "ready" when ready to start.
ready

Is the number 4?
(Enter 'y' if the guess is correct.
Enter 'h' if the computer should guess higher.
Enter 'l' if the computer should guess lower.)
h

Is the number 6?
(Enter 'y' if the guess is correct.
Enter 'h' if the computer should guess higher.
Enter 'l' if the computer should guess lower.)
y

Your secret number was 6!

QUESTION 3 – PAVING STONES

Write a program to identify the shapes of paving stones. Input and output for this program will be from files.

There are four possible shapes for paving stones:



The file "stones.txt" will contain information about the paving stones. The very first line will contain the total number of paving stones in the file. The rest of the file will contain information for one paving stone per line. Each line will have the length of two adjacent sides (in cm) as well as the contained angle (in degrees).

The program will need to output to a file called "shapes.txt". The output file must list information for each paving stone, one per line. Each output line will contain the length of the two adjacent sides (in cm) as well as the contained angle (in degrees), and then the shape of the stone.

Use a tolerance of 7mm for side lengths and 0.5 degrees for angles.

Run your program using the given "stones.txt" input file. Print out the "shapes.txt" file generated by your program and submit it with your code.

HINT

This program is larger in scope than previous questions. Therefore, it is very helpful to break it down into smaller steps and solve each step separately. You should completely solve and test each step before moving on to the next.

The suggested steps are the following:

1. Write a program that can open the file "stones.txt", read the information line by line, and output it back to the screen.
2. Modify the program so that the information is outputted to the file "shapes.txt", instead of the screen.
3. Think about how you want to differentiate between types of stones. Are some of the "tests" the same? Always consider whether it is reasonable to use nesting and/or multiway decisions.
4. Modify the program so that the type of paving stone is also output to "shapes.txt".

FINAL REMINDERS

Do not forget to include a signed header for your assignment, and to make sure that both students in the group have an electronic copy of all the code when it is complete. Remember, you should both be contributing significantly on all questions on this, and all, assignments.