Compose answers to the questions using your favorite word editor. The single programming task aims to reinforce all of the topics that you’ve seen up to this point, as well as give you practice with for loops.

**Hint**: Refer to lab 4 to review how to generate random numbers and to exit a for loop prematurely. Start right away. Come see me or the TAs during office hours for help.

**Reminder**: You can discuss this homework with your peers. However, the answers to the questions and programming solution MUST be your own. You cannot copy another person’s code, you cannot have another person tell you what code to type, etc. If any part of this is unclear, please come see me.

I. Questions : 40 points

1. Write code with selection statements that is equivalent to the following, but does **not** use `elif`.
   ```python
   if (num == 32 and letter == "4") :
       print ("both num and letter are the same")
   elif ((num == 32 and letter == "33") or (num == 33 and letter == "4").
       print("only one of num or letter are 33")
   else
       print("neither num nor letter are 33")
   ```

2. Does the following selection statement correctly identify if the integer variable `aNum` has been assigned a value that is ONLY one of the following: 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9? **Explain your answer.**
   ```python
   if (aNum > -1 or aNum < 10)
   ```

3. Identify the error(s) in the following snippet of python code.
   ```python
   four x in range(-3,4,-5)
   print("The number is ,” x)
   ```

4. **True or False.** Assuming no syntax errors, a Boolean expression can evaluate to only one of three possible choices. **Explain.**

5. Write code that will print the powers of 3 greater than 1 but smaller than 1000. Thus your code should output 1, 3, 9, 27, 81, etc. **You can write at most two lines of python code.**

6. Explain what the following statement does: `range(-345, 8789, 378)`

7. Explain what the following statement accomplishes: `import random`

8. What does the following statement evaluate to? 0 % 2
9. Write python code that will print the integers less than -1 but greater than -101 which are evenly divisible by 16. The output should be on one line, and the numbers be from largest to smallest left-to-right. For example:

   -16 -32 -48 -64 -80 -96

   You can write at most two lines of python code.

10. How does python know which line(s) of code is(are) contained in the body or code block for a loop?

II. Coding Task : 60 points

   Hint : Refer to lab 4 for several hints to help you out with this coding task! In that lab you learn about generating random numbers and using the break command to exit a for loop.

   For this assignment, assume you are a computer programmer working for a company that makes legacy (old-style, text-only) games for people who were using computers in the early 1980s. The game you’ve been tasked to write is a simple guessing game. A player selects whether to play a letter or number game, specifies how many tries are allowed, and then proceeds to guess a secret two-character sequence or a three-digit number. The secret three-digit number or 2 letters to be guessed are randomly generated each time the game is played. Because the game is intended for distribution to alumni of Washington universities, the letters in the letters game are selected from the letters in the word seattle. See the last pages of these lab instructions for screenshots of sample game play.

   Your manager has provided you with the following requirements and/or pseudocode for the game.

   1. Your program must be named guessingGames.py, and your program must prompt the player to specify either the Letter or Number game to play (N or L)

   2. The program should provide a brief blurb that explains the game

   3. The program prompts the use for the number of tries

   4. If a player selects to play the Letter game, then :
      a. Two letters from among seattle should be chosen as the secret answer. Because the letters are chosen independently, it may be that both the first and second secret letters chosen are the same.
      b. While the number of tries remaining is greater than zero, the game should prompt the user to guess a letter, and then check if the guessed letter is either the first or the second secret letter. If yes, then the program should specify which of the letters was guessed correctly. If the guess is not one (or neither) of the secret letters, then the program should output a statement stating that fact.
      c. The program should remember which letter (if any) was guessed correctly, so that, for example, if the first letter is guessed correctly, then subsequent guesses should specify whether the guess is correct or incorrect for the second letter.
5. If a player selects to play the Number game, then:
   a. A three-digit number should be chosen, randomly, as the secret answer. Hint: generate the 3 digits of the three-digit number one by one, and do not generate a single three-digit number. Although it can be done both ways, doing it this way is easier.
   b. While the number of tries remaining is greater than zero, the game should prompt the user to guess a number, and then check if the guessed number is one of the remaining digits that have not yet been correctly guessed. If yes, then the program should specify which of the digits was guessed correctly. If the guess is not any of the three secret digits, then the program should output a statement stating that fact.
   c. The program should remember which digit (if any) was guessed correctly, so that, for example, if the first digit is guessed correctly, then subsequent guesses should specify whether the guess is correct for second or third digits.

6. For both the Number and Letter game, if a user guesses correctly, the game should output “You win” and terminate right away, even if the user has tries remaining.

7. For both the Number and Letter games, if a user does not correctly guess the secret digits or letters, the game should quit and specify that there are no more tries remaining. The correct answer should be provided.

8. You MUST use at least one if statement, and at least one for loop.

Hint: This game can be implemented many different ways. Declare and use as many variables as you need to keep track of guesses. Sample invocations of the program are shown on the last 2 pages of this handout.

After each guess, the program informs the user whether the guess was correct. Consider two sample rounds of play below. In the first game (number game) the player loses, but in the letter game, the player wins because both letters were guessed correctly.

<table>
<thead>
<tr>
<th>Game setup</th>
<th>Game Play</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Game Type</strong></td>
<td><strong>number guesses</strong></td>
</tr>
<tr>
<td>Number</td>
<td>3</td>
</tr>
<tr>
<td>Letter</td>
<td>4</td>
</tr>
</tbody>
</table>
III. Submission

Submit to canvas:

1. A word document (.docx, .doc, .pdf) with your answers to the 10 questions
2. The guessingGames.py file that is your implementation of the programming task

IV. Rubric

<table>
<thead>
<tr>
<th>Homework</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free-response, Multiple Choice questions</td>
<td>40 points</td>
</tr>
<tr>
<td>The top of the program file contains comments, including your name</td>
<td>10 points</td>
</tr>
<tr>
<td>The program contains code to ask user if Number or Letter game should be played</td>
<td>5 points</td>
</tr>
<tr>
<td>The program contains code to ask the user how many tries should be allowed</td>
<td>5 points</td>
</tr>
<tr>
<td>The program generates a random 2 character sequence using the letters seatl</td>
<td>5 points</td>
</tr>
<tr>
<td>The program generates a random 3-digit number</td>
<td>5 points</td>
</tr>
<tr>
<td>The program correctly keeps track of how many tries remaining, and specifies which (if any) of the secret letters or digits have been guessed correctly</td>
<td>10 points</td>
</tr>
<tr>
<td>The program correctly terminates right away and says “Win” if the player guesses correctly</td>
<td>10 points</td>
</tr>
<tr>
<td>Variable names are informative, and code is commented and easy to read</td>
<td>10 points</td>
</tr>
<tr>
<td>Total</td>
<td>100 points</td>
</tr>
</tbody>
</table>
V. Screenshots of sample invocations of the coding task

Would you like to play a Letter or Number game? Type L for letters, or N for numbers. N
The goal is to guess a three digit number 0-999. Two or three of the digits may be the same.
How many tries would you like? 4

Try 1
Your guess : 1
The first digit is not 1
You've guessed the second digit
The third digit is not 1

Try 2
Your guess : 2
The first digit is not 2
The third digit is not 2

Try 3
Your guess : 4
The first digit is not 4
You've guessed the third digit

Try 4
Your guess : 5
The first digit is not 5
You are out of tries. Game over. The digits were 814
Would you like to play a Letter or Number game?
Type L for letters, or N for numbers. N
The goal is to guess a three digit number 0-999.
Two or three of the digits may be the same.
How many tries would you like? 6

Try 1
Your guess : 1
The first digit is not 1
The second digit is not 1
You've guessed the third digit

Try 2
Your guess : 3
The first digit is not 3
The second digit is not 3

Try 3
Your guess : 5
The first digit is not 5
You've guessed the second digit

Try 4
Your guess : 4
You've guessed the first digit

Would you like to play a letter or Number game?
Type L for letters, or N for numbers. L
The goal is for you to guess two character chosen randomly from the word 'seattle'. The two character may be the same.
How many tries would you like? 2

Try 1
Your guess : s
The first character is not s
The second character is not s

Try 2
Your guess : e
The first character is not e
The second character is not e

You are out of tries. Game over. The letters were la
Would you like to play a Letter or Number game? Type L for letters, or N for numbers. L
The goal is for you to guess two character chosen randomly from the word 'seattle'. The two character may be the same.
How many tries would you like? 5

Try 1
Your guess : s
The first character is not s
The second character is not s

Try 2
Your guess : e
The first character is not e
The second character is not e

Try 3
Your guess : a
You've guessed the first character
The second character is not a

Try 4
Your guess : t
You've guessed the second character

You've guessed the secret characters at. You win. Woot.