Fall 2022 - CS1342
Assignment 6
Due Date: November 14th - 2022
No Later than 3:45 pm

Write a Python program that can create four different patterns of different sizes. The size of each pattern is determined by the number of columns or rows. For example, a pattern of size **5** has **5** columns and **5** rows. Each pattern is made up of the character   P and a digit , which shows the size. The size must be between 2 and 9. The following shows the four different patterns for size **5**

Pattern 1	Pattern 2	Pattern 3	Pattern 4
5PPPP	PPPP**5**	PPPPP	PPPPP
P**5**PPP	PPP**5**P	PPPP**5**	**5**PPPP
PP**5**PP	PP**5**PP	PPP**55**	**55**PPP
PPP**5**P	P**5**PPP	PP**555**	**555**PP
PPPP**5**	**5**PPPP	P**5555**	**5555**P

Your program should display a menu and ask the user to choose a pattern and a size. Your program must be robust; it must prompt the user to an option between 1 and 4 or 15 , and a pattern size must be between 2 and 9.

Sample Run

Welcome to My Pattern Program

This program is written by (your name) . The purpose of this program is to create four different patterns of different sizes. The size of each pattern is determined by the number of columns or rows. For example, a pattern of size **5** has **5** columns and **5** rows. Each pattern is made up of character   P and a digit , which shows the size. The size must be between 2 and 9.

Menu

1.   Pattern One
2.   Pattern Two
3.   Pattern Three
4.   Pattern Four
15.   Quit

Choose an option (between 1 and 4 or 15 to end the program) : 11

Your option is incorrect .   Please try again

Choose an option (between 1 and 4 or 15 to end the program) : 3

Choose a pattern size (between 2 and 9) : 11

Your pattern size   is incorrect.   Please try again

Choose a pattern size (between 2 and 9) : 5

Pattern   3   is   Displayed

PPPPP

PPPP**5**

PPP**55**

PP**555**

P**5555**

Menu

1.   **Pattern One**
2.   **Pattern Two**
3.   **Pattern Three**
4.   **Pattern Four**
15. **Quit**

Choose an option (between 1 and 4 or 15 to end the program) : 1

Choose a pattern size (between 2 and 9) : 3

Pattern 1 is displayed

3PP

P**3**P

PP**3**

Menu

1.   **Pattern One**
2.   **Pattern Two**
3.   **Pattern Three**
4.   **Pattern Four**
15. **Quit**

Choose an option (between 1 and 4 or 15 to end the program) : 4

Choose a pattern size (between 2 and 9) : 9

Pattern 4 is displayed

PPPPPPPPP

9PPPPPPPP

99PPPPPPP

999PPPPPP

9999PPPPP

99999PPPP

999999PPP

9999999PP

99999999P

Menu

1. **Pattern One**
2. **Pattern Two**
3. **Pattern Three**
4. **Pattern Four**
15. **Quit**

Choose an option (between 1 and 4 or 15 to end the program) :   15

Pattern Program By:

Husain Gholoom – 11 – 14 - 2022

Note :

- **Must use at least 4 functions in which each function represents one pattern.**
- **Must use Switch, for, and while loops**

Style :

Your Program must include the following as **comments** on the top before the start of your program:

```
//   Author :  (Your name  here!!)
//
//   Due Date:
//
//   HW –  6  -  Programming Assignment
//   Fall 2022  -   CS 1342    -    Section  Number

//    Instructor:    Husain Gholoom.
//
//    <Brief description of the purpose of the program
```

Coding Style Guidelines:

- **Variable names** Must be meaningful
- All variable definitions should be commented
- **Line length** of source code should be no longer than 80 characters (no wrapping of lines).

Rules:

1. Your program **must compile** and run using   Python IDE Shell 3.10.7.
2. Not allowed to use any concepts that was not discussed in the class such as recursions … etc.
3. Must follow the coding style guidelines
4. Must use **at least 4 functions , for , or   while   or both along with   if .. else** statements.
5. You must use the appropriate libraries in writing this program.
6. Must properly **format** the output by use the appropriate library**.**
   See the output above. Note that in the following 2 lines:

   Prepared by Husain Gholoom

   11 - 8 - 1989

   - **Replace my first / last name with your own first / last name.**
   - **Replace the date 11 – 8 – 1989   to be   the due date of your program.**

7. You must name your program as :

   XXXXXX_YYYYYY_1342_1_ HW6_F22_.py

   Where XXXXX is your First Name and YYYYYY is your Last Name.
   For example, the file name should look something like:

   Husain_Gholoom_1342_1_ HW6_F22.py

8. You must upload your programs no later than 3:45 pm on the due date. **No late assignments will be accepted regardless of the reason and a grade of zero will be assigned**

Use Canvas To upload your program

9. Maximum points for this assignment are 10.   Points will be deducted if:

- Incorrect file format or missing electronic version , copying from other students or from the web   (- 10 points)
- Compilation Errors, using any concepts that was not discussed in the class , using recursion   (- 8.5 points)
- Logical Error (at least - 1 point)
- Not using functions (- 5 points)
- Incorrect program name, Incorrect Output / Output format, Missing or incorrect comments on top of the program, not replacing my first and last name with your first and last name, not replacing XXXXXX and YYYYYYY with your first and last name , Missing header , missing footer Not following the coding style guidelines (at least - 0.75 point)