Assignment SU8

Reminder: Add your name, surname, and student number as a comment line at the top of each of your programs. Use comments to name and explain each script.

8.1 **Submit your Python script file (*.py) on eFundi Assignments;** named:

StudentNumber_Assignment_SU8-1 (include your student number).

Problem

You need to provide a sequence of numbers that will allow you to experiment with the for loop.

Instructions

1. Ask the user to enter any positive integer number.
2. Use a **for** loop, to display output in such a way that the number is printed, and all subsequent descending numbers, until 0 is reached. As an example; should the input be 5, the displayed values should be:

   ```
   4 3 2 1 0
   ```
3. Address the fly-by-window problem in your solution.

Make sure you supply headings to ensure that your input and output make sense.

8.2 **Submit your Python script file (*.py) on eFundi Assignments;** named:

StudentNumber_Assignment_SU8-2 (include your student number).

Problem

You need to provide a sequence of numbers that will allow you to experiment with the while loop.

Instructions

1. Work on the same problem as in Assignment 8.1 above, but now use a **while** loop to display output in such a way that the same numbers are printed, this time in ascending order. Using the same example as before; the displayed values should be:

   ```
   0 1 2 3 4
   ```
2. Also print the sum of the integers. Using the same example; the displayed values should be:

   ```
   0 + 1 + 2 + 3 + 4 = 10
   ```
3. Address the fly-by-window problem in your solution.

Make sure you supply headings to ensure that your input and output make sense.

8.3 **Submit your Python script file (*.py) on eFundi Assignments;** named:

StudentNumber_Assignment_SU8-3 (include your student number).

Problem

Write a Python script that will calculate the circumference (perimeter) of geometric shapes.

Instructions

1. Ask the user to enter his or her name. Then greet the user.
2. For each of the shapes:

- Ask the user for the information needed to calculate the circumference of each shape. An example: the length of one side of a square would be needed to calculate its circumference. Work in centimetres (cm). *Hint: The formulas you will need for each shape, is provided below.*
- Calculate the circumference of each shape.
- Print the circumference of each shape, make sure you do not only provide the value, but also the applicable unit.

3. Allow the user to decide when the program should stop running.
4. Earn bonus marks by imitating the test data's tabulation below in your output, using "%-formatting". Do this at the end of each loop.

Formulas

Shape	Perimeter	Terms
Circle	2 π r (circumference)	r = radius
Triangle	a + b + c	a, b, c = sides
Square	4 s	s = side
Rectangle	2 (l + w)	l = length w = width
Important: Make use of the math module pi value		

Test data

Shape	Value(s)	Perimeter
Circle	r = 3cm	18.85 cm
Triangle	a = 9cm b = 5cm c = 3cm	17.00 cm
Square	s = 7cm	28.00 cm
Rectangle	l = 9cm w = 3cm	24.00 cm

Assessment rubric

Mark allocation rubric			
Item		**Mark allocation**	
8.1	Obtain a number from the user		/1
	For loop correctly implemented		/2
	Display numbers in descending order		/1
	Display makes sense		/1
	Fly-by-window problem addressed		/1
8.2	Obtain a number from the user		
	Display numbers in ascending order		/1
	While loop correctly implemented		/2
	Display sum of the numbers		/1
	Display makes sense		
	Fly-by-window problem addressed		
8.3	Include the math module, and use pi		/2
	Obtain the user's name and greet the user		/1
	Implement the selected loop structure correctly		/4
	Obtain the values needed to do the calculations		/1
	Do the necessary calculations		/1
	Display all answers		/1
Comments included in programs (penalty 1 per script), file name according to the specification (penalty 2 per script), correct extension (penalty – not marked), only the latest versions submitted (penalty 1 per additional script submission)			
	SUB-TOTAL	**0**	20
	BONUS		2
	TOTAL (SUB-TOTAL/2+BONUS)	**0**	12