Tutorial Week 2

Aims:
- Strings (introduction)
- Use a range of built-in functions - print(), type(), int(), str()
- Get Keyboard input - input()
- Translate your Pseudocode into Python programs

1. **Built-in Functions**
   a) Try the following. Check if the results are as expected.
   ```
   total = 10
   print(total)
   print(type(total))
   ```

   b) Complete the last line of the following to concatenate (join) total and greet.
   ```
   total = 10
   print(total)
   print(type(total))
   greet = 'Hello'
   both =                    # complete this to join total and greet
   ```

   If your program produces an error when you run it try the following.
   - Print the data type of each variable.
   - Note that you cannot concatenate a string and an integer.
   - Try using the built-in "str()" (convert to string) function to fix the error.

   c) What is the output of the following program? Test the program to check your answer.
   ```
   a = "10"
   b = '99'
   c = a + b
   print (c)
   print (type(c))
   c = int(c)
   print (c)
   print (type(c))
   ```

   d) Amend the above program so that it prints out the value **109**.

2. **Keyboard input**
   a) Try the following program:
   ```
   name = input('Please enter your name: \n')
   print('Hello', name)
   ```
   - Remember, \n within quote marks forces a new line to be printed.
   - When you run the program, you should see the "Please enter your name:" message in the shell window. Type in your name, followed by the ENTER key. The program will greet you.

   b) Extend the program to get the user's age, and print out "your age is" (with the response).

3. How would you print the following so that it displayed correctly: `test\test2\answers.txt`

4. Type the following. Check the differences between the three print statements.
   ```
   the_text = input('Enter some text.\n')    # get some text!

   #print - version 1
   print('This is what you entered: ')
   print(the_text)

   #print - version 2
   print('This is what you entered:', the_text)

   #print - version 3 - To supress printing of a new line, use end=' '
   print('This is what you entered:', end=' ')
   print(the_text)
   ```

5. What will be displayed by the following code? Type and run the code to check your answer.
   ```
   print("A", end = ' ')
   print("B", end = ' ')
   print("C", end = ' ')
   print("D", end = ' ')
   ```

6. The following section links to your solutions created for the **Lecture Self-check Questions (1-5).**
   Lecture Question 1. Write the program to get and print the number of pets a user has.

   Lecture Question 2. Write the pseudocode to put zero into variable `running_total`. Then write separate instructions to add the following numbers onto what is in the variable, adding one number at a time 5, 8, 2, 3. Print `running_total`.

Type, run and test your **Python program solutions** that you created in the lecture.
   Lecture Question 3. Write the Python program using the pseudocode shown.
   ```
   total <- 0
   INPUT num_1
   INPUT num_2
   total <- num_1 + num_2
   ```

   Lecture Question 4. Write the Python program using the pseudocode shown.
   ```
   INPUT cost_of_item
   INPUT cash_paid (e.g., 10 for £10)
   CALCULATE change
   ```

   Lecture Question 5. Program to calculate the average of three numbers (pseudocode in lecture notes).

7. Temperature Program (part 1) – This program will be extended in a later tutorial.
   Write a program that will convert a Centigrade temperature (c) entered as input into Fahrenheit (f) using the formula: $f = (9/5) * c + 32$

8. Write a program to calculate the volume of a box. Enter in the values for the three dimensions (length, height, width).

9. Write a program that changes meters (m) to centimeters (c). The program should allow you to enter in the number of meters and then print out the number of centimeters.