ITP122 ASSESSMENT 2

INTERMEDIATE PROGRAMMING TASKS

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Task 1 - Coding for Simple Loops

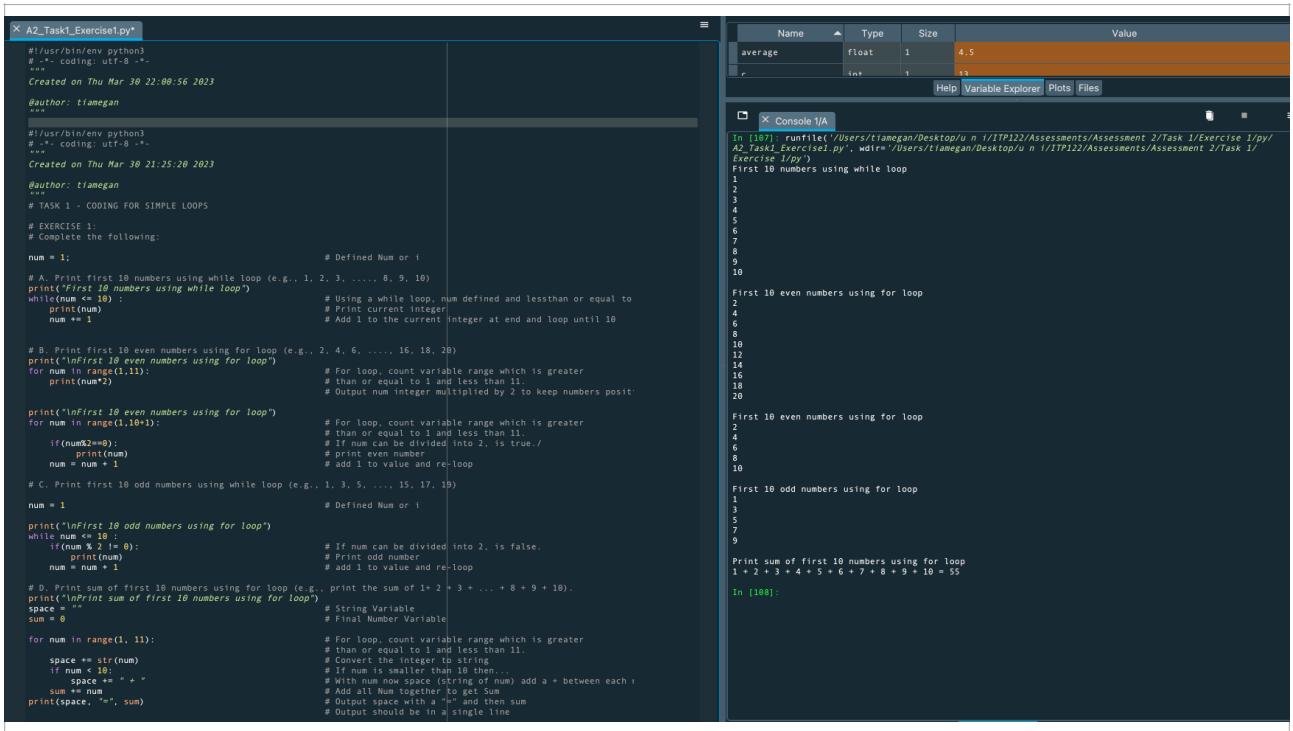
1. Complete the following programming exercises using python programming language:

    a. Print first 10 numbers using while loop (e.g., 1, 2, 3, ..., 8, 9, 10)

    b. Print first 10 even numbers using for loop (e.g., 2, 4, 6, ..., 16, 18, 20)

    c. Print first 10 odd numbers using while loop (e.g., 1, 3, 5, ..., 15, 17, 19)

    d. Print sum of first 10 numbers using for loop
    (e.g., print the sum of 1+ 2 + 3 + ... + 8 + 9 + 10).



Filepath: Assessment 2 / Task 1 / Exercise 1 / py / A2_Task1_Exercise1.py

2. Write a python program that ask for an integer input from the user and prints its multiplications on the screen. The program should follow these steps:

Print on the screen, prompting for an input number from the user (e.g., ‘Enter an integer value’)
Print the multiplication tables of a given number for 10 times

An example of the program output when a user enters 5:

5 x 1 = 5

5 x 2 = 10

5 x 3 = 15

5 x 4 = 20

5 x 5 = 25

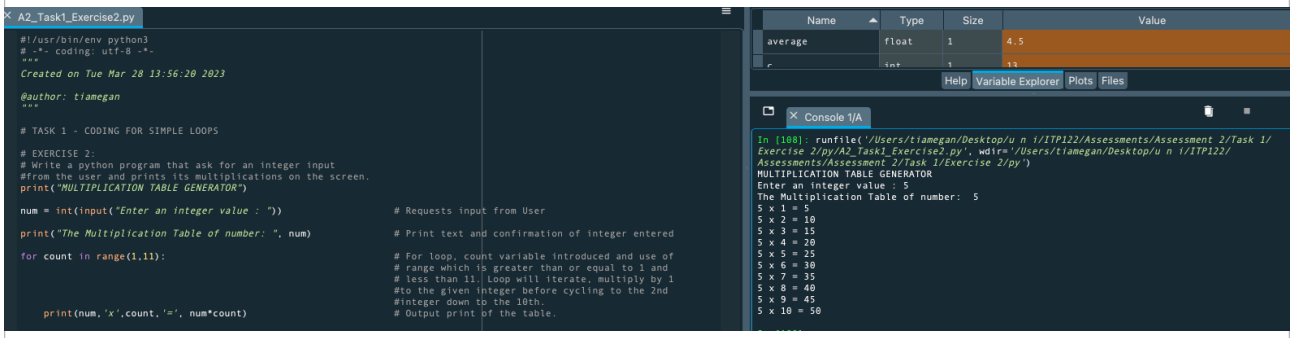
5 x 6 = 30

5 x 7 = 35

5 x 8 = 40

5 x 9 = 45

5 x 10 = 50



Filepath: Assessment 2 / Task 1 / Exercise 1 / py / A2_Task1_Exercise2.py

Task 2 - Coding For Different Types of Loops

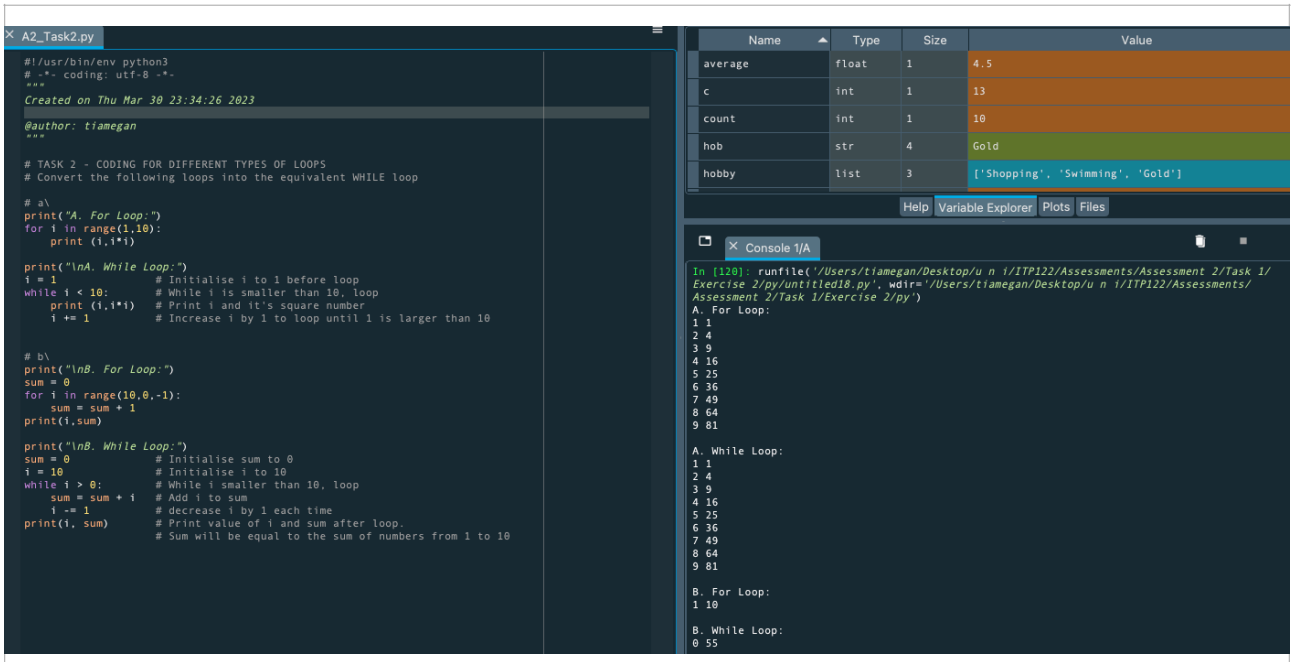
3. Convert the following for loops into the equivalent while loop:

a)
```
for i in range(1,10):
    print (i,i*i)
```

Run the program. Include a screenshot of the output on the screen in your zip file.

b)
```
sum = 0
for i in range (10,0,-1):
    sum = sum + i
print (i,sum)
```

Run the program. Include a screenshot of the output on the screen in your zip file.



Filepath: Assessment 2 / Task 2 / py / A2_Task1_Exercise2.py

Task 3 - Interpretation of Loop Codes

a. b=10
While (b<10)
Print (“Hello”)
b+=1

Explain the code with comments and write down the expected output.

b. i=1
while i<3:
print(i)
i=i+1
else:
print(0)

Explain the code with comments and write down the expected output.

a.

b = 10
While (b<10)
print(“Hello”)
b+1

Is a piece of pseudo-code that demonstrates the use of a while loop. Below is a breakdown.

A2_Task3_a.py

```
#!/usr/bin/env python3
# -*- coding: utf-8 -*-
"""
Created on Sun Apr 16 15:09:28 2023

@author: tiamegan
"""
b=10                    # Initialize the variable b with a value of 10

while (b<10):           # Start a while loop that will execute as long
                        # as b is less than 10. However, since we initialized
                        # b with a value of 10, the loop will never execute.

    print("Hello")      # This line will not be executed because the condition
                        # of the while loop is never met.

    b+=1                # This line will not be executed because the condition
                        #of the while loop is never met.
```

Since the condition of the while loop is never met, the output of this code will be nothing, and the program will terminate without printing anything.

Filepath: Assessment 2 / Task 3 / py / A2_Task3_a.py

b.

Is a piece of pseudo-code that demonstrates the use of a while loop with an else statement. Below is a breakdown.

A2_Task3_b.py

```
#!/usr/bin/env python3
# -*- coding: utf-8 -*-
"""
Created on Sun Apr 16 15:14:40 2023

@author: tiamegan
"""

i=1                 # Initialize the variable i with a value of 1.

while i<3:          # Start a while loop that will execute as long
                    # as i is less than 3.
    print(i)        # Print the current value of i.
    i=i+1           # Increment i by 1.

else:               # This else block is not part of the while loop,
                    # it will be executed once the while loop completes.
    print(0)        # Print the value 0.
```

Since the while loop will execute twice, printing the values 1 and 2, and then terminate, the output of the code is showcased below.

Console 1/A

```
In [8]: runfile('/Users/tiamegan/Desktop/u n i/ITP122/Assessments/
Assessment 2/Task 3/py/A2_Task3_b.py', wdir='/Users/tiamegan/Desktop/u n
i/ITP122/Assessments/Assessment 2/Task 3/py')
1
2
0
```

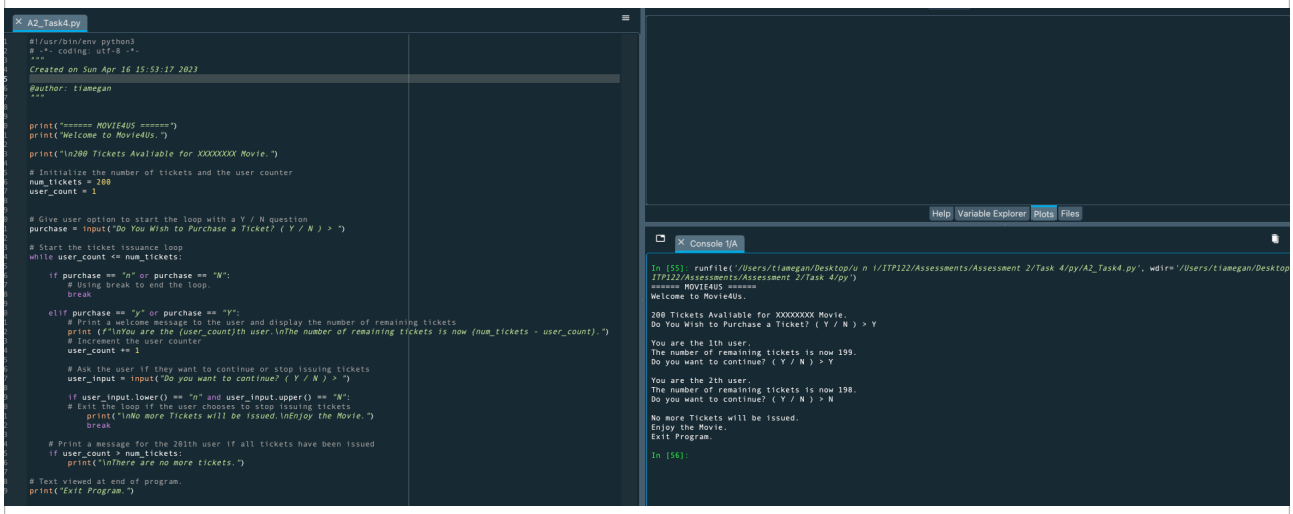
The final ‘0’ is printed by the else block after the while loop has finished executing.

Filepath: Assessment 2 / Task 3 / py / A2_Task3_b.py

Task 4 - Simple Coding for Case Sample

You are hired as a software coder for Movies4Us Pty Ltd located in Melbourne, Australia. Your task is to develop a software program that issues 200 movie tickets. Your software program is to print “welcome to Movie4Us” to the first 200 users but write “there is no more ticket” to the 201th user. The software also needs to display how many tickets are available to each customer.

For example, if Tim is 50th user to buy the movie ticket, your software program should display “You are the 50th user. The number of remaining tickets is now 150”. Prepare software code with sufficient comments to explain the progress.



A breakdown of the above code in bullet points:

- Initialise the number of tickets to 200, and the user counter to 1.
- Asking the first question, primarily for visual purposes about purchasing a ticket.
- Starting a ‘while’ loop that will continue until either all 200 tickets have been issued or the user stops purchasing tickets.
- Inside the loop, a message will print with the user count and the number of remaining tickets. Using f-strings to format the message dynamically with the values of the user counter and the difference between the total number of tickets and the user count.
- Increase the user count by 1 after each iteration of the loop
- Using the ‘input’ function to see if the user wishes to continue.
- After the loop, checking the value of the user counter to determine whether all the tickets have been issued. If the counter is greater than 200, printing a message indicating that there are no more tickets available.

In the code, I’ve used both .lower() and .upper() to handle uppercase and lowercase functions for the input of ’n’ and ‘y’.

Filepath: Assessment 2 / Task 4 / py / A2_Task4.py

End of Assessment 2.