Course Title: Programming Language I

Course Code: CSE 110

Assignment no: 1

Class Tasks	3
Evaluation Tasks	2 (5+5 Points)
Home Tasks	3 (40+10+10 Points)
Total	8

Attention

Students must ensure that they have collected the lab login credentials (it is not the G-suite account) before attending the lab to access the lab computers. The login information was sent to students' USIS-registered email addresses. If not found, students should request login information by emailing support@bracu.ac.bd or visiting University Building # 2, Level 18.

Before getting started…

Since all the lab tasks require students to write codes in Python to solve the problems, students must ensure that a proper Python environment and IDE (e.g. Jupyter Notebook) are set up or have a stable internet connection to use Google Colaboratory - an online Notebook-style IDE for writing Python codes.

Jupyter Notebook:

Tutorial: https://www.youtube.com/watch?v=_GQd1jwH0A4

Download Link: https://www.anaconda.com/products/distribution

Google Colaboratory:

Link: https://colab.research.google.com/

Slack:
https://join.slack.com/t/cse110fall2023/signup

Class Task 1: Playing With Datatypes and Inputs

1.1 Take a String and an integer input from the user and print these.

Sample Input	Sample Output
hello world 21	hello world 21

1.2 Take two integer inputs from the user and print their summation and multiplication.

Sample Input	Sample Output
10 5	Summation: 15 Multiplication: 50

1.3 Take one integer input and one float input from the user and print their addition and subtraction in the same line separated by a space.

Sample Input	Sample Output
4 5	9.0 -1.0

1.4 Take two integer numbers from the user. Convert the second number into float. Now convert both numbers into string and add them. Print the addition.

Sample Input	Sample Output
2 3	23.0

Class Task 2: Playing With Operators

Write a Python program that reads two integers M and N respectively and finds the value of M^N (or M^N) and prints the value exactly as shown in the examples below. Your code should work correctly for any other sample inputs.

Sample Input	Sample Output
2 3	2^3: 8
10 3	10^3: 1000

Class Task 3: Calculating Maximum Weight

A sailor has a boat known as Téssares Boat, which has four corners. The boat is capable of carrying goods of any weight as long as there is equal distribution of loads on each corner of the boat - the center area has been occupied by the engine. The sailor needs your help to know the maximum amount of weight he can carry in each shipment.

Write a Python program that reads the total weight of the shipment and prints the maximum load (or weight) the boat can take from the given shipment. We can assume that the weight of each good is exactly 1 unit, therefore, the weight of 5 units means there are 5 (loose) items in the shipment.

Sample Input	Sample Output
9	8
11	8
23	20

Class Evaluation Task 1: Operator Precedence

Write a Python program that reads 3 integers **A**, **B**, and **C** respectively, and then reads a floating-point number **D**. After reading, the program should print the result (as int) using the given formula below.

Formula: $A^C + (2*B) * (A//2) - D/3$

Sample Input	Sample Output
2 6 8 1.3	267
9 100 1 3.7	807
88 22 1 3.3	2022

Class Evaluation Task 2: Student Info

Take the first name, last name, age and CGPA of a student. Change the last name to "Rahman". Subtract 2 from the age and add 0.25 with the CGPA. Finally print the information in the way shown in the output.

Sample Input	Sample Output
First Name: Labiba Last Name: Arif Age: 23 CGPA: 3.7	Name: Labiba Rahman Age: 21 CGPA: 3.95

Home Task 1: Ins and Outs of Datatypes and Operators

Run the following lines of codes, observe the outputs and try to understand the reasoning behind these outputs. Maintain the order/serial of the codes. In your assignment just write the outputs. Leave a gap where no output is generated.

For example:

1.1: `Hello`   1.2: `9.5`

1.3:   1.4: `-4`

Sl	Python Code	Output	Sl	Python Code	Output
1.1	`print ("Hello")`		1.2	`print (4+5.5)`	
1.3	`x, y = 6, 10`		1.4	`print (x - y)`	
1.5	`print (x + y)`		1.6	`print (x * y)`	
1.7	`print (x**2)`		1.8	`print (y ** x)`	
1.9	`print (y / 3)`		1.10	`print (x % y)`	
1.11	`print (y // 3)`		1.12	`print (y % x)`	
1.13	`print (y % y)`		1.14	`print (y / y)`	
1.15	`print (-5 / 2)`		1.16	`print (-5 // 2)`	
1.17	`print (y > x)`		1.18	`print (x > y)`	
1.19	`print (y == x)`		1.20	`print (y != x)`	
1.21	`print (y >= x)`		1.22	`print (x <= y)`	
1.23	`a = True` `b = False`		1.24	`print (a)` `print ("b")`	
1.25	`print (a and b)`		1.26	`print (a or b)`	
1.27	`print (a and not b)`		1.28	`print (not a)`	
1.29	`y = x`		1.30	`print (x)`	
1.31	`print (y)`		1.32	`x -= 2`	
1.33	`x = x + 2`		1.34	`x //= 1`	
1.35	`print (x)`		1.36	`print (x != y and a)`	
1.37	`print ( x*y**2)`		1.38	`print (x+5*4%2-1)`	
1.39	`print (x == y*2//2 -` `2**(2-1))`		1.40	`print (x - ((x+y%2) *3)//2)`	

Home Task 2: Printing Variations

Some lines of codes may cause errors. If so, then write "error".

Sl	Python Code	Output
2.1	`print ("Hello"+ "Hi")`	
2.2	`print ("Hello"+ "   "+ "Hi")`	
2.3	`print ("Hello", end= " ")` `print ("Hi")`	
2.4	`print ("Hello", Hi")`	
2.5	`print ("Hello")` `print ("Hi")`	
2.6	`print ("Hello", "Hi", end= 5)` `print("Yo")`	
2.7	`print ("Hi" + 5)`	
2.8	`print ("Hi" + str(5))`	
2.9	`x=5` `print (6 + int(x))`	
2.10	`print ("Hi" * 3)`	

Home Task 3: Chocolate Dilemma

Write a python program that takes an integer from the user which represents the number of chocolates that he/she has. He/She decided to distribute the chocolates equally among 3 friends, keeping the remaining chocolates for him/herself. Find out the number of chocolates each friend will receive and the number of chocolates that will be remaining.

Sample Input	Sample Output
50	Each friend will receive 16 chocolates The number of remaining chocolates is 2
90	Each friend will receive 30 chocolates The number of remaining chocolates is 0

Next lab

Branching