

CLASS 01: REVISION

FOR-LOOP

1. Write a program that will take N numbers as inputs and compute their average.
(Restriction: Without using any array)

Sample input	Sample output
4 256 2 4 3 3 5	39.57

2. Write a program that will run and show keyboard inputs until the user types an 'A' at the keyboard.

NESTED FOR-LOOP

3. Write a program that prints all the unique elements of an array once.

Sample input	Sample output
4 256 2 4 3 3 5	4 256 2 3 5

4. Write a program that prints the number of occurrences of each unique elements of an array.

Sample input	Sample output
4 256 2 4 3 3 5	4 occurs 2 times 256 occurs 1 times 2 occurs 1 times 3 occurs 2 times 5 occurs 1 times

FUNCTION

5.

Write a code for the following scenario:

Input: number1 and number2

Output: print all the factorials of numbers within [number1, number2]

The code should contain

- (i) A function calc_factorial that returns the factorial of a given number
- (ii) A main method that takes inputs number1 and number2 from user and uses the function calc_factorial to find all the numbers

Sample Input	Sample Output
2 4	$2! = 2 \times 1 = 2$ $3! = 3 \times 2 \times 1 = 6$ $4! = 4 \times 3 \times 2 \times 1 = 24$
1 3	$1! = 1 = 1$ $2! = 2 \times 1 = 2$ $3! = 3 \times 2 \times 1 = 6$

FUNCTION

6.

Write a code that will take n integer numbers into an array, and then reverse all the integers within that array. Finally print them all from 0 index to last valid index.

The code should contain

- (i) A function reverse_array that takes as input an array and reverses the array inside the function
- (ii) A function print_array that takes as input an array and prints it
- (iii) A main method that uses the functions reverse_array and print_array to produce the output

Sample input	Sample output
4 256 2 4 3 3 5	5 3 3 4 2 256 4

STRING

7.

Write a code for the following scenario:

Input: A sentence

Output: converts the sentence into lowercase and removes all whitespace

The code should contain

- (i) A function conv_to_lower that takes a string and returns a lowercase string
- (ii) A function remove_ws that takes a string and removes the whitespaces
- (iii) A main method that takes the input from user and uses the functions remove_ws and conv_to_lower to get the desired output

Sample Input	Sample Output
Do you have 2 Markers? Can you spare one for me?	doyouhave2markers?canyouspareoneforme?

STRING

8.

Write a Program that will take as input a string, and toggle cases of all the letters.

Sample input	Sample output
SPL Laboratory	spl IABORATORY
United International University	uNITED iNTERNATIONAL uNIVERSITY

STRUCTURE

9.

Write a program to take as input the name, height in cm and age of n employees, and sorts it according to height in descending order. If two employees have the same height then sorts according to age in descending order. Print the employees in the sorted order.

Sample input	Sample output
5 Mr. Kamal 165 32 Ms. Zara 163 28 <u>Nitu Roy</u> 165 28 <u>Rakib Hasan</u> 178 25 <u>Samira Haque</u> 165 28	 <u>Rakib Hasan</u> 178 25 Mr. Kamal 165 32 <u>Nitu Roy</u> 165 28 <u>Samira Haque</u> 165 28 Ms. Zara 163 28

STRUCTURE

10. Write a program to take as input an array of N names, an array of N ids and an array of N salaries where the name, id, and salary of the i^{th} index belongs to the same person. Store them in a structure and sort them according to salaries (ascending) and then by ids (ascending). Print the person in the sorted order.

Sample input	Sample output
5 Mr. Kamal Ms. Zara Nitu Roy Rakib Hasan Samira Haque 32 28 29 25 30 165 163 165 178 165	Ms. Zara 163 28 Nitu Roy 165 29 Samira Haque 165 30 Mr. Kamal 165 32 Rakib Hasan 178 25