

PROGRAMMING FOR ALL - SPRING 2021 - WEEK #1 - LAB - 210331**TOPICS:**

INTRO TO COMPUTERS, PRINTING FUNCTION, CALCULATIONS, BASIC PROGRAMS

GENERAL INFORMATION FOR ASSIGNMENT SUBMISSION AND LAB RULES

A goal of lab assignments is to practice topics covered in class during each week. Each lab has two parts: Theory & Programming.

In **the theory part**, you are expected to read pieces of codes and to predict outputs of these codes. **You should not use Python for these predictions**; you should test your skills to understand codes. When everyone is ready, TA displays correct outputs.

In **the programming part**, you are expected to make programs for assigned problems. You are expected to make all programs during the lab time, however, only **one specified program should be submitted to CANVAS**.

RULES:

1. Every student has to join lab sessions.
2. TA has to check your lab work for the full lab credit.

PART I: THEORY - for this part take a piece of paper or open an empty file and write down expected outputs without using Python. AFTER this prediction verify your answer using Python or wait for TA to display the answer

1. Predict the outputs of the following statements. Do not use Python when predicting. Provide the output in the form, which would show on a screen.

```
value_x=11
value_y=4

print('value_x')

print(value_y)

print('value_x=',value_x)

print(value_x//value_y)

print(value_x%value_y)

print(3+2*5-5**2)

print(-3**2+4)

print(7<5+3)

print(4-3**2)

print((5-7)**3//5)

print(10-4>10+4)

print((( -15)//4)%3)
```

PART II. PROGRAMMING

Note: In all programs you can use only methods and tools already introduced in the class.

PROGRAM #1 - Celsius vs. Fahrenheit

Write a program, that converts Celsius temperatures to Fahrenheit temperatures. The formula is as follows:

$$F = \frac{9}{5} * C + 32$$

The program should:

- ask the user to enter a temperature in Celsius;
- display the temperature converted to Fahrenheit.

Specification:

All displayed values should be formatted to two decimal places.

PROGRAM #2 - Average Speed

In some competition, runners are running six miles. Most runners can finish the run in around 45 minutes.

Write a program that ask the user how many minutes and how many second did he/she need to finish the run (there are two inputs), and displays the average speed of the runner in miles per hour.

Example:

If a runner needs 42 minutes and 35 seconds for the run, his/her average speed was 8.45miles/hour.

Note: speed = distance [miles]/time [hours]

PROGRAM #3 - Digits and Sums - must be submitted to CANVAS as lab1.py.

Start the program with: **# your name.**

Write a program that asks the user to provide a two digit integer and displays:

- The individual digits;
- The sum of digits.

Example:

If the user enters the number 43 the program should display:

Digits are: 4, 3

The sum of digits is: 7.

(Hint: use math operations // and %.)