# Programming Fundamental

Programming Day - Week 03

## Introduction

Welcome to your favorite day of the week which is programming day🎉. This week, we shall work together to learn and implement new programming concepts.

## Skills to be Tested:

- Compiling and Executing programs while taking input from the user

## Let's do some coding.

**Task 01(OP):** Write a program to print a half pyramid using *

```
D:\PF codes>c++ half.cpp -o half.exe

D:\PF codes>half.exe
*
**
***
****
*****
```

**Task 02(OP):** Write a C++ program to ask the user to enter two integers. Then, store the sum of those two integers in a variable and then display the sum on the screen.

```
D:\PF codes>c++ task02.cpp -o task.exe

D:\PF codes>task.exe
Enter Integer: 12
Enter Integer: 32
Sum: 44
D:\PF codes>
```

**Task 03(CP):**

**Skill:** Compiling and Executing programs while taking input from the user

Muhammad Irzam & Maida Shahid, Department of Computer Science, UET Lahore

A toy car accelerates from initial velocity to final velocity in some time. You have to write the C++ program for calculating the Final Velocity. Take initial velocity, acceleration, and time as input from the user and calculate the final velocity of the car, and display it on the screen.

The formula to Calculate the Acceleration is

**Acceleration = (Final velocity - Initial velocity) / Time**

Remember: You have to calculate the final velocity

```
D:\PF codes>c++ task03.cpp -o task.exe

D:\PF codes>task.exe
Enter Initial Velocity: 12
Enter Accerlation: 23
Enter Time: 2
Final Velocity: 58
D:\PF codes>
```

**Task 04(CP):**

A teacher wants to calculate the students' marks percentage, teachers have 5 subject marks for every student. He needs a program that automates this process by asking 5 subjects' marks from the user and calculating the percentage of students. Total marks are 500 for 5 subjects. To guide the user, first, you need to display a message and then take input from the user. Do it for all 5 subjects.

Your Name:

Enter subject 1 marks:

Enter subject 2 marks:

Enter subject 3 marks:

Enter subject 4 marks:

Enter subject 5 marks:

Once all five subjects have been entered, show the student name and total obtained percentage on the console.

```
D:\PF codes>task.exe
Enter Your Name: Ali
Enter subject 01 marks: 78
Enter subject 02 marks: 98
Enter subject 03 marks: 67
Enter subject 04 marks: 78
Enter subject 05 marks: 87
Your percentage: 81.6
D:\PF codes>
```

**Task 05(CP):**

Amir is a fat guy. He wants to lose weight but he is also weak in calculations. Write a simple C++ program that tells him how many days he will need to lose weight if he strictly follows the doctor's suggestions. The doctor suggested that if he eats 4000 calories daily, he walks for 1 hour daily. It will help him to lose 1 kg of weight after 15 days. Now Amir wants to know how many days he will need to lose 12 Kg of weight if he follows the doctor's suggestion.

```
D:\PF codes>c++ task05.cpp -o task.exe

D:\PF codes>task.exe
Enter Weight that you want to loose: 12
It will take you 180 Days to loose 12 KGs
D:\PF codes>
```

**Task 06(CP):**

During each summer, Ahmad and Fatima grow vegetables in their backyard and buy seeds and fertilizer from a local nursery. The nursery carries different types of vegetable fertilizers in various bag sizes. When buying a particular fertilizer, they want to know the price of the fertilizer per pound and the cost of fertilizing per square foot. Write a c++ program that inputs

1. the size of the fertilizer bag in pounds.
2. the cost of the bag.
3. and the area in square feet that can be covered by the bag.

**Skill:** Compiling and Executing programs while taking input from the user

The Algorithm should then output

1. the cost of the fertilizer per pound.
2. the cost of fertilizing the area per square foot.

```
D:\PF codes>c++ task06.cpp -o task.exe

D:\PF codes>task.exe
Enter Bag Size in Pounds: 5
Enter cost of the bag: 500
Enter area covered by each bag in square feet: 10
_____________________________________________________
Cost of the fertilizer per pound: 100
Cost of fertilizing the area per square feet: 50
D:\PF codes>_
```

**Task 07(CP):**

A movie in a local theater is in great demand. To help a local charity, the theater owner has decided to donate to the charity a portion of the total amount generated from the movie. Write a c++ program that prompts the user to input the

1. Movie name
2. Adult ticket price
3. Child ticket price
4. The number of adult tickets sold.
5. The number of child tickets sold.
6. Percentage of the amount to be donated to the charity.

First of all, you have to Calculate the total amount generated by the total sold tickets. Then after donating to the charity from the total amount, show the remaining amount achieved from the movie on the Screen.

```
D:\PF codes>c++ task07.cpp -o task.exe

D:\PF codes>task.exe
Enter Movie Name: Avengers
Enter Adult Ticket Price: 20
Enter Child Ticket Price: 10
Enter Number of Adult Ticket Sold: 1000
Enter Number of Child Ticket Sold: 5000
Enter Percentage to Donate: 10
_____________________________________
Total Amount Generated: 70000
Amount after donation: 63000

D:\PF codes>
```

**Task 08(CP):**

A gardener is selling his harvest on the vegetables market. He is selling vegetables for N coins per kilogram and fruits for M coins per kilogram. Write a program that calculates the earnings of the harvest in Rupees (Rps). Assume the Rps / coin rate is fixed: 1 Rp == 1.94 coins.

**Input Data and Output Data:**

Four numbers are read from the console, one per line:

- First line: vegetable price per kilogram – a floating-point number.
- Second line: fruit price per kilogram – a floating-point number.
- Third line: total kilograms of vegetables – an integer.
- Fourth line: total kilograms of fruits – an integer.

The output should be the earnings of all fruits and vegetables in Rps on the console.

**Clarification for the first example:**

- Vegetables cost: 0.194 coins * 10 kg = **1.94 coins**.
- Fruits cost: 19.4 coins * 10 kg = **194 coins**.
- Total: **195.94 coins = 101 PKR** (== 101 * 1.94).

| Input | Output |
|---|---|

**Skill:** Compiling and Executing programs while taking input from the user

101

0.194

19.4
10
10

**Task 08(CP):**

There is a modulus operator that returns the remainder For Example if we take the modulus of 4 with 3 it would return 1. If we take 7 % 4 it would return 3.

With the help of a modulus operator, write a program that takes a 4-digit number from the user and sums individual digits.

Test Case
If the user enters 1234
The output would be 10

If the user enters 4324
The output would be 13

If the user enters 4901
The output would be 14

```
Microsoft Windows [Version 10.0.19045.2251]
(c) Microsoft Corporation. All rights reserved.

C:\Users\HP>D:

D:\>cd "PF codes"

D:\PF codes>c++ task08.cpp -o task.exe

D:\PF codes>task.exe
Enter Four Digit Number: 1234
Sum: 10
D:\PF codes>
```

**Skill:** Compiling and Executing programs while taking input from the user

# Programming Fundamental

Programming Day - Week 03

**Task 09(CP):**

Write a program that takes 15 numbers from the user, it adds the first 5 numbers, multiplies the next 5 numbers, and subtract the next 5 numbers. After that, it adds the first two results and subtracts the 3rd result, and shows the final output on the monitor screen.

```
D:\PF codes>c++ task09.cpp -o task.exe

D:\PF codes>task.exe
Enter 1st number: 12
Enter 2nd number: 21
Enter 3rd number: 23
Enter 4th number: 45
Enter 5th number: 3
Enter 6th number: 24
Enter 7th number: 35
Enter 8th number: 12
Enter 9th number: 2
Enter 10th number: 2
Enter 11th number: 1
Enter 12th number: 45
Enter 13th number: 3
Enter 14th number: 700
Enter 15th number: 3
Total: 41174
D:\PF codes>
```

**Task 10(CP):**

Write a program that takes 5 integers from the user and displays their sum on screen. **But** You can **only use two variables**.

**Good Luck and Best Wishes !!**

**Happy Coding ahead :)**

**Skill:** Compiling and Executing programs while taking input from the user