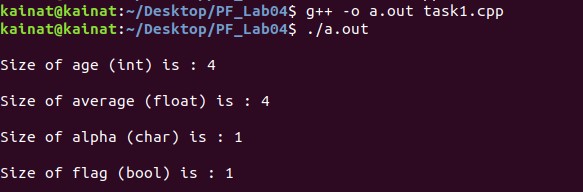
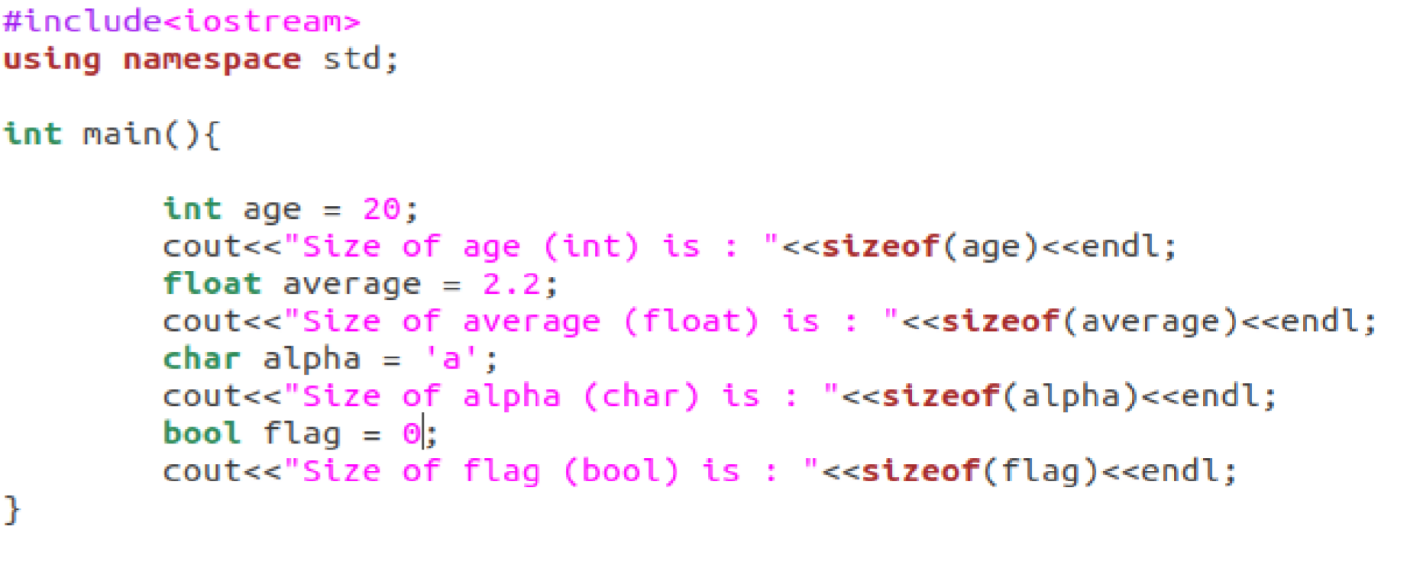
National University of Computer and Emerging Sciences Islamabad Programming Fundamentals Lab FALL 2022

**Lab 04**

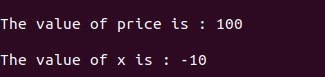
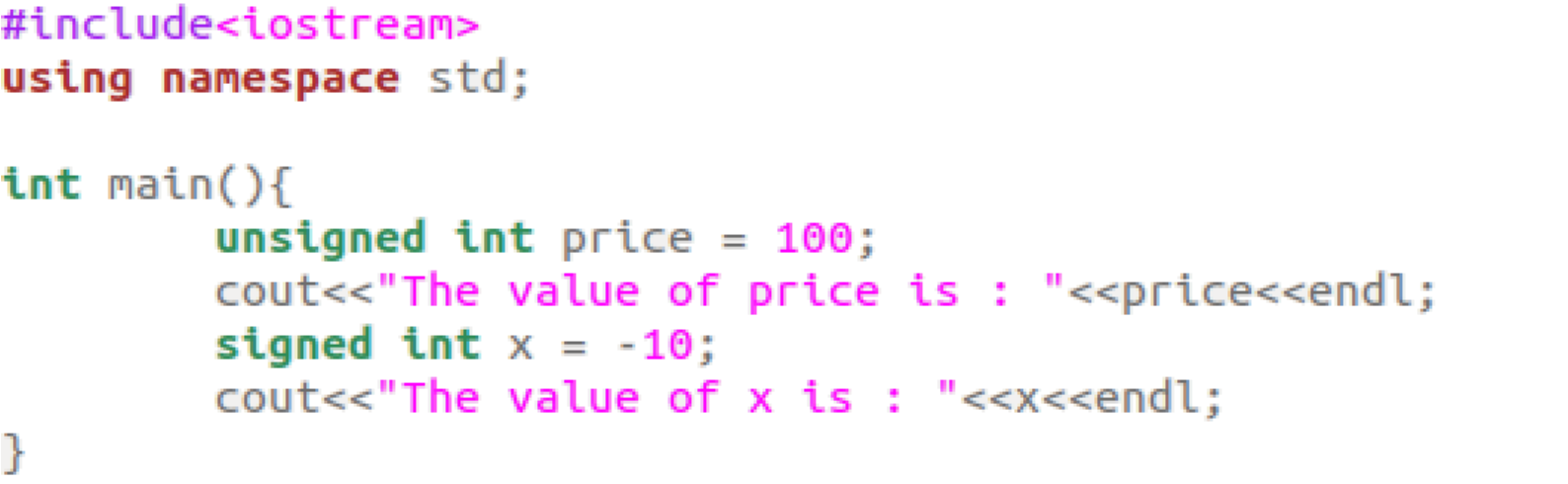
**Iomanip, Arithmetic Operators, Expressions and Precedence**

1. **Variables: Data Types, and sizeOf:**

**Example 1.1:**



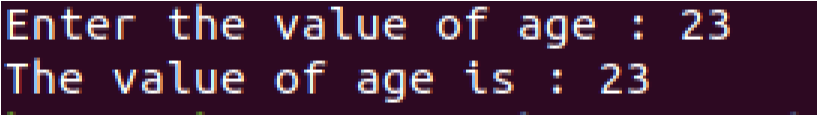
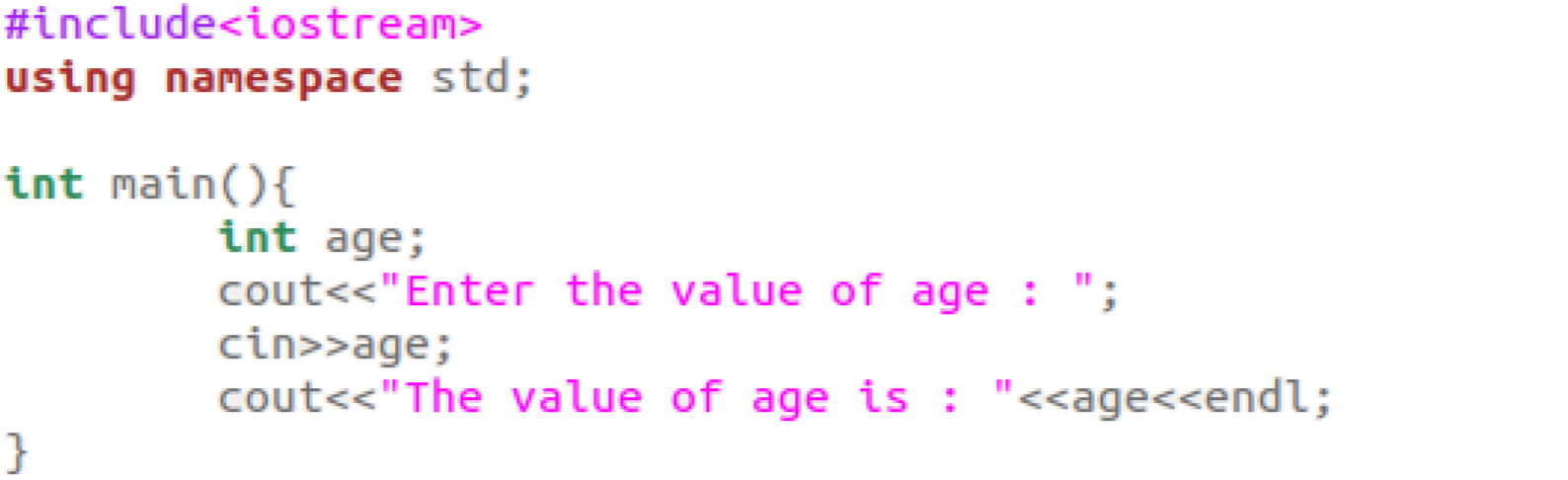
**Example 1.2:**



1. **Standard Input (cin):**

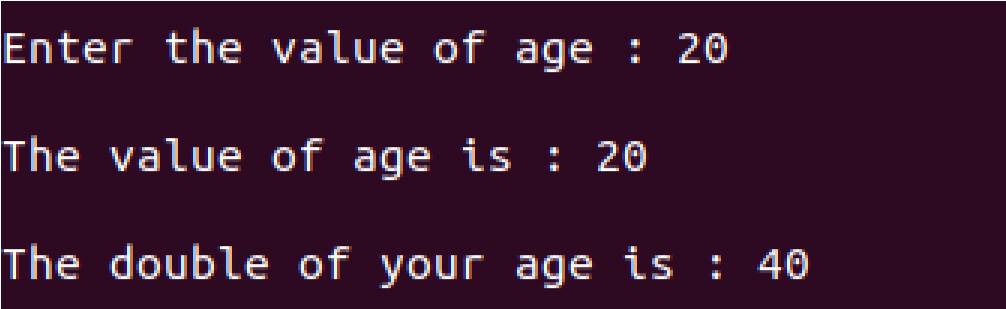
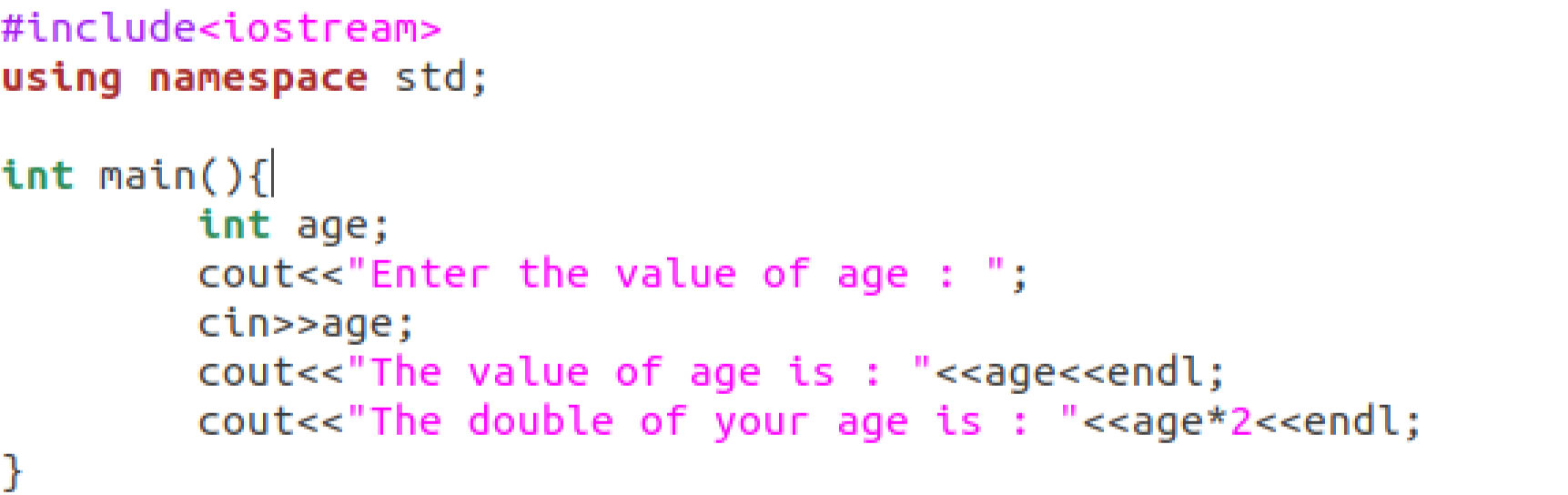
**Example 2.1:**

**Example 2.2:**



**3)**

**Operators:**

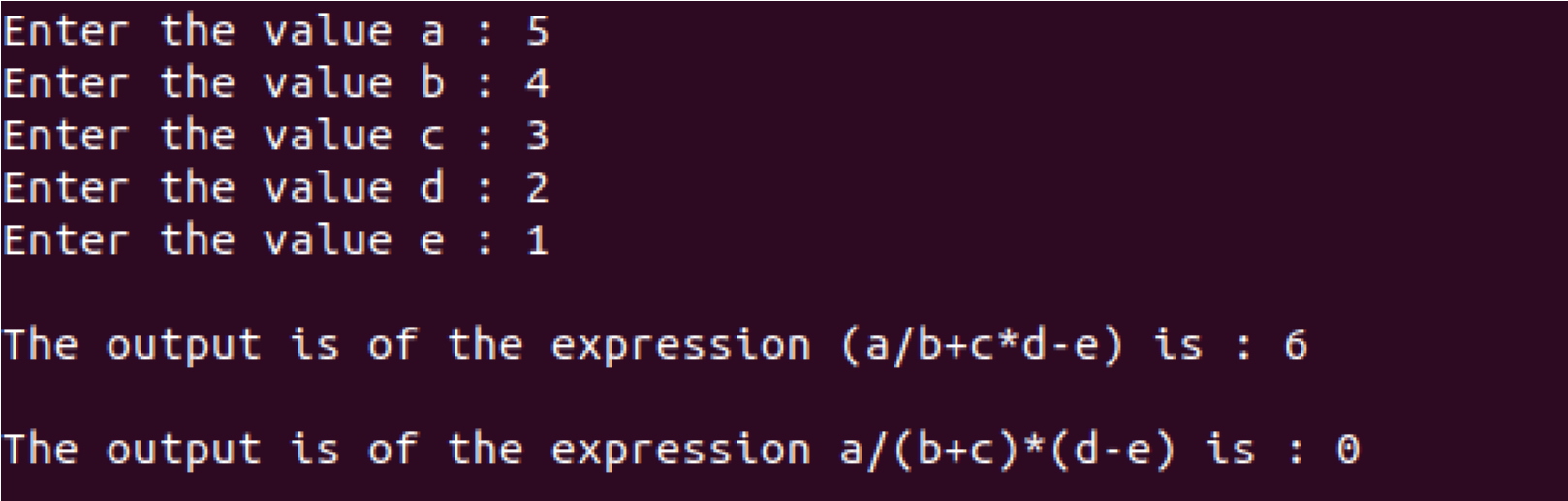
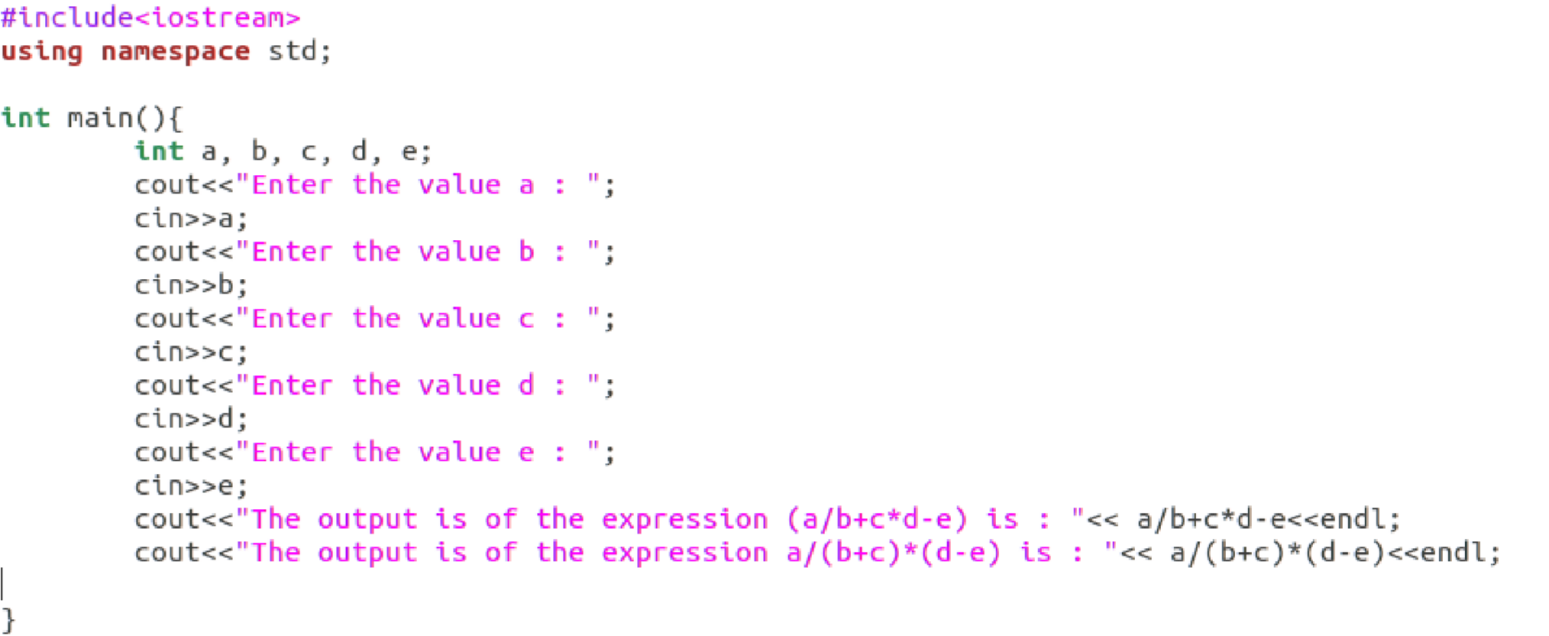


**Arithmetic Operators**

Table

Description automatically generated

**Example 3.1:**



# iomanip

iomanip is a library that is used to manipulate the output of C++ program. Below are some Parametric manipulators

#### setw

It is used to sets the field width to be used on output operations

Example

Text, letter

Description automatically generated

Now compile your code and see what the output is.

#### setprecision

It is used to sets the decimal precision to be used to format floating-point values on output operations.

Text, letter

Description automatically generatedExample

Output

Text

Description automatically generated

**Lab Tasks**

**Problem 01**

Write a program to find circumference of a circle. The program should take radius input from user and display the circumference.

𝑐𝑖𝑟𝑐𝑢𝑚𝑓𝑒𝑟𝑒𝑛𝑐𝑒 = 2𝜋𝑟 (𝑤ℎ𝑒𝑟𝑒 𝑃𝐼 𝑖𝑠 𝑎 𝑐𝑜𝑛𝑠𝑡𝑎𝑛𝑡 𝑣𝑎𝑙𝑢𝑒 𝑜𝑓 3.1415 𝑎𝑛𝑑 𝑟 𝑖𝑠 𝑟𝑎𝑑𝑖𝑢𝑠)

***Note: Declare PI as constant***

**Problem 02**

Write a program for the following mathematical trick:

* Declare an integer variable
* Take input from user and assign the value to the variable
* Double the value of variable and store in the same variable.
* Add 10 to the value of variable and store in the same variable.
* Now half the value of variable and store in the same variable.
* Then subtract the number entered by user from the current value of the variable and store in the same variable.
* Finally display the value of the variable. The answer must always be five.

**Problem 03**

Write a program that asks a shopkeeper to input unit price of chocolate mini bar and stores in a variable. It then asks to input the quantity of chocolates sold in a particular day and store in another variable. Now it calculates and displays the total sales amount of chocolates earned by the shopkeeper. Now calculate 10% tax on total sales amount and store in another variable. Display the total sales amount of chocolates after tax deduction.

**Problem 04**

Write a program to find and display result for whole square of three numbers using following formula in a single expression:

**a2 + b2 + c2 + 2 (ab + bc + ca)**

# Note: Get the values of a, b and c from user. Perform the above task with only one mathematical equation. Keep the concept of operator precedence in mind.

**Problem 05**

### Write a program to print the following using just ONE COUT statement & setw function.

A picture containing chart

Description automatically generated

**Problem 06**

Write programs that performs the following operations:

(2\*(3-(4\*5))) = ?

((2\*3)-(4\*5)) = ?

1 + 2 \* 3 - 4 + 5 + 6 - 7 \* 8 - 9 = ?

1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 = ?

**Problem 07**

Write a program that inputs the time in seconds from the user and display the time in Hours Minutes and Seconds in the following format:

**03 hours : 20 mins : 45 seconds**

Note: 1 hour =60 minutes, 1 min = 60 seconds

|  |
| --- |
| **Submission Instructions:**  1.Save all **.cpp** files with your roll no and task number  **e.g. i22XXXX\_Task04.cpp**   1. Now create a new folder/directory with name *ROLLNO\_LAB04* **e.g. i22XXXX\_LAB04** 2. Move all of your .cpp files to this newly created directory and compress it into **.zip file**. 3. Now you have to submit this zipped file on Google Classroom. |

**THE END**