

National University of Computer and Emerging Sciences



Programming Fundamentals Lab Manual 3

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Section	A
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Objective:

- 1- Introduction to C++
- 2- How to compile C++ code
- 3- Simple arithmetic problems solving

Activity # 1

Write a C++ program that prints your name.

Activity # 2

Write a C++ program to print “your roll number, batch, name, degree major, course title, section and lab number” in the following format.

```
*****
*****
*****
Welcome to Programming Fundamentals
Name: Muhammad Naveed
Roll #: Mscs19044
Degree: MS (CS)
Section: A
Lab: 03
*****
*****
*****
```

Activity # 3(Calculate area of Rectangle)

Take two inputs from user (keyboard) length and breadth of rectangle. Compute the area of rectangle given by: $\text{area} = \text{length} * \text{breadth}$

Step-1: Create a console application.	Open Visual studio and create a console application
Step-2: Declare int variables length, breath and area.	<code>int length; int breadth; int area;</code>
Step-3: Print a message for user to input length.	<code>cout << "Please enter length of rectangle: ";</code>
Step-4: Take input from user/keyboard length.	<code>cin >> length;</code>
Step-5: Print a message for user to input breadth.	<code>cout << "Please enter breadth of rectangle: ";</code>
Step-6: Take input from user/keyboard breadth.	<code>cin >> breadth;</code>
Step-7: Calculate area according to formula by multiplying length and breadth, and store the result in "area" variable.	<code>area = length * breadth;</code>
Step-8: Print appropriate message and area.	<code>cout << "Area of rectangle is " << area;</code>

```
#include <iostream>
using namespace std;

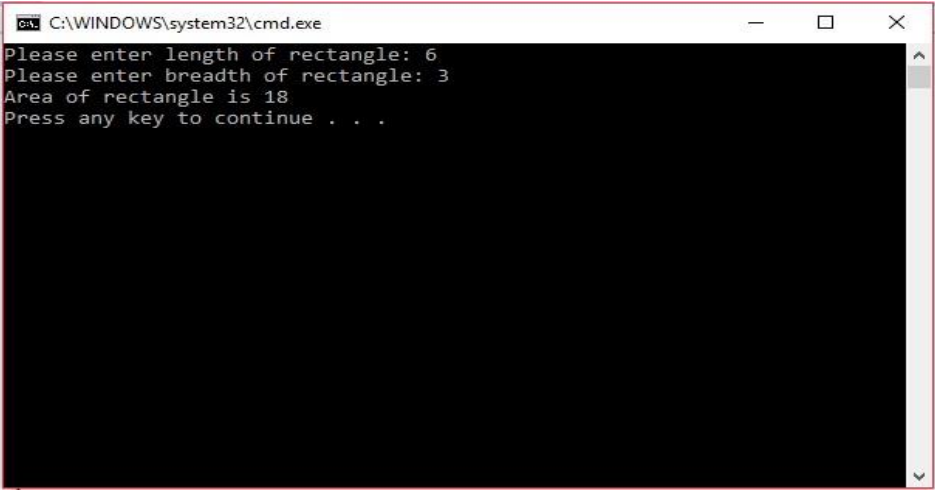
int main()
{
    int length;
    int breadth;
    int area;

    cout << "Please enter length of rectangle: ";
    cin >> length;
    cout << "Please enter breadth of rectangle: ";
    cin >> breadth;

    area = length * breadth;
    cout << "Area of rectangle is " << area;
    cout << endl;

    return 0;
}
```

Output:



A screenshot of a Windows command prompt window. The title bar shows the path "C:\WINDOWS\system32\cmd.exe". The window has standard Windows window controls (minimize, maximize, close). The command prompt displays the following text: "Please enter length of rectangle: 6", "Please enter breadth of rectangle: 3", "Area of rectangle is 18", and "Press any key to continue . . .". The background of the command prompt is black, and the text is white.

Activity # 4

Use **float** data type for (length, breadth and area) in activity#3 and use fractional numbers (length and breadth) to compute area and print the area.

Activity # 5

There is an ice-cream parlor which serves three flavors of ice cream: strawberry, chocolate, and vanilla.

One by one, the user is asked the number of scoops that will be needed for each flavor. After that depending on the entered data, you have to calculate the final bill and print it. The price of one scoop is 100.

The prices above are without GST the final bill has to have GST included i.e. 17%

Sample Run

Enter # of scopes you wanted

Strawberry: 2

Chocolate:0

Vanilla:3

Output

Total Bill: 500

Activity # 6

Write C++ code to solve the second-degree equation $aX^2 + bX + c = 0$ for any real numbers a , b and c . The program takes the values of a , b and c as input from the user, and calculates X .

Note: real numbers are taken in float.

$$x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$$

Example: This is for your understanding. Your code must work for any value of a , b , and c .

Input:

Enter a: 1

Enter b: -1

Enter c: -6

Output:

X=3, -2

Activity # 7

Take marks of 5 subjects separately from the user. Max marks of 1 subject are 100. Calculate the percentage of total marks and print it.

Example

Input:

Enter marks of 5 subjects:

Subject1= 75

Subject2= 80

Subject3= 71

Subject4= 90

Subject5= 65 **Output:**

The Percentage is 76.2

END