



**Course code: CSC-284**  
**Lab Report: 05**

**Submitted To**

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Program: BCSE

Section: A

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Teacher signature

# 1. Copy Constructor:

The screenshot displays the Code::Blocks IDE interface. The main editor window shows a C++ file named 23303097.cpp. The code defines a `Rectangle` class with private attributes `width` and `height`. It includes a constructor that initializes these attributes to 5 and 10, a `displayArea` method that calculates and prints the area, and a copy constructor. The `main` function creates two `Rectangle` objects, `rect1` and `rect2`, and calls their `displayArea` methods. The output window shows the execution results, including the name "Md: Ikbal Hossain" and the areas of the two rectangles (50 and 96). The status bar at the bottom indicates the file is 23303097.cpp and the compiler is C/C++.

```
1 #include <iostream>
2 using namespace std;
3
4 class Rectangle {
5     private:
6         int width, height;
7     public:
8         Rectangle(int w = 5, int h = 10) {
9             width = w;
10            height = h;
11        }
12        void displayArea() {
13            cout << "Area of rectangle: " << width * height << endl;
14        }
15 };
16
17 int main() {
18     cout << "Md: Ikbal Hossain" << endl;
19     Rectangle rect1;
20     rect1.displayArea();
21     Rectangle rect2(8, 12);
22     rect2.displayArea();
23     return 0;
24 }
```

Output:

```
D:\23303097.exe
Md: Ikbal Hossain
Area of rectangle: 50
Area of rectangle: 96
Process returned 0 (0x0)   execution time : 0.087 s
Press any key to continue.
```

## 2. Parameterized Constructor:

The screenshot displays the Code::Blocks IDE interface. The main editor window shows a C++ file named 23303097.cpp. The code defines a `Rectangle` class with a parameterized constructor, a `getArea` method, and a `displayDimensions` method. The `main` function creates a `Rectangle` object with dimensions 10 and 5, and prints the name, dimensions, and area.

```
1 #include <iostream>
2 using namespace std;
3
4 class Rectangle {
5 private:
6     int length;
7     int width;
8
9 public:
10    Rectangle(int l, int w) {
11        length = l;
12        width = w;
13    }
14    int getArea() {
15        return length * width;
16    }
17    void displayDimensions() {
18        cout << "Length: " << length << ", Width: " << Area: 50
19    }
20 };
21
22 int main() {
23     cout << "Md. Ikbai Hossain" << endl;
24     Rectangle rect(10, 5);
25 }
```

The output window shows the execution of the program, displaying the name, dimensions, and area of the rectangle.

```
D:\23303097.exe
Md. Ikbai Hossain
Length: 10, Width: 5
Area: 50

Process returned 0 (0x0)   execution time : 0.122 s
Press any key to continue.
```

### 3. Multiple Constructor:

The screenshot displays the Code::Blocks IDE interface. The main editor window shows a C++ file named 23303097.cpp. The code defines a `Rectangle` class with three constructors: a default constructor, a single-parameter constructor (for squares), and a two-parameter constructor. The `area()` method is also implemented. The output window shows the execution results, including the output of the constructors and the area calculations for three rectangles.

```
#include <iostream>
using namespace std;
class Rectangle {
private:
    int length;
    int width;
public:
    Rectangle() {
        length = 0;
        width = 0;
        cout << "Default constructor called: Rectangle with length = 0 and width = 0." << endl;
    }
    Rectangle(int side) {
        length = side;
        width = side;
        cout << "Constructor with one parameter called: Square with side = " << side << endl;
    }
    Rectangle(int l, int w) {
        length = l;
        width = w;
        cout << "Constructor with two parameters called: Rectangle with length = " << l << " and width = " << w << endl;
    }
    int area() {
        return length * width;
    }
};
```

Output:

```
Select D:\23303097.exe
Md: Ikbai Hossain
Default constructor called: Rectangle with length = 0 and width = 0.
Constructor with one parameter called: Square with side = 5
Constructor with two parameters called: Rectangle with length = 3 and width = 4
Area of rect1 (default): 0
Length: 0, Width: 0
Area of rect2 (square): 25
Length: 5, Width: 5
Area of rect3 (rectangle): 12
Length: 3, Width: 4
Process returned 0 (0x0)   execution time : 0.079 s
Press any key to continue.
```

#### 4. Dynamic Constructor:

