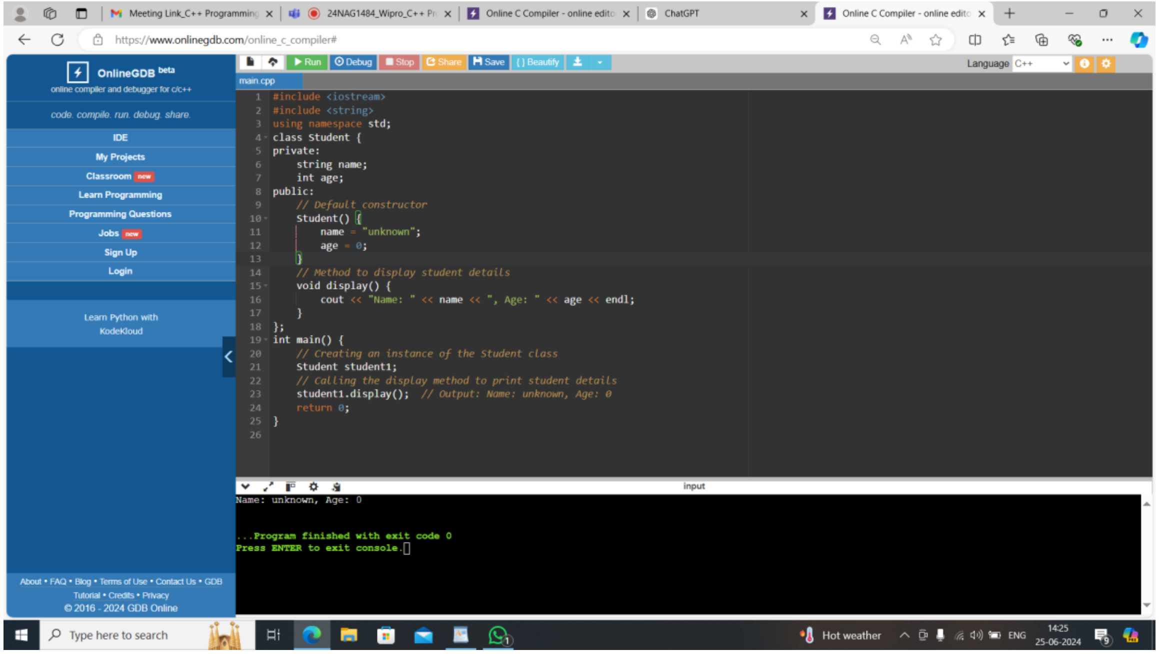
Default Constructor :-

write a class Student with a default constructor that initializes the student's name to "Unknown" and age to 0. Add a method display to print the student's details.

```
#include <string>
using namespace std;
class Student {
private:
    string name;
    int age;
public:
    // Default constructor
    Student() {
        name = "unknown";
        age = 0;
    }
    // Method to display student details
    void display() {
        cout << "Name: " << name << ", Age: " << age << endl;
    }
};
int main() {          // Creating an instance of the Student class
    Student student1;          // Calling the display method to print student details
    student1.display();          // Output: Name: unknown, Age: 0
    return 0;
```

}



```
#include <iostream>
#include <string>
using namespace std;
class Student {
private:
    string name;
    int age;
public:
    // Default constructor
    Student() {
        name = "unknown";
        age = 0;
    }
    // Method to display student details
    void display() {
        cout << "Name: " << name << ", Age: " << age << endl;
    }
};
int main() {
    // Creating an instance of the Student class
    Student student1;
    // Calling the display method to print student details
    student1.display();  // Output: Name: unknown, Age: 0
    return 0;
}
```

```
Name: unknown, Age: 0


...Program finished with exit code 0
Press ENTER to exit console.
```

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Parameterized Constructor :-

write a class rectangle with a parameterized constructor that initializes the length and width. add a metod area that returns the area of the rectangle.

include <iostream>

// Rectangle class declaration

class Rectangle {

private:

    // Private member variables

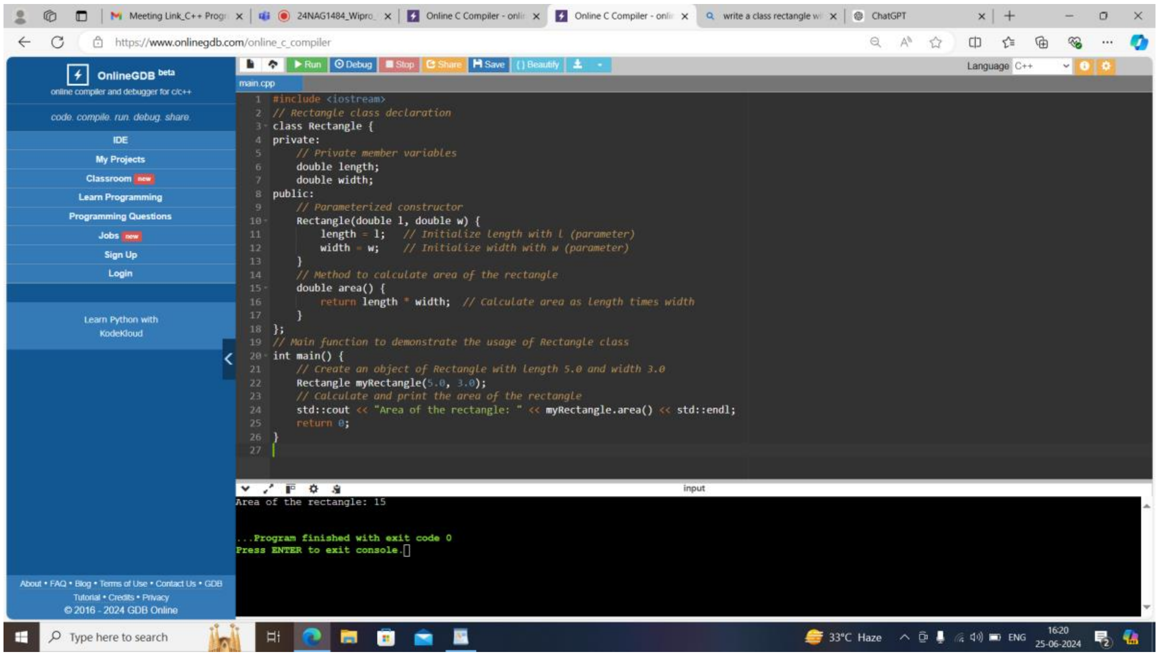
    double length;

    double width;

public:

    // Parameterized constructor

```
    Rectangle(double l, double w) {
        length = l;     // Initialize length with l (parameter)
        width = w;      // Initialize width with w (parameter)
    }
    // Method to calculate area of the rectangle
    double area() {
        return length * width;   // Calculate area as length times width
    }
};
// Main function to demonstrate the usage of Rectangle class
int main() {
    // Create an object of Rectangle with length 5.0 and width 3.0
    Rectangle myRectangle(5.0, 3.0);
    // Calculate and print the area of the rectangle
    std::cout << "Area of the rectangle: " << myRectangle.area() << std::endl;
    return 0;
}
```



```cpp
#include <iostream>
// Rectangle class declaration
class Rectangle {
private:
    // Private member variables
    double length;
    double width;
public:
    // Parameterized constructor
    Rectangle(double l, double w) {
        length = l;   // Initialize length with l (parameter)
        width = w;    // Initialize width with w (parameter)
    }
    // Method to calculate area of the rectangle
    double area() {
        return length * width;  // Calculate area as length times width
    }
};
// Main function to demonstrate the usage of Rectangle class
int main() {
    // Create an object of Rectangle with length 5.0 and width 3.0
    Rectangle myRectangle(5.0, 3.0);
    // Calculate and print the area of the rectangle
    std::cout << "Area of the rectangle: " << myRectangle.area() << std::endl;
    return 0;
}
```

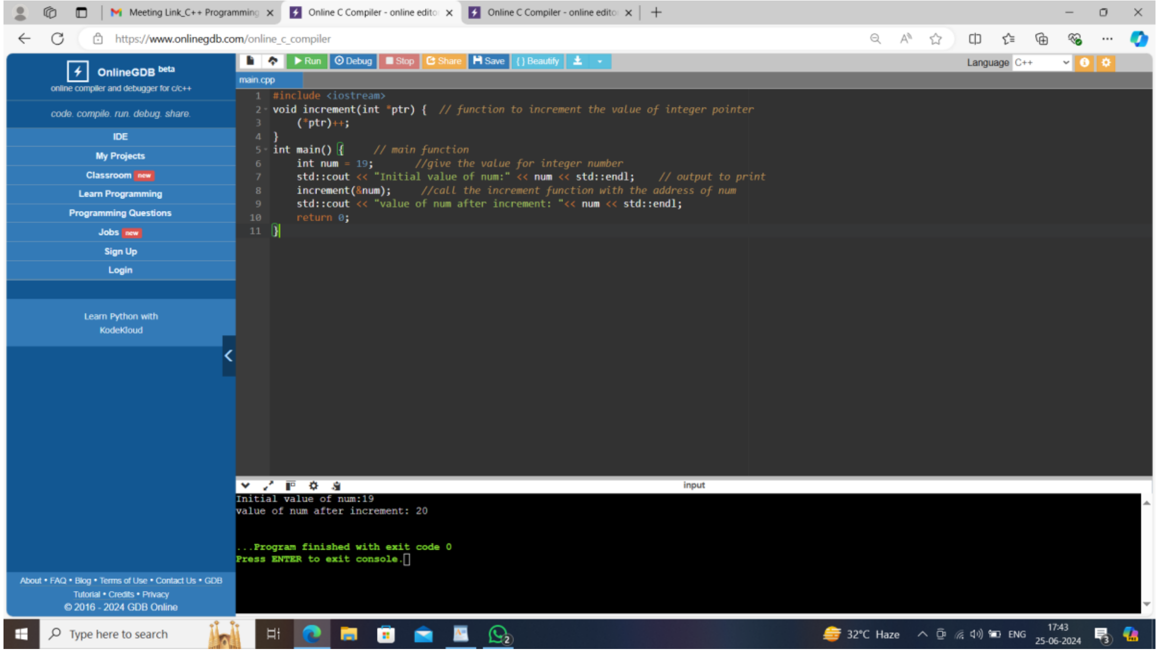
```
Area of the rectangle: 15


...Program finished with exit code 0
Press ENTER to exit console.
```

Pointer to an integer :-

Write a function increment that takes a pointer to an integer and increments its value by 1. Demonstrate the function in the main program.

```
#include <iostream>

void increment(int *ptr) {     // function to increment the value of integer pointer

        (*ptr)++;

}

int main() {           // main function

        int num = 19;               //give the value for integer number

        std::cout << "Initial value of num:" << num << std::endl;        // output to print

        increment(&num);          //call the increment function with the address of num

        std::cout << "value of num after increment: "<< num << std::endl;

        return 0;
```

}



```
#include <iostream>
void increment(int *ptr) {  // function to increment the value of integer pointer
    (*ptr)++;
}
int main() {      // main function
    int num = 19;        //give the value for integer number
    std::cout << "Initial value of num:" << num << std::endl;    // output to print
    increment(&num);      //call the increment function with the address of num
    std::cout << "value of num after increment: "<< num << std::endl;
    return 0;
}
```

```
Initial value of num:19
value of num after increment: 20


...Program finished with exit code 0
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```

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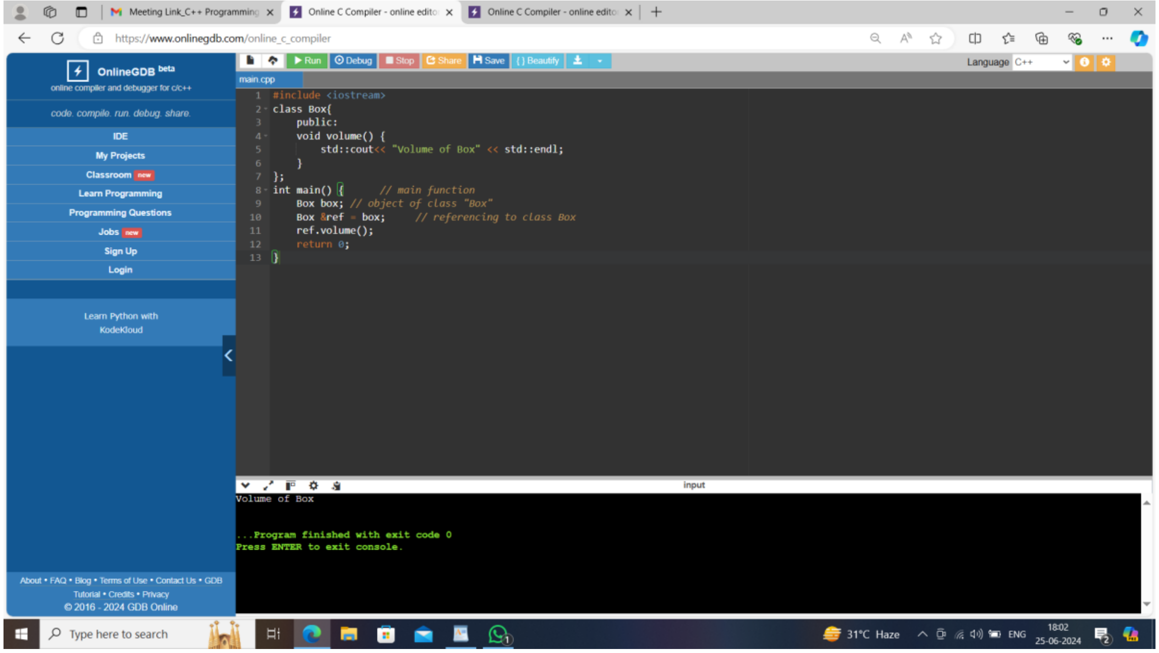
Reference to a Class Object :-

Write a class Box with a method volume. Create an object of this class and a reference to this object. Call the volume method using the reference.

```
#include <iostream>

class Box{

        public:

        void volume() {

                std::cout<< "Volume of Box" << std::endl;

        }

};

int main() {            // main function

        Box box; // object of class "Box"

        Box &ref = box;          // referencing to class Box
```

```
    ref.volume();
    return 0;
}
```



```
#include <iostream>
class Box{
    public:
    void volume() {
        std::cout<< "Volume of Box" << std::endl;
    }
};
int main() {       // main function
    Box box; // object of class "Box"
    Box &ref = box;     // referencing to class Box
    ref.volume();
    return 0;
}
```

```
Volume of Box


...Program finished with exit code 0
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```

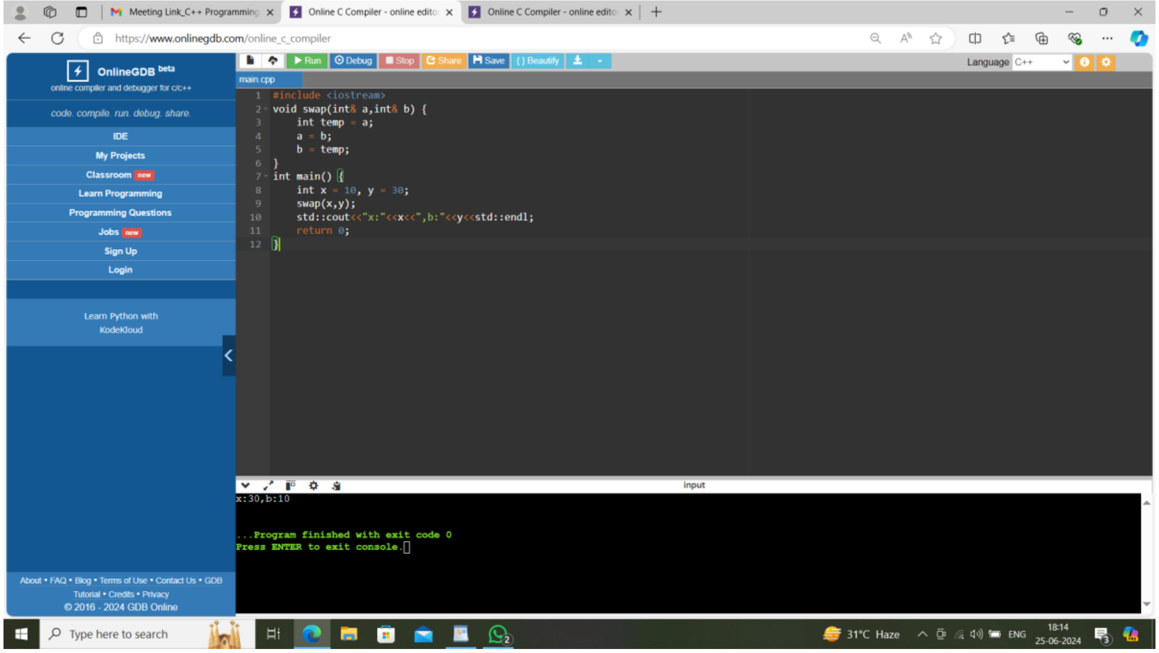
Reference to an Integer :-

Write a function swap that takes two integer references and swaps their values. Demonstrate the function in the main program.

```
#include <iostream>
void swap(int& a,int& b) {
    int temp = a;
    a = b;
    b = temp;
}
int main() {
    int x = 10, y = 30;
    swap(x,y);
    std::cout<<"x:"<<x<<",b:"<<y<<std::endl;

   return 0;

}
```



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```
#include <iostream>
void swap(int& a,int& b) {
    int temp = a;
    a = b;
    b = temp;
}
int main() {
    int x = 10, y = 30;
    swap(x,y);
    std::cout<<"x:"<<x<<",b:"<<y<<std::endl;
    return 0;
}
```

```
x:30,b:10


...Program finished with exit code 0
Press ENTER to exit console.
```