Programming Laboratory-I

Assignment No-2

(Constructors, Destructors and Static members)

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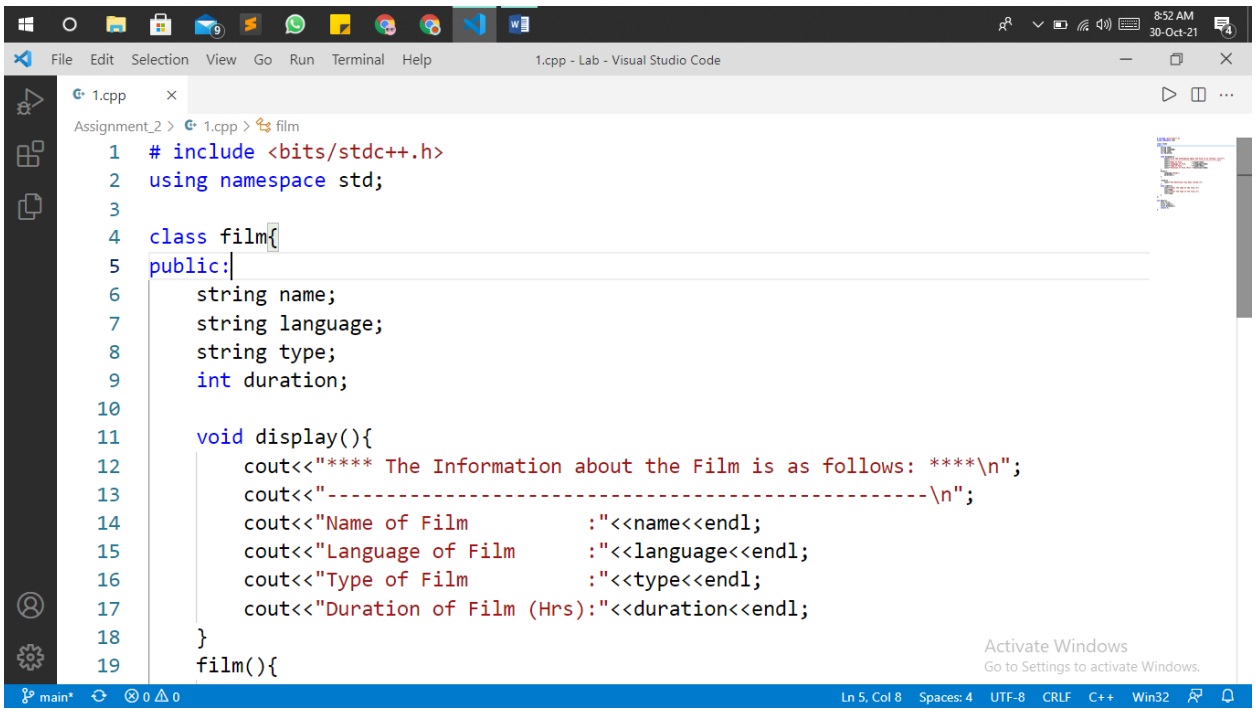
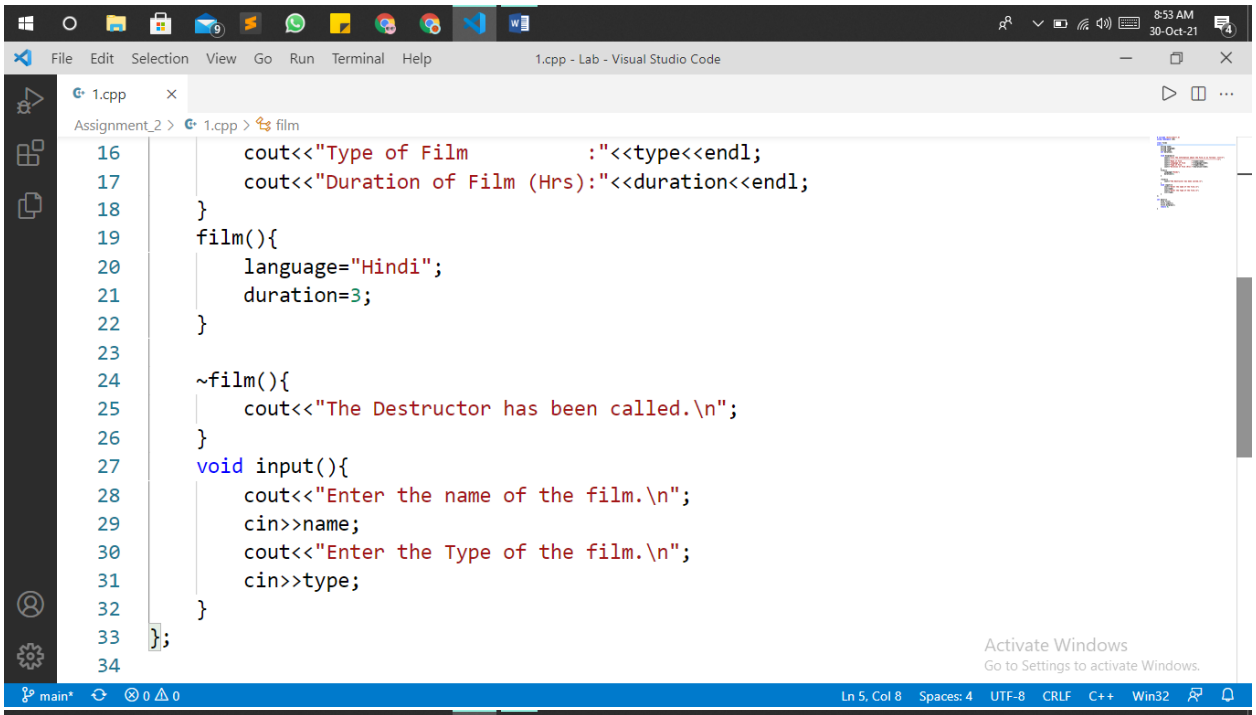
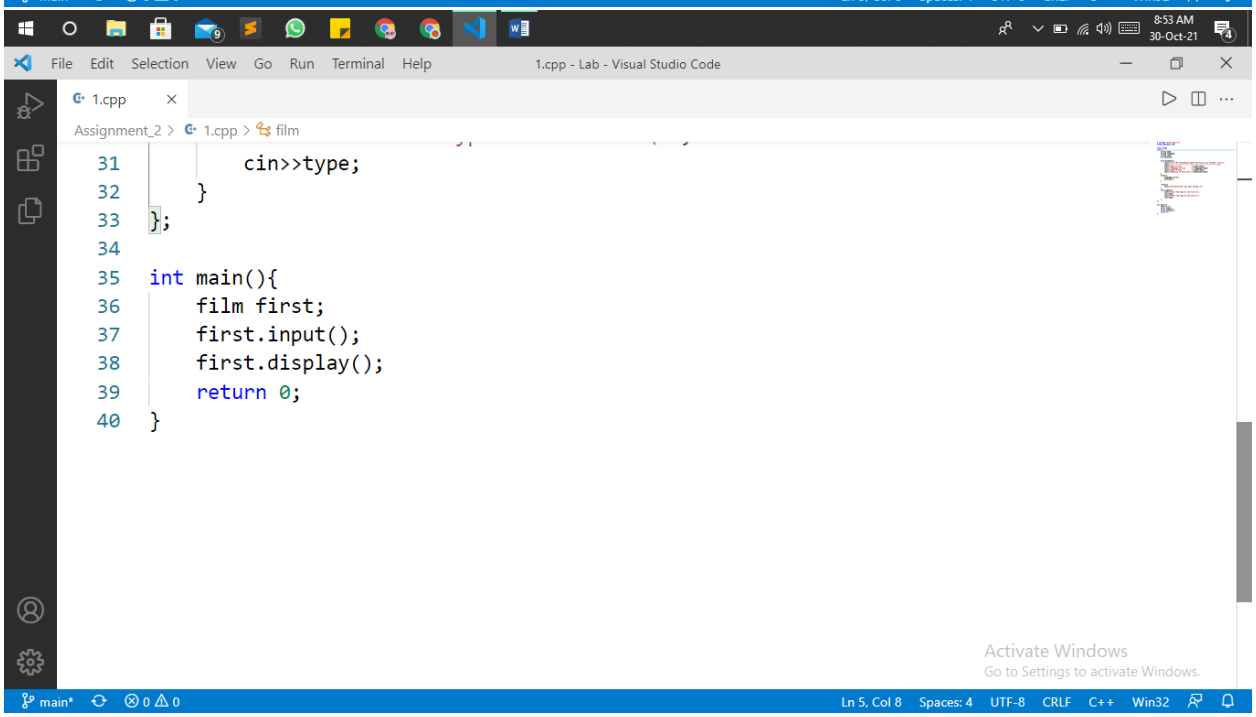
Prn: 2020BTECS00005

1. Create a class Film (Name, Language, Type and Duration). Create a default constructor to initialize Language and Duration as ‘Hindi’ and 3 (hrs.). Insert rest of the details through function. Display all the details. (Use destructor as well)

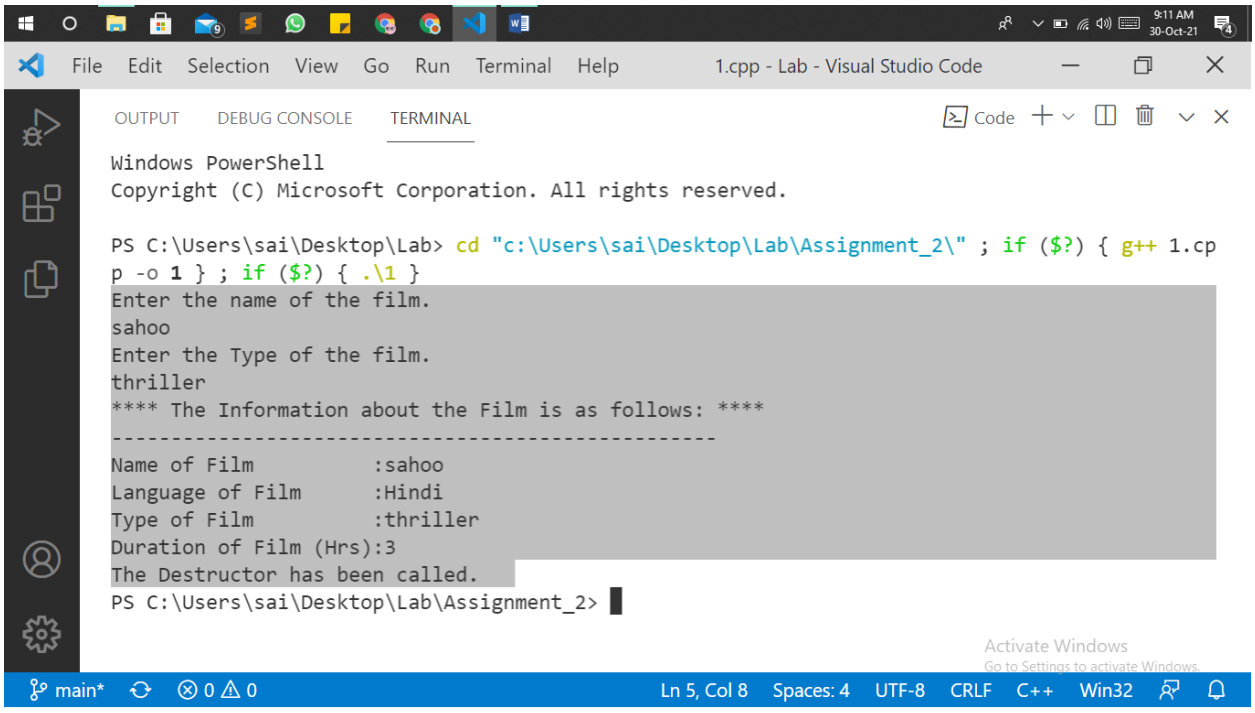
PROGRAM :




File Edit Selection View Go Run Terminal Help
1.cpp - Lab - Visual Studio Code
1.cpp
Assignment_2 > 1.cpp > film
16 cout<<"Type of Film :"<<type<<endl;
17 cout<<"Duration of Film (Hrs):"<<duration<<endl;
18 }
19 film(){
20 language="Hindi";
21 duration=3;
22 }
23
24 ~film(){
25 cout<<"The Destructor has been called.\n";
26 }
27 void input(){
28 cout<<"Enter the name of the film.\n";
29 cin>>name;
30 cout<<"Enter the Type of the film.\n";
31 cin>>type;
32 }
33 };
34
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 5, Col 8 Spaces: 4 UTF-8 CRLF C++ Win32

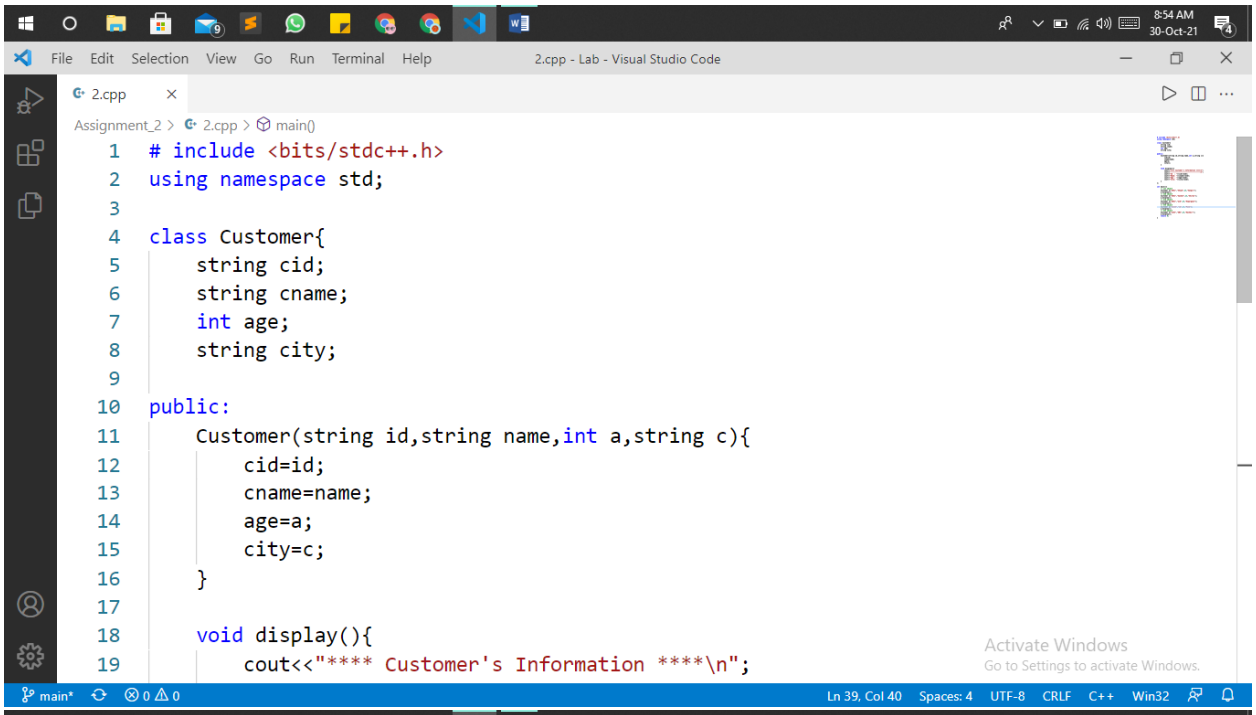

File Edit Selection View Go Run Terminal Help
1.cpp - Lab - Visual Studio Code
1.cpp
Assignment_2 > 1.cpp > film
31 cin>>type;
32 }
33 };
34
35 int main(){
36 film first;
37 first.input();
38 first.display();
39 return 0;
40 }
Activate Windows
Go to Settings to activate Windows.
main* 0 0
Ln 5, Col 8 Spaces: 4 UTF-8 CRLF C++ Win32

OUTPUT :

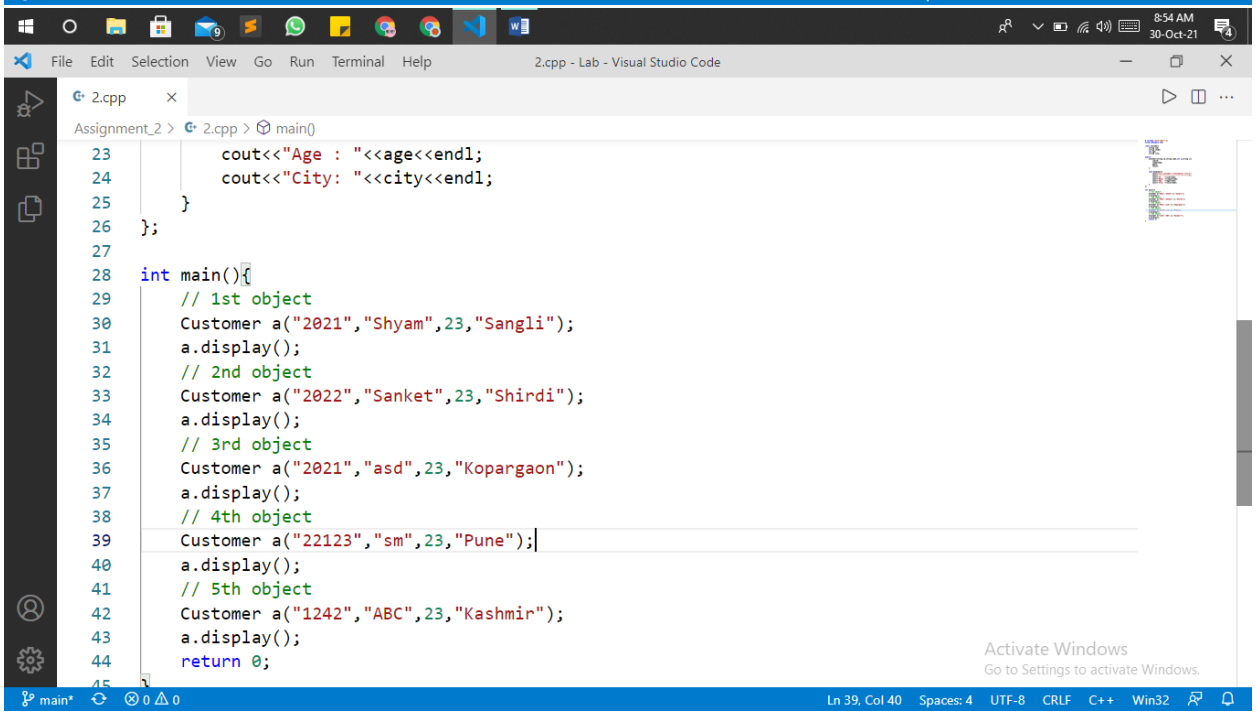


2. Create a class Customer (Cid, Cname, Age, City). Make all the members as private. Use parameterized constructor to assign values to it. Display all Customer information. (Add at least 5 records)

PROGRAM :

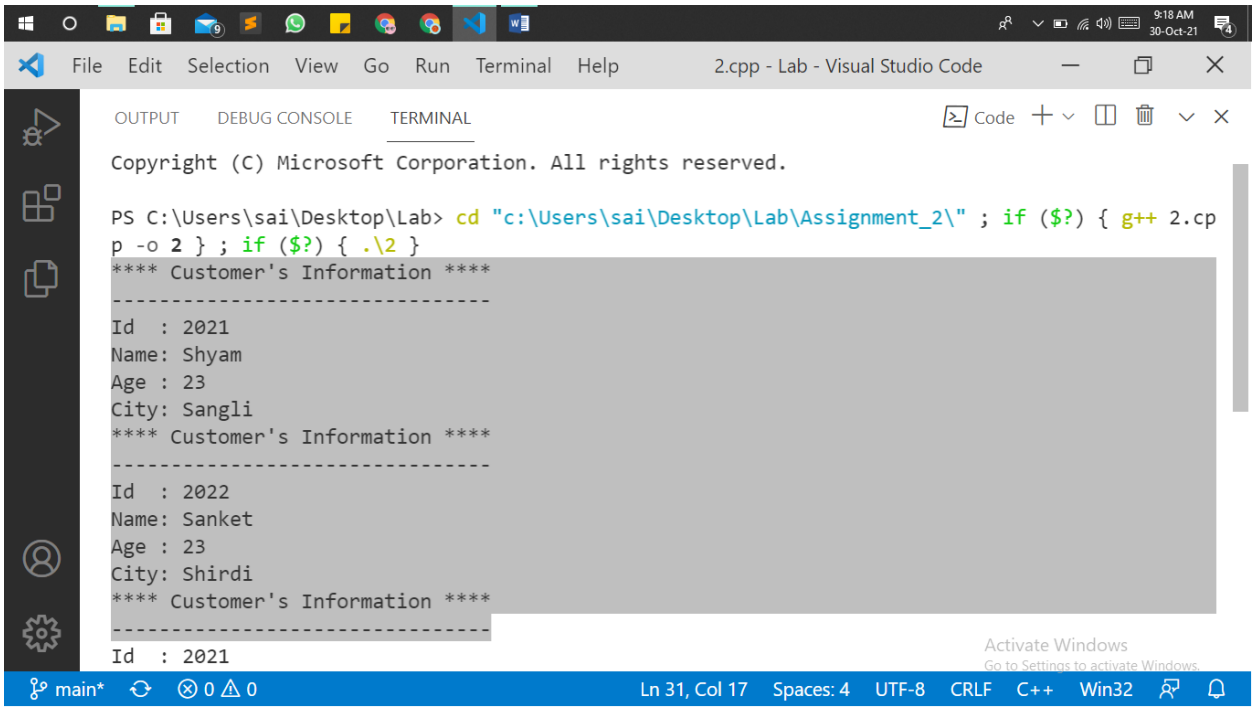


```
# include <bits/stdc++.h>
using namespace std;

class Customer{
    string cid;
    string cname;
    int age;
    string city;

public:
    Customer(string id,string name,int a,string c){
        cid=id;
        cname=name;
        age=a;
        city=c;
    }

    void display(){
        cout<<"**** Customer's Information ****\n";
```



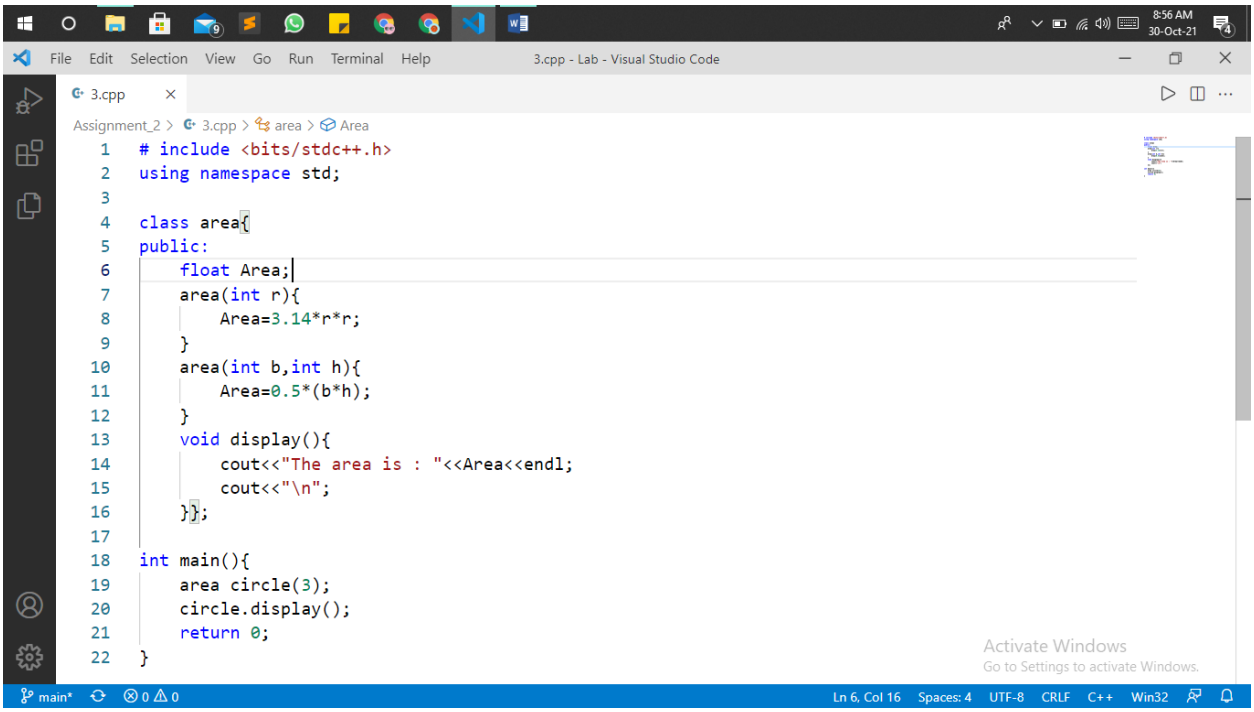
```
        cout<<"Age : "<<age<<endl;
        cout<<"City: "<<city<<endl;
    }
};

int main(){
    // 1st object
    Customer a("2021","Shyam",23,"Sangli");
    a.display();
    // 2nd object
    Customer a("2022","Sanket",23,"Shirdi");
    a.display();
    // 3rd object
    Customer a("2021","asd",23,"Kopargaon");
    a.display();
    // 4th object
    Customer a("22123","sm",23,"Pune");
    a.display();
    // 5th object
    Customer a("1242","ABC",23,"Kashmir");
    a.display();
    return 0;
}
```

OUTPUT :

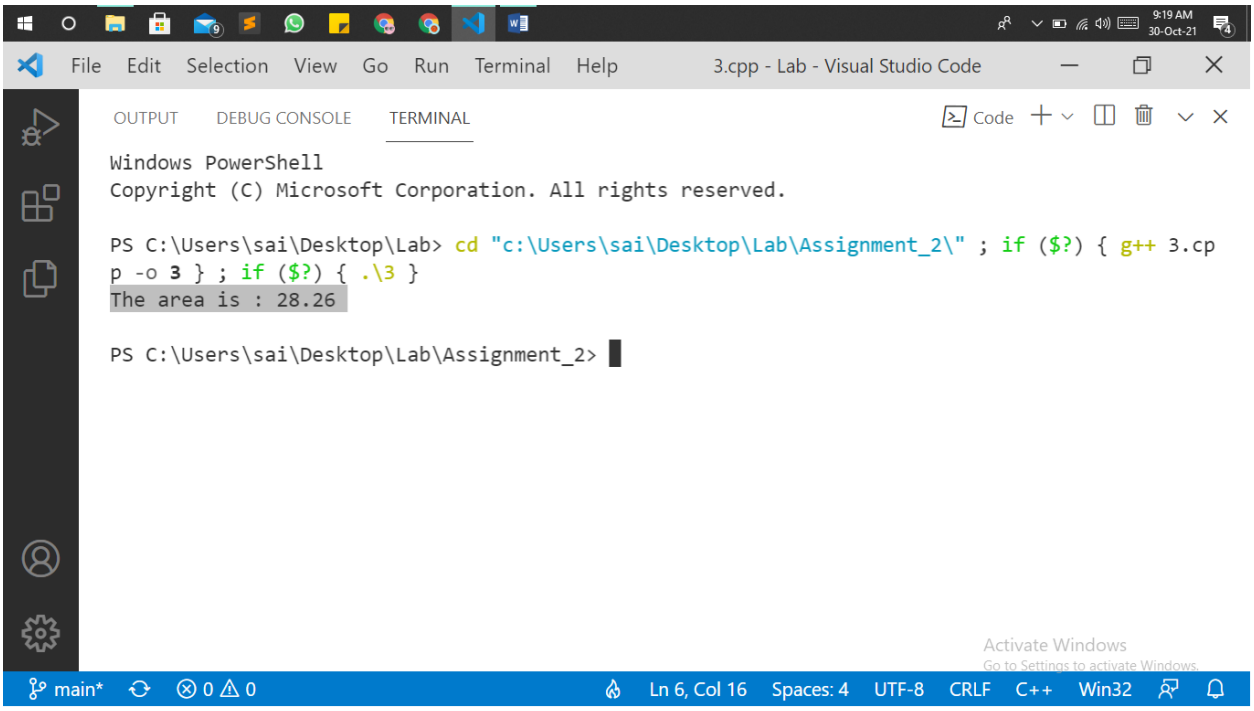


3. With help of copy constructor calculate
   a. Area of Circle
   b. Area of Triangle
   c. Area of Square

PROGRAM :

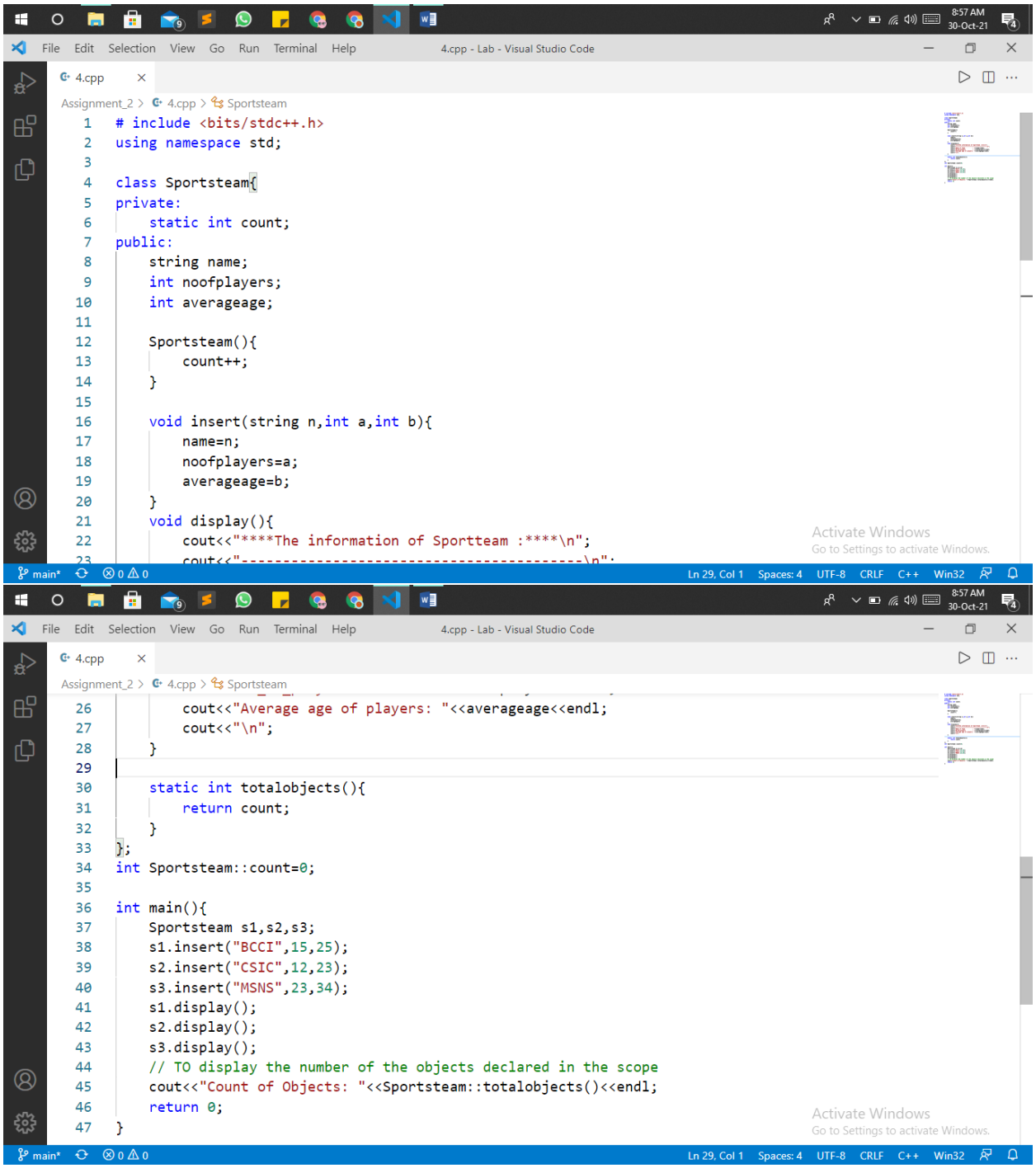


OUTPUT :

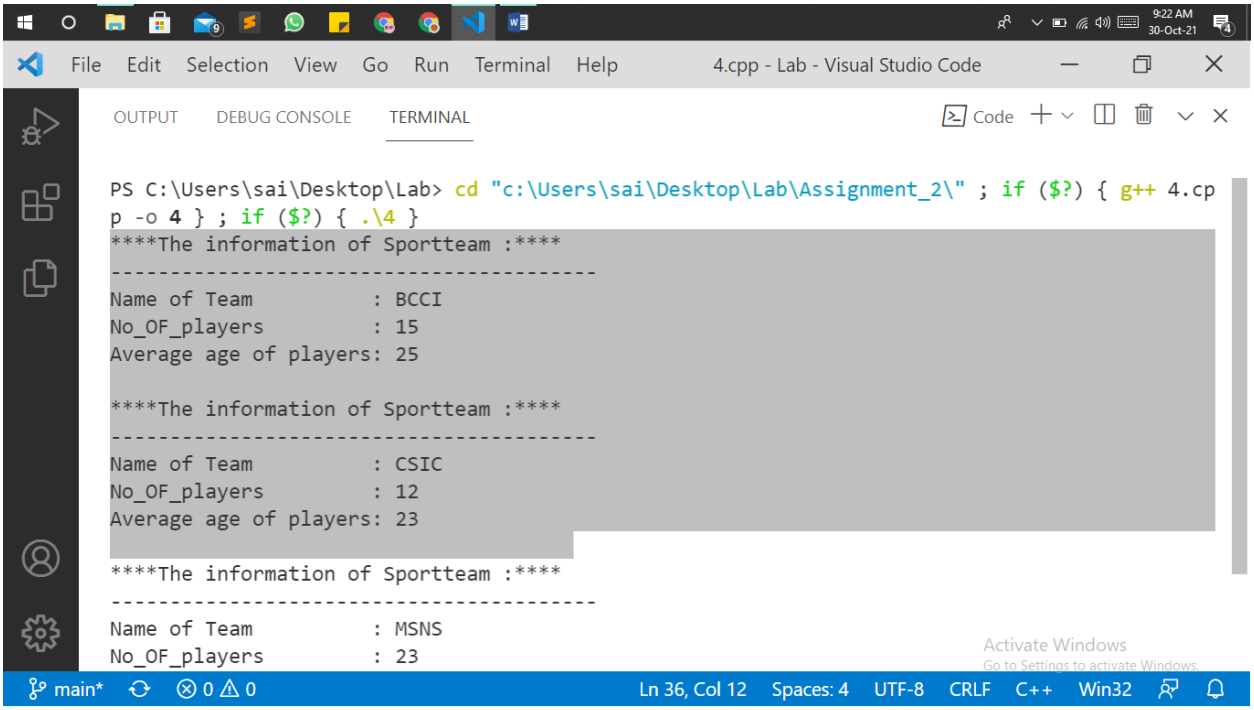


4. Create class SportsTeam (Name, NoOfPlayers, Average_age). Make a Static data member as ObjectCount. Create 3 Objects of SportsTeam, Insert and Display all information of 3 SportsTeam and Display count of object.

****Program:***

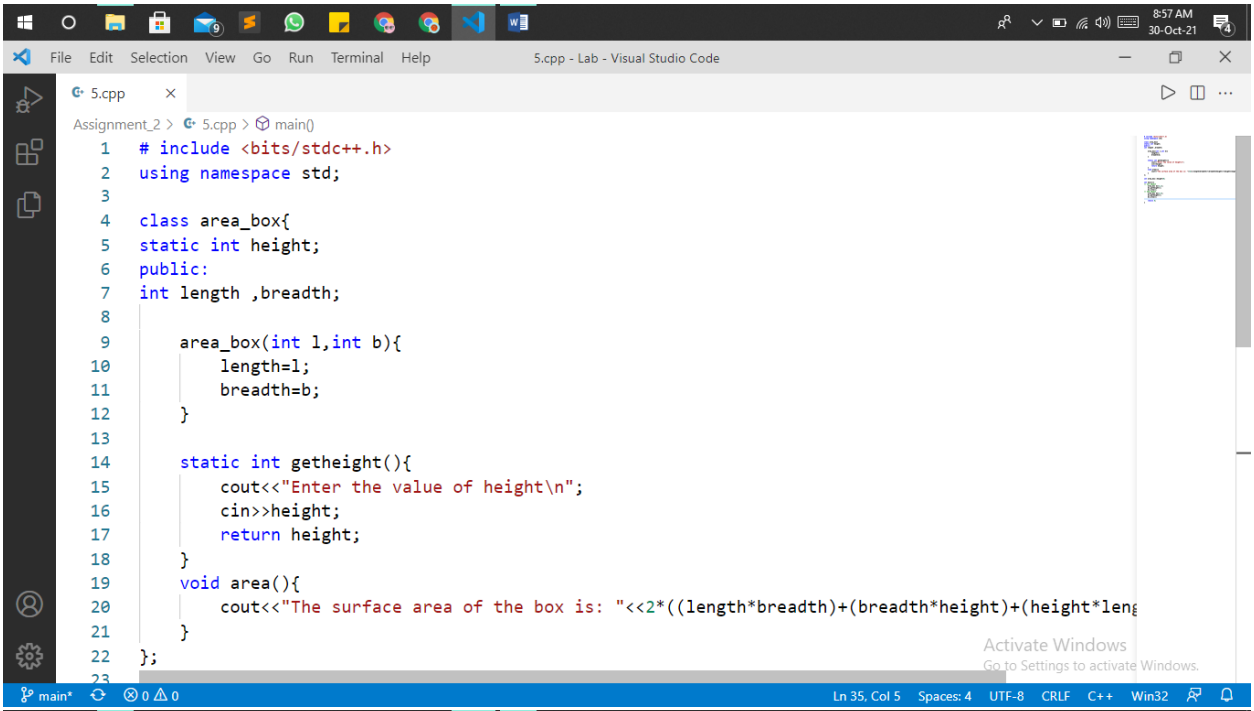

File Edit Selection View Go Run Terminal Help
4.cpp - Lab - Visual Studio Code
4.cpp
Assignment_2 > 4.cpp > Sportsteam
include <bits/stdc++.h>
using namespace std;
class Sportsteam{
private:
static int count;
public:
string name;
int noofplayers;
int averageage;
Sportsteam(){
count++;
}
void insert(string n,int a,int b){
name=n;
noofplayers=a;
averageage=b;
}
void display(){
cout<<"****The information of Sportteam :****\n";
Activate Windows
Go to Settings to activate Windows.
main*
Ln 29, Col 1
Spaces: 4
UTF-8
CRLF
C++
Win32
8:57 AM
30-Oct-21
cout<<"Average age of players: "<<averageage<<endl;
cout<<"\n";
}
static int totalobjects(){
return count;
}
};
int Sportsteam::count=0;
int main(){
Sportsteam s1,s2,s3;
s1.insert("BCCI",15,25);
s2.insert("CSIC",12,23);
s3.insert("MSNS",23,34);
s1.display();
s2.display();
s3.display();
// TO display the number of the objects declared in the scope
cout<<"Count of Objects: "<<Sportsteam::totalobjects()<<endl;
return 0;
}

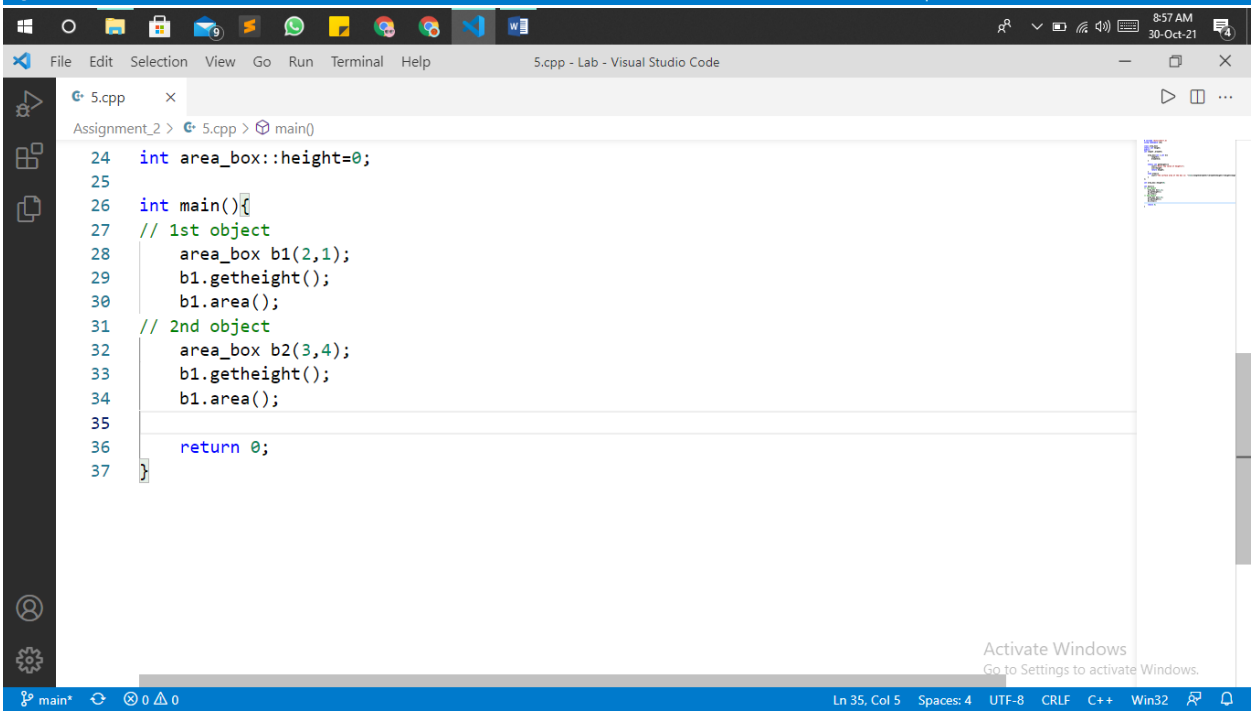
OUTPUT :



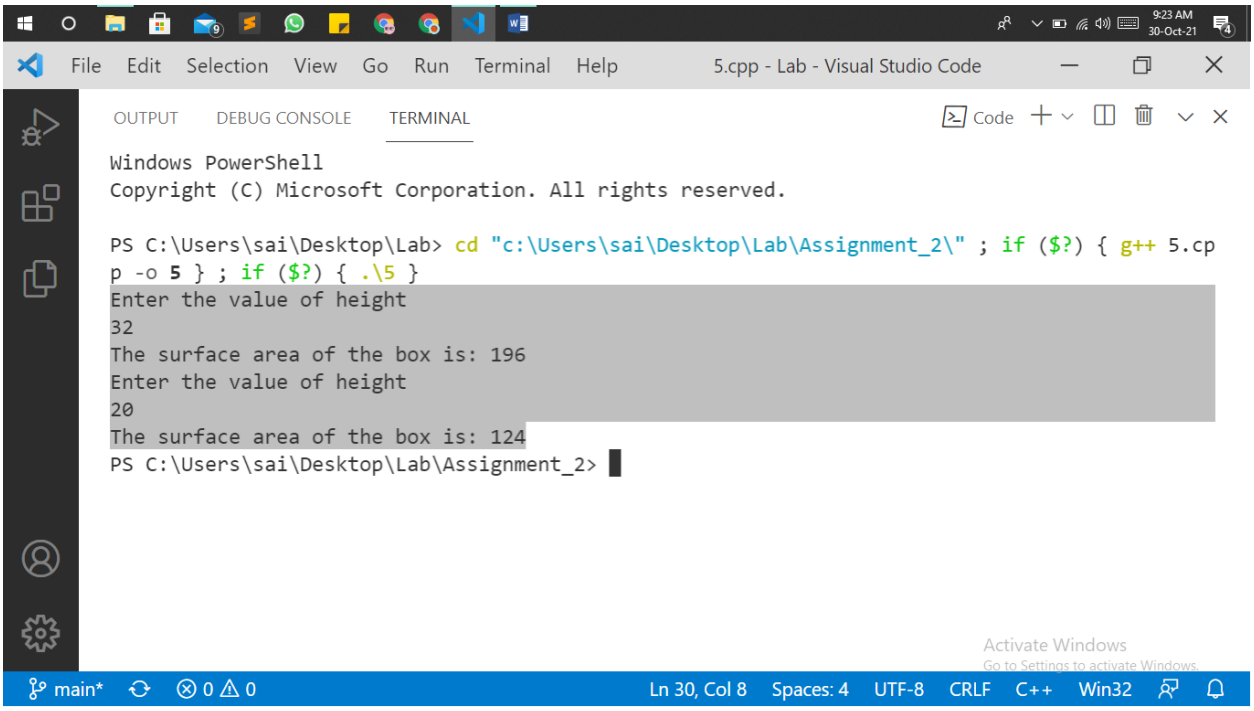
5. Calculate area of Box (Length, Breadth, Height). Consider Height as static member (Need to initialize). Use static member function getHeight() which will return value of Height. Create function Area() which will calculate area of Box. Use parameterized constructor to initialize data (insert data from keyboard). Create two objects.

PROGRAM :





OUTPUT :



6. Define a class String that could work as a user-defined string type. Include constructors that will enable us to create an uninitialized string

   String sl; //

   string with length 0 and also to initialize an object with a string constant at the time of creation like

   String s2("Well done!");

   Include a function that adds two strings to make a third string. Note that the Statement

   s2= s1;

   will be perfectly reasonable expression to copy one string to another.

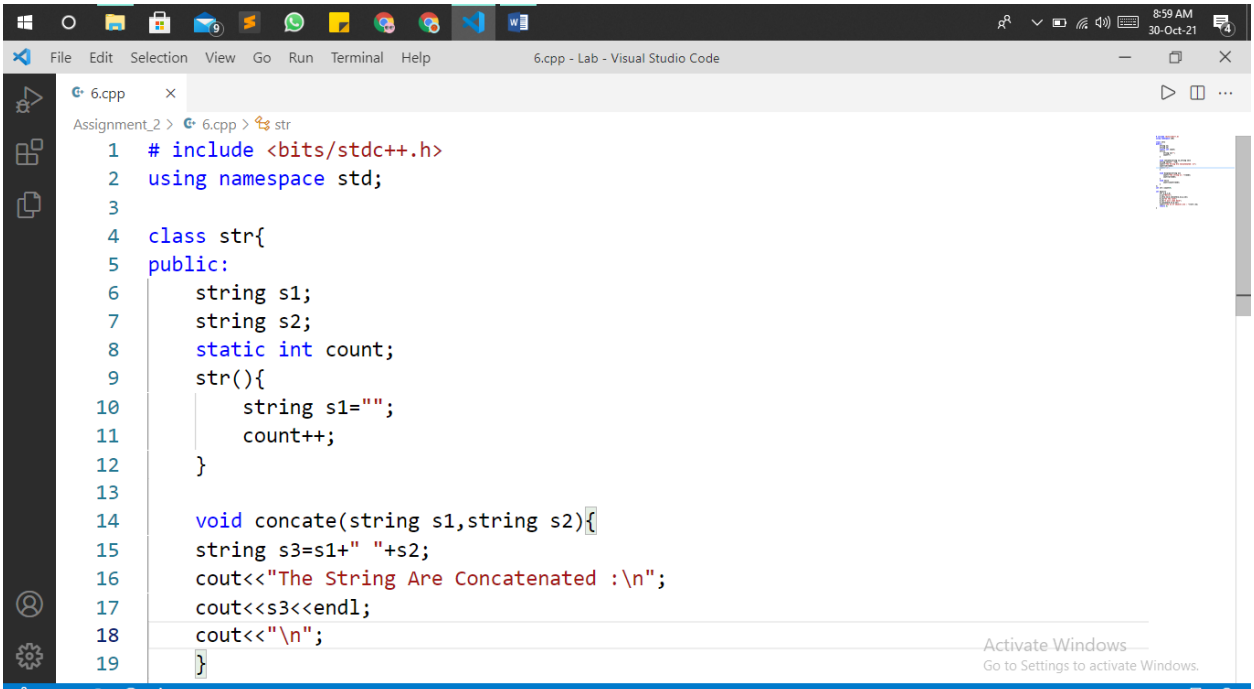
   Write a complete program to test your class to see that it does the following tasks:

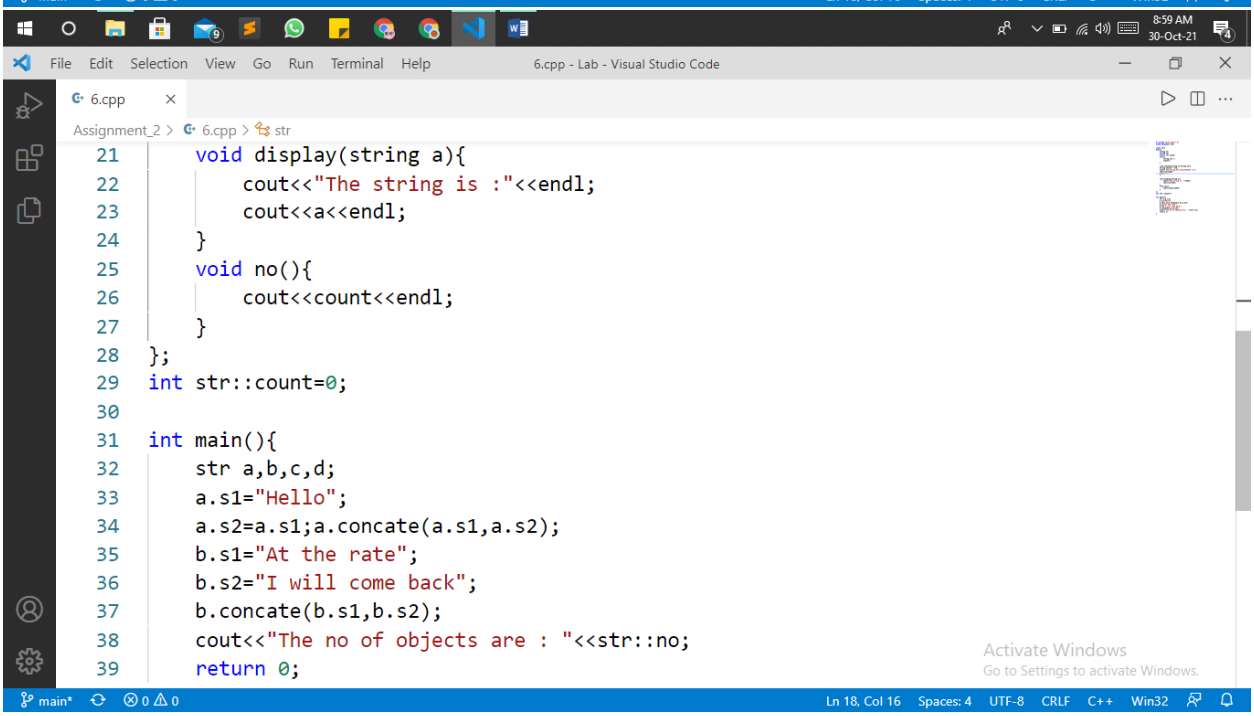
   (a) Creates uninitialized string objects.

(b) Creates objects with string constants.

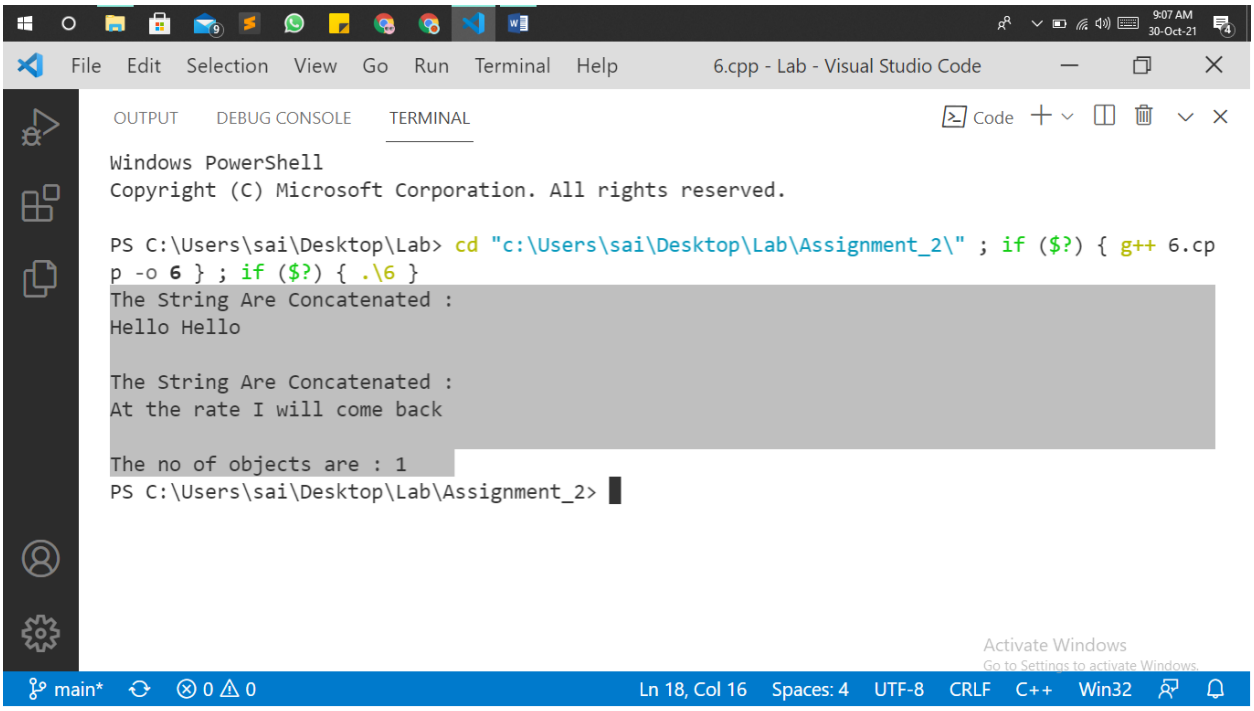
(c) Concatenates two strings properly.

(d) Displays a desired string object.***PROGRAM :***



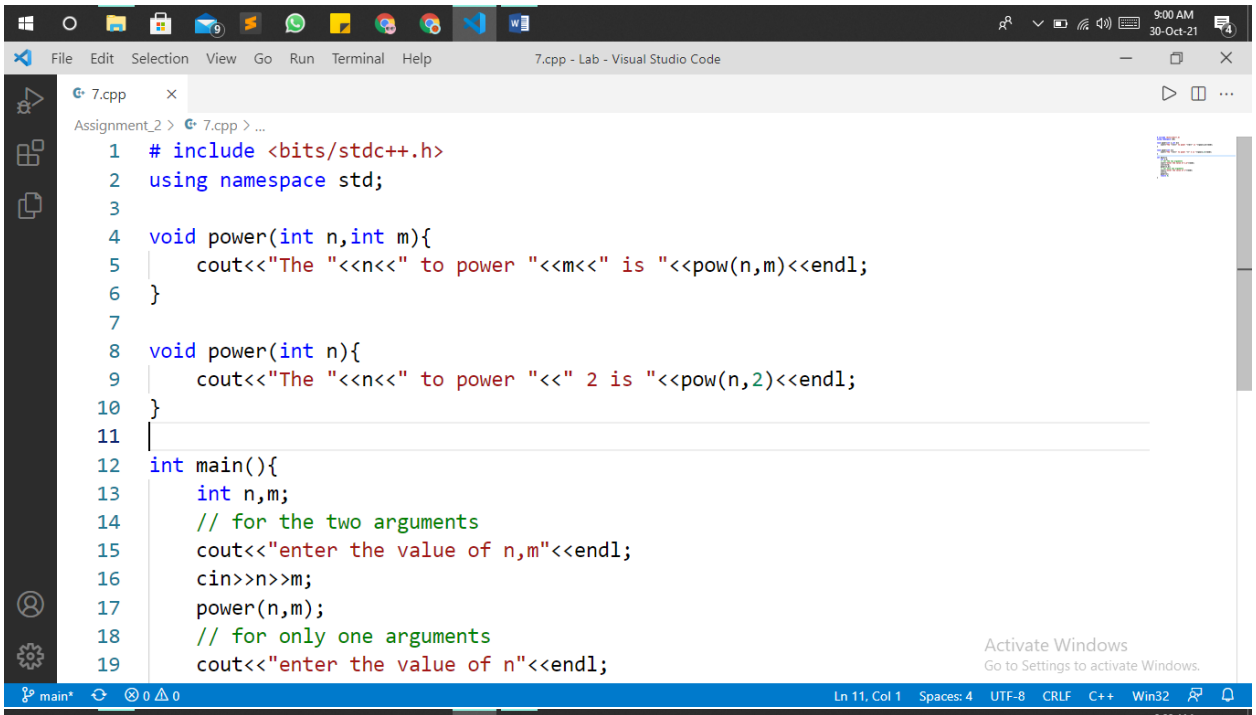


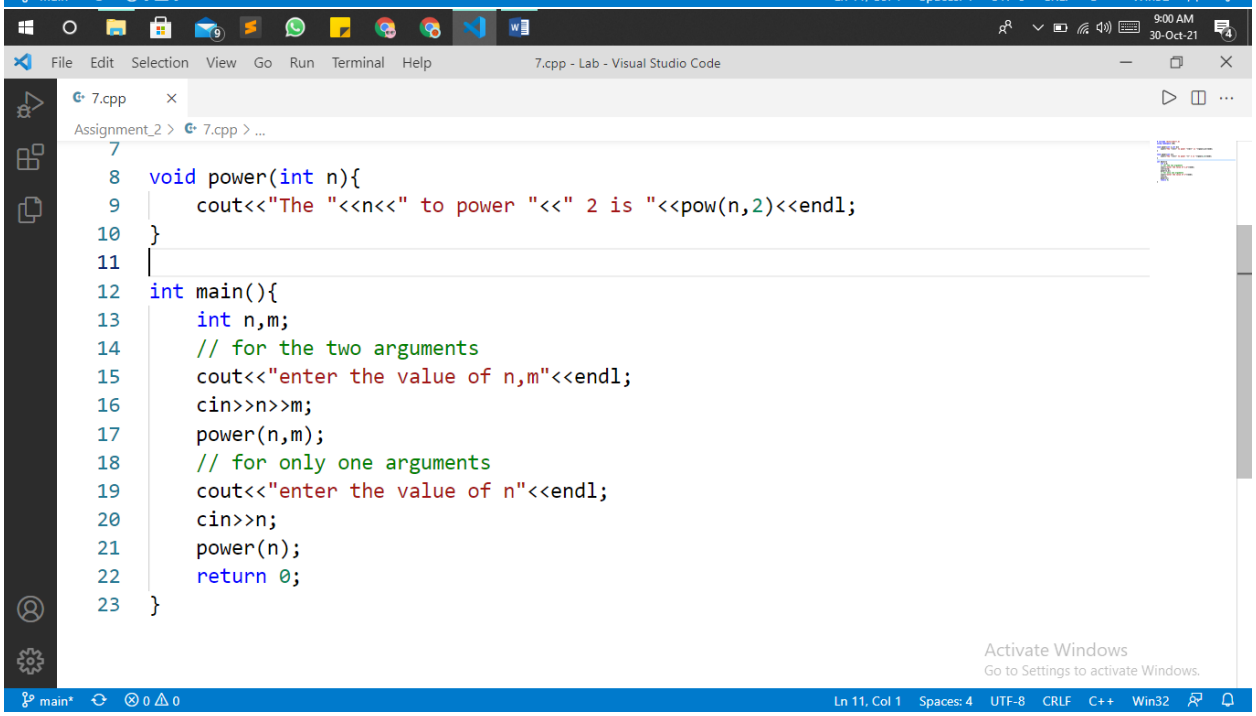
OUTPUT :



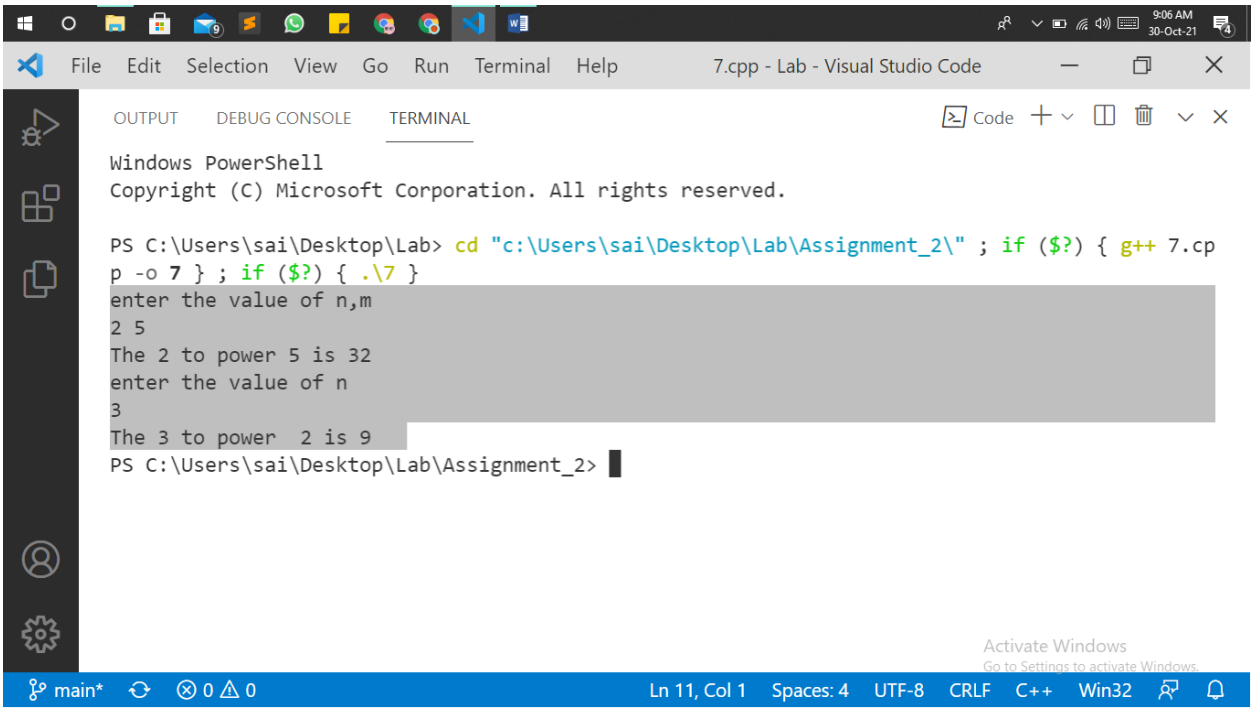
7. Write a function power to raise a number m to a power n. The function takes a double value for m and int value for n and returns the result correctly. Use a default value of 2 for n to make the function to calculate squares when this argument is omitted. Write a function that performs the operation as above but asks an int value for m. Both the functions should have the same name. Write a main that calls both the functions. Use the concept of function overloading.

****Program***


File Edit Selection View Go Run Terminal Help
7.cpp - Lab - Visual Studio Code
7.cpp
Assignment_2 > 7.cpp > ...
include <bits/stdc++.h>
using namespace std;
void power(int n,int m){
cout<<"The "<<n<<" to power "<<m<<" is "<<pow(n,m)<<endl;
}
void power(int n){
cout<<"The "<<n<<" to power "<<" 2 is "<<pow(n,2)<<endl;
}
int main(){
int n,m;
// for the two arguments
cout<<"enter the value of n,m"<<endl;
cin>>n>>m;
power(n,m);
// for only one arguments
cout<<"enter the value of n"<<endl;
Activate Windows
Go to Settings to activate Windows.
main*
Ln 11, Col 1
Spaces: 4
UTF-8
CRLF
C++
Win32

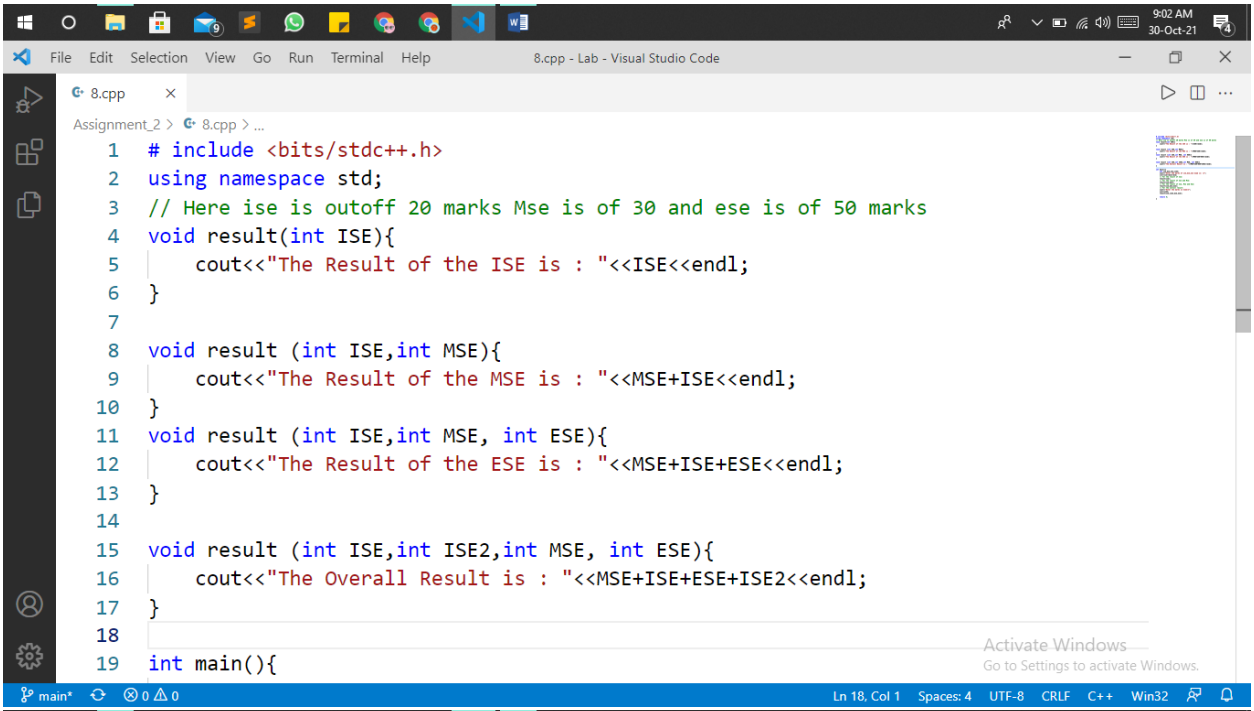

File Edit Selection View Go Run Terminal Help
7.cpp - Lab - Visual Studio Code
7.cpp
Assignment_2 > 7.cpp > ...
void power(int n){
cout<<"The "<<n<<" to power "<<" 2 is "<<pow(n,2)<<endl;
}
int main(){
int n,m;
// for the two arguments
cout<<"enter the value of n,m"<<endl;
cin>>n>>m;
power(n,m);
// for only one arguments
cout<<"enter the value of n"<<endl;
cin>>n;
power(n);
return 0;
}
Activate Windows
Go to Settings to activate Windows.
main*
Ln 11, Col 1
Spaces: 4
UTF-8
CRLF
C++
Win32

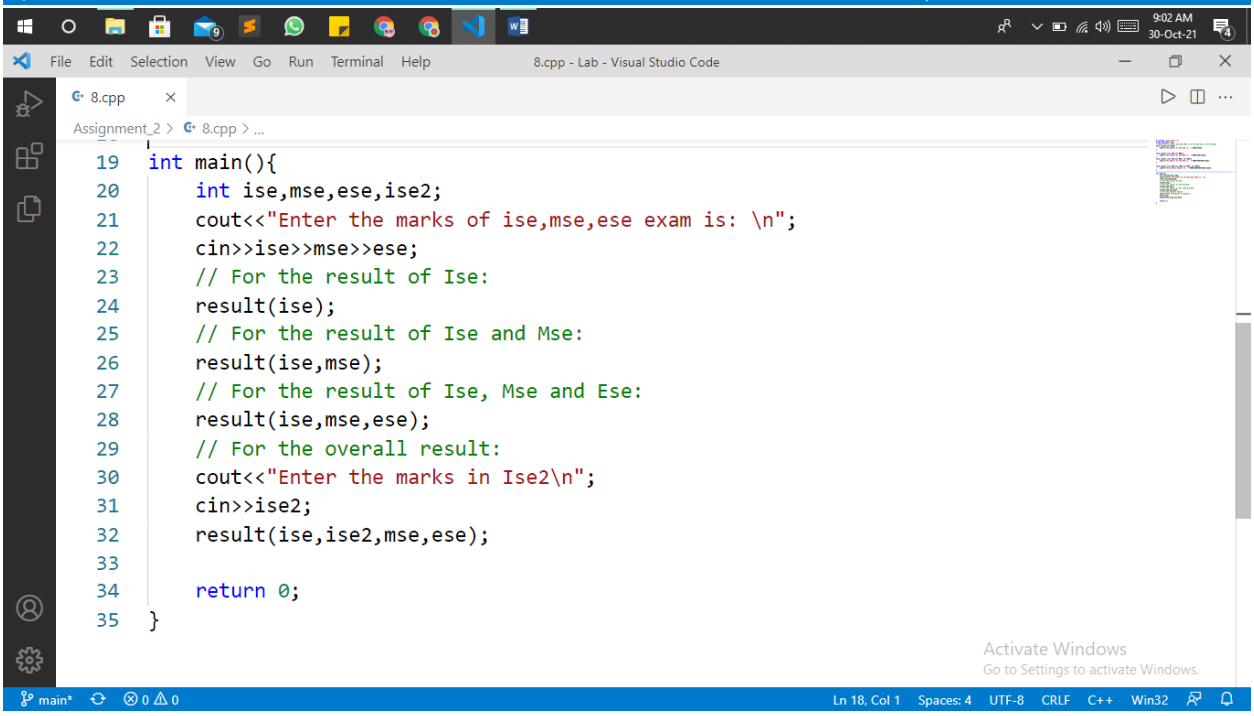
OUTPUT :



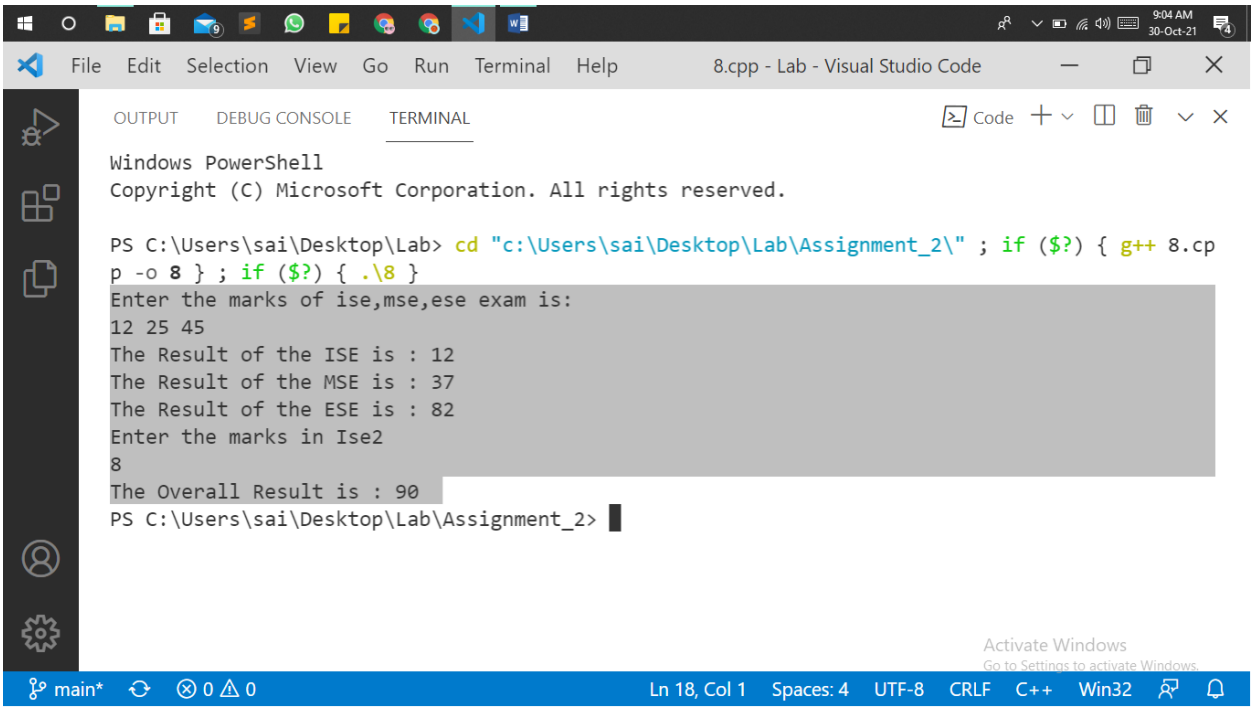
8. Write a program to calculate result of student based on his/her marks. Display the result. Use concept of function overloading. (Result of Internal exam, Mid sem exam, End sem exam and Final consolidated result) function name should beresult.

PROGRAM:





OUTPUT:


File Edit Selection View Go Run Terminal Help
8.cpp - Lab - Visual Studio Code
OUTPUT DEBUG CONSOLE TERMINAL
Code
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
PS C:\Users\sai\Desktop\Lab> cd "c:\Users\sai\Desktop\Lab\Assignment_2\" ; if ($?) { g++ 8.cpp -o 8 } ; if ($?) { .\8 }
Enter the marks of ise,mse,ese exam is:
12 25 45
The Result of the ISE is : 12
The Result of the MSE is : 37
The Result of the ESE is : 82
Enter the marks in Ise2
8
The Overall Result is : 90
PS C:\Users\sai\Desktop\Lab\Assignment_2>
Activate Windows
Go to Settings to activate Windows.
main*
Ln 18, Col 1
Spaces: 4
UTF-8
CRLF
C++
Win32