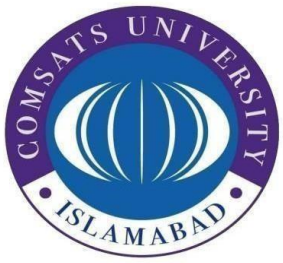
Object Oriented Programming
CSC-241



Lab #03 Class Scope and Accessing Class Members

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Lab Assessment

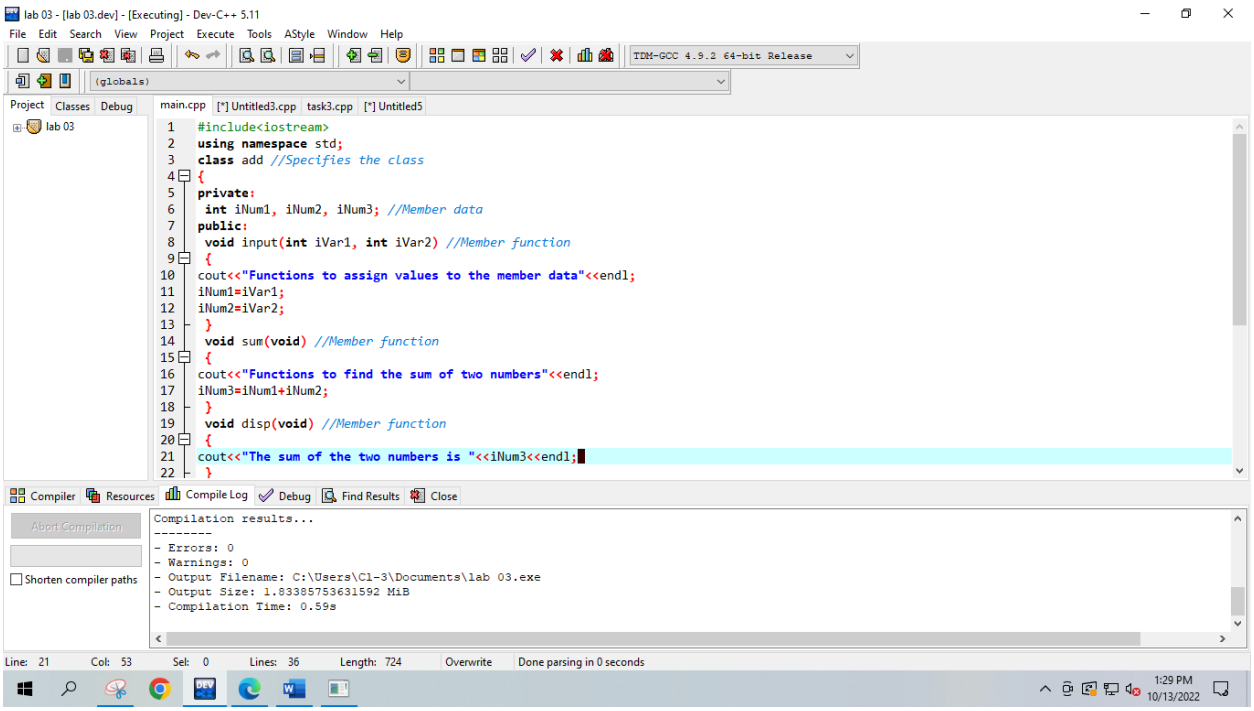
Pre-Lab	**In-Lab**	**Post Lab**			**Total**
		Data Presentation	**Data Analysis**	**Writing Style**	

Lab Tasks

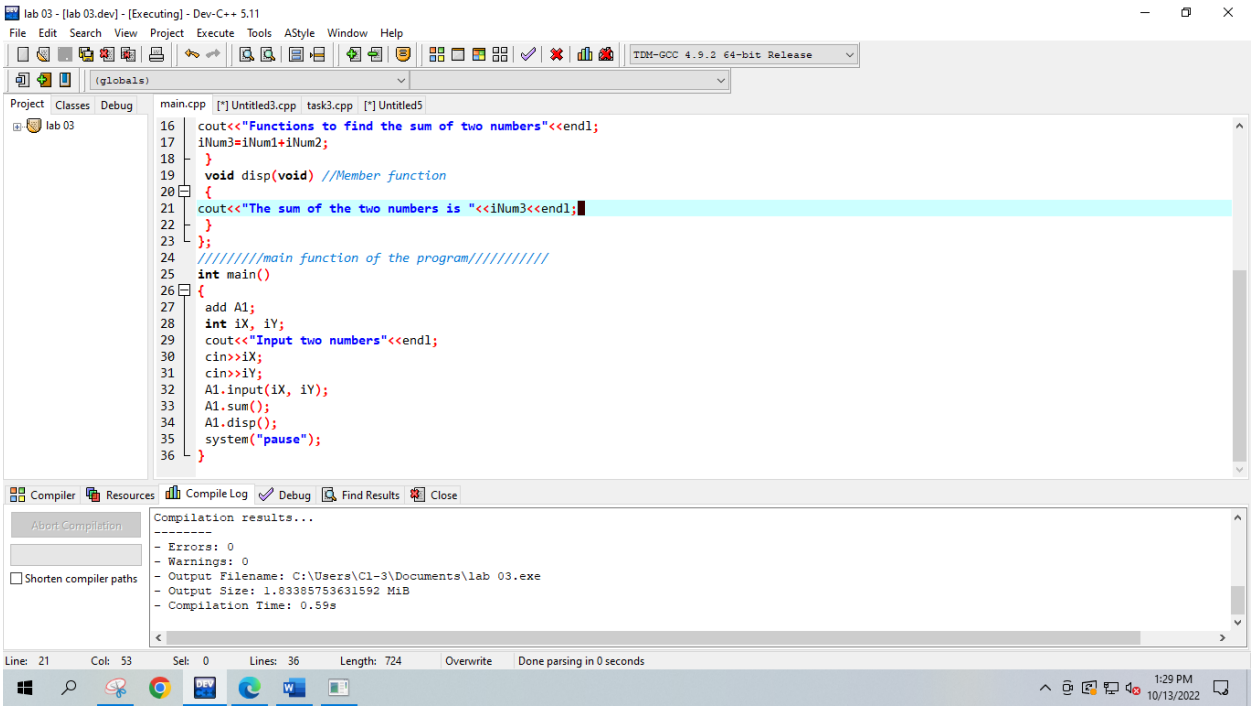
5.1. Code the example given above and check the errors if you try to access the private data members in main () function.

```
#include<iostream>
using namespace std;
class add //Specifies the class
{
private:
 int iNum1, iNum2, iNum3; //Member data
public:
 void input(int iVar1, int iVar2) //Member function
 {
cout<<"Functions to assign values to the member data"<<endl;
iNum1=iVar1;
iNum2=iVar2;
 }
 void sum(void) //Member function
 {
cout<<"Functions to find the sum of two numbers"<<endl;
iNum3=iNum1+iNum2;
 }
 void disp(void) //Member function
 {
cout<<"The sum of the two numbers is "<<iNum3<<endl;
```

```
 }
};
/////////main function of the program//////////
int main()
{
 add A1;
 int iX, iY;
 cout<<"Input two numbers"<<endl;
 cin>>iX;
 cin>>iY;
 A1.input(iX, iY);
 A1.sum();
 A1.disp();
 system("pause");
}
```


lab 03 - [lab 03.dev] - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
lab 03
main.cpp [*] Untitled3.cpp task3.cpp [*] Untitled5
1 #include<iostream>
2 using namespace std;
3 class add //Specifies the class
4 {
5 private:
6 int iNum1, iNum2, iNum3; //Member data
7 public:
8 void input(int iVar1, int iVar2) //Member function
9 {
10 cout<<"Functions to assign values to the member data"<<endl;
11 iNum1=iVar1;
12 iNum2=iVar2;
13 }
14 void sum(void) //Member function
15 {
16 cout<<"Functions to find the sum of two numbers"<<endl;
17 iNum3=iNum1+iNum2;
18 }
19 void disp(void) //Member function
20 {
21 cout<<"The sum of the two numbers is "<<iNum3<<endl;
22 }
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\C1-3\Documents\lab 03.exe
- Output Size: 1.83385753631592 MiB
- Compilation Time: 0.59s
Line: 21 Col: 53 Sel: 0 Lines: 36 Length: 724 Overwrite Done parsing in 0 seconds
1:29 PM
10/13/2022


lab 03 - [lab 03.dev] - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
lab 03
main.cpp [*] Untitled3.cpp task3.cpp [*] Untitled5
16 cout<<"Functions to find the sum of two numbers"<<endl;
17 iNum3=iNum1+iNum2;
18 }
19 void disp(void) //Member function
20 {
21 cout<<"The sum of the two numbers is "<<iNum3<<endl;
22 }
23 };
24 ////////main function of the program//////////
25 int main()
26 {
27 add A1;
28 int iX, iY;
29 cout<<"Input two numbers"<<endl;
30 cin>>iX;
31 cin>>iY;
32 A1.input(iX, iY);
33 A1.sum();
34 A1.disp();
35 system("pause");
36 }
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\C1-3\Documents\lab 03.exe
- Output Size: 1.83385753631592 MiB
- Compilation Time: 0.59s
Line: 21 Col: 53 Sel: 0 Lines: 36 Length: 724 Overwrite Done parsing in 0 seconds
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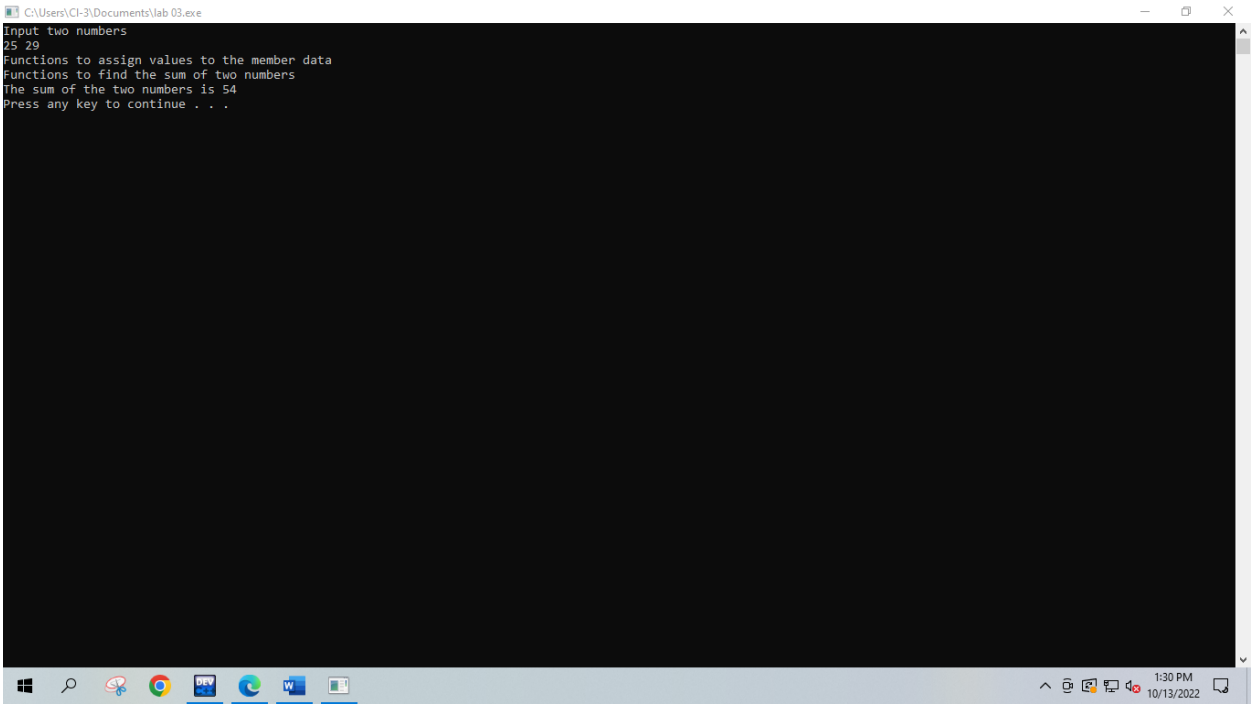
Output:

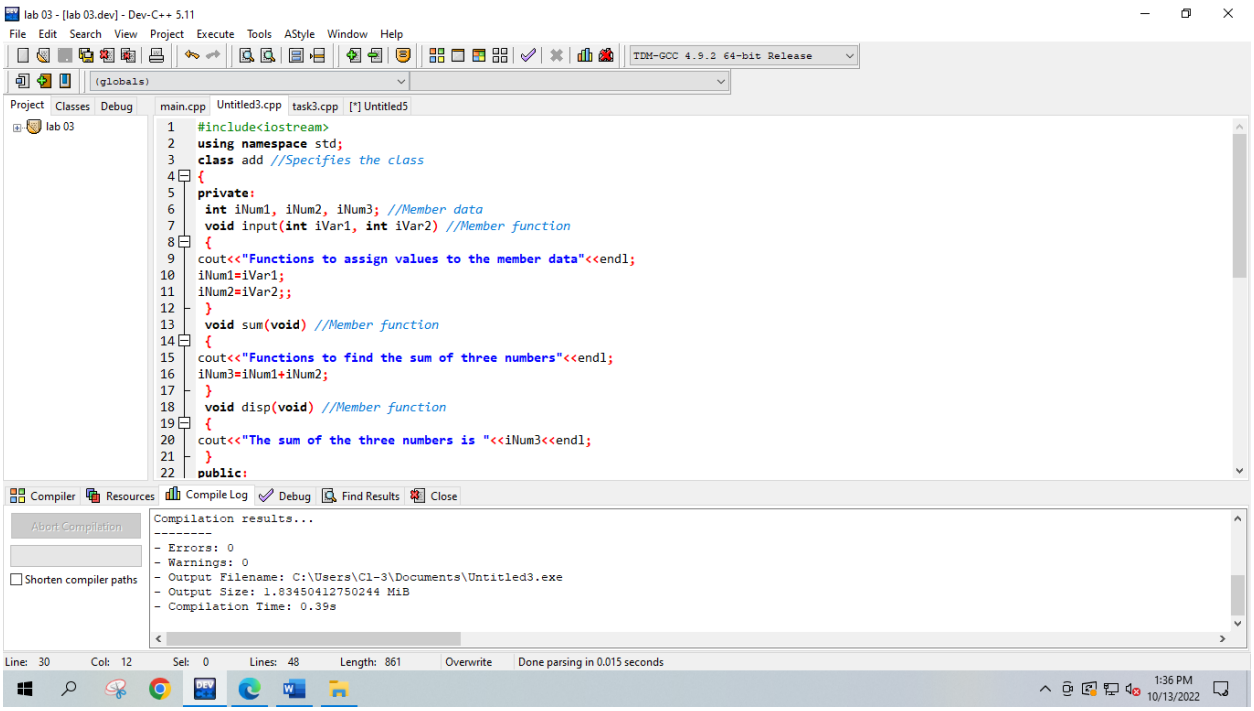


5.2. Modify the above task by making the scope of public member functions as private. Create access functions in public scope to access private member functions from main ().

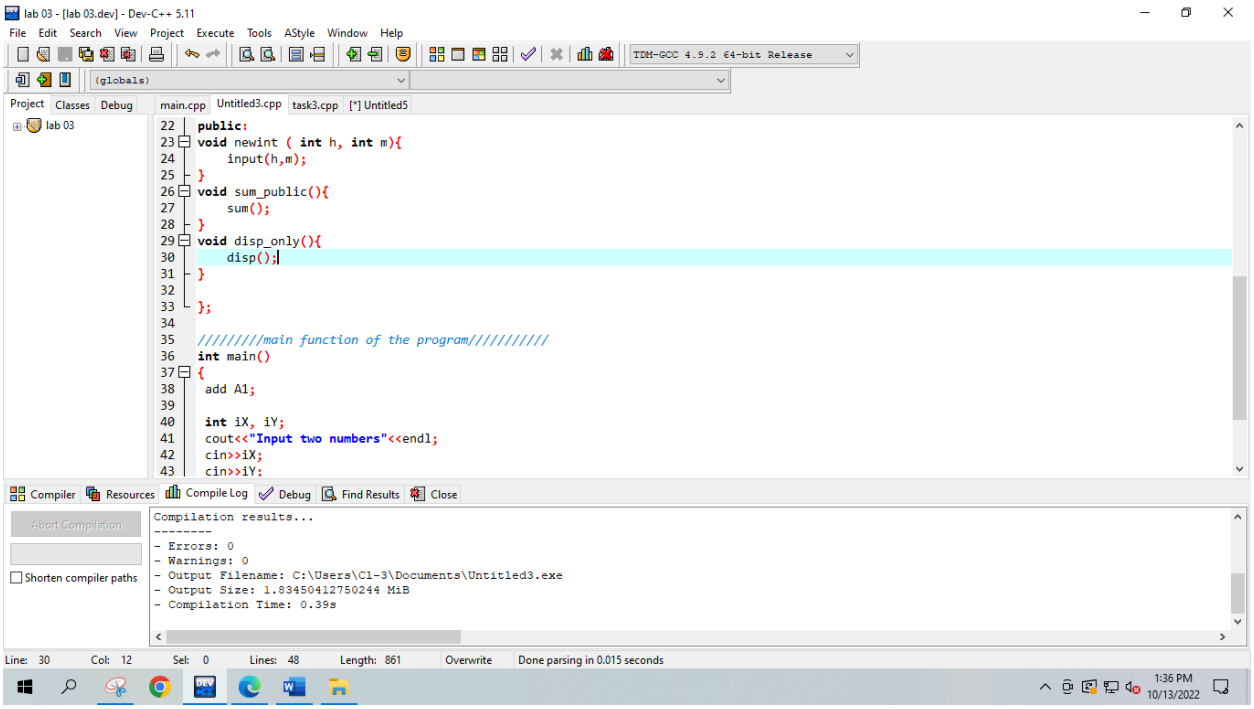
```
#include<iostream>

using namespace std;

class add //Specifies the class

{

private:

 int iNum1, iNum2, iNum3; //Member data

 void input(int iVar1, int iVar2) //Member function

 {
```

```
cout<<"Functions to assign values to the member data"<<endl;
iNum1=iVar1;
iNum2=iVar2;;
 }
 void sum(void) //Member function
 {
cout<<"Functions to find the sum of three numbers"<<endl;
iNum3=iNum1+iNum2;
 }
 void disp(void) //Member function
 {
cout<<"The sum of the three numbers is "<<iNum3<<endl;
 }
public:
void newint ( int h, int m){
        input(h,m);
}
void sum_public(){
        sum();
}
void disp_only(){
        disp();
}
```

```
};

/////////main function of the program//////////
int main()
{
 add A1;

 int iX, iY;
 cout<<"Input two numbers"<<endl;
 cin>>iX;
 cin>>iY;
 A1.newint(iX, iY);
 A1.sum_public();
A1.disp_only();
 system("pause");
}
```


lab 03 - [lab 03.dev] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
lab 03
main.cpp Untitled3.cpp task3.cpp [*] Untitled5
1 #include<iostream>
2 using namespace std;
3 class add //Specifies the class
4 {
5 private:
6 int iNum1, iNum2, iNum3; //Member data
7 void input(int iVar1, int iVar2) //Member function
8 {
9 cout<<"Functions to assign values to the member data"<<endl;
10 iNum1=iVar1;
11 iNum2=iVar2;;
12 }
13 void sum(void) //Member function
14 {
15 cout<<"Functions to find the sum of three numbers"<<endl;
16 iNum3=iNum1+iNum2;
17 }
18 void disp(void) //Member function
19 {
20 cout<<"The sum of the three numbers is "<<iNum3<<endl;
21 }
22 public:
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\C1-3\Documents\Untitled3.exe
- Output Size: 1.83450412750244 MiB
- Compilation Time: 0.39s
Line: 30 Col: 12 Sel: 0 Lines: 48 Length: 861 Overwrite Done parsing in 0.015 seconds
1:36 PM
10/13/2022


lab 03 - [lab 03.dev] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
lab 03
main.cpp Untitled3.cpp task3.cpp [*] Untitled5
22 public:
23 void newint (int h, int m){
24 input(h,m);
25 }
26 void sum_public(){
27 sum();
28 }
29 void disp_only(){
30 disp();
31 }
32
33 };
34
35 ////////main function of the program//////////
36 int main()
37 {
38 add A1;
39
40 int iX, iY;
41 cout<<"Input two numbers"<<endl;
42 cin>>iX;
43 cin>>iY;
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\C1-3\Documents\Untitled3.exe
- Output Size: 1.83450412750244 MiB
- Compilation Time: 0.39s
Line: 30 Col: 12 Sel: 0 Lines: 48 Length: 861 Overwrite Done parsing in 0.015 seconds
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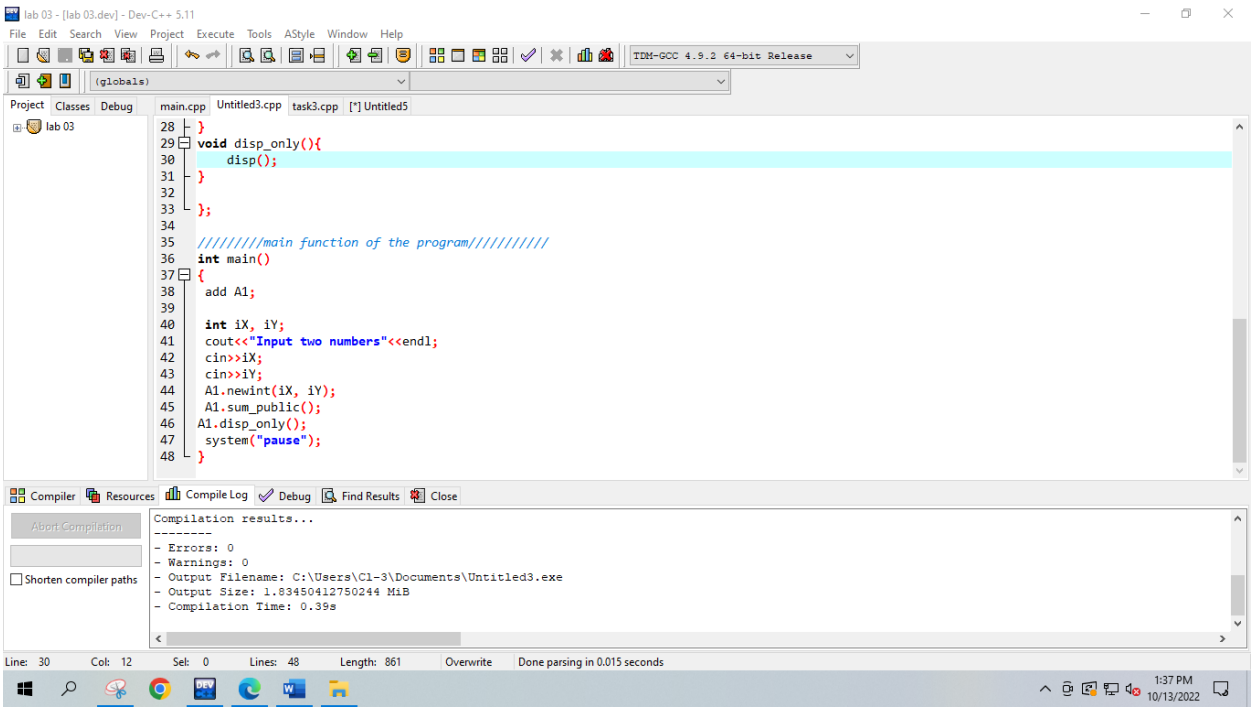
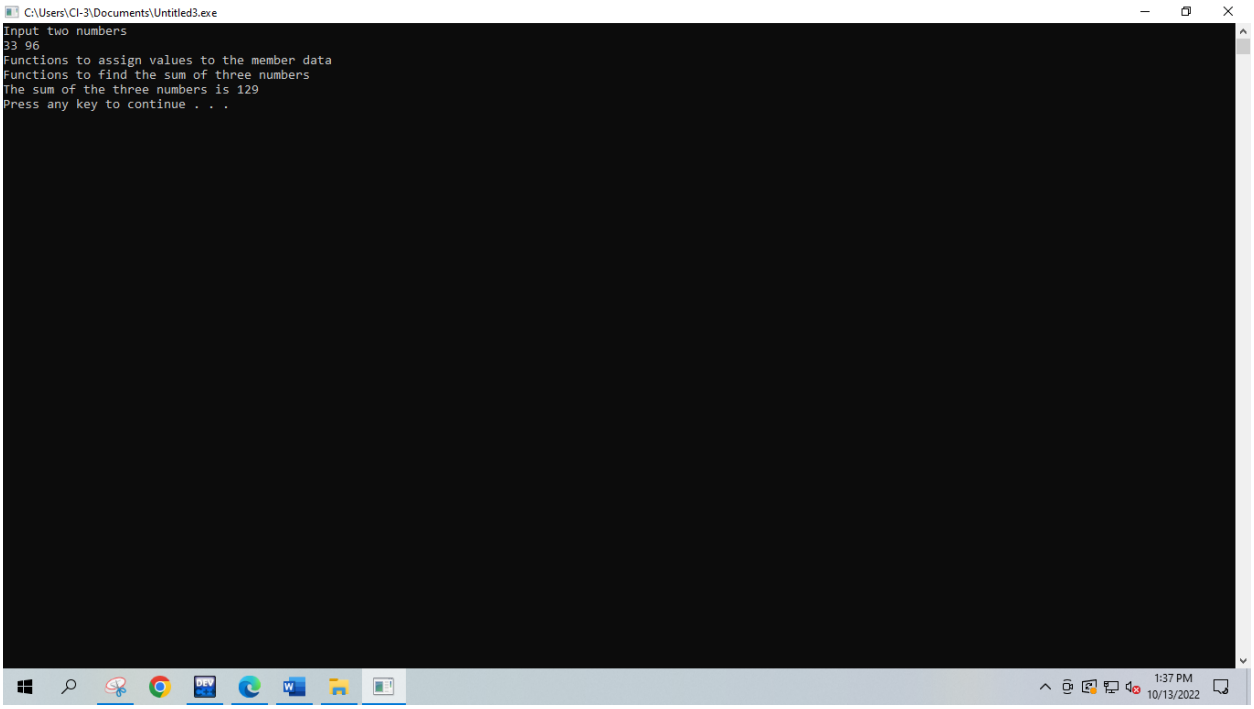
10/13/2022


lab 03 - [lab 03.dev] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
lab 03
main.cpp Untitled3.cpp task3.cpp [*] Untitled5
28 }
29 void disp_only(){
30 disp();
31 }
32
33 };
34
35 ////////main function of the program//////////
36 int main()
37 {
38 add A1;
39
40 int iX, iY;
41 cout<<"Input two numbers"<<endl;
42 cin>>iX;
43 cin>>iY;
44 A1.newint(iX, iY);
45 A1.sum_public();
46 A1.disp_only();
47 system("pause");
48 }
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\CI-3\Documents\Untitled3.exe
- Output Size: 1.834504127502444 MiB
- Compilation Time: 0.39s
Line: 30 Col: 12 Sel: 0 Lines: 48 Length: 861 Overwrite Done parsing in 0.015 seconds
1:37 PM
10/13/2022

Output:


C:\Users\CI-3\Documents\Untitled3.exe
Input two numbers
33 96
Functions to assign values to the member data
Functions to find the sum of three numbers
The sum of the three numbers is 129
Press any key to continue . . .
1:37 PM
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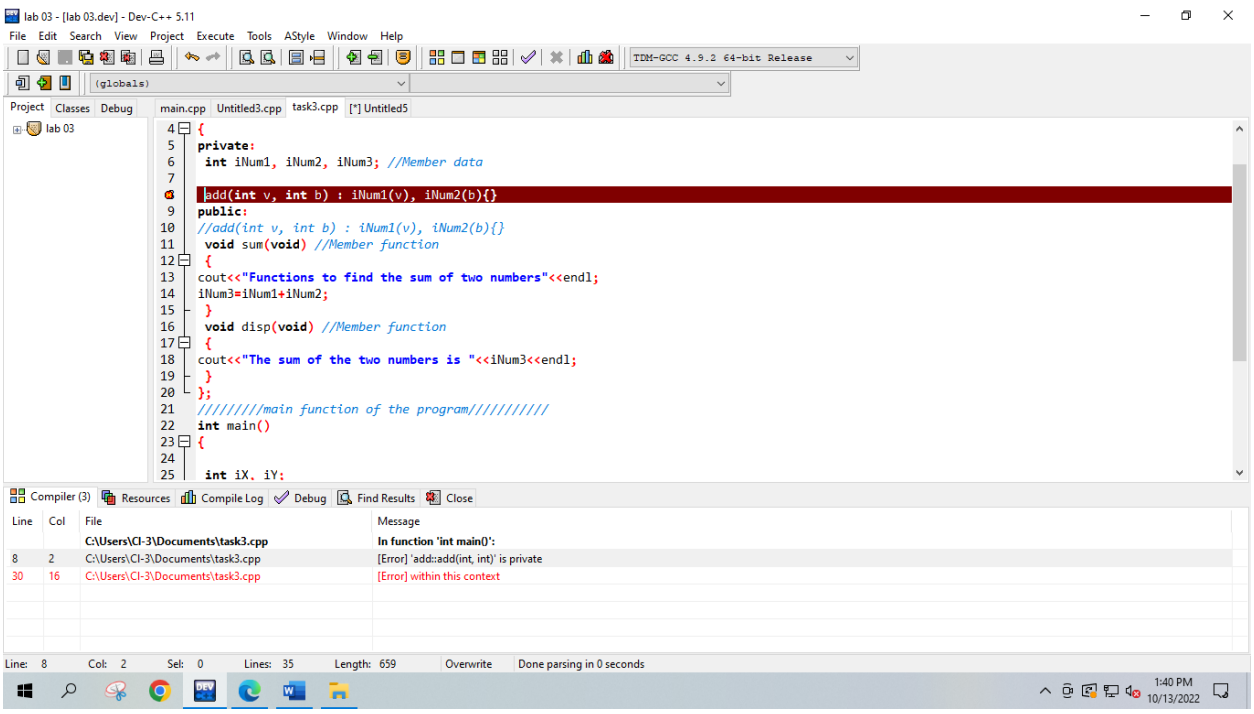
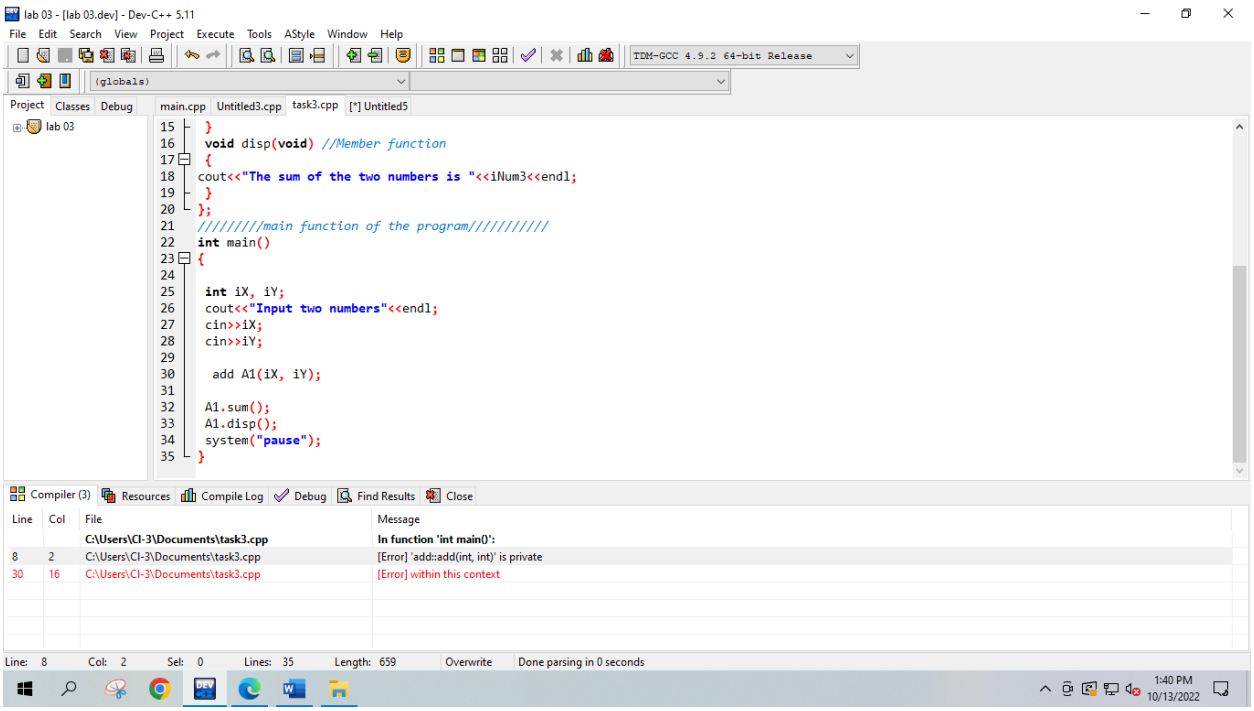
5.3. Code the example given above and include a private constructor in the class. Create objects of this class. Test the code and write down how the constructor will be called or unable to be called?

```
#include<iostream>

using namespace std;

class add //Specifies the class

{

private:

 int iNum1, iNum2, iNum3; //Member data


 add(int v, int b) : iNum1(v), iNum2(b){}

public:

//add(int v, int b) : iNum1(v), iNum2(b){}

 void sum(void) //Member function

 {

cout<<"Functions to find the sum of two numbers"<<endl;

iNum3=iNum1+iNum2;

 }

 void disp(void) //Member function

 {

cout<<"The sum of the two numbers is "<<iNum3<<endl;

 }

};

/////////main function of the program//////////

int main()

{
```

```
int iX, iY;
cout<<"Input two numbers"<<endl;
cin>>iX;
cin>>iY;

 add A1(iX, iY);

A1.sum();
A1.disp();
system("pause");
}
```



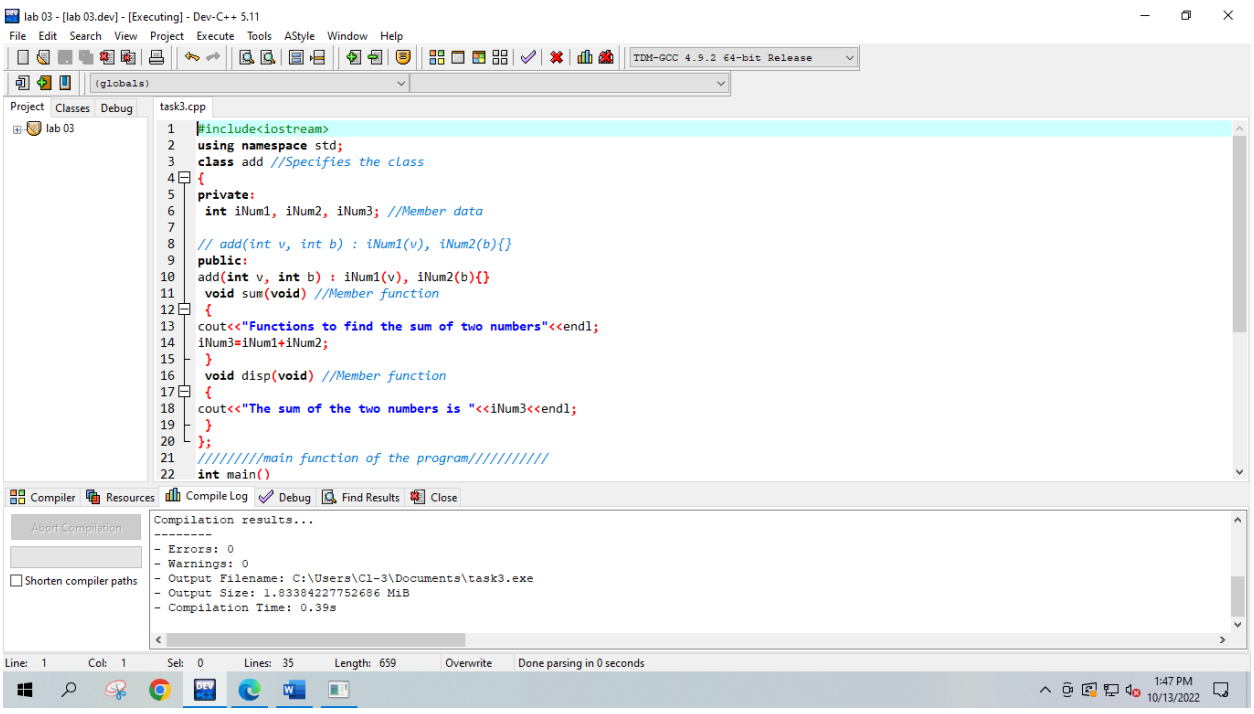


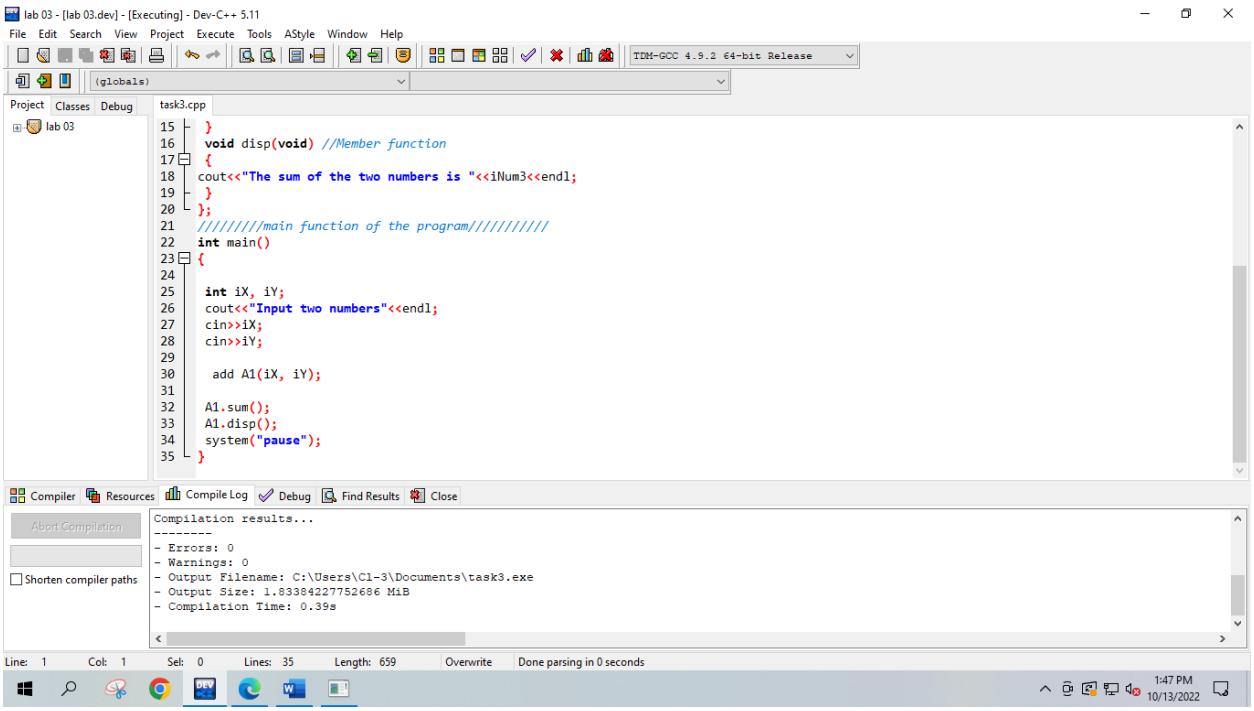
- If we initialize the constructor in private, we are unable to call it from main function when we create an object and it gives error during compilation.

<u>If we initialize the constructor in public then it will be called from main function when we create an object and it can executed successfully.</u>

```
#include<iostream>
using namespace std;
class add //Specifies the class
{
private:
 int iNum1, iNum2, iNum3; //Member data

// add(int v, int b) : iNum1(v), iNum2(b){}
public:
add(int v, int b) : iNum1(v), iNum2(b){}
 void sum(void) //Member function
 {
cout<<"Functions to find the sum of two numbers"<<endl;
iNum3=iNum1+iNum2;
```

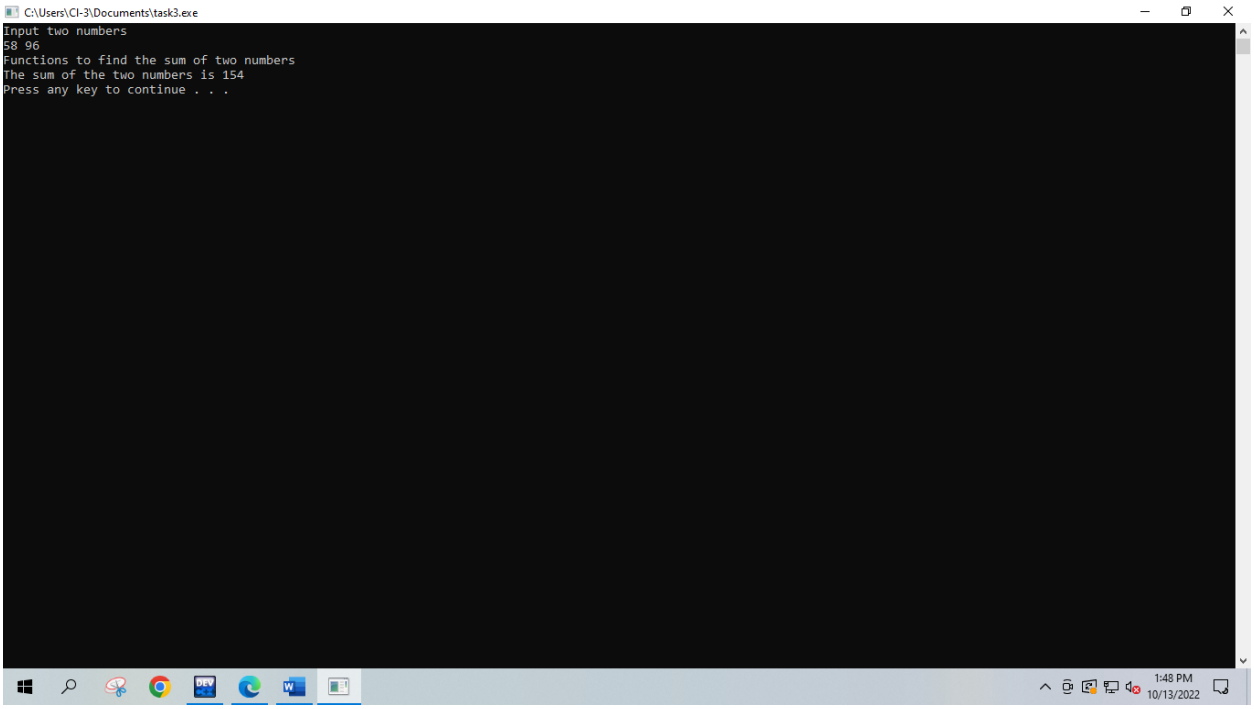
```
 }
 void disp(void) //Member function
 {
cout<<"The sum of the two numbers is "<<iNum3<<endl;
 }
};
/////////main function of the program//////////
int main()
{

 int iX, iY;
 cout<<"Input two numbers"<<endl;
 cin>>iX;
 cin>>iY;

  add A1(iX, iY);

 A1.sum();
 A1.disp();
 system("pause");
}
```




lab 03 - [lab 03.dev] - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
lab 03
task3.cpp
15 }
16 void disp(void) //Member function
17 {
18 cout<<"The sum of the two numbers is "<<iNum3<<endl;
19 }
20 };
21 /////////main function of the program//////////
22 int main()
23 {
24
25 int iX, iY;
26 cout<<"Input two numbers"<<endl;
27 cin>>iX;
28 cin>>iY;
29
30 add A1(iX, iY);
31
32 A1.sum();
33 A1.disp();
34 system("pause");
35 }
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...

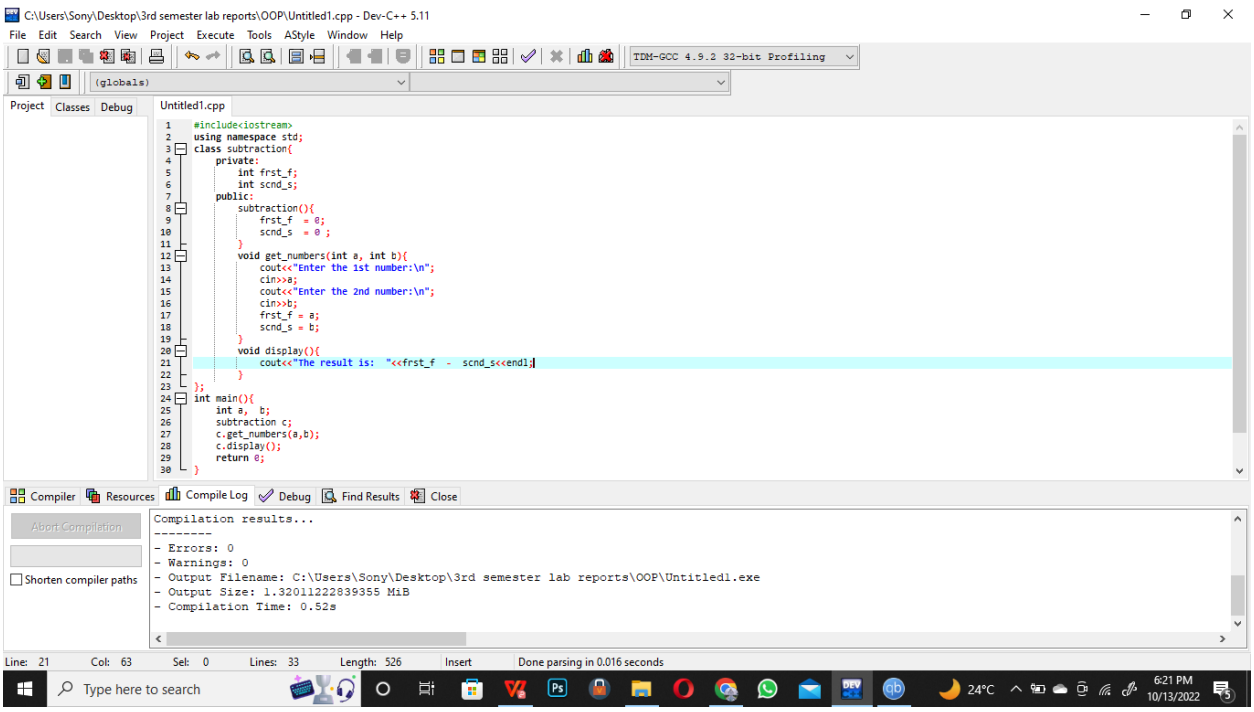
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\CI-3\Documents\task3.exe
- Output Size: 1.83384227752686 MiB
- Compilation Time: 0.39s
Line: 1 Col: 1 Sel: 0 Lines: 35 Length: 659 Overwrite Done parsing in 0 seconds
1:47 PM
10/13/2022

Output:

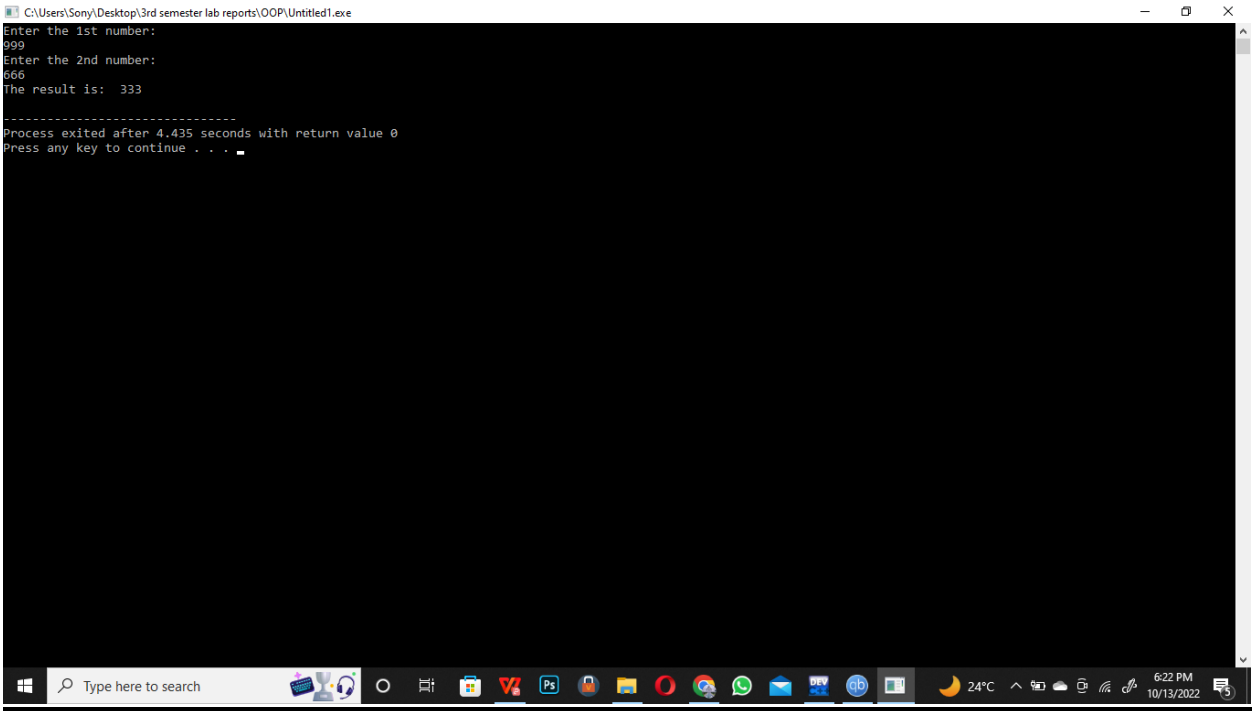

C:\Users\CI-3\Documents\task3.exe
Input two numbers
58 96
Functions to find the sum of two numbers
The sum of the two numbers is 154
Press any key to continue . . .
1:48 PM
10/13/2022

Home Tasks

6.1. Create a class of subtraction having two private data members. Create class methods to get data from users and for subtraction of data members. Use appropriate access modifiers for class methods.



Output:



Critical analysis/Conclusions:

In this lab we learn how to access the private data in main function with the help of member functions. Moreover, if we initialize the constructor in private, we are unable to call it from main function when we create an object and it gives error during compilation. If we initialize the constructor in public then it will be called from main function when we create an object and it can executed successfully. In this lab we found out errors in given example syntax during compilation and make its execution successful.