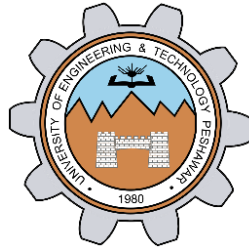


# STRUCTURES AND CLASSES

## LAB # 10 & 11



**Spring 2022**

### **CSE102L Computer Programming Lab**

Submitted by: **Ali Asghar**

Registration No. : **21PWCSE2059**

Class Section: **C**

“On my honor, as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work.”

Student Signature: \_\_\_\_\_

Submitted to:

**Engr. Abdullah Hamid**

July 4, 2022

Department of Computer Systems Engineering  
University of Engineering and Technology, Peshawar

**Lab Objective(s)**

To understand pointer role in arrays and functions To learn about data structures and classes in C++

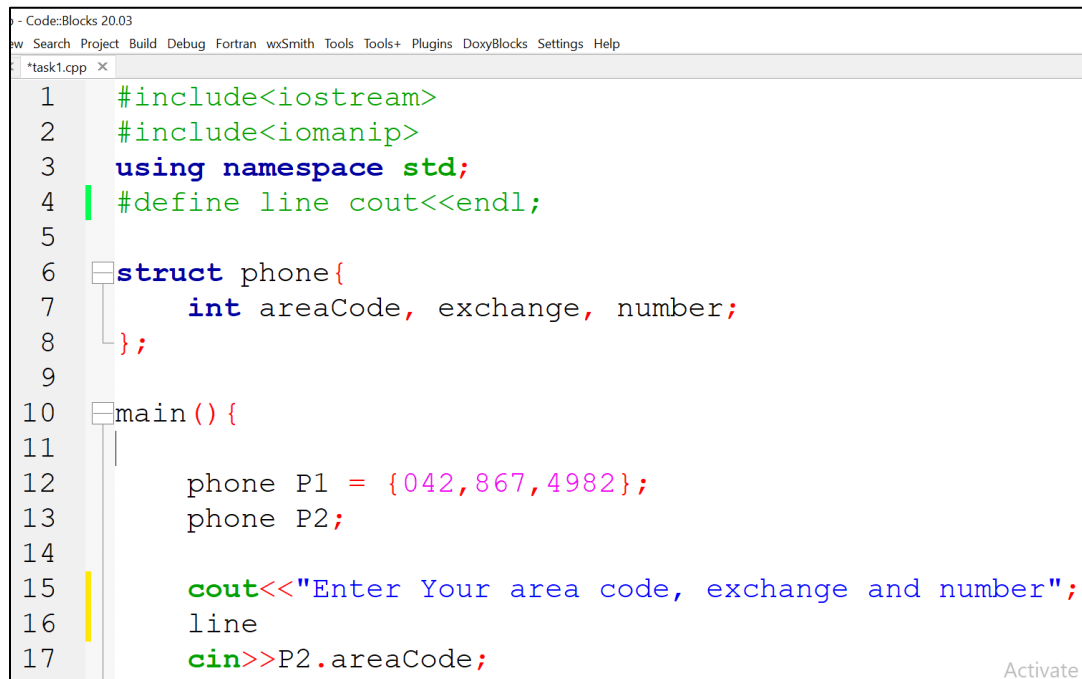
- To learn about data structures and classes in C++

**TASK # 1:****Title:**

A phone number such is (091) 767-8900 can be.....Display both numbers.

**CODE SCREENSHOTS:**

Here are the screenshots of the code.



```
- Code::Blocks 20.03
File Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task1.cpp x
1  #include<iostream>
2  #include<iomanip>
3  using namespace std;
4  #define line cout<<endl;
5
6  struct phone{
7      int areaCode, exchange, number;
8  };
9
10 main(){
11
12     phone P1 = {042,867,4982};
13     phone P2;
14
15     cout<<"Enter Your area code, exchange and number";
16     line
17     cin>>P2.areaCode;
```

Activate

```
Code::Blocks 20.03
File Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task1.cpp
12     phone P1 = {042,867,4982};
13     phone P2;
14
15     cout<<"Enter Your area code, exchange and number";
16     line
17     cin>>P2.areaCode;
18     cin>>P2.exchange;
19     cin>>P2.number;
20
21     cout<<"My number is ("<<setfill('0')<<setw(3)<<
22     P1.areaCode<<" ) "<<P1.exchange<<"-"<<P1.number;
23     line
24     cout<<"Your number is ("<<setfill('0')<<setw(3)
25     <<P2.areaCode<<" ) "<<P2.exchange<<"-"<<P2.number;
26     line
27 }
```

**OUTPUT (COMPILATION, DEBUGGING & TESTING):**

Here is the screenshot of the output of above code.

```
"D:\uni\2nd Semester\CP\CP Lab\Lab Reports\Lab 10\Task 1\task1.exe"
Enter Your area code, exchange and number
091
123
4567
My number is (034) 867-4982
Your number is (091) 123-4567

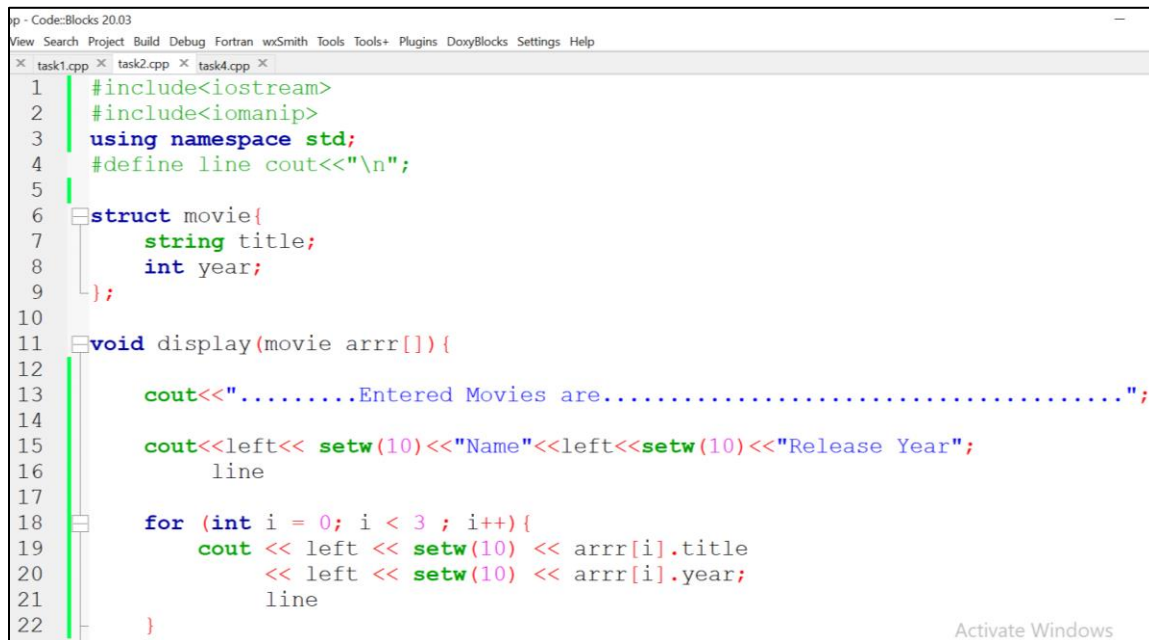
Process returned 0 (0x0)   execution time : 7.112 s
Press any key to continue.
_
```

**TASK # 2:****Title:**

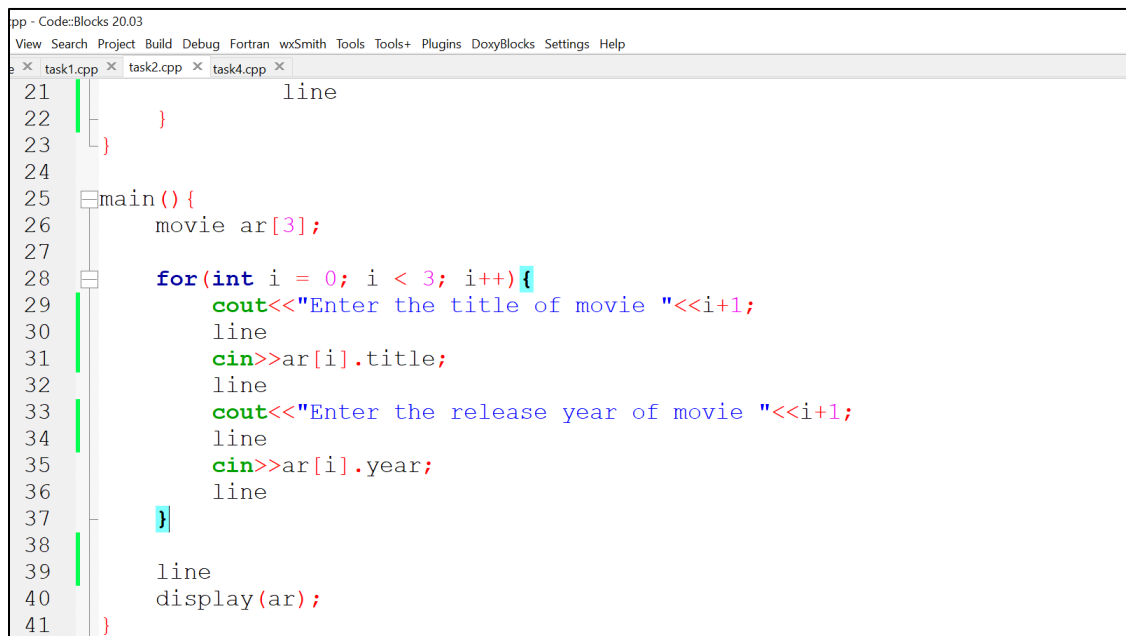
Write a C++ Program where you create a movie database.....then display the move title and names.

**CODE SCREENSHOTS:**

Here is the screenshot of the code.



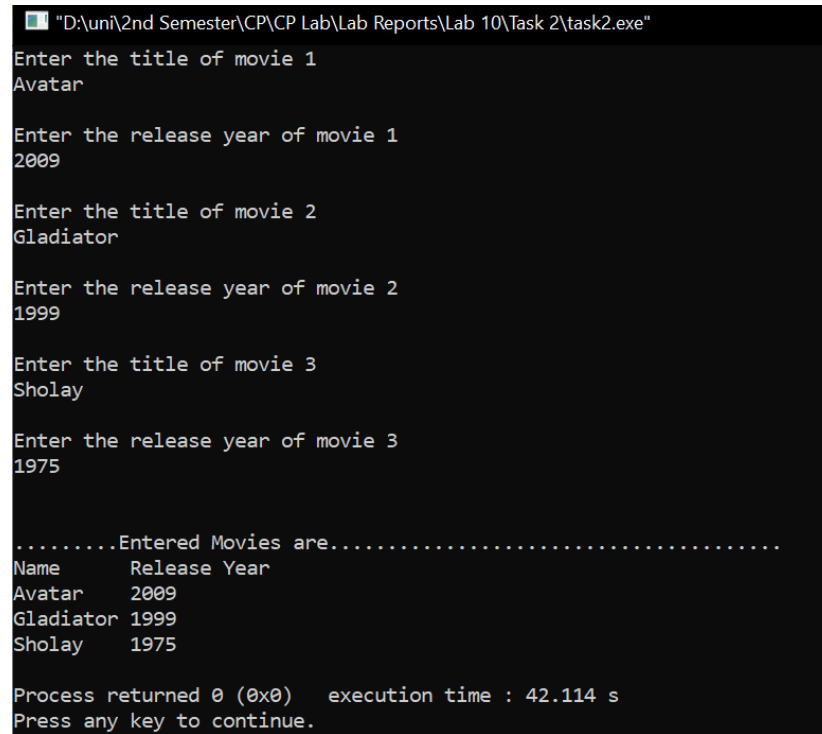
```
1  #include<iostream>
2  #include<iomanip>
3  using namespace std;
4  #define line cout<<"\n";
5
6  struct movie{
7      string title;
8      int year;
9  };
10
11 void display(movie arrr[]){
12
13     cout<<".....Entered Movies are.....";
14
15     cout<<left<< setw(10)<<"Name"<<left<<setw(10)<<"Release Year";
16     line
17
18     for (int i = 0; i < 3 ; i++){
19         cout << left << setw(10) << arrr[i].title
20         << left << setw(10) << arrr[i].year;
21         line
22     }
```



```
21     line
22 }
23
24
25 main(){
26     movie ar[3];
27
28     for(int i = 0; i < 3; i++){
29         cout<<"Enter the title of movie "<<i+1;
30         line
31         cin>>ar[i].title;
32         line
33         cout<<"Enter the release year of movie "<<i+1;
34         line
35         cin>>ar[i].year;
36         line
37     }
38
39     line
40     display(ar);
41 }
```

**OUTPUT (COMPILATION, DEBUGGING & TESTING):**

Here are the screenshots of the output of above code.



```
"D:\uni\2nd Semester\CP\CP Lab\Lab Reports\Lab 10\Task 2\task2.exe"
Enter the title of movie 1
Avatar

Enter the release year of movie 1
2009

Enter the title of movie 2
Gladiator

Enter the release year of movie 2
1999

Enter the title of movie 3
Sholay

Enter the release year of movie 3
1975

.....Entered Movies are.....
Name      Release Year
Avatar    2009
Gladiator 1999
Sholay    1975

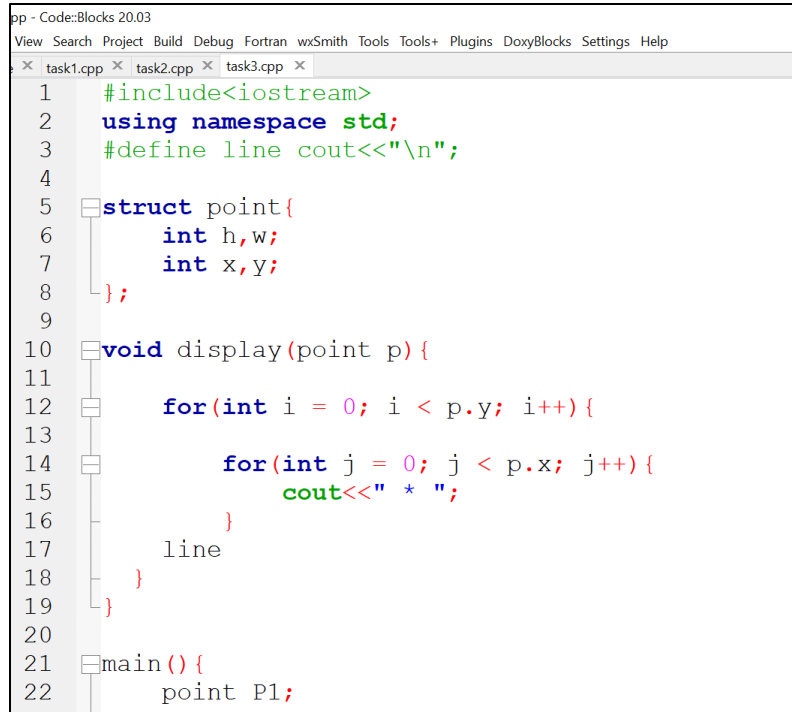
Process returned 0 (0x0)   execution time : 42.114 s
Press any key to continue.
```

**TASK # 3:****Title:**

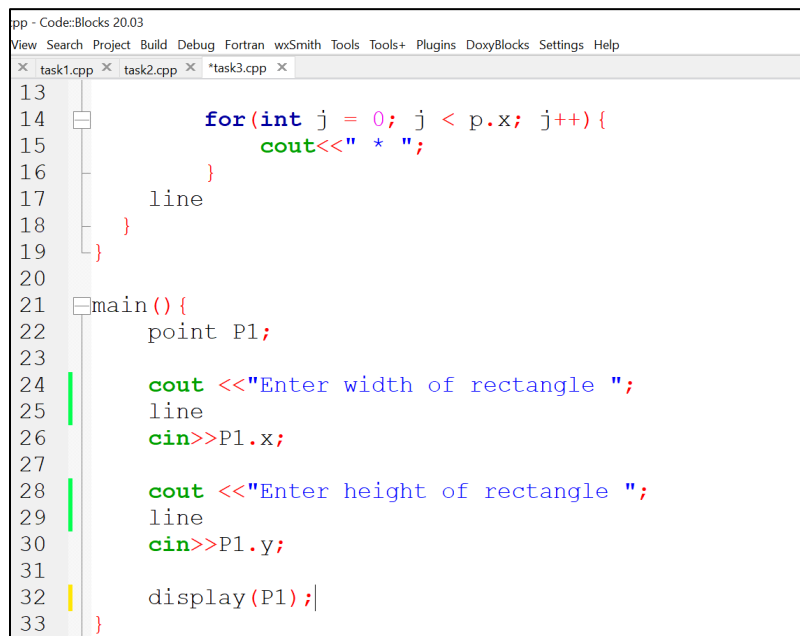
A point on a two-dimensional space has two.....entered height and width of the rectangle.

**CODE SCREENSHOTS:**

Here is the screenshot of the code.



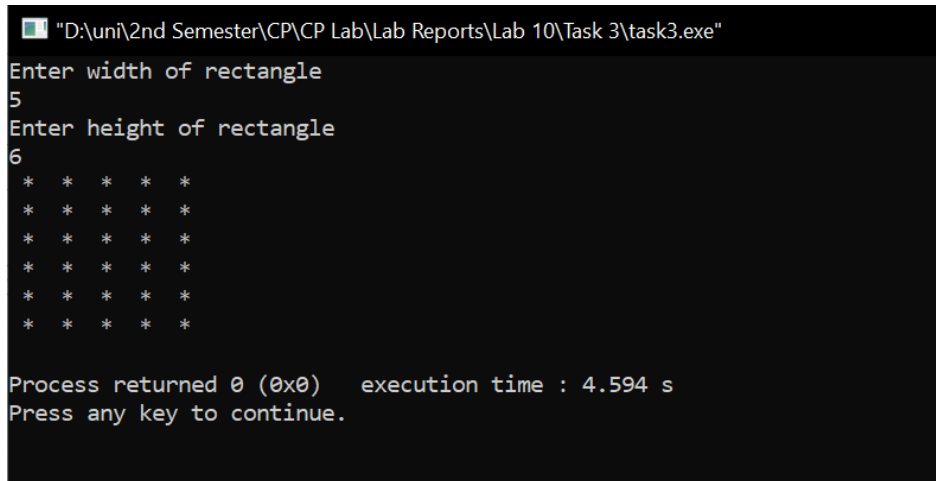
```
pp - Code::Blocks 20.03
View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task1.cpp task2.cpp task3.cpp
1  #include<iostream>
2  using namespace std;
3  #define line cout<<"\n";
4
5  struct point{
6      int h,w;
7      int x,y;
8  };
9
10 void display(point p){
11
12     for(int i = 0; i < p.y; i++){
13
14         for(int j = 0; j < p.x; j++){
15             cout<<" * ";
16         }
17         line
18     }
19 }
20
21 main(){
22     point P1;
```



```
pp - Code::Blocks 20.03
View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task1.cpp task2.cpp *task3.cpp
13
14     for(int j = 0; j < p.x; j++){
15         cout<<" * ";
16     }
17     line
18 }
19 }
20
21 main(){
22     point P1;
23
24     cout <<"Enter width of rectangle ";
25     line
26     cin>>P1.x;
27
28     cout <<"Enter height of rectangle ";
29     line
30     cin>>P1.y;
31
32     display(P1);
33 }
```

**OUTPUT (COMPILATION, DEBUGGING & TESTING):**

Here is the screenshot of the output of above code.



```
"D:\uni\2nd Semester\CP\CP Lab\Lab Reports\Lab 10\Task 3\task3.exe"
Enter width of rectangle
5
Enter height of rectangle
6
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *

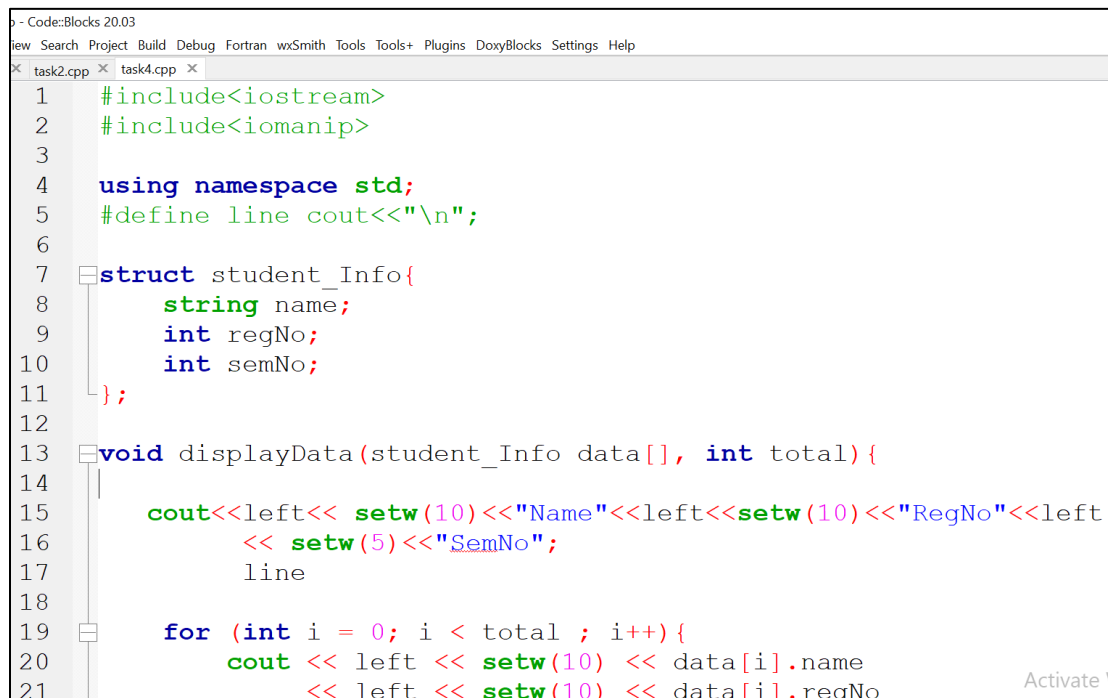
Process returned 0 (0x0)   execution time : 4.594 s
Press any key to continue.
```

**TASK # 4:****Title:**

Write a program to develop student information system.....when asked to do so, via reg no.

**CODE SCREENSHOTS:**

Here is the screenshot of the code.

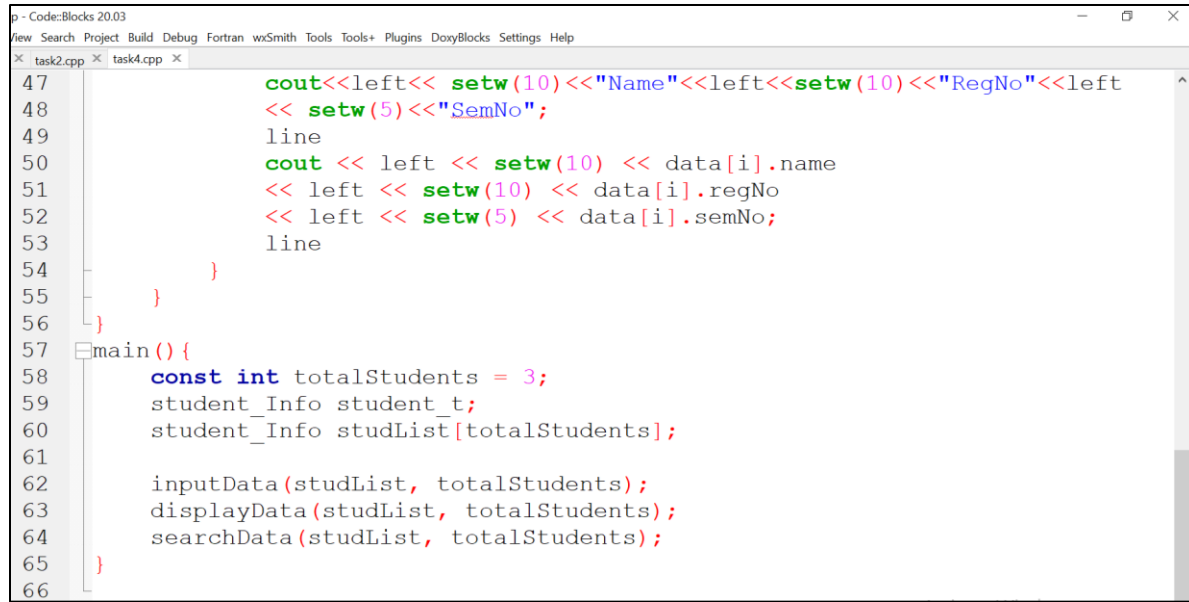


```
Code::Blocks 20.03
File Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task2.cpp task4.cpp
1  #include<iostream>
2  #include<iomanip>
3
4  using namespace std;
5  #define line cout<<"\n";
6
7  struct student_Info{
8      string name;
9      int regNo;
10     int semNo;
11 };
12
13 void displayData(student_Info data[], int total){
14
15     cout<<left<< setw(10)<<"Name"<<left<<setw(10)<<"RegNo"<<left
16         << setw(5)<<"SemNo";
17     line
18
19     for (int i = 0; i < total ; i++){
20         cout << left << setw(10) << data[i].name
21         << left << setw(10) << data[i].regNo
22     }
23 }
```

```
pp - Code::Blocks 20.03
View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task2.cpp task4.cpp
19 for (int i = 0; i < total ; i++){
20     cout << left << setw(10) << data[i].name
21         << left << setw(10) << data[i].regNo
22         << left << setw(5) << data[i].semNo;
23     line
24 }
25 }
26
27 void inputData(student_Info data[], int total){
28
29     for(int i = 0; i<total; i++){
30         cout<<"Enter the name, registration no. and semester no. of student
31             line
32         cin>>data[i].name;
33         cin>>data[i].regNo;
34         cin>>data[i].semNo;
35         line
36     }
37 }
38
39 void searchData(student_Info data[], int total){
```

```
pp - Code::Blocks 20.03
View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task2.cpp task4.cpp
38
39 void searchData(student_Info data[], int total){
40     int rNo;
41     cout<<"Enter the registration no. of student to see his/her info "<<endl;
42     cin>>rNo;
43
44     for(int i = 0; i<total; i++){
45         if(data[i].regNo == rNo){
46             line
47             cout<<left<< setw(10)<<"Name"<<left<<setw(10)<<"RegNo"<<left
48                 << setw(5)<<"SemNo";
49             line
50             cout << left << setw(10) << data[i].name
51                 << left << setw(10) << data[i].regNo
52                 << left << setw(5) << data[i].semNo;
53             line
54         }
55     }
56 }
57 main(){
58     const int totalStudents = 3;
```

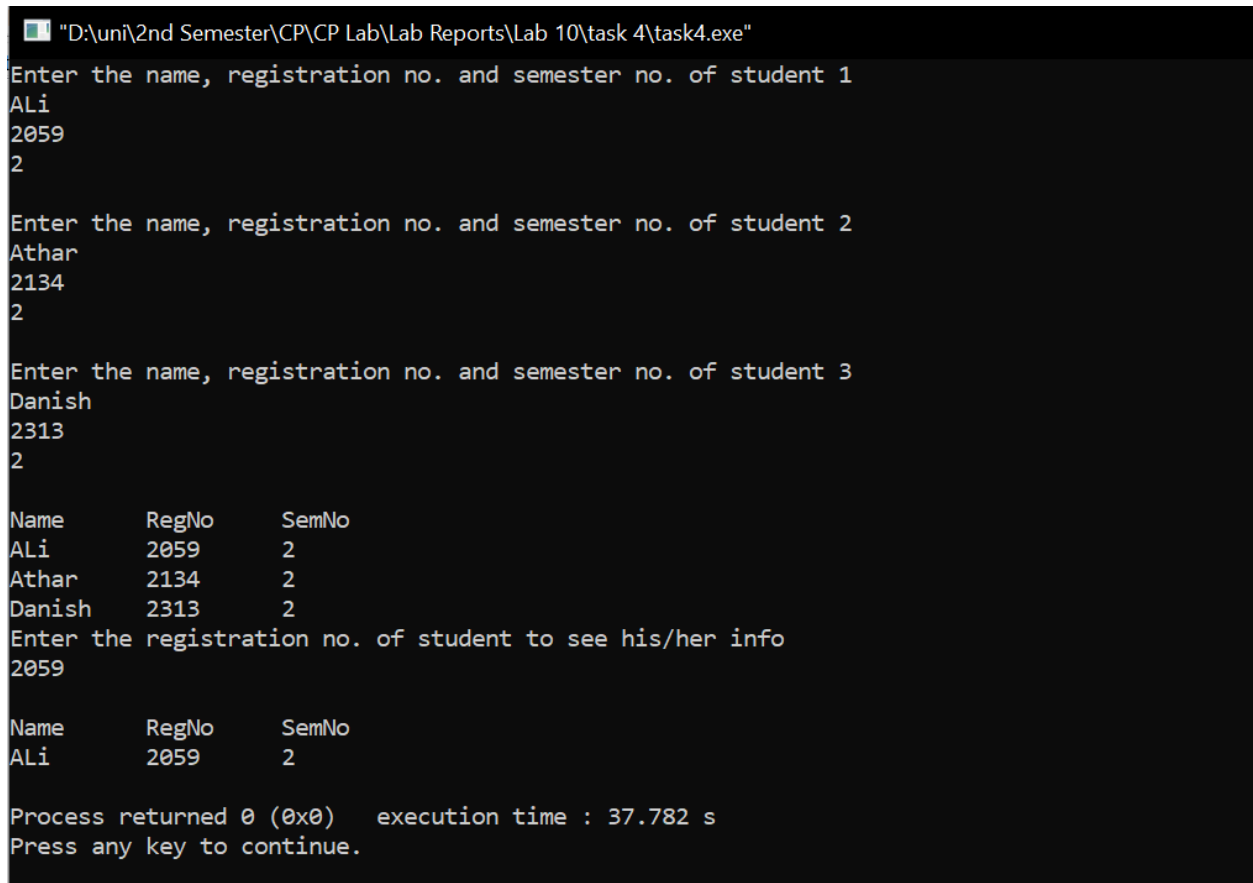




```
p - Code::Blocks 20.03
View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task2.cpp task4.cpp
47         cout<<left<< setw(10)<<"Name"<<left<<setw(10)<<"RegNo"<<left
48         << setw(5)<<"SemNo";
49         line
50         cout << left << setw(10) << data[i].name
51         << left << setw(10) << data[i].regNo
52         << left << setw(5) << data[i].semNo;
53         line
54     }
55 }
56 }
57 main(){
58     const int totalStudents = 3;
59     student_Info student_t;
60     student_Info studList[totalStudents];
61
62     inputData(studList, totalStudents);
63     displayData(studList, totalStudents);
64     searchData(studList, totalStudents);
65 }
66
```

### OUTPUT (COMPILATION, DEBUGGING & TESTING):

Here is the screenshot of the output of above code.



```
"D:\uni\2nd Semester\CP\CP Lab\Lab Reports\Lab 10\task 4\task4.exe"
Enter the name, registration no. and semester no. of student 1
ALi
2059
2

Enter the name, registration no. and semester no. of student 2
Athar
2134
2

Enter the name, registration no. and semester no. of student 3
Danish
2313
2

Name      RegNo    SemNo
ALi       2059     2
Athar     2134     2
Danish    2313     2

Enter the registration no. of student to see his/her info
2059

Name      RegNo    SemNo
ALi       2059     2

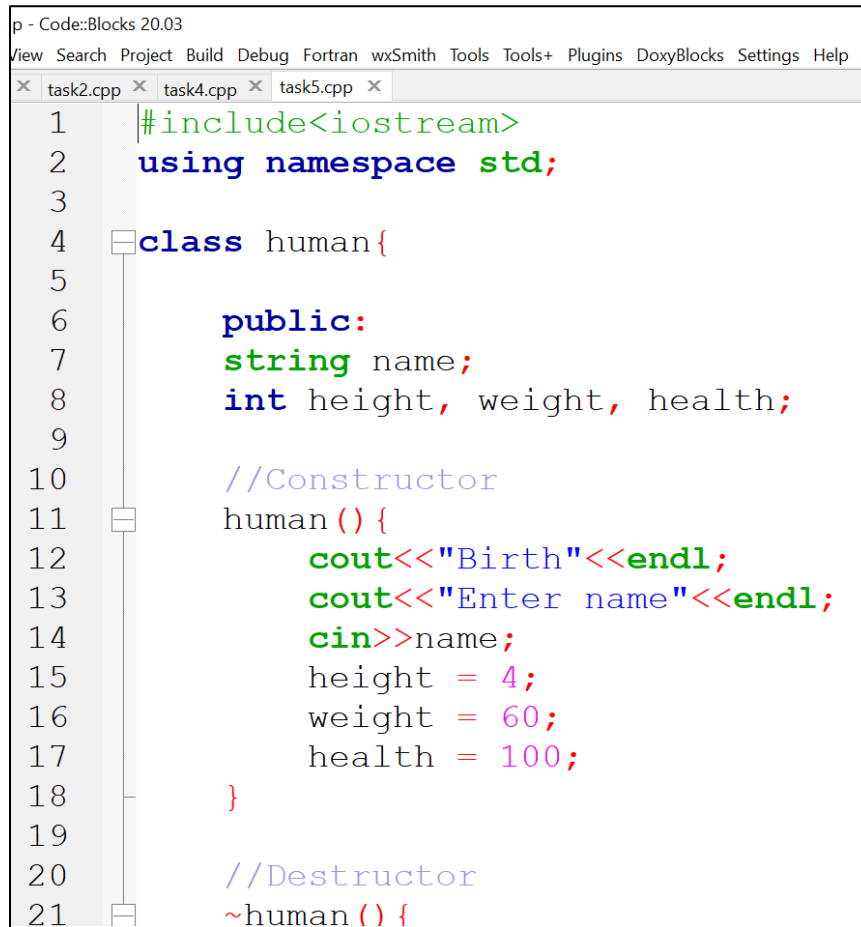
Process returned 0 (0x0)   execution time : 37.782 s
Press any key to continue.
```

**TASK # 5:****Title:**

Make a C++ Program that will have a Class of your choosing.....Your class must contain the following

**CODE SCREENSHOTS:**

Here are the screenshots of the code.



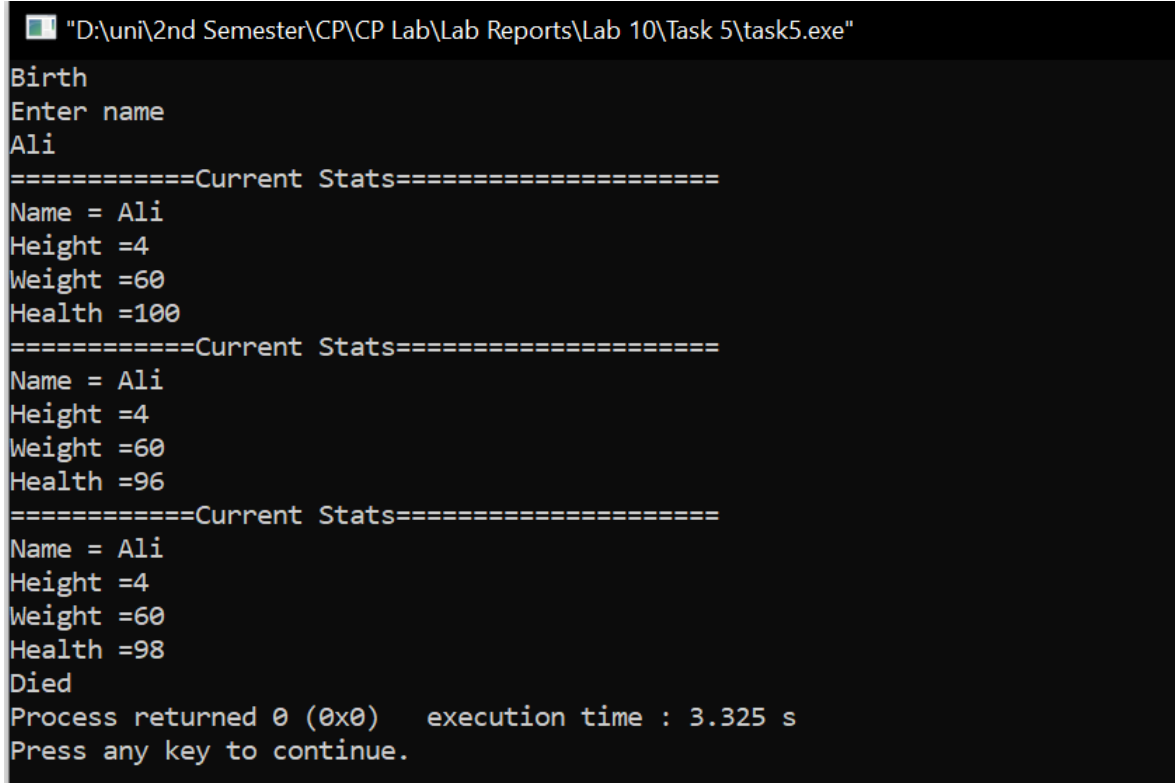
```
p - Code::Blocks 20.03
View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task2.cpp x task4.cpp x task5.cpp x
1  #include<iostream>
2  using namespace std;
3
4  class human{
5
6      public:
7      string name;
8      int height, weight, health;
9
10     //Constructor
11     human () {
12         cout<<"Birth"<<endl;
13         cout<<"Enter name"<<endl;
14         cin>>name;
15         height = 4;
16         weight = 60;
17         health = 100;
18     }
19
20     //Destructor
21     ~human () {
```

```
p - Code::Blocks 20.03
View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task2.cpp task4.cpp task5.cpp
19
20 //Destructor
21 ~human() {
22     height = 4;
23     weight = 60;
24     health = 0;
25
26     cout<<"Died";
27 }
28
29 void eat(int x) {
30     if(health >= 0 && health <=100)
31         health += x;
32 }
33
34 void takeDamge(int x) {
35     if(health >= 0 && health <=100)
36         health -= x;
37 }
38
39 void showStats() {
```

```
p - Code::Blocks 20.03
View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
task2.cpp task4.cpp task5.cpp
37 }
38
39 void showStats() {
40     cout<<"=====Current Stats===== "<<endl;
41     cout<<"Name = "<<name<<endl;
42     cout<<"Height = "<<height<<endl;
43     cout<<"Weight = "<<weight<<endl;
44     cout<<"Health = "<<health<<endl;
45 }
46 };
47
48 main() {
49     human ali;
50     ali.showStats();
51     ali.takeDamge(4);
52     ali.showStats();
53     ali.eat(2);
54     ali.showStats();
55 }
```

**OUTPUT (COMPILATION, DEBUGGING & TESTING):**

Here is the screenshot of the output of above code.



```
"D:\uni\2nd Semester\CP\CP Lab\Lab Reports\Lab 10\Task 5\task5.exe"
Birth
Enter name
Ali
=====Current Stats=====
Name = Ali
Height =4
Weight =60
Health =100
=====Current Stats=====
Name = Ali
Height =4
Weight =60
Health =96
=====Current Stats=====
Name = Ali
Height =4
Weight =60
Health =98
Died
Process returned 0 (0x0)   execution time : 3.325 s
Press any key to continue.
```