

## Assignment - 03(CPP)

Q1) Write a program in C++ to create a class Car with data members name and speed.

Use a member function display() to print values.

Create two objects and display their details.

```
Assignment03 > C++ Cars.cpp > Cars > display()
1  #include<iostream>
2  using namespace std;
3
4  class Cars{
5      string name;
6      float speed;
7      public:
8      void setData(string n, float s){
9          name = n;
10         speed = s;
11     }
12     void display(){
13         cout<<"Car Detail "<<endl;
14         cout<<"Car Name : "<<name<<"\nSpeed : "<<speed <<" km/hr"<<endl;
15     }
16 }
17 };
18 int main(){
19     Cars c1,c2;
20     c1.setData("BMW",350);
21     c2.setData("Benz",400);
22     c1.display();
23     c2.display();
24 }
```

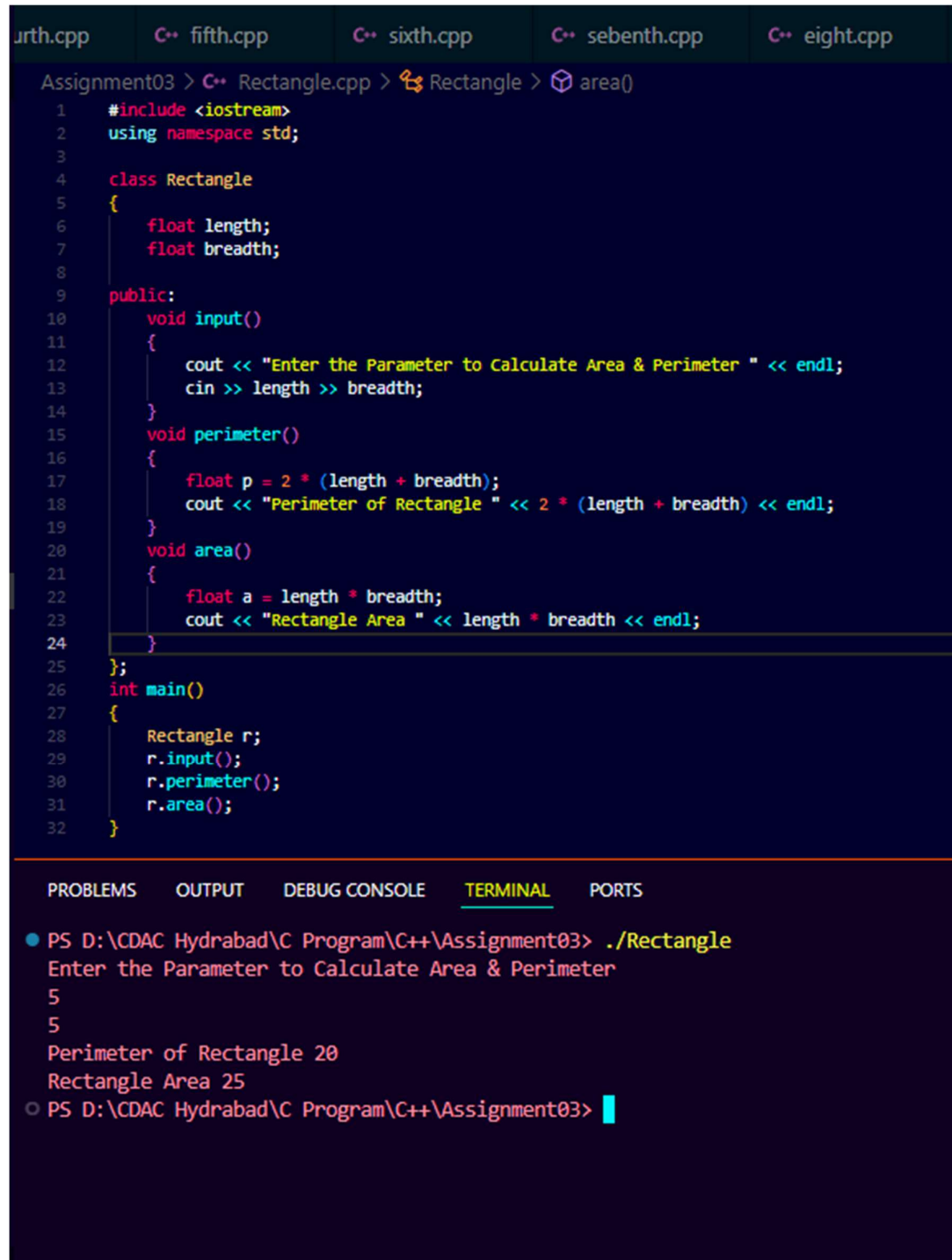
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
● PS D:\CDAC Hyderabad\C Program\C++> cd .\Assignment03\
● PS D:\CDAC Hyderabad\C Program\C++\Assignment03> ./Cars
Car Detail
Car Name : BMW
Speed :350 km/hr
Car Detail
Car Name : Benz
Speed :400 km/hr
○ PS D:\CDAC Hyderabad\C Program\C++\Assignment03> █
```

Q2) Rectangle (Area & Perimeter) Create a class Rectangle with data members length and width.

Add member functions to calculate area and perimeter.

Read values from user and display results.



The screenshot displays a C++ IDE with a tabbed interface at the top showing files: 'urth.cpp', 'C++ fifth.cpp', 'C++ sixth.cpp', 'C++ sebeth.cpp', and 'C++ eight.cpp'. The active file is 'Rectangle.cpp' under the project 'Assignment03'. The code defines a 'Rectangle' class with private data members 'length' and 'breadth' of type 'float'. It includes three public member functions: 'input()' for taking user input, 'perimeter()' for calculating the perimeter, and 'area()' for calculating the area. The 'main()' function creates a 'Rectangle' object 'r' and calls these three functions in sequence. The terminal window at the bottom shows the execution of the program, displaying the prompts and results for the input values 5 and 5.

```
Assignment03 > C++ Rectangle.cpp > area()
1  #include <iostream>
2  using namespace std;
3
4  class Rectangle
5  {
6      float length;
7      float breadth;
8
9  public:
10     void input()
11     {
12         cout << "Enter the Parameter to Calculate Area & Perimeter " << endl;
13         cin >> length >> breadth;
14     }
15     void perimeter()
16     {
17         float p = 2 * (length + breadth);
18         cout << "Perimeter of Rectangle " << 2 * (length + breadth) << endl;
19     }
20     void area()
21     {
22         float a = length * breadth;
23         cout << "Rectangle Area " << length * breadth << endl;
24     }
25 };
26 int main()
27 {
28     Rectangle r;
29     r.input();
30     r.perimeter();
31     r.area();
32 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

- PS D:\CDAC Hyderabad\C Program\C++\Assignment03> ./Rectangle  
Enter the Parameter to Calculate Area & Perimeter  
5  
5  
Perimeter of Rectangle 20  
Rectangle Area 25
- PS D:\CDAC Hyderabad\C Program\C++\Assignment03> █

### Q3) Student Details

Create a class Student with data members: rollNo, name, and marks.

Add member function input() to take values.

Add function display() to print them.

Create an array of 3 students and display all details.

```
Assignment03 > C++ Students.cpp > Students > display()
1  #include <iostream>
2  using namespace std;
3
4  class Students
5  {
6      string name;
7      int roll_no;
8      float mark;
9
10 public:
11     void input()
12     {
13         cout << "Enter Students Details : " << endl;
14         cout << "Enter Name" << endl;
15         // getline(cin, name);
16         cin >> name;
17         cout << "Enter Roll Number : " << endl;
18         cin >> roll_no;
19         cout << "Enter Marks : " << endl;
20         cin >> mark;
21     }
22     void display()
23     {
24         cout << "Name : " << name << "\nRoll_No : " << roll_no << "\nMarks : " << mark << endl;
25         cout << "\n*****" << endl;
26     }
27 };
28 int main()
29 {
30     Students s[3];
31     for (int i = 0; i < 3; i++)
32     {
33         cout << "Student Details Are " << endl;
34         s[i].input();
35     }
36     for (int i = 0; i < 3; i++)
37     {
38         s[i].display();
39     }
40 }
```

```

PS D:\CDAC Hyderabad\C Program\C++\Assignment03> ...
Enter Students Details :
Enter Name
Yash
Enter Roll Number :
107
Enter Marks :
59
Student Details Are
Enter Students Details :
Enter Name
Raj
Enter Roll Number :
56
Enter Marks :
88
Student Details Are
Enter Students Details :
Enter Name
John
Enter Roll Number :
22
Enter Marks :
90
Name : Yash
Roll_No : 107
Marks : 59

*****
Name : Raj
Roll_No : 56
Marks : 88

*****
Name : John
Roll_No : 22
Marks : 90

*****
PS D:\CDAC Hyderabad\C Program\C++\Assignment03> █

```

Q4) . Bank Account Create a class BankAccount with:

Data members: accountNumber, balance.

Functions: deposit(), withdraw(), displayBalance().

Perform deposit and withdrawal operations using objects.

```

Assignment03 > C++ Bank.cpp > main()
1  #include<iostream>
2  using namespace std;
3
4  class Bank{
5      int accno;
6      float balance = 0;
7  public:
8      void deposit(double amt){
9          if (amt>0)
10         {
11             balance += amt;
12             cout<<"Amount Deposited "<<amt<<"\nAvalabil Balance "<<balance<<endl;
13         }
14         else{
15             cout<<"Invalid amount"<<endl;
16         }
17     }
18     void withdraw(double amt){
19         if (amt<=balance)
20         {
21             balance -= amt;
22             cout<<"Withdraw Succes "<<amt<<"\nAvalabil Balance "<<balance<<endl;
23         }
24         else{
25             cout<<"Insuffecent Balance"<<endl;
26         }
27     }
28 }
29 void display(){
30     cout<<"Avalaible Balance "<<balance<<endl;
31 }
32 };
33 int main(){
34     Bank b;
35     b.deposit(10000);
36     b.withdraw(10);
37     b.display();
38 }

```

```

PS D:\CDAC Hyderabad\C Program\C++\Assignment03> ./bank
Amount Deposited 10000
Avalabil Balance 10000
Withdraw Succes 10
Avalabil Balance 9990
Avalaible Balance 9990
PS D:\CDAC Hyderabad\C Program\C++\Assignment03>

```

### Q5) Employee Salary (Parameterized Constructor)

Write a C++ program to create a class Employee with data members id, name, and salary. Use a parameterized constructor to initialize values. Display employee details using a function.

```

#include <iostream>
using namespace std;

class Employees{
    int id;
    string name;
    double salary;
public:
    Employees(int Id, string n, double s){
        id = Id;
        name = n;
        salary = s;
    }
    void display(){
        cout<<"Employees Details"<<endl;
        cout<<"Employee ID : "<<id<<"\nEmployee Name : "<<name<<"\nSalary : "<<salary<<endl;
    }
};

int main(){
    Employees e(1001,"Yash",100000);
    e.display();
}

```

```

PS D:\CDAC Hyderabad\C Program\C++\Assignment03> ./Employees
Employees Details
Employee ID : 1001
Employee Name : Yash
Salary : 100000
PS D:\CDAC Hyderabad\C Program\C++\Assignment03>

```

## Q6) . Complex Number (Object as Argument)

Create a class Complex with data members real and imag.

Add a member function add() that takes another Complex object and returns the result as a new object.

Display the sum of two complex numbers.



```
Assignment03 > C++ Complex.cpp > Complex
1  #include <iostream>
2  using namespace std;
3
4  class Complex{
5      float real,imag;
6
7      public:
8      Complex(float r =0, float i = 0){
9          real = r;
10         imag = i;
11     }
12
13     Complex add(Complex c2){
14         Complex result;
15         result.real = real + c2.real;
16         result.imag = imag + c2.imag;
17         return result;
18     }
19
20     void display(){
21         cout<< real<<" + "<< imag <<"i"<<endl;
22     }
23 };
24 int main(){
25     Complex c1(5.2, 3.4);
26     Complex c2(2.8, 4.6);
27     Complex sum = c1.add(c2);
28     cout<<"first";
29     c1.display();
30     cout<<"second";
31     c2.display();
32     return 0;
33 }
34 }
```

PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS D:\CDAC Hyderabad\C Program\C++\Assignment03> g++ Complex.cpp -o Complex
PS D:\CDAC Hyderabad\C Program\C++\Assignment03> ./Complex
first5.2 + 3.4i
second2.8 + 4.6i
PS D:\CDAC Hyderabad\C Program\C++\Assignment03>
```

### Q7. Library Management

Create a class Book with data members title, author, and price. Write functions to input and display details. Create an array of 5 books and print the book with the highest price



Assignment03 > C++ Library.cpp > Library > input()

```
1  #include<iostream>
2  using namespace std;
3
4  class Library{
5      string title;
6      double price;
7
8  public:
9      void input(){
10         cout<<"Enter Book Title";
11         cin>>title;
12
13         cout<<"Enter Book Price"<<endl;
14         cin>>price;
15     }
16     void display(){
17         cout<<"\nBook Title"<<title<<endl;
18         cout<<"Price"<<price<<endl;
19         cout<<"*****"<<endl;
20     }
21     double getprice(){
22         return price;
23     }
24 };
25 int main(){
26     Library l[5];
27
28     for (int i = 0; i < 5; i++)
29     {
30         cout<<"Book Number "<<i+1<<endl;
31         l[i].input();
32     }
33     for (int i = 0; i < 5; i++)
34     {
35         cout<<"Book Number "<<i+1<<" Display"<<endl;
36         l[i].display();
37     }
38     int f = 0;
39     int h = l[0].getprice();
40     for (int i = 0; i < 5; i++)
41     {
42         if (h<l[i].getprice())
43         {
44             h = l[i].getprice();
45             f = i;
46         }
47     }
48
49     cout<<"*****"<<endl;
50     cout<<"Higest Book Price"<<endl;
51     l[f].display();
52     return 0;
53 }
```

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```
PS D:\CDAC Hyderabad\C Program\C++\Assignment03> ./Library
```

```
Book Number 1
```

```
Enter Book Title :Panchtantra
```

```
Enter Book Price :
```

```
200
```

```
Book Number 2
```

```
Enter Book Title :Champion
```

```
Enter Book Price :
```

```
600
```

```
Book Number 3
```

```
Enter Book Title :Happines
```

```
Enter Book Price :
```

```
500
```

```
Book Number 4
```

```
Enter Book Title :Life
```

```
Enter Book Price :
```

```
745
```

```
Book Number 5
```

```
Enter Book Title :Introvert
```

```
Enter Book Price :
```

```
997.9
```

```
Book Number 1 Display
```

```
Book TitlePanchtantra
```

```
Price200
```

```
*****
```

```
Book Number 2 Display
```

```
Book TitleChampion
```

```
Price600
```

```
*****
```

```
Book Number 3 Display
```

```
Book TitleHappines
```

```
Price500
```

```
*****
```

```
Book Number 4 Display
```

```
Book TitleLife
```

```
Price745
```

```
*****
```

```
Book Number 5 Display
```

```
Book TitleIntrovert
```

```
Price997.9
```

```
*****
```

```
*****
```

```
Higest Book Price
```

```
Book TitleIntrovert
```

```
Price997.9
```

```
*****
```

```
PS D:\CDAC Hyderabad\C Program\C++\Assignment03> █
```