

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 shows a code editor with tabs for "urth.cpp", "C++ fifth.cpp", "C++ sixth.cpp", "C++ sebenth.cpp", and "C++ eight.cpp". The current file is "C++ eight.cpp". The code defines a class Rectangle with private data members length and breadth, and public member functions input(), perimeter(), and area(). The main() function creates a Rectangle object r and calls these methods. The output terminal shows the program's execution and the resulting area and perimeter calculations for a rectangle with length 5 and breadth 5.

```
Assignment03 > C++ Rectangle.cpp > ⚙ Rectangle > ⓘ 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.

The screenshot shows a code editor with a dark theme. The file is named 'Students.cpp'. The code defines a class 'Students' with private data members: name (string), roll\_no (int), and mark (float). It includes a public 'input()' function for reading user input and a public 'display()' function for printing student details. The main() function creates an array of three 'Students' objects and loops through them to call their respective functions.

```
rth.cpp C++ fifth.cpp C++ sixth.cpp C++ sebenth.cpp C++ eight.cpp C++ Cars.cpp
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 << "*****" << 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

```

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 void display(){
29 cout<<"Avalaible Balance "<<balance<<endl;
30 }
31 };
32 int main(){
33 Bank b;
34 b.deposit(10000);
35 b.withdraw(10);
36 b.display();
37 }
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.

```
1 #include <iostream>
2 using namespace std;
3
4 class Employees{
5 int id;
6 string name;
7 double salary;
8 public:
9 Employees(int Id, string n, double s){
10 id = Id;
11 name = n;
12 salary = s;
13 }
14 void display(){
15 cout<<"Employees Details"<<endl;
16 cout<<"Employee ID : "<<id<<"\nEmployee Name : "<<name<<"\nSalary : "<<salary<<endl;
17 }
18 };
19 int main(){
20 Employees e(1001,"Yash",100000);
21 e.display();
22 }
```

```
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.

The screenshot shows a code editor window with the following details:

- File Tabs:** ls.cpp, C++ Complex.cpp X, C++ Library.cpp 2, C++ Item.cpp, Rectangle.exe, L.
- Code Content:** A C++ program named Complex.cpp. It defines a class Complex with data members real and imag. It includes a constructor, an add() member function that adds two Complex objects, and a display() member function that prints the real and imaginary parts. In the main() function, two Complex objects are created (c1 and c2), their sum is calculated (sum = c1.add(c2)), and both objects are displayed.
- Toolbars:** Chat (CTRL + I) / Share (CTRL + L) button.
- Bottom Bar:** PROBLEMS 2, OUTPUT, DEBUG CONSOLE, TERMINAL (underlined), PORTS.
- Terminal:** Shows the command line output of the program execution. It shows the compilation command g++ Complex.cpp -o Complex, the execution command ./Complex, and the output showing the addition of two complex numbers: first 5.2 + 3.4i and second 2.8 + 4.6i.

```
#include <iostream>
using namespace std;

class Complex{
 float real,imag;
public:
 Complex(float r =0, float i = 0){
 real = r;
 imag = i;
 }

 Complex add(Complex c2){
 Complex result;
 result.real = real + c2.real;
 result.imag = imag + c2.imag;
 return result;
 }

 void display(){
 cout<< real<<" + "<< imag <<"i"<<endl;
 }
};

int main(){
 Complex c1(5.2, 3.4);
 Complex c2(2.8, 4.6);
 Complex sum = c1.add(c2);
 cout<<"first";
 c1.display();
 cout<<"second";
 c2.display();
 return 0;
}
```

```
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
53 return 0;
```

Ln 10, Col 26 Spaces: 4

```
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>
```