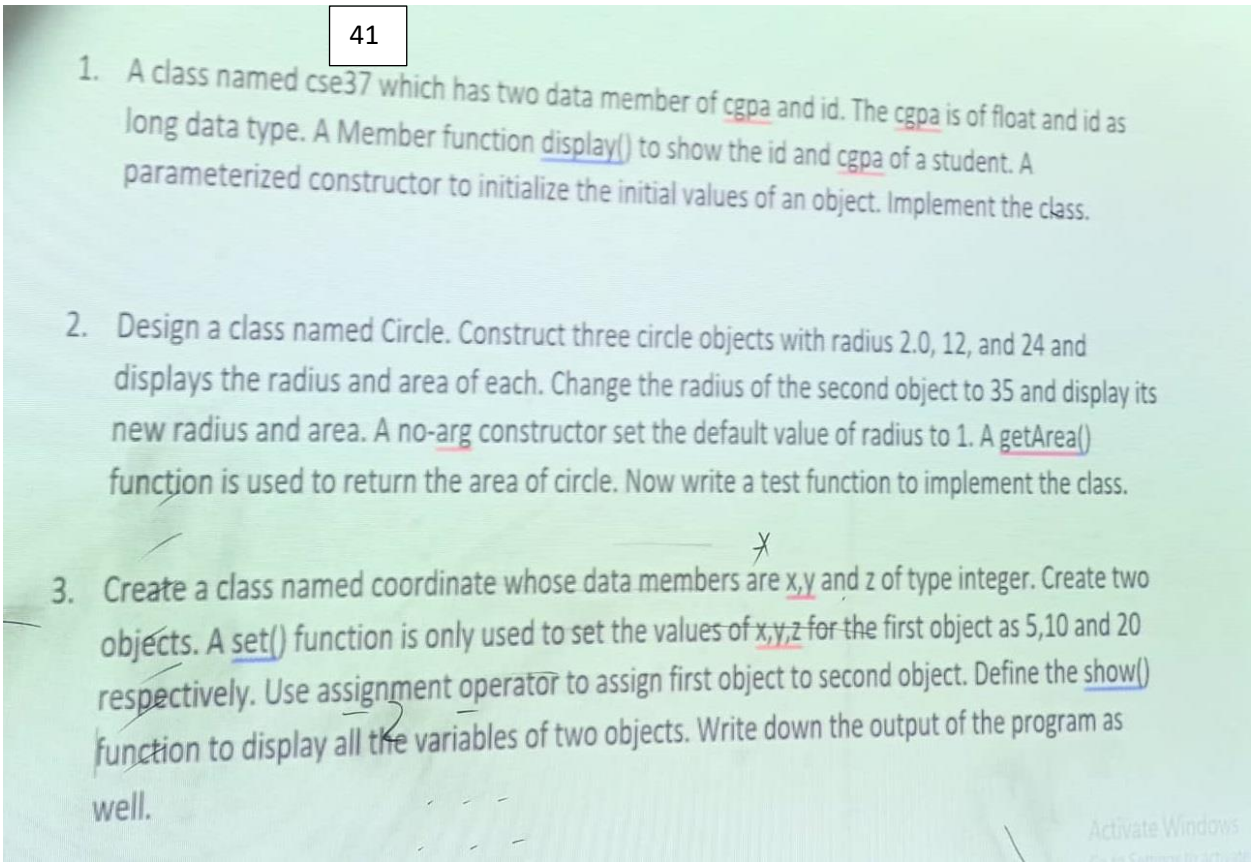


41

1. A class named cse37 which has two data member of cgpa and id. The cgpa is of float and id as long data type. A Member function display() to show the id and cgpa of a student. A parameterized constructor to initialize the initial values of an object. Implement the class.

2. Design a class named Circle. Construct three circle objects with radius 2.0, 12, and 24 and displays the radius and area of each. Change the radius of the second object to 35 and display its new radius and area. A no-arg constructor set the default value of radius to 1. A getArea() function is used to return the area of circle. Now write a test function to implement the class.

3. Create a class named coordinate whose data members are x,y and z of type integer. Create two objects. A set() function is only used to set the values of x,y,z for the first object as 5,10 and 20 respectively. Use assignment operator to assign first object to second object. Define the show() function to display all the variables of two objects. Write down the output of the program as well.

Solution 1:

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

class cse41{
    float cgpa;
    long int id;

public:
     void display(){
        cout << "Id: " << id << " Cgpa: " << cgpa << endl;
     }

     cse41(float x,long int y){
         cgpa = x;
         id = y;
    }
};

int main(){
    cse41 obj(3.83, 199338);
```

```
    obj.display();
}
```

Output:

```
Id: 199338 Cgpa: 3.83
```

```
//Problem 2
#include<iostream>
using namespace std;
class Circle{
    public:
    float radius;
    float area;
    Circle(float x){
        radius = x;
    }
    float getArea(){
        double area1;
        area1 = 3.1416 * radius * radius;
        return area1;
    }
    Circle(){
        radius = 1;
    }

    void display(){
        area = getArea();
        cout << radius  << " " << area << endl;
    }

};

int main(){
    Circle obj1(2.0),obj2(12),obj3(24), obj4;
    obj1.display();
    obj2.display();
    obj3.display();
    obj4.display();
    obj2.radius = 35;
    obj2.display();
}
```

Output:

```
2 12.5664
12 452.39
24 1809.56
1 3.1416
35 3848.46
```

```cpp
//Problem class 1: 03
#include<iostream>
using namespace std;
class coordinate{
    int x,y,z;
    public:
        void set(int a, int b, int c){
            x = a;
            y = b;
            z = c;
        }

        void show(){
            cout << "x: " << x << " y: "  << y << " z:" << z << endl;
        }

};

int main()
{
    coordinate ob1,ob2;
    ob1.set(5,10,20);
    ob2 = ob1;
    ob1.show();
    ob2.show();

}
```

Output:

```
x: 5 y: 10 z:20
x: 5 y: 10 z:20
```

1. Define a class named square which has private data member length as integer type. A member function set_length() is used to set the length of an object. To calculate the area of a non-member function area() which takes an square object as parameter and returns the area of the object. Now create an object of square class, then set the length of the object and show the area as output.

2. Define a class named Box which has private data member length, width and height as integer type. A parameterized constructor is used to set the data members of an object and a display() function shows the values of the data members. To calculate the volume, a non-member function volume() which takes an Box object as parameter and returns the area of the object. Now create an object of box class, then set the length of the object and show the area as output.

```cpp
///Problem class 2: 01
#include<iostream>
using namespace std;

class Square{
    int length;
    public:
    void set_length(int x){
        length = x;
    }
    friend int area(Square ob);

};


int area(Square ob){
    int area = ob.length * ob.length;
    return area;
}
```

```
int main(){
  Square ob;
  ob.set_length(10);
  cout << "Area: "<< area(ob);

}
```

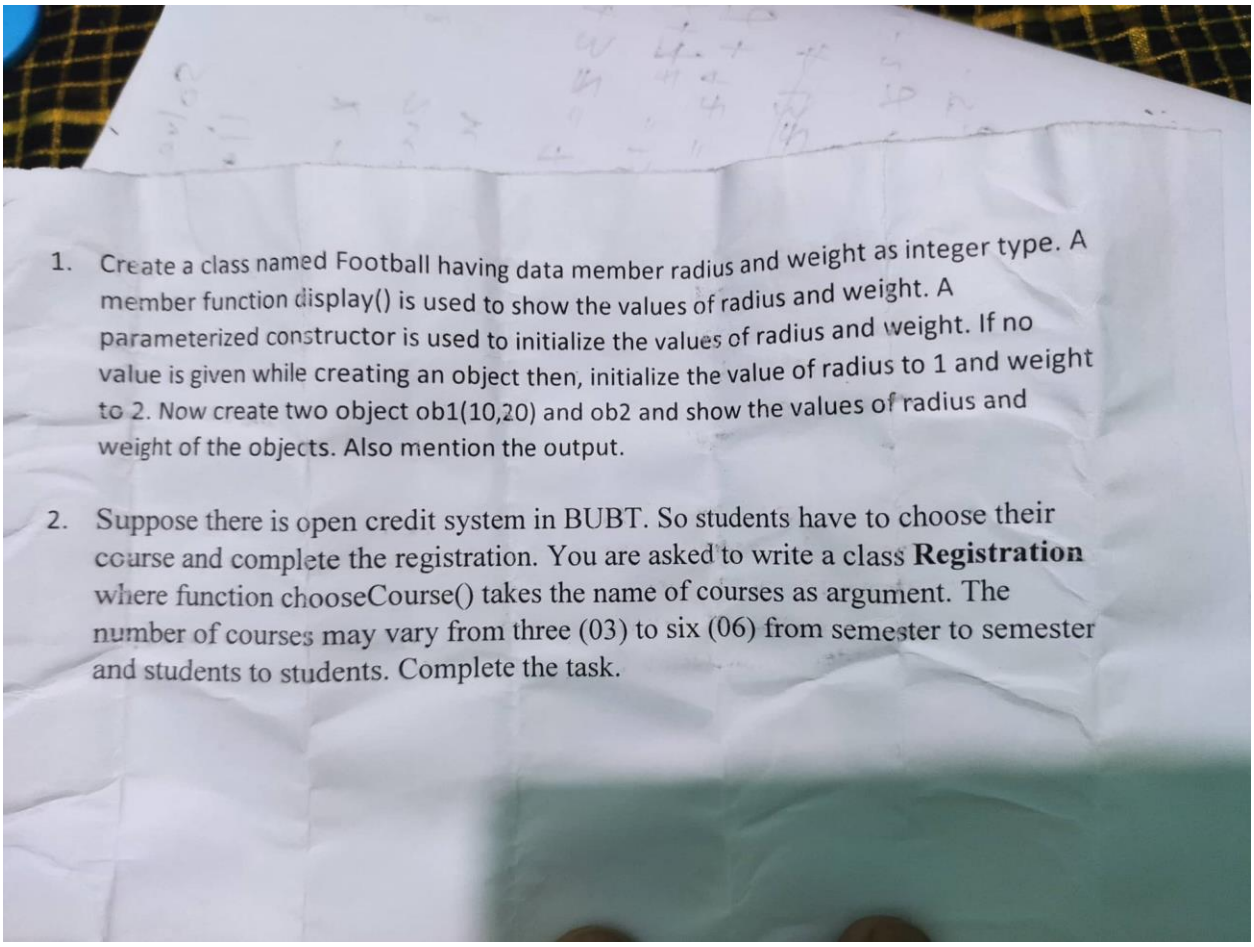
Ouput:

```
Area: 100
```

```
///Problem class 2: 02
#include<iostream>
using namespace std;

class Box{
    int length, width, height;
    public:
        Box(int l, int w, int h){
            length = l;
            width = w;
            height = h;
        }

        void display(){

            cout << "length: " << length << " Width: "  << width << " Height:" <<
height << endl;
        }
        friend int volume(Box obj);
};

//Formula of Box: 2(lw+lh+hw)
int volume(Box obj){
    int area = 2*((obj.length * obj.width) + (obj.length * obj.height) +
(obj.height * obj.width));
    return area;
}


int main(){
    Box obj(10,30,10);
    cout << volume(obj) << endl;

}
```

Output:

```
1400
```



1. Create a class named Football having data member radius and weight as integer type. A member function display() is used to show the values of radius and weight. A parameterized constructor is used to initialize the values of radius and weight. If no value is given while creating an object then, initialize the value of radius to 1 and weight to 2. Now create two object ob1(10,20) and ob2 and show the values of radius and weight of the objects. Also mention the output.

2. Suppose there is open credit system in BUBT. So students have to choose their course and complete the registration. You are asked to write a class **Registration** where function chooseCourse() takes the name of courses as argument. The number of courses may vary from three (03) to six (06) from semester to semester and students to students. Complete the task.

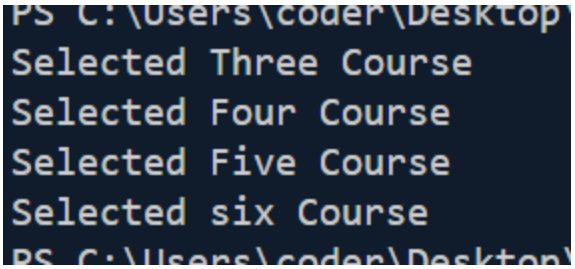
```cpp
//Problem 01
#include<iostream>
using namespace std;
class Football{
    int radius, weight;
    public:
    void display(){
        cout << "Radius: " << radius  << " Weight: " << weight << endl;
    }
    Football(int a, int b){
        radius = a;
        weight = b;
    }
    Football(){
```

```
        radius = 1;
        weight = 2;
    }

};

int main(){
    Football ob1(10,20), ob2;
    ob1.display();
    ob2.display();
}
```

```
Radius: 10 Weight: 20
Radius: 1 Weight: 2
```

```
//Problem 2
#include<iostream>
using namespace std;
class Registration{
   public:
        void chooseCourse(string a, string b, string c){
            cout << "Selected Three Course" << endl;
        }
        void chooseCourse(string a, string b, string c, string d){
            cout << "Selected Four Course"<< endl;
        }
        void chooseCourse(string a, string b, string c, string d, string e){
            cout << "Selected Five Course" << endl;
        }
        void chooseCourse(string a, string b, string c, string d, string e,
string f){
            cout << "Selected six Course";
        }

};
int main(){
    Registration obj;
    obj.chooseCourse("Cse 101", "Cse 102", "Cse 103");
    obj.chooseCourse("Cse 101", "Cse 102", "Cse 103", "Cs3");
    obj.chooseCourse("Cse 101", "Cse 102", "Cse 103", "Cs322", "cse22");
    obj.chooseCourse("Cse 101", "Cse 102", "Cse 103", "Cs322", "cse22","cse112");
}
```

Output:


PS C:\Users\coder\Desktop
Selected Three Course
Selected Four Course
Selected Five Course
Selected six Course
PS C:\Users\coder\Desktop