1. Define a class Complex to represent a complex number. Declare instance member variables to store real and imaginary part of a complex number, also define instance member functions to set values of complex number and print values of complex number.

```
#include<iostream>

using namespace std;

class Complex

{

   int a;

   int b;

public:

   Complex(int x,int y)

   {

      a = x;

      b = y;

   }

   void display()

   {

      cout<<"Complex number is: "<<a<<"+"<<b<<"i"<<endl;

   }

};

int main()

{

   Complex c(3,4);

   c.display();

   return 0;

}
```

2. Define a class Time to represent Time (like 3 hr 45 min 20 sec). Declare appropriate number of instance member variables and also define instance member functions to set values for time and display values of time.

```
#include<iostream>
```

```
using namespace std;
class Time
{
  public:
    int hour,min,sec;
    Time(int h,int m,int s)
    {
        hour = h;
        min = m;
        sec = s;
    }
    void display()
    {
        cout<<"Time = "<<hour<<":"<<min<<":"<<sec<<endl;
    }
};
int main()
{
     Time t(5,45,20);
     t.display();
     return 0;
}
```

3. Define a class Factorial and define an instance member function to find the Factorial of a number using class.

```
#include<iostream>
using namespace std;
class Factorial
{
   int n;
```

```
   int fact;
public:
   Factorial(int number)
   {     fact = 1;
         n = number;
         for(int i = 1;i<=n;i++)
       fact = fact*i;
   }
   void display()
   {
      cout<<"Factorial of "<<n<<" is "<<fact<<endl;
   }
};
int main()
 {
    Factorial f(5);
    f.display();
    return 0;
 }
```

4. Define a class LargestNumber and define an instance member function to find the Largest of three Numbers using the class.

```
#include<iostream>
using namespace std;
class Largestnum
{
   int x,y,z;
   int largestnum;
public:
   Largestnum(int a,int b,int c)
```

```
    {
        x=a;
        y=b;
        z=c;
          }
    void findlargestnum()
    {
        largestnum = (x>y)?(x > z ? x :z):(y > z ? y:z);
    }
    void print()
    {
        cout<<"Largest of "<<x<<","<<y<<","<<z<<" is "<<largestnum<<endl;
    }
};
int main()
{
    Largestnum l(5,34,54);
    l.findlargestnum();
    l.print();
    return 0;
}
```

5. Define a class ReverseNumber and define an instance member function to find Reverse of a Number using class.

```
#include<iostream>
using namespace std;
class ReverseNum
{
    int num;
    int reverse;
```

```
public:
   ReverseNum(int a)
   {
      num = a;
   }
   void findreverse()
   {
      int n = num;
      reverse = 0;
      while(n!=0)
      {
         reverse = reverse*10 +n%10;
         n = n/10;
      }
   }
   void print()
   {
      cout<<"Reverse of "<<num<<" is : "<<reverse<<endl;
   }
};
int main()
{
   int num;
   cout<<"Enter the number"<<endl;
   cin>>num;
   ReverseNum r(num);
   r.findreverse();
   r.print();
   return 0;
```

```
}
```

6. Define a class Square to find the square of a number and write a C++ program to Count number of times a function is called.

```
#include<iostream>
using namespace std;
class Square
{
   static int count;
   int i,sq;
public:
   Square(int num)
   {
      i = num;
   }
   void findsquare()
   {    count++;
      sq = i*i;
   }
   void print()
   {
      cout<<"Number of function calling is :"<<count<<endl<<" square of "<<i<<" is "<<sq<<endl;
   }
};
int Square::count = 0;

int main()
{
   int i,;
   cout<<"Enter a number to find square"<<endl;
```

```
    cin>>i;
    Square s(i);
    s.findsquare();
    s.print();

    return 0;
}
```

7. Define a class Greatest and define instance member function to find Largest among 3 numbers using classes.

```
#include<iostream>
using namespace std;
class GreatestNum
{
     int x,y,z;
     int greaternum;
public:
   GreatestNum(int a,int b,int c)
   {
      x=a;
      y=b;
      z=c;
   }
     findgreaternum()
   {
      greaternum = (x>y)?(x>z? x:z):(y>z ? y:z);
   }
    void display()
   {
      cout<<"Greatest of "<<x<< ", "<<y<<" and "<<z<< " is :"<<greaternum<<endl;
```

```
    }
};
 int main()
 {
    int x,y,z;
    cout<<"Enter three numbers"<<endl;
    cin>>x>>y>>z;
    GreatestNum l(x,y,z);
    l.findgreaternum();
    l.display();
    return 0;
}
```

8. Define a class Rectangle and define an instance member function to find the area of the rectangle.

```
#include<iostream>
using namespace std;
class Rectangle
{
   int length,width;
   int area;
public:
   Rectangle(int l,int w)
   {
      length = l;
      width  = w;
   }
   void findarea()
   {
      area = length*width;
   }
```

```
    void display()
    {
        cout<<"Area of rectangle is: "<<area<<endl;
    }

};
int main()
{
    int a,b;
    cout<<"Enter the Length and Width of rectangle"<<endl;
    cin>>a>>b;
    Rectangle x(a,b);
    x.findarea();
    x.display();
    return 0;
}
```

9. Define a class Circle and define an instance member function to find the area of the circle.

```
#include<iostream>
using namespace std;
class Circle
{
    int radius;
    int area;
public:
    Circle(int r)
    {
        radius =  r;
    }
    void Area()
```

```
    {
        area = 3.14*radius*radius;
    }
    void print()
    {
        cout<<"area of circle is "<<area<<endl;
    }
};
int main()
{
    int r;
    cout<<"Enter radius of circle"<<endl;
    cin>>r;
    Circle x(r);
    x.Area();
    x.print();
    return 0;
}
```

10. Define a class Area and define instance member functions to find the area of the different shapes like square, rectangle , circle etc.

```
#include<iostream>
using namespace std;
class Area
{
    int length,width,side;
    int area;
public:
    Area(int l,int w)
    {
```

```
        length = l;
        width = w;
    }
    Area(int a)
   {
   side = a;
   }
   Rectarea()
   {
      area = length*width;
      cout<<"Area of  rectangle : "<<area<<endl;
   }
   Squarearea()
   {
      area = side*side;
      cout<<"Area of square :"<<area<<endl;
   }

};
int main()
{
     int x,y;
     cout<<"Enter two numbers to calculate area of rectangle"<<endl;
     cin>>x>>y;
     Area p(x,y);
     p.Rectarea();
     int a;
     cout<<"Enter a number for finding area of ant square shape"<<endl;
     cin>>a;
```

```
    Area q(a);
    q.Squarearea();
    return 0;
}
```