**Assignment – 25**

A Job Ready Bootcamp in C++, DSA and IOT

**Classes and Objects**

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

{

private:

int real;

int img;

public:

void set(int x,int y)

{

real=x;

img=y;

}

void print(Complex c)

{

cout<<real<<"+"<<img<<"i"<<endl;

cout<<c.real<<"+"<<c.img<<"i"<<endl;

}

void sum(Complex S)

{

cout<<real+S.real<<"+"<<img+S.img<<"i"<<endl;

}

};

int main()

{

Complex a1,a2;

a1.set(3,5);

a2.set(10,11);

a1.print(a2);

a1.sum(a2);

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

{

private:

int Hour;

int Min;

int Sec;

public:

void set(int h,int m,int s)

{

Hour=h;

Min=m;

Sec=s;

}

void print()

{

cout<<Hour<<"hr "<<Min<<"min "<<Sec<<"sec";

}

};

int main()

{

Time c1;

c1.set(10,30,35);

c1.print();

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 Fact

{

private:

int fact;

public:

void factorial(int);

};

void Fact :: factorial(int n)

{

int i,f=1;

for(i=1;i<=n;i++)

{

f=f\*i;

}

cout<<"Factorial is "<<f;

}

int main()

{

Fact a;

a.factorial(5);

}

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 Largest

{

private:

int a;

int b;

int c;

int Greater;

public:

void setA(int x)

{

a=x;

}

int getA()

{

return a;

}

void setB(int y)

{

b=y;

}

int getB()

{

return b;

}

void setC(int z)

{

c=z;

}

int getC()

{

return c;

}

void find\_Greater()

{

if(a>b&&a>c)

{

Greater=a;

}

if(b>a&&b>c)

{

Greater=b;

}

if(c>a&&c>b)

{

Greater=c;

}

}

int getGreater()

{

return Greater;

}

};

int main()

{

Largest a1;

a1.setA(15);

a1.setB(10);

a1.setC(30);

a1.find\_Greater();

cout<<a1.getGreater()<<" is greater number between of three numbers ";

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 Reverse

{

int actual\_Num;

int Rev\_num;

public:

void set\_Act(int x)

{

actual\_Num=x;

}

int get\_Act()

{

return actual\_Num;

}

void rev\_Num();

void getrev\_Num()

{

cout<<Rev\_num;

}

};

void Reverse::rev\_Num()

{

while(actual\_Num%10!=0)

{

Rev\_num=actual\_Num%10;

actual\_Num=actual\_Num/10;

getrev\_Num();

}

}

int main()

{

Reverse a;

a.set\_Act(123);

cout<<"Reverse number Of "<<a.get\_Act()<<" is ";

a.rev\_Num();

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

{

int Num;

int NumSq;

public:

static int Count;

void setNum(int n)

{

Num=n;

}

int getNum()

{

return Num;

}

void CalculateSq()

{

NumSq=Num\*Num;

}

int getNumSq()

{

return NumSq;

}

static int getCount()

{

Count++;

return Count;

}

};

int Square :: Count;

int main ()

{

Square x;

int num;

cout<<"Enter a number who's you would find Square"<<endl;

cin>>num;

x.setNum(num);

x.CalculateSq();

cout<<"Square of "<<x.getNum()<<" is "<<x.getNumSq();

cout<<"Function of Square Calculate call "<<x.getCount()<<" time(s)";

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 Greatest

{

int num1,num2,num3,Max;

public:

void setnum1(int x)

{

num1=x;

}

void setnum2(int y)

{

num2=y;

}

void setnum3(int z)

{

num3=z;

}

int getnum1()

{

return num1;

}

int getnum2()

{

return num2;

}

int getnum3()

{

return num3;

}

void setMax(int M)

{

Max=M;

}

int getMax()

{

return Max;

}

void CalculateMax()

{

if(Max<num1)

Max=num1;

if(Max<num2)

Max=num2;

if(Max<num3)

Max=num3;

}

};

int main()

{

Greatest a;

a.setnum1(-12);

a.setnum2(23);

a.setnum3(-10);

a.setMax(-9999);

a.CalculateMax();

cout<<"Greater number btwm "<<a.getnum1()<<","<<a.getnum2()<<","<<a.getnum3()<<" is "<<a.getMax();

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 AreaRect

{

int length, breadth,area;

public:

void setlength(int l)

{

length=l;

}

void setbreadth(int b)

{

breadth=b;

}

int getlength()

{

return length;

}

int getbreadth()

{

return breadth;

}

void CalculateArea()

{

area=length\*breadth;

}

int getArea()

{

return area;

}

};

int main()

{

AreaRect a;

int x,y;

cout<<"Enter Length and Breadth of RECTANGLE : ";

cin>>x>>y;

a.setlength(x);

a.setbreadth(y);

a.CalculateArea();

cout<<"Length = "<<a.getlength()<<endl;

cout<<"Breadth = "<<a.getbreadth()<<endl;

cout<<"Area of rectangle is "<<a.getArea();

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

{

float radius, area;

static float PI;

public:

void setradius(float r)

{

radius=r;

}

float getradius()

{

return radius;

}

float Area()

{

return area;

}

void CalculateArea()

{

area=PI\*radius\*radius;

}

};

float Circle::PI=3.14;

int main()

{

Circle a;

float r;

cout<<"Enter radius"<<endl;

cin>>r;

a.setradius(r);

a.CalculateArea();

cout<<"Radius = "<<a.getradius()<<endl;

cout<<"Area of a circle is "<<a.Area();

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

{

float side,length,breath,radius;

public:

void setSide(float s)

{

side=s;

}

void setLen\_Bre(float l,float b)

{

length=l;

breath=b;

}

void setRadius(float r)

{

radius=r;

}

float AreaOfSq()

{

return side\*side;

}

float AreaOfRect()

{

return length\*breath;

}

float AreaOfCircle()

{

return 3.14\*radius\*radius;

}

};

int main()

{

Area a;

float s,l,b,r;

cout<<"Enter Side of Square : ";

cin>>s;

a.setSide(s);

//a.AreaOfSq();

cout<<"Area of Square is "<<a.AreaOfSq()<<endl;

cout "Enter Length and Breath of Rectangle : ";

cin>>l>>b;

a.setLen\_Bre(l,b);

cout<<"Area of Rectangle is "<<a.AreaOfRect()<<endl;

cout<<"Enter Radius of a circle : ";

cin>>r;

a.setRadius(r);

cout<<"Area of circle is "<<a.AreaOfCircle();

return 0;

}