**Classes and Objects**

**Assignment – 25**

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 imag;

public:

void set(int r,int i)

{

real=r;

imag=i;

}

void display(Complex c)

{

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

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

}

void add(Complex c)

{

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

}

};

int main()

{

Complex c1,c2;

c1.set(4,5);

c2.set(6,10);

c1.display(c2);

c1.add(c2);

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 hr;

int mi;

int sec;

public:

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

{

hr=h;

mi=m;

sec=s;

}

void display()

{

cout<<hr<<"hr:"<<mi<<"min:"<<sec<<"sec"<<endl;

}

};

int main()

{

Time t;

t.set(04,50,55);

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

{

private:

int n,f=1;

public:

void fact();

void input();

void display();

};

void Factorial::fact()

{

for(int i=n;i>0;i--)

f=f\*i;

}

void Factorial::input()

{

cout<<"ENTER VALUE OF N=";

cin>>n;

}

void Factorial::display()

{

cout<<"Factorial of given no is="<<f;

}

int main()

{

Factorial x;

x.input();

x.fact();

x.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 Largestnumber

{

private:

int a;

int b;

int c;

int la;

public:

void set(int n1,int n2,int n3)

{

a=n1;

b=n2;

c=n3;

}

void input();

void large();

void display();

};

void Largestnumber::input()

{

cout<<"ENTER THREE NO=";

cin>>a>>b>>c;

}

void Largestnumber::large()

{

if(a>=b && a>=c)

{

la=a;

}

else if(b>=a && b>=c)

{

la=b;

}

else

{

if(c>=a && c>=b)

la=c;

}

}

void Largestnumber::display()

{

cout<<"LARGEST NUMBER AMONG "<<a<<","<<b<<","<<c<<"="<<la;

}

int main()

{

Largestnumber l;

l.input();

l.large();

l.display();

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 ReverseNumber

{

private:

int n;

int re=0;

int rem;

public:

void input();

void rev();

void display();

};

void ReverseNumber::input()

{

cout<<"ENTER 3 DIGIT NO=";

cin>>n;

}

void ReverseNumber::rev()

{

while(n!=0)

{

rem=n%10;

re=re\*10+rem;

n/=10;

}

}

void ReverseNumber::display()

{

cout<<"REVERSE OF 3 DIGIT NO="<<re<<endl;

}

int main()

{

ReverseNumber r;

r.input();

r.rev();

r.display();

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

{

private:

int n;

int s;

static int b;

public:

void display();

void sq();

void input();

};

Square::b=0;

void Square::input()

{

cout<<"ENTER A NO=";

cin>>n;

}

void Square::sq()

{

s=n\*n;

b++;

}

void Square::display()

{

cout<<"Square of number="<<s<<endl;

cout<<"Function is called "<<b<<" times by the objects";

}

int main()

{

Square squ;

squ.input();

squ.sq();

squ.display();

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 Largestnumber

{

private:

int a;

int b;

int c;

int la;

public:

void set(int n1,int n2,int n3)

{

a=n1;

b=n2;

c=n3;

}

void input();

void large();

void display();

};

void Largestnumber::input()

{

cout<<"ENTER THREE NO=";

cin>>a>>b>>c;

}

void Largestnumber::large()

{

if(a>=b && a>=c)

{

la=a;

}

else if(b>=a && b>=c)

{

la=b;

}

else

{

if(c>=a && c>=b)

la=c;

}

}

void Largestnumber::display()

{

cout<<"LARGEST NUMBER AMONG "<<a<<","<<b<<","<<c<<"="<<la;

}

int main()

{

Largestnumber l;

l.input();

l.large();

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

{

private:

int area=1;

int l;

int h;

int b;

public:

void input();

void a();

void display();

};

void Rectangle::input()

{

cout<<"ENTER LENGTH,BREADTH AND HEIGHT=";

cin>>l>>b>>h;

}

void Rectangle::a()

{

area=l\*h\*b;

}

void Rectangle::display()

{

cout<<"AREA OF RECTANGLE="<<area;

}

int main()

{

Rectangle r;

r.input();

r.a();

r.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

{

private:

float area=1;

float r;

float pie=3.14;

public:

void input();

void a();

void display();

};

void Circle::input()

{

cout<<"ENTER RADIUS OF CIRCLE=";

cin>>r;

}

void Circle::a()

{

area=pie\*r\*r;

}

void Circle::display()

{

cout<<"AREA OF Circle="<<area;

}

int main()

{

Circle r;

r.input();

r.a();

r.display();

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

{

private:

float r,l,b,h;

float area1=0,area2=1,area3=1;

float pie=3.14;

public:

void input1();

void input2();

void input3();

void areac();

void arear();

void areas();

void display1();

void display2();

void display3();

};

void Area::input1()

{

cout<<"ENTER Radius of circle=";

cin>>r;

}

void Area::input2()

{

cout<<"ENTER LENGTH,Breadth AND Height=";

cin>>l>>b>>h;

}

void Area::input3()

{

cout<<"ENTER LENGTH AND BREADTH=";

cin>>l>>b;

}

void Area::areac()

{

area1=pie\*r\*r;

}

void Area::arear()

{

area2=l\*b\*h;

}

void Area::areas()

{

area3=l\*b;

}

void Area::display1()

{

cout<<"AREA OF CIRCLE="<<area1<<endl;

}

void Area::display2()

{

cout<<"AREA OF Rectangle="<<area2<<endl;

}

void Area::display3()

{

cout<<"AREA OF Square="<<area3<<endl;

}

int main()

{

Area a;

a.input1();

a.areac();

a.display1();

a.input2();

a.arear();

a.display2();

a.input3();

a.areas();

a.display3();

}