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**Assignment-26**

**\*\*\*MEMBER FUNCTION ; STATIC**

**; CONSTRUCTOR\*\*\***

**Q.1. Define a class Complex to represent a complex number with instance variables a and b to store real and imaginary parts. Also define following member functions**

**a. void setData(int,int)**

**b. void showData()**

**c. Complex add(Complex)**

**Ans:**

#include<iostream>

using namespace std;

class complex

{

private:

int a,b;

public:

void setdata(int n1,int n2)

{

a=n1;

b=n2;

}

void showdata()

{

cout<<"Real "<<a<<" Imaginary "<<b<<endl;

}

complex add(complex x)

{

a=x.a;

b=x.b;

}

};

int main()

{

complex c1,c2;

c1.setdata(5,10);

c1.showdata();

c2.add(c1);

c2.showdata();

return 0;

}

**Q.2. Define a class Time to represent a time with instance variables h,m and s to store hour, minute and second. Also define following member functions**

**a. void setTime(int,int,int)**

**b. void showTime()**

**c. void normalize()**

**d. Time add(Time)**

**Ans:**

#include<iostream>

using namespace std;

class time

{

private:

int h,m,s;

public:

void setTime(int a,int b,int c)

{

if(a<13&&b<60&&c<60)

{

h=a;

m=b;

s=c;

}

}

void showTime()

{

cout<<h<<" Hour "<<m<<" minutes "<<s<<" seconds "<<endl;

}

void normalize()

{

cout<<"Time Is "<<endl;

}

time add(time t)

{

time temp;

temp.h=h+t.h;

temp.m=m+t.m;

temp.s=s+t.s;

return temp;

}

};

int main()

{

time t1,t2,t3;

t1.setTime(5,12,10);

t2.setTime(04,25,30);

t3=t2.add(t1);

t1.normalize();

t1.showTime();

t2.showTime();

t3.showTime();

return 0;

}

**Q.3. Define a class Cube and calculate Volume of Cube and initialise it using constructor.**

**Ans:**

#include<iostream>

#include<math.h>

using namespace std;

class cube

{

private:

int edge;

public:

void showcube()

{

int vol=pow(edge, 3);

cout<<"The Volume Of Cube Is "<<vol<<endl;

}

cube(int l)

{

edge=l;

}

};

int main()

{

cube c1(10);

c1.showcube();

return 0;

}

**Q.4. Define a class Counter and Write a program to Show Counter using Constructor.**

**Ans:**

#include<iostream>

using namespace std;

class counter

{

private:

public:

counter()

{

cout<<"Constructor called"<<endl;

}

};

int main()

{

counter c1,c2,c3;

return 0;

}

**Q.5. Define a class Date and write a program to Display**

**Dateand initialise date object using Constructors**

**Ans:**

#include<iostream>

using namespace std;

class date

{

private:

int dates,month,year;

public:

date(int d,int m,int y)

{

if(d<32&&m<13)

{

dates=d;

month=m;

year=y;

}

else

{

cout<<"ENTER VALID DATE"<<endl;

}

}

void showdate()

{

cout<<dates<<"//"<<month<<"//"<<year<<endl;

}

};

int main()

{

date d1(12,10,2022),d2(20,07,2022);

d1.showdate();

d2.showdate();

return 0;

}

**Q.6. Define a class student and write a program to enter student details using constructor and define member function to display all the details.**

**Ans:**

#include<iostream>

using namespace std;

class student

{

private:

int id;

string name;

int sem;

string email;

public:

student(int i,string n,int s,string e)

{

id=i;

name=n;

sem=s;

email=e;

}

void showdata()

{

cout<<"Id-"<<id<<" Name-"<<name<<" Sem-"<<sem<<" Email-"<<email<<endl;

}

};

int main()

{

student s1(1,"Rishi",3,"R123");

student s2(2,"vijay",5,"v123");

s1.showdata();

s2.showdata();

return 0;

}

**Q.7. Define a class Box and write a program to enter length, breadth and height and initialise objects using constructor also define member functions to calculate volume of the box.**

**Ans:**

#include<iostream>

using namespace std;

class box

{

private:

int length,bredth,height;

public:

box(int l,int b,int h)

{

length=l;

bredth=b;

height=h;

}

void volumeofbox()

{

cout<<"The Bolume Of Box is "<<height\*bredth\*length<<endl;

}

};

int main()

{

box b1(5,7,2),b2(5,10,8);

b1.volumeofbox();

b2.volumeofbox();

return 0;

}

**Q.8. Define a class Bank and define member functions to read principal , rate of interest and year. Another member functions to calculate simple interest and display it. Initialise all details using constructor.**

**Ans:**

#include<iostream>

using namespace std;

class bank

{

private:

int p,r,y;

public:

bank(int pb,int ri,int yr)

{

p=pb;

r=ri;

y=yr;

}

void read()

{

cout<<endl<<"Principle Ballance ="<<p<<" ,\nRate Of Interest = "<<r<<" ,\nYears ="<<y<<endl;

}

void si()

{

cout<<"Simple Interest ="<<r\*y\*p<<endl;

}

};

int main()

{

bank b1(5000,7,5);

b1.read();

b1.si();

return 0;

}

**Q.9. Define a class Bill and define its member function get() to take detail of customer , calculateBill() function to calculate electricity bill using below tariff : Upto 100 unit RS. 1.20 per unit From 100 to 200 unit RS. 2 per unit Above 200 units RS. 3 per unit.**

**Ans:**

#include<iostream>

using namespace std;

class bill

{

private:

int unit;

public:

void get()

{

cout<<"Enter Electricity Unit "<<endl;

cin>>unit;

}

void calculatebill()

{

if(unit<=100)

{

cout<<"Electricity Bill Is "<<unit\*1.20<<endl;

}

else if(unit>100&&unit<=200)

{

cout<<"Electricity Bill Is "<<unit\*2<<endl;

}

else if(unit>200)

{

cout<<"Electricity Bill Is "<<unit\*3<<endl;

}

}

};

int main()

{

bill b1;

b1.get();

b1.calculatebill();

return 0;

}

**Q.10. Define a class StaticCount and create a static variable. Increment this variable in a function and call this 3 times and display the result**

**Ans:**

#include<iostream>

using namespace std;

class staticcount

{

public:

static int c;

void display()

{

c++;

cout<<"Display Function Called"<<endl;

}

};

int staticcount::c;

int main()

{

staticcount s1;

s1.display();

s1.display();

s1.display();

cout<<"Count="<<staticcount::c;

return 0;

}