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(AI & ML)**

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**Lab Manual
Object Oriented programming
System
(B23-CSE-211)**

PRACTICAL NO :: 1

```
#include<iostream.h>
```

```
#include<conio.h>
```

```
double power(float n,int p=2)
```

```
{
```

```
    double result=1;
```

```
    for(int i=0;i<p;i++)
```

```
        result=result*n;
```

```
    return(result);
```

```
}
```

```
void main()
```

```
{
```

```
    float n;
```

```
    int p,sw;
```

```
    double result;
```

```
    char ans='y';
```

```
    while(ans=='y')
```

```
    {
```

```
        clrscr();
```

```
        cout<<"1. Call power function with desired power"<<endl;
```

```
        cout<<"2. Call square function"<<endl;
```

```
        cout<<"3. Exit"<<endl;
```

```
        cout<<"Enter your preference:";
```

```
        cin>>sw;
```

```
        switch(sw)
```

```
        {
```

```
            case 1:clrscr();
```

```
                cout<<"Enter the number & its power:";
```

```
                cin>>n>>p;
```

```

        result=power(n,p);
        cout<<"The result is "<<result<<endl;
        getch();
        break;

    case 2:clrscr();

        cout<<"Enter only the number:";
        cin>>n;
        result=power(n);
        cout<<"The result is "<<result<<endl;
        getch();
        break;

    case 3:ans='n';

        break;

    default:cout<<endl<<endl<<"Invalid Preference"<<endl<<"Try
Again"<<endl;

        getch();
    }
}
}

```

PRACTICAL NO :: 2

```
#include<iostream.h>
```

```
#include<conio.h>
```

```
struct point
```

```
{
```

```
    int x,y;
```

```
};
```

```
void main()
```

```
{
```

```
    point pt1,pt2,pt3;
```

```
    cout<<"Enter Coordinates for P1:";
```

```
    cin>>pt1.x>>pt1.y;
```

```
    cout<<"Enter Coordinates for P2:";
```

```
    cin>>pt2.x>>pt2.y;
```

```
    pt3.x=pt1.x+pt2.x;
```

```
    pt3.y=pt1.y+pt2.y;
```

```
    cout<<"Coordinates of P1+P2 are: "<<pt3.x<<" , "<<pt3.y<<endl;
```

```
    getch();
```

```
}
```

PRACTICAL NO :: 3

```
#include<iostream.h>
```

```
#include<conio.h>
```

```
int add(int a,int b)
```

```
{
```

```
int c;
```

```
c=a+b;
```

```
return(c);
```

```
}
```

```
int sub(int a,int b)
```

```
{
```

```
int c;
```

```
c=a-b;
```

```
return(c);
```

```
}
```

```
long mul(int a,int b)
```

```
{
```

```
int c;
```

```
c=a*b;
```

```
return(c);
```

```
}
```

```
double div(int a,int b)
```

```
{
```

```
int c;
```

```
c=a/b;
```

```
return(c);
```

```
}
```

```
void main()
```

```
{
```

```
int a,b,c;
```

```
long int d;
```

```
double e;
```

```
char op,ans='y';
```

```
while(ans=='y' || ans=='Y')
```

```
{
```

```
    cout<<"Enter the first number, operator, second number: ";
```

```
    cin>>a>>op>>b;
```

```
    switch(op)
```

```
    {
```

```
        case '+':c=add(a,b);
```

```
            cout<<"Answer="<<c<<endl;
```

```
            break;
```

```
        case '-':c=sub(a,b);
```

```
            cout<<"Answer="<<c<<endl;
```

```
            break;
```

```
        case '*':d=mul(a,b);
```

```
            cout<<"Answer="<<d<<endl;
```

```
            break;
```

```
        case '/':e=div(a,b);
```

```
            cout<<"Answer="<<e<<endl;
```

```
            break;
```

```
        default:cout<<"Sorry.Only addition, subtraction, multiplication &
division can be performed"<<endl;

                break;

    }

    cout<<"Do another (Y/N)?";

    cin>>ans;

}

}
```

PRACTICAL NO :: 4

```
#include<iostream.h>
```

```
#include<conio.h>
```

```
typedef struct phone
```

```
{
```

```
    int area,exch,numb;
```

```
}ph;
```

```
void getdata(ph*,ph*);
```

```
void showdata1(ph);
```

```
void showdata2(ph);
```

```
void main()
```

```
{
```

```
    ph p1,p2;
```

```
    getdata(&p1,&p2);
```

```
    showdata1(p1);
```

```
    showdata2(p2);
```

```
    getch();
```

```
}
```

```
void getdata(ph *p1,ph *p2)
```

```
{
```

```
    p1->area=212;
```

```
    p1->exch=767;
```

```
    p1->numb=8900;
```

```
    cout<<"Enter your area code, exchange code & number: ";
```

```
    cin>>p2->area>>p2->exch>>p2->numb;
```

```
}
```

```
void showdata1(ph p1)
```

```
{
```

```
cout<<"My number is ("<<p1.area<<") "<<p1.exch<<"-"<<p1.numb<<endl;
}
```

```
void showdata2(ph p1)
{
    cout<<"Your number is ("<<p1.area<<") "<<p1.exch<<"-"<<p1.numb<<endl;
}
```

PRACTICAL NO :: 5

```
#include<iostream.h>
#include<conio.h>
class DB;
class DM
{
    float met,cem;
public:
    void getdata(void)
    {
        cout<<"Enter the distance in meter & centimeter :";
        cin>>met>>cem;
    }
    void showdata(void)
    {
```

```
        cout<<"The sum of distances are "<<met<<" meteres, "<<cem<<"  
centimeters resp."<<endl;
```

```
    }
```

```
friend DM add1(DM,DB);
```

```
friend DB add2(DM,DB);
```

```
};
```

```
class DB
```

```
{
```

```
    float feet,inch;
```

```
public:
```

```
void getdata(void)
```

```
{
```

```
    cout<<"Enter the distance in feet & inches :";
```

```
    cin>>feet>>inch;
```

```
}
```

```
void showdata(void)
```

```
{
```

```
    cout<<"The sum of distances are "<<feet<<" feet, "<<inch<<" inches  
resp."<<endl;
```

```
}
```

```
friend DM add1(DM,DB);
```

```
friend DB add2(DM,DB);
```

```
};
```

```
DM add1(DM,DB);
```

```
DB add2(DM,DB);
```

```
void main()
```

```
{
```

```
    DM dis1;
```

```

DB dis2;
int sw;
char ans='y';
dis1.getdata();
dis2.getdata();
while(ans=='y')
{
    clrscr();
    cout<<"The result is addition of two distances entered."<<endl;
    cout<<"1. Result in meter & centimeter form"<<endl;
    cout<<"2. Result in feet & inches form"<<endl;
    cout<<"Enter your preference: ";
    cin>>sw;
    switch(sw)
    {
        case 1:DM res1;
                res1=add1(dis1,dis2);
                res1.showdata();
                getch();
                ans='n';
                break;

        case 2:DB res2;
                res2=add2(dis1,dis2);
                res2.showdata();
                getch();
                ans='n';
                break;

        default:cout<<endl<<endl<<"Invalid Preference.You can only enter (1-
2)"<<endl<<"Try Again"<<endl;
    }
}

```

```
                                break;
                        }
    }
}
```

DM add1(DM dis1,DB dis2)

```
{
    DM res;
    res.met=dis1.met+(0.3*dis2.feet);
    res.cem=dis1.cem+(2.5*dis2.inch);
    return(res);
}
```

DB add2(DM dis1,DB dis2)

```
{
    DB res;
    res.feet=dis2.feet+(3.33*dis1.met);
    res.inch=dis2.inch+(0.4*dis1.cem);
    return(res);
}
```

PRACTICAL NO :: 6

```
#include<iostream.h>
```

```
#include<conio.h>
```

class father

{

protected:

int age;

public:

father()

{

age=55;

}

virtual void iam()

{

cout<<"\n\n I AM THE FATHER ,MY AGE IS "
<<age<<endl;

}

};

class son:public father

{

private:

int sage;

public:

son()

{

sage=21;

}

void iam()

{

father::iam();

cout<<"\n\n I AM THE SON,MY AGE IS "<<sage<<endl;

```

    }
};

class daughter:public father
{
    private:
    int dage;
    public:
    daughter()
    {
        dage=20;
    }
    void iam()
    {
        father::iam();
        cout<<"\n\n I M THAE DAUGHTER,.....MY AGE IS
"<<dage<<endl;
    }
};

void main()
{
    clrscr();
    son s;
    daughter d;
    father *fat;
    fat=&s;
    fat->iam();
    fat=&d;
    fat->iam();
    getch();
}

```

}

PRACTICAL NO :: 7

```
#include<iostream.h>
#include<conio.h>
class tollbooth
{
    unsigned int no_car;
    double tot_amt;
    int paycar,no_paycar;
public:
    tollbooth()
    {
        no_car=0;
        tot_amt=0;
        paycar=0;
        no_paycar=0;
    }
    void payingcar()
    {
        no_car++;
        tot_amt+=.50;
        paycar++;
    }
    void no_payingcar()
    {
        no_car++;
        no_paycar++;
    }
    void display()
    {

        cout<<"total number of car =" <<no_car++<<endl;
        cout<<"total amount=" <<tot_amt<<endl;
```

```
cout<<"total number of paying car =" <<paycar++<<endl;
cout<<"total number of payingcar =" <<no_paycar++<<endl;
}
};

void main()
{
clrscr();
tollbooth t;
t.payingcar();
t.no_payingcar();
t.display();
getch();
}
```

PRACTICAL NO :: 8

```
#include<iostream.h>
```

```
#include<conio.h>
```

```
#include<string.h>
```

```
#include<stdio.h>
```

```
char*reverseit(char*str)
```

```
{  
    char*temp="null";  
    char *res;  
    int l=strlen(str);  
    for(int i=l;i>=0;i--)  
    {  
        *(temp)=*(str+i);  
        temp++;  
    }  
    *temp='\0';  
    for(i=0;i<l;i++)  
  
        temp--;  
    res=temp;  
    return res;  
}
```

```
void main()
```

```
{  
    char *string,*t;  
    int i;  
    clrscr();  
    cout<<"Enter a String ";  
    gets(string);  
    t=reverseit(string);  
    cout<<"\n\n"<<"reverse string is"<<t;  
    getch();  
}
```

PRACTICAL NO :: 9

```
#include<iostream.h>
```

```
#include<conio.h>
```

```
class shape
```

```
{
```

```
    public:
```

```
    int a,b;
```

```
    virtual void area()
```

```
    {
```

```
    }
```

```
};
```

```
class triangle:public shape
```

```
{
```

```
    public:
```

```
    triangle()
```

```
    {
```

```
        cout<<"\n Enter the value of a and b for triangle";
```

```

        cin>>a>>b;
    }

    void area()
    {
        float area=0.5*a*b;
        cout<<"Area of triangle is "<<area;
    }
};

class rectangle:public shape
{
    public:
    rectangle()
    {
        cout<<"\n Enter the value of a and b for rectangle ";
        cin>>a>>b;
    }

    void area()
    {
        float area=a*b;
        cout<<"Area of rectangle is "<<area;
    }
};

void main()
{
    clrscr();
    shape *s;
    triangle t;

```

```
s=&t;
```

```
s->area();
```

```
rectangle r;
```

```
s=&r;
```

```
s->area();
```

```
getch();
```

```
}
```

PRACTICAL NO :: 10

```
#include<iostream.h>
```

```
#include<conio.h>
```

```
class rational
```

```
{
```

```
    int num;
```

```
    int den;
```

```
    public:
```

```
    void getdata()
```

```
    {
```

```
        cout<<"Enter numerator";
```

```
        cin>>num;
```

```
        cout<<"Enter Denominator ";
```

```
        cin>>den;
```

```
    }
```

```
    rational()
```

```
    {
```

```
        num=1;
```

```
        den=1;
```

```
}
```

```
rational(int num,int den)
```

```
{
```

```
    this->num=num;
```

```
    this->den=den;
```

```
}
```

```
int operator+(rational r)
```

```
{
```

```
    int a,b,c;
```

```
    a=num/den;
```

```
    b=r.num/r.den;
```

```
    c=a+b;
```

```
    return c;
```

```
}
```

```
int operator>(rational ob)
```

```
{
```

```
    int a,b;
```

```
    a=num/den;
```

```
    b=ob.num/ob.den;
```

```
    if(a>b)
```

```
    {
```

```
        return 1;
```

```
    }
```

```
    if(b>a)
```

```
    {
```

```
        return 2;
```

```
    }
```

```
        else
        {
            return 3;
        }
    }
};
```

```
void main()
{
    clrscr();
    rational r1;
    rational r2(6,2);
    int d,num,den;
    r1.getdata();
    d=r1+r2;
    cout<<d<<endl;
    cout<<"a and b are"<<endl;
    cout<<num;
    cout<<endl;
    cout<<den;

    getch();
}
```

PRACTICAL NO :: 11

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>

class student
{
    char rollno[20],name[20];
    float marks;
    void getdata()
    {
        cout<<"Enter The rollno,name and marks of Student ";
        cin >>rollno>>name>>marks;
    }

    void putdata()
    {
        cout<<"roll no is "<<rollno;
        cout<<"name is "<<name;
        cout<<"marks is "<<marks;
    }
};
```

```
void main()  
{  
    student s1,s2;  
    s1.getdata();  
    fstream Student_file;  
    Student_file.open("student.dat",ios::in|ios::app|ios::out|ios::binary);  
    Student_file.seekup(ios::begin);  
    Student_file.write((char*)&s1,size of(s1));  
    Student_file.seekup(ios::begin);  
    Student_file.read((char*)&s,size of(s2));  
    s1.putdata();  
    File.close();  
    getch();  
}
```