

PROGRAM:

```
#include<iostream>

using namespace std;

class number
{
    protected:
        int x;
        void get()
        {
            cout<<"enter a number";
            cin>>x;
        }
};

class cube:public number
{
    public:
        void show()
        {
            get();
            cout<<"cube of a number="<<x*x*x;
        }
};

int main()
{
    cube c;
    c.print();
    return 0;
}
```

OUTPUT:

```
enter a number3
cube of a number=27
-----
Process exited after 1.679 seconds with return value 0
Press any key to continue . . .
```

PROGRAM:

```
#include
<iostream>
using namespace std;
class area
{
    protected:
        void cal_area(int a,int b)
        {
            cout<<"area of rectangle="<<a*b<<endl;
        }
};
class perimeter
{
    protected:
        void cal_perimeter(int a,int b)
        {
            cout<<"perimeter of rectangle="<<2*(a+b);
        }
};
class rectangle:public area,public perimeter
{
    public:
        int a,b;
        void print()
        {
            cout<<"enter a,b values";
            cin>>a>>b;
            cal_area(a,b);
        }
};
```


```
        cal_perimeter(a,b);
    }

};

int main()

{
    rectangle r;
    r.print();
    return 0;
}
```

OUTPUT:

 C:\Users\Sweety\Documents\rambo2.exe


enter a,b values2

4

area of rectangle=8

perimeter of rectangle=12

Process exited after 2.978 seconds with return value 0

Press any key to continue . . . 

PROGRAM:3)Multi-level inheritance

```
#include<iostream>

using namespace std;

class student
{
    protected:
        string name;
        int rollno;
        student()
        {
            cout<<"enter name and rollno:";
            cin>>name>>rollno;
        }
};

class marks:public student
{
    protected:
        int m1,m2,m3,m4,m5,m6;
        string branch;
        marks()
        {
            cout<<"enter 6 subjects marks";
            cin>>m1>>m2>>m3>>m4>>m5>>m6;
            cout<<"enter branch";
            cin>>branch;
        }
        void show()
        {
            cout<<"name of student:"<<name<<endl;
            cout<<"roll no. of student:"<<rollno<<endl;
            cout<<"branch of student:"<<branch<<endl;
```

```

        }

};

class percentage:public marks
{
    private:
        float per;
    public:
        void print()
        {
            per=(float)(m1+m2+m3+m4+m5+m6)/6;
            show();
            cout<<"percentage="<<per;
        }
};

int main()
{
    percentage p;
    p.print();
    return 0;
}

```

OUTPUT:

```
enter name and rollno:
abd
123
enter 6 subjects marks
98
96
94
97
95
93
enter branch
cse
name of student:abd
roll no. of student:123
branch of student:cse
percentage=95.5
-----
Process exited after 32.3 seconds with return value 0
Press any key to continue . . . █
```


PROGRAM:4)Heiarchial inheritance

```
#include<iostream>
```

```
using namespace std;
```

```
class person
```

```
{
```

```
    protected:
```

```
        string name;
```

```
        int age;
```

```
        char gender;
```

```
    public:
```

```
        person()
```

```
        {
```

```
            cout<<"enter name:";
```

```
            cin>>name;
```

```
            cout<<"enter age:";
```

```
            cin>>age;
```

```
            cout<<"enter gender:";
```

```
            cin>>gender;
```

```
        }
```

```
        void show()
```

```
        {
```

```
            cout<<"name:"<<name<<endl;
```

```
            cout<<"age :"<<age<<endl;
```

```
            cout<<"gender:"<<gender<<endl;
```

```
        }
```

```
};
```

```
class student:public person
```

```
{
```

```
    private:
```

```
        string college;
```

```
        int id;
```

```

        public:
            student()
            {
                college="some";
                id=9;
            }
            void showst()
            {
                cout<<"college:"<<college<<endl;
                cout<<"id:"<<id<<endl;
            }
};

class employee:public person
{
    private:
        float salary;
        int id;
    public:
        employee()
        {
            salary=9999999;
            id=50;
        }
        void showe()
        {
            cout<<"salary:"<<salary<<endl;
            cout<<"id:"<<id;
        }
};

int main()
{

```

```
    student s;  
    s.show();  
    s.showst();  
    employee e;  
    e.show();  
    e.showe();  
    return 0;  
}
```

OUTPUT:

```
Enter name:xyz
Enter age:17
Enter gender:m
name:xyz
age :17
gender:m
college:some
id:9
Enter name:abc
Enter age:18
Enter gender:m
name:abc
age :18
gender:m
salary:999999
id:50
!-----
Process exited after 26.88 seconds with return value 0
Press any key to continue . . . ■
```

PROGRAM:5)Hybrid inheritance

```
#include<iostream>
```

```
using namespace std;
```

```
class student
```

```
{
```

```
protected:
```

```
    string name,branch;
```

```
    int rollno;
```

```
    student()
```

```
    {
```

```
        cout<<"enter name and rollno:";
```

```
        cin>>name>>rollno;
```

```
        cout<<"enter branch:";
```

```
        cin>>branch;
```

```
    }
```

```
};
```

```
class marks:public student
```

```
{
```

```
protected:
```

```
    int m1,m2,m3,m4;
```

```
    marks()
```

```
    {
```

```
        cout<<"enter 4 subject marks";
```

```
        cin>>m1>>m2>>m3>>m4;
```

```
    }
```

```
    void show()
```

```
    {
```

```
        cout<<"name of the student:"<<name<<endl;
```

```
        cout<<"roll num of student:"<<rollno<<endl;
```

```

        cout<<"branch name:"<<branch<<endl;
    }
};

class project
{
    protected:
        int ip,ep;
        project()
        {
            cout<<"enter ip and ep marks";
            cin>>ip>>ep;
        }
};

class percentage:public marks,public project
{
    private:
        float a;
    public:
        void print()
        {
            a=(float)(m1+m2+m3+m4+ip+ep)/6;
            show();
            cout<<"percentage of student:"<<a<<endl;
        }
};

int main()
{
    percentage p;
    p.print();
    return 0;
}

```

OUTPUT:

```
enter name and rollno:  
xyz  
123  
enter branch:cse  
enter 4 subject marks  
98  
96  
94  
92  
enter ip and ep marks  
98  
95  
name of the student:xyz  
roll num of student:123  
branch name:cse  
percentage of student:95.5
```

```
-----  
Process exited after 23.96 seconds with return value 0  
Press any key to continue . . . █
```

PROGRAM:

```
#include<iostream>

using namespace std;

class a
{
    public:
        a()
        {
            cout<<"constructor a is invoked"<<endl;
        }
        ~a()
        {
            cout<<"destructor a is invoked"<<endl;
        }
};

class b:public a
{
    public:
        b()
        {
            cout<<"constructor b is invoked"<<endl;
        }
        ~b()
        {
            cout<<"destructor b is invoked"<<endl;
        }
};

class c:public a
{
    public:
        c()
```



```

        {
            cout<<"constructor c is invoked"<<endl;
        }
        ~c()
        {
            cout<<"destructor c is invoked"<<endl;
        }
};

class d:public b,public c
{
    public:
        d()
        {
            cout<<"constructor d is invoked"<<endl;
        }
        ~d()
        {
            cout<<"destructor d is invoked"<<endl;
        }

};

int main()
{
    d D;
    return 0;
}

```

OUTPUT:

```
constructor a is invoked  
constructor b is invoked  
constructor a is invoked  
constructor c is invoked  
constructor d is invoked  
destructor d is invoked  
destructor c is invoked  
destructor a is invoked  
destructor b is invoked  
destructor a is invoked
```

```
-----  
Process exited after 0.09008 seconds with return value 0  
Press any key to continue . . . █
```