# Program 9 Develop programs for implementation of multilevel inheritance by applying various access controls to its data members and methods.

**CODE:**

class Base{

public int x = 1;

protected int y = 2;

int z=3;

private int l=4;

public void base\_meth1(){

System.out.println("Base\_meth1 x= "+x);

System.out.println("Base\_meth1 y= "+y);

System.out.println("Base\_meth1 z= "+z);

System.out.println("Base\_meth1 l= "+l);

}

protected void base\_meth2(){

System.out.println("Base\_meth2 x= "+x);

System.out.println("Base\_meth2 y= "+y);

System.out.println("Base\_meth2 z= "+z);

System.out.println("Base\_meth2 l= "+l);

}

void base\_meth3(){

System.out.println("Base\_meth3 x= "+x);

System.out.println("Base\_meth3 y= "+y);

System.out.println("Base\_meth3 z= "+z);

System.out.println("Base\_meth3 l= "+l);

}

private void base\_meth4(){

System.out.println("Base\_meth4 x= "+x);

System.out.println("Base\_meth4 y= "+y);

System.out.println("Base\_meth4 z= "+z);

System.out.println("Base\_meth4 l= "+l);

}

}

class Derived1 extends Base{

public int a = 5;

protected int b = 6;

int c=7;

private int d=8;

public void meth2(){

System.out.println("Derived1 a= "+a);

System.out.println("Derived2 b= "+b);

System.out.println("Derived3 c= "+c);

System.out.println("Derived5 d= "+d);

}

}

class Derived2 extends Derived1{

public int p = 9;

protected int q= 10;

int r=11;

private int s=12;

public void meth3(){

System.out.println("Derived2 p= "+p);

System.out.println("Derived2 q= "+q);

System.out.println("Derived2 r= "+r);

System.out.println("Derived2 s= "+s);

}

}

public class Multilevel\_inheritance {

public static void main(String[] args) {

Derived2 d2 = new Derived2();

// variables

System.out.println("Accessing variables of base class by creating obj of Derived2 class");

System.out.println("Base\_meth1 x= "+d2.x);

System.out.println("Base\_meth1 y= "+d2.y);

System.out.println("Base\_meth1 z= "+d2.z);

// System.out.println("Base\_meth1 l= "+d2.l); not allowed becz its private variable

// methods

System.out.println("Accessing methods of Base class by creating obj of Derived2 class");

d2.base\_meth1();

d2.base\_meth2();

d2.base\_meth3();

// d2.base\_meth4(); not allowed becz its private method

System.out.println("Accessing methods of Derived1 class by creating obj of Derived2 class");

d2.meth2();

System.out.println("Accessing methods of own class by creating obj of Derived2 class");

d2.meth3();

}

}

**OUTPUT:**

D:\java>javac Multilevel\_inheritance.java

D:\java>java Multilevel\_inheritance

Accessing variables of base class by creating obj of Derived2 class

Base\_meth1 x= 1

Base\_meth1 y= 2

Base\_meth1 z= 3

Accessing methods of Base class by creating obj of Derived2 class

Base\_meth1 x= 1

Base\_meth1 y= 2

Base\_meth1 z= 3

Base\_meth1 l= 4

Base\_meth2 x= 1

Base\_meth2 y= 2

Base\_meth2 z= 3

Base\_meth2 l= 4

Base\_meth3 x= 1

Base\_meth3 y= 2

Base\_meth3 z= 3

Base\_meth3 l= 4

Accessing methods of Derived1 class by creating obj of Derived2 class

Derived1 a= 5

Derived2 b= 6

Derived3 c= 7

Derived5 d= 8

Accessing methods of own class by creating obj of Derived2 class

Derived2 p= 9

Derived2 q= 10

Derived2 r= 11

Derived2 s= 12

D:\java>

