21. Write a program in Java to create a package P1. Create class SUPER inside the package P2. Implement the program in such a way that SUB class extends SUPER class. Access the variables (Public, Private, Protected, Default) of SUPER class inside and outside the package and remark on that.

**// Inside the folder named 'P1' and file named 'SUPER.java'**

package *P*1;

public class SUPER {

    static int def = 1;

    public static int pub = 2;

    private static int pri = 3;

    protected static int pro = 4;

    public static void main(String[] args) {

        System.out.println("SAME CLASS INSIDE SAME PACKAGE");

        System.out.println("Default: " + def);

        System.out.println("Public: " + pub);

        System.out.println("Private: " + pri);

        System.out.println("Protected: " + pro);

    }

}

class SUB extends SUPER {

    void display() {

        System.out.println("SUBCLASS INSIDE SAME PACKAGE");

        System.out.println("Default: " + def);

        System.out.println("Public: " + pub);

        // System.out.println("Private: " + pri);  -> private variable can't be accessed from the sub-class inside a package

        System.out.println("Protected: " + pro);

    }

}

class ANOTHER {

    void display() {

        System.out.println("OUTSIDE CLASS INSIDE SAME PACKAGE");

        System.out.println("Default: " + SUPER.def);

        System.out.println("Public: " + SUPER.pub);

        // System.out.println("Private: " + SUPER.pri);

-> private variable can't be accessed from outside the class inside a package

        System.out.println("Protected: " + SUPER.pro);

    }

}

class check {

    public static void main(String[] args) {

        SUB obj1 = new SUB();

        obj1.display();

        System.out.println();

        ANOTHER obj2 = new ANOTHER();

        obj2.display();

    }

}

**OUTPUT**:

Microsoft Windows [Version 10.0.19045.3570]

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C:\Users\Anurag Singh>d:

D:\>cd desktop

D:\Desktop>cd java

D:\Desktop\Java>cd college

D:\Desktop\Java\College>javac P1/SUPER.java

D:\Desktop\Java\College>java P1/SUPER

SAME CLASS INSIDE SAME PACKAGE

Default: 1

Public: 2

Private: 3

Protected: 4

D:\Desktop\Java\College>java P1/check

SUBCLASS INSIDE SAME PACKAGE

Default: 1

Public: 2

Protected: 4

OUTSIDE CLASS INSIDE SAME PACKAGE

Default: 1

Public: 2

Protected: 4

**// Inside the folder named 'P2' and file named 'SUB.java'**

package *P*2;

import P1.SUPER;

public class SUB extends SUPER {

    void display() {

        System.out.println("SUBCLASS OUTSIDE PACKAGE");

        // System.out.println("Default: " + def);  -> default variable can't be accessed from the sub-class outside a package

        System.out.println("Public: " + pub);

        // System.out.println("Private: " + pri);  -> private variable can't be accessed from the sub-class outside a package

        System.out.println("Protected: " + pro);

    }

}

class ANOTHER {

    void display() {

        System.out.println("OUTSIDE CLASS OUTSIDE PACKAGE");

        // System.out.println("Default: " + SUPER.def);  -> default variable can't be accessed from outside the class outside a package

        System.out.println("Public: " + SUPER.pub);

        // System.out.println("Private: " + SUPER.pri);  -> private variable can't be accessed from outside the class outside a package

        // System.out.println("Protected: " + SUPER.pro);  -> protected variable can't be accessed from outside the class outside a package

    }

}

class check {

    public static void main(String[] args) {

        SUB obj1 = new SUB();

        obj1.display();

        System.out.println();

        ANOTHER obj2 = new ANOTHER();

        obj2.display();

    }

}

**OUTPUT**:

Microsoft Windows [Version 10.0.19045.3570]

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C:\Users\Anurag Singh>d:

D:\>cd desktop

D:\Desktop>cd java

D:\Desktop\Java>cd college

D:\Desktop\Java\College>javac P2/SUB.java

D:\Desktop\Java\College>java P2/check

SUBCLASS OUTSIDE PACKAGE

Public: 2

Protected: 4

OUTSIDE CLASS OUTSIDE PACKAGE

Public: 2

**TABLE**:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ACCESS MODIFIERS | SAME PACKAGE | | | DIFFERENT PACKAGE | |
| SAME CLASS | SUBCLASS | OUTSIDE CLASS | SUBCLASS | OUTSIDE CLASS |
| Private | ☑ | 🗵 | 🗵 | 🗵 | 🗵 |
| Protected | ☑ | ☑ | ☑ | ☑ | 🗵 |
| Public | ☑ | ☑ | ☑ | ☑ | ☑ |
| Default | ☑ | ☑ | ☑ | 🗵 | 🗵 |