Question:

Java program to implement the concept of importing classes from user defined package and creating packages.

Code:

Program 1 file

```
package pack;

public class program1 {
   public int roll = 25;
   public void print() {
       System.out.println("Student Roll = " +roll);
   }
}
```

Program 2 file

```
import pack.program1;
public class program2 {

   public static void main(String[] args) {
       program1 ob = new program1();
       ob.roll = 50;
       ob.print();
   }
}
```

Output:

```
linuxmint@jc6111:~/Desktop$  /usr/bin/env /usr/
kspaceStorage/af5e25042ebb0e14199e7ff49102673d/
Student Roll = 50
linuxmint@jc6111:~/Desktop$
```

Question:

Write a java program to explain the use of access specifiers -

Public, Protected, Default, Private

Code:

Inside package **pack**, there is a folder named “p”:

Stud file Code :

```
package pack.p;

public class stud {
    public String Name = "Pokemon";
    private int cgpa = 9;
    int roll = 100;
    protected int age = 100;

    public void displayRoll() {
        System.out.println("Roll is default "+roll);
    }
    public void displayName() {
        System.out.println("Name is public "+Name);
    }
    public void displayCgpa() {
        System.out.println("Cgpa is Private "+cgpa);
    }
    public void displayAge() {
        System.out.println("Age is protected "+age);
    }

}
```

1. **test_file Code (No inheritance)** :

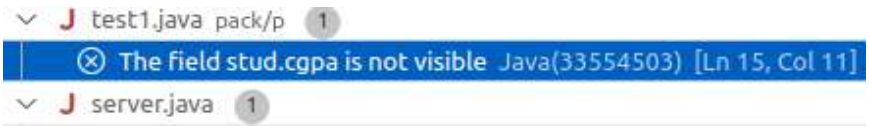
```
package pack.p;
import java.io.BufferedWriter;

import pack.p.stud;
public class test1 {
   public static void main(String[] args) {
        stud s = new stud();
        //this is public
        s.Name = "Doraemon";
        //this is protected
        s.age = 40;
        //this is private
        //s.cgpa = 100;

        ///this is default
        s.roll = 50;
        s.displayAge();
        s.displayCgpa();
        s.displayName();
        s.displayRoll();
   }
}
```

Output:

Except private variable **cgpa,** rest can be accessed:

```
Age is protected 40
Cgpa is Private 9
Name is public Doraemon
Roll is default 50
```

If we try to access the cgpa we get error :



2. **test file Code (showing inheritance) :**

Code

```
package pack.p;
import pack.p.stud;
class par extends stud {
   public void print() {
       System.out.println(Name);
   }
}

public class test3 extends par {
   public static void main(String[] args) {
       stud s = new stud();
       // this is public
       s.Name = "Doraemon";

       // this is protected
       s.age = 40;

       // Since cgpa is private in the parent class, you cannot access it
directly from the subclass.
       s.cgpa = 80;
       // this is default
       s.roll = 50;

       s.displayAge();
       // You can't access private cgpa directly from here.
       // s.displayCgpa();
       s.displayName();
       s.displayRoll();
   }
}
```

Output:

Error due to access attempt of private data member

Except **private** all can be accessed, **protected** can only be accessed in the super class and subclass of the same package

```
Age is protected 40
Name is public Doraemon
Roll is default 50
```

3. **test file code different package (No inheritance):**

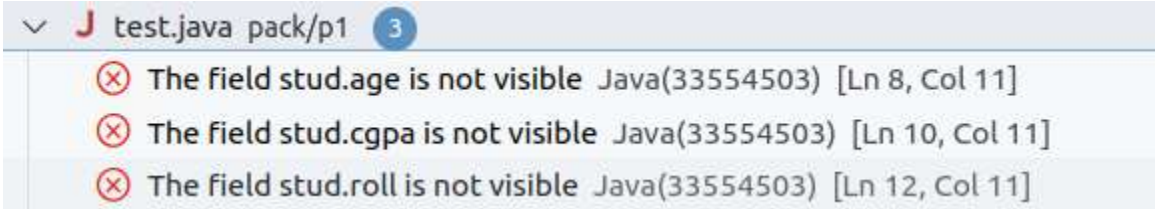
Only **public** access specified member that is **name** should work.

Code

```
package pack.p1;
import pack.p.stud;
public class test {
   public static void main(String[] args) {
        stud s = new stud();
        s.Name = "Winter Soldier";
        //protected data member age
        s.age = 30;
        //private data member cgpa
        s.cgpa =90;
        //default data member roll
        s.roll = 100;
        System.out.println("after trying to change only we can access age
which is public: ");
        s.displayAge();
        s.displayCgpa();
        s.displayName();
        s.displayRoll();
   }
}
```

Output:

Error when we try to access **private**, **protected** and **default** data members



When we only access the **public** data member

```
after trying to change only we can access age which is public:
Age is protected 100
Cgpa is Private 9
Name is public Winter Soldier
Roll is default 100
```

4. **test file code different package (inheritance):**

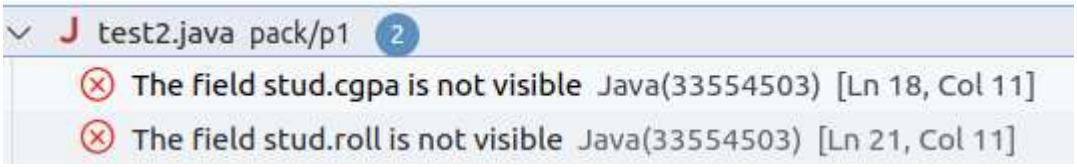
Code

```
package pack.p1;
import pack.p.stud;
class Supertest extends stud{
   public void print() {
       System.out.println("This is a super class");
   }
}
public class test2 extends Supertest{
   public static void main(String[] args) {
       test2 s = new test2();
       //Name is public specified
       s.Name = "Sentry";

       // age is protected access specified
       s.age = 60;

       //cgpa is private access specified
       s.cgpa = 80;

       //roll is default access specified
       s.roll = 20;
       s.displayName();
```

```
        s.displayAge();
        s.displayCgpa();
        s.displayRoll();
    }
}
```

Output:

Error when we try to access **private** and **default** data members:



When we do not access **private** and **default** data members:

```
Name is public Sentry
Age is protected 60
Cgpa is Private 9
Roll is default 100
```