

Implementation of Packages in Java

Aim:

Write a Java program to implement built-in, user-defined packages and accessing all classes in a package.

PRE LAB EXERCISE

QUESTIONS

1. What is java.util package and what collection framework does it contain?

java.util is a **built-in Java package** that provides:

- Utility classes
- Data structures
- Date and time classes
- Random number generation
- Scanner class

It is mainly used for **collection-related operations**.

And the Java Collection Framework including List, Set, Queue, and Map interfaces and their implementations.

2. What are the two types of packages in Java?

Java packages are divided into:

1. Built-in (Predefined) Packages

- Provided by Java
- Example:
 - java.util
 - java.lang
 - java.io
 - java.sql

2. User-defined Packages

- Created by programmers
- Used to organize custom classes

Objective

Built-in Packages comprise a large number of classes that are part of the Java API. Some of the commonly used built-in packages are:

- ## Source Code

```
import java.util.Random; // built-in package

public class Sample{

    public static void main(String[] args) {

        // using Random class

        Random rand = new Random();

        // generates a number between 0–99

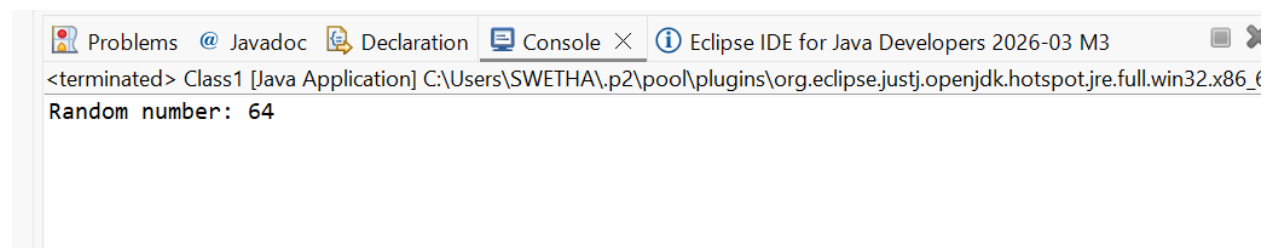
        int number = rand.nextInt(100);

        System.out.println("Random number: " + number);

    }

}
```

Random number: 49



User-defined Packages are the packages that are defined by the user.

Source code

```
package com.myapp;

public class Helper {

    public static void show() {

        System.out.println("Hello from Helper!");

    }

}
```

==To use this in another class==

```
import com.myapp.Helper;

public class Test {

    public static void main(String[] args) {

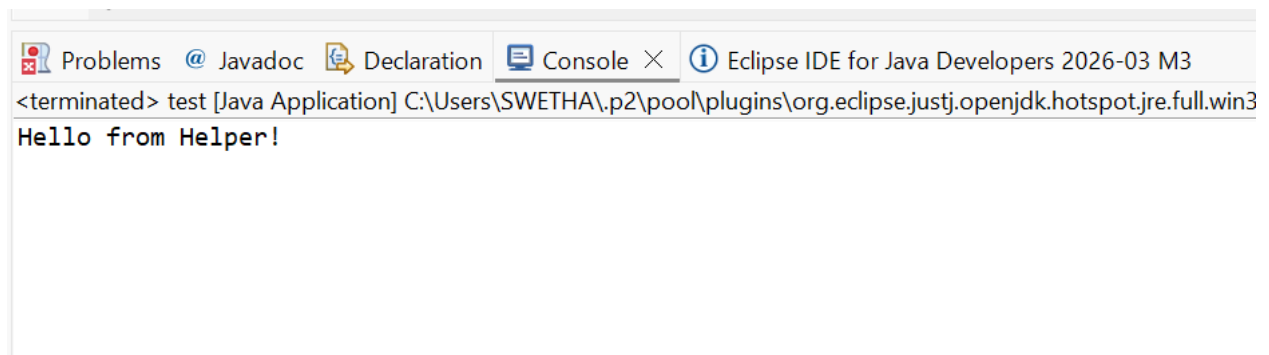
        Helper.show();

    }

}
```

Output:

Hello from Helper!



//Importing all classes from a package.

Source code

```
import java.util.Vector;

public class Coders {

    public Coders() {

        // java.util.Vector is imported, We are able to access it directly in our code.

    }

}
```

```

Vector v = new Vector();

java.util.ArrayList l = new java.util.ArrayList();

l.add(3);

l.add(5);

l.add(7);

System.out.println(l);

}

public static void main(String[] args) {

    new Coders();

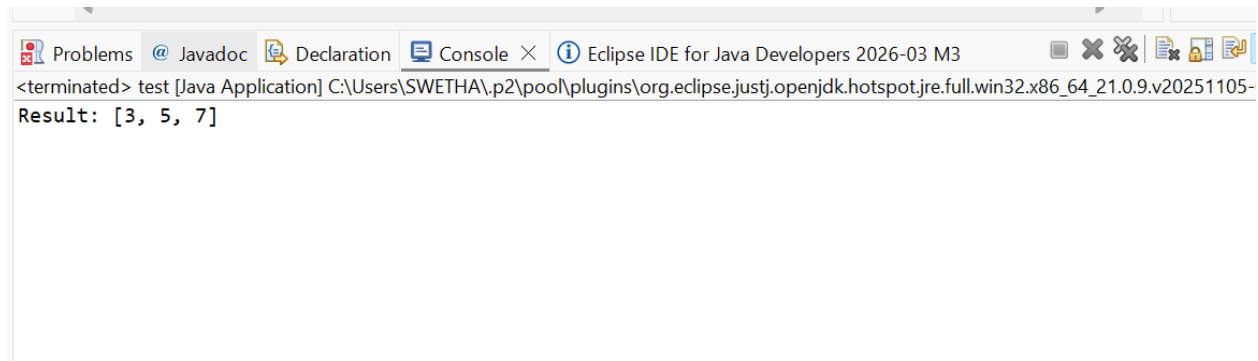
}

}

```

Output

[3,5,7]



POST LAB EXERCISE

1. What will happen if two classes in different packages have the same name and are imported in a Java file?
 If two classes with the **same name** are imported from different packages, Java will create an **ambiguity error**. The compiler throws an ambiguity error, and we must use fully qualified class names to resolve it.
2. What is the purpose of using packages in Java?
 Packages are used to:
 - ✓ Organize classes logically
 - ✓ Avoid name conflicts
 - ✓ Provide access protection
 - ✓ Improve code reusability
 - ✓ Make large projects easier to manage

3. Which built-in Java package would you use if you want to create a GUI window and display a message?
- A. java.util
 - B. java.sql
 - C. java.awt
 - D. java.net
- java.awt
- java.awt (Abstract Window Toolkit) is used for:
 - Creating GUI windows
 - Buttons
 - Labels
 - Dialog boxes

ASSESSMENT

Description	Max Marks	Marks Awarded
Pre Lab Exercise	5	
In Lab Exercise	10	
Post Lab Exercise	5	
Viva	10	
Total	30	
Faculty Signature		