

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

IN LAB EXERCISE

Objective

To understand and implement the concepts of built-in, user-defined packages and accessing all classes in a package in Java.

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:

- `java.lang`: Contains language support classes(e.g, classes that define primitive data types, math operations). This package is automatically imported.
- `java.io`: Contains classes for supporting input/output operations.
- `java.util`: Contains utility classes that implement data structures such as Linked Lists and Dictionaries, as well as support for date and time operations.
- `java.applet`: Contains classes for creating Applets.
- `java.awt`: Contains classes for implementing the components for graphical user interfaces (like buttons, menus, etc).

Source Code

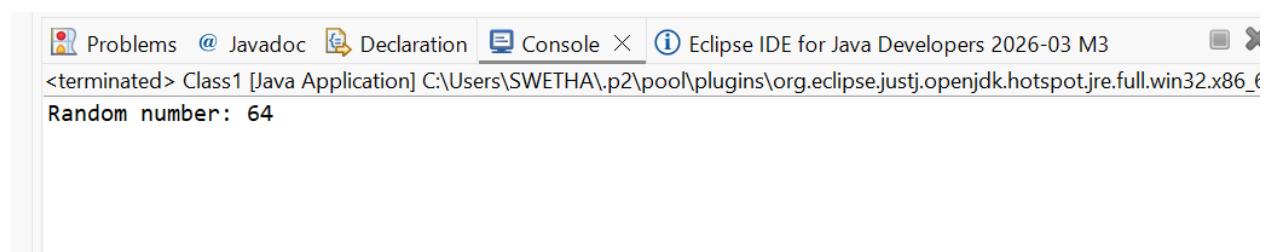
```
import java.util.Random; // built-in package

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);
    }
}
```

Output

Random number: 49



The screenshot shows the Eclipse IDE interface with the following details:

- Top bar: Problems, @ Javadoc, Declaration, Console (highlighted), Eclipse IDE for Java Developers 2026-03 M3.
- Console tab: <terminated> Class1 [Java Application] C:\Users\SWETHA\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64
- Console output: Random number: 64

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

Source code

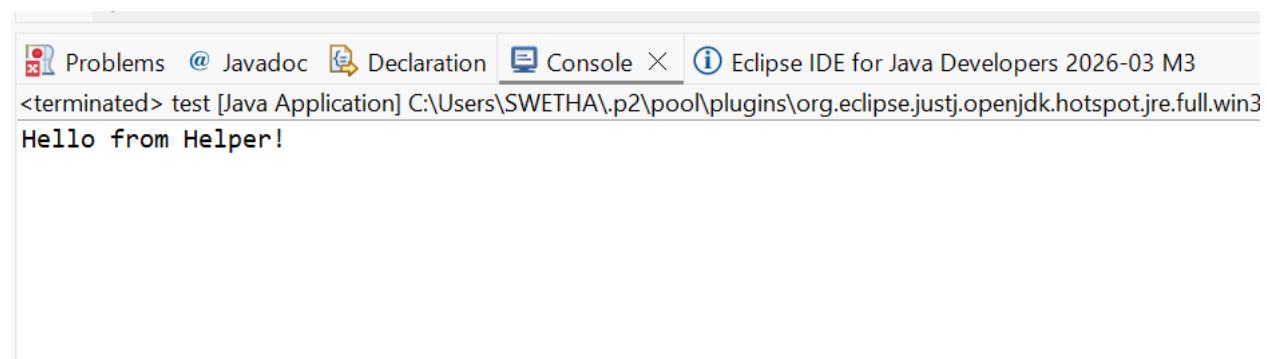
```
package com.myapp;  
  
public class Helper {  
  
    public static void show() {  
  
        System.out.println("Hello from Helper!");  
  
    }  
}
```

==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.

```

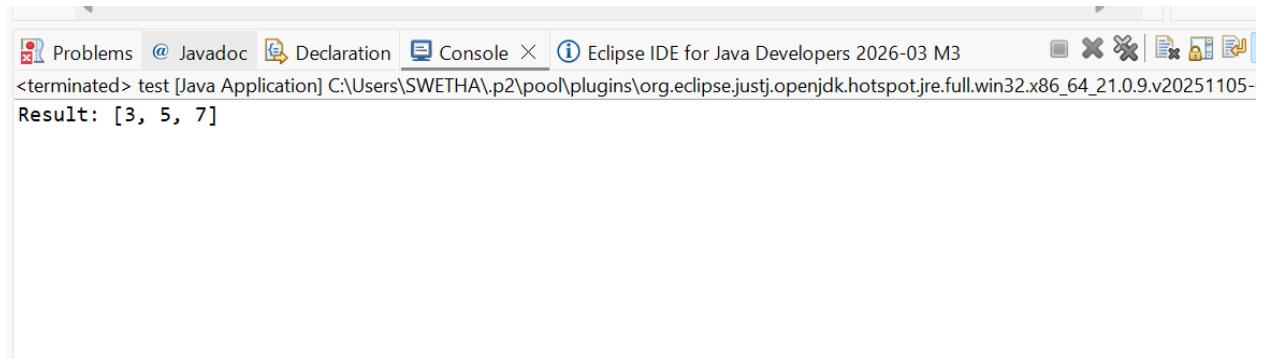
Vector v = new Vector();
java.util.ArrayList l = new java.util.ArrayList();
l.add(3);
l.add(5);
l.add(7);
System.out.println(l);
}

public static void main(String[] args) {
    new Coders();
}
}

```

Output

[3,5,7]



POST LAB EXERCISE

- 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.
- 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		