

Sriram B

24BCS285

CSE-A1

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 package in Java that provides utility classes like collections, date/time tools, and more.

2. What are the two types of packages in Java?
3. • **Built-in packages** – Provided by Java (e.g., java.util, java.lang)
4. • **User-defined packages** – Created by the programmer

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

The screenshot shows the IntelliJ IDEA interface with the 'Run' tool window open. The title bar says 'Run Sample'. The window displays the command run: 'C:\Users\Theeran\.jdks\openjdk-25.0.2\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 2025.3.3\lib\'. Below it, the output pane shows the printed message 'Random number: 28' followed by 'Process finished with exit code 0'. On the right side of the window, there are performance monitoring tabs for 'Performance' and a 'Show Results' button.

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() {
```

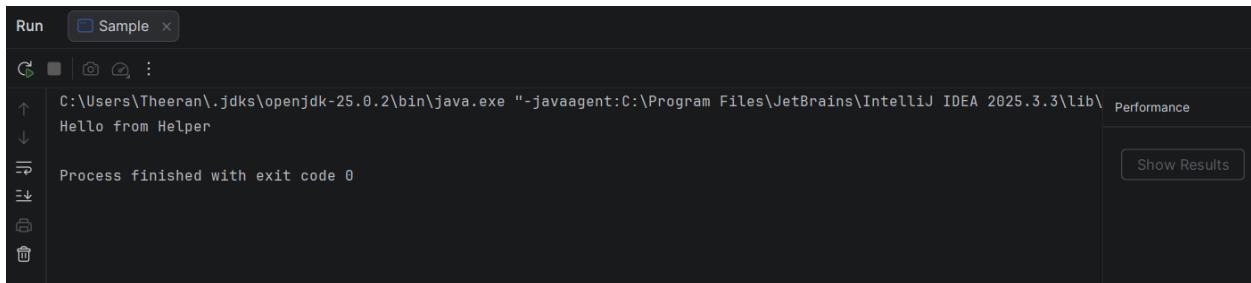
```
        System.out.println("Hello from Helper!");  
    }  
}
```

==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!



The screenshot shows a terminal window within an IDE. The title bar says "Run Sample". The terminal pane displays the command run: "C:\Users\Theeran\.jdks\openjdk-25.0.2\bin\java.exe -javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 2025.3.3\lib\...". The output shows the text "Hello from Helper" followed by "Process finished with exit code 0". There are standard terminal navigation keys like up and down arrows, and a "Show Results" button.

//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]

The screenshot shows a dark-themed IDE interface with a 'Run' tab selected. In the center, there's a terminal-like window displaying the command used to run the Java application: 'C:\Users\Theeran\.jdks\openjdk-25.0.2\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 2025.3.3\lib\"'. Below this, the output of the program is shown: '[3, 5, 7]'. At the bottom of the window, it says 'Process finished with exit code 0'. On the right side of the interface, there are buttons for 'Performance' and 'Show Results'.

POST LAB EXERCISE

- What will happen if two classes in different packages have the same name and are imported in a Java file?

If you import both classes with the same name, **Java will show a compile-time error (ambiguity error)**.

To fix it, you must use the **fully qualified class name** (package name + class name).

- What is the purpose of using packages in Java?

Packages are used to:

- Organize related classes
- Avoid name conflicts
- Provide access protection
- Make code easier to maintain

- 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 is used to create GUI components like windows, buttons, labels, etc.

ASSESSMENT

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