Experiment Number : 8 **Date: 25-02-26**

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24BCS298

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

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.

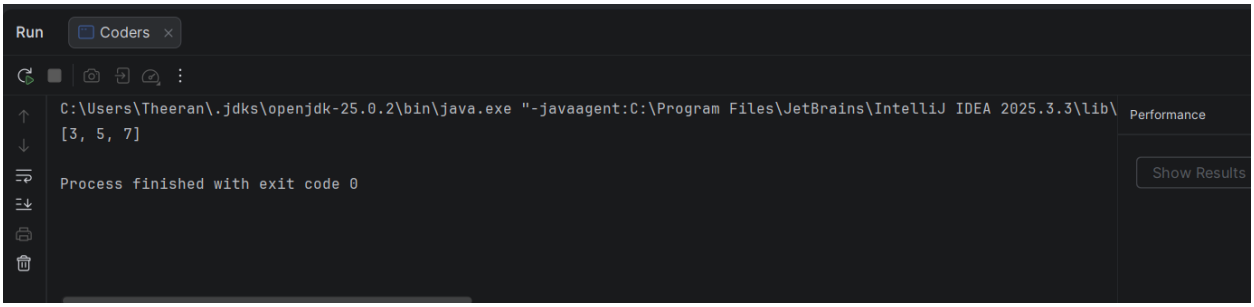
Source code

```
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 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).

2. 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

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 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		