Experiment Number : 8 **Date: 13.2.2026**

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 and the **Collection Framework**.

   It contains collections like:

- **List** → ArrayList, LinkedList
- **Set** → HashSet, TreeSet
- **Queue** → PriorityQueue
- **Map** → HashMap, TreeMap

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

   Built-in Packages (Predefined Packages)

   These are provided by Java.

   Examples:

- java.lang
- java.util
- java.io
- java.sql

User-defined Packages

These are created by the programmer using the package keyword.

Example:

package mypackage;

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: 14

```
[Running] cd "c:\Users\msand\OneDrive\Desktop\
Random number: 14

[Done] exited with code=0 in 1.097 seconds
```

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!

```
[Running] cd "c:\Users\msand\OneDrive\Desktop\java\" && javac Main.java && java Main
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]

```
[Running] cd "c:\Users\msand\OneDrive\Desktop\java\" && javac Main.java && java Main
[3, 5, 7]

[Done] exited with code=0 in 0.998 seconds
```

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 give a compilation error (ambiguity error).
   Example:
   import java.util.Date;
   import java.sql.Date; // Error: Date is ambiguous
   Solution:
   Use the **fully qualified name**:
   java.util.Date d1 = new java.util.Date();
   java.sql.Date d2 = new java.sql.Date(0);

2. What is the purpose of using packages in Java?

   Purpose of using packages in Java
   Packages are used to:

- Organize classes
- Avoid name conflicts
- Provide access protection
- Improve code reusability
- Make large projects manageable

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

Answer:

C. java.awt

java.awt (Abstract Window Toolkit) is used to create GUI components like:

- Window
- Button
- Label
- Frame

ASSESSMENT

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