

## **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?

Ans:

java.util is a built-in Java package.

It contains useful classes and the Collection Framework.

Collection Framework includes:

- List - Stores ordered data
- Set - Stores unique data
- Map - Stores data in key–value pairs
- Queue - Stores data in FIFO order

It is used to store and manage group of objects.

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

Ans:

Built-in package – Already created by Java.

User-defined package – Created by 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**

```
PS C:\Users\prawin H\OneDrive\Desktop\educat>
tspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionHandler
g\Code\User\workspaceStorage\99647c62e51d2da12
'Sample'
Random number: 63
PS C:\Users\prawin H\OneDrive\Desktop\educat>
```

**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:**

```
C:\Program Files\Eclipse Adoptium\  
ionMessages' '-cp' 'C:\Users\prawin  
e0fec2abefad\redhat.java\jdt_ws\edu  
Hello from Helper!  
PS C:\Users\prawin H\OneDrive\Desktop
```

**//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**

```
PS C:\Users\prawin H\OneDrive\Desktop\educat
tspot\bin\java.exe' '-XX:+ShowCodeDetailsInE
g\Code\User\workspaceStorage\99647c62e51d2da
'Coders'
[3, 5, 7]
PS C:\Users\prawin H\OneDrive\Desktop\educat
```

## POST LAB EXERCISE

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

Ans:

If two classes have the same name and both are imported, Java will show error (confusion). We must use full package name.

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

Ans:

Packages are used to organize classes and avoid name conflict.

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

Ans:

java.awt

## **ASSESSMENT**

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