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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

The screenshot shows an IDE's terminal window. At the top, it says 'Run' and has a dropdown set to 'Sample'. Below that is a toolbar with icons for file operations like open, save, and copy/paste. The terminal itself has a dark background with white text. It displays the command run, the class name Sample, the output 'Random number: 28', and the message 'Process finished with exit code 0'. There are also some navigation icons on the left side of the terminal area.

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() {
```

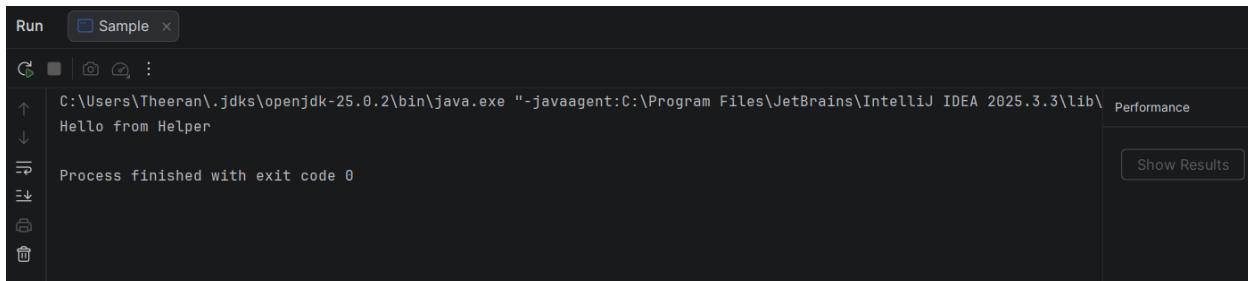
```
        System.out.println("Hello from Helper!");  
    }  
}
```

==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 content is as follows:

```
Run Sample ×  
G C :  
C:\Users\Theeran\.jdks\openjdk-25.0.2\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 2025.3.3\lib\ Performance  
Hello from Helper  
Process finished with exit code 0
```

A "Show Results" button is visible on the right side of the terminal window.

//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 window titled 'Coders'. The output in the terminal is as follows:

```

Run Coders ×

C:\Users\Theeran\.jdks\openjdk-25.0.2\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 2025.3.3\lib\ Performance
[3, 5, 7]
Process finished with exit code 0
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		