



CORE JAVA

MANUAL V8.3

MODULE CODE:

ANUDIP FOUNDATION





ICONS AND THEIR MEANING



HINTS:
Get ready for helpful insites on difficult topics and questions.



STUDENTS:
This icon symbolize important instreutions and guides for the students.



TEACHERS/TRAINERS:
This icon symbolize important instreutions and guides for the trainers.

Module 2: Object Oriented Programming and Package**Chapter 8**

Objective: After completing this lesson you will be able to :

- * Understand the concepts and advantages of Java packages
- * Gain an introduction to Java system packages (Lang, util, awt)

Materials Required:

1. Computer
2. Internet access

Theory Duration: 120 minutes

Practical Duration: 0 minute

Total Duration: 120 minutes

Chapter 8

8.1 Concept and Advantages of Package

Concept of Package in Java

In Java, a package is a mechanism for encapsulating groups of sub packages, classes and interfaces. A package is used to avoid naming problems. Two classes can have the same name, but be differentiated with a package. Packages are used for managing namespaces and protecting access.

Packages also make searching and using interfaces, annotations, enumerations and classes more convenient. A package can be considered as a form of encapsulation as it can hide components.

Example of Java package -

```
package yourpack;

public class Simple{
    public static void main(String args[]){
        System.out.println('This is a package');
    }
}
```

The two package types are -

- * Java built-in packages
- * User-defined packages

Programmers can define their own packages for grouping particular interfaces or classes. Using packages enables the grouping of classes that are related to each other.

Default packages are assigned for enumerations, interfaces, classes and annotation types if no package statement is specified. One source file can only have a single package statement.

Advantages of Java package

1. **Improved organization** - Using packages helps to organize the components of expansive Java projects in a streamlined manner. Packages enable organizing of similar class types into conveniently-named and easily accessible packages. This results in better efficiency of Java projects as classes and interfaces can be accessed more easily.
2. **Code reusability** - Packages can be imported if an identical piece of code needs to be used. By using a Java package programmers can avoid writing the same code multiple times.
3. **Preventing conflicts** - Using packages enables programmers to have identical classes without facing the possibility of naming clashes. Two different packages can have classes, interfaces and enumerations with the same names.

8.2 System Packages (Lang, util, awt)

System packages or built-in packages in Java are those already defined within the platform. Built-in packages have classes required for programmers to read and write files from a physical storage location (hard disk). These packages can also be utilized for Internet and network-wide data transfer, establishing data connections and other tasks.

* **lang** - The lang package contains all the fundamental language support classes of Java. It is written as `java.lang.Package`. Object and class are the two most important classes of the Lang package in Java.

* **util** - The util package contains Java legacy collection classes, the collections framework, time and date features, internationalization, event model, and utility classes. It is written as `java.util`.

* **awt** - The Awt package in Java is the key package of the Abstract Windowing Toolkit (AWT). This package mainly contains the graphics classes, including Graphics and Graphics 2D.

Instructions: The progress of students will be assessed with the exercises mentioned below.

MCQ

1. A package is used to avoid _____ problems.

- a) gaming
- b) naming
- c) integration
- d) None of the mentioned

2. Namespaces are _____ using packages.

- a) managed
- b) deleted
- c) re-evaluated
- d) None of the mentioned

3. A Java package can be considered as a form of _____.

- a) encapsulation
- b) compilation
- c) classes
- d) None of the mentioned

4. Java has _____ and built-in packages.

- a) user-defined
- b) class-oriented
- c) user-based
- d) None of the mentioned

5. Using packages helps in grouping classes that are _____ to each other.

- a) opposite
- b) unrelated
- c) related
- d) None of the mentioned

6. What happens if a class is not assigned any package ?

- a) default package gets assigned
- b) no package gets assigned
- c) custom package gets assigned
- d) None of the mentioned

7. One source file can only have a single _____ statement.

- a) package
- b) pack
- c) class

d) None of the mentioned

8. Packages can make interfaces more _____.

a) inaccessible

b) accessible

c) congruent

d) None of the mentioned

9. Using packages in Java improves _____ reusability

a) code

b) parameter

c) component

d) None of the mentioned

10. Object and _____ are the two most important classes of the Lang package

a) hash

b) class

c) integer

d) None of the mentioned