Experiment No-6

Aim: Understand and demonstrate concepts of package.

Problem Statement:

1. Implement a program to demonstrate concepts of package.
2. Write a Program to create mathematical package and its access.

Theory:

A **java package** is a group of similar types of classes, interfaces and sub-packages. Package is collection of classes. Java provides a mechanism for partitioning the class namespace into more manageable chunks. This mechanism is the package. The package is both a naming and a visibility control mechanism. You can define classes inside a package that are not accessible by code outside that package.

Package in java can be categorized in two form, built-in package and user-defined package. There are many built-in packages such as java, lang, awt, javax, swing, net, io, util, sql etc.

Advantage of Java Package

1. Java package is used to categorize the classes and interfaces so that they can be easily maintained.
2. Java package provides access protection.
3. Java package removes naming collision.

Defining the package:

- Include a package command as the first statement in Java source file. Any classes declared within that file will belong to the specified package.
- The package statement defines a namespace in which classes are stored.

Package statement

- The **package statement** defines a name space in which classes are stored.
- General form of the **package statement:**

  package *package-name;*
- **Example:**

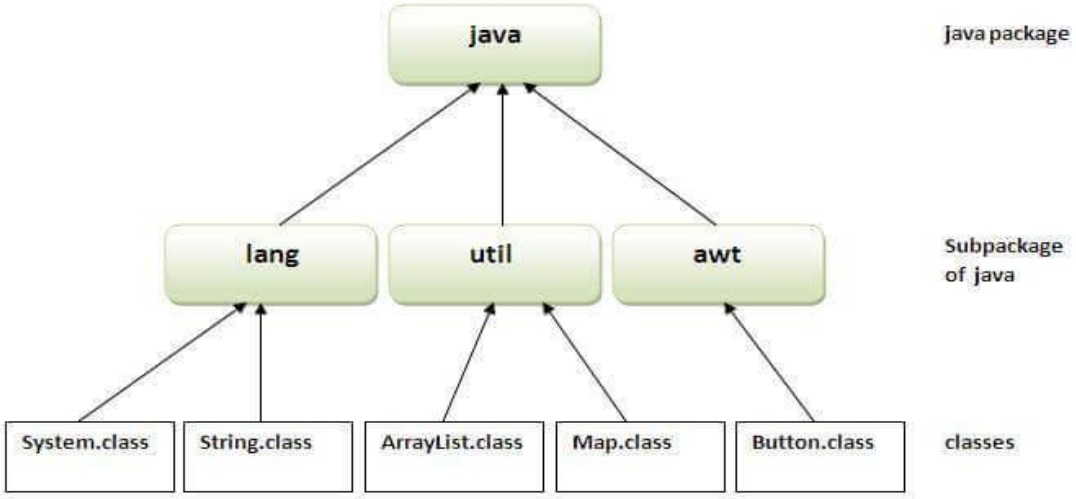
```
package mypack;
public class employee
{
        statement;
}
```

Uses of Package

1. Packages are used in Java to avoid name conflicts and to control access of class and interface.

2. A package can be defined as a group of similar types of classes, interface or sub-package.
3. A package is always defined as a separate folder having the same name as the package name.
4. Store all the classes in that package folder.
5. All classes of the package must be declared public to access outside the package.
6. All classes within the package must have the package statement as its first line.
7. All classes of the package must be compiled before use.

Package Hierarchy



Syntax to compile and run package program

1. Compile your packages:
   i. **javac -d directory javafilename**
2. Run your package:
   i. **java packagename.javafilename**
3. Example: Package is= pack
   Java file name= First.java
4. **Steps:**
   a. Compile java file with javac First.java
   b. To create package with javac –d . First.java
   c. Run java pack.First

Importing packages:

- Java includes the import statements to bring certain classes or entire packages.
- **Syntax**

  import package_name.class_name; OR

  import package.*;

- Import keyword is used to import built-in and user-defined packages into your java source file.

- Class can refer to a class that is in another package by directly using its name.
- There are 3 different ways to access any class present in a different package:
  --Using fully qualified name
  --To import only one class from a package.
  --To import all the classes from a package.

Conclusion:

Successfully demonstrated package program.