Packages

1. Packages are containers for classes.
    - Defines a namespace in which classes are stored.
    - Classes are stored in system directories with the name of the package.
2. A package in Java is used to group related classes and interfaces.
3. It is a naming and visibility control mechanism used to avoid naming conflicts.
4. Packages are stored in a hierarchical manner.
    - Packages are organized in a structured, tree-like directory format.
    - For example, the package `java.util.Scanner` is part of the `util` package:

    java
    └── util
    └── Scanner.java

    that is the folder structure will be
    - **java/util/**
    - Scanner.java files will be inside **java/util/**

Type of packages

Two types of packages in java

1. **User defined**
2. **Built-in**

- User defined - created by programmers.

Eg– package cbse or package icse

cbse
└── Teacher.java
icse
└── Teacher.java

- InBuilt - prvided by java.

– java.lang:
    primitive types, strings, math functions, threads, and exception
– java.util:
    Contains classes such as vectors, hash tables, date etc.
– java.io: Stream classes for I/O
– java.awt: Classes for implementing GUI – windows, buttons, menus etc.
– java.net: Classes for networking
– java.applet: Classes for applet development

Defining a Package

1. To create a package, simply include the package command:

```
...java code
package package_name;
// Example: package Sample;
...
```

Accessing a Package

1. Use import statement, eg,

format: import pkg1[.pkg2].(classname|*);

```
...java code
import java.util.Scanner;
import java.util.*;
...
```

2. Without importing, eg

```
...java code
cbse.Teacher t1 = new cbse.Teacher();
isce.Teacher t2 = new isce.Teacher();
...
```

Uniersity Question

Create a package reversepackage. Add a class Reverse in it with a method reverse() to print the reverse of a string without using built-in methods. Create a class outside the package and use this method to reverse a string
Ans:

1. create folder **reversepackage** in working directory and implement class Reverse.java inside reversepackage folder

```
// reversepackage/Reverse.java
package reversepackage;
public class Reverse {
        public void reverse(String str) {
                int len = str.length();
                for(int i=len; i>0; i--) {
                        System.out.print(str.charAt(i-1));
                }
        }
}//end of Reverse class
```

2. return to working directory, and implement class TestPkg.java

```
// TestPkg.java
import reversepackage.*;
public class TestPkg {
        public static void main(String[] str) {
                Reverse rev = new Reverse();
                rev.reverse("alice");
        }
} // end of TestPkg class
```

3. excecute as below from workingdirectory

```
/> javac reversepackage/Reverse.java
/> javac TestPkg.java
/> java TestPkg
```