Package

What is package?

A package arrange number of classes, interfaces and sub-package of same type into a particular group. It is nothing but folder in windows.

Types:-

1. Pre-defined
2. User-defined

Pre-defined – The package which are already created by the java developers.

- Java.lang – Default package(we can't write or run any code without this package) Ex- String, Integer, Object etc.
- Java.util – Used to implement data structure of java. It contain utility, classes also known as collection framework. Ex-LinkedList, Stack, Tree etc.
- Java.io – Used to perform input/output operations on file. Ex- File, File Writer, File Reader etc.
- Java.applet – Used to develop GUI related application. Ex- Applet
- Java.awt – Stands for abstract window toolkit. Used to develop GUI related application. Difference from applet is, awt are stand alone program & it contain main() unlike main. Ex- Frame, Button, Text Field etc.
- Java.net – URL, InetAddress, URL Connection, and so on.
- Java.sql – Connection, Statement, Resultset etc.
- Javax.swing – Jframe, Jbutton, JtextField etc.

User-defined – The package which are created by java programmers for their own use are know as user-defined package.

- Package Pi
- Package add
- Package myPack

Access modifier :-

Modifier	Class	Package	Subclass	Global
Public	✓	✓	✓	✓
Protected	✓	✓	✓	✗
Default	✓	✓	✗	✗
Private	✓	✗	✗	✗

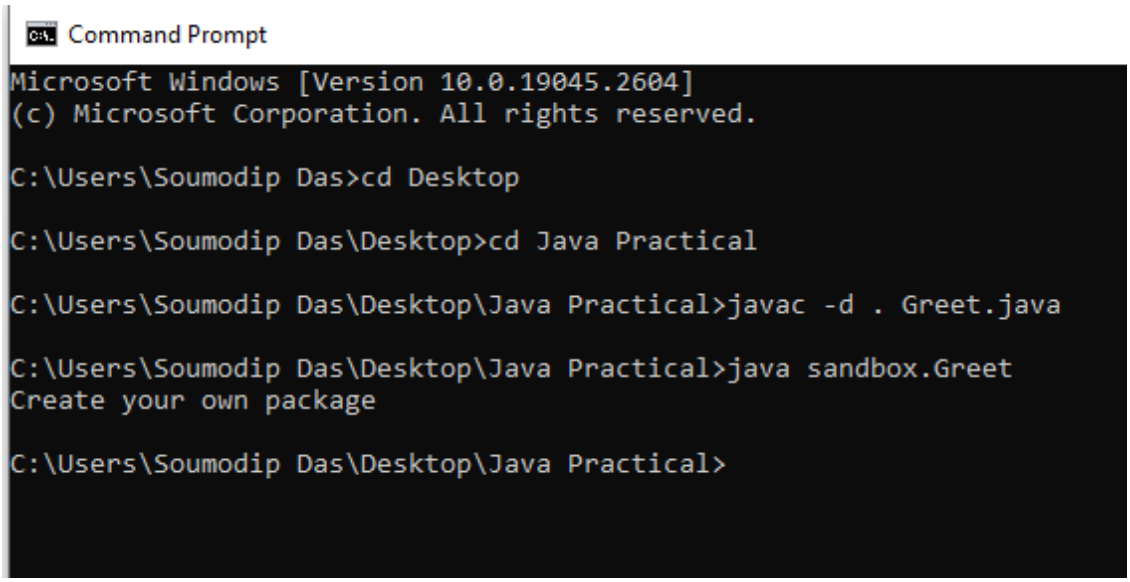
Advantages :-

1. Reusability
2. Security
3. Fast Searching
4. Naming Conflicting
5. Hiding

Dis-advantages :-

We can't pass parameter to package.

User Defined Package Example :-



1. **But if we create a another class and then we make the main method in it and make the object of the previous class and call the method then, we will get an error for private access modifier.**

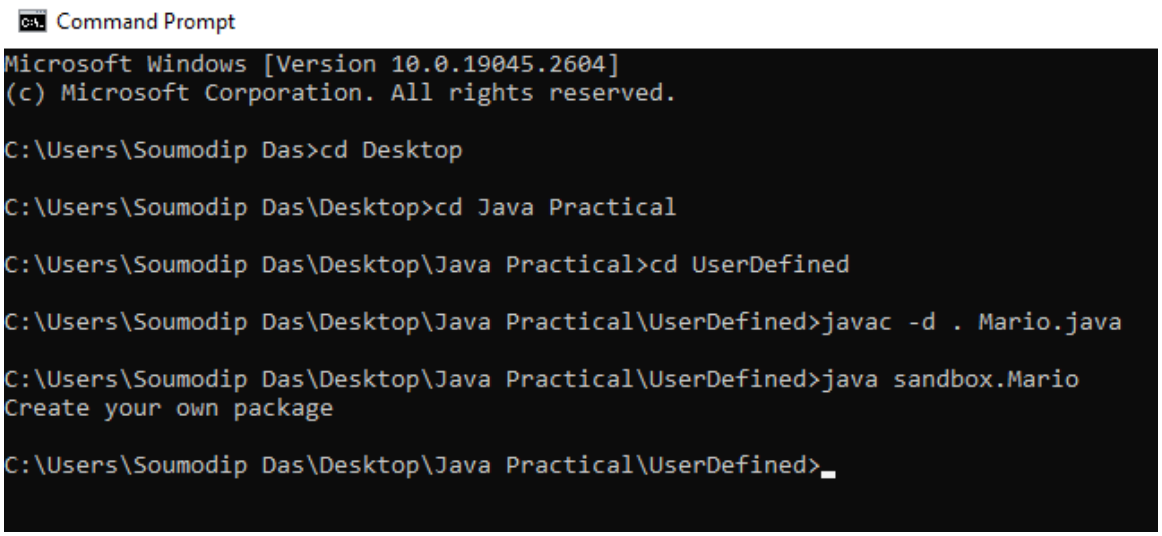
```
Command Prompt
Microsoft Windows [Version 10.0.19045.2604]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Soumodip Das>cd Desktop

C:\Users\Soumodip Das\Desktop>cd Java Practical

C:\Users\Soumodip Das\Desktop\Java Practical>javac -d . Greet.java

C:\Users\Soumodip Das\Desktop\Java Practical>java sandbox.Greet
Create your own package

C:\Users\Soumodip Das\Desktop\Java Practical>javac -d . Greet.java
error: file not found: Greet.java
Usage: javac <options> <source files>
use --help for a list of possible options

C:\Users\Soumodip Das\Desktop\Java Practical>cd UserDefined

C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>javac -d . Greet.java
Greet.java:23: error: show() has private access in Greet
        g.show();
          ^
1 error

C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>
```

2. In default method another class can access

Mario.java 1

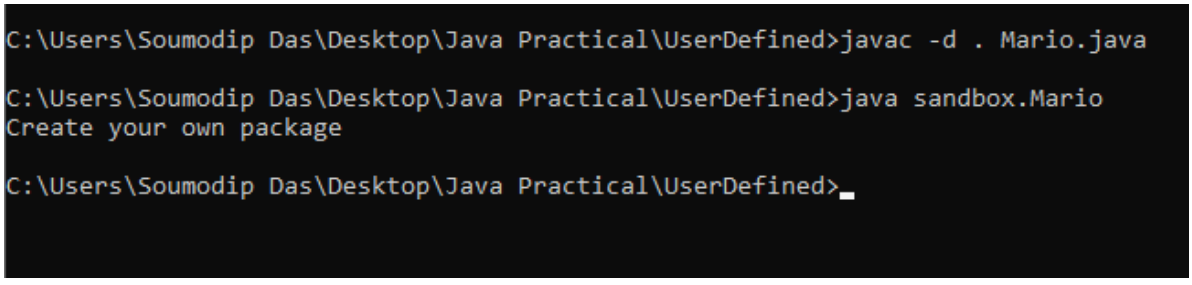
UserDefined > Mario.java > Mario > main(String[])

```java
class Greet {
    void show() {
      System.out.println(x:"Create your own package");
    }
}
class Mario {
    Run | Debug
    public static void main(String[] args) {
        Greet g = new Greet();
        g.show();
    }
}
```



3. In case of protected method another class can access.

```java
package sandbox;

class Greet {
    protected void show() {
      System.out.println(x:"Create your own package");
    }
}
class Mario {
    Run | Debug
    public static void main(String[] args) {
        Greet g = new Greet();
        g.show();
    }
}
```



Now, we will create an another java file and make a package in it. Then we will import the package sandbox in it, and in sandbox we will make the main method and call then method of class Greet's method.


```
C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>javac -d . Greet.java

C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>javac -d . Luigi.java

C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>java index.Luigi
Create your own package

C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>
```

4. In case of public another class can access we can access in anywhere.


```
C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>javac -d . Greet.java

C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>javac -d . Luigi.java

C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>java index.Luigi
Create your own package

C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>
```