

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	✓	✗	✗	✗

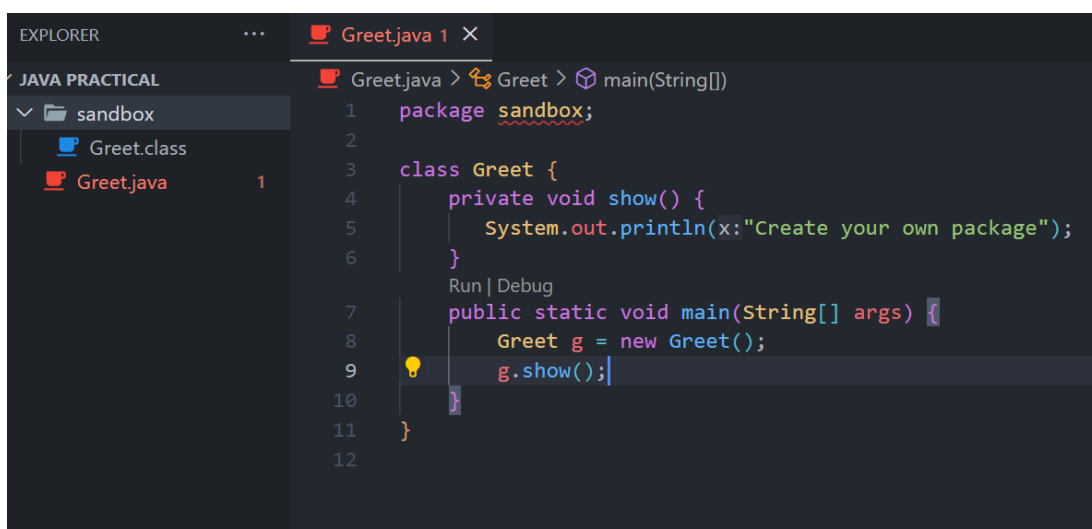
Advantages :-

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 package sandbox;
2
3 class Greet {
4     private void show() {
5         System.out.println(x:"Create your own package");
6     }
7     public static void main(String[] args) {
8         Greet g = new Greet();
9         g.show();
10    }
11 }
12
```

```
Command Prompt
Microsoft Windows [Version 10.0.19045.2604]
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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>
```

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.

```
Greet.java 2 X
UserDefined > Greet.java > Greet

12
13 package sandbox;
14
15 class Greet {
16     private void show() {
17         System.out.println(x:"Create your own package");
18     }
19 }
20 class Mario {
21     Run | Debug
22     public static void main(String[] args) {
23         Greet g = new Greet();
24         g.show();
25     }
26 }
```

```

Command Prompt
Microsoft Windows [Version 10.0.19045.2604]
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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 X
UserDefined > Mario.java > Mario > main(String[])
14
15 class Greet {
16     void show() {
17         System.out.println(x:"Create your own package");
18     }
19 }
20 class Mario {
    Run | Debug
21     public static void main(String[] args) {
22         Greet g = new Greet();
23         g.show();
24     }
25 }
26

```

Command Prompt

```
Microsoft Windows [Version 10.0.19045.2604]
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C:\Users\Soumodip Das>cd Desktop

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

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

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

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

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

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

```
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();
    }
}
```

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

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

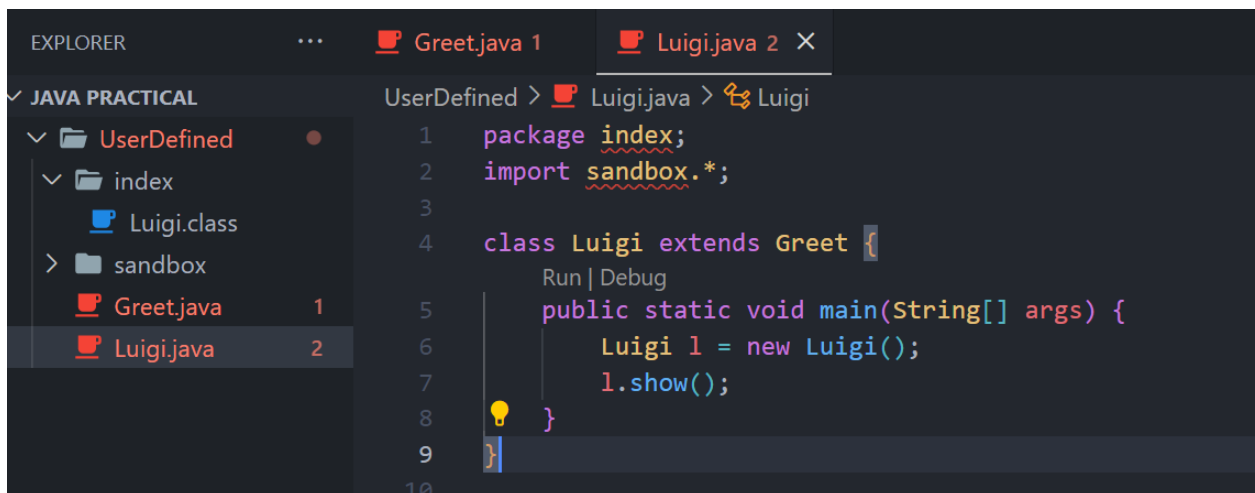
C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>_
```

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.



The screenshot shows the Visual Studio Code editor with the Explorer sidebar on the left. The Explorer shows a project named 'JAVA PRACTICAL' with a folder 'UserDefined' containing an 'index' folder. Inside 'index' are 'Luigi.class', 'Greet.java', and 'Luigi.java'. The 'Greet.java' file is open in the editor, showing its package declaration as 'package sandbox;'. The class 'Greet' has a protected method 'show()' that prints 'Create your own package'.

```
28 // }
29
30 package sandbox;
31
32 public class Greet {
33     protected void show() {
34         System.out.println(x:"Create your own package");
35     }
36 }
37
```



The screenshot shows the Visual Studio Code editor with the 'Luigi.java' file open. The package declaration is 'package index;'. It imports 'sandbox.*' and defines a class 'Luigi' that extends 'Greet'. The 'main' method creates a 'Luigi' object and calls its 'show()' method.

```
1 package index;
2 import sandbox.*;
3
4 class Luigi extends Greet {
5     public static void main(String[] args) {
6         Luigi l = new Luigi();
7         l.show();
8     }
9 }
10
```

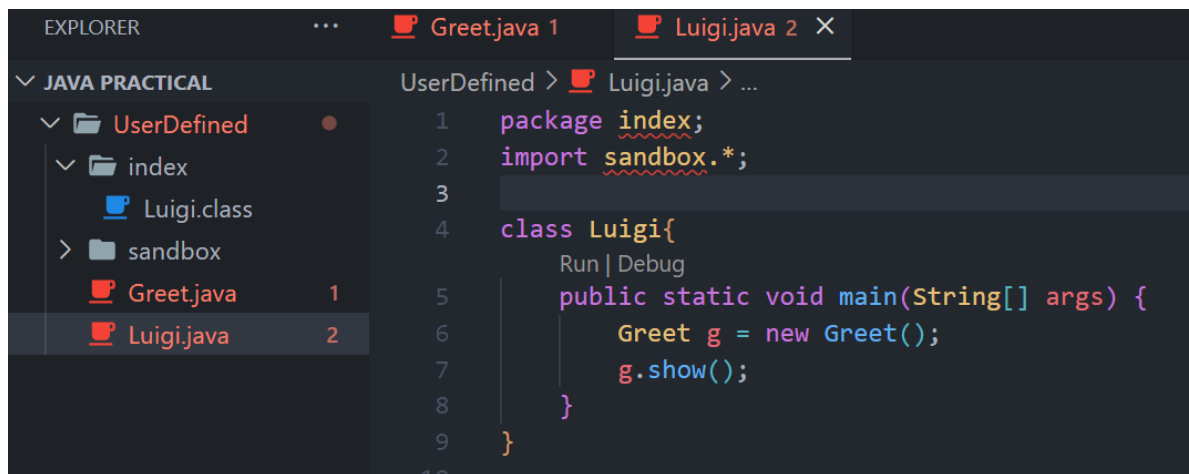
```
C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>javac -d . Greet.java
C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>javac -d . Luigi.java
C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>java index.Luigi
Create your own package
C:\Users\Soumodip Das\Desktop\Java Practical\UserDefined>
```

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



The screenshot shows the Visual Studio Code interface. The Explorer panel on the left shows a project structure with a folder named 'UserDefined' containing an 'index' folder (with 'Luigi.class') and a 'sandbox' folder (with 'Greet.java' and 'Luigi.java'). The main editor displays the 'Greet.java' file, which is located at 'UserDefined > Greet.java > ...'. The code in the editor is as follows:

```
28 // }
29
30 package sandbox;
31
32 public class Greet {
33     public void show() {
34         System.out.println(x:"Create your own package");
35     }
36 }
37
```



The screenshot shows the Visual Studio Code interface. The Explorer panel on the left shows the same project structure. The main editor displays the 'Luigi.java' file, which is located at 'UserDefined > Luigi.java > ...'. The code in the editor is as follows:

```
1 package index;
2 import sandbox.*;
3
4 class Luigi{
5     Run | Debug
6     public static void main(String[] args) {
7         Greet g = new Greet();
8         g.show();
9     }
10 }
```

```
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>
```