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Java Package

Java Programming Day-14



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Syllabus Day-14

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- Java Package
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- How to access package from another package?



Java Package

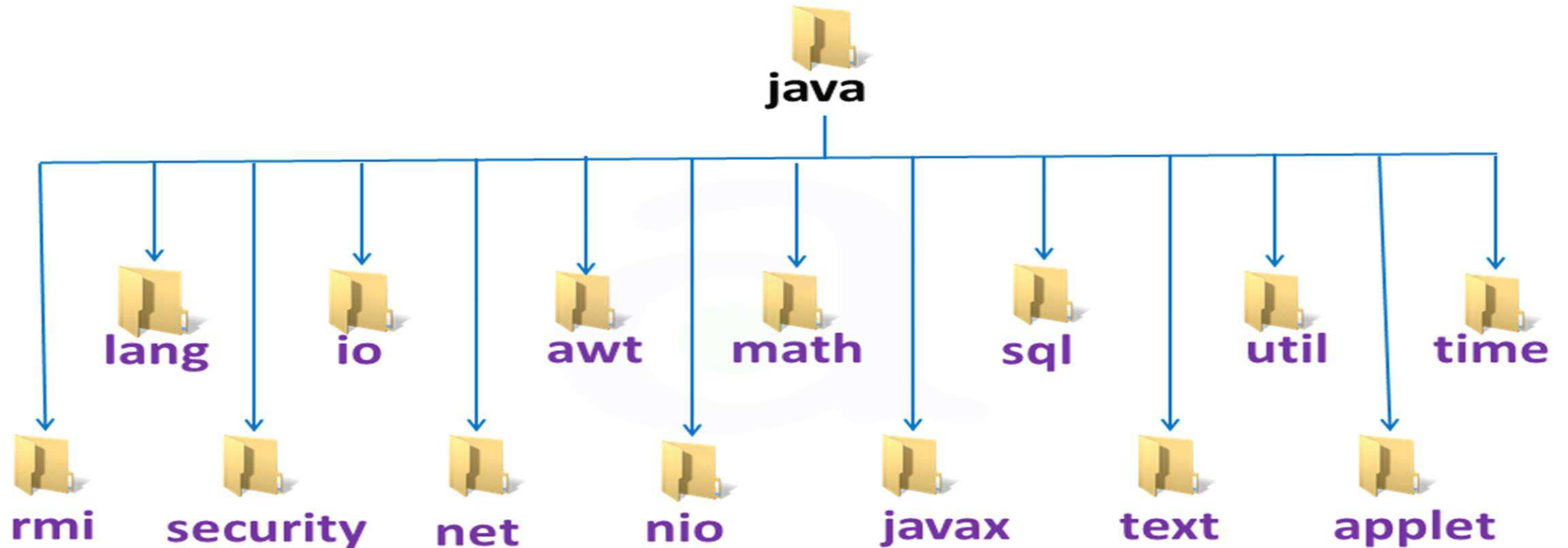
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- A java package is a group of similar types of classes, interfaces and sub-packages.
- Package in java can be categorized in two form, built-in package and user-defined package.
- There are many built-in packages such as java, lang, awt, javax, swing, net, io, util, sql etc.

Built-in Java Package

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Contd.. *Built-in Java Package*



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- **java.awt** : Contains classes for creating **user interfaces** and for painting graphics and images. Classes like Button, Color, Event, Font, Graphics, Image etc are part of this package.
- **java.io** : Provides classes for system **input/output** operations. Classes like BufferedReader, BufferedWriter, File, InputStream, OutputStream, PrintStream, Serializable etc are part of this package.
- **java.lang** : Contains classes and interfaces that are fundamental to the design of **Java programming language**. Classes like **String**, **StringBuffer**, **System**, **Math**, Integer etc are part of this package.
- **java.net** : Provides classes for implementing **networking applications**. Classes like Authenticator, HttpCookie, Socket, URL, URLConnection, URLEncoder, URLDecoder etc are part of this package.
- **java.sql** : Provides the classes for **accessing and processing data** stored in a **database**. Classes like **Connection**, **DriverManager**, PreparedStatement, ResultSet, Statement etc are part of this package.
- **java.util** : Contains the collections **framework**, some internationalization support classes, properties, random number generation classes. Classes like ArrayList, LinkedList, HashMap, Calendar, Date, TimeZone etc are part of this package.

Contd.. *Built-in Java Package*

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- java.math
 - multiprecision arithmetics
- java.nio
 - the Non-blocking I/O framework for Java
- java.security
 - key generation, encryption and decryption
- java.text
 - Provides classes and interfaces for handling text, dates, numbers, and messages in a manner independent of natural languages.
- java.rmi
 - Provides the RMI package.
- java.time
 - The main API for dates, times, instants, and durations.
- java.beans
 - The java.beans package contains classes and interfaces related to JavaBeans components.
- java.applet
 - This package provides classes and methods to create and communicate with the applets.

Advantage of Java Package

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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**.

We can define two classes with the same name in different packages so to avoid name collision, we can use packages.

Simple example of java package

*The **package** keyword is used to create a package in java.*



- Step-1: //save as Simple.java

1. **package** mypack; //user defined pkg

2. **public class** Simple{

3. **public static void** main(String args[]){

4. System.out.println("My Package");

5. }

6. }

- Step-3 Run Package

- Example:

- Java mypack.Simple

```
F:\Skill_Updates\JavaProg>java mypack.Simple
My Package
F:\Skill_Updates\JavaProg>
```

- Step-2 Compile java package

- Syntax:

▲ javac -d directory javafilename

- Example:

- javac -d . Simple.java

```
Select Command Prompt
F:\Skill_Updates\JavaProg>javac -d . Simple.java
F:\Skill_Updates\JavaProg>
```

where to put the generated class file.

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How to access package from another package?

- There are **three ways** to access the package from outside the package.

1. `import package.*;`
2. `import package.classname;`
3. `fully qualified name.`



Example of package

A) import the package.*

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```
Command Prompt

F:\Skill_Updates\JavaProg>javac -d . A.java

F:\Skill_Updates\JavaProg>_
```

5.}

- Step-2 Compile java package pack
- Example: javac -d . A.java

PDF Step-3 //save by B.java in pack Compile pkg mypack

1.package mypack;

2.import pack.*

```
Command Prompt

F:\Skill_Updates\JavaProg>javac -d . pack/B.java

F:\Skill_Updates\JavaProg>_
```

9.}

• Step-4 Run B.java

• Example: java mypack/B

```
Select Command Prompt

F:\Skill_Updates\JavaProg>java mypack/B
Hello Hello
Hello Hello

F:\Skill_Updates\JavaProg>_
```

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Example of package

B) import the package.classname

- Step-1: //save by A.java

```
1.package pack;  
2.public class A{  
3. public void msg()  
4.{System.out.println("Hello Hello");}  
5.}
```

- Step-2 Compile java package pack
- Example: javac -d . A.java

```
Command Prompt  
F:\Skill_Updates\JavaProg>javac -d . A.java  
F:\Skill_Updates\JavaProg>_
```

PDF Step-3 //save by B.java in pack Compile pkg mypack

```
1.package mypack;  
2.import pack.A; //<- Only Change is here  
3. class B{  
4. public static void main(String args[]){  
5. A obj1 = new A();  
6. A obj2 = new A();  
7. obj1.msg();  
8. obj2.msg();  
9. }
```

```
Command Prompt  
F:\Skill_Updates\JavaProg>javac -d . pack/B.java
```

- Step-4 Run B.java
- Example: java mypack/B

```
Select Command Prompt  
F:\Skill_Updates\JavaProg>java mypack/B  
Hello Hello  
Hello Hello  
F:\Skill_Updates\JavaProg>_
```

Example of package

c) import the fully qualified name



- Step-1: //save by A.java

```
1.package pack;
2.public class A{
3.  public void msg()
4.  {System.out.println("Hello Hello"); }
5. }
```

- Step-2 Compile java package pack
- Example: javac -d . A.java

```
Command Prompt
F:\Skill_Updates\JavaProg>javac -d . A.java
F:\Skill_Updates\JavaProg>_
```

PDF Step-3 //save by B.java in pack Compile pkg mypack

```
1.package mypack;
2.//import pack.A; //<- First Change is here
3. class B{
4.  public static void main(String args[]){
5.  pack.A obj1 = new pack.A(); //<- Second Change is here
6.  //pack.A obj2 = new pack.A(); //<- Third Change is here
7.  obj.msg();
8.  obj.msg();
9. }
```

```
Command Prompt
F:\Skill_Updates\JavaProg>javac -d . pack/B.java
F:\Skill_Updates\JavaProg>
```

- Step-4 Run B.java
- Example: java mypack/B

```
Select Command Prompt
F:\Skill_Updates\JavaProg>java mypack/B
Hello Hello
Hello Hello
F:\Skill_Updates\JavaProg>_
```