Introduction to Packages

Agenda

1 **Introduction to Packages**

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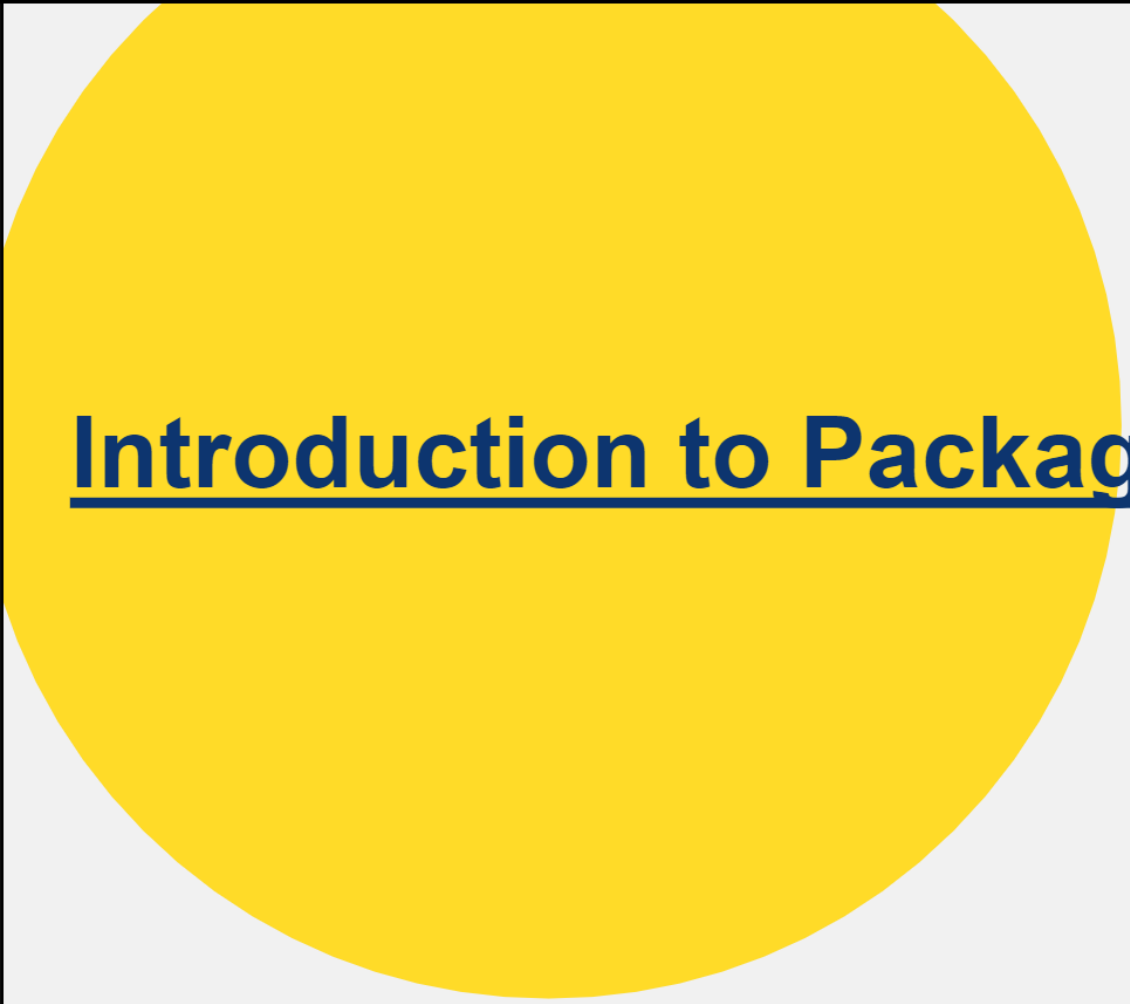
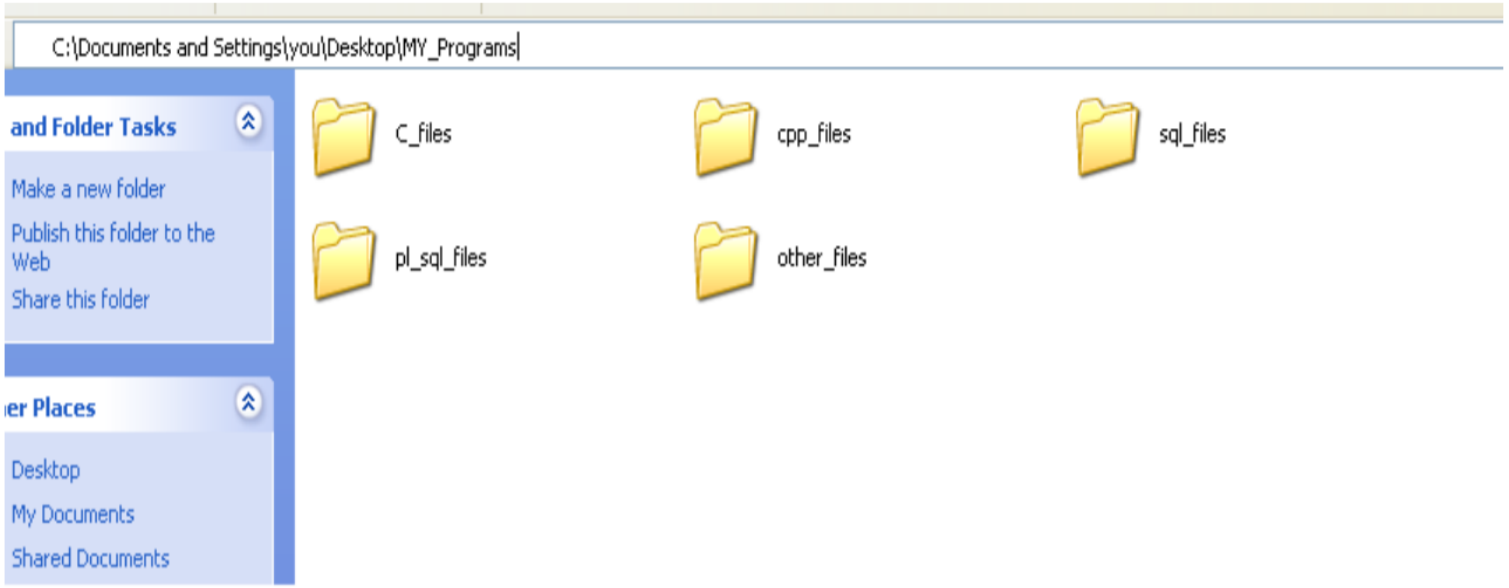


Package is similar to folders in your Disk



Just relate package concept with directories concept in your file system.
The advantage is we can easily locate the files if they are organized.

Organizing classes into Packages

- Packages are containers for classes and interfaces
- Example:

```
package MyPackage;
class MyClass {// code}
class YourClass{// more code }
```

- Classes and interfaces are grouped together in containers called **packages**
- To avoid namespace collision, we put classes and interfaces into containers called **packages!**
- Whenever you need to access a class, you access it through its package by prefixing the class with the package name

Packages & Access Control

Specifier	Accessibility
private	Accessible in the same class only
No-specifier (default access)	Subclasses and non-subclasses in the same package
protected	Subclasses and non-subclasses in the same package, and subclasses in other packages!
public	Subclasses and non-subclasses in the same package, **as well as** subclasses and non-subclasses in other packages. So, Any class can access from anywhere..

Access Specifiers in a Nutshell

Access Specifier	Private access	Default Access	Protected Access	Public access
Same Class	Yes	Yes	Yes	Yes
Same Package Subclass	No	Yes	Yes	Yes
Same Package Non-subclass	No	Yes	Yes	Yes
Different Package subclass	No	No	Yes	Yes
Different Package Non-Subclass	No	No	No	Yes

Access Control

Specifier	Accessibility
private	same class only
No-Keyword (default access)	same package only
protected	same package and subclasses
public	Anywhere in the program

Inbuilt Packages in java

java.lang, java.io, java.util, java.awt, java.applet, java.sql, javax.swing (more packages are there) are some of the in-built packages.

- java.lang – Basic package which is automatically imported in all programs.
  - PrintWriter, String, StringBuilder, StringBuffer,
  - All Wrapper Classes // **(totally 8 – can u list them?)**
  - Throwable
  - Exception
  - Thread
  - Runnable
- java.io –Input / Output related classes are available here.
  - Scanner //(Why we need this ?)
  - File , FileReader , FileWriter
  - BufferedReader
  - InputStreamReader
  - IOException, FileNotFoundException etc

Inbuilt Packages(contd.).

- java.util – Utility classes are available here. We can use these ready-made classes.
  - ArrayList
  - Set
  - HashMap
  - **Date** (to work with Date)
  - Calendar (improved one)
  - Stack (LIFO) , Queue (FIFO) // expand these
  - Vector ,

- java.sql –for JDBC programming
  - Various classes like Connection,
  - DriverManager,
  - ResultSet,
  - SQLException are available here.

Quiz

Which is not a correct inbuilt java package?

A) java.io
B) java.sql
C) java.dbms
D) java.net

Option ?
Find which are valid java packages.

Quiz

Which is a correct inbuilt java package?

A) java.text

B) java.errors

C) java.dbms

C) java.network

All are invalid java packages.

Summary

In this session, you were able to :

- Learn about packages


Assignment

Thank You