Packages

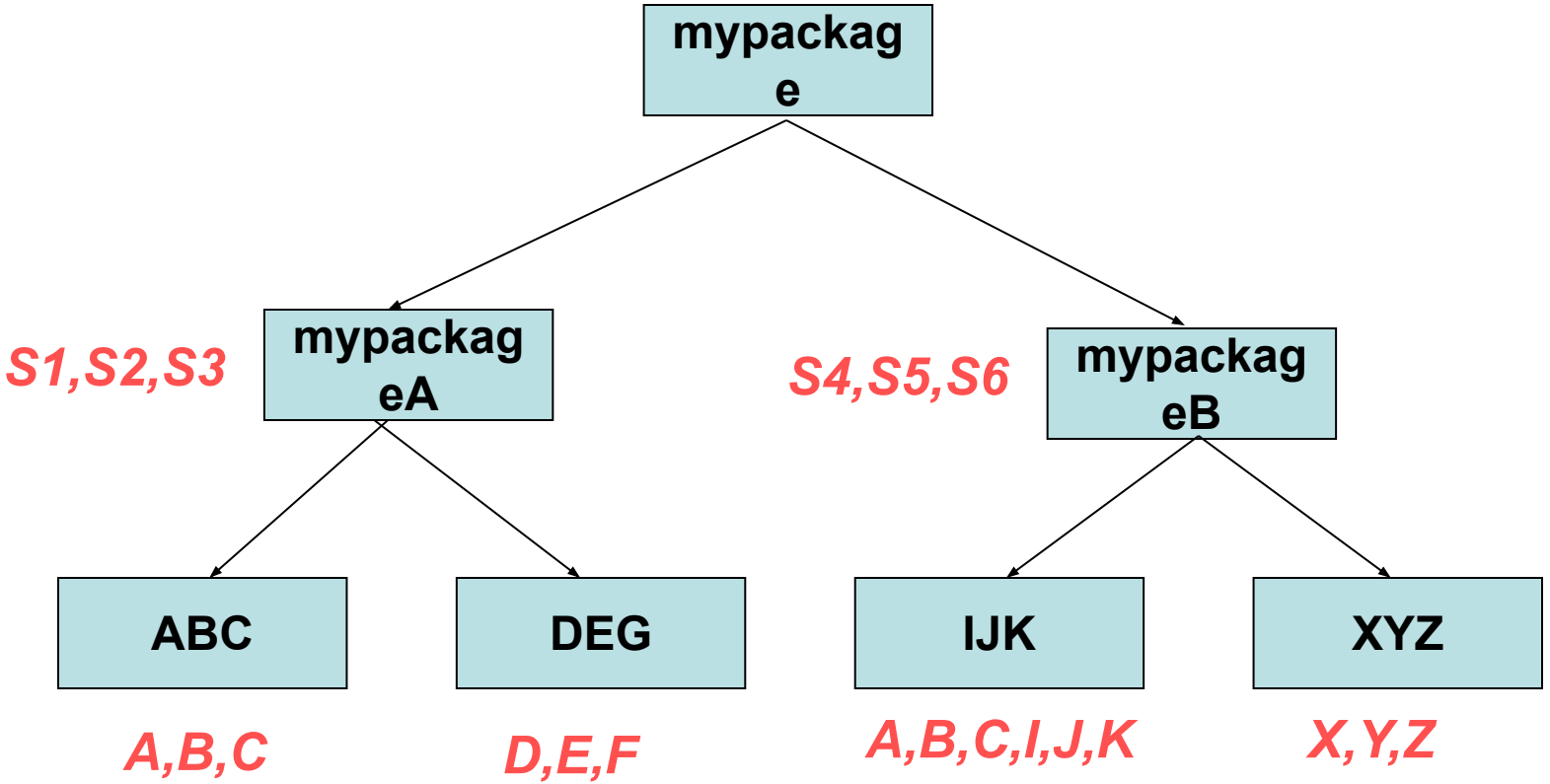
- *Packages enable grouping of functionally related classes*
- *Package names are dot separated, e.g., java.lang.*
- *Package names have a correspondence with the directory structure*
- *Packages Avoid name space collision. There can not be two classes with same name in a same Package But two packages can have a class with same name.*
- *Exact Name of the class is identifed by its package structure.* ***<< Fully Qualified Name>>***

java.lang.String ; java.util.Arrays;
java.io.BufferedReader ; java.util.Date

How To Create a Package

- ***Packages are mirrored through directory structure.***
- ***To create a package, First we have to create a directory /directory structure that matches the package hierarchy.***
- ***Package structure should match the directory structure also.***
- ***To make a class belongs to a particular package include the package statement as the first statement of source file.***

Exercise Creating Packages



Package ABC and IJK have classes with same name.

A class in ABC has name ***mypackage.mypackageA.ABC.A***

A class in IJK has name ***mypackage.mypackageB.IJK.A***

How to make a class Belong to a Package

- Include a proper package statement as first line in source file

Make class S1 belongs to mypackageA

```
package mypackage.mypackageA;
public class S1
{
public S1( )
{
System.out.println("This is Class S1");
}
}
```

Name the source file as S1.java and compile it and store the S1.class file in mypackageA directory

Make class S2 belongs to mypackageA

```
package mypackage.mypackageA;
public class S2
{
public S2( )
{
System.out.println("This is Class S2");
}
}
```

Name the source file as S2.java and compile it and store the S2.class file in mypackageA directory

Make class A belongs to IJK

```
package mypackage.mypackageB.IJK;
public class A
{
public A( )
{
System.out.println("This is Class A in IJK");
}
}
```

Name the source file as A.java and compile it and store the A.class file in IJK directory

<< Same Procedure For all classes>>

Importing the Package

- *import statement allows the importing of package*
- *Library packages are automatically imported irrespective of the location of compiling and executing program*
- *JRE looks at two places for user created packages*

  (i) Under the current working directory

  (ii) At the location specified by CLASSPATH environment variable
- *Most ideal location for compiling/executing a program is immediately above the package structure.*

Example importing
import mypackage.mypackageA.ABC;

```
import mypackage.mypackageA.ABC.*;
class packagetest
{
public static void main(String args[])
{
B b1 = new B();
C c1 = new C();
}
}
```

<< packagetest.java>>

<< Store it in location above the package structure. Compile and Execute it from there>>

This is Class B
This is Class C

```
import mypackage.mypackageA.ABC.*;
Import mypackage.mypackageB.IJK.*;
class packagetest
{
public static void main(String args[])
{
A a1 = new A();
}
}
```

<< What's Wrong Here>>

mypackage.mypackageA.ABC.A a1 = new mypackage.mypackageA.ABC.A();

OR

mypackage.mypackageB.IJK.A a1 = new mypackage.mypackageB.IJK.A();

<< class A is present in both the imported packages ABC and IJK. So A has to be fully qualified in this case>>

CLASSPATH Environmental Variables

- CLASSPATH Environmental Variable lets you define path for the location of the root of the package hierarchy
- Consider the following statement :

  package mypack;

  What should be true in order for the program to find mypack.

  (i) Program should be executed from the location immediately above mypack

  OR

  (ii) mypack should be listed in the set of directories for CLASSPATH