

Appendix: Java Packages & Name Spaces

A Java name space refers to the scope of the name of a class. Till now, all of your classes have existed in the default Java name space. Within any Java name space, all class names must be unique. Since your projects have involved only a few files, it has been easy to create classes with descriptive yet unique and brief names within this default name space. However, as the size of your projects grow, it can become difficult to keep class names descriptive, unique and brief.

To aid programmers, Java supports the concept of a *package*. A Java package defines a name space and the classes that are part of it. All references to classes inside of a package must be through the name of the package. By using packages, Java programmers can reuse class names. All that is required is that each class name be unique within its package.

To be in a package, the package statement must be included at the top of each class definition file (.java file). The package statement has the following form:

```
package package_name;
```

Each .java file in the package must have the same package statement (and name) in it. Here are two example files of a package called *BookPackage*.

```
package BookPackage;

public class Book {
    private String title;
    private String author;
    private int pubDate;

    Book(String t, String a, int d) {
        title = t;
        author = a;
        pubDate = d;
    }

    void show() {
        System.out.println(title);
        System.out.println(author);
        System.out.println(pubDate);
        System.out.println();
    }
}
```

```
package BookPackage;

public class BookDemo {
    public static void main(String args[]) {
        Book books[] = new Book[4];
        books[0] = new Book("Stranger in a Strange Land", "Heinland",
                            1964);
        books[1] = new Book("Terradesia", "Egan", 1997);
        books[2] = new Book("Mighty Good Road", "Scott", 1989);
        books[3] = new Book("Pride of Chanur", "Cherryh", 1983);

        for (int x=0; x<4; x++) books[x].show();
    }
}
```

In this example, the file *Book.java* should be compiled first. The resulting class file, *Book.class* should then be copied into a subdirectory of the directory that contains the .java files named *BookPackage*. (Notice that this is the same name as the package that contains the two classes.) Next, the file *BookDemo.java* should be compiled and the resulting .class file copied into the *BookPackage* directory.

To refer to any class in *BookPackage*, the name of the class must be preceded by the name of the package, separated by a period. For example, the following command would be executed in the parent directory of the *BookPackage* directory to run the program in *BookDemo*:

```
java BookPackage.BookDemo
```

Here is the output of the run:

```
C:\jdk1.3\projects\package>java BookPackage.BookDemo
Stranger in a Strange Land
Heinland
1964

Terradesia
Egan
1997

Mighty Good Road
Scott
1989

Pride of Chanur
Cherryh
1983
```

From this example, it is easy to see how a very large project might be assembled from many packages.