CS1110 16 April 2009

Applications and Applets

Read Chapter 16 of the text

We also look at html, since we need it to use applets.

Top finalists from a real-life "Dilbert quotes contest"

As of tomorrow, employees will be able to access the building only using individual security cards. Pictures will be taken next Wednesday and employees will receive their cards in two weeks." (Fred Dales, Microsoft)

I need an exact list of specific unknown problems we might encounter. (Lykes Lines Shipping)

Email is not to be used to pass on information or data. It should be used only for company business. (Accounting manager, Electric Boat Company)

This project is so important, we can't let things that are more important interfere with it. (Advertising/Marketing manager, United Parcel Service)

Doing it right is no excuse for not meeting the schedule. (Plant manager, Delco Corporation)

Executing Java programs outside the DrJava Interactions pane.

Every Java program is either an application or an applet.

```
public class C {
   …
   public static void main(String[] args) {
      …
   }
   …
}
```

A Java application needs a class with a method main that is defined like this.

To start the application, method main is called.

The parameter, an array of Strings, can be used to pass information into the program.


```
public class CLAS {
   …
   public static void main(String[] args) {
      …
   }
   …
}
```

```
> cd
> dir
  (list of files)
> java CLAS
```

Causes method call CLAS.main(null); to be executed

Terminal window

(can type "java CLAS" in DrJava Interactions pane)

jar file (Java Archive file)

(like tar file (Tape Archive file))

Contains (among other things)

(1) .class files

(2) a "manifest", which says which class has method main

Manifest:

A list of passengers or an invoice of cargo for a vehicle (as a ship or plane).

Standalone Java programs

Suppose images.jar contains a Java application

It has a class with a static procedure main, and its manifest names the class.

- Execute it by double clicking its icon in a directory.
- Execute it by typing

  java -jar images.jar

  in a terminal window (or DOS, or command-line window)

Creating a jar file

1. Navigate to the directory that contains the .class files.
2. Create a text file x.mf that contains one line (with a line-feed):

   Main-class: <name of class>
3. In the directory, type:

```
jar -cmf x.mf app.jar *.class
```

Create Manifest File — **name of manifest file** — **name of file to create** — **expands to name all the .class files**

Inspecting jar files

```
jar  -tf  images.jar
```

type (list)

File

name of jar file

List the contents of jar file images.jar

Applet: a java program that can be called from a web page (in your browser)

```
public class C {
   public static void main(String[] args)
      { … }
}
```
application

```
import javax.swing.*;
public class A extends JApplet {
   public void init() { … }
   public void start() { …}
   public void stop() { … }
   public void destroy() { … }
}
```
applet

Four inherited procedures:

- called to initialize
- called to start processing
- called to stop processing
- called to destroy resources (just before killing the applet)


```
public class Quizit extends JApplet {
   // = "started as an applet"
   private boolean isApplet= false;
   public Quizit() {}
   /** = "started as an applet" */
   public boolean isApplet()
     { return isApplet; }
   public static void main(
                        String[] pars) {
      Quizit a= new Quizit();
      a.isApplet= false;  …
      a.readTopicsFile(br);
      a.gui= new A7GUI(
                  a.fillItems(), a);
   }
```

Quizit is both an applet and an application

```
/** initialize applet */
public void init() {
    isApplet= true;  …
    readTopicsFile(br);
    gui= new A7GUI(
          fillItems(), this);
  }
```


An html (HyperText Markup Language) file

```
<html>
  <head>  <title>Just a title</title>  </head>
  <body>
    <p align="center"><B>Demo Links and Images</i> </p>
    <p>This is
      <a href="http://www.cs.cornell.edu/courses/cs1110/2009sp/"> a link</a></p>
    <p>This <a href="http://www.cs.cornell.edu/courses/cs1110/2009sp/"
                        target="_blank">link</a>
       opens a new window</p>

    <p>Below  is an image </p>

    <p><img src="Hilbert_curve.png"
                width="544"
                height="352">
    </p>
  </body>
</html>
```

tags

<html>	start an html page
<head>	start the "heading"
<title>	the title for the page
<body>	start the body, content, of the page
<p>	begin a paragraph
<a>	begin a link
<img>	begin an image

An html (HyperText Markup Language) file

```
<html>
  <head>
     <title>FacultyApplet</title>
  </head>
  <body>
     <p align="center"><B>This</B> is
            an <i>Applet!</i>
     </p>
     <br><br>

     <p><applet archive="AppletClasses.jar"
           code="FacultyApplet.class"
          width=800   height=550>
         </applet>
     </p>

  </body>
</html>
```

tags

<html>	start an html page
<head>	start the "heading"
<title>	the title for the page
<body>	start the body, content, of the page
<p>	begin a paragraph
<b>	begin boldface
<i>	begin italics
<applet>	start a Java applet
 	line break (no end tag)