Welcome to the Class

Department of Computing and Information System

Java Applets

Introducing Applets

- Applets
  - Java programs called from within another application
  - Frequently run from a Web page
  - Display as rectangular area
  - Can respond to user-initiated events
  - Behaviors come from Java class named `JApplet`
- Steps to write an applet
  - Set up layout for applet
  - Create components and add them to applet

Applets

- An applet is a program that is typically embedded in a Web page and can be run from a browser
- You need special HTML in the Web page to tell the browser about the applet
- You don't need to supply a main method; the browser does that
  - When you write an applet, you are writing only *part* of a program
  - You supply certain methods that the browser calls
- For security reasons, applets run in a sandbox: they have no access to the client's file system

What an applet is

- You write an applet by extending the class JApplet

- JApplet is just a class like any other; you can even use it in applications if you want

- When you write an applet, you are only writing *part* of a program; the browser supplies the main method

  - Once you understand how applets work, you can write a program that function either as an applet or as an application—just write a main method that calls the right methods at the right time

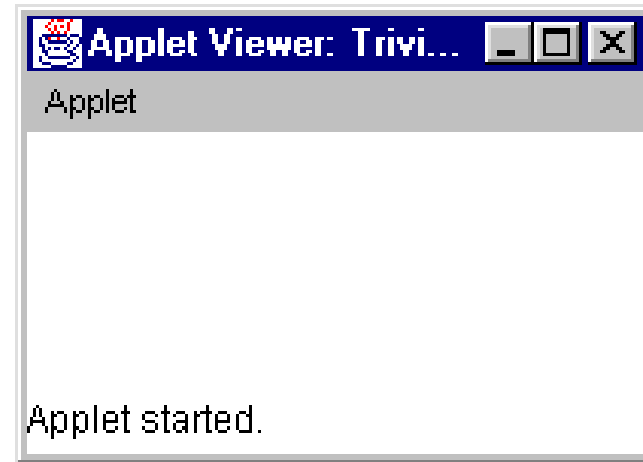   - Such programs have the ugly name "appletcations"

The simplest possible applet

TrivialApplet.java

```java
import javax.swing.JApplet;
public class TrivialApplet extends JApplet { }
```

TrivialApplet.html

```html
<applet
    code="TrivialApplet.class"
    width="150"
    height="100">
</applet>
```

Applet Viewer: Trivi...

Applet

Applet started.

The simplest reasonable applet

```java
import java.awt.*;
import javax.swing.JApplet;

public class HelloWorld extends JApplet {
    public void paint(Graphics g) {
        g.drawString("Hello World!", 30, 30);
    }
}
```

What are the disadvantages of applets? (Cont'd)

- Applets can't find any information about the local computer
- All java-created pop-up windows carry a warning message
- Stability depends on stability of the client's web server
- Performance directly depend on client's machine

What are the advantages of applets?

- Automatically integrated with HTML; hence, resolved virtually all installation issues.

- Can be accessed from various platforms and various java-enabled web browsers.

- Can provide dynamic, graphics capabilities and visualizations

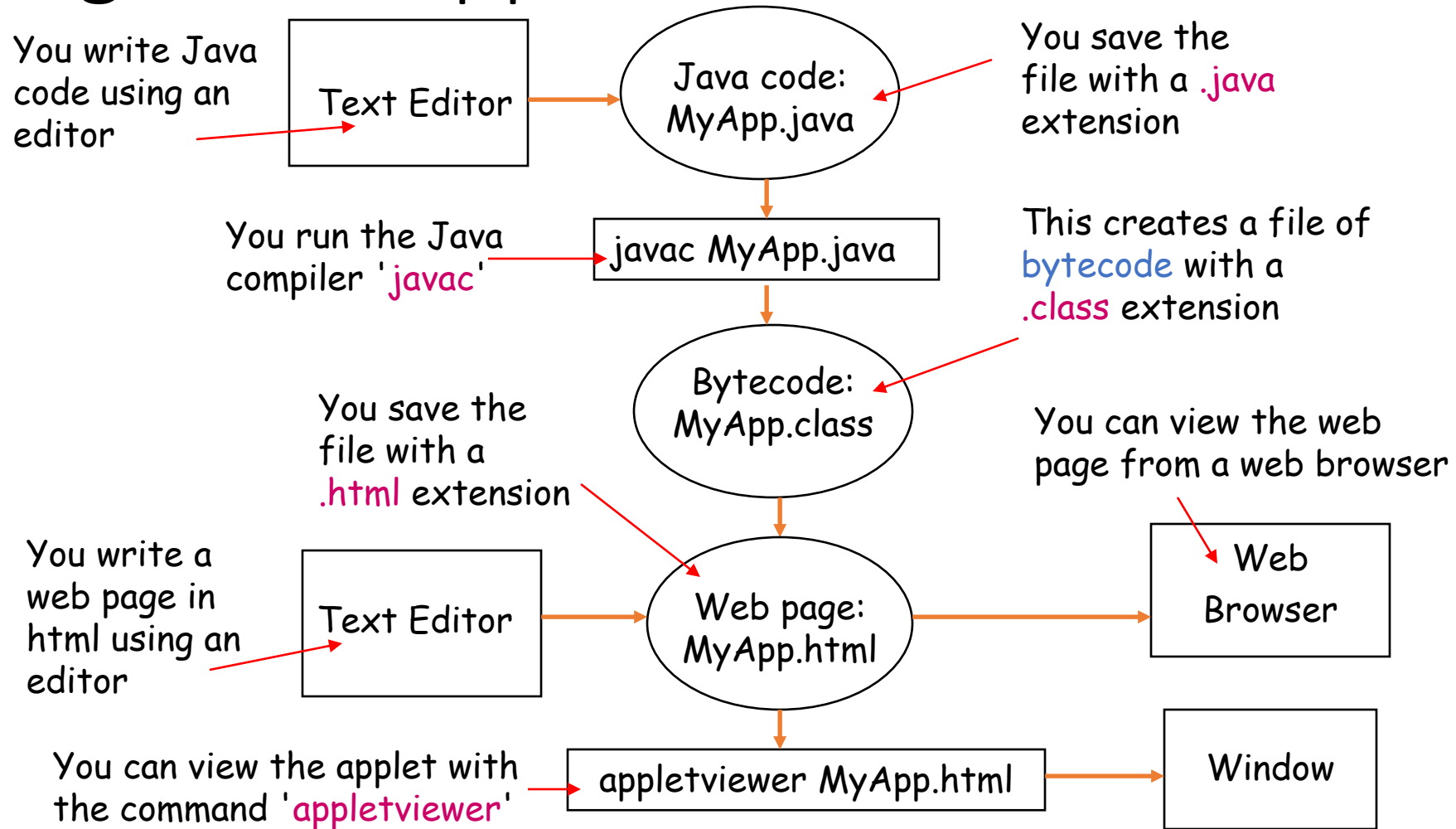- Implemented in Java, an easy-to-learn OO programming language

What are the disadvantages of applets?

- Applets can't run any local executable programs
- Applets can't with any host other than the originating server
- Applets can't read/write to local computer's file system

What are the advantages of applets? (Cont'd)

- Alternative to HTML GUI design

- Safe! Because of the security built into the core Java language and the applet structure, you don't have to worry about bad code causing damage to someone's system

- Can be launched as a standalone web application independent of the host web server

Running a Java Applet

You write Java code using an editor

Text Editor

Java code: MyApp.java

You save the file with a .java extension

You run the Java compiler 'javac'

javac MyApp.java

This creates a file of bytecode with a .class extension

Bytecode: MyApp.class

You save the file with a .html extension

You can view the web page from a web browser

You write a web page in html using an editor

Text Editor

Web page: MyApp.html

Web Browser

You can view the applet with the command 'appletviewer'

appletviewer MyApp.html

Window

Creating an Applet

- Open "Notepad" (Start → Programs → Other → Notepad)

- Type this in:

- Save As "Greetings.java" (Put the " " round the name otherwise it adds .txt to the end!)

```
import java.awt.*;
import java.applet.Applet;

public class Greetings extends Applet {

    public void paint(Graphics g) {
        g.drawString("Hello World!", 50, 50);
    }
}
```

- Open a DOS Window (Start → MS-DOS Prompt)

```
G:\> javac Greetings.java
G:\>
```

- Type javac Greetings.java

- If you type dir Greetings.* you should see Greetings.java and Greetings.class

If it gives an error check you typed it in exactly right.

Creating the Web Page

In order to run an applet you have to embed it in a web page using a special <applet> tag e.g:

<applet code="name.class" width=www height=hhh></applet>

Using Notepad type in the following and save it as "Greetings.html":

Size of the applet in pixels

```
<html>
<head>
<title>Greetings Applet</title>
</head>
<body>
<applet code="Greetings.class" width=300 height=200 ></applet>
</body>
</html>
```
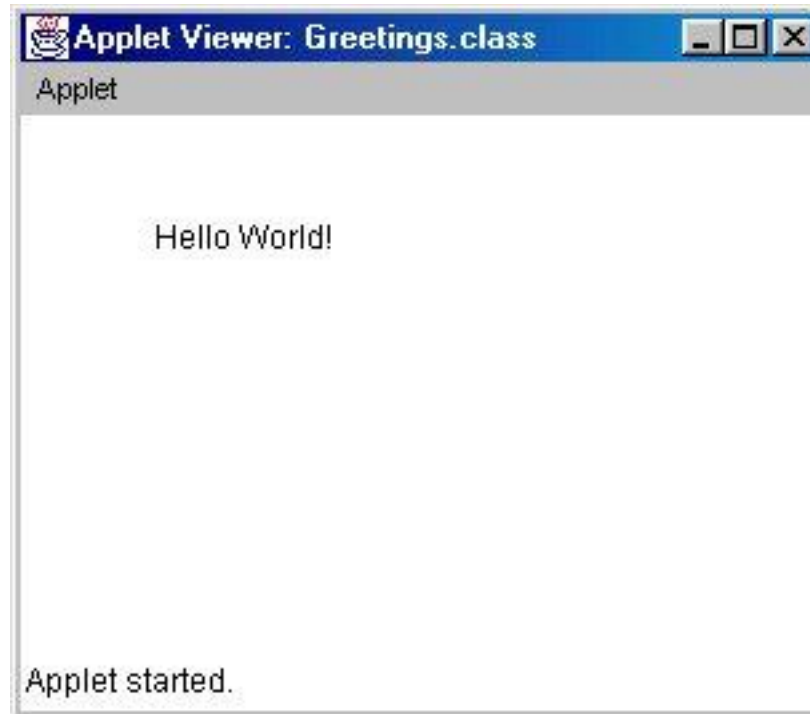
Running the Program

In the DOS window type appletviewer Greetings.html

```
G:\> appletviewer Greetings.html
```

You should see something like this:

Thanks to All