

1 Java Development Kit

Java Development Kit JDK 1.4.2 is installed on all department machines (Red Hat PCs including popeye.cs.iastate.edu). The executable files for Java are located in /usr/java/jdk1.5.0_06/bin. Modify your path (one way to do this is to edit your .cshrc or .tcshrc or .kshrc or .bashrc file) to include /usr/jdk1.5.0_06/bin in the search path, and logout then login again. This enables you to invoke Java without specifying the entire path each time.

2 Getting Started

A Java program runs on a wide variety of hardware platforms after it is compiled into a *byte code* by the Java compiler. Byte code is executed by a byte code interpreter, which is called a *Java virtual machine*. Once a system is equipped with a Java virtual machine, the system can execute any compiled Java program.

There are two types of Java programs: *applications* and *applets*. Applications can be executed as standalone programs and applets are run within a Java-compatible browser (e.g., netscape) via references inserted into HTML (hypertext markup language) files. Most of the programs that you will write in this course are Java applications.

All Java programs contain one or more *class* definitions, each of which may contain various *method* definitions. You must store the definition of a (primary) class in a file identified by the name of the class with .java as the extension. (For example, Store.java should be used for the class Store). Most Java programmers start each class name with an uppercase letter.

3 Java Applications

1. Create a Java source file.

Edit following program and name it HelloWorldApp.java.

```
public class HelloWorldApp {
    public static void main (String argv[]) {
        System.out.println("Hello World!");
    }
}
```

2. Compile the source file.

```
> javac HelloWorldApp.java
```

The Java compiler places the resulting byte code in a file named HelloWorldApp.class in the current directory.

3. Run the application.

```
> java HelloWorldApp
```

The system displays "Hello World!" on the screen.

4 Applets

1. Create a Java source file.

Edit following program and name it `HelloWorld.java`.

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

public class HelloWorld extends Applet {
    public void paint(Graphics g) {
        g.drawString("Hello world!", 50, 25);
    }
}
```

Every applet must implement at least one of the following methods: `init`, `start`, or `paint`. Unlike Java applications, applets do not need to implement a `main` method.

2. Compile the source file.

```
> javac HelloWorld.java
```

The Java compiler places the resulting byte code in a file named `HelloWorld.class` in the current directory.

3. Create an HTML file that includes the applet.

Edit following program and name it `Hello.html`:

```
<HTML>
<HEAD>
<TITLE>A Simple Program</TITLE>
</HEAD>
<BODY>
Here is the output of my program:
<APPLET CODE="HelloWorld.class" WIDTH=150 HEIGHT=25>
</APPLET>
</BODY>
</HTML>
```

4. Run the applet.

Load the HTML file by entering the following into a browser's URL (uniform resource locator):

```
file://..your directory../Hello.html
```

The execution of the applet will cause the following to be displayed:

```
Here is the output of my program:   Hello World!
```