

## Applications and Applets

## Kinds of Java Programs

- Applications
  - Traditional program: needs main method
  - Running on a host
- Applets
  - Running on a web browser in a client
  - Incomplete because because run-time environment provides the main method
  - Make HTML dynamic
- Servlets
  - Applets running on the server side without a face
  - Platform-independent component enhancing web server's capability

## Example of an Applet

```
// Einstein.java    Author: Lewis/Loftus

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

public class Einstein extends Applet {
    public void paint (Graphics page) {
        page.drawRect (50, 50, 40, 40); // square
        page.drawRect (60, 80, 225, 30); // rectangle
        page.drawOval (75, 65, 20, 20); // circle
        page.drawLine (35, 60, 100, 120); // line

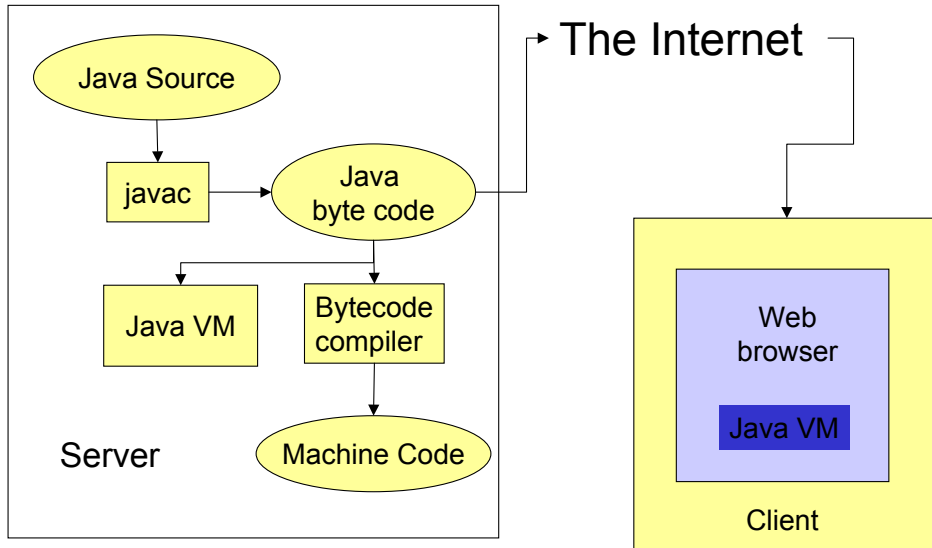
        page.drawString ("Out of clutter, find simplicity.", 110, 70);
        page.drawString ("-- Albert Einstein", 130, 100);
    }
}
```

## Testing Applets

- Appletviewer  
appletviewer Einstein.html
- Web browser: access a HTML file embedding the applet  
<HTML>  
<HEAD>  
<TITLE>The Einstein Applet</TITLE>  
</HEAD>  
<BODY>  
<center>  
<H3>The Einstein Applet</H3>  
<applet code="Einstein.class" width=350 height=175>  
</applet>  
</center>  
</BODY>  
</HTML>



## How Applets Are Executed in the Internet

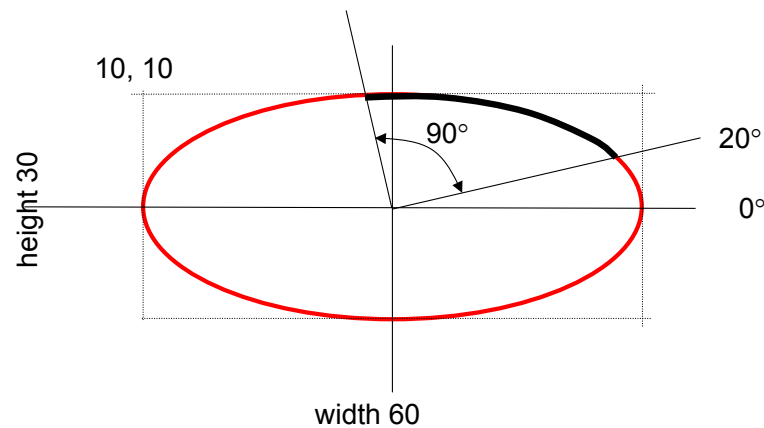


## The Graphics Class

```

void drawArc (int x, int y, int width, int height, int startAngle, int arcAngle)
void drawLine (int x1, int y1, int x2, int y2)
void drawOval(int x, int y, int width, int height)
void drawRect (int x, int y, int width, int height)
void drawString (String str, int x, int y)
void fillArc (int x, int y, int width, int height, int startAngle, int arcAngle)
void fillOval (int x, int y, int width, int height)
void fillRect (int x, int y, int width, int height)
void getColor() // foreground color
void setColor(Color color)
  
```

## Basic Drawing Command



```
drawArc(10, 10, 60, 30, 20, 90)
```

## The Color Class

Color	Object	RGB Value
black	Color.black	0, 0, 0
blue	Color.blue	0, 0, 255
cyan	Color.cyan	0, 255, 255
gray	Color.gray	128, 128, 128
dark gray	Color.darkGray	64, 64, 64
light gray	Color.lightGray	192, 192, 192
green	Color.green	0, 255, 0
magenta	Color.magenta	255, 0, 255
orange	Color.orange	255, 200, 0
pink	Color.pink	255, 175, 175
red	Color.red	255, 0, 0
white	Color.white	255, 255, 255
yellow	Color.yellow	255, 255, 0

## Snow Man

// Snowman.java Author: Lewis/Loftus

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

```
public class Snowman extends Applet {
    public void paint (Graphics page) {
        final int MID = 150;
        final int TOP = 50;
```

```
        setBackground (Color.cyan);
```

```
        page.setColor (Color.blue);
        page.fillRect (0, 175, 300, 50); // ground
```

```
        page.setColor (Color.yellow);
        page.fillOval (-40, -40, 80, 80); // sun
```

```
        page.setColor (Color.white);
        page.fillOval (MID-20, TOP, 40, 40); // head
        page.fillOval (MID-35, TOP+35, 70, 50); // upper torso
        page.fillOval (MID-50, TOP+80, 100, 60); // lower torso
```

```
        page.setColor (Color.black);
        page.fillOval (MID-10, TOP+10, 5, 5); // left eye
        page.fillOval (MID+5, TOP+10, 5, 5); // right eye
```

```
        page.drawArc (MID-10, TOP+20, 20, 10, 190, 160); // smile
```

```
        page.drawLine (MID-25, TOP+60, MID-50, TOP+40); // left arm
        page.drawLine (MID+25, TOP+60, MID+55, TOP+60); // right arm
```

```
        page.drawLine (MID-20, TOP+5, MID+20, TOP+5); // brim of hat
        page.fillRect (MID-15, TOP-20, 30, 25); // top of hat
```

```
    }
}
```

[Web](#)

Appletviewer