

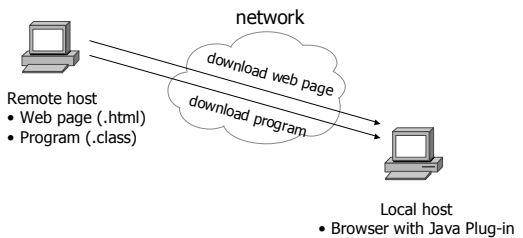
CS201 Introduction to Java Programming

Introduction to Java Applets and Drawing Methods

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Applet

◆ Embed programs in web pages



Limitations of Applets

- ◆ Security restrictions
 - Cannot read/write files
 - Can only make network connections with the remote host where the applet is downloaded
- ◆ Limited support for graphics design
- ◆ Different browsers have different Java plug-ins

Running Applet

- ◆ Browser
 - URL of the web page
 - Open File – WebPageName.html
- ◆ Appletviewer
 - `appletviewer WebPageName.html`
- ◆ Using JBuilder

Dissecting a Simple Applet

- ◆ WelcomeApplet.html
- ◆ WelcomeApplet.java

WelcomeApplet.html

◆ Tags and attributes

```
<html>
  <head>
    <title> WelcomeApplet </title>
  </head>
  <body>
    <applet code=WelcomeApplet.class width=300 height=300>
    </applet>
  </body>
</html>
```

WelcomeApplet.java

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

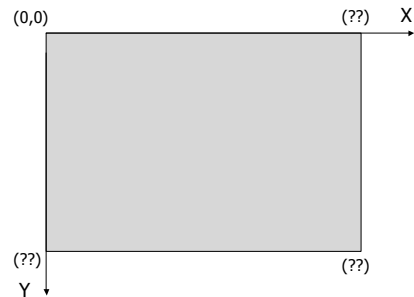
public class WelcomeApplet extends JApplet {

    public void paint( Graphics g )
    {
        super.paint(g);

        g.drawString( "Welcome to Java Programming!", 25, 25 );
        g.drawOval( 100, 100, 100, 100 );
    }

} // end of class WelcomeApplet
```

Drawing Area

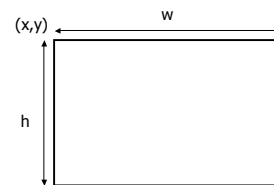


Graphics Class

- ◆ In java.awt package
- ◆ Draw lines
- ◆ Draw strings
- ◆ Draw un/filled rectangles, ovals, arcs, and polygons
- ◆ Set and get drawing color
- ◆ Set and get drawing fonts
- ◆ Clear a rectangular region
- ◆ ... more

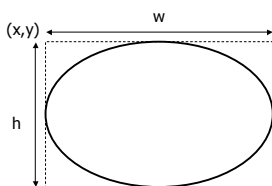
Rectangle

- ◆ void drawRect(int x, int y, int w, int h)
- ◆ void fillRect(int x, int y, int w, int h)
- ◆ void clearRect(int x, int y, int w, int h)



Oval

- ◆ void drawOval(int x, int y, int w, int h)
- ◆ void fillOval(int x, int y, int w, int h)



Arc

- ◆ void drawArc(int x, int y, int w, int h, int startAngle, int arcAngle)
- ◆ void fillArc(int x, int y, int w, int h, int startAngle, int arcAngle)
- ◆ Arc
 - Begins at startAngle
 - Extends arcAngle
- ◆ 0 degree is at the 3 clock position
- ◆ startAngle must be 0 or positive
- ◆ arcAngle
 - Positive – counter clock-wise rotation
 - Negative – clock-wise rotation

String

```
void drawString( String s, int x, int y )
```

Welcome to Java
(x,y)

Color Class

- ◆ In java.awt package
- ◆ Predefined colors
 - Color.red, Color.black, Color.blue ...
 - Exercise: read Java API doc for Color
- ◆ Constructor
 - Color(int r, int g, int b)
 - getGreen(), getRed(), getBlue()
 - ... more

Program with Color

```
// get current drawing color  
Color c = g.getColor();  
  
// draw some red stuff  
g.setColor( Color.red );  
...  
  
// draw some yellow stuff  
g.setColor( Color.yellow );  
...  
  
// restore the original drawing color  
g.setColor( c );
```

Happy Face Example

