

## **Section 8: Graphics in AWT**

### **1) Importing Needed**

```
import java.awt.*;
```

### **2) Class Color**

a) standard predefined colors of class Color:

black, blue, cyan, darkGray, gray, green, lightGray, magenta, orange, pink, red, white, yellow

b) making a new color using the Color class constructor:

```
Color c = new Color(#R,#G,#B); // # can be from 0 to 255
```

### **3) setBackground (an Applet method)**

```
setBackground(Color);
```

example: `setBackground(Color.color);`

### **4) DrawString (a Graphics method)**

```
drawString(string, x, y);  
drawString(string + numeric-expression, x, y);  
drawString(string + etc., x, y);
```

### **5) setColor (a Graphics method)**

```
setColor(Color)
```

example: `g.setColor(`

### **6) drawLine (a Graphics method)**

```
drawLine(x1,y1, relative-x2,relative-y2);
```

### **7) drawRect (a Graphics method)**

```
drawRect(x1,y1, relative-x2,relative-y2);
```

### **8) drawOval (a Graphics method)**

```
drawOval(x1,y1, relative-x2,relative-y2, rect-width,rect-height);
```

## **9) drawArc (a Graphics method)**

```
drawArc(x1,y1, relative-x2,relative-y2, start-angle,total-angle);
```

## **10) fillRect (a Graphics method)**

```
fillRect(x1,y1, relative-x2,relative-y2);
```

## **11) fillOval (a Graphics method)**

```
fillOval(x1,y1, relative-x2,relative-y2, rect-width,rect-height);
```

## **12) fillArc (a Graphics method)**

```
fillArc(x1,y1, relative-x2,relative-y2, start-angle,total-angle);
```

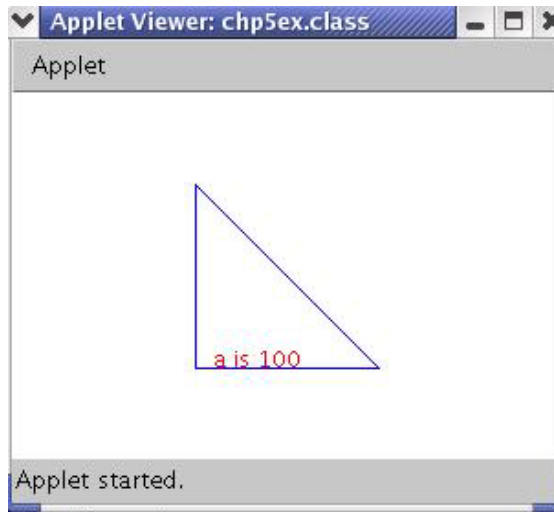
## **13) Drawing a Polygon (using Graphics methods)**

```
Polygon p = new Polygon();  
p.add(x,y);           // repeat as necessary  
g.drawPolygon(p);    // polygon edges  
g.fillPolygon(p);    // filled (solid) polygon
```

## **Example:**

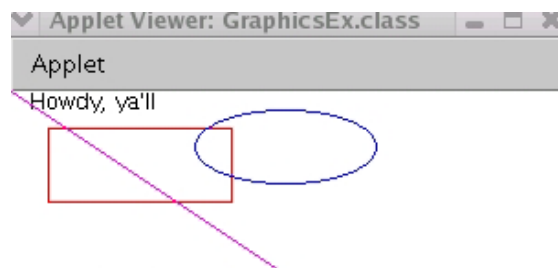
```
import java.awt.*;  
import java.applet.Applet;  
  
public class chp5ex extends Applet {  
  
    public void paint(Graphics g) {  
        setBackground(Color.white);  
        int a=10;  
        a = Square(a);  
        g.setColor(Color.red);  
        g.drawString("a is " + a,110,150);  
        g.setColor(Color.blue);  
        DrawTriangle(g, a);  
    }  
  
    private int Square(int a)  
    {  
        return a*a;  
    }  
  
    private void DrawTriangle(Graphics g, int s)  
    {  
        g.drawLine(100,50,100,50+s);  
    }  
}
```

```
        g.drawLine(100,50,100+s,50+s);  
        g.drawLine(100,50+s,100+s,50+s);  
    }  
}
```



## Example:

```
import java.awt.*;  
import java.applet.Applet;  
  
public class GraphicsEx extends Applet {  
    public void paint(Graphics g) {  
        setBackground(Color.white);  
  
        g.setColor(Color.black);  
        g.drawString("Howdy, ya'll", 10, 10);  
        g.setColor(Color.red);  
        g.drawRect(20,20, 100,40);  
        g.setColor(Color.blue);  
        g.drawOval(100,10, 99, 40);  
        g.setColor(Color.magenta);  
        g.drawLine(0,0, 299,199);  
        g.setColor(Color.orange);  
        g.drawArc(50,150, 100,199, 45,45);  
  
        g.setColor(Color.gray);  
        g.fillRect(0,100, 50,20);  
        g.fillOval(50,100, 50,50);  
        g.fillArc(0,150, 50,49, 45,90);  
    }  
}
```



## Example:

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

public class chp3_1ex extends Applet {

    float PI = 3.14159f;
    double a =1.2345;

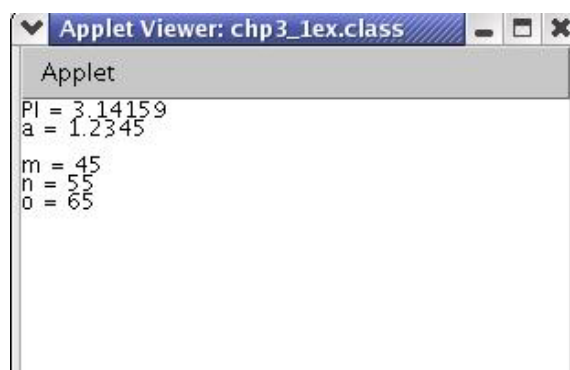
    short m = 45;
    int n = 55;
    long o = 65;

    public void paint(Graphics g) {
        setBackground(Color.white);

        g.setColor(Color.black);

        g.drawString("PI = " + (PI), 0, 10);
        g.drawString("a = " + (a), 0, 20);

        g.drawString("m = " + (PI), 0, 40);
        g.drawString("n = " + (PI), 0, 50);
        g.drawString("o = " + (PI), 0, 60);
    }
}
```



## **Example:**

### Example of the Object class:

```
import java.awt.*;
import java.awt.event.*;

public class chp9b {
    private int x, y, w, h;
    Color c;

    public chp9b(int initX, int initY, int initW, int initH,
                 Color initC) {
        x = initX;
        y = initY;
        w = initW;
        h = initH;
        c = initC;
    }

    public void paint(Graphics g) {
        g.setColor(c);
        g.fillOval(x,y,w,h);
        g.setColor(Color.black);
        g.drawOval(x,y,w,h);
    }
}
```

Example of the a Class using Objects of Another Classes

```
import java.awt.*;  
import java.applet.Applet;  
import java.awt.event.*;  
  
public class chp9ex extends Applet {  
    private chp9b a = new chp9b(100,100,20,40,Color.red);  
    private chp9b b = new chp9b(200,200,100,10,Color.blue);  
  
    public void paint(Graphics g) {  
        a.paint(g);  
        b.paint(g);  
    }  
}
```

