Graphics

By

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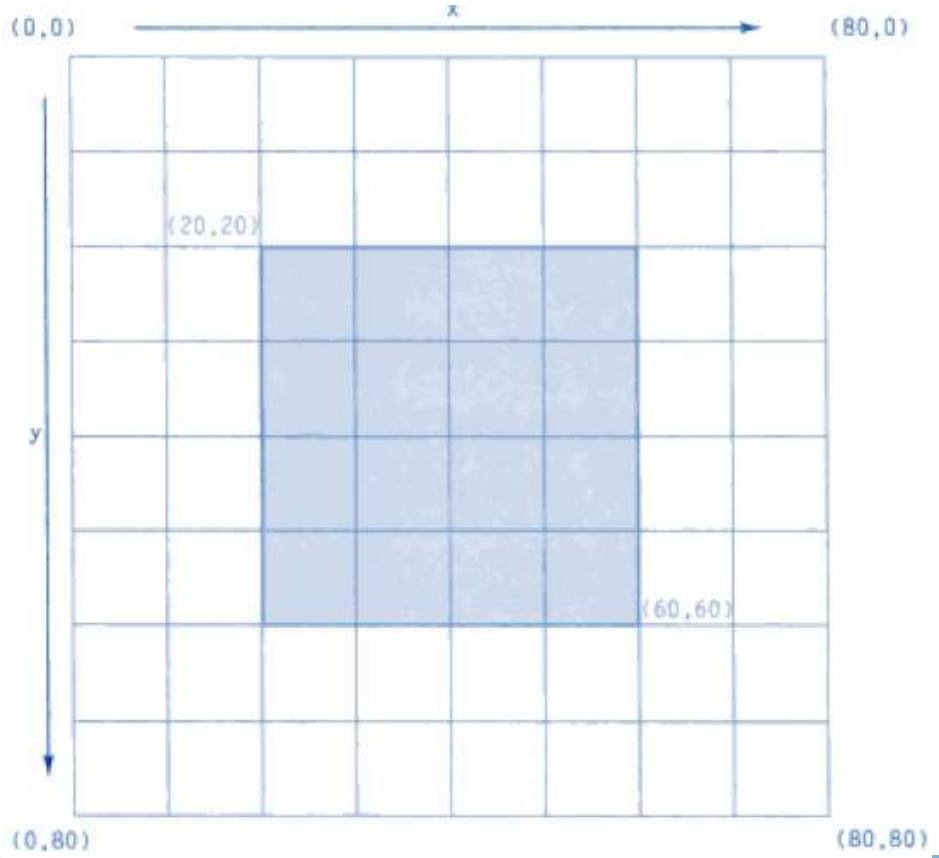
Graphics

- ✓ Graphics can be drawn using Java Applets
- ✓ Graphics are drawn on the Canvas of Applet
- ✓ We can draw
  - ✓ Lines
  - ✓ Images
  - ✓ Shapes
  - ✓ Text with different fonts and colours

Graphics – Co-ordinate System



Graphics – Co-ordinate System

- ✓ Applet uses a Co-ordinate system starts @ (0,0) in the upper-left corner of screen within the canvas to draw objects graphics
- ✓ Positive X - values are considered from left to right
- ✓ Positive Y - values are considered from top to bottom
- ✓ X and Y values are given in pixels

Graphics Class

- ✓Contains methods to draw objects

Method	Description
clearRect( )	Erases Rectangular area of the canvas
copyArea( )	Copies Rectangular area of the canvas to another area
drawArc( )	Draws a hollow Arc

Graphics Class

Method	Description
drawLine( )	Draws a Straight Line
drawOval( )	Draws a hollow Oval
drawPolygon( )	Draws a hollow Polygon

Graphics Class

Method	Description
drawRect( )	Draws a hollow Rectangle
drawRoundRect( )	Draws a hollow Rectangle with rounded corners
drawString( )	Displays a text String

Graphics Class

Method	Description
fillArc( )	Draws a filled Arc
fillOval( )	Draws a filled Oval
fillPolygon( )	Draws a filled Polygon

Graphics Class

Method	Description
fillRect( )	Draws a filled Rectangle
fillRoundRect( )	Draws a filled Rectangle with rounded corners
getColor( )	Retrives the current drawing Color

Graphics Class

Method	Description
getFont( )	Retrieves currently used Fonts
getFontMetrics( )	Retrieves information about the current Font
setColor( )	Sets the drawing Color
setFont( )	Sets the Font

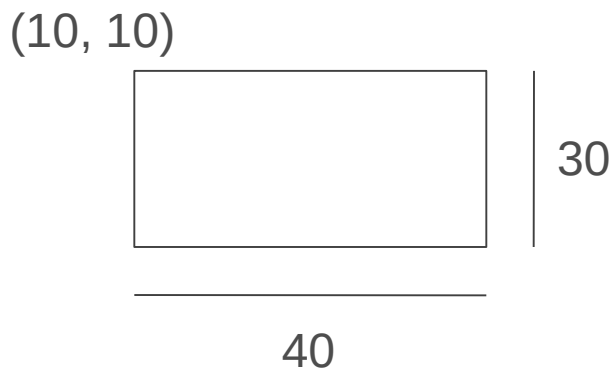
drawLine( ), drawRect( )

drawLine(x1, y1, x2, y2);

drawLine(10,10, 50, 50);

drawRect(x, y, width, height);

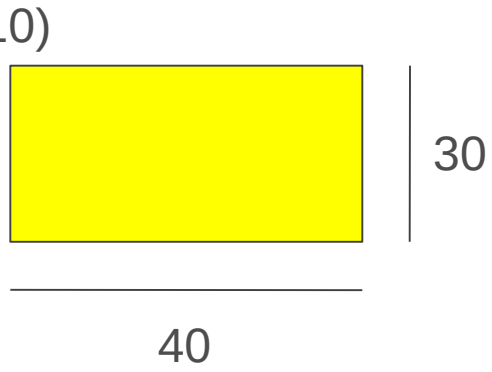
drawRect(10,10, 40, 30);



fillRect( ), fillRoundRect( )

fillRect(x, y, width, height);

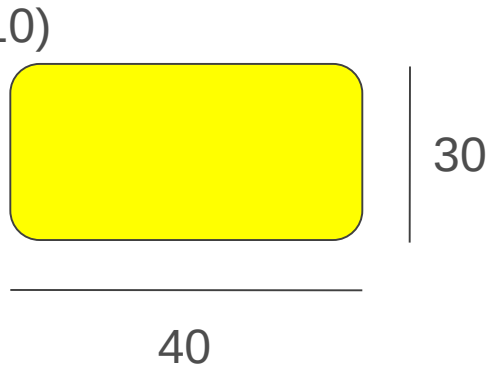
fillRect(10,10, 40, 30);



fillRoundRect(x, y, width, height, angle of corners);

width, height

fillRoundRect(10,10, 40, 30, 10,10);



Example - Drawing Lines and Rectangles

```
import java.awt.*;
import java.applet.*;
public class LineRect extends Applet
{
  public void paint(Graphics g)
  {
     g.drawLine(10,10,50,50);
     g.drawRect(10,60,40,30);
     g.fillRect(60,10, 30,80);
     g.drawRoundRect(10, 100, 80, 50, 10,10);
     g.fillRoundRect(20, 110, 60, 30, 5, 5);
     g.drawLine(100,10,230,140);
     g.drawLine(100,140,230,10);
} }
```

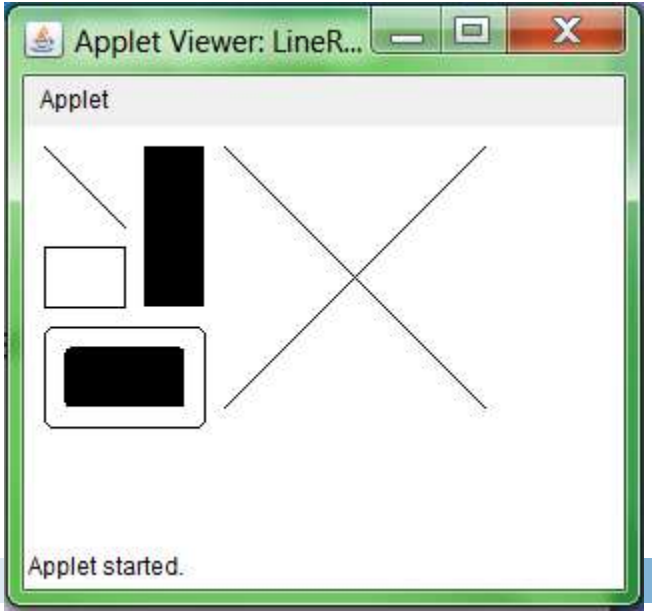
```
<html>
<applet
     code = LineRect.class
     width = 300
     height = 300>
</applet>
</html>
```

Example - Output

D:\>cd D:\jdk1.8.0_111\jdk1.8.0_111\bin

D:\jdk1.8.0_111\jdk1.8.0_111\bin>javac LineRect.java

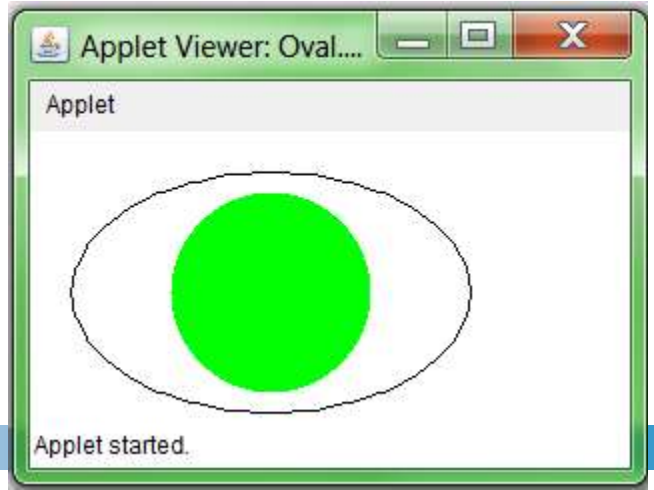
D:\jdk1.8.0_111\jdk1.8.0_111\bin>appletviewer.exe LineRect.html



Example - Drawing Oval

```
import java.awt.*;
import java.applet.*;
public class Oval extends Applet
{
  public void paint(Graphics g)
  {
     g.drawOval(20,20,200, 120);
     g.setColor(Color.green);
     g.fillOval(70,30,100,100);
  }
}
```

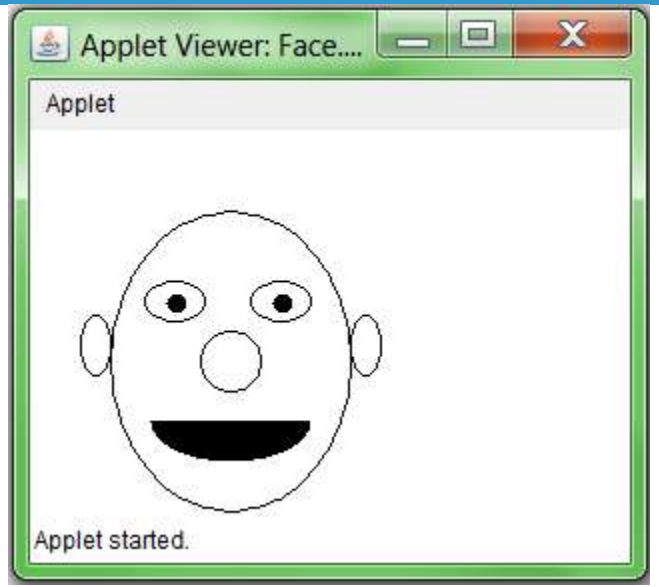
```
<html>
<applet
     code = Oval.class
     width = 300
     height = 300>
</applet>
</html>
```



Example - Drawing Lines and Rectangles

```
import java.awt.*;
import java.applet.*;
public class Face extends Applet
{
  public void paint(Graphics g)
  {
      g.drawOval(40,40,120,150);
      g.drawOval(57,75,30,20);
      g.drawOval(110,75, 30,20);
      g.fillOval(68,81, 10,10);
      g.fillOval(121,81, 10,10);
      g.drawOval(85,100, 30,30);
      g.fillArc (60,125, 80, 40, 180,180);
      g.drawOval(25, 92, 15, 30);
      g.drawOval(160, 92, 15, 30);
   }
 }
```

```
<html>
<applet
     code = Face.class
     width = 300
     height = 300>
</applet>
</html>
```



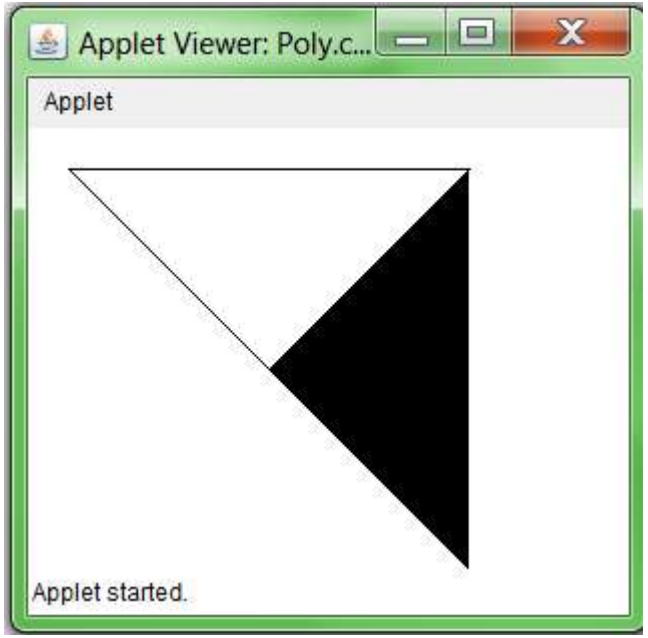

```
D:\jdk1.8.0_111\jdk1.8.0_111\bin>javac Face.java

D:\jdk1.8.0_111\jdk1.8.0_111\bin>appletviewer.exe Face.html
```

Example - Drawing Polygons

```
import java.awt.*;
import java.applet.*;
public class Poly extends Applet
{
      int x1[ ]  = {20,120, 220,20};
      int y1[ ]  = {20,120, 20,20};
      int n1 = 4;
      int x2[ ]  = {120,220, 220,120};
      int y2[ ]  = {120,20,220,120};
      int n2 = 4;
      public void paint(Graphics g)
      {
        g.drawPolygon(x1,y1,n1);
        g.fillPolygon(x2,y2,n2);
      }
 }
```

```
<html>
<applet
      code = Poly.class
      width = 300
      height = 300>
</applet>
</html>
```



D:\jdk1.8.0_111\jdk1.8.0_111\bin>javac Poly.java

D:\jdk1.8.0_111\jdk1.8.0_111\bin>appletviewer.exe Poly.html

Example - Drawing Barchart

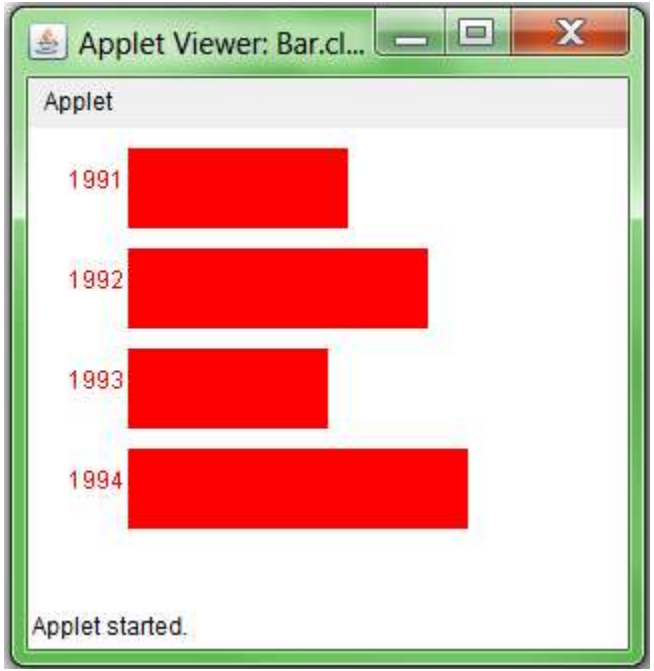
```
import java.awt.*;
import java.applet.*;
public class Bar extends Applet
{
  int n = 0;
  String label[ ];
  int value[ ];
  public void init( )
  {
    try
    {
                n = Integer.parseInt(getParameter("columns"));
                label = new String[n];
                value = new int [n];
                label [0] = getParameter("label1");
                label [1] = getParameter("label2");
                label [2] = getParameter("label3");
                label [3] = getParameter("label4");
```

Example - Drawing Barchart

```
                value [0] =  Integer.parseInt(getParameter("c1"));
                value [1] =  Integer.parseInt(getParameter("c2"));
                value [2] =  Integer.parseInt(getParameter("c3"));
                value [3] =  Integer.parseInt(getParameter("c4"));
    }
    catch(NumberFormatException e) {                    }
  }
  public void paint(Graphics g)
  {
                for(int i = 0;  i < n; i++)
                {
                   g.setColor(Color.red);
                   g.drawString(label[i], 20, i*50+30);
                   g.fillRect(50, i*50+10, value[i], 40);
                }
  }
}
```

Example - Drawing Barchart

```
<html>
<applet
      code = Bar.class
      width = 300
      height = 300>
      <param name = "columns" value = "4">
      <param name = "c1" value = "110">
      <param name = "c2" value = "150">
      <param name = "c3" value = "100">
      <param name = "c4" value = "170">
      <param name = "label1" value = "1991">
      <param name = "label2" value = "1992">
      <param name = "label3" value = "1993">
      <param name = "label4" value = "1994">
</applet>
</html>
```



References

- ✓ Programming with Java – A Primer - E. Balagurusamy, 3rd Edition, TMH

Thank You