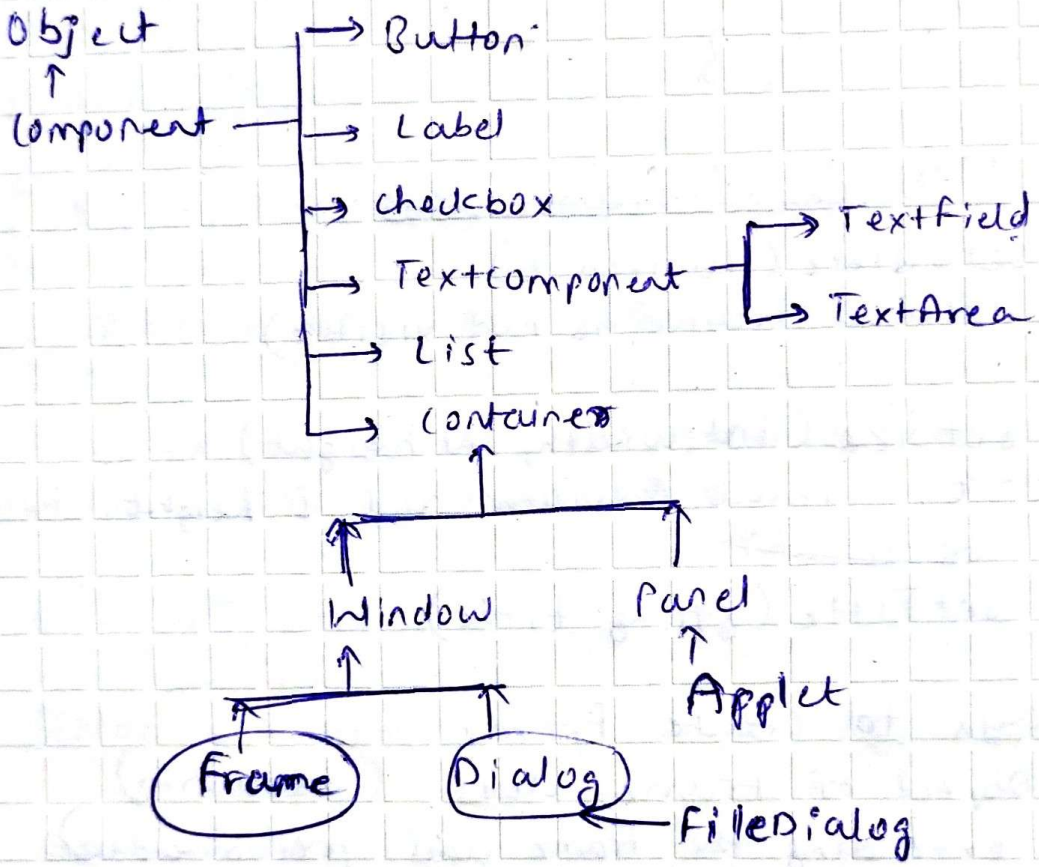
Java AWT (Abstract Window Toolkit)

- API to develop GUI or windows based applications
- Java AWT components are platform-dependent i.e. components are displayed according to the view of OS

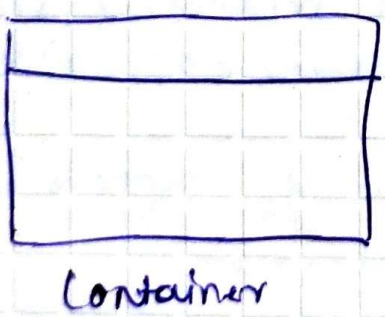
Youtube (Uttamsoft) (Playlist - Java AWT tutorials)

① AWT (Abstract Window Toolkit)
- GUI, window based applic^s, desktop applic^s
- AWT components are platform dependent

components - e.g. Textfield, Textarea, Button
Container will have to hold components

② 

③ java.awt packages provides support for GUI components with its predefined classes.

④ 

- Container is a component itself and it adds the capability to add components to itself.
- Container can add only components to itself.

⑤ java.awt.Frame

Frame - is a container
- contains title bar, border, menu bars

Component
↑
Container
↑
Window
↑
Frame

public class Frame extends Window
implements MenuContainer
{
}

Methods of ~~frame class~~

(i) setVisible(boolean b)
(by default frame is not visible)

(ii) setSize(int width, int height)
- by default 0 width and 0 height.

~~setSize~~

(iii) setTitle(String title)

2 ways to create Frame
A> Object of Frame class (association)
B> extending the frame class - (recommended) (inheritance)

Association method is not recommend, since we can't customize the frame.

here we can create user defined methods as well

- Color class creates color using RGBA values.
  (Red, green, blue, alpha)
- value for individual components RGBA (0 to 255 or 0.0 to 1.0)
- value of alpha determines the opacity of the colour, 0 or 0.0 → fully transparent
  255 or 1.0 → opaque

public static final Color black
(black किंवा BLACK चालेल)

black, blue, red, grey, orange, yellow, pink, etc.

Color.black or Color.BLACK

public Color(int red, int green, int blue)
public Color(int red, int green, int blue, int alpha)

0 to 255 range

Color c = new Color(255, 0, 0);

public Color(float red, float green, float blue)

Range 0.0 to 1.0

float alpha

public Color(int rgb)

specified combined RGB value

public Color brighter()
public Color darker()
public int getTransparency() → transparency mode

(7)

public void setBackground (Color clr)

2 methods

(i) Color c = Color.red;

(ii) Color c = new Color (255,0,0);

```
Frame fm = new Frame();
fm.setBackground(c);
```

(8) Graphics class

Graphics - lines, rectangles, circles, polygons

Methods of graphics class

(i) public abstract void drawString (String str, int x, int y)

- draw the specified string or text

g.drawString("Swarali", 50, 50);

graphics object

coordinates

(ii) drawRect(int x, int y, int width, int height)

rectangle's x coordinate at which the rectangle is started.

For square, pass equal width & height.

(iii) fillRect(int x, int y, int width, int height)

(iv) drawOval(x, y, width, height) (int)
(v) fillOval(x, y, w, h)
(vi) drawLine(x1, y1, x2, y2) → It is used to draw line between the points (x1, y1) and (x2, y2)
(vii) drawArc(x, y, width, height, startAngle, arcAngle)
→ circular or elliptical arc
fillArc(——— " ———)
(viii) setColor(Color c)
- set graphics current color to the specified color.
(ix) ~~fillArc(color, x, y, width, height, startAngle, arcAngle)~~
~~fill~~ setFont(Font font)

To use Graphics class properties on frame, we've to override paint method

To use

```
public void paint( Graphics g) {
    g.drawString( "Username", 200, 200);
}
```

Refer way2java website → to understand why paint can't be directly called
↓
Article - java repaint() call paint()

Constants in Font class

public static final int PLAIN
" " " BOLD
" " " ITALIC
" " " DIALOG - string constant for the canonical family name of the logical font "Dialog"
" " " SERIF - font "Serif"

```
Font f = new Font("consolas", FONT.BOLD, 25);
```

Font styles - Plain - 0
Bold - 1
Italic - 2
Bold+Italic - 3

```
Font f = new Font("Arial", 1, 35);
```

Public boolean isPlain()
" " " isBold()
" " " isItalic()
public int getSize() - it returns the point size of this font.

```
public void paint(Graphics g){
    Font f=new Font("Arial", 1, 25);
    g.setFont(f);
```

paint() is called by JVM implicitly in 2 circumstances-

(i) when first time frame is created and displayed

(ii) when frame resized by the user.