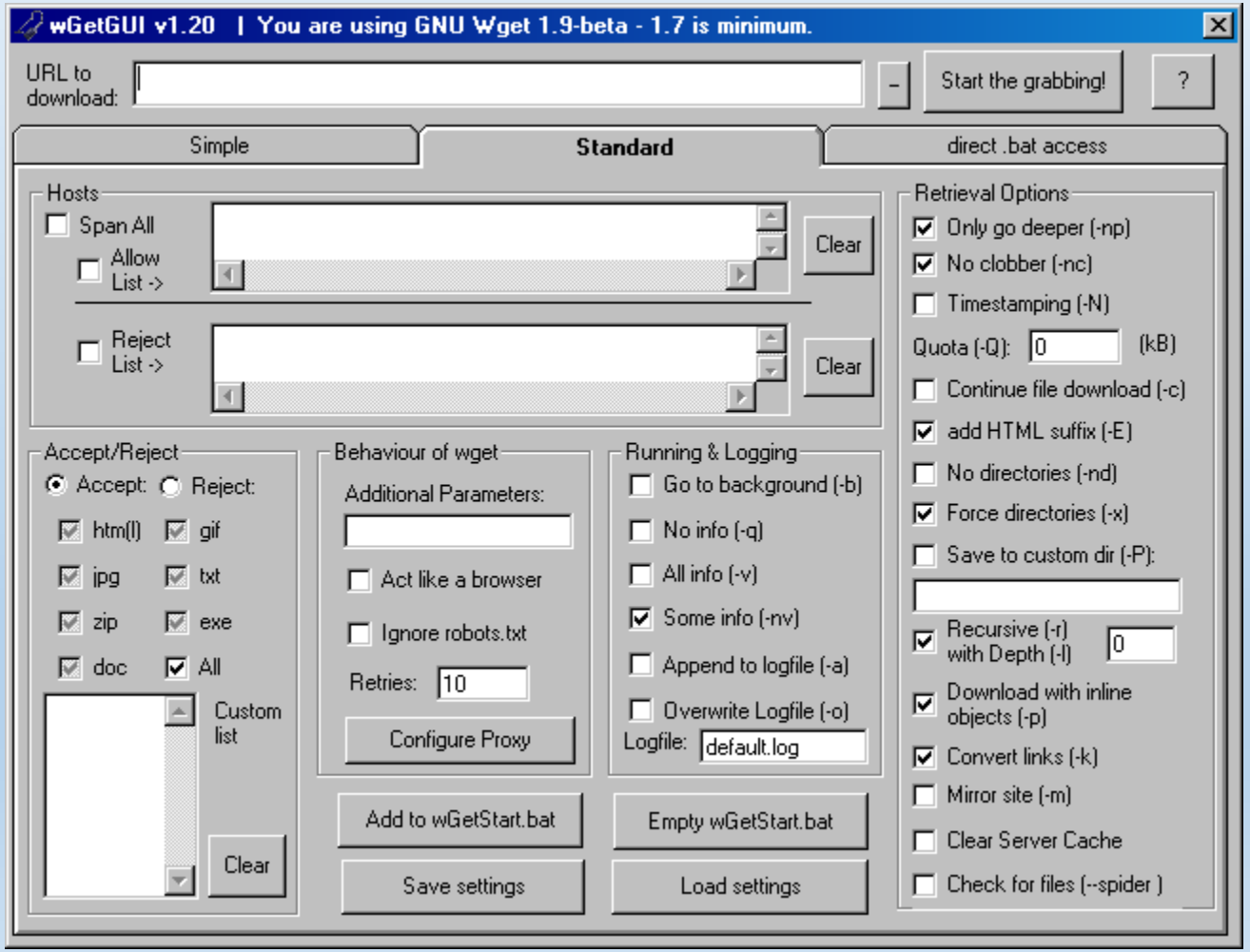
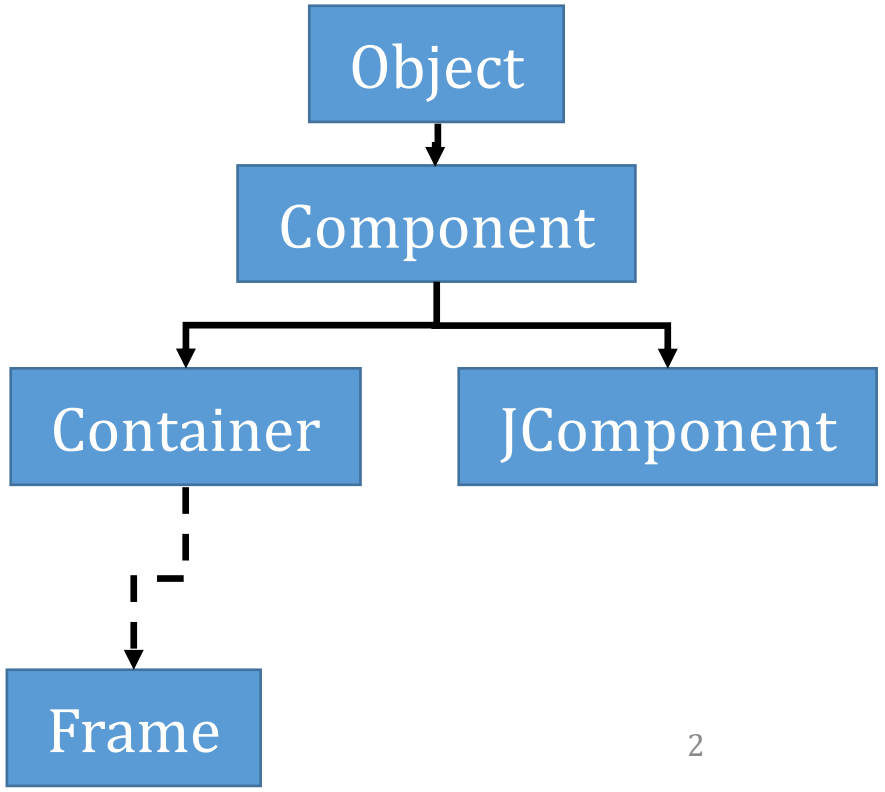
Swing Components



Chapter 20.3

Swing is Rectangular

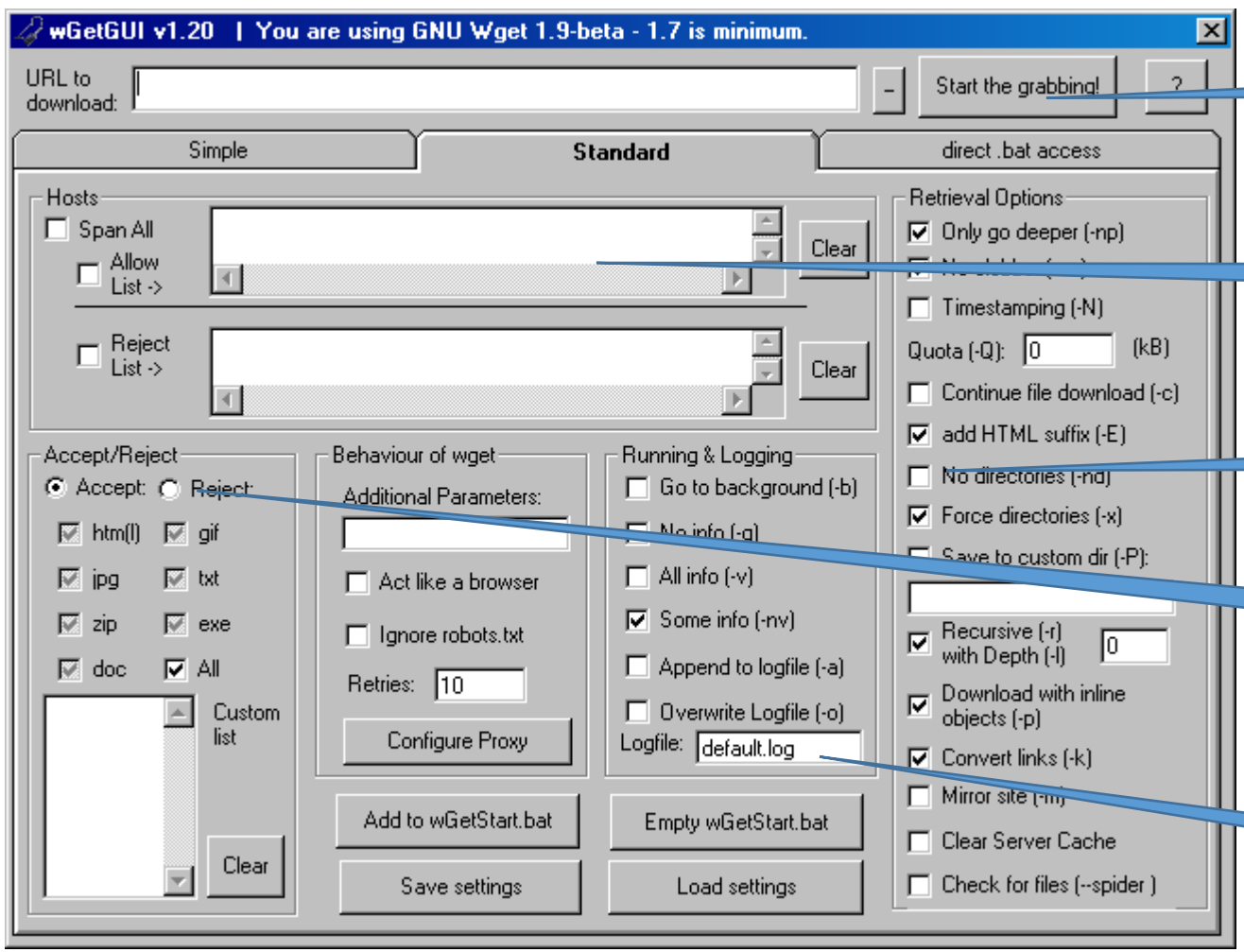
- You get a rectangular window from the X server or "Frame"
- You fill up that rectangular window with rectangular components
  - Think of these as two dimensional "blocks"
- The basic class in Swing is "Component"
  - public void setSize(int width,int height)
- There are two kinds of components:
  - Container (Contains other components)
  - JComponent (These are widgets)



Some JComponents (widgets)

- JLabel – write text on the screen (non-editable)
- JButton – Make a pressable button
  - JCheckButton – on/off – allows independent on/off
  - JRadioButton – on/off – only one of a set may be on
- JTextField – Single editable line of text
- JComboBox – Choose from list of options with drop-down list
- JScrollBar – scroll up and down
- JMenu – Top "File/…/Help" menu bar w/ drop-downs
- JProgressBar / JSlider / JFileChooser

Common Swing Widgets

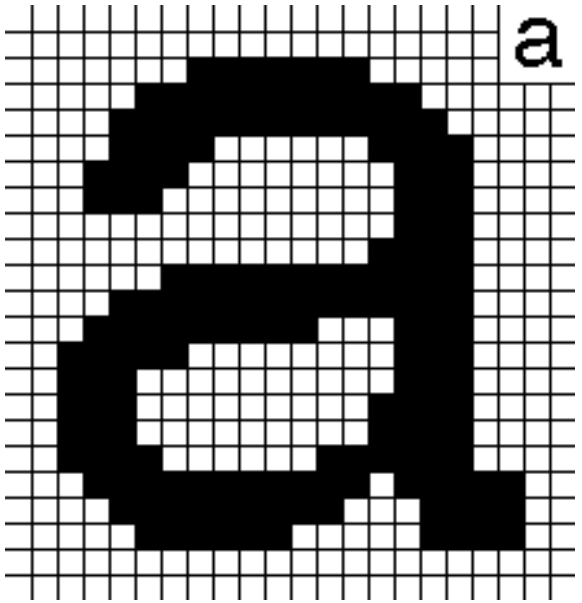


JComponent Methods

- setBackground(Color bg)
- setForeground(Color fg)
- setFont(Font f)

- setMaximumSize(Dimension max)
- setMinimumSize(Dimension min)

Text Based Components



- Like JLabel (simplest)
  - String text field
- Rendered by bitmapping each character
- A “font” is an array of bitmaps - one for each Unicode character
  - Different fonts look different
  - Includes letter size and style… e.g. italic, bold, etc.
- Fonts do not specify color of background or foreground
  - Bit on implies foreground
  - Bit off implies background

Investigating Rendering

- Swing renders or "paints" a component when requested to
  - System Requests
    - When the component is first made visible on the screen
    - When the component is resized
    - When the component was "damaged" and needs repair – e.g. uncovered
  - Program Requests
    - The program changed the component and wants the user to see the change
- The component has a "paint(graphics g)" method
  - This is invoked by swing whenever rendering is required
  - Override the "paint" method to change how a component is rendered
  - Don't *invoke* the paint method! Swing does that for you (repaint instead)

What's in a paint method?

- Paint uses the Graphics object passed as a parameter
- Graphics has methods to draw and fill things on the screen
  - void drawLine(int x1,int y1,int x2, int y2)
  - void fillRect(int x,int y,int width, int height)
  - void drawString(String str, int x, int y)
  - void drawImage(Image img, int x, int y, …)
- Most of the time, we don't need to override paint… the Swing classes already do that for us

Extending Swing

- If we want to extend the capabilities of Swing components, we can create child classes
- Override the methods we want to change
- For instance, add a shape to a label