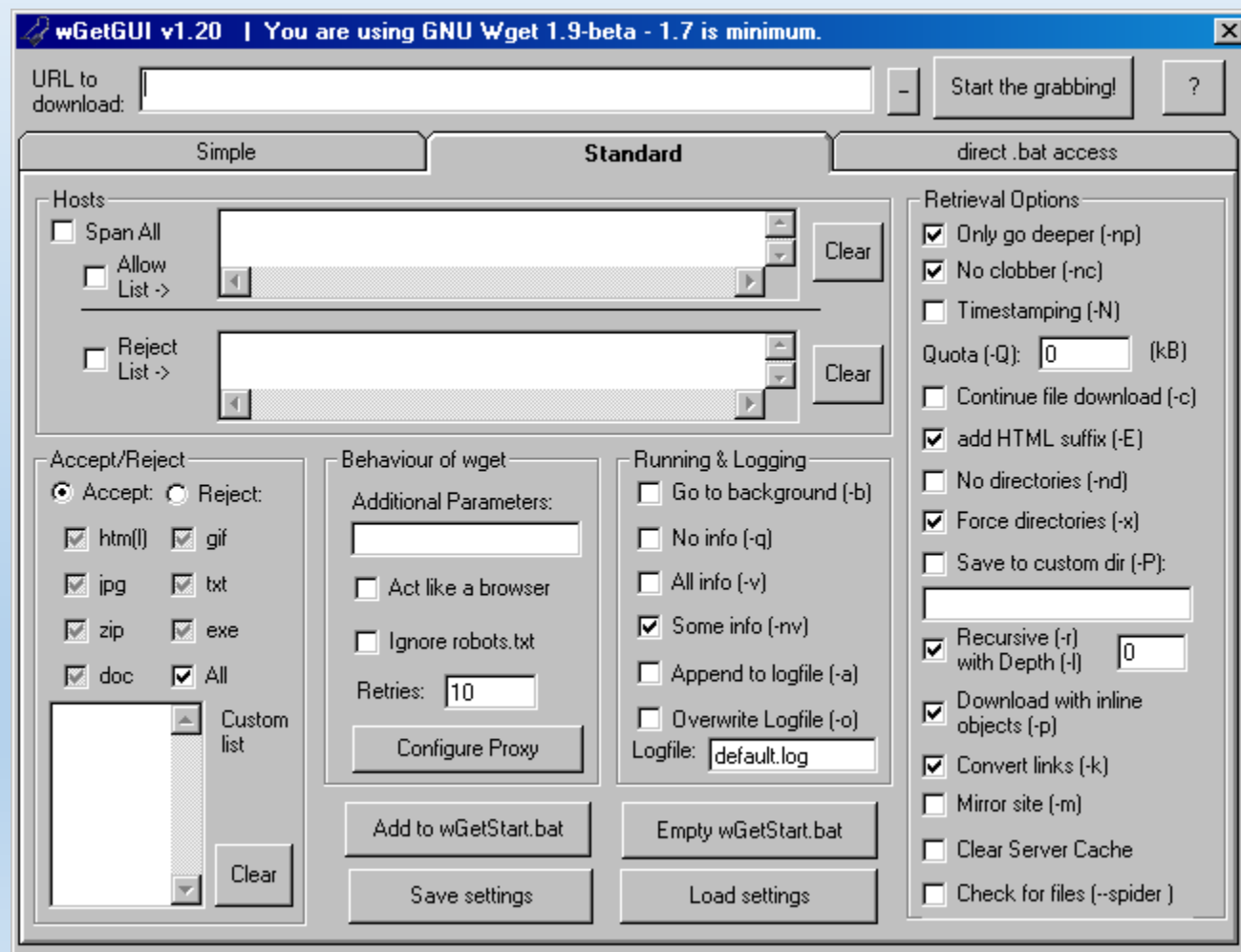


Swing Run Time



Chapter 20

BootStrapping the event loop...

```
class MyGui implements Runnable {  
    public void run() {  
        // Create and show GUI  
    }  
  
    public static void main(String[] args) {  
        MyGui gui = new MyGui();  
        javax.swing.SwingUtilities.invokeLater(gui);  
    }  
}
```

BootStrapping the event loop w/lambda

```
class MyGui {  
    public void create() {  
        // Create and show GUI  
    }  
  
    public static void main(String[] args) {  
        MyGui gui = new MyGui();  
        javax.swing.SwingUtilities.invokeLater(() -> gui.create());  
    }  
}
```

invokeLater

- invokeLater is a static method in the SwingUtilities class
- Adds it's argument to the end of the AWT event list
- Starts the AWT event loop
- All events in the AWT event loop must be Runnable
- When the AWT event handler finds an object on its event list, it invokes `object.run()`

BootStrapping the event loop w/lambda

```
class MyGui {  
    public void create() {  
        // Create and show GUI  
    }  
  
    public static void main(String[] args) {  
        MyGui gui = new MyGui();  
        javax.swing.SwingUtilities.invokeLater(()->gui.create());  
    }  
}
```

Swing Callback Implementation

- Components w/ actions (e.g. buttons) have an “ActionListener” list
- “ActionListener”: Functional Interface
 - requires the `void actionPerformed(ActionEvent e)` method
- `addActionListener(x)` adds x to the ActionListener list
 - x must implement *ActionListener* or be a lambda expression
 - Registers a callback to x when an action occurs
- When an action occurs `x.actionPerformed(event)` is invoked for each x in the ActionListener list

The ChangeListener class

- Components w/ values (e.g. JTextLine) have a "ChangeListener" list
- ChangeListener: Functional Interface
 - requires `stateChanged(ChangeEvent e)`
- `addChangeListener(x)` adds x to the ChangeListener list
 - x must implement ChangeListener or be a lambda expression
- When the value of the component changes, `x.stateChanged(event)` is invoked for each x in the ChangeListener list

Pre-Packaged Dialogs

- Static methods that perform all the interaction for you
- All you have to do is invoke
- Return value is the "user selected" option (if there are options)