General features of GUI's

Applicable to all methodologies and all platforms:

- Linux/UNIX
- Windows
- Android
- OS-X
A Window

• Space for text and (maybe) graphics, might be constrained to rectangle
• Allows user interaction (click a button, type text, etc.)
• No commands to learn
• Components (not all available in all platforms):
  – Buttons
  – Sliders for scrolling
  – Menus/Toolbars
  – Detectable areas (click/swipe)
  – Sizing, moving, maximizing, minimizing mechanism
Interaction modes

• WIMP
  – Traditional devices (PC, tablet, mobile phones)
  – Window, Icon, Mouse, Pointer or basic touch (i.e.; tap)

• Post-WIMP
  – Smart-phones, tablets
  – Allows multi-touch (pinch, stretch, rotate)
Program interaction

• Mechanism for window manager to notify program
  – Callback functions
  – Activated upon user action (mouse click, etc.)

• Mechanism for program to notify window manager
  – Call to manipulate controls
    • Create windows & child windows
    • Sliders
    • Menus
    • Etc.
O/S Support Needed

• Callback interface
• Non-blocking I/O
• Display mgmt. (resizing, etc.)
• Human interface I/O (accept mouse, keyboard, finger, etc.)
• Device independence (printer, screen, etc.)
• Multi-threading
• Thread-safety
Network access

• Ability to manage displays on remote devices
• Send/receive/acknowledge mechanism
  – Built into O/S
  – Blocking/non-blocking
• Common API's for communication (Android/Linux/Windows)
  – Independent of GUI API's
• Differential between PC's & mobile devices
• Requirements for homogeneous systems