Desktop +

- Read Chapter 10

- Screen layout
  - called geometry
  - it is a bitmap with certain size of pixels
  - typical size is 1920 x 1200
  - addressing pixels
    - specific position on screen, e.g., 500 x 200
    - position relative to corner of screen

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Desktop +

- Screen layout
  - e.g., +50+50 is 50 pixels away from the upper left corner of the screen in both X and Y direction
X Window System security

Who can have access to your screen?

- X server running a system only allows X client on that system to talk to it.
- X server does not allow connections from other X clients unless you explicitly allow it.

Utility: `xhost` [+|-][hostname]

- The `xhost` command allows or denies access to the X server on a system.
- With no arguments, `xhost` prints its current settings and which hosts (if any) have access.
- By specifying only +, you can give access to all hosts, or by specifying only -, deny access to all hosts.
- When a hostname is specified after a + or -, access is granted or denied, respectively, to that host.
**X Window System security**

- *Utility: xhost [+-][hostname]*
  
  For example: $ xhost +bluenote

allows X clients running on system "bluenote" to write to the display on the system where the *xhost* utility was run. Later, when whatever you needed to run is finished, you can disallow access with the command:

  $ xhost -bluenote

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**X Window System security**

- *Utility: xhost [+-][hostname]*

You can allow any X client on the network to write to your display with the command:

  $ xhost +

You can also take away access to all remote X clients with:

  $ xhost -

  - Where does it make sense to do this?
Desktop Environment

All programs that manage and render the desktop, e.g., the icons, windows etc.

- menus providing access to objects, tasks, or applications
- icons representing devices or other objects in the system
- status bars or areas where real-time status data is displayed
- a cursor controlled by a mouse providing navigation among and interaction with desktop objects

Desktop Environment

Most common Linux desktops

- The Common Desktop Environment (CDE) was one of the first true DEs for UNIX system
- CDE is based in large part on Hewlett-Packard's Visual User Environment (VUE) and Sun Microsystem's OpenWindows.
Desktop Environment

- Most common Linux desktops
  - The GNU Network Object Model Environment (GNOME) is the GNU Project's contribution to desktop environment.
  - Like other GNU software, it is freely available, is included in most Linux distributions.

Desktop Environment

- Most common Linux desktops
  - The K Desktop Environment (KDE) has been developed by a loose group of programmers around the world.
  - KDE is included in most Linux distributions
Window Managers

- A window manager is a program (an X client) that communicates with the X server and with the keyboard and mouse on the system.

- It provides the interface for the user to give instructions to the X server about what to do with the windows.

- Window manager provides “look and feel” of desktop

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Window Managers

- **Focus**

  - Focus is the term used to describe which window is currently selected or active.

  - e.g. if you type on keyboard, the window with focus is where the data will be sent.

  - Typically the window with focus has different border, e.g., highlighted, darker shade etc.
Window Managers

Many choices, e.g.,

- dtwm
  - The Desktop Window Manager (dtwm) is part of the CDE, and is similar to vuewm, discussed below, but supports a virtual desktop.

- fvwm
  - fvwm is popular in the Linux community because of its free availability and because it is very customizable. fvwm is included in some Linux distributions.

-gnome-wm
- The GNOME Window Manager (gnome-wm) is the window manager used with the GNU Network Object Model Environment (GNOME).
Window Managers

Many choices, e.g.,

icewm

The ICE Window Manager (icewm) is another grassroots, popular window manager.

It is small, fast, and easily customizable to resemble Windows so that PC users can feel comfortable using a Linux system.

icewm is included in some Linux distributions.

Window Managers

Many choices, e.g.,

kwm

The K Window Manager (kwm) is used with the K Desktop Environment (KDE).

While not required, it is recommended over other window managers for use with KDE because of its tight integration with KDE functionality.

kwm is included in just about all Linux distributions.
Window Managers

Many choices, e.g.,

- **mwm**
  - The Motif Window Manager (mwm) is one of the first major window managers.

- **olwm**
  - Sun Microsystems' OpenLook Window Manager (olwm) and OpenLook Virtual Window Manager (olvwm) run on Sun systems and can be used with CDE.

- **twm**
  - Tom's Window Manager (twm) and Tom's Virtual twm (tvtwm) were written by Tom LaStrange to correct some of the things he didn't like about mwm.

- **tvm**
  - tvm is included in many Linux distributions.
  - tvm is also sometimes called the Tab Window Manager.
Window Managers

- Many choices, e.g.,
  - vuewm
  - The VUE Window Manager (vuewm) is from Hewlett-Packard and runs under HP's Visual User Environment (VUE) desktop.

Client Applications

- Many choices, e.g.,
  - Utility: xclock [-digital]
    - The xclock command provides a simple clock on your desktop. The default is an analog clock. If the -digital argument is specified, a digital clock is displayed instead.
  - Utility: xterm
    - The xterm command starts a terminal window on the desktop.
Client Applications

- X Client Arguments, e.g.
  - geometry
    - $ xclock -geometry 100x100-10+10
    - XxY defines size, +X+Y offset
  - color
    - $ xterm -foreground cyan -background black

Networking Capability

- One can display information from an X client on one computer on an X server running on another.
  - This is useful when you are working on a remote server and need to display all your X applications on your local desktop.
  - on X client specify **-display**
    - this tells client which X server to contact to display its widgets
Networking Capability

- Start xterm on host “eternium”
  - `$ xterm -display eternium:0.0`
  - `:0.0` identifies a display
  - if the user on eternium has used the `xhost` command to allow access, then the X terminal window will be displayed on eternium

Networking Capability

- Alternative
  - `$ export DISPLAY="eternium:0.0"
  - `$ xterm`
  - This is useful when you are working on a remote server and need to display all your X applications on your local desktop.