


# Linux: first Level

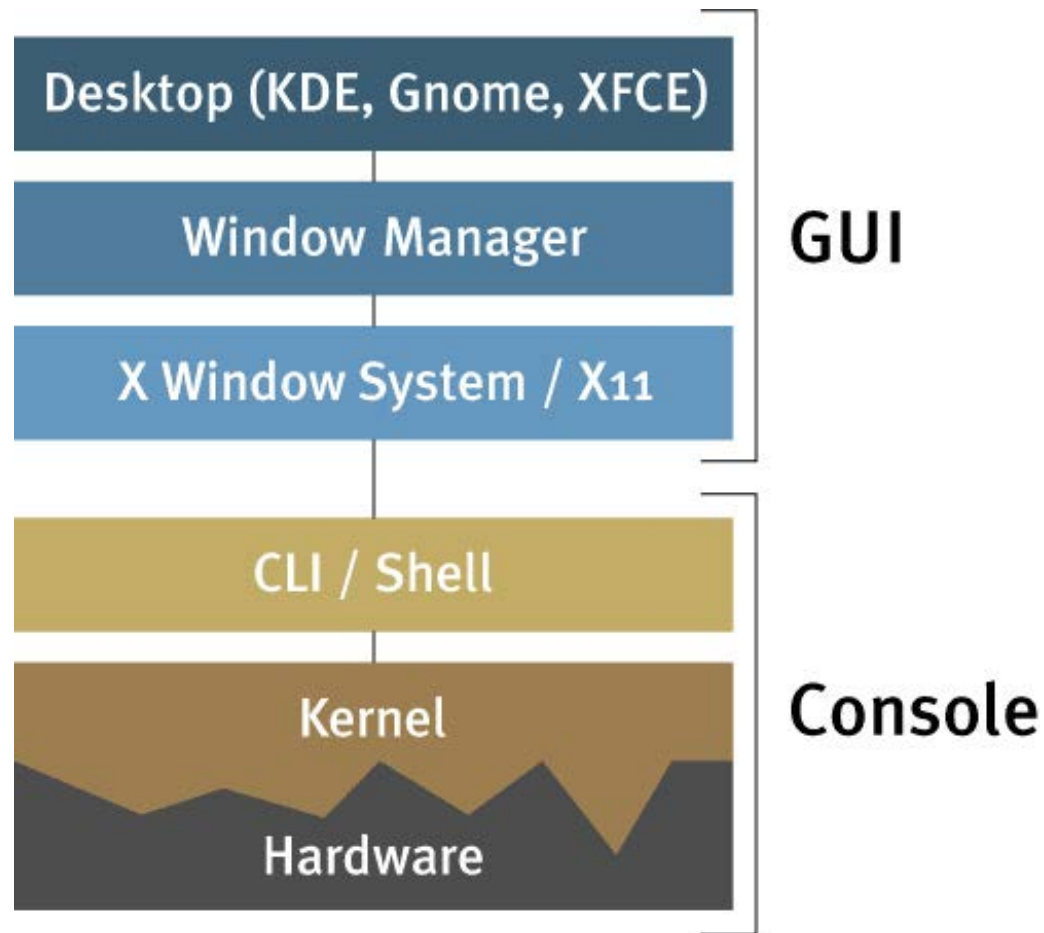
# What is Unix?

- A multi-task and multi-user Operating System
- It was developed in 1969 at AT&T's Bell Labs by
  - Ken Thompson (Unix)
  - Dennis Ritchie (C)
  - Douglas Mcllroy (Pipes)
- Powerful computers

# What is Linux?

- A clone of Unix for personal computers 
- It was developed in 1991 by Linus Torvalds, a Finnish graduate student
- Inspired by and replacement of Minix
- Linus' Minix became Linux
- Consist of
  - Linux Kernel
  - GNU (GNU is Not Unix) Software
  - Software Package management
  - Others

# What is Linux?



# Linux Distribution

- Slackware
- Redhat
- CentOS
- SuSe
- Gentoo
- Debian
- Ubuntu (based in South Africa)
- Knoppix
- ...

# Linux commands-man (help)

- Manpage
  - \$ man ls
  - \$ man 2 mkdir
  - \$ man man
  - \$ man -k mkdir
- Manpage section
  - 1 User-level cmds and apps
    - /bin/mkdir
  - 2 System calls
    - int mkdir(const char \*, ...);
  - 3 Library calls
    - int printf(const char \*, ...);
  - 4 Device drivers and network protocols
    - /dev/tty
  - 5 Standard file formats
    - /etc/hosts
  - 6 Games and demos
    - /usr/games/fortune
  - 7 Misc. files and docs
    - man 7 locale
  - 8 System admin. Cmds
    - /sbin/reboot
- \$ manpath
- \$ env | grep MANPATH
- /etc/man.config

# Commands

- `ls`
  - `$ ls -l`
  - `$ ls -a`
  - `$ ls -la`
  - `$ ls -l --sort=time`
  - `$ ls -l --sort=size -r`
- `cd`
  - `$ cd /usr/bin`
- `pwd`
  - `$ pwd`
- `~`
  - `$ cd ~`
- `~user`
  - `$ cd ~user`
- `which`
  - `$ which ls`
- `whereis`
  - `$ whereis ls`
- `locate`
  - `$ locate stdio.h`
  - `$ locate iostream`
- `rpm`
  - `$ rpm -q bash`
  - `$ rpm -qa`
  - `$ rpm -qa | sort | less`
- `find`
  - `$ find / | grep stdio.h`
  - `$ find /usr/include | grep stdio.h`

# Commands

- echo
  - `$ echo "Hello World"`
  - `$ echo -n "Hello World"`
- cat
  - `$ cat /etc/motd`
  - `$ cat /proc/cpuinfo`
- cp
  - `$ cp foo bar`
  - `$ cp -a foo bar`
- mv
  - `$ mv foo bar`
- mkdir
  - `$ mkdir foo`
- rm
  - `$ rm foo`
  - `$ rm -rf foo`
  - `$ rm -i foo`
  - `$ rm -- -foo`
- chgrp
  - `$ chgrp bar /home/foo`
- chsh
  - `$ chsh foo`
- chfn
  - `$ chfn foo`
- chown
  - `$ chown -R foo:bar /home/foo`



# Commands

- tar
  - `$ tar cvfp lab1.tar lab1`
- gzip
  - `$ gzip -9 lab1.tar`
- untar & ungzip
  - `$ gzip -cd lab1.tar.gz | tar xvf -`
  - `$ tar xvfz lab1.tar.gz`
- touch
  - `$ touch foo`
  - `$ cat /dev/null > foo`
- Pipe
  - `$ cal > foo`
  - `$ cat /dev/zero > foo`
  - `$ cat < /etc/passwd`
  - `$ who | cut -d' ' -f1 | sort | uniq | wc -l`
- backtick
  - `$ echo "The date is `date`"`
  - `$ echo `seq 1 10``
- Hard, soft (symbolic) link
  - In `vmlinuz-2.6.24.4 vmlinuz`
  - In `-s firefox-2.0.0.3 firefox`

# Commands

- Disk usage
  - `$ df -h /`
- File space usage
  - `$ du -sxh ~/`
- **Advance linux**
  - `$ ssh eon who`
  - `$ ssh eon 'cd .html ; tar cvfp - cs183 | gzip -9c' | tar xvpz -`
  - `$ ssh kilo-1 'tar cvfp - /extra/weesan' | tar xvpf - -C /`

# Linux text editor: Vi

- 2 modes
  - Input mode
    - ESC to back to cmd mode
  - Command mode
    - Cursor movement
      - h (left), j (down), k (up), l (right)
      - ^f (page down)
      - ^b (page up)
      - ^ (first char.)
      - \$ (last char.)
      - G (bottom page)
      - :1 (goto first line)
    - Swtch to input mode
      - a (append)
      - i (insert)
      - o (insert line after)
      - O (insert line before)
- Delete
  - dd (delete a line)
  - d10d (delete 10 lines)
  - d\$ (delete till end of line)
  - dG (delete till end of file)
  - x (current char.)
- Paste
  - p (paste after)
  - P (paste before)
- Undo
  - u
- Search
  - /
- Save/Quit
  - :w (write)
  - :q (quit)
  - :wq (write and quit)
  - :q! (give up changes)

# Editor: Emacs

- \$ emacs
- Cursor movement
  - ^f (forward one char.)
  - ^b (backward one char.)
  - ^a (begin of line)
  - ^e (end of line)
  - ^n (next line)
  - ^p (prev. line)
  - ^v (page up)
  - alt-v (page down)
- Deletion
  - ^d (delete one char)
  - alt-d (delete one word)
  - ^k (delete line)
- Paste
  - ^y (yank)
- Undo
  - ^/
- Load file
  - ^x^f
- Cancel
  - ^g
- Save/Quit
  - ^x^c (quit w/out saving)
  - ^x^s (save)
  - ^x^w (write to a new file)

# Gedit

- Open Gedit in Ubuntu/Friendly text editor