

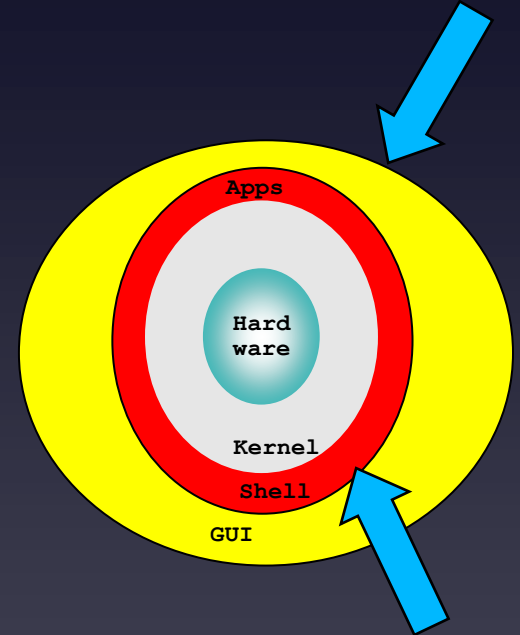
# **31268 Web Systems**

Week 1: Operating Systems  
Part 3: GUI vs CLI

## Week 1

Operating Systems  
(User Interfaces)

**GUI vs Command Line**



- The **Command Line Interface (CLI)**.

Interact through the **keyboard** and a monitor which only prints **text**.



- **The Command Line Interface (CLI).**

Interact through the **keyboard** and a monitor which only prints **text**.

- **The Graphical User Interface (GUI).**

Interact via **windows, icons, menu, pointer device**

*called "**WIMP**" interface ☺*



# Well Known CLI's

## Command Line Interfaces

- **sh** 1969: predecessor of **bash**, csh
- **CPM** 1973: predecessor of **MS-DOS**
- **cmd.exe** – windows shell

```
bash-2.05b$ pwd
/home/dstone
bash-2.05b$ cd /usr/portage/app-shells/bash
bash-2.05b$ ls -al
total 68
drwxr-xr-x 3 root root 4096 May 14 12:05 .
drwxr-xr-x 26 root root 4096 May 17 02:36 ..
-rw-r--r-- 1 root root 13718 May 3 22:35 ChangeLog
-rw-r--r-- 1 root root 2924 May 14 12:05 Manifest
-rw-r--r-- 1 root root 3720 May 14 12:05 bash-2.05b-r11.ebuild
-rw-r--r-- 1 root root 3516 May 2 20:05 bash-2.05b-r9.ebuild
-rw-r--r-- 1 root root 5083 May 3 22:35 bash-3.0-r11.ebuild
-rw-r--r-- 1 root root 4030 May 14 12:05 bash-3.0-r7.ebuild
-rw-r--r-- 1 root root 3931 May 14 12:05 bash-3.0-r6.ebuild
-rw-r--r-- 1 root root 4267 Mar 29 21:11 bash-3.0-r5.ebuild
drwxr-xr-x 2 root root 4096 May 3 22:35 files
-rw-r--r-- 1 root root 164 Dec 29 2003 metadata.xml
bash-2.05b$ cat metadata.xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE pkgmetadata SYSTEM "http://www.gentoo.org/dtd/metadata.dtd">
<pkgmetadata>
  <herdbase-systen/>herd</herd>
</pkgmetadata>
bash-2.05b$ sudo /etc/init.d/bluetooth status
Password:
* status: stopped
bash-2.05b$ ping -q -c 1 en.wikipedia.org
PING rr.chtpa.wikimedia.org (207.142.131.247) 56(84) bytes of data.
--- rr.chtpa.wikimedia.org ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/ndev = 112.076/112.076/112.076/0.000 ms
bash-2.05b$ grep -i /dev/sda /etc/fstab | cut --fields=3
/dev/sda1 /nnt/usbkey
/dev/sda2 /nnt/ipod
bash-2.05b$ date
Wed May 25 11:36:56 PDT 2005
bash-2.05b$ lsmod
Module Size Used by
joydev 8256 0
ipu2200 175112 0
ieee80211 44220 1 ipu2200
ieee80211_crypt 4072 2 ipu2200,ieee80211
e1000 84460 0
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wikipedia



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## GUIs

1983: Apple – Lisa, Mac OS

1984: Unix - Gnome, KDE

1985: Microsoft – Windows 1.0

2001: Apple – Mac OS X &  
Microsoft Windows XP

2006: Microsoft Vista Aero

2010: Microsoft Metro

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bash-2.05b$ lsmod
Module              Size  Used by
joydev              8256  0
ipw2200             175112  0
ieee80211           44220  1 ipw2200
ieee80211_crypt     4072  2 ipw2200,ieee80211
e1000               84460  0
bash-2.05b$
```

wikipedia



# GUI vs CLI – which is better ?

- “Holy Wars” have been waged over which is the better interface.
- Neither of them is “better”.
  - Each of them has an appropriate and important role in computing.
- Both the CLI and the GUI have their strengths and weaknesses.



# Why have multiple interfaces?

- Customisation





# Why have multiple interfaces?

- Customisation
- Automation



# Why have multiple interfaces?

- Customisation
- Automation
- Understanding



# The Graphical User Interface

## Strengths

- Little/no experience required
- Good for graphics e.g.  
→ artwork, desktop publishing,
- User friendly, intuitive
- Hides complexity from users.



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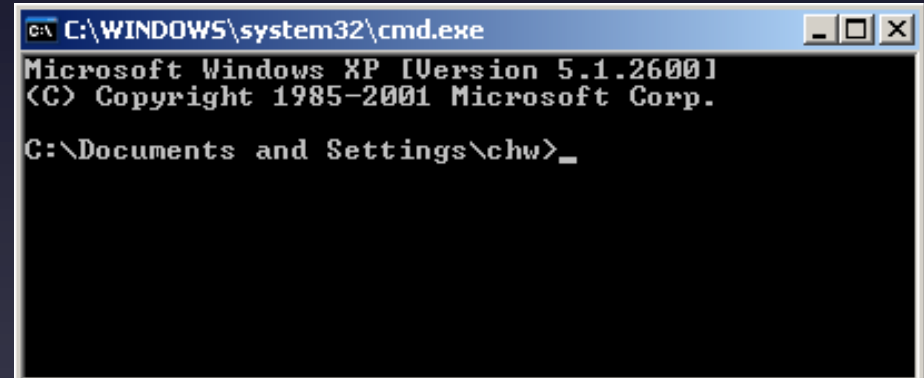
## Weaknesses

- Can't do everything.  
→ Using keyboard can be **faster**.
- Can **crash** the system!
- User is **unsure** of what the O/S is **really** doing.
- **Slows computer down**
- Needs **better hardware**
- **Hides complexity from users.**

# The Command Line Interface

## Strengths

- Greater flexibility
- Fine tuning, → parameters
- Essential for system administration
- Faster, less overhead
- Runs on simple hardware.
- Can run remotely
- Robust - Difficult to crash.

A screenshot of a Windows XP Command Prompt window. The title bar shows the path 'C:\WINDOWS\system32\cmd.exe'. The window content displays the following text: 'Microsoft Windows XP [Version 5.1.2600]  
<C> Copyright 1985-2001 Microsoft Corp.  
C:\Documents and Settings\chw>\_'. The cursor is at the end of the command line.

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## Weaknesses

- **Hard to learn**  
→ cryptic commands & parameters
- **Multiple options**  
→ more than 1 way to do things
- Output often **cryptic** or non-existent
- **Inconsistent** commands  
→ different versions of Unix? DOS?
- No graphics
- No safety net  
→ '**expert mode**'

# Next module

- We will continue with the command line interface to look at scripting