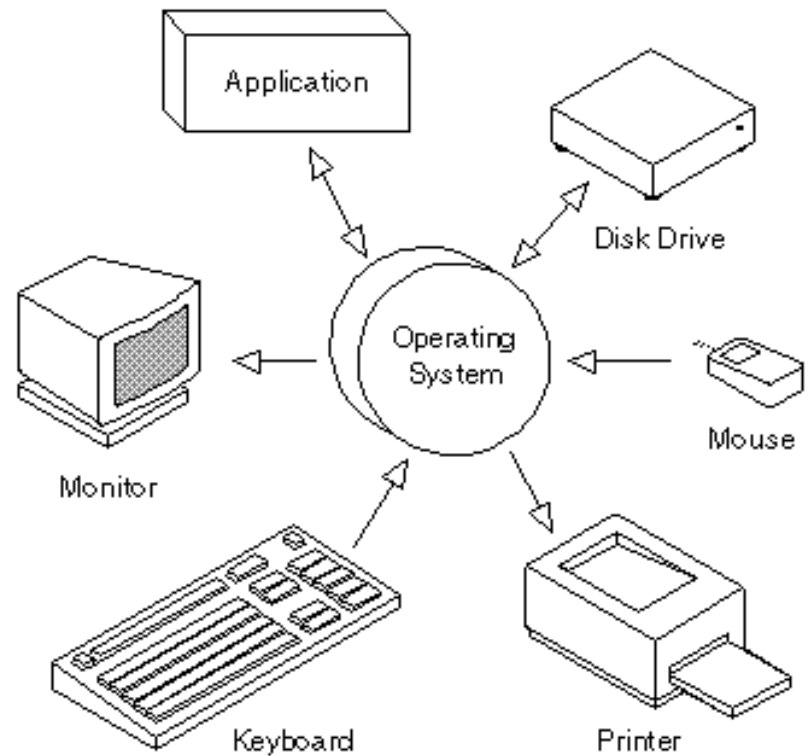


Unit 2: Concepts of Operating Systems

Definition

- An Operating System, or OS, is low-level software that enables a user and higher-level application software to interact with a computer's hardware and the data and other programs stored on the computer.
- An OS performs basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as printers.



Other Services

➤ Program Execution

OS provides an environment where the user can conveniently run programs. The user does not have to worry about memory allocation or CPU scheduling.

➤ I/O Operations

Each program requires input and produces output. The OS hides some of the details of the underlying hardware for such I/O. All the user sees is that the I/O has been performed, without those details.

➤ Communications

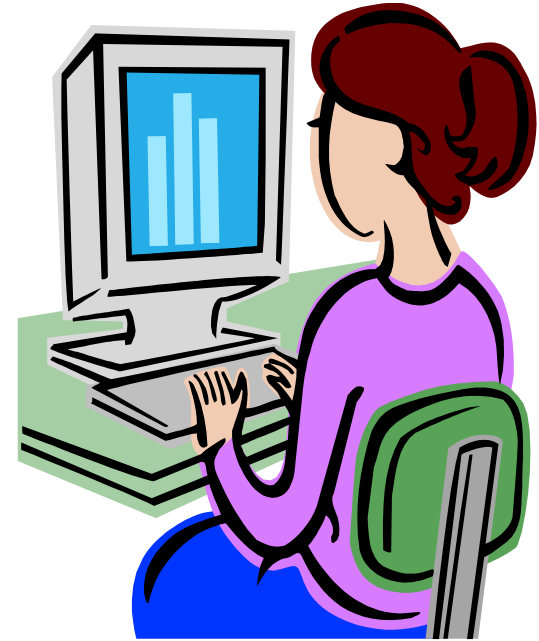
There are instances where processes need to communicate with each other to exchange information. It may be between processes running on the same computer or running on different computers. The OS provides these services to application programs, making inter-process communication possible, and relieving the user of having to worry about how this accomplished.

Application programs and OS

- Operating systems provide a software platform on top of which other programs, called *application programs*, can run.
- The choice of operating system, therefore, determines to a great extent the applications a user can run.
- For example, the DOS operating system contains commands such as COPY and RENAME for copying files and changing the names of files, respectively. The commands are accepted and executed by a part of the operating system.
- Similarly, the UNIX operating system has commands like CP and MV to copy and rename.

UNIX

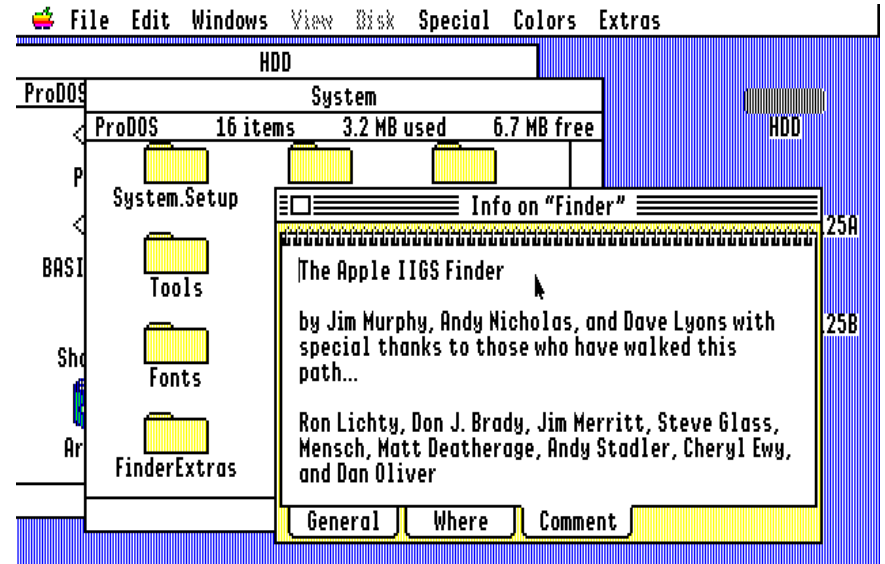
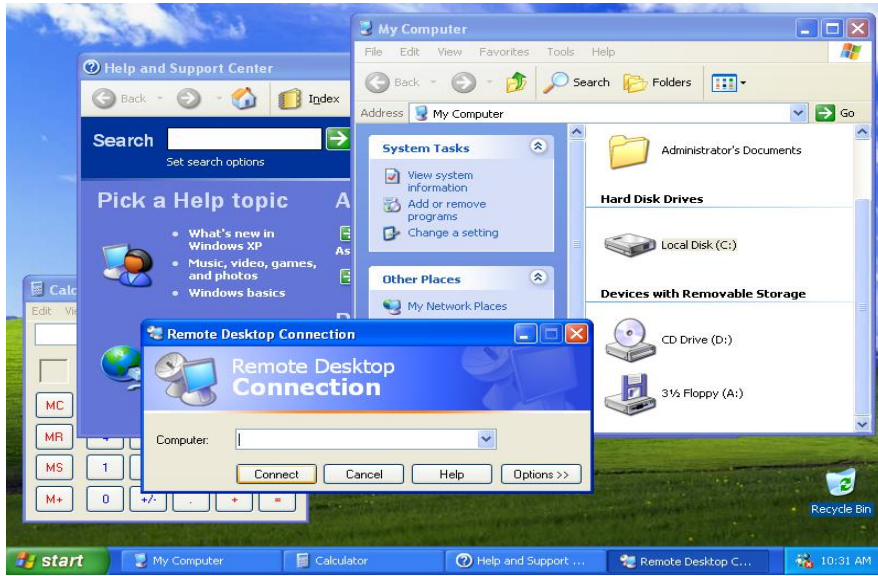
- UNIX was one of the first operating systems to be written, in 1971.
- Advantages of UNIX are...
 - Multitasking – multiple programs can run at one time.
 - Multi-user – allows more than a single user to work at any given time. This is accomplished by sharing processing time between each user.
 - Safe – prevents one program from accessing memory or storage space allocated to another program, and enables file protection, requiring users to have permission to perform certain functions, such as accessing a directory, file, or disk drive.



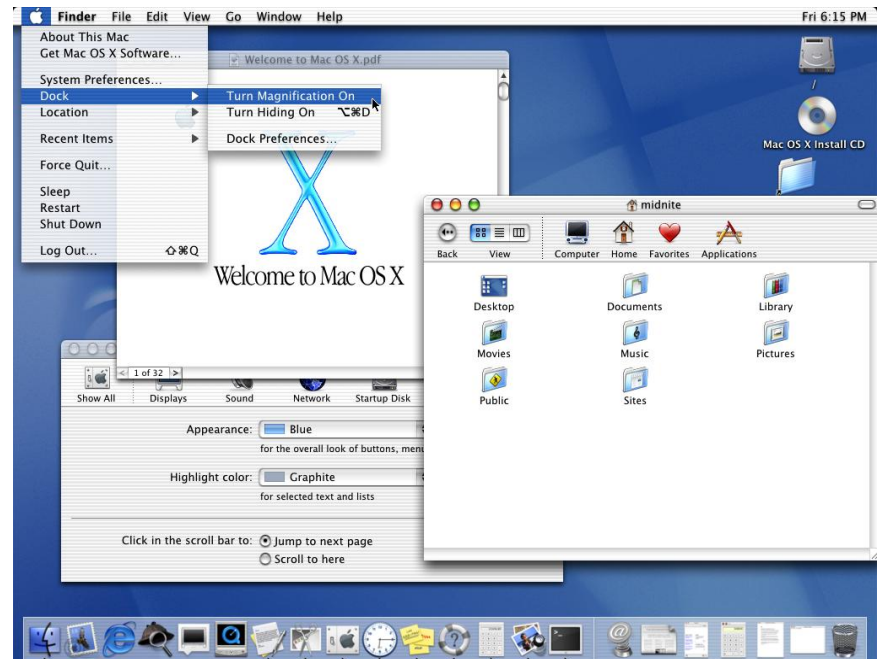
Types of OS

- Microsoft Windows
- Mainframe
- DOS
- OS/2
- Linux
- Mac OS
- AmigaOS

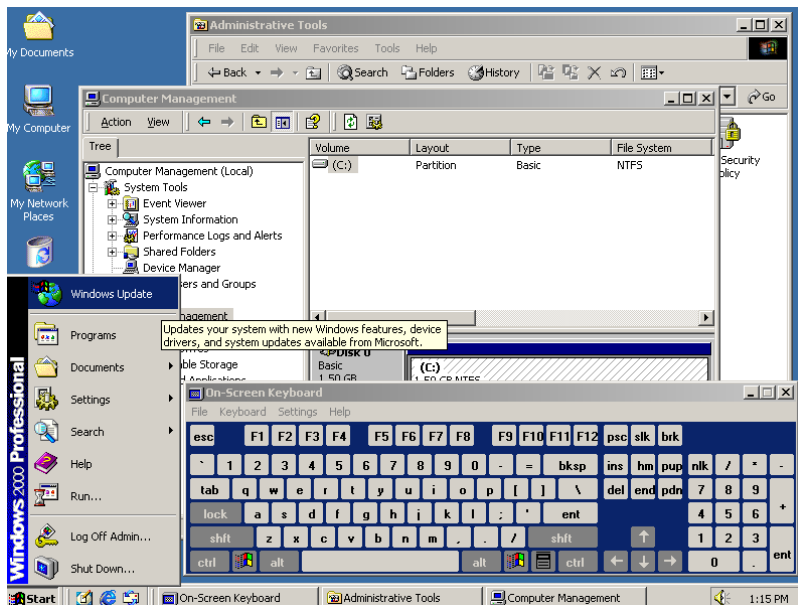
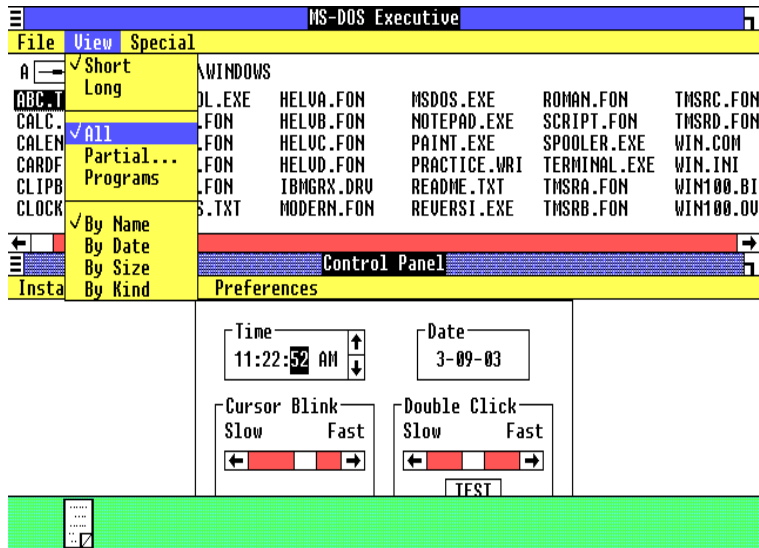
Types Of OS



```
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 13710 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  5093 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-r8.ebuild
-rw-r--r--  1 root root  4267 Mar 29 21:11 bash-3.0-r9.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>
<herd>base-system</herd>
</pkgmetadata>
bash-2.05b$ sudo /etc/init.d/bluetooth status
Password:
* status: stopped
bash-2.05b$ ping -q -c1 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/mdev = 112.076/112.076/112.076/0.000 ms
bash-2.05b$ grep -i /dev/sda /etc/fstab | cut --fields=3
/dev/sda1          /mnt/usbkey
/dev/sda2          /mnt/ipod
bash-2.05b$ date
Wed May 25 11:36:56 PDT 2005
bash-2.05b$ lsmod
Module              Size  Used by
joydev              8256  0
ipw2200             175112  0
ieee80211           44228  1 ipw2200
ieee80211_crypt    4872  2 ipw2200,ieee80211
e1000               84468  0
bash-2.05b$
```



Evolution of Windows



Evolution of OS/2

