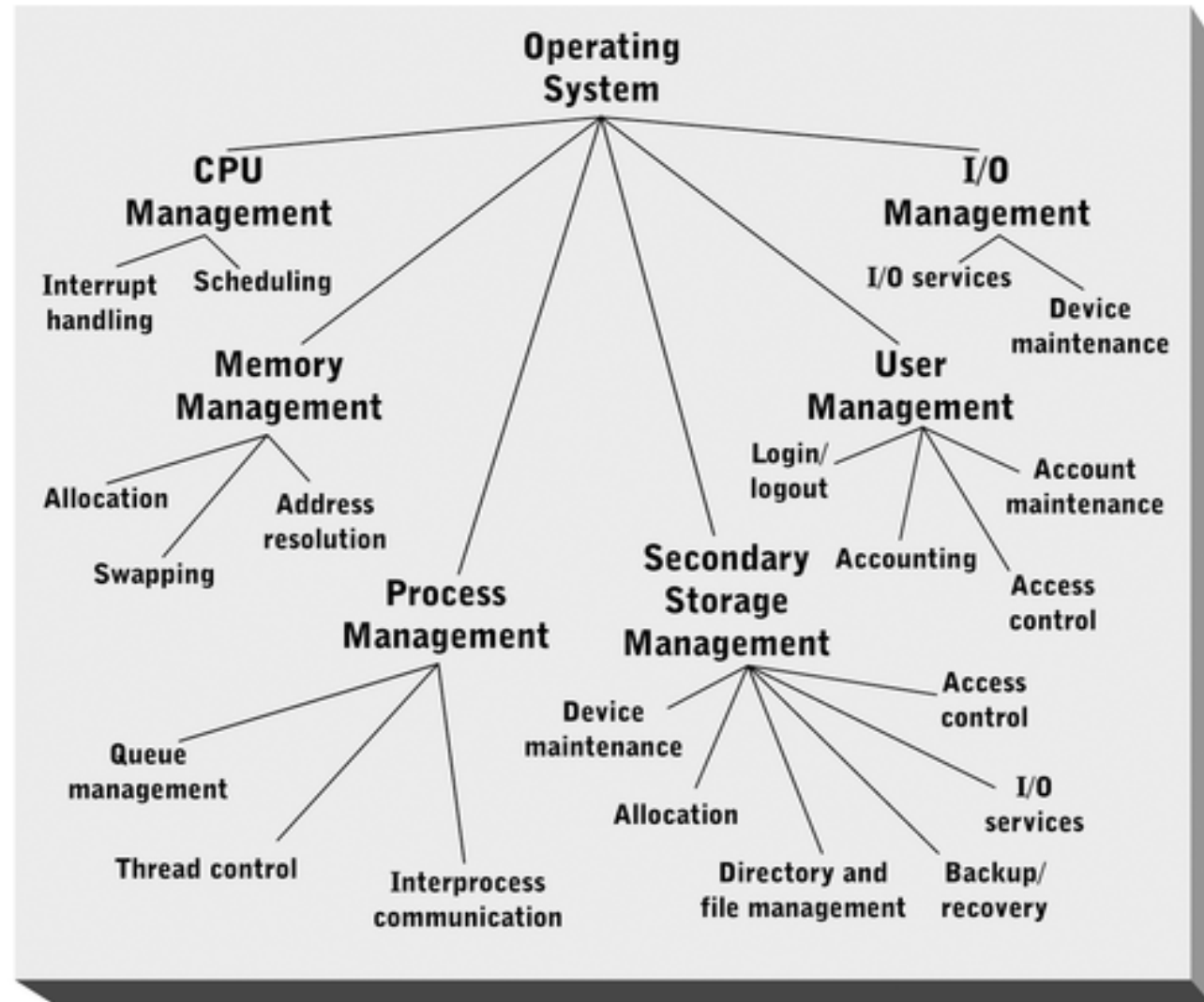# Introduction to Operating Systems

1st topic - Introduction
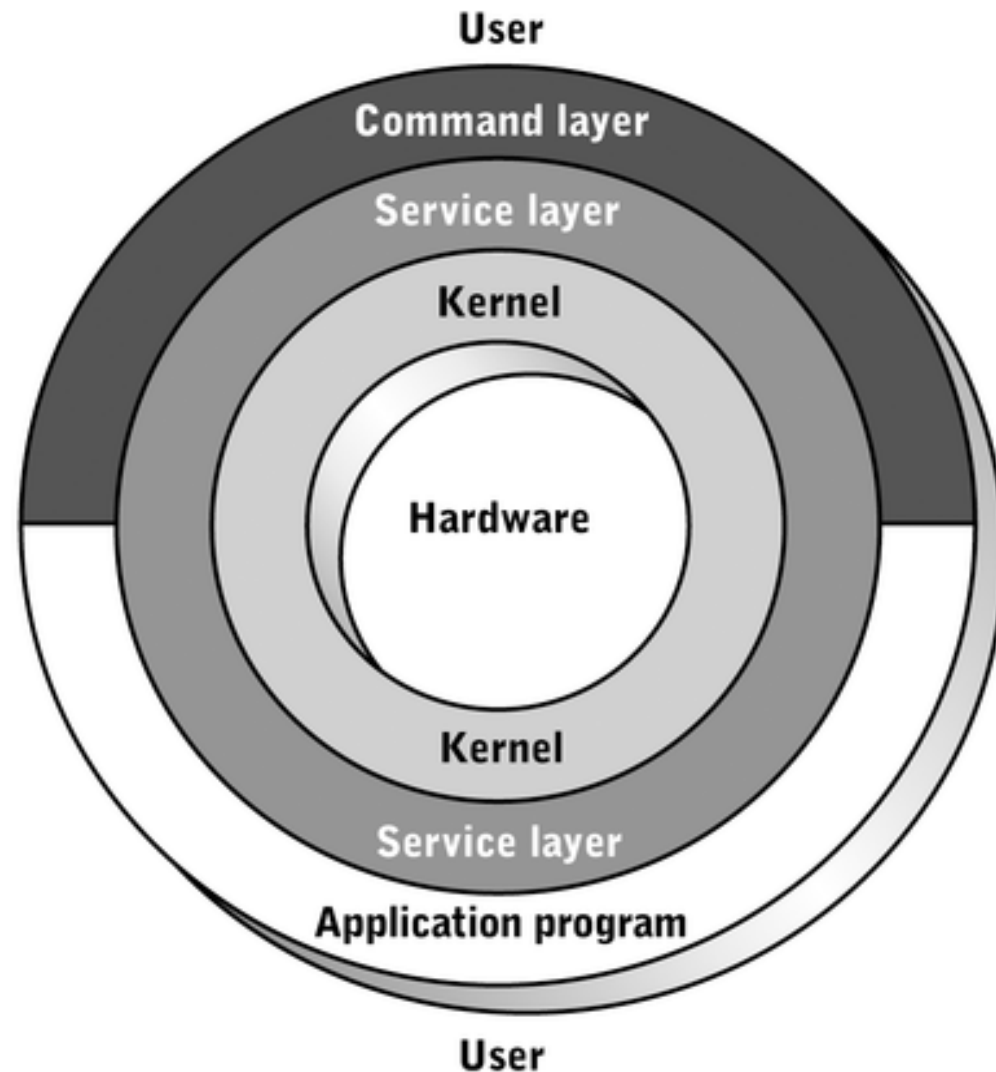
Operating System Overview

Figure 11-2 ►

Operating system management functions
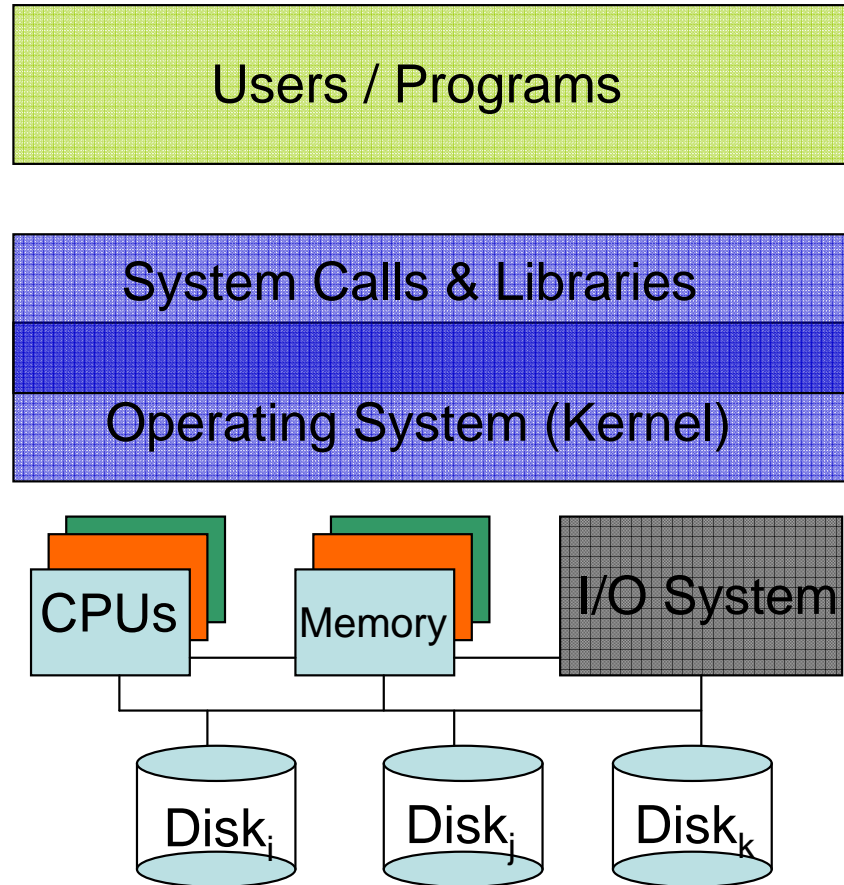
Operating System Overview

Figure 11-3 ►

Operating system
layers (shaded)

User

Command layer

Service layer

Kernel

Hardware

Kernel

Service layer

Application program

User

The Principle of Abstraction

The OS as Extended Machine

Read(fl, lblk, mm)

I/O System

fl: file name
lblk: logical block
mm: Main Memory

Compute pos. of lblk on disk
Move R/W head to corresponding track
Error Check (seek-errors)
Read physical block
Check for read errors
Copy block to mm

History of Operating Systems

Tape drive
Card reader
(a) (b)
1401

Input tape
System tape
Output tape
(c) (d) (e)
7094

Printer
(f)
1401
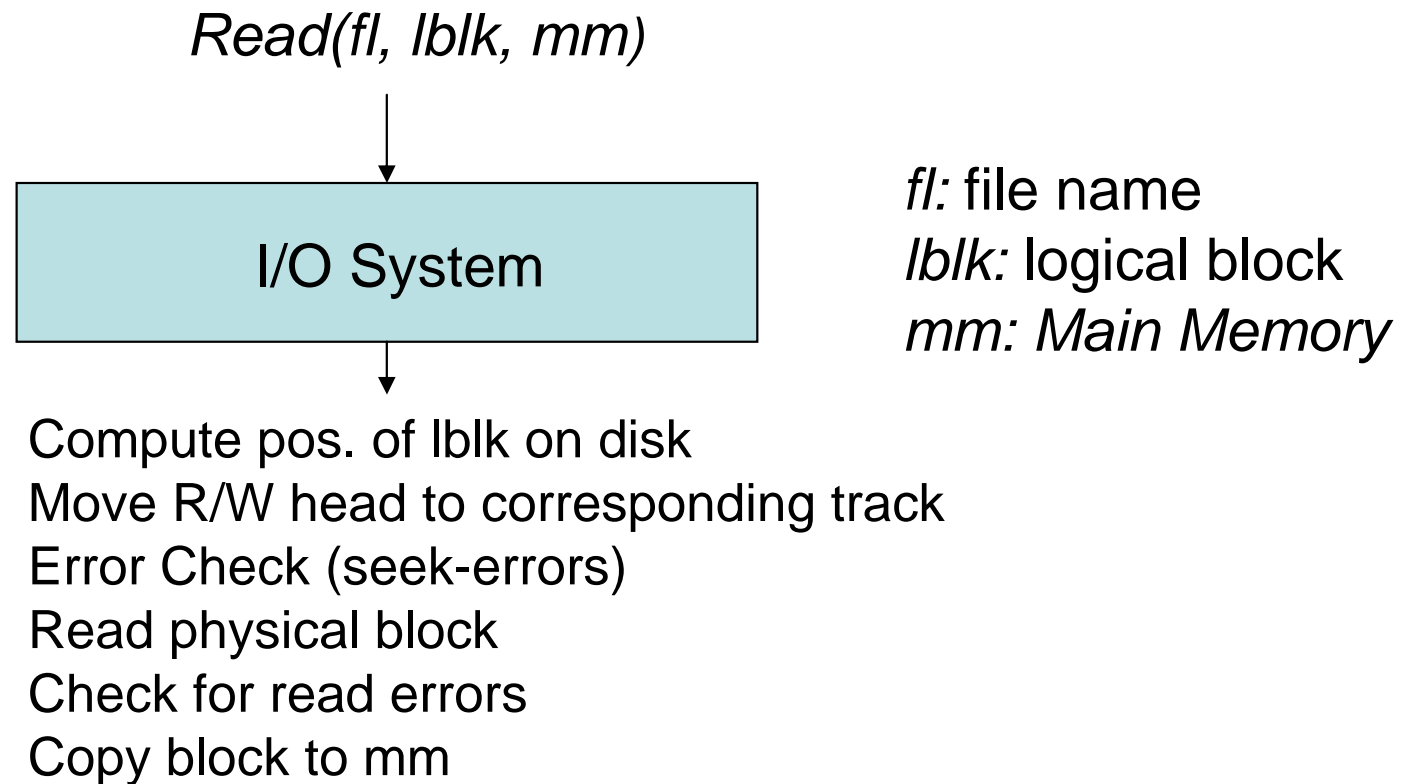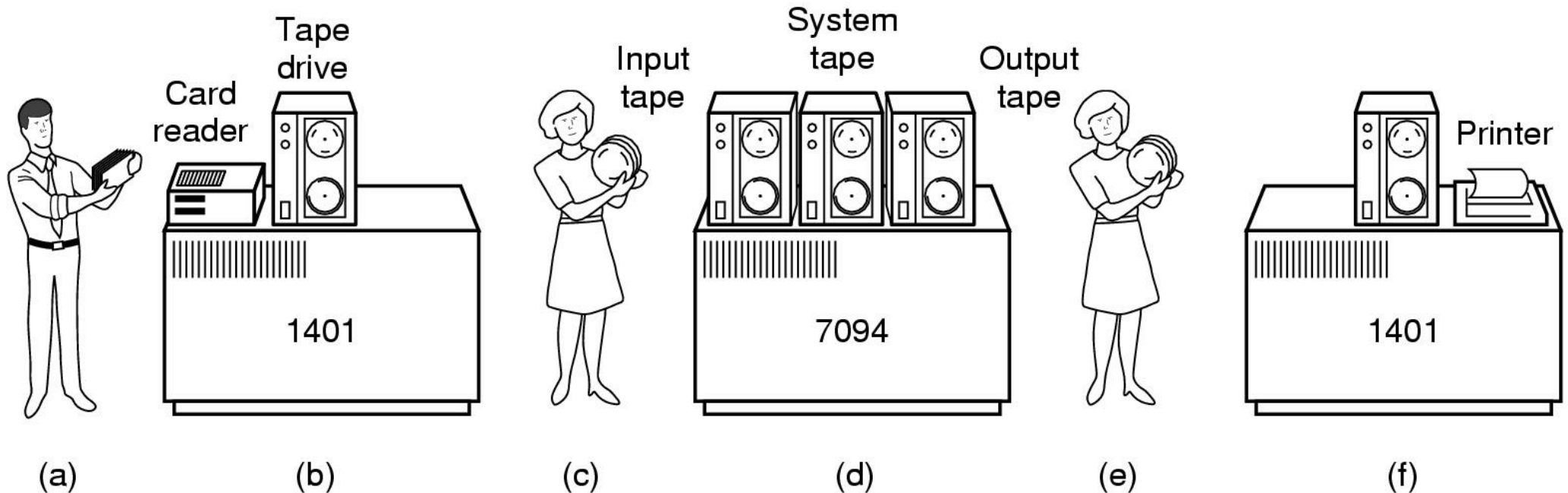
Early batch system
- bring cards to 1401
- read cards to tape
- put tape on 7094 which does computing
- put tape on 1401 which prints output

History of Operating Systems

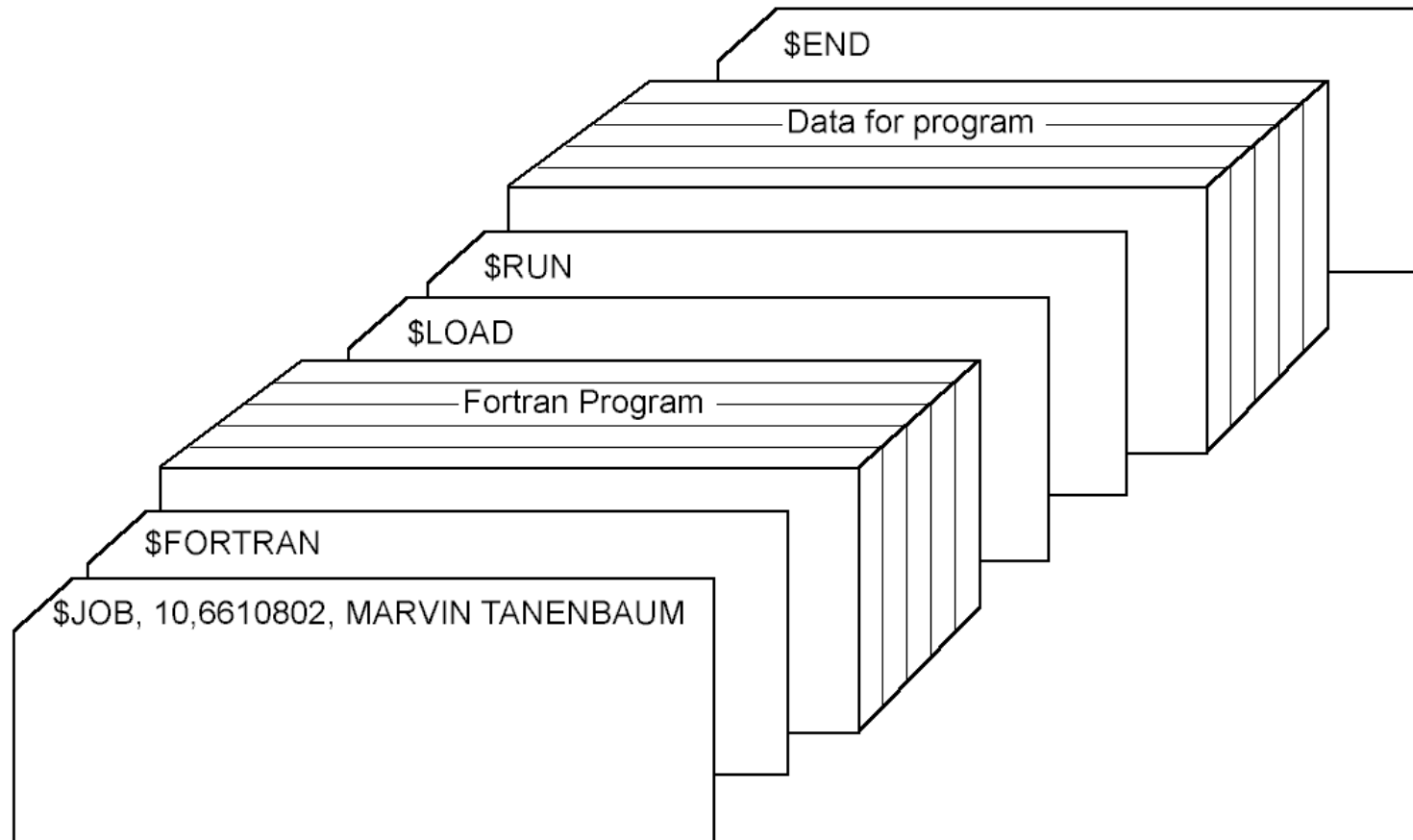Structure of a typical FMS (Fortran Monitor System) job

History of Operating Systems
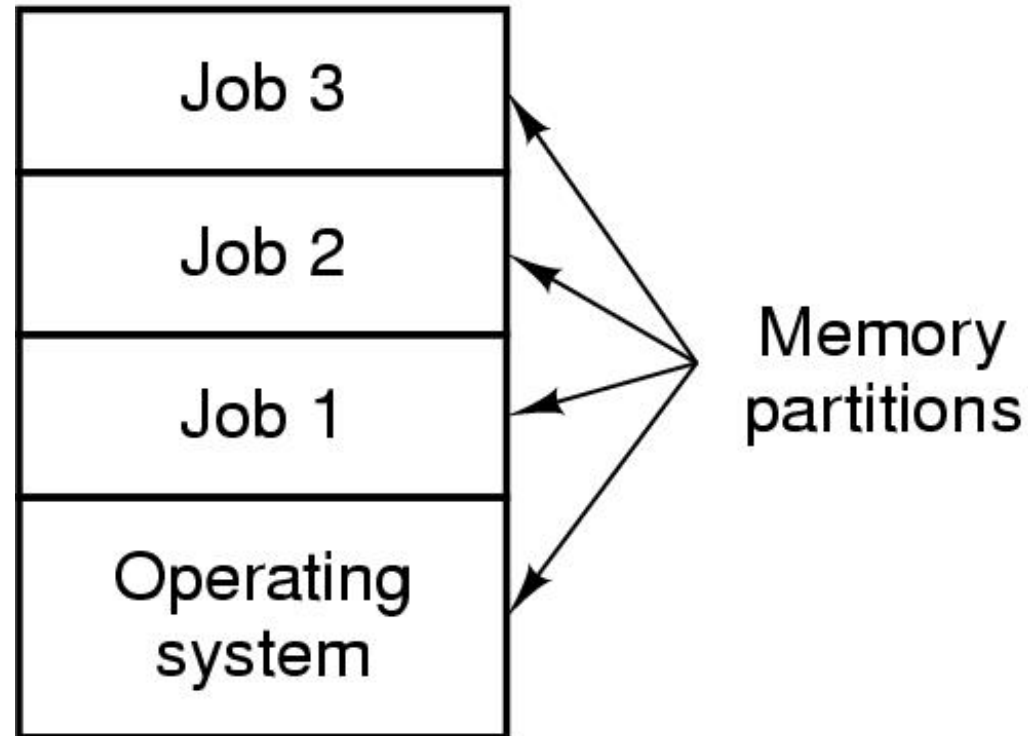
- Multiprogramming system
  - three jobs in memory

Unix Operating System(s)

- AIX (IBM)
- BSD (Berkeley Software Distribution)
- HP-UX (Hewlett-Packard)
- IRIX (Silicon Graphics)
- NeXTSTEP (NeXT)
- SunOS, Solaris (Sun Microsystems)
- ULTRIX, OSF1, Digital Unix (DEC, Compaq)
- SCO Unix (Santa Cruz Operation)
- …
- <u>Free</u>: FreeBSD, Hurd, Linux, Minix…

Unix Operating System(s)

MS-DOS

Sample MS-DOS Commands
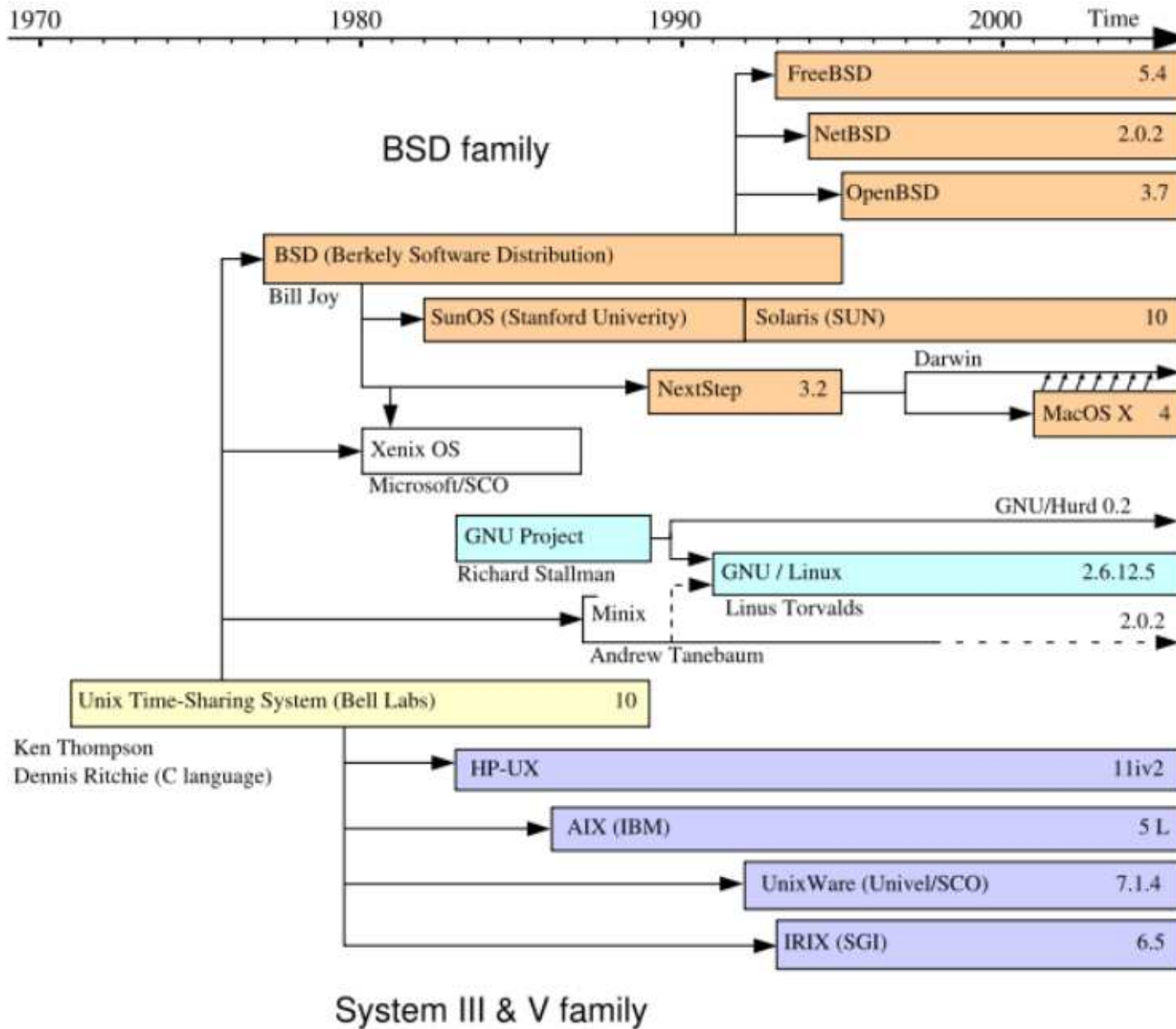
C:\>FORMAT A: Prepares an unformatted diskette on drive A: for use.

C:\>DIR A:DIR   Lists the files on the diskette in drive A: (DIR stands for directory)

C:\>COPY MRKTDATA.SUM A: Copies file MRKTDATA.SUM on drive C to Drive A.

C:\>DEL A:SALESRPT.TXT   Deletes file SALESRPT.TXT from drive A:

C:\>RENAME MRKTDATA.SUM SSDATA.CHT   Renames the file MRKTDATA.SUM on drive C: to SSDATA.CHT

- Command-line interface

- Prompt – system is waiting for you to do something

- Key a command

- Not user-friendly

Microsoft Windows
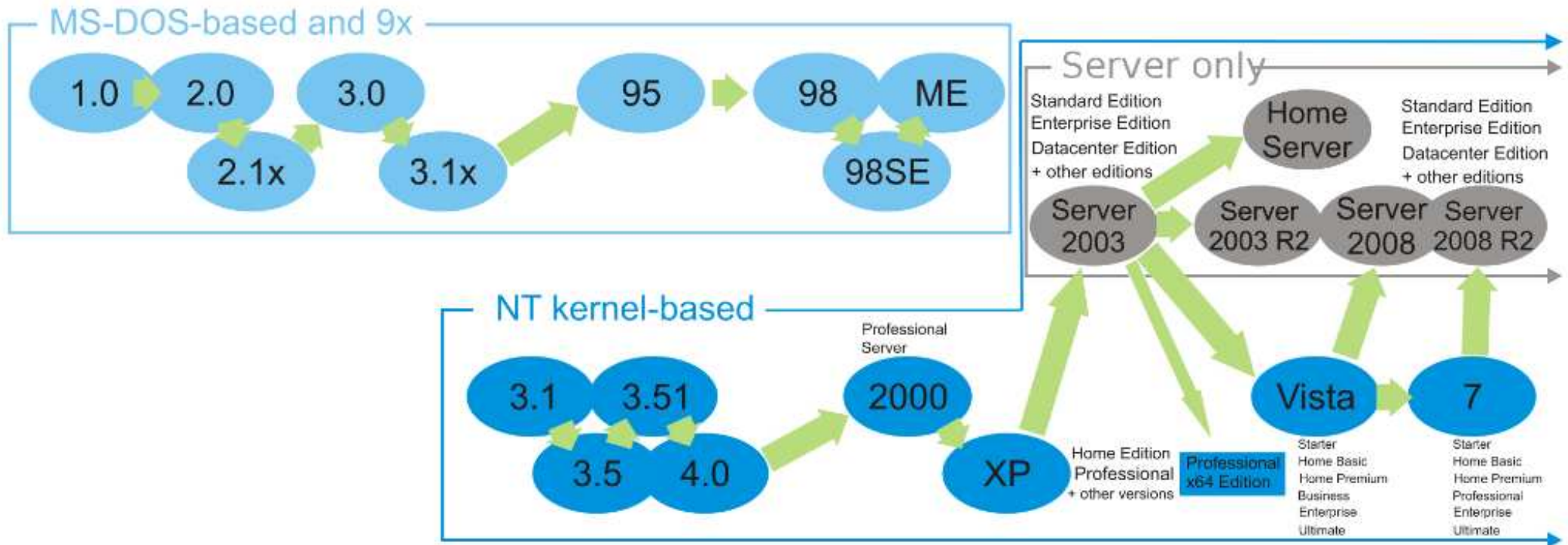
Real-time operating systems

- QNX ("Quick Unix")
- VxWorks
- Windows CE, Windows Embedded
- …
- <u>Free</u>: FreeRTOS, RTLinux…

Operating Systems for PDA/Smartphones/Tablets

- Palm OS

- Blackberry OS

- Symbian

- Windows Mobile, Windows Phone

- iPad/iPhone OS (iOS)

- Google Android

- …

Mobile Operating Systems

a quick visual overview February 2010

	Apple App Store 100 000 + applications	Android Market 20 000 + applications	Zune & Xbox integration App store on the way?	Ovi App store 3000 + applications		Palm store 1400 + applications	Blackberry App World 3000 + applications
	zune **?** XBOX					palm	
	iPhone OS 3.0 Software	ANDROID	Windows Phone 7 Series	SYMBIAN	MeeGo	palm	BlackBerry
Market Share	13%	3%	9%	50%	< 3%	< 3%	20%
Operating System	iPhone OS 3.X	Android 2.X	Windows Phone Series 7	Symbian^3	MeeGo (Maemo) (Moblin)	Palm Web OS 1.X	Blackberry OS 5
	Closed Source	Open Source	Closed Source	Open Source	Open Source	Closed Source	Closed Source
	Apple	Google	Microsoft	Nokia	Nokia, Intel	Palm	RIM
	No Multi-tasking	Multi-tasking	Restricted Multi-tasking	Visual Multi-tasking	Multi-tasking	Multi-tasking	Multi-tasking
	Multi-touch Interface	Multi-touch Interface	Multi-touch Interface	Multi-touch	Multi-touch Interface	Multi-touch Interface	No Multi-touch
	Safari/WebKit Browser	Chrome/WebKit Browser	Internet Explorer/Trident	Mozilla Browser	Mozilla Browser	Chrome/WebKit Browser	WebKit Browser Announced
	Sync/Patch Updates	Over the Air Updates	TBA	Sync/Patch OTA	Over the Air Updates	Over the Air Updates	Sync/Patch OTA

Apple
iPhone, iPad

Hardware
Can be used by any hardware manufacturer

Hardware Partners
Yet to be announced

Nokia
Nokia Mobile Devices

Other Manufacturers
Opensource OS can be used by other hardware manufacturers

Palm
Palm Smartphones

RIM
Blackberry Smartphones

Estimated Total Market Share including previous OS versions based on Q2 2009 data

www.whytheluckymobile.com

Disclaimer: This guide is intended as a quick visual overview. Figures are indicative only.