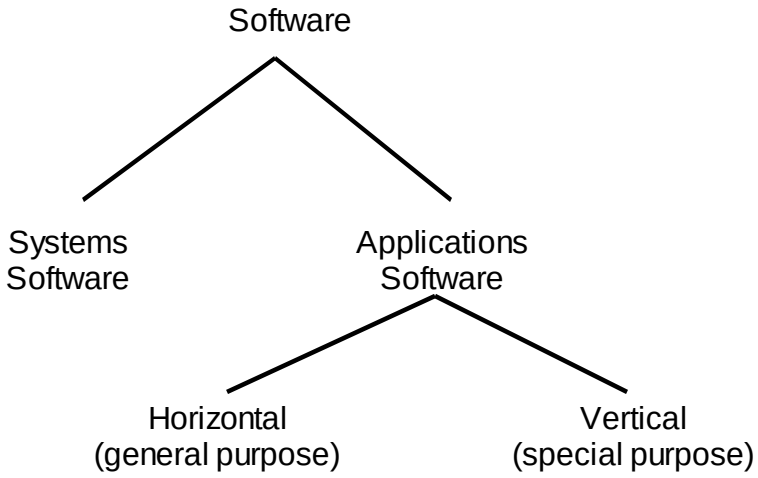
IS 300 — Lecture 4

- How is software categorized?
- What are the major functions of an operating system?
- How do the major operating systems compare?
- What programming language options exist and what are the implications relating to these choices?

How is software categorized?



What are the major functions of an operating system?

Supporting the GUI – Graphical User Interface

Managing system memory

Virtual Memory

- better utilization of RAM
- larger programs run in available RAM
- can hurt performance

Managing processing tasks

Multitasking (multiprogramming)

- improved productivity for user
- better utilization of resources

Multithreading

File Management

Network support

Single- versus multi-user systems

Enforcing access/security rules

Multiprocessing

How do the major operating systems compare?

UNIX

Advantages

- runs on many machines (portable)
- good network support
- powerful for the power user

Disadvantages

- can be cryptic (although good GUI are available)

  awk '/hello/,/goodbye/ {print}' filex

Linux ("Lean – icks")

- open standard
- very inexpensive

MAC OS (OS 9 and OS X)

Advantages

- nice GUI
- good network support
- architecturally sound
- protected memory
- preemptive multitasking

Disadvantages

- market share

Windows 95/98

Advantages

- nice GUI
- market share
- blends old/new technology

Disadvantages

- blends old/new technologies (FAT16/FAT32)
- memory not protected

Windows NT 4.0

Advantages

- nice GUI
- new technology (protected memory, preemptive multitasking)
- good network/security

Disadvantages

- market confusion
- complexity (resource use)

Windows 2000 Professional

Mobile (plug 'n play)

Internet enabled (ala Windows 98)

Resource requirements

- 133 MHz Pentium
- 64 MB RAM (128 MB better)
- 2 GB disk space

Windows 2000 Server

Supports a "Business Internet"

Resource requirements

- 133 MHz Pentium
- 256 MB RAM (more is better)
- 2 GB disk space

- What programming language options exist and what are the implications relating to these choices?

	Low level (machine/assembly)	Procedure-oriented (BASIC, C)	Nonprocedural
CPU dependent	Yes	No	No
Solution orientation	How	How	What
	Steps for computing the average: 1. Sum ages 2. Count number of ages 3. Divide sum by count		Compute average age
Programming skill level	Very high	Moderate to high	Low
Machine efficiency	Excellent	Moderate to good	Moderate to poor