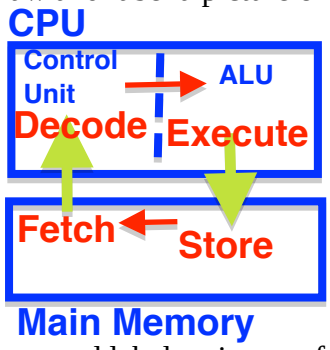
Week 2 Topics – What is an Operating System and Historical Points of Interest

Before class read these questions over. Complete them in class as time permits and finish them in the current week. If you don't understand a question, ask for clarification in class. Questions from quizzes will form the bulk of the midterm and final exams.

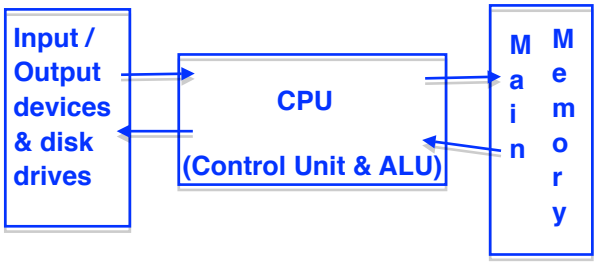
1. Define the function or purpose of a computer? To execute prerecorded instructions on input data producing output data.

2. What are the three major tasks (functions) of an operating system?
   1. To manage system resources
   2. To provide a user accessible (friendly) interface
   3. To provide an environment under which other, more task-specific, programs can run

3. Draw and label a picture of the machine cycle.



4. Draw and label a picture of the Von Neuman machine architecture/model.



5. List the 6 operating system managers that handle the Von Neuman machine, and (briefly) what each does.
   1. Process manager - schedules tasks and controls the flow of data through the computer
   2. Memory manager - De/Allocates memory resources & tracks where program data is stored
   3. Device manager - Manages specific devices and external Input/Output
   4. Filesystem manager - Manages the (long term) data stored on the hard disk/ext. media
   5. User Interface - Provides the use accessible (friendly) means to interact with the machine
   6. Network manager - Provides the ability to meaningfully interact with other computers

6. How many processes can be running on a computer at each instant in time? One per CPU/Core

7. What is the difference between a "running" program and an "active" program? A "running" program is one that's consuming the processor in the moment. An "active" process is waiting on, or has just recently been consuming, the processor resource.

8. What are the two common types of user interface? Command Line and Graphic

9. What are some advantages and disadvantages of each user interface? Graphic is easy to understand but more complex to provide. Command line is light-weight but is less intuitive.

10. What are utilities and what function do they provide? Utilities are programs that provide the user with an interactive means to configure and manage computer resources

11. What is the term we use to describe a fault or flaw in a computer system? A "Bug"

12. Who coined this term? Dr. Grace Hopper (1945)

13. Order the following in chronological order:
    - 7 Network operating systems
    - 2 Spooled systems - punch cards read to tape offline. The tape then read and processed. Output goes to tape.
    - 5 Time sharing systems. Multiple terminals allowed multiple users to use the system at the same time.
    - 3 Real time operating systems IBM MPX on the 1800, DEC RSX11 on the PDP-11. Guaranteed response time
    - 4 Multiprogramming systems. Several jobs loaded at once.
    - 6 Personal computers and their operating systems. Dos, Windows, Mac OS, Linux, ...
    - 1 Stacked Batch machines read jobs from punched cards Output goes to printer or cards.

14. Did the first computer systems ship with an operating system? No Why did that quickly change? Faster processors, more memory, and more complexity required more efficient use of a system and the need for the computer to manage itself.

15. When was the first Unix like system created? Multics in 1964

16. Why did Unix become so popular at Universities - especially UC Berkely? Bell Labs made UNIX "Open" meaning that anyone could modify or change it. There was a lot of collaboration between Berkley and Bell.

17. What is Minix? A smaller UNIX-like OS designed for the PC When does it show up with respect to the other unix like systems? Roughly around the same time other UNIXes were being converted to run on PC-sized hardware.

18. When did MS/PC DOS first happen on the market? 1981

19. Did Microsoft create the first MS DOS? No If not where did it come from? Purchased from Seattle Computer Products (86-DOS or QDOS)

Direct Hint

20. What hardware event caused DOS to need a hierarchal file structure? PCs started shipping with Hard disk drives.

21. What is the last MS Dos Version? 8 When was it released? 2001 What stopped the development of MS DOS? Windows XP no longer used it.

22. When was the first GUI operated computer? 1973 Who developed it? PARC (Xerox) What did it lead to? Apple's Macintosh and LISA platforms

23. When was the Apple Macintosh released? 1984 What else is significant about that year*?
George Orwell's book titled 1984
*(*Check out the Apple Mac release commercial YouTube)*

24. What is significant about OS/X? Unix based and features protected memory
25. Did the first MS Windows release come before or after the Mac? One year after

26. When did MS Windows become mature enough to be usable? Version 3

27. What is significant about Windows XP vs Vista? Security - Vista introduced tighter security measures.
28. Which current technology (2013) in a way duplicates which historical technology mentioned in the notes?
Current: Cloud computing / Software as a Service (SAAS)
Historical: Distributed, multi-user, mainframe Time sharing systems

29. Why was Linux created? "Just for Fun"

30. Match the following four names to their contribution to Computer Science:

1 -	Ken Thompson and Dennis Ritchie	2	Created Linux
2 -	Linus Torvalds	3	Created Minix
3 -	Andrew S. Tanenbaum	4	Created GNU
4 -	Richard Stallman	1	Created UNIX

31. In what order did the four events in the previous question happen? 1 - 4 - 3 - 2

Choose the correct response to each of the multiple-choice questions. Note that there may be more than one correct response to each question.

32. Of the operating systems discussed so far, which one is most likely to be used to operate a bank's computer system?
a. Embedded
b. Distributed
c. Real time
d. Single user

33. Which of these devices might hold an embedded computer system?
a. Race car
b. Parachute
c. Cable TV receiver
d. antique train set