

吴承瑞 110550091

Operating System (Quiz1)

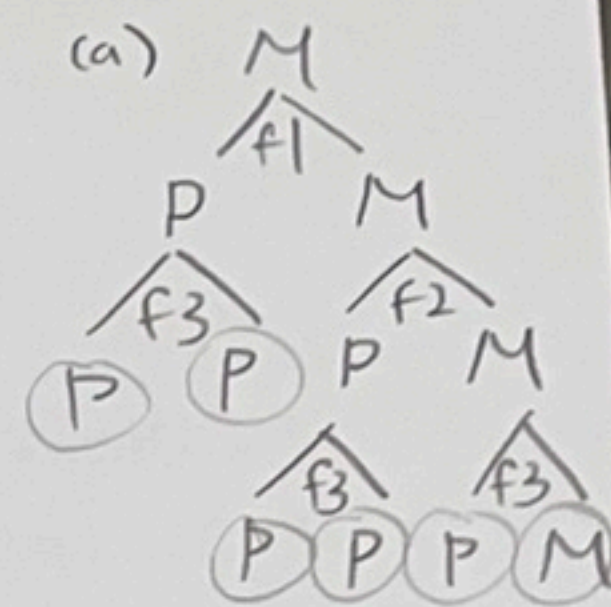
T/F Questions (20%)

- F 1. The operating system is the initial program that the computer runs when it is powered up or rebooted.
- T 2. When a user application requests a service from the operating system (via a system call), it must transition from user to kernel mode to fulfill the request.
- T ③ 3. The interrupt vector is a table of pointers to specific interrupt-handling routines.
- F 4. OS is responsible for initializes all aspects of the system, from CPU registers to device controllers to memory contents after the computer is powered up.
- T ⑤ 5. On UMA systems, accessing RAM takes the same amount of time from any CPU.
- F 6. In a timesharing system, a running process can use CPU as long as it needs and will release CPU when it has to wait for I/O events.
- T 7. Flash memory is slower than DRAM but needs no power to retain its contents.
- F 8. A microkernel is a kernel containing many components that are optimized to reduce memory size.
- F 9. A layered operating system is running more efficiently than a simple structured operating system.
- F 10. Compared to layered approach, simple structured operating systems are more easily to debug.

Multiple Choices (64%)

- BCD 1. A process may transit to the Ready state by which of the following actions?
A) Waiting for an I/O event B) Awaiting its turn on the CPU C) Newly-admitted process
D) Completion of an I/O event
- BD 2. What operations below are performed in kernel mode?
~~A)~~ access to global variables B) execution in an ISR C) access parameters in stack
D) execution in a system call
- A 3. Which of following statements is/are true for a message-passing model?
A) It is easier to implement than a shared memory model for inter-computer communication.
~~B)~~ It is typically faster than the shared memory model because it has no data copying.
~~C)~~ It is a network protocol used for inter-computer communication
~~D)~~ It is a better choice than shared memory model for exchanging large amount of data.
- ABCD 4. Which of the following statements is true?
A) Ordinary pipes require a parent-child relationship between communicating processes.
~~B)~~ Reading and writing to ordinary pipes on UNIX can be performed like ordinary file I/O.
C) A named pipe can be used by several unrelated processes for communication
D) Named pipes require all the communicating processes running on the same machine.
- ACD 5. Which of following statement(s) is/are correct?
A) A process that has terminated, but its parent has not yet called wait(), is called a zombie process.
~~B)~~ When a process becomes zombie, OS will start immediately to clean up all the data related to it.

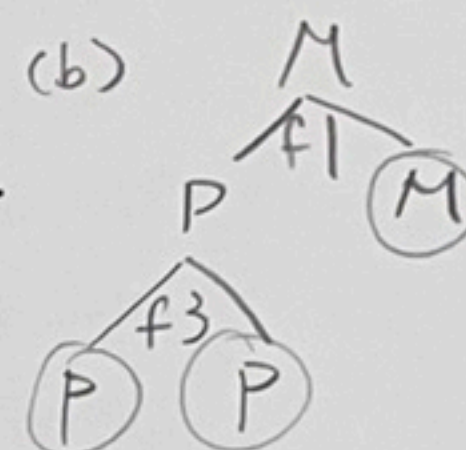
- C) In Linux system, the *init* process is usually assigned as the parent of orphan processes.
D) Calling to `exit()` is a typical way used by a process to terminate itself.



AB

6. Which of the following statement(s) is/are true?

- A) A loopback is a special IP address: 127.0.0.1.
B) When a computer refers to IP address 127.0.0.1, it is referring to itself.
C) The "loopback" allows a client and server on different hosts to communicate using TCP/IP.
D) TCP is more efficient (i.e., faster) than UDP in transmission



B D

7. Which of following statement(s) is/are correct.

- A) In interrupt-based I/O systems, CPU is responsible for moving data between device and I/O buffer.
B) In interrupt-based I/O systems, CPU is responsible for moving data between I/O buffer and main memory
C) A DMA system is efficient for moving large amounts of data between the device and I/O buffer.
D) No matter in interrupt-based I/O systems or in DMA systems, the device controller is always responsible for moving data between the devices that it controls and its I/O buffer.

C

8. Imagine that a host with IP address 150.55.66.77 wishes to download a file from the web server at IP address 202.28.15.123. Select a valid socket pair for a connection between this pair of hosts.

- A) 150.55.66.77:80 and 202.28.15.123:80 B) 150.55.66.77:150 and 202.28.15.123:80
C) 150.55.66.77:2000 and 202.28.15.123:80 D) 150.55.66.77:80 and 202.28.15.123:3500

Short Answer (16%)

1. For the **code sequence** on the right side, where assume all the calls to `fork()` and `execvp()` are successful, please answer the questions below for code sequence (a) and (b), respectively.

- A. How many processes will be created when we run the code? (include the main process)
B. How many processes will print out "message 1"?
C. How many processes will print out "message 2"?
D. How many processes will print out "message 3"?

(a)	(b)
<pre> main() { pid_t pid; pid = fork(); // fork1 printf("message 1\n"); if(pid > 0) { main printf("message 2\n"); fork(); // fork2 } printf("message 3\n"); fork(); // fork3 } </pre>	<pre> main() { pid_t pid; pid = fork(); // fork1 printf("message 1\n"); if(pid > 0) { printf("message 2\n"); execvp("/bin/ls", "ls", NULL); } printf("message 3\n"); fork(); // fork3 } </pre>

Your answer: (a) A: 6 B: 2 C: 1 D: 3 (b) A: 3 B: 2 C: 1 D: 1