First Term Exam of Operating Systems, Nov. 8, 2004

1. Explain the following questions briefly: (30%)

(1) Describe the actions taken by a kernel to context switch between processes

(2) What is the "degree of multiple programming"?

(3) What feature of a process will be described as a "CPU-bound process"?

(4) What is the purpose of system calls?

(5) Please describe the "shared communication model".

(6) Please draw a diagram to show "storage hierarchy".

(7) Describe a mechanism which an operating system can use to protect memory.

(8) Why does a computer architecture support "privileged instructions"?

(9) What are the functions of a loader?

(10) What is "spooling'?

2. Give the full name of the following terminology. (10%)

(1) PCB

(2) VM Virtual Machine

(3) IPC

(4) RPC

(5) SYSGEN(or sysgen)

3. What is the purpose of system programs? List three system programs. (5%)

4. How can a user invoke (call) a service provided by an operating system? Describe all the possible approaches. (5%)

5. Why an operating system designer is advised to separate 'mechanisms" to 'policies"? Please also define "mechanism" and "policy". (10%)

6. What is the "cache coherence" problem? Can you show an example? (10%)

7. What are the features to a "micro kernel" as compared to a monolithic(單一且巨大) kernel? (10%)

8. If the designer of some operating system said that " A process should have the states: new, ready, run, blocked, exit." Can you draw the process state transition diagram for the operating system? (10%)

9. MS-DOS provided no means of concurrent processing. Discuss three major complications that concurrent processing adds to an operating system. (10%)

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