

所別：網路學習科技研究所碩士班 科目：作業系統

- (20%)The following two data structures are often employed in the computer system:
 - Binary tree
 - B-treePlease draw two figures to demonstrate and describe their differences for these two data structures, respectively?
- (20%)Redundant Array of Independent Disks(RAID) becomes more and more popular for data speedup and fault-tolerance, RAID 3 employed disk interleaving with dedicated parity HD and RAID 5 employed disk interleaving with interspersed parity. Please use three disks to show the interleaving way of storing data and parity for these two RAID technologies.
- (20%)The following are the scenarios of processes entering CPU,

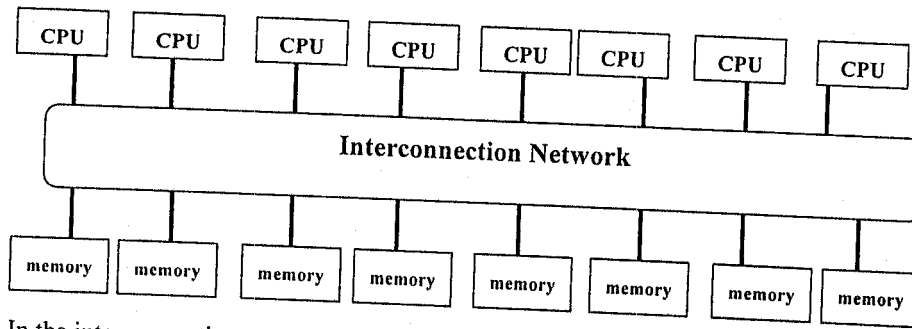
Process ID	Arrival time	The length of Process time
1	0	30
2	1	20
3	2	50
4	3	10

- If the total waiting time= $0+(30-1)+(50-2)+(100-3)=174$, what kind of scheduling strategy is used?
- If Non-preemptive and Shortest Job First are employed, please calculate the total waiting time. Please also describe its advantages and weakness.

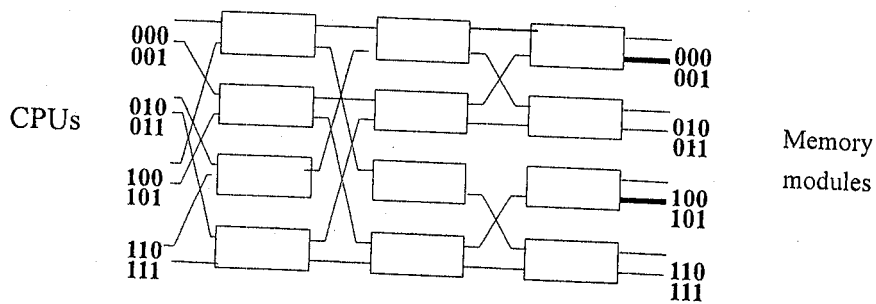
注意：背面有試題

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4. (20%)The following is the interconnection architecture of Multiple CPUs and memories.



In the interconnection network, Multistage Interconnection Network is employed and shown as bellows, please calculate its Hardware Complexity and describe its advantages and limitation.



5 (20%)Please describe the following terminologies in details:

- 甲、Multiple Threads Synchronization (5%)
- 乙、Working Set in the memory paging system (5%)
- 丙、CSMA/CA (5%)
- 丁、Interrupt versus Polling (5%)