

系別：資訊工程學系

科目：計算機組織與系統 (含作業系統、計算機組織)

准帶項目請打「○」否則打「x」	
計算機	字典
✓	×

本試題共 2 頁

本試題雙面印製

- Suppose a cache is 10 times faster than main memory, and suppose that the cache can be used 85% of the time. How much speedup do we gain by using the cache?(15%)
- Given the data below, what is the impact of second-level cache associativity on the miss penalty?(20%)
 - Two-way set associativity increases hit time by 10% of a CPU clock cycle
 - Hit time_{L2} for direct mapped = 10 clock cycles
 - Local miss rate_{L2} for direct mapped = 25%
 - Local miss rate_{L2} for two-way set associative = 20%
 - Miss penalty_{L2} = 50 clock cycle
- Assume a network with a bandwidth of 100 Mbps has a sending overhead of 250 microseconds and a receiving overhead of 280 microseconds. Assume two machines are 100 meters apart and one wants to send a 1000 bytes message to another (include the header), and the message format allows 1000 bytes in a single message. Calculate the total latency to send the message from one machine to another. (Assume the speed of light is 300,000 km/sec)(15%)

4. Consider the following snapshot of a system:

	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

Answer the following questions using the banker's algorithm:

- What's is the content of the matrix *Need*? (5%)
- Is the system in a safe state? Please explain your reason. (8%)
- If a request from process P1 arrives for (0, 4, 2, 0) can the request be granted immediately? (7%)

淡江大學九十學年度碩士班招生考試試題

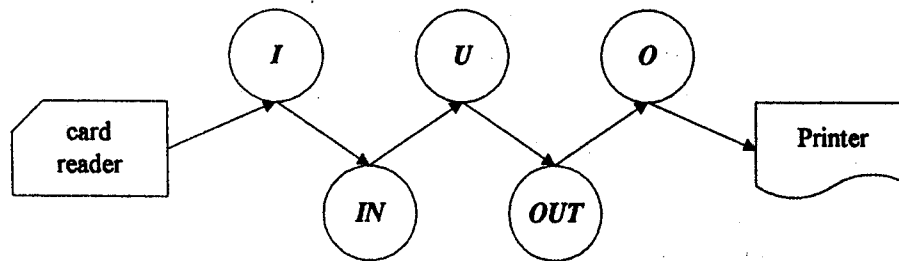
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5. A spooling system consists of an input process I , a user process U , and an output process O , which exchanges data through two bounded-buffer monitors IN and OUT . Write a program to implement such a scheme, assuming that *read* and *write* operations allow you to read from the card reader and write onto the printer. (20%)



6. Please explain what is *working set*. (10%)