

國立暨南國際大學九十二學年度碩士班研究生入學考試試題

第 3 節作業系統 適用:(資管所 335)

(本試題共 1 頁,第 1 頁)

考生注意: 1. 依次序作答, 只要標明題號, 不必抄題。
2. 答案必須寫在答案卷上, 否則不予計分, 並限以藍黑色筆作答。
3. 試題隨卷繳回。(餘詳詳閱試場規則)

- (12%) What is the main difficulty that a programmer must overcome in writing an operating system for a real-time environment?
- (12%) What is the main difficulty that a programmer must overcome in writing an operating system for an embedded system?
- (12%) Explain why spinlocks are not appropriate for uniprocessor systems yet may be suitable for multiprocessor systems.
- (12%) Discuss why disabling interrupts is not appropriate as a general mutual exclusion mechanism for user processes.
- (24%) Describe how do FAT-based file systems (e.g. MS-DOS) and UNIX-based file systems implement random access to files.
- (12%) A system has four processes and five allocatable resources. The current allocation and maximum needs are as follows:

Process	Current Allocation					Maximum Demand				
	A	B	C	D	E	A	B	C	D	E
P1	1	0	2	1	0	1	1	2	1	0
P2	2	0	1	1	1	2	2	2	1	3
P3	1	1	0	1	0	2	1	3	2	1
P4	1	1	1	1	0	1	1	2	1	0

- If the available resource for (A B C D E) is (0 0 1 x 1). Determine whether this system can be in a safe state. If yes, what is the value of x for which this is a safe state? Explain your answer.
 - If the available resource for (A B C D E) is (0 0 1 x x). Redo the above question.
- (16%) A machine has a 32-bit address space and an 8-KB page. The page table is entirely in hardware, with one 32-bit word per entry. When a process starts, the page table is copied to the hardware from memory, at one word every 100 nsec. If each process runs for 100 msec (including the time to load the page table), what fraction of the CPU time is devoted to loading the page tables?