100 學年度上學期博士班資格考作業系統考題

1. (10)What is DMA? How can it work?
2. (6)What are the difference between the system calls and API?
3. (10)Describe the actions taken by a thread library to context switch between user level threads.
4. (10)What is the dispatcher latency? How much kinds of component consist in the dispatcher latency?
5. (14)Consider the following set of processes, with the length of the CPU burst given in milliseconds:

Process	Burst Time	Arrival Time
P1	15	0
P2	12	3
P3	8	7
P4	7	20

   Three kinds of scheduler should be performed in the system. There are FCFS, preemptive SJF, and non-preemptive RR (quantum time is 5 milliseconds). Draw three Gantt charts that illustrate the execution of these processes using these three schedulers. What is the average waiting time of these schedulers?
6. (10)What is monitor? What are the differences between the semaphore and monitor?
7. (10)What is Banker's Algorithm? How can it work?
8. (10)How can the paging hardware with TLB work? What are the inverted page tables? How can these work? (Draw a picture to explain it)
9. (10)How can the segmentation hardware with paging work?
10. (10)What is the procedure for handling the page fault?