國立臺灣科技大學
八十九學年度博士班招生考試試題

系所組別： 電子工程系甲組
科　目： 計算機系統

計算機系統

1. (15%) Define what a thread is. Compare a thread with a process. How do you use multi-threads to implement a client-server system?

2. (20%) Explain the following concepts related to computer system security. For each concept, describe a technique that deals with the issue.
   a). Authentication
   b). Access Control
   c). Certification
   d). Virus

3. (15%) Explain the three sources for the cache inconsistency problem in a multiprocessor system. Describe briefly how Snoopy Bus Protocol tries to solve the problem. Discuss the pros and cons of this cache coherence scheme.

4. (15%) Show the pipelined execution structure of each of the following processor architectures. Explain the differences.
   a). Scalar RISC
   b). Superscalar RISC
   c). Vector

5. (15%) Describe the basic operation of a dynamic programming algorithm. Explain how you solve the 0/1 knapsack problem using the strategy.

6. (20%) Describe the basic operation of a greedy algorithm. Explain why the 0/1 knapsack problem can not be solved by this strategy but the fractional knapsack problem can be solved.

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