

淡江大學八十七學年度碩士班入學考試試題

系別：資訊管理學系

科目：計算機概論

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1. If overflows in a static hash table is handled by linear probing, please describe the most efficient way to determine if the key to search is or is not in the table, and discuss the drawback of linear probing. (10%)
2. The most popular system for representing integers within today's computers is two's complement notation. Please explain the advantages of the two's complement notation. (10%)
3. The following error-correcting codes are designed to detect and correct communication errors. Each character is represented by an 8-bit code.
00000010 represents 'A'
00111101 represents 'B'
11101110 represents 'C'
11010001 represents 'D'
Please decide the following sentence is correct or not. "The set of error-correcting codes can be used to detect up to two errors in bits and correct up to 1 error". If you think it correct, explain why. If you think it is not correct, give the correct sentence and explain why. (20%)
4. In many computer applications, such as data communication, information is encoded in digital form. Please discuss the advantages of processing information in digital form over in analog form. (10%)
5. Please compare the low level language with the high level language. (10%)
6. Given a sequence of 10 instructions, each of them has three steps in its instruction cycle : (1) Fetch, (2) Decode and (3) Execute. It is assumed that Fetch requires 2 nanoseconds, Decode requires 1 nanosecond, and Execute requires 3 nanoseconds, and each of the steps is processed by different unit. Please compare the performance of the execution of the 10 instructions with pipelining to the execution without pipelining in terms of throughput. (20%)
7. Write a C program to recursively input a sequence of characters and print the characters in reverse order when a '.' is reached. The program must contain a recursive function. (20%)