國立交通大學 105 學年度碩士班考試入學試題

科目：管理資訊系統 (5082)
系所班別：資訊管理與財務金融學系　　　　組別：資管碩乙組　　考試日期 105 年 2 月 2 日　第 3 節
【不可使用計算機】＊作答前請先核對試題、答案卷 (試卷) 與准考證之所組別與考科是否相符！！　　　第 1 頁，共 2 頁

1. (A) 目前市面上有觸控式多功能定位導航儀符合 IPX7 防水功能，請解釋何謂 IPX7. (5%)
   (B) 同時，市面上也出現 8K 超高畫質電視，請問解析度為何？它和目前流行的 HDTV 有和不同 (5%)

2. Binary Pattern (*BP*) is a simple yet very efficient operator. Due to its discriminative power and computational simplicity, *BP* operator has become a popular approach in various applications. It can be seen as a unifying approach to the traditionally divergent statistical and structural model analysis. The value of *BP* for a 3×3 integer array can be calculated as following:

$$BP = \sum_{p=1}^{8} s(Z_0 - Z_p) \times 2^p \quad \text{where}$$

$$s(x) = \begin{cases} 1, & \text{if } x \geq 0 \\ 0, & \text{otherwise} \end{cases}$$

Z_1	Z_2	Z_3
Z_8	Z_0	Z_4
Z_7	Z_6	Z_5

Therefore, (A) what is the value of *BP* for the following 3×3 integer array ?(5%)
　　　　　　　(B) what is the largest value of *BP*.(3%)
　　　　　　　(C) how to modify the following 3×3 integer array to make *BP* as small as possible with minimal changes of numbers? Please show your new 3×3 integer array. (5%)

58	99	21
54	54	86
67	12	13

3. Some analysts predict that future e-commerce security relies in the development of effective biometric techniques. Please list at least four biometric methods using physiological characteristics. (10%)

4. Identify the level within a database system (*user, programmer of application software, designer of the DBMS software*) at which each of the following concerns or activities occur:
   a. (2.5%) How should data be stored on a disk to maximize efficiency?
   b. (2.5%) Is there a vacancy on flight 243?
   c. (2.5%) How should a relation be organized in mass storage?
   d. (2.5%) How many times should a user be allowed to mistype a password before the conversation is terminated?
   e. (3%) How can the PROJECT operation be implemented?

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第 2 頁,共 2 頁

5. (20%) Describe how the following information about airlines, flights (for a particular day), and passengers would be represented as two relations (tables) in a relational database:

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Airlines: Clear Sky, Long Hop, and Tree Top
Flights for Clear Sky: CS205, CS37, and CS102
Flights for Long Hop: LH67 and LH89
Flights for Tree Top: TT331 and TT809
Smith has reservations on CS205 (seat 12B), CS37 (seat 18C), and LH 89 (seat 14A).
Baker has reservations on CS37 (seat 18B) and LH89 (seat 14B).
Clark has reservations on LH67 (seat 5A) and TT331 (seat 4B).
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6. The Internet has changed our daily life a lot. Assume you are the CIO of a Biotech startup in Taiwan. Having many research partners in Taiwan, US and India and clients come from all over the world, your company is dedicated to preventing your clients from diseases. Recently your company needs to deploy a new information system project to collect and analyze clients' genetic data to develop a cancer prediction system. Answer the following questions as details as possible.

a. What issues are you most concerned about developing the system (5%)?

b. Why these issues are so important to be concerned (10%)?

c. What kind of system development methods will you adopt to establish this project and what are your justifications (10%)?

7. What is Joint Application Design (3%)? How is it better than traditional information-gathering techniques (3%)? What are its weaknesses (3%)?