

# 國立中央大學八十七學年度碩士班研究生入學試題卷

所別： 資訊管理研究所 <sup>甲乙</sup> 系 <sub>丁</sub> 組 科目： 計算機概論 共 1 頁 第 1 頁

## 一、請參考以下程式 (15%)

```
SELECT DISTINCT S.SNAME
FROM S
WHERE S.S# IN
(SELECT SP.S#
FROM SP
WHERE SP.P# = 'P2')
```

- 請問以上的程式是用什麼語言寫的？
- 該程式語言屬於哪一類型？其特性何在？和 C, COBOL 等語言類有何差別？
- 該語言必須搭配哪一種電腦軟體，才能運作？
- 請舉出一個可能的 data schema，使該程式能有答案。
- 請用白話說明該程式想要解決的問題。

## 二、解釋名詞 (5%)

- E-R model
- Data dictionary
- 3-tier client-server
- Functional dependency
- Data independence

## 三、Please fill in the blanks with the terms in the following rows: (20%, 4% each. Be careful to choose the right answers from the following options.)

- |                              |                   |                 |                    |
|------------------------------|-------------------|-----------------|--------------------|
| 1. context                   | 2. external       | 3. event list   | 4. decision tables |
| 5. controls                  | 6. input          | 7. execution    | 8. event diagram   |
| 9. data flow                 | 10. communication | 11. data stores | 12. Association    |
| 13. functional decomposition | 14. non of all    |                 |                    |

Process modeling may be used in different types of projects. For application development projects, an event-driven data flow diagramming strategy is described as follow:

- Draw a \_\_\_(a)\_\_\_ diagram that shows how the system interfaces to other systems, the business, and external organizations.
- Draw a \_\_\_(b)\_\_\_ diagram that shows the key subsystems and/or functions that comprise the system.
- Create a (or an) \_\_\_(c)\_\_\_ that identifies the external and temporal events to which the system must provide a response.
- Update the decomposition diagram to include processes to handle the events.
- For each event draw an event diagram that shows its interactions with external entities, \_\_\_(d)\_\_\_, and, on occasion, other triggers to other events.
- Combine the event diagrams into one or more system diagrams.
- For each event on the system diagram, either describe it as an elementary process using \_\_\_(e)\_\_\_, or explode it into a primitive data flow diagram that includes elementary process that must be subsequently described by either structured English, decision tables, or both. To reveal greater detail, it is important to maintain consistency between the different types of diagrams; this is called synchronization.

注：背面有試題

勿用

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四、A database is a structure that can house information about multiple types of entities, as well as what? (5%)

五、大部份的 DBMS 可被歸為四種 models (or categories), 請依 DBMS 發展之時間順序, 列出此四種 models. (5%)

六、一個 database 有 "integrity" 是指甚麼? (5%)

七、在 relational database, index 的使用可增進某一特定 row 被 retrieve 的速度, 除此之外, index 尚有何 potential use? (5%)

八、請說明以下每一對觀念之間的關係 (12%)

- a) switch and hub
- b) algorithm and program
- c) searching and sorting
- d) Ethernet and WAN (Wide Area Network)
- e) TCP and IP
- f) domain name system and e-mail system

九、試以 C 程式語言撰寫一個可以從螢幕列印出以下結果的程式: (8%)

```
*
***
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*****
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*****
```

十、同學們很容易瞭解課本上已寫好的程式邏輯, 然而當同學們拿到作業自己動手時, 卻不知該如何下手。解釋這個普遍現象的一個理論是: 有經驗的程式設計師有一堆對某些基本問題的標準答案, 及「組合運用」這些答案的基本策略; 初學程式設計者如果僅靠閱讀程式, 仍無法理解寫程式的「問題解決的過程」, 所以還是不太會寫程式。

根據上述的假說, 我們希望你在回答這一題時, 能自我檢視你的程式設計的問題解決過程。我們假設你具備有寫好程式的經驗, 請回答以下題目: (20%)

a) 請運用結構化程式設計的原則, 使用虛擬碼 (pseudo code) 撰寫以下題目的資料結構及主程式 (main program):

現有兩個人事檔案, 一個是主檔, 名字叫做 personnel 檔, 一個是交易檔, 名字為 new employee 檔。假設這兩個檔案內的記錄均已按員工代碼由小到大依序排列, 請試著寫一程式, 使用 new employee 檔來更新 personnel 檔案的資料。(請自行做一切必要但合理的假設, 以期簡化整個問題求解的過程)

b) 請自評 (先明確指出評比的判準及所持的理由) 你 / 妳所設計的資料結構的恰當或優越性。

c) 請自評 (先明確指出評比的判準及所持的理由) 你 / 妳所設計的程式結構的恰當或優越性。

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