國立中正大學
114學年度碩士班招生考試
試 題

[第3節]

科目名稱	計算機概論
系所組別	資訊管理學系－甲組 乙組
	資訊管理學系醫療資訊管理

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1. In the traditional AI techniques, there are a lot of techniques are proposed, like the rule-based inference, case-based reasoning, data mining techniques (such as association rule, sequential pattern), theory proof, etc. Please list one successful business application adopting one of the above techniques, including why the application adopt that technique (5 分). In the modern AI techniques, there are also a lot of techniques are proposed, like CNN + neural network, RNN + (transformer +) neural network, neural-network-based language model, etc. Please list one successful application adopting one of the above techniques, including why the application adopt that technique (5 分).

2. What are the focus and goal for the four disciplines individually: a. data warehousing, b. data structure, c. data mining, d. big data? (10 分)

3. Individually list the goal and its suitable area of problem of the following diagrams in system analysis: a. use case diagram, b. class diagram, c. Entity-Relationship diagram, d. collaboration diagram, e. state-transition diagram, f. deployment diagram, g. class-responsibility-collaboration diagram. (10 分)

4. For the four data structure, a. stack, b. linked-list, c. priority queue, and d. binary searching tree, please list one application for each of the above structure and list the why the application adopts that data structure rather (i.e., total four applications, each of which mainly adopts one of the data structure). (10 分)

5. Please individually list the philosophy (i.e., concepts) of the algorithm methods of a. greedy method, b. dynamic programming, c. divide and conquer, d. prune and search. (10 分)

6. Please individually show what situation the database mechanism (i.e., system functions) is applied to or needed: a. recovery, b. concurrency control, c. checkpoint, d. roll-back. (10 分)

7. What is operation (processing) in the caller and called during the respective parameter passing way in: a. call-by-value, b. call-by-address, c. call-by-in-out, d. call-by-name, e. call-by reference. (10 分)

8. What is the pros and cons of CISC (complex instruction set computer) and RISC (reduced instruction set computer), and why the trend of instruction sets moves from CISC to RISC? (10 分)

9. Deadlock can be prevented by eliminating any one of the four necessary conditions, which are a. mutual exclusion, b. hold and wait, c. no preemption, and d. circular wait. Please list two applications in any category which did not cause deadlocks, and what conditions in the above four

are eliminated in the two applications (total two applications). (10 分)

10. Assume a power-off notebook turns on its power, and then connects to the internet to access data from the web server www.ccu.edu.tw. Please list the protocols in time order the notebook issue a new request, or utilizes the results of the communication protocols in the following in the first time reaching from the notebook to the web site: a. DNS resolution; b. Three-way handshaking; c. DHCP protocol; d. Arp protocol; e. BGP protocol; f. HTTP protocol. (10 分)