

國立中山大學 107 學年度碩士暨碩士專班招生考試試題

科目名稱：計算機概論【資管系碩士班甲組、乙組】

題號：442001

※本科目依簡章規定「不可以」使用計算機(混合題)

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單選題(每題 5 分)：

- Which of the following about Functional Programming Languages is FALSE?
 - Closure is created by parental functions and is enclosed with the information of parental functions.
 - Higher-order functions are functions that can either take other functions as arguments or return them as results.
 - A "Map" function is usually used to reduce a set of elements/values to a single element by combining elements via a supplied function.
 - Iterations are usually implemented by recursions.
- Which of the following software framework/package is NOT commonly used in processing massive datasets larger than main memory?
 - Apache Spark
 - Apache Hadoop
 - H2O
 - Pandas
- Which of the following is usually considered semi-structured data?
 - JSON
 - Email body text
 - Video file
 - Table data in relational databases
- Suppose that *ary* is an C array and *aryPtr* is an C pointer to the array, which expression refers to the address of element 3?
 - $*(aryPtr + 3)$
 - $aryPtr[3]$
 - $ary(t + 3)$
 - $\&ary[3]$

5. Evaluate the below C statement.

```
const int * const xPtr = &x;
```

Which of the following is TRUE?

- xPtr* is a pointer variable that points to an object of type const
- The data value of the object that *xPtr* points to can be modified
- The memory address saved in *xPtr* cannot be modified
- Statement $xPtr = \&y$ is valid

背面有題

試題隨卷繳回

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6. Which of the following about MapReduce Programming Model is TRUE?
- A. MapReduce is often used in iterative data processing
 - B. MapReduce is a common programming model implemented in Apache Spark
 - C. The concept of MapReduce originated from object-oriented programming
 - D. Combiners in MapReduce may help reduce data transmission among multiple data nodes

7. Consider the following table A and B in a relational database.

A:

<u>id</u>	val
1	A
3	X
5	C

B:

<u>id</u>	val
3	X
5	Y
6	Z

How many rows and columns in the output after running below SQL query?

```
SELECT A.* from A LEFT JOIN B ON A.id = B.id
```

- A. 3 rows and 2 columns
 - B. 3 rows and 4 columns
 - C. 2 rows and 2 columns
 - D. 2 rows and 4 columns
8. It typically takes up _____ bit(s) when an integer number 5 is stored as a character in computer memory.
- A. 8
 - B. 5
 - C. 16
 - D. 1
9. In IPv6, what is the broadcast address?
- A. All ones
 - B. All zeros
 - C. 255.255.255.255
 - D. None
10. What is the function of Time to Live field in the Internet protocol?
- A. Limiting the response time of servers
 - B. Specifying the time of transmission
 - C. Limiting the hop number of a packet
 - D. To improve the privacy of message by restricting its lifetime

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11. Which of the following is trusted for vouching the authenticity of the person or organization using the authentication?
- A. Civil court
 - B. Certificate authority
 - C. Fingerprint advisory board
 - D. Computing center
12. What is reinforcement learning?
- A. A kind of e-learning reinforced by classmates
 - B. An educational technology to improve the learning performance
 - C. An unsupervised machine learning algorithm
 - D. A kind of machine learning method based on maximizing the reward
13. Which of the following algorithms represents an optimal solution in time complexity for sorting a list?
- A. Insertion sort
 - B. Bubble sort
 - C. Selection sort
 - D. Merge sort
14. If the longest path in a binary tree contains four nodes, what is the maximum number of nodes in the entire tree?
- A. 4
 - B. 7
 - C. 15
 - D. 31
15. Which of the following is a technique for controlling access to a critical section?
- A. Spooling
 - B. Time sharing
 - C. Semaphore
 - D. Booting
16. Which of the following equations is correct?
- A. $P(X|Y) = P(Y|X) P(X) / P(Y)$
 - B. $P(X|Y) = P(Y|X) P(X)$
 - C. $P(X|Y) = P(Y|X) / P(Y)$
 - D. $P(X|Y) = P(Y|X) P(X) P(Y)$

背面有題

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問答題(每題 10 分)：

1. Please write a recursive C/C++ function *reverse(n)* that prints reversed positive integer number *n*.
For example,
reverse(9876);
will print
6789
2. Write a recursive binary search function in C/C++.