

系所組別： 資訊管理研究所乙組

考試科目： 計算機概論

考試日期：0223，節次：2

※ 考生請注意：本試題不可使用計算機。 請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Multiple choice questions 單選題 10%

(1) Which of the following C++ expressions does NOT always correctly compute the mathematical average of the integer variables x, y, and z?

- A. `double ((x + y + z) / 3.0)`
- B. `(double (x + y + z)) / 3`
- C. `(x + y + z) / 3.0`
- D. `(x + double (y) + z) / 3`
- E. None of the above

(2) What will the following C++ program happen?

```
0001  #include <stdio.h>
0002  int main() {
0003
0004  }
```

- A. running well without any output
- B. running well but showing "0" on the screen
- C. syntax error at line 0002 when compiling
- D. syntax error at line 0003 when compiling
- E. None of the above

(3) Virtualization is an important facilitator for cloud computing. Which of the following is an appropriate definition for a virtual machine:

- A. software-created segment of a hard drive that contains its own operating system and applications
- B. hybridization of several computers
- C. collection of storage devices, actual servers and network components
- D. feature that enables the creation of testing of programs and interfaces

(4) Some people like being beta testers for software. Which of the following is NOT true about their motivations?

- A. They want their voices to be heard.
- B. They get paid for their time.
- C. They may get the software free or at a discount.
- D. They enjoy being on the cutting edge.

(5) Which of the following sorting algorithms has a running time that is least dependent on the initial ordering of the input?

- A. Insertion sort
- B. Quick sort
- C. Selection sort
- D. Shellsort
- E. Merge sort

(背面仍有題目，請繼續作答)

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2. Short answer questions and discussion

(1) Perform the following conversions 5%

- (a) convert $(153.51)_{10}$ to hexadecimal number
- (b) convert $(0225177)_8$ to hexadecimal number

(2) Compare the Trojan horse, Worm, and botnet viruses. 5%

(3) What is the so-called preemptive multitasking in an operating system? Why is it so important in the system? 5%

(4) What are HTTP, HTML, and URL? What is the relationship among them? 5%

(5) It is well known that *telnet* is a famous Internet application based on TCP/IP. Please give another example of Internet application, however, based on UDP/IP and describe how it works. 5%

(6) It is well known that the transmission of emails is in ASCII mode for SMTP and an ASCII file is immune to virus. Then why is it still possible for the receiver to get virus when one sends an email with an attachment file such as Microsoft Word file? 5%

(7) Gartner, a world-wide information technology research and advisory firm, released its list of the top 10 strategic technologies for 2014 at the Gartner Symposium/ITxpo in Orlando, Florida, USA. These technologies expected to have the most strategic impact in the next three years include Software Defined Anything and Web-Scale IT. 10%

- (a) What is Software Defined Anything (SDx)? Why is it an important strategic technology for organizations?
- (b) What is Web-Scale IT? How can organizations benefit from it?

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3. Please respectively define the paired terms in each question item (3% per term) and then provide an example to differentiate the terms (2% per example). Note: 8% for each question item.

- (1) Cryptography v.s. Steganography
- (2) DES v.s. AES
- (3) Huffman coding v.s. LZ encoding
- (4) KDC v.s. CA

4. Use diagrams and descriptions to explain how Turing machine simulates Simple Language (8%)

5. According to the diagram displayed on the next page and four hypotheses proposed as follows:

- (1) What is/are the purpose(s) of this study? (5%)
- (2) All hypotheses are supported in this study. What will be the implications that can be drawn from this study's results? (5%)

Hypothesis 1 (H1): During expected IT events, individuals engage in an automatic IS use pattern characterized by (a) emotions unrelated to the event, (b) non-computer-related thoughts, and (c) exploitive behaviors.

Hypothesis 2 (H2): Discrepant IT events trigger an adjusting IS use pattern characterized by (a) negative emotions (negative affect and high physiological arousal) related to the system, (b) computer-related thoughts, and (c) adaptive behaviors.

Hypothesis 3 (H3): As time passes since a discrepant IT event occurred, the adjusting use pattern disappears and users return to the automatic use pattern.

Hypothesis 4 (H4): Automatic IS use patterns, through their exploitive behavioral component, result in higher short-term task performance.

Reference: de Guinea, A. O., and Webster, J. (2013). An investigation of information systems use patterns: Technological events as triggers, the effect of time, and consequences for performance. *MIS Quarterly*, 37(4), pp. 1165-1188.

(背面仍有題目，請繼續作答)

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