國立成功大學

113學年度碩士班招生考試試題

編　號：233

系　所：資訊管理研究所

科　目：計算機概論

日　期：0202

節　次：第 2 節

備　註：不可使用計算機

※ 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。

A-1 [40%] Multiple choice questions: (choose only ONE answer for a question; 4% for each question)

(1) A framework is a collection of functions or modules that you can call from your code which dictates the flow of control in your application.

    a.　True

    b.　False

(2) A system analyst depicts the static view of an information system with _____.

    a.　use-case models

    b.　structural models

    c.　behavioral models

    d.　state chart diagrams

(3) _____ means having the ability to call the same method on different objects, which can be interpreted differently by different objects.

    a.　Encapsulation

    b.　Inheritance

    c.　Coupling

    d.　Polymorphism

(4) What are the two types of coupling in object-oriented systems?

    a.　interaction, data

    b.　data, inheritance

    c.　interaction, inheritance

    d.　inheritance, polymorphism

(5) _____ is a specific methodology that maps out when and how to use the various Unified Modeling Language (UML) techniques for object-oriented analysis and design

    a.　Prototyping

    b.　Waterfall

    c.　Scrum

    d.　Unified Process

(6) It is impossible for a super class to invoke functions in its subclasses

    a.　True

    b.　False

(7) A component is a self-contained, encapsulated piece of software that can be plugged into a system to provide a specific set of required functionalities.

    a.　True

    b.　False

(8) Which is true regarding RSA algorithm?

    a.　Encryption and decryption must use the same key

b. Encryption using the public key of a user can be regarded as a digital signature

c. RSA is faster than traditional block ciphers algorithms such as DES

d. RSA could be vulnerable to chosen ciphertext attack

(9) Which is true regarding DES?

a. Double DES is much more secure than single DES

b. DES has a key length of 512 bits

c. A data block with a size less than 64 bits cannot be encrypted using DES

d. DES can be used to implement a stream cipher

(10) Which is false regarding secure hash functions?

a. Secure hash functions play a crucial role in the context of digital currency.

b. It is possible that two different data blocks are mapped to the same hash code by a secure hash function.

c. Hash codes generated by secure hash functions require no additional protection when employed as a message authentication code.

d. Secure hash functions can be used to create a one-way password file

A-2 [5%] Explain the adapter design pattern and give an example of its use.

A-3 [5%] What is cohesion? Is it a desirable quality in software design?

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B-1 (4%) In C++, call-by-reference can achieve the security of call-by-value when

  (a) The value being passed is small.

  (b) The `const` qualifier is used.

  (c) A pointer to the argument is used.

  (d) A large argument is passed in order to improve performance.

B-2 (4%) Recursion is memory-intensive because

  (a) It requires large data values.

  (b) Many copies of the function code are created.

  (c) Recursive functions tend to declare many local variables.

  (d) Previous function calls are still open when the function calls itself and the activation records of these previous calls still occupy space on the call stack.

B-3 (4%) In C++, comparing pointers and performing pointer arithmetic on them is meaningless unless

  (a) They point to elements of the same array.

  (b) They point to arrays of the same type.

  (c) You are trying to compare and perform pointer arithmetic on the values to which they point.

  (d) They point to arrays of equal size.

B-4 (4%) In C++, what does `( *min )( number1, number2, number3 );` mean?

  (a) It is the header for function `min`.

  (b) It is the prototype for function `min`.

  (c) It is a call to the function pointed to by `min`.

  (d) It is a declaration of a pointer to a function called `min`.

B-5 (4%) Which forms of inheritance are *is-a* relationships in C++?

  (a) Only `public`.

  (b) Only `public` and `private`.

  (c) Only `public` and `protected`.

  (d) All forms of inheritance are *is-a* relationships.

B-6 (4%) In C++, the main difference between a pure virtual function and a virtual function is

  (a) The return type.

  (b) The location in the class.

  (c) The member access specifier.

  (d) That a pure virtual function cannot have an implementation.

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B-7 (4%) For a class template in C++, the binary scope resolution operator (::) is needed

  (a) Only in the definitions of the member functions defined outside the class.

  (b) Only if multiple class-template specializations will be created from this class template.

  (c) Both in the prototype and definition of a member function.

  (d) In neither the definition nor prototype of member functions.

B-8 (22%) Write a C++ program to execute selection sort using pass-by-reference. The objective is to input a series of integers using the function readFunc and display the sorted integers in ascending order on the screen. Two requirements are as follows: (1) The function selectionSort that sorts the integers should be implemented.(2) While implementing the program, focus on providing the function declaration for readFunc; implementing the function itself is not required..