

國立勤益科技大學 99 學年度四技日間部轉學生招生考試試題卷

系級：資訊管理系二年級

科目：計算機概論

准考證號碼：_____（考生自填）

考生注意事項：

一、考試時間 80 分鐘。

二、本考科 可 使用電子計算機。
 不可

三、答案請寫在答案卷上，否則不予計分。試題請連同答案卷一併繳回。

一、選擇題：〈40 分, 每題兩分〉

1. _____ is a memory type with capacitors that need to be refreshed periodically. (A) DRAM (B) SRAM (C) ROM (D) all of the above
2. A 32-bit code called _____ represents symbols in all languages. (A) ANSI (B) Unicode (C) EBCDIC (D) ASCII
3. For the binary AND operation, only an input of _____ gives an output of 1. (A) two 0s (B) two 1s (C) one 0 and one 1 (D) any of the above
4. A mask can flip the five leftmost bits of an 8-bit pattern. What is the result when the mask is operated on the following pattern 10100110? (A) 01011001 (B) 10111001 (C) 01011110 (D) 10111111
5. How many symbols can be represented by a bit pattern with 10 bits? (A) 128 (B) 256 (C) 512 (D) 1024
6. In a computer, the _____ subsystem accepts data and programs and sends processing results to the outside world. (A) ALU (B) input/output (C) memory (D) control unit
7. In the _____ graphic method of representing an image in a computer, the image is decomposed into a combination of geometrical figures. (A) bitmap (B) vector (C) quantized (D) binary
8. The _____ is a storage device in which the user can write information only once to the disc. (A) CD-R (B) CD-ROM (C) CD-RW (D) all of the above
9. There are _____ bytes in 16 terabytes. (A) 2^{16} (B) 2^{40} (C) 2^{44} (D) 2^{56}
10. _____ can occur if a process has too many resource restrictions. (A) Starvation (B) Synchronization (C) Paging (D) Deadlock
11. A _____ controller is a high-speed serial interface that transfers data in packets. (A) SCSI (B) FireWire (C) USB (D) both B and C
12. In the _____ method to synchronize the operation of the CPU with the I/O device, a large block of data can be passed from an I/O device to memory directly. (A) programmed I/O (B) interrupt-driven I/O (C) DMA (D) isolated I/O
13. Multiprogramming requires a _____ operating system. (A) batch (B) time-sharing (C) personal (D) distributed
14. The _____ manager is responsible for archiving and backup. (A) memory (B) process (C) device (D)

file

15. We use a _____ search for an unordered list. (A) sequential (B) binary (C) bubble (D) insertion
16. The three steps in executing each instruction of a program on a computer are performed in the specific order _____. (A) fetch, execute, and decode (B) decode, execute, and fetch (C) fetch, decode, and execute (D) decode, fetch, and execute
17. The _____ layer of the TCP/IP protocol suite is responsible for node-to-node delivery of a frame between two adjacent nodes. (A) transport (B) network (C) data-link (D) physical
18. _____ is a protocol for e-mail services. (A) FTP (B) SMTP (C) TELNET (D) HTTP
19. _____ is a program's code in machine language. (A) A procedure (B) An object program (C) A source program (D) none of the above
20. Java is a(n) _____ language. (A) procedural (B) functional (C) declarative (D) object-oriented

二、綜合題：〈60分，每題10分。有任何計算過程務必寫出，否則不予計分〉

1. If integers are stored in two's complement format in a computer, how the computer does the following arithmetic operation? Please use an 8-bit allocation for each integer.
11 - 25
2. Show the Excess_127 (single precision) representation of the decimal number 5.75
3. An imaginary computer has sixteen data registers (R0 to R15), 1024 words in memory, and 16 different instructions (add, subtract, etc.).
 - a. What is the minimum size of an instruction in bits if a typical instruction uses the following format: **INSTRUCTION M R**. (**INSTRUCTION** represents one of the 16 instructions, **M** represents a location of the memory, and **R** is one of the sixteen registers)
 - b. What is the size of the instruction register of this computer?
 - c. What is the size of the program counter of this computer?
4. A multiprogramming operating system uses paging. The available memory is 60 MB divided into 15 frames, each of 4 MB. The first program needs 14 MB. The second program needs 11 MB. The third program needs 26 MB.
 - a. How many frames are used by the first program?
 - b. How many frames are used by the second program?
 - c. How many frames are used by the third program?
 - d. How many frames are unused?
 - e. What is the total memory wasted?
5. Write a recursive algorithm in pseudocode to find the greatest common divisor (*gcd*) of two integers using the following definition. In this definition, the expression "x mod y" means dividing x by y and using the remainder as the result of the operation.

$$\text{gcd}(x, y) = \begin{cases} x & \text{if } y = 0 \\ \text{gcd}(y, x \bmod y) & \text{otherwise} \end{cases}$$

6. Rewrite the algorithm, as depicted in figure 1, in pseudocode for the summation of a list of integers.

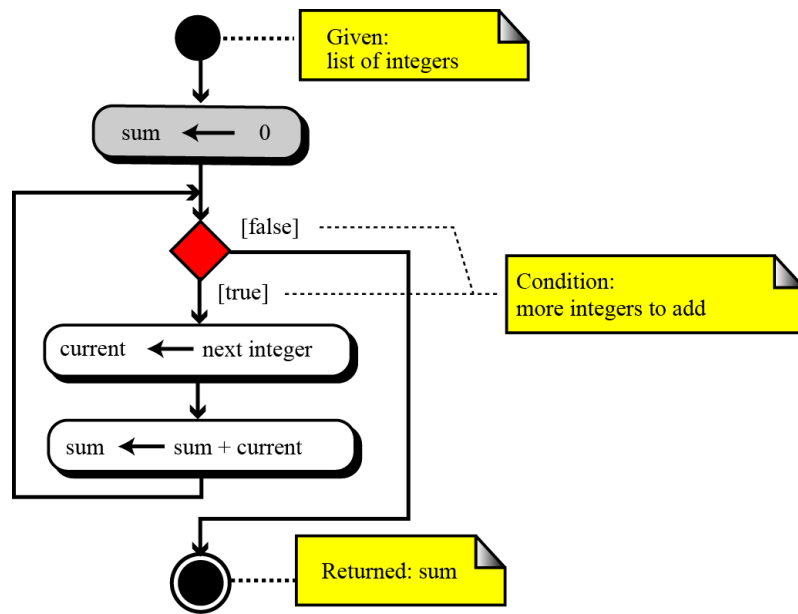


Figure 1. summation of a list of integers