

考試科目	新媒體科技	所別	數位內容碩士學位 (創意傳播組)	考試時間	2月27日(日)第3節
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以下有四題申論題，各為 25 分，總分 100 分。

1. 微軟推出了新的體感硬體叫 Kinect，這是一種 3D 景深攝影機結合語音辨識，能夠將攝影機前的物件直接轉換成 3D 模型，然後透過電腦運算，可以捕捉人體的肢體動作，臉部表情與所說的話語。請以這個硬體的功能，由醫療保健，教育或線上購物這三個領域中，選其中一個領域，以此硬體發展一件互動產品，請描述
 - a. 此產品在該領域想要解決的問題 (10%)
 - b. 此產品的互動方式，以簡圖與分鏡表呈現 (15%)

2. 電影阿凡達在全球締造了亮眼的票房紀錄，並且推動了 3D 軟硬體的產業，請你就 3D 影片與傳統影片的差別，對以下的項目提出你的看法：
 - a. 3D 影片在說故事的能力上與傳統電影的比較 (10%)
 - b. 在運鏡上，怎樣的場景與運鏡比較能凸顯 3D 影片的特色？ (15%)

3. 以三隻小豬的故事為背景，設計一個給 7~10 歲孩童玩的電腦互動遊戲。請用簡圖與文字描述你的設計 (25%)

4. 假設某旅遊公司為了爭取即將開放陸客自由行的龐大商機，委託你幫忙開發一套在行動裝置上的旅遊資訊服務系統以供陸客使用。請以台灣任何一個城鄉為例，從以下四個面向說明此資訊服務系統：
 - a. 資訊內容及架構(10%)
 - b. 服務功能(5%)
 - c. 互動選擇(5%)
 - d. 介面呈現(5%)

考試科目	媒介敘事	所別	數位內容 創意傳播組	考試時間	2月27日(日)第4節
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考試科目：媒介敘事

所別：數位內容碩士學位學程創意傳播組

考試時間：100年2月27日第四節，下午15：20-17：00

說明：以下為兩題申論題，各為50分，總分100分。

第一題

從「媒介即訊息」(The medium is the message)，到「內容是王道」(Content is King)，到「脈絡是王道」(Context is King)。說明著傳播媒介與傳播生態正在發生變革，也影響著我們每個人，特別是數位化的衝擊更是無遠弗界。

請問：

1. 你是否同意上述的論點。為什麼？請詳述。(10%)
2. 請用兩種「媒介」(不限數位或非數位)，說明它與它所承載的「訊息」之間的關係，是否能夠支持你的觀點。並且用兩種訊息的「內容」，及其建構的「脈絡」，做為例證說明：為何內容與脈絡是(或不是)王道。(40%)

第二題

科技和網路不只改變了我們溝通、分享資訊、購物、學習娛樂的方式，也提供品牌更多的機會和管道根據消費者的需求和想法，在對的時候、對的地點，以更吸引人的方式與他們互動。

假定現在有一波廣告活動想要提升20-25歲年輕人關心選舉和投票的意願，你會如何運用科技或網路讓溝通更有效果？請你：

1. 簡述你要跟目標對象說什麼？(10%)
2. 從(1)社群媒體(如facebook)、(2)手機應用程式App、或(3)戶外互動液晶螢幕(或戶外互動裝置)等三種媒體中擇一，發想適當的創意，溝通你的訊息。(40%)

備

註

試題隨卷繳交

考試科目	計算機概論	所別	數位內容碩士學程 資訊技術組	考試時間	2月27日(日)第3節
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本試題有兩大部份各佔 50 分，總分 100 分。

第一部份，有是非題 10 小題（答錯倒扣 1 分），選擇題 5 小題，以及問答題 2 題；

第二部份，有問答題 5 題。

第一部份

1. (20%) True or False (Please write O (for true) or X (for false) as an answer to each of the following statements.)

- (1) The binary search algorithm is a good algorithm for searching an unordered list.
- (2) There is only one shortest path for any source to any destination for a given planar graph.
- (3) "Call by value" will pass the address of a memory cell to the called program.
- (4) Access to the beginning of a RAM takes the same time as access to the end of a RAM.
- (5) Kernel is a long-time resident program that is the core of an operating system.
- (6) Fourier Transform is to convert a frequency domain signal into a time domain signal.
- (7) Router is an ISO-Layer 3 network element.
- (8) Uploading a file is slower than downloading a file when you access network using an ADSL modem.
- (9) Ethernet uses CSMA/CD (Carrier Sense Multiple Access with Collision Detection) protocol.
- (10) A computer can solve a NP complete problem within a time proportional to $O(N \log N)$.

2. (10%) Single Selection Questions

(1) What is the postfix expression for the following infix expression:

$(A+B)*C-D/E?$

- (a) $ABC*+DE-/?$
- (b) $AB+C*DE-/?$
- (c) $ABCDE+*-/?$
- (d) $AB+C*D-E/?$

備註 試題隨卷繳交

請注意：背面還有試題。

考試科目	計算機概論	所別	數位內容碩士學位 資訊技術組	考試時間	2月27日(日)第3節
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(2) Which of the following functions grow the fastest when n becomes large?

- (a) n^{300}
- (b) 3^n
- (c) $n \log n$
- (d) ne^3

(3) Which simple protocol exchanges datagram, without acknowledgements or guaranteed delivery?

- (a) TCP
- (b) ASP
- (c) UDP
- (d) TCP/IP
- (e) None of above

(4) In RGB coloring system, if the magnitude of each color is represented by a hexadecimal (十六進制) number, which of following codes represents color RED?

- (a) 100
- (b) 001
- (c) F00
- (d) 00F
- (e) FF0

(5) Given a recursive function $f(n)=2f(n/3)+4$, where $k \geq 1$, $f(1)=2$, what is the value of $f(3^k)$?

- (a) 44
- (b) 10
- (c) 13
- (d) 9
- (e) None of above

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3. (10%) A Finite-State Machine is defined by a set of possible inputs I , a set of possible outputs O , and a set of finite states S , together with two functions: $\text{output} = f(\text{current_state}, \text{input})$ and $\text{next_state} = g(\text{current_state}, \text{input})$. Suppose

$$\begin{array}{lll}
 I = \{0,1\}, & O = \{\text{'狗'}, \text{'咬'}, \text{'吠'}, \text{'人'}\}, & S = \{x, y, z\}, \\
 f(x, 0) = \text{'狗'}, & f(y, 0) = \text{'咬'}, & f(z, 0) = \text{'人'}, \\
 f(x, 1) = \text{'人'}, & f(y, 1) = \text{'吠'}, & f(z, 1) = \text{'狗'}, \\
 g(x, 0) = y, & g(y, 0) = z, & g(z, 0) = x, \\
 g(x, 1) = y, & g(y, 1) = z, & g(z, 1) = x,
 \end{array}$$

- (a) (6%) draw a state diagram for the machine,
 (b) (2%) find the output if the initial state is x and the input string is 000101,
 (c) (2%) find the output if the initial state is x and the input string is 001110.

4. (10%) Use C, or Shell (including AWK, Sed, and Perl) to write a program that reads a ASCII text file, "infile.txt", and print out even lines (印出偶數行). Each line of infile.txt contains one integer in ASCII format.

第二部份

1. Describe your understanding towards the following computer science related terms: (10%)
- 1) Unicode
 - 2) HTML
 - 3) DRM
 - 4) RSS
 - 5) SNS

考試科目	計算機概論	所別	數位內容碩士學位 資訊技術組	考試時間	2月27日(日)第3節
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2. Briefly explain the following technologies and their influence on current digital content related implementations: (12%)

- 1) Artificial Intelligence
- 2) Cloud Computing
- 3) Semantic Web
- 4) Microblogging

3. Give some examples (metadata initiatives) (3%) and briefly describe your knowledge on metadata used for multimedia content database development (images, video or music). (3%)

4. Briefly explain what is digital publishing? (3%) Elaborate the current situation and solutions of digital publishing. (3%)

5. What is Multimedia Data Mining? (3%) What areas does Multimedia Data Mining cover? (5%) Who does need Multimedia Data Mining? (5%) What is the future of Multimedia Data Mining? (3%)

備

註

試題隨卷繳交

考試科目	程式設計與 資料結構	所別	數位內容碩士學位學程/ 資訊技術組	考試時間	2月27日(日)第四節
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1. (10%)

A logical expression contains three types of operators, namely, in order of precedence, \sim (not), \wedge (and), \vee (or).

Given a logical expression, $A \vee (B \wedge (C \sim D \vee E)) \wedge (F \vee G)$

(1) Please write its prefix form.

(2) Please draw its expression tree.

2. (10%)

Given an n -node binary search tree using array implementation, please give

(1) the smallest possible position, and

(2) the largest possible position

in this array for the smallest element and the largest element of this binary search tree respectively.

3. (10%)

(1) Please show the result of sorting 64, 16, 9, 316, 56, 27, 35, 136, using radix sort with 7 buckets. Please list the result of each pass.

(2) Please show that the time complexity of radix sorting of n keys with r buckets.

4. (10%)

Given an undirected graph shown in Figure 1, to find the shortest path from A to every other vertex, Dijkstra's algorithm proceeds in stages. At each stage, Dijkstra's algorithm selects a vertex, declares it to be known, and updates tentative distances for each vertex. The first stage selects the vertex A .

(1) Please show the vertex selected at stage 4 and stage 5 respectively.

(2) Please show the tentative distance of each vertex after stage 4 and stage 5 respectively.

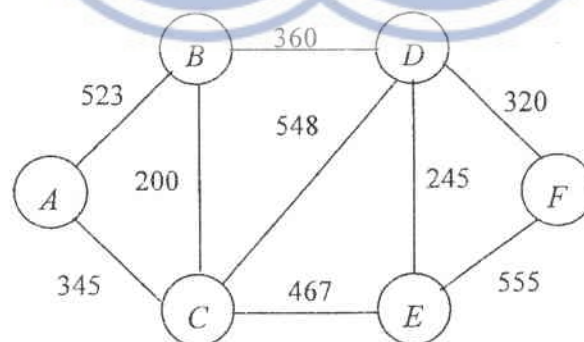


Figure 1.

請注意：背面還有試題。

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5. (10%)

Given the two-dimension array shown in Table 1, after execution of the program segment in C Language shown in Figure 2, please indicate the result of

- (1) flag[2]
- (2) flag[5]
- (3) flag[6]
- (4) flag[8], respectively.

```

void Mystery( void )
{
    int i, count, flag[n];
    for ( i = 0; i < n; i++ ) {
        flag[ i ] = 0;
    }
    count = 0;
    for ( i = 0; i < n; i++ )
        if ( flag[ i ] == 0 )
            Secret( i );
}
void Secret( int v )
{
    int i;
    flag[ v ] = count++;
    for ( i = 0; i < n; i++ )
        if ( data[ v ][ i ] == 1 && flag[ i ] == 0 ) {
            Secret( i );
        }
}

```

Figure 2.

	1	2	3	4	5	6	7	8
1	1	1	1	0	0	0	0	0
2	1	1	0	1	1	0	0	0
3	1	0	1	0	1	1	0	0
4	0	1	0	1	0	0	1	1
5	0	1	1	0	1	0	0	0
6	0	0	1	0	0	1	0	0
7	0	0	0	1	0	0	1	0
8	0	0	0	1	0	0	0	1

Table 1.

6. (10%)

There is a town with n citizens. Only some friendships between pairs of people are known. According to the famous saying that "The friends of my friends are my friends, too" it follows that if A and B are friends and B and C are friends then A and C are friends, too. Please write a procedure in a language of your choice (please specify) to determine the friendships for all pairs of citizens in $O(n^3)$.

7. (10%)

Given a network of n computers, the distance between each pair of computers is known and is shown in Table 2. Please design an $O(n^2 \log n)$ algorithm to find the shortest length of cable that can be used to connect all computers while ensuring that there is a path between any two computers. Please illustrate your algorithm by the example shown in Table 2.

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	1	2	3	4	5	6
1	0	6	3	4	10	8
2	6	0	15	10	2	5
3	3	15	0	6	4	2
4	4	10	6	0	4	3
5	10	2	4	4	0	1
6	8	5	2	3	1	0

Table 2.

8. (30%) True or False (Please use O for true, X for false)

- (1) It may take $O(1)$ time to insert a key into a given position in a linked list.
- (2) It may take $O(n+m)$ time to merge two sorted linked list of size n and m into one sorted linked list.
- (3) The third minimum element of a minimum heap must be one of the two children of the root.
- (4) If the input keys are strings, hashing doesn't work.
- (5) Extendible hashing is a dynamic hashing scheme.
- (6) Queue is more useful than stack for checking whether every right parenthesis correspond to its left counterpart in a statement of a program.
- (7) The recurrence relation of worst case time complexity in terms of comparison operations for quick sort of n records is $T(n)=2T(n/2)+cn$.
- (8) The worst case time complexity of searching a key in a sorted linked list of size n is $O(\log n)$
- (9) The worst time complexity of LR rotation in an AVL tree of size n is $O(1)$
- (10) The best time complexity of finding the maximum in an AVL tree of size n is $O(\log n)$
- (11) If all pairs of vertices are adjacent in an undirected graph, then this graph is connected.
- (12) Given a graph with n vertices, the minimum cost spanning tree of this graph contains exactly $n-1$ edges.
- (13) To represent the friendships of users in Facebook, adjacency matrix representation is more appropriate than adjacency list representation.
- (14) A topological ordering is not possible if all the in-degrees of vertices in the graph are nonzero.
- (15) Currently there are no algorithms in which finding the path from a single source to one vertex is any faster than finding the path from a single source to all vertices.