考 試 科 目	新媒介與科技	系　別	數位內容碩士學位學程 創意傳播組	考 試 時 間	2 月 23 日(六)　第三節

本科有兩題，每題各有兩小題。

第一題

Google 眼鏡（Google Glass）是 Google 最近的實驗性產品，以頭戴式的螢幕與微型電腦結合，透過衛星定位（GPS），擴增實境（Augmented Reality）與語音輸入，讓使用者行動中就可以使用 Google 的各項服務：例如導航，影音電話，拍照，上網等。

試題：

1-1 如同智慧型手機普遍以後，低頭族開始出現，一個新型態的商品都會引起一些好與壞的影響。請你分析當此產品普及後，在社會上可能會引起的影響（20 分）。

1-2 請你分析這產品的特性，並提出一個適合此產品的軟體或行動服務（30 分）。

第二題

社群網絡（social networks）已經成為我們生活的一部分；根據尼爾森公司的調查，2012 年美國人使用社群網絡的時間，佔去了他們使用 PC 時間的 20%、行動裝置時間的 30%。在此同時，美國智慧型手機的銷售量已經超越一般功能型手機（feature phone），連帶著把我們使用社群網絡的習慣延伸到實體世界中。社群（social）、地點（local）和行動運算（mobile），或簡稱為 SoLoMo，正緊密的交織在一起，改變我們使用媒體的習慣和消費行為，也為行銷和廣告帶來新的可能。

試題：

2-1 請你例舉一個善用 SoLoMo 的行銷或廣告案例（國內、國外皆可），並說明社群、地點和行動運算在其中扮演的角色（20 分）。

2-2 假定你的客戶是麥當勞，你會如何善用 SoLoMo 來行銷他們的餐點？請提出一的創新的構想，這個構想可以是一個 app、互動裝置、廣告、促銷活動、遊戲……等任何有助於提升銷售量的創意（30 分）。

試題結束

備　　　　註	試 題 隨 卷 繳 交

考 試 科 目	媒介敘事	系　別	數位內容碩士學位學程 創意傳播組一般生	考 試 時 間	2 月 23 日（六）　第四節

說明：以下共有兩大題，每題 50 分。總分為 100 分。

一、「想像」與「科技」百年來不斷顛覆敘事的表達，試列舉 3 個故事實例，解析它們各自在敘事表現上的創新之處及其如何善用科技。（50 分）

二、請閱讀下面這首詩：

鄭愁予《錯誤》

我打江南走過
那等在季節裡的容顏如蓮花的開落
東風不來，三月的柳絮不飛
你底心如小小的寂寞的城
恰若青石的街道向晚
跫音不響，三月的春帷不揭
你底心是小小的窗扉緊掩

我達達的馬蹄是美麗的錯誤
我不是歸人，是個過客

請設計把這首詩「放到」兩種不同的數位平台（如：BBS、網頁、部落格、網路遊戲、社群媒體、平版電腦、智慧型手機、電子繪本、Kindle 閱讀器等，但不限於此）。請問：你認為需要增減什麼樣的形式與內容，並且配合上所選用這兩種數位平台之特定效能，才能將這首詩的意境完美表達？（50 分）

備　　　　　註	試 題 隨 卷 繳 交

考　試　科　目	計算機概論	所　別	數位內容碩士學位學程 資訊技術組	考　試　時　間	2 月 23 日（六）第三節

[15%] 1. Briefly explain the followings and their influence on current digital content related implementations:（15%）
    1) UX / UI
    2) UGC
    3) Folksonomy
    4) Kindle e-Readers
    5) Image Histogram

[8%] 2. (a) Briefly describe your knowledge on crowdsourcing. (3%) (b) Give some examples of recent network services that utilized crowdsourcing technology to accomplish their tasks. (5%)

[8%] 3. (a) Briefly explain recent trends on mobile device operating systems. (3%) (b) Describe your understanding towards recent mobile device operating systems. (5%)

[6%] 4. (a) Describe your experience on recent mobile device applications? (3%) (b) Give some examples of recent mobile device applications that impressed you the most. (3%)

[13%] 5. (a) Identify and explain the two major types of 2-D computer graphics. Give an advantage and disadvantage of each. (3%) (b) Identify and briefly explain the advantages of digital sound over traditional analog sound recordings.（5%）(c) Discuss the new creative powers the computer introduced to the animation process. Briefly explain at least three of these innovations.（5%）

（請注意：背面還有試題。）

備　　　　　註	試　題　隨　卷　繳　交

考　試　科　目	計算機概論	系　別	數位內容碩士學位學程 資訊技術組	考試時間	2月23日(六)　第三節

網路與多媒體單元 (佔50%)

[10%] 6. (a) We consider sending real-time voice from Host A to Host B over a packet-switched network (VoIP).　Host A converts analog voice to a digital 64kbps bit stream on the fly.　Host A then groups the bits into 48-byte packets.　There is one link between Host A and B; its transmission rate is 1Mbps and its propagation delay is 2 msec.　As soon as Host A gathers a packet, it sends it to Host B.　As soon as Host B receives an entire packet, it converts the packet's bits to an analog signal.

How much time elapses from the time a bit is created (from the original analog signal at Host A) until the bit is decoded (as part of the analog signal at Host B)?　(5%)

(b) According to the Internet-5-layer model, in the application of VoIP in (a), explain which layer is mapping to the above which task(s), respectively.　(5%)

[10%] 7. (a) Considering multimedia applications over Internet, what are the important networking factors/challenges that affect the Quality of Service (performance) of the applications.　Please illustrate at least two factors, and explain.　(5%)

(b) For each factor you illustrate in (a), please express what the user will experience for the application if the factor is not well controlled, respectively.　(5%)

[10%] 8. (a) For a color TV, each pixel is 24 bits, with 8 bits for each primary color (red, green, blue).　Suppose the TV resolution is 1024 X 768 pixels, with frame rate 50 frames/second.　What is the data rate needed to send this TV video?　(5%)

(b) To reduce data quantity, usually the compression technique is used.　As far as you know, please give an example for each of lossless and lossy compression techniques.　Also, in what kind of circumstances/applications, each compression is suitable?　Explain why?　(5%)

[10%] 9. Please write a short essay to comment the differences between WiFi and Bluetooth?

[10%] 10. Give an example or design an application in the field of the "Digital Content and Technologies", then according to the example or application you give, comment the major difference(s) for the following cases:　If the application is involved with (modified if needed)

(i) both "networking" and "multimedia" techniques

(ii) only one technique, either "networking" or "multimedia"

(iii)　　neither "networking' nor "multimedia" techniques

備　　　　　註	試　題　隨　卷　繳　交

| 考 試 科 目 | 程式設計與資料結構 | 系 別 | 數位內容碩士學位學程 資訊技術組 | 考 試 時 間 | 2 月 23 日 內 第 4 節 |

可用中文或英文回答

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

    (1) A compiler is like translating a line at a time while an interpreter is like translating an entire book.

    (2) Byte code is an intermediate language between source code and object code.

    (3) Boolean data type is one that holds multiple independent values.

    (4) The way to change an entity of one data type into another is called typecasting.

    (5) Floating point represents an approximation to real numbers in two parts: a base and an exponent.

    (6) A queue is a last-in first-out list.

    (7) A local variable can only be used inside its function.

    (8) Hash collision occurs when two keys that are assigned by the hash function to the same bucket.

    (9) Constructor is automatically called when the object is explicitly deleted.

    (10) Bubble sort is a simple sorting technique that uses divide-and-conquer algorithm.

2. **(12%) Single Selection**

    (1) Which of the following is a run-time error?

        (a) Forgetting a colon at the end of a statement where one is required.

        (b) Forgetting to divide by 100 when printing a percentage amount.

        (c) Attempting to divide by 0.

        (d) Writing a statement that compiler can't recognize.

    (2) Which one is right-associative operator?

        (a) +

        (b) =

        (c) <

        (d) &

    (3) Which of the following is NOT the property of "binary search tree"?

        (a) The left subtree of a node contains only nodes with keys less than the node's key.

        (b) The right subtree of a node contains only nodes with keys greater than the node's key.

        (c) Both the left and right subtrees must also be binary search trees.

        (d) There must be one duplicate node.

(4) Which of the following CANNOT solve shortest path problem?

    (a) Dijkstra's algorithm

    (b) A* search algorithm

    (c) Fisher–Yates shuffle

    (d) Floyd–Warshall algorithm

(5) Which parameter in the following function is passed by reference?

    (a) void func(int x)

    (b) void func(double x)

    (c) void func(const int x)

    (d) void func(const double& x)

(6) Which of the following is the WORST case order for the Quick Sort?

    (a) $O(n^2)$

    (b) $O(2^n)$

    (c) $O(n)$

    (d) $O(\log n)$

3. (10%) What is deep copy and shallow copy, please explain with examples.

4. (10%) Give the best Big-Oh characterization for each of the following running time estimates (where n is the size of the input problem).

    (a) $\log(n)+1000$

    (b) $n+ (n-1) + (n-2) + \ldots + 3 + 2 + 1$

    (c) $1000n^2 + 16n + 2^n$

    (d) $2^{10} + 3^5$

    (e) $n \log(n) + 15n + 0.002 n^2$

5. (12%) What are the differences between an AVL tree and a B-tree?

6. (12%) Here is an adjacency list representation of a directed graph where there are no weights assigned to the edges.
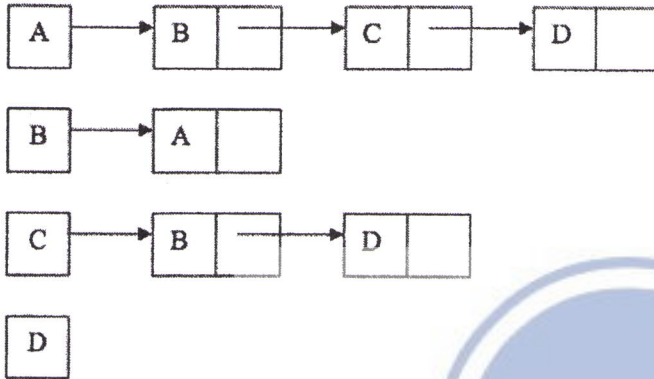
(a) Draw a picture of the directed graph that has the above adjacency list representation.

(b) Draw the adjacency matrix for this graph.

7. (12%) Given the following code, please complete the reverse function to reverse a singly linked list.

```
1  #include <stdio.h>
2  typedef struct Node {
3     char data;
4     struct Node* next;
5  } Node;
6
7  Node* reverse(Node* root) {
8     /* please complete this function */
9  }
10 int main() {
11    Node d = { 'd', 0 };
12    Node c = { 'c', &d };
13    Node b = { 'b', &c };
14    Node a = { 'a', &b };
15    Node* root = &a;
16    root = reverse(root);
17    return 0;
18 }
```

考 試 科 目 程式設計與資料結構　系　別 數位內容碩士學位學程 資訊技術組　考 試 時 間 2 月 23 日 及 第 4 節

8. (12%) Write an algorithm for binary search. What are the conditions under which sequential search of a list is preferred over binary search?

備　註　試 題 隨 卷 繳 交