Introduction to Computer Science: Final Exam

January 8, 2016. 9:30 - 11:00

Name: _____

Student ID: _____

Instructions: This paper consists of fifty multiple choice questions. Each carries 2 marks. You have to answer all of them. For each question, there is only ONE correct answer. Please circle your answer by using either blue or black ball pen. Using dictionary and calculator during examination is allowed.

Question 1

Which of the following electronic technologies is the key for making the personal computer in the 1970s?

(a) Transistor

(b) Integrated circuit

(c) Microprocessor

(d) Mouse and GUI

Question 2

What is the name of the first electronic computer in UK?

(a) Babbage Difference Machine

(b) Turing Machine

(c) Manchester

(d) Colossus

Question 3

Which of the following statement is the best description of the market nature of Google Play?

(a) Google Play is a C2C market.

(b) Google Play is a B2B market.

(c) Google Play is a C2B market.

(d) Google Play is a B2C market.

Question 4

Which of the following statement(s) is(are) true?

(i) All arithmetic operations can be implemented by NAND gates.

(ii) Representing a negative number in 2's-complement formate can let addition/subtraction easily be done by using full adder.

(iii) All logic operations can be implemented by NAND gates.

Answer :

(a) (i) & (ii)

(b) (ii) & (iii)

(c) (i) & (iii)

(d) (i), (ii) and (iii)

Question 5

Convert -148_{10} in **16-bit 2'S complement formate** and then convert this binary bit patterns in hexadecimal form.

(a) $FEEB$.

(b) $FF6B$.

(c) $FF6C$.

(d) $FEEC$.

Question 6

To manage multiple processes running on a single CPU, one common method is called _____. Difference processes are scheduled in different time slots. So that, in each time slot, only one process can use the CPU.

(a) Time-sharing processing

(b) Parallel processing

(c) Distributed processing

(d) None of the above.

Question 7

Which of the following language is the lowest level language?

(a) Machine code.

(b) C language.

(c) Assembly language.

(d) SQL.

Question 8

With reference to ASCII code, what are the bit patterns of the characters '0', '1' and '2'?

(a) 00110010, 00110001, 00110000

(b) 00110000, 00110001, 00110010

(c) 00011110, 00011111, 00100000

(d) 00100000, 00011111, 00011110

Question 9

With reference to ASCII code, what are the bit pattern of the string '0 1'? (Note that there is a space between '0' and '1'?)

(a) 001100000011000000110001

(b) 001100000010000000110001

(c) 001100000011000000110000

(d) 001100000010000000110000

Question 10

What is the contribution of Xerox in the evolution of computer?

(a) Window OS

(b) Mouse and Graphical User Interface

(c) Xerox OS

(d) Multi-touch

Question 11

The truth table of an half adder is shown below.

A	B	C	D
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

The implementation of this half adder can be done by two logic gates, say X and Y. Logic gate X is with A and B as input and C as output, while logic gate Y is with A and B as input and D as output. What should logic gates X and Y are?

(a) X is a OR gate, while Y is an AND gate.

(b) X is a XOR gate, while Y is an AND gate.

(c) X is a AND gate, while Y is an OR gate.

(d) X is a AND gate, while Y is an XOR gate.

Question 12

To execute an instruction, the CPU will first decode the instruction into a sequence of electrical signals controlling the connections amongst the logic gates. Which of the following unit is responsible for generating such signals?

(a) Register

(b) Control unit

(c) ALU

(d) Cache

Question 13

An information system is a set of interrelated components that _____, _____, _____ and distribute information to _____ in an organization.
Which of the following should NOT be put in the blanks ?

(a) collect

(b) process

(c) store

(d) make decision

Question 14

The mission of an information system is to improve the performance of _____ through the use of information technology.

(a) computers in organizations

(b) people in organizations

(c) computer network

(d) people network

Question 15

Which of the following systems is the most important system in an organization? It means that the organization will not be functional if such a system is missing.

(a) Transaction processing systems

(b) Executive information systems

(c) Management information systems

(d) Decision support systems

Question 16

Which of the following statement(s) is(are) true?

(i) Smartphone is able to connect to the Internet via 3G telecom network.

(ii) Smartphone is able to connect to the Internet via WiFi.

(iii) WiFi and 3G are the same technology.

Answer:

(a) (i) only.

(b) (ii) only.

(c) (i) and (ii) only.

(d) (i), (ii) and (iii).

Question 17

Which of the following has the fastest data transmission rate?

(a) Shielded Twisted-Pair

(b) Unshielded Twisted-Pair

(c) Coaxial Cable

(d) Fiber-Optic Cable

Question 18

Which of the following statements about network protocol is NOT correct?

(a) Protocol is a set of rules that ensure communications among computers of different types and from different manufacturers.

(b) Protocol is a set of rules that determine the form of signal being transmitted, encoded, the way that signal error is detected and corrected, etc.

(c) Protocol is the set of rules proposed by IBM only.

(d) Whenever a new technology has been introduced and later became commonly used, it can be filed as a new protocol.

Question 19

DNS refers to domain name server. Which of the following statements about DNS is wrong?

(a) Each DNS consists of a table showing the mapping of the IP addresses of all the domain names in the world.

(b) All the DNSs form a DNS network to facilitate the search of IP address of a domain name.

(c) Even if all the DNSs are down, we are still able to access a homepage.

(d) Even if all the DNSs are down, we are still able to send emails.

Question 20

Which of the following is(are) possible cause(s) for not able to access a homepage?

(i) The DNS your computer is linking to is being attacked by DDoS.

(ii) The remote web server is under DDoS attack.

(iii) Your computer has not yet connected to the Internet.

(iv) You have wrongly typed the URL.

Answer :

(a) (i) & (ii)

(b) (iii) & (iv)

(c) (i), (ii) and (iii)

(d) (i), (ii) and (iv)

(e) (i), (iii) and (iv)

(f) (ii), (iii) and (iv)

(g) (i), (ii), (iii) and (iv)

Question 21

Which of the following domain names is not a valid domain name for an university or a school?

(a) xxx.edu.tw

(b) xxx.edu

(c) xxx.edu.org

(d) xxx.edu.hk

Question 22

Which of the following languages is the earliest markup language for web page design?

(a) Extensible Markup Language (XML)

(b) Hypertext Markup Language (HTML)

(c) Java Server Page (JSP)

(d) Personal Home Page (PHP)

Question 23

Which of the followings is the correct structure of a HTML file?

(a)
```
<meta> ... </meta>
<body>
<html> ... </html>
</body>
```

(b)
```
<body>
<meta> ... </meta>
<html> ... </html>
</body>
```

(c)
```
<html>
<meta> ... </meta>
<body> ... </body>
</html>
```

(d)
```
<html>
<body>
<meta> ... </meta>
...
</body>
</html>
```

Question 24

If one would like to highlight the name of a book (say "Computer Science") in italic, which of the following tag should be used?

(a) `<b>Computer Science</b>`

(b) `<a>Computer Science</a>`

(c) `<p>Computer Science</p>`

(d) `<i>Computer Science</i>`

Question 25

In the source code of a webpage, there is a segment looking like this:

```
<ol>
<li> PhD CSE CUHK
<li> MPhil CSE CUHK
<li> BENG EE PolyU
</ol>
```

Once this webpage is browsed, what will you see?

(a)
```
a. PhD CSE CUHK
b. MPhil CSE CUHK
c. BENG EE PolyU
```

(b)
```
1. PhD CSE CUHK
2. MPhil CSE CUHK
3. BENG EE PolyU
```

(c)
```
o PhD CSE CUHK
o MPhil CSE CUHK
o BENG EE PolyU
```

(d)
```
- PhD CSE CUHK
- MPhil CSE CUHK
- BENG EE PolyU
```

Question 26

In building a webpage, we can use the anchor tag

`<a href="...">...</a>`

to link to a URL. Which of the following files are allowable for this anchor tag to link to?

(a) Image file

(b) Video file

(c) Homepage

(d) All of them.

Question 27

Which of the following codes is correct?

(a) `<B><I>Computer Science</B></I>`

(b) `<B><I>Computer Science<B><I>`

(c) `<B><I>Computer Science</I></B>`

(d) `<B><I>Computer Science<I><B>`

Question 28

In HTML, the tag

`<H1>...</H1>`

is used for _____,

`<P>...</P>`

is used for _____.

(a) drawing a horizontal line with one line thick, formatting the content within in bold face

(b) drawing a horizontal line with one line thick, formatting the content within as a paragraph

(c) formatting the content within as a section heading, formatting the content within in bold face

(d) formatting the content within as a section heading, formatting the content within as a paragraph

Question 29

What is the full name of ARPA?

(a) Advanced Research Projects Agency

(b) Advanced Research Project Agency

(c) Advance Research Projects Agency

(d) Advance Research Project Agency

Question 30

What did Paul Barron propose in the computer network?

(a) Circuit switching

(b) Packet switching

(c) Queuing theory

(d) Terminal communication

Question 31

What killer application dramatically changed the use of APRANET and who developed that killer application?

(a) VOIP.

(b) Telnet.

(c) Email.

(d) FTP.

Question 32

For an Internet connection with transmission rate 56Kbps, what will be the maximum size of a file that can be transmitted in ONE MINUTES?

(a) 56K Bytes

(b) 3360K Bytes

(c) 56K bits

(d) 420K Bytes

Question 33

Which of the following functions are NOT done by a compiler?

(i) Check logical error.

(ii) Correct logical error.

(iii) Check syntax error.

(iv) Correct syntax error.

Answer:

(a) (i) and (ii) only.

(b) (ii) and (iii) only.

(c) (i) and (iii) only.

(d) (i), (ii) and (iv).

Question 34

Below is a program demonstrating how to enter a string.

```
#include<stdio.h>

main() /* Main function. */
{
int YOB; /* Define integer variable YOB. */
int Age; /* Define integer variable Age */
char Name[32]; /* String for Name. */

printf("Please enter your name: ");
scanf("%s", Name);
printf("Enter your year of birth: ");
scanf("%d", &YOB);

Age = 2014 - YOB;
printf("%s, your YoB is %d.\n", Name, YOB);
printf("So, your age is %d.\n", Age);

}
```

If the name entered is Peter and the year of birth 1990, what will you see on the screen?

(a) `Peter, your YoB is 1990.`

   `So, your age is 24.`
   `c:\>`

(b) `Peter, your YoB is 1990.`
   `So, your age is 24.`
   `c:\>`

(c) `Peter, your YoB is 1990.`
   `So, your age is 24.`

   `c:\>`

(d) `Peter, your YoB is 1990.`

   `So, your age is 24.`

   `c:\>`

Question 35

Refer to Program A. What will you see after you have entered "a"?

(a) `You have successfully registered MKT.`
   `You are now the 45 number of student.`

(b) `You have successfully registered MKT.`
   `You are now the 46 number of student.`

(c) `You have successfully registered ACCT.`
   `You are now the 35 number of student.`

(d) `You have successfully registered ACCT.`
   `You are now the 36 number of student.`

Question 36

Refer to Program A. What will you see after you have entered "b"?

(a) `You have successfully registered MKT.`
   `You are now the 45 number of student.`

(b) `You have successfully registered MKT.`
   `You are now the 46 number of student.`

(c) `You have successfully registered ACCT.`
   `You are now the 35 number of student.`

(d) `You have successfully registered ACCT.`
   `You are now the 36 number of student.`

Question 37

Refer to Program A. What will you see after you have entered "c"?

(a) `You have successfully registered MKT.`
   `You are now the 45 number of student.`

(b) `You have successfully registered MKT.`
   `You are now the 46 number of student.`

(c) `You have successfully registered ACCT.`
   `You are now the 35 number of student.`

(d) `You have successfully registered ACCT.`
   `You are now the 36 number of student.`

Question 38

Refer to Program B. If the following command is typed on the console, what will you see on the screen?

`c:\>bubblesort a 3 6 5 4 7 9 11`

(a) `a 3 4 5 6 7 9 11`

   `c:\>`

(b) `a 3 4 5 6 7 9 11`
   `c:\>`

(c) `3 4 5 6 7 9 11`

   `c:\>`

(d) `3 4 5 6 7 9 11`
   `c:\>`

Question 39

Refer to Program B. If the following command is typed on the console, what will you see on the screen?

```
c:\>bubblesort 3 6 5 4 7 9 11
```

(a) 11 9 7 6 5 4 3

```
    c:\>
```

(b) 11 9 7 6 5 4 3
```
    c:\>
```

(c) 11 9 7 6 5 4

```
    c:\>
```

(d) 11 9 7 6 5 4
```
    c:\>
```

Question 40

Refer to Program B. If there are 10 numbers to be sorted, how many "pairwise comparisons" are required for the program to do this sorting.

(a) 100

(b) 81

(c) 50

(d) 45

Question 41

Refer to Program B. What is the maximum number of numbers the program can sort?

(a) 15

(b) 16

(c) 17

(d) Unlimited

Question 42

Refer to Program B. What is the value of "argc" if the following command is typed?

```
c:\>bubblesort 3 6 5 4 7 9 11
```

(a) 5

(b) 6

(c) 7

(d) 8

Question 43

Refer to Program C. If the numbers entered are "4 5 2 1 6" and your option of sorting style is "a", what will you see on the screen?

(a) The sorted numbers are 1 2 4 5 6.
    c:\>

(b) The sorted numbers are 12345.
    c:\>

(c) The sorted numbers are 6 5 4 2 1.
    c:\>

(d) The sorted numbers are 65421.
    c:\>

Question 44

Refer to Program C. If the numbers entered are "4 5 2 1 6" and your option of sorting style is "d", what will you see on the screen?

(a) The sorted numbers are 1 2 4 5 6.
    c:\>

(b) The sorted numbers are 12345.
    c:\>

(c) The sorted numbers are 6 5 4 2 1.
    c:\>

(d) The sorted numbers are 65421.
    c:\>

Question 45

Refer to Program C. If the numbers entered are "4 5 2 1 6" and your option of sorting style is "ascend", what will you see on the screen?

(a) The sorted numbers are 1 2 4 5 6.
    c:\>

(b) The sorted numbers are 12345.
    c:\>

(c) The sorted numbers are 6 5 4 2 1.
    c:\>

(d) The sorted numbers are 65421.
    c:\>

Question 46

Let A is an array of n integers, and the memory space for an integer is 1 byte. While Bubble sort is applied to sort this integer array, at maximum how many number of swap operations and how much memory space are required?

(a) $n(n+1)$ swaps and n bytes memory space

(b) $\frac{n(n+1)}{2}$ swaps and n bytes memory space

(c) $n(n-1)$ swaps and $n+1$ bytes memory space

(d) $\frac{n(n-1)}{2}$ swaps and $n+1$ bytes memory space

Question 47

If the following C program segment is executed, what will you see on the screen?

```
for (i=1,i<5, i++)
{
   printf("*"); printf("/n");
}
```

(a) *****

(b) *
    *
    *
    *
    *

(c) ****

(d) *
    *
    *
    *

Question 48

If the following C program segment is executed, what will you see on the screen?

```
for (i=0,i<5, i++);
  printf("*");
  printf("%d/n", i);
```

(a) *****5

(b) *
    *
    *
    *
    *
    5

(c) *5

(d) 5

Question 49

If the following C program segment is executed, what will you see on the screen?

```
i=0;
While (i<=2)
{ printf("*");
  i = i+1;
}
printf("%d\n", i);
```

(a) **2

(b) **3

(c) ***2

(d) ***3

Question 50

Which is the best way to kill a computer virus?

(a) Format the hard disk.

(b) Using an updated virus cleaner.

(c) Restart the computer.

(d) Take it to a hospital and get injection.

Program A

The filename of the following program is "registration.cpp".

```
#include<stdio.h>

main() /* Main function. */
{
int SNM; /* Current no. of students in Marketing. */
int SNA; /* Current no. of students in Accounting. */
char Choice; /* Define a character variable Choice. */

SNM = 45; SNA = 35;
printf("Which course you would like to register?\n");
printf("a: Marketing, b: Accounting\n");
printf("Please enter your choice (a or b): ");
scanf("%c", &Choice);

if (Choice == 'a')
{
  SNM = SNM + 1;
  printf("You have successfully registered MKT.\n");
  printf("You are now the %d number of student.", SNM);
}
else
{
  SNA = SNA + 1;
  printf("You have successfully registered ACCT.\n");
  printf("You are now the %d number of student.", SNA);
}

}
```

Program B

The filename of the following program is "bubblesort.cpp".

```
#include<stdio.h>
#include<stdlib.h>

int main(int argc, char *argv[])
{
    int A[16]; /* Define integer array. */
    int i,j; /* Define indices. */
    int tmp; /* Define dummy variable for sorting. */
    char Opt = 'c'; int SNUM;

    /* Step 1: Read input from the command line. */
    SNUM = argc - 2;
    Opt = argv[1][0];
    for(i = 0; i<argc-2; i++)
        A[i] = atoi(argv[i+2]);

    /* Step 2: Sorting the numbers */
    if(Opt == 'a')
        for(i=0; i<SNUM-1; i++)
        for(j=0; j<SNUM-i-1; j++)
        {
                if(A[j] > A[j+1])
                {
                tmp = A[j];
                A[j] = A[j+1];
                A[j+1] = tmp;
                }
        }
    else
        for(i=0; i<SNUM-1; i++)
        for(j=0; j<SNUM-i-1; j++)
        {
                if(A[j] < A[j+1])
                {
                tmp = A[j];
                A[j] = A[j+1];
                A[j+1] = tmp;
                }
        }


    /* Step 3: Show the results */
    printf("The sorted numbers are");
    for(i=0; i<SNUM; i++)
        printf(" %d", A[i]);
    printf(".\n");
}
```

Program C

The filename of the following program is "bubblesort02.cpp".

```
#include<stdio.h>
main()
{
    int A[5]; /* Define integer array. */
    int i,j; /* Define index. */
    int tmp; /* Define dummy variable for sorting. */
    char OPT[8];  char Opt = 'c';

    printf("This program demonstrates how to do sorting.\n\n");
    while((Opt != 'a')&&(Opt != 'd'))
    {
    printf("Select a sorting style, 'a' for ascending and 'd' for descending.\n");
    printf("Option : ");
    scanf("%s", OPT);
    Opt = OPT[0];
    }
    printf("\n");
    printf("Please enter five numbers.\n");

    for(i=0; i<5; i++)
    {
    printf("Enter the %d number: ", i+1);
    scanf("%d", &A[i]);
    }
    printf("Numbers entered are %d %d %d %d %d.\n\n", A[0], A[1], A[2], A[3], A[4]);

    if(Opt == 'a')
        {
        for(i=0; i<4; i++)
        for(j=0; j<4-i; j++)
        {
                if(A[j] > A[j+1])
                {
                tmp = A[j];
                A[j] = A[j+1];
                A[j+1] = tmp;
                }
        }
        printf("The sorted numbers are %d %d %d %d %d.", A[0], A[1], A[2], A[3], A[4]);
        }
    else
        {
        for(i=0; i<4; i++)
        for(j=0; j<4-i; j++)
        {
                if(A[j] < A[j+1])
                {
                tmp = A[j];
                A[j] = A[j+1];
                A[j+1] = tmp;
                }
        }
        printf("The sorted numbers are %d %d %d %d %d.", A[0], A[1], A[2], A[3], A[4]);
        }
}
```