

國立臺北科技大學 100 學年度碩士班招生考試

系所組別：3140 土木與防災研究所丁組

第一節 計算機概論 試題

第一頁 共二頁

注意事項：

1. 本試題分 3 部分，共 17 題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

一. 單選題 (共 8 題，每題 5 分，共 40 分)

1. The result of $1.2 + 3.4$ printed by a computer is 4.599999999999996 (rather than 4.6). Why is not the printed result mathematically correct? (5 分)
(A) It is because of binary round-off error.
(B) The printer must be broken.
(C) The computer must be out of date.
(D) Actually the 4.599999999999996 is mathematically correct. The 4.6 is not.
2. Which is a reasonable description about cloud computing? (5 分)
(A) Cloud computing is a supercomputer installed on an airplane flying in the cloud.
(B) The cloud is the steam that was water used to cool down the hot busy CPU chips.
(C) Cloud computing is an algorithm that removes clouds from satellite images.
(D) The computations of a cloud computing job are run by remote computers.

(提醒：單選題答案為 A、B、C，或 D。不得回答數字。)

3. What is the **y** after running the following C/C++ statements? (5 分)

```
int x = 0, y = 0;
x = 3 * y + 4;
y = x - 2;
```

- (A) -1 (B) 0 (C) 1 (D) 2

4. What is the **kk** after running the following C/C++ statements? (5 分)

```
int ii = 0, jj = 0, kk = 0;
for (ii = 0; ii < 5; ii++)
    for (jj = 0; jj < 5; jj++)
        kk = kk + 1;
```

- (A) 1 (B) 4 (C) 16 (D) 25

(再次提醒：單選題答案為 A、B、C，或 D。不得回答數字。)

5. What is the **SUM1** after running the following C/C++ statements? (5 分)

```
int ii, SUM1=0, SUM2=0;
int T[] = { 5,1,2,1,5,6,7,3,2,12 };
for (ii = 0; ii < 10; ii++)
    if ( T[ii] >= 0 && T[ii] <= 5 )
        SUM1 = SUM1 + T[ii];
    else
        SUM2 = SUM2 + T[ii];
```

- (A) 5 (B) 10 (C) 19 (D) 32

6. Refer to the above question. What is the **SUM2**? (5 分)

- (A) 2 (B) 7 (C) 12 (D) 25

7. What is the **C[1]** after running the following C/C++ statements? (5 分)

```
int ii = 0;
int T[] = { 5,1,2,1,5,6,7,3,2,12 };
int C[] = { 0,0,0,0,0,0,0,0,0,0 };
for (ii = 0; ii < 10; ii++)
{
    if ( T[ii] >= 0 && T[ii] <= 9 )
    {
        C[ T[ii] ]++;
    }
}
```

- (A) 2 (B) 5 (C) 45 (D) 55

8. What is the **T[1]** after running all statements in the following program? (5 分)

```
void bubble(int N, int ARR[])
{
    int ii, jj, kk;
    for( ii=0; ii< N; ii++)
        for( jj=ii+1; jj< N; jj++)
            if ( ARR[ii] > ARR[jj] )
            {
                kk = ARR[ii];
                ARR[ii] = ARR[jj];
                ARR[jj] = kk;
            }
}

void main(void) {
    int M = 5;
    int T[] = { 3, 5, 4, 2, 1 };
    bubble( M, T );
}
```

- (A) 1 (B) 2 (C) 47 (D) 57

注意：背面尚有試題

二. 填空题 (共 8 題, 每題 5 分, 共 40 分)

A program reads data from a text file named **CO2PPM.dat** as shown in Figure 1. Each row contains a string followed by three numbers, which represent the name of a month and the CO₂ concentrations measured by three stations in the month. Then this program calculates the average of three numbers of each month. It finally prints the months with highest CO₂ concentrations. Figure 2 shows the output of this program. Complete the program by filling out blanks.

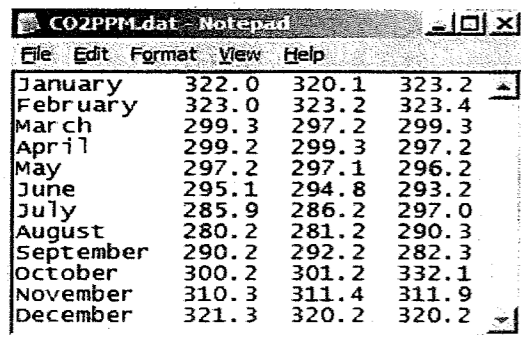


Figure 1: CO2PPM.dat

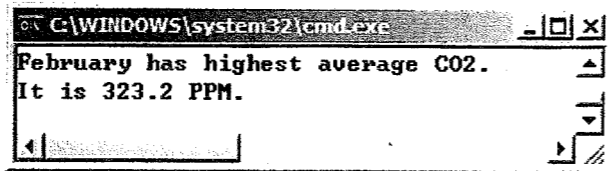


Figure 2: Output of this program

```
int main(void)
{
    int i, j, MONTHMAX;
    double CO2DATA[12][3], AVERAGE[12], CO2MAX;
    string MONTH[12];
    // Hint: Read data from file
    ifstream CO2FILE("CO2PPM.dat");
    for (i=0; i<12; i++)
    {
        (1) (5分) >> MONTH[i];
        for (j=0; j< (2) (5分) ; j++)
            CO2FILE >> CO2DATA[(3) (5分)][(4) (5分)];
    }
    CO2FILE.close();
    // Hint: Find average and max.
    for (i=0; i<12; i++)
    {
        // Hint: Find average
        double SUM = (5) (5分);
        for (j=0; j<3; j++)
            SUM = SUM + (6) (5分);
        AVERAGE[i] = SUM / 3;
        // Hint: Find max
        if (i == 0 || CO2MAX < AVERAGE[i] )
        {
            CO2MAX = (7) (5分);
            MONTHMAX = (8) (5分);
        }
    }
    cout << MONTH[MONTHMAX] << " has highest average CO2." << endl;
    cout << "It is " << CO2MAX << " PPM." << endl;
    return 0;
}
```

三. 程式撰寫 (共 1 題, 共 20 分)

$$\sum_{M=1}^{100} \left(\sum_{N=1}^M \sqrt{\frac{M}{N}} \right)$$

Write a program which calculates and outputs the result.

You can write your program in C, C++, FORTRAN, MATLAB, Java, Python, BASIC, Tcl, or Pascal.

----- 此線之後無試題 -----

英文單字之參考中譯:

mathematically (adv.) 數學上地; 理論上地	rather than 而不是
CO ₂ (carbon dioxide) 二氧化碳	round-off (a.) 數字捨位的
remove (v.) 移除	algorithm (n.) 演算法
remote (a.) 遙遠的; 遠端的	satellite (n.) 衛星
string (n.) 字串	computation (n.) 運算
	character (n.) 字元符號
	represent (v.) 代表
	concentration (n.) 濃度