

程式設計 作業7			
系級	航空與太空工程學系		
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1. 寫一程式，使用 time.h 中的 clock 功能，來製作出一個碼表。碼表功能如下：

程式開始後，等待使用者按下任一按鍵開始計時：
(10%)

```
D:\Users\IEC5892M\Desktop>
按下任一按鍵開始計時
```

開始計時後，能顯示已過去的時間：
(10%)

```
D:\Users\IEC5892M\Desktop>
按下任一按鍵開始計時
=====空白鍵：分圈      esc: 暫停=====
00:00:07.60
```

分圈：
按下空白建後，顯示第n圈花費了多少秒：(10%)

```
D:\Users\IEC5892M\Desktop>
按下任一按鍵開始計時
=====空白鍵：分圈      esc: 暫停=====
||第01圈|| 00:00:27.64
||第02圈|| 00:00:30.27
||第03圈|| 00:00:32.12
00:00:33.76
```

停止計時：
按下 esc 鍵後，結
束計時。(5%)

```
D:\Users\IEC5892M\Desktop...  —  □  ×
按下任一按鍵開始計時
====空白鍵：分圈      esc：暫停====
||第01圈|| 00:00:27.64
||第02圈|| 00:00:30.27
||第03圈|| 00:00:32.12
      00:00:47.60
請按任意鍵繼續 . . .
```

.cpp

```
1 #include <stdio.h>
2 #include <time.h>
3 #include <conio.h>
4 #include <stdlib.h>
5 int main()
6 {
7     printf("按下任一按鍵開始計時\n====空白鍵：分圈      esc：暫停====\n");
8     bool key = 1;
9     char s;
10    int hour = 0, min = 0, round = 0;
11    clock_t start_t, end_t;
12    double total_t, second;
13    start_t = clock();
14    while (key) {
15        end_t = clock();
16        total_t = ((double)(end_t - start_t)) / (double)(CLOCKS_PER_SEC);
17        hour = total_t / 3600;
18        min = (total_t - hour * 3600) / 60;
19        second = (total_t - hour * 3600 - min * 60);
20        printf("\t%02d:%02d:%05.2lf\n", hour, min, second);
21        if (!_kbhit()) {
22            s = _getch();
23            if (s == 32) {
24                round++;
25                printf("\t||第%02d圈|| \t%02d:%02d:%05.2lf\n", round, hour, min, second);
26            }
27            if (s == 27) {
28                key = 0;
29                printf("\n");
30            }
31        }
32    }
33    system("pause");
34    return 0;
35 }
```

執行結果

```
C:\Users\eamon\OneDrive\桌面\NCKU\程式作業\HW7\HW7_Q1\Debug\HW
按下任一按鍵開始計時
====空白鍵：分圈      esc：暫停====
||第01圈|| 00:00:02.67
||第02圈|| 00:01:05.01
||第03圈|| 00:01:07.15
||第04圈|| 00:01:07.34
||第05圈|| 00:01:07.51
||第06圈|| 00:01:07.70
      00:01:08.10
Press any key to continue . . .
```

2. 寫一程式，求一元二次方程式 $ax^2 + bx + c$ 的兩個根，請考慮到所有情況。(25%)

$$\lambda_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

.cpp

```
1 #include <stdio.h>
2 #include <stdlib.h>
3 #include <math.h>
4 int main()
5 {
6     float a = 0, b = 0, c = 0, reg;
7     printf("please input a, b, c according to the following form:\nax^2 + bx + c\n");
8     scanf_s("%f%f%f", &a, &b, &c);
9     reg = b * b - 4 * a * c;
10    if (reg > 0) {
11        printf("We have two real roots: %f and %f", (-b + sqrt(reg)) / (2 * a), (-b - sqrt(reg)) / (2 * a));
12    }
13    else if (reg == 0) {
14        printf("We have same real roots: %f", -b / (2 * a));
15    }
16    }
17    else {
18        printf("We have imaginary roots: %f + i%f and %f - i%f", -b / (2 * a), sqrt(-reg) / (2 * a), -b / (2 * a), sqrt(-reg) / (2 * a));
19    }
20    printf("\n");
21    system("pause");
22    return 0;
23 }
```

執行結果

C:\Users\eamon\OneDrive\桌面\NCKU\程式作業\HW7\HW7_Q2\Debug\HW7_Q2.exe

```
please input a, b, c according to the following form:
ax^2 + bx + c
1 2 1.5
We have imaginary roots: -1.000000 + i0.707107 and -1.000000 - i0.707107
Press any key to continue . . .
```

C:\Users\eamon\OneDrive\桌面\NCKU\程式作業\HW7\HW7_Q2\Debug\HW7_Q2.exe

```
please input a, b, c according to the following form:
ax^2 + bx + c
1 5 6
We have two real roots: -2.000000 and -3.000000
Press any key to continue . . .
```

```
C:\Users\eason\OneDrive\桌面\NCKU\程式作業\HW7\HW7_Q2\Debug\HW7_Q2.6
please input a, b,c according to the following form:
ax^2 + bx + c
1 6 9
We have same real roots: -3.000000
Press any key to continue . . .
```

3. 寫一程式，使用亂數方法產生-5、-1、3、...、95 中的任一數。
(20%)


.cpp	
<pre>1 #include <stdio.h> 2 #include <time.h> 3 #include <stdlib.h> 4 int main() 5 { 6 srand(time(NULL)); 7 int n = -9, d; 8 d = rand() % 20 + 1; 9 printf("%d\n", n + 4 * d); 10 system("pause"); 11 return 0; 12 } 13</pre>	
執行結果	
<pre>C:\Users\eason\OneDrive\桌面\NCKU\程式作業\HW7\HW7_Q3\Debug\HW 11 Press any key to continue . . .</pre>	

4. 寫一程式，輸入一句英文，然後將每個字(word) 的第一個字母改
成大寫輸出。(20%)

.cpp

```
1 #include <stdio.h>
2 #include <string.h>
3 #include <ctype.h>
4 #include <stdlib.h>
5 int main()
6 {
7     char s[1000];
8     bool key = 1;
9     gets_s(s);
10    for (int i = 0; i < strlen(s); i++) {
11        if (isalpha(s[i]) && key) {
12            s[i] = toupper(s[i]);
13            key = 0;
14        }
15        if (s[i] == 32) {
16            key = 1;
17        }
18    }
19    puts(s);
20    system("pause");
21    return 0;
22 }
23
```

執行結果

 C:\Users\eason\OneDrive\桌面\NCKU\程式作業\HW7\HW7_Q4\Debug\HW7_Q4.exe

```
i wanna play my pc inteade of doing these stuffs.
I Wanna Play My Pc Intead Of Doing These Stuffs.
Press any key to continue . . .
```