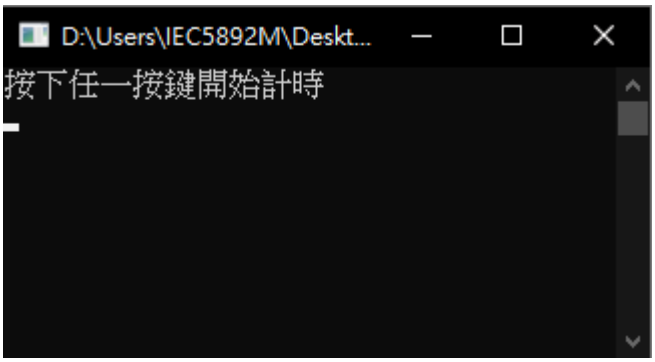
程式設計 作業7			
系級	航空與太空工程學系		
學號	F44134057	姓名	邱翊碩

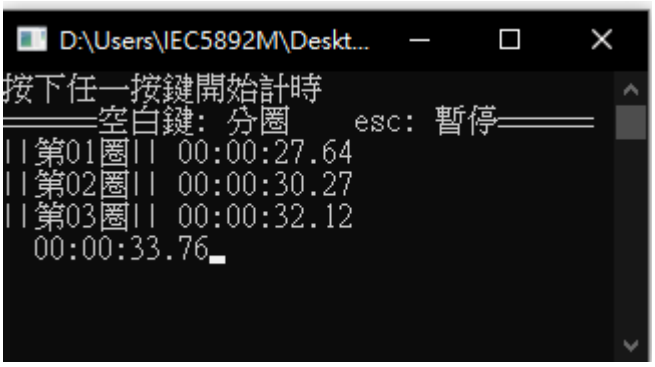
1. 寫一程式，使用 time.h 中的 clock 功能，來製作出一個碼表。碼表功能如下:

程式開始後，等待使用者按下任一按鍵開始計時: (10%)



開始計時後，能顯示已過去的時間: (10%)

分圈:
按下空白建後，顯示第 n 圈花費了多少秒: (10%)

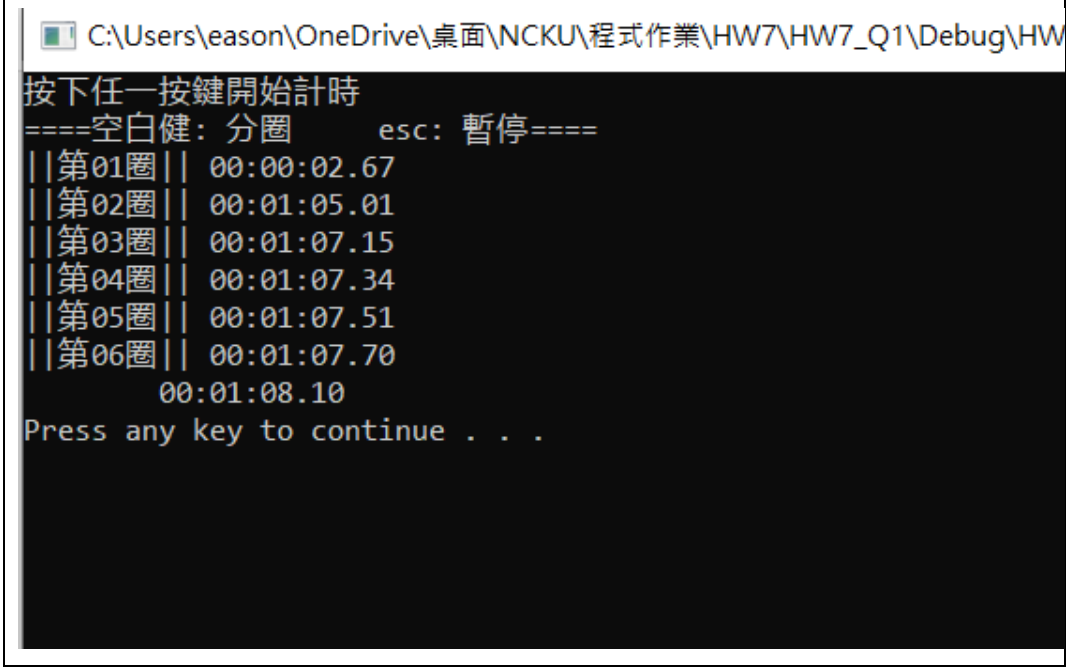


停止計時:
按下 esc 鍵後，結束計時。(5%)

.cpp

```cpp
#include <stdio.h>
#include <time.h>
#include <conio.h>
#include <stdlib.h>
int main()
{
    printf("按下任一按鍵開始計時\n====空白鍵: 分圈    esc: 暫停====\n");
    bool key = 1;
    char s;
    int hour= 0, min = 0, round = 0;
    clock_t start_t, end_t;
    double total_t, second;
    start_t = clock();
    while (key) {
        end_t = clock();
        total_t = ((double)(end_t - start_t)) / (double)(CLOCKS_PER_SEC);
        hour = total_t / 3600;
        min = (total_t - hour * 3600)/60;
        second = (total_t - hour * 3600 - min * 60);
        printf("\t%02d:%02d:%05.2lf\r", hour, min, second);
        if (_kbhit()) {
            s = _getch();
            if (s == 32) {
                round++;
                printf("||第%02d圈|| %02d:%02d:%05.2lf\n", round, hour, min, second);
            }
            if (s == 27) {
                key = 0;
                printf("\n");
            }
        }
    }
    system("pause");
    return 0;
}
```

執行結果



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

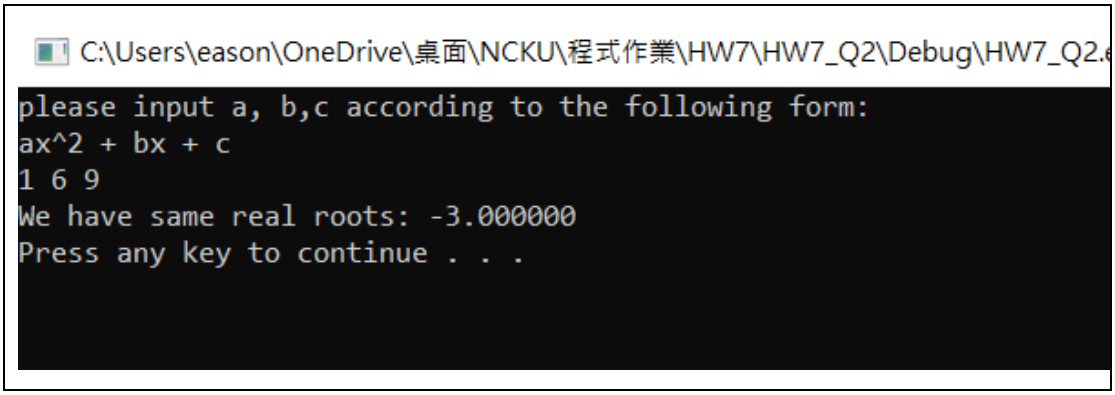
```cpp
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
    float a = 0, b = 0, c = 0, reg;
    printf("please input a, b,c according to the following form:\nax^2 + bx + c\n");
    scanf_s("%f%f%f", &a, &b,&c);
    reg = b * b - 4 * a*c;
    if (reg > 0) {
        printf("We have two real roots: %f and %f", (-b + sqrt(reg)) / (2 * a), (-b - sqrt(reg)) / (2 * a));
    }
    else if (reg == 0) {
        printf("We have same real roots: %f", -b / (2 * a));

    }
    else {
        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) );
    }
    printf("\n");
    system("pause");
    return 0;
}
```

執行結果

```
C:\Users\eason\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\eason\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 . . .
```



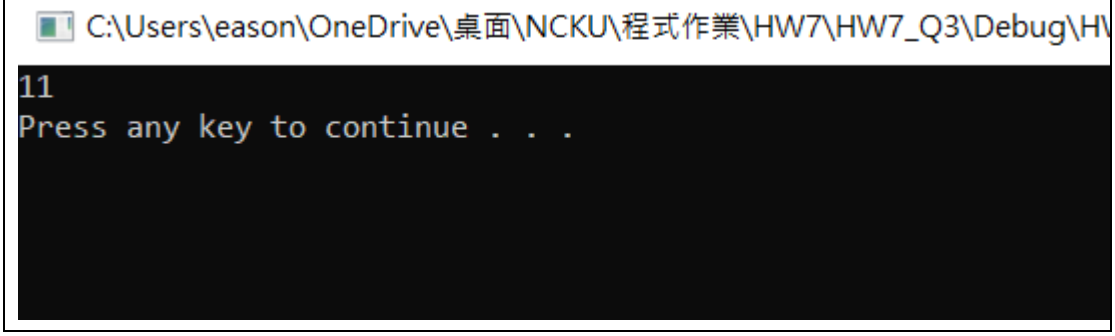
3. 寫一程式，使用亂數方法產生-5、-1、3、…、95 中的任一數。(20%)

.cpp

```cpp
#include <stdio.h>
#include <time.h>
#include <stdlib.h>
int main()
{
    srand(time(NULL));
    int n = -9, d;
    d = rand() % 20 + 1;
    printf("%d\n", n + 4 * d);
    system("pause");
    return 0;
}

```

執行結果



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

```cpp
#include <stdio.h>
#include <string.h>
#include <ctype.h>
#include <stdlib.h>
int main()
{
    char s[1000];
    bool key = 1;
    gets_s(s);
    for (int i = 0; i < strlen(s); i++) {
        if (isalpha(s[i]) && key) {
            s[i] = toupper(s[i]);
            key = 0;
        }
        if (s[i] == 32) {
            key = 1;
        }
    }
    puts(s);
    system("pause");
    return 0;
}

```

執行結果