

C Programming and Labs

2020 Fall; week 8

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Textbook: P. Deitel and H. Deitel, C HOW TO PROGRAM
8/E, PEARSON, 2016

期中 模擬考 (Exercise)


- ▶ 不計分，但是是期中考題庫
- ▶ 13:00~15:00: 做完的同學，可舉手模擬驗收繳交
不可交談，不可看VisualStudio(&題目)以外的東西

有作弊嫌疑者，直接請出考場，無異議


- ▶ 15:00~16:00: 問題討論

Exercise 1


- ▶ Enter a number , and you can get opposite number

 Microsoft Visual Studio 偵錯主控台

```
plz enter number:43210123  
The opposite number is :32101234
```

 Microsoft Visual Studio 偵錯主控台

```
plz enter number:1234567890  
The opposite number is :987654321
```

 選取 Microsoft Visual Studio 偵錯主控台

```
plz enter number:-345  
The opposite number is :-543
```



Exercise 2

- ▶ Enter 3 scores and calculate the average.

If pass, the grade will be A.

If fail, the grade will be B.

Please print the 3 scores 、 average and grade.

```
Plz enter ur Score : 55
57
61

Score_1 Score_2 Score_3 Average Grade
   55      57      61    57.00      B
```



Exercise 3

- ▶ (a) Write a function that can print a row of space and *.
e.g., `void Space(.....)` 、 `void List(.....)`
- ▶ (b) Please use the functions of (a), and print a diamond.

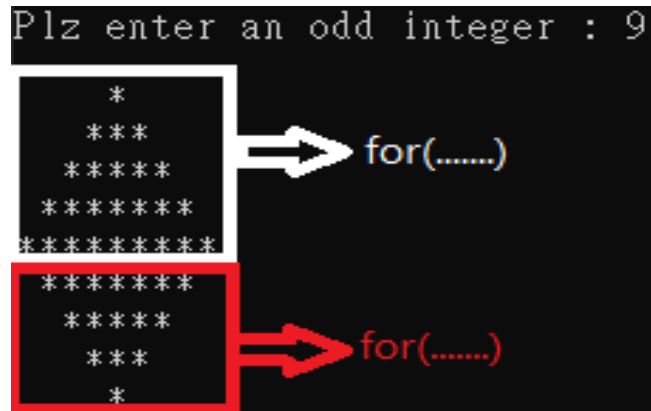
```
Plz enter an odd integer : 9

      *
     ***
    *****
   *********
  ***********
 *****
  *****
   *****
    ***
     *
```

[Hint]

```
Plz enter an odd integer : 9

      *
     ***
    *****
   *********
  ***********
 *****
  *****
   *****
    ***
     *
```

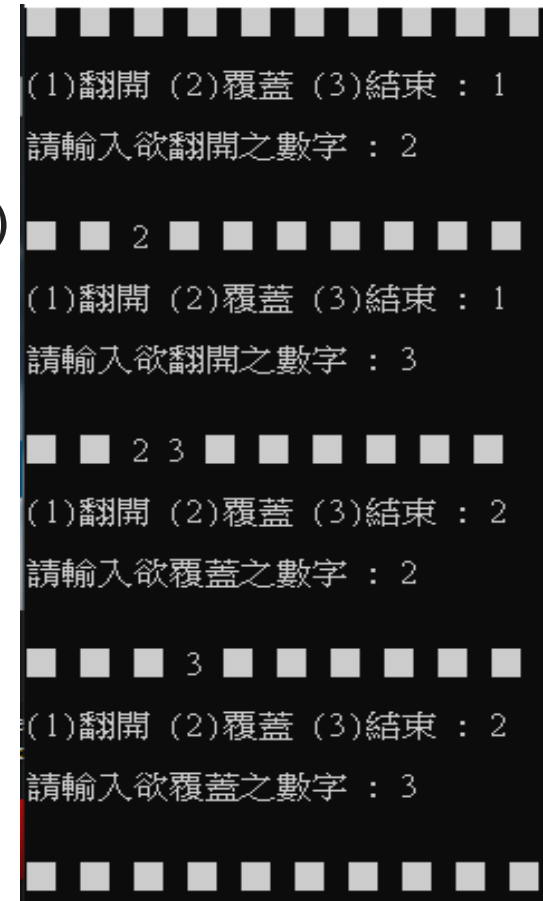


```
void Space(int count)
{
    .....;
    printf(" ");
}
```

```
void List(int count)
{
    .....;
    printf("*");
}
```

Exercise 4

- ▶ We have 10 blocks ■■■■■■■■■■ (0~9 from left to right)
If u select 1, then u can specify a position to uncover the block
and there will be the corresponding number showing at the position.
(a sequence of 10 random numbers is generated at the start of this program)
If u select 2, then u can specify a position to cover with block
If u select 3, the game is ended.
- ▶ [Hint] Use array to determine which number/position should be covered or not.
■=[Alt + 41405]



Exercise 5

- ▶ Enter two numbers to find the greatest common factor and the least common multiple.

$$\gcd(a, b) = \begin{cases} a & \text{if } b = 0 \\ \gcd(b, a \bmod b) & \text{else} \end{cases} \quad LCM(a, b) = \frac{a \cdot b}{GCD(a, b)}$$

 Microsoft Visual Studio

```
輸入兩數：20 30  
Gcd：10  
Lcm：60
```

Exercise 6

- ▶ 1st , Enter a number.(binary/octal/decimal/hexadecimal => 2/8/10/16.)
- ▶ 2nd , Enter a number you want to convert.
- ▶ 3rd , Enter a number.(binary/octal/decimal/hexadecimal => 2/8/10/16.)
- ▶ 4th , The converted number.
- ▶ [Hint] Use array to determine which number should be converted

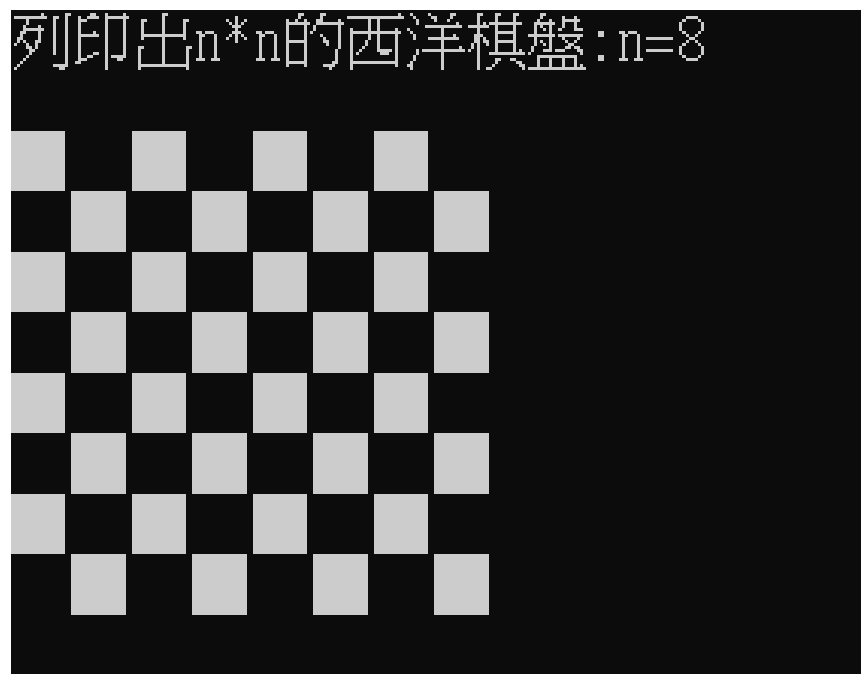


```
Microsoft Visual Studio 偵錯主控台
請輸入轉換前進制:16
請輸入數字:FF
請輸入轉換後進制:2
11111111
```



Exercise 7

- ▶ Print a $n \times n$ checkerboard pattern , n is a arbitrary number
(white square can use , black square can use " ")



Exercise 8

- ▶ Please design a program that can count Permutation{ $P(n,k)$ } and Combination{ $C(n,k)$ }
($P(n,k) = n!/(n-k)!$, $C(n,k) = n!/(k!*(n-k)!)$)

```
請輸入n,k:3 5  
n必須大於等於k，請重新輸入。  
請輸入n,k:5 3  
P(5,3)=60  
C(5,3)=10
```



Appendix

- ▶ Bubble sorting uses matrix input 10 numbers to sort from small to large, and prints its results and maximum and minimum values

Microsoft Visual Studio Debug Console

```
Plz enter response 1 : 1
Plz enter response 2 : 5
Plz enter response 3 : 6
Plz enter response 4 : 8
Plz enter response 5 : 10
Plz enter response 6 : 50
Plz enter response 7 : 2
Plz enter response 8 : 100
Plz enter response 9 : 80
Plz enter response 10 : 99
1 2 5 6 8 10 50 80 99 100
最小1
最大100
```



wk8_test1.txt



wk8_test2.txt



wk8_test3.txt



wk8_test4.txt



wk8_test5.txt



wk8_test6.txt



wk8_test7.txt



wk8_test8.txt



Appendix.txt



To be continued.....

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