# 輸出句子 printf (adv)

輸出?

```
1. printf ("%d   \n", 123);
2. printf ("%+d  \n", 123);
3. printf ("%+d  \n", -123);
4. printf ("% d  \n", 123);
5. printf ("% d  \n", -123);
```

```
123
+123
-123
 123
-123
```

```
6. printf ("%f   \n", 123.4);
7. printf ("%.f  \n", 123.4);
8. printf ("%.1f \n", 123.4);
9. printf ("%8.2f\n", 123.4);
```

```
123.400000
123
123.4
  123.40
```



輸出?

```
11. printf("%d\n", 205);
12. printf("%d\n", 2+3);
13. printf("%f\n", 2+3);
```

```
205
5
0.000000
```

```
14. printf("%f\n", 205.0);
15. printf("%f\n", 2.05e2);
16. printf("%f\n", 1.15e-3);
```

```
205.000000
205.000000
0.001150
```

```
17. printf("%d\n", 7/3);
18. printf("%f\n", 7/3);
19. printf("%d\n", 7.0/3);
20. printf("%f\n", 7.0/3);
```

```
2
0.001150
-1431655765
2.333333
```

輸出?

```
21. printf("%d\n", 7%3);
22. printf("%d\n", 10);
23. printf("%d\n", 010);
24. printf("%d\n", 0x10);

25. printf("\041\n");
26. printf("\x41\n");
27. printf("\0  \n");

28. printf("%o\n", 20);
29. printf("%x\n", 20);
```

```
1
10
8
16
```

8進制

16進制

```
!
A
```

```
24
14
```

8進制 (%o)

16進制 (%x)



# C語言控制字元表：

| 字元 | 8進位 | 16進位 | 功能敘述 |
|---|---|---|---|
| \a | \007 | \x07 | 發出一聲嗶的聲音beep |
| \b | \010 | \x08 | 退位backspace |
| \f | \014 | \x0c | 跳頁form-feed |
| \n | \012 | \x0A | 換行new-line |
| \r | \015 | \x0D | 無換行的歸位return |
| \t | \011 | \x09 | Tab定位(水平) |
| \v | \013 | \x0B | Tab定位(垂直) |
| \\ | \134 | \x5c | 印出反斜線 \ 字元 |
| \' | \047 | \x27 | 印出單引號 ' 字元 |
| \" | \042 | \x22 | 印出雙引號 " 字元 |

輸出?

```
1. printf("We don't have enough time\n");
2. printf("Everybody say"
      " \"Later is better than never\"\n");
```

```
We don't have enough time
Everybody say "Later is better than never"
```

```
3. printf("Computer is powerfuk\bl\n");
4. printf("who can make it\rYou\n");
5. printf("Failure \151\163 the mother "
          "\x6f\x66 success\n");
```

```
Computer is powerful
You can make it
Failure is the mother of success
```



# printf()函數資料轉換型態

| %字元 | 功能敘述 |
|---|---|
| %i,%d | 輸出十進位的整數 |
| %c | 輸出字元 |
| %s | 輸出字串 |
| %f | 輸出以小數點表示的浮點數 |
| %e | 輸出以指數表示的浮點數 |
| %g | 自動選擇以小數點表示或指數表示的浮點數 |
| %o | 輸出八進位的整數 |
| %x | 輸出十六進位的整數 |

# 八進位、十六進位

將十進位的數值轉換成字元(%c)、八進位(%o)、十六進位(%x)

```
1 #include<stdio.h>
2 main(){
3   int a = 69;
4   printf("The ASCII         Code of %i is %c.\n", a, a);
5   printf("The Octal         value of %i is %o.\n", a, a);
6   printf("The Hexadecimal value of %i is %x.\n", a, a);
7 }
```

```
The ASCII         Code of 69 is E.
The Octal         value of 69 is 105.
The Hexadecimal value of 69 is 45.
```



# 顯示資料的欄寬和精確度

- 語法一
  - %ni　　e.g. %6i, %02i
- 語法二
  - %-nd　　e.g. %-6d

+靠右

前面補0

-靠左

# %i %d 修飾語(printf)

```
#include<stdio.h>
main(){
   int a = 1021;
   printf("|%i|  \n", a);
   printf("|%2d| \n", a);
   printf("|%6d| \n", a);
   printf("|%+6d|\n", a);
   printf("|%-6d|\n", a);
}
```

```
|1021|
|1021|
|  1021|
| +1021|
|1021  |
```

-靠左



# %f小數點浮點輸出

- 語法一
  - %m.nf  e.g. %10.1f, %.2f

共10位
小數後1位

小數後
2位

- 語法二
  - %-m.nf  e.g. %-10.1f

+靠右
-靠左

# %f 修飾語變化

```
#include<stdio.h>
main(){
    float f;
    f = 691.021;

    printf("|%f|      \n", f);
    printf("|%2.2f|   \n", f);
    printf("|%9.2f|   \n", f);
    printf("|%-9.2f|\n", f);
}
```

%f 小數後6位

小數後2位，四捨五入

```
|691.020996|
|691.02|
|   691.02|
|691.02    |
```



```
char s[6]="abcde";
printf("1234567890\n");
printf("%10s$     \n", s);
printf("%-10s$    \n", s);
printf("%*s       \n", 8,s);
```

```
1234567890
□□□□□abcde$
abcde□□□□□$
□□□abcde
```

```
printf("%*c \n", 2,'x');
printf("%*c \n", 3,'y');
```

```
□x
□□y
```

```
printf("%*.*f \n", 10,2, 4.567);
printf("%*.*f \n", 10,2, 34.56);
printf("%*.*f \n", 10,2, 234.5);
```

```
□□□□□□4.57
□□□□□34.56
□□□□234.50
```

## 隨機分數

```
i=0;
do{
        n = rand()%100+1;
        printf("%5i \n", n);
        i++;
}while(i<10);
```

+靠右

```
   55
    3
   41
  100
   48
   38
    8
   28
   67
   91
```

%i與%d 的分別

```
scanf("%i", &x);     // dec,oct,hex
scanf("%d", &y);     // dec
```



```
void printBinary (int n){
        if(n==0) return;
        printBinary (n/2);
        printf ("%i",n%2);
}
```

```
main(){
        int n,i;
        do{
                printf ("Enter n: ");
                scanf ("%i", &n);       // 7
                printBinary (n);        // 二進制
                printf ("\n");

                for (i=n; i<n+10; i++)
                        printf ("%2i\t%o\t%X\n", i,i,i);
        }while(1);
}
```

| 10 | 8 | 16 |
|---|---|---|
| %i | %o | %x |
| 7 | 7 | 7 |
| 8 | 10 | 8 |
| 9 | 11 | 9 |
| 10 | 12 | A |
| 11 | 13 | B |
| 12 | 14 | C |
| 13 | 15 | D |
| 14 | 16 | E |
| 15 | 17 | F |
| 16 | 20 | 10 |

10 8 16進制