第八章 字串函數 (二)

1. 取得或設定日期

DATE$ [= "mm-dd-yy"]

【例題 8-1】

```
PRINT DATE$
01-01-1980
Ok
DATE$="10-18-88"
Ok
PRINT DATE$
10-18-1988
Ok
```

【例題 8-2】

```
DATE$="1/32/88"
Illegal function call
```

2. 取得或設定時間

TIME$ [= "hh:mm:ss"] *{*取得或設定時間*}*

【例題 8-3】

```
PRINT TIME$
00:39:58
Ok
TIME$="19:10:5"
Ok
PRINT TIME$
19:10:10
Ok
TIME$="19:10:61"
Illegal function call
Ok
```

3. DEF FN函數名稱 = 函數式

函數名稱可爲數值變數或字串變數

【例題 8-4】

```
LIST
10 ' *** DEF FN test *** def1.bas
20 DEF FN F(X, Y) = X^2 + Y^2
30 INPUT "INPUT X, Y : ", X, Y
40 ANS = FN F(X, Y)
50 PRINT X; CHR$(253); "+"; Y; CHR$(253); "="; ANS
Ok
RUN
INPUT X, Y : 1,1
 1 ² + 1 ² = 2
Ok
RUN
INPUT X, Y : 10,2
 10 ²+ 2 ² = 104
Ok
```

【例題 8-5】

```
LIST
10 '*** DEF FN test *** def-2.bas
15 DEF FN S$(X$) = "*** " + X$ + " ***" + CHR$(13)
20 CLS
30 PRINT "DO YOU LOVE ME !!! (Y/N) ? "
40 A$ = INPUT$(1)
50 IF INSTR("YyNn", A$) = 0 THEN BEEP:
            PRINT FN S$("TRY AGAIN !!!"):
            GOTO 30
60 IF INSTR("Nn", A$) THEN 90
70 PRINT FN S$("I LOVE YOU, TOO !")
80 GOTO 100
90 PRINT "YOU ARE PIG !"
100 END
Ok
RUN
DO YOU LOVE ME !!! (Y/N) ?
*** TRY AGAIN !!! ***

 DO YOU LOVE ME !!! (Y/N) ?
 *** I LOVE YOU, TOO ! ***
 Ok
```

4. 產生亂數

RND(1)

可產生大於 0, 小於 1 的亂數值

【例題 8-6】

LIST 10 FOR I = 1 TO 5 20 PRINT RND 30 NEXT I Ok	RUN .1213501 .651861 .8688611 .7297625 .798853 Ok

5. 啓動亂數產生器

RANDOMIZE [n] n (-32768 to 32767)

【例題 8-7】

LIST 5 RANDOMIZE 10 FOR I = 1 TO 5 20 PRINT RND(1) 30 NEXT I Ok	RUN Random number seed (-32768 to 32767)? 2 .8162134 .4226789 .9276842 .6269628 .3237438 Ok

【例題 8-8】

LIST 5 RANDOMIZE 2 10 FOR I = 1 TO 5 20 PRINT RND(1) 30 NEXT I Ok	RUN .8162134 .4226789 .9276842 .6269628 .3237438 Ok

【例題 8-9】

LIST 5 RANDOMIZE VAL(RIGHT$(TIME$, 2)) 10 FOR I = 1 TO 5 20 PRINT INT(RND(1)*10) 30 NEXT I Ok	RUN 2 4 8 0 7 Ok

【例題 8-10】

LIST 5 RANDOMIZE VAL(RIGHT$(TIME$, 2)) 10 FOR I = 1 TO 5 20 PRINT RND(1) 30 NEXT I Ok	RUN .2589319 .9382734 .8496508 .4548131 .0589428 Ok RUN .6653192 .1097364 .1633867 2.923018E-02 .7888165 Ok

【例題 8-11】統計骰子出現次數

LIST 10 CLS 20 RANDOMIZE VAL(RIGHT$(TIME$, 2)) 30 DIM A(6) 40 INPUT "KET IN A NUMBER : ", N 50 FOR I = 1 TO N 60 S = INT(RND * 6) + 1 70 PRINT S, 80 A(S) = A(S) + 1 90 NEXT I 100 PRINT 110 FOR I = 1 TO 6 120 PRINT USING "[#] : ##"; I; A(I) 130 NEXT I Ok	RUN KET IN A NUMBER : 20 4 4 1 4 3 5 6 1 5 3 2 5 1 1 4 1 4 4 4 1 [1] : 6 [2] : 1 [3] : 2 [4] : 7 [5] : 3 [6] : 1 Ok

【例題 8-12】

LIST	RUN
5 RANDOMIZE VAL(RIGHT$(TIME$, 2))	1
10 FOR I = 1 TO 5	5
20 PRINT INT(RND(1)*10) + 1	10
30 NEXT I	8
Ok	9
	Ok

【例題 8-13】模擬擲骰子 (一)

```
LIST
1  '*** RANGAME-2 *** GAME-2.BAS
10 CLS
20 RANDOMIZE VAL(RIGHT$(TIME$, 2))
30 DEF FN R = INT(RND * 6) + 1
40 FOR I = 1 TO 6
50     READ A$(I)
60 NEXT  I
70 S1 = FN R
80 S2 = FN R
100 FOR I = 0 TO 6
105     FOR J = 1 TO 7
110         IF MID$(A$(S1), I*7+J, 1) = "1" THEN PRINT "O";
          ELSE PRINT " ";
115     NEXT J
118     PRINT
120 NEXT I
490 '    1      2      3      4      5      6      7
500 DATA 1111111100000110000011001001100000110000011111111 '1
510 DATA 1111111100000110000011010101100000110000011111111 '2
520 DATA 1111111100000110010011000001101010110000011111111 '3
530 DATA 1111111100000110101011000001101010110000011111111 '4
540 DATA 1111111100000110101011001001101010110000011111111 '5
550 DATA 1111111100000110111011000001101110110000011111111 '6
Ok
RUN
OOOOOOO
O     O
O OOO O
O     O
O OOO O
O     O
OOOOOOO
Ok
```

【例題 8-14】猜數字遊戲

```
LIST
10 '*** NUMBER GAME **** ngame-1.bas
20 KEY OFF: CLS
30 RANDOMIZE VAL(RIGHT$(TIME$, 2))
40 ANS = INT(RND * 1000) + 1
50 P$(1) = "TOO BIG !!!  "
60 P$(2) = "TOO SMALL !  "
70 '
80 '
90 PRINT "Hello ! I am computer."
100 PRINT "Answer is 1 to 1000 "
110 PRINT
120 TIME$ = "00:00:00"
130 '
140 '
150 C = C + 1
160 T = VAL(MID$(TIME$, 7, 2))
170 N = 35 - T
180 IF N <= 0 THEN BEEP:
        PRINT "TIME : [ 0]":
        PRINT "GAME OVER":
        PRINT "TIME IS ABOVE":
        PRINT "ANSWER ===> "; ANS:
        GOTO 310
190 PRINT USING "TIME : [##]"; N
200 INPUT "Your answer >> ", YOUR
210 IF YOUR = ANS THEN 280
220 IF YOUR > ANS THEN N = 1
   ELSE N = 2
230 BEEP
240 PRINT P$(N); "Try again !!!": PRINT
250 GOTO 150
260 '
270 '
280 PRINT STRING$(20, "*")
290 PRINT "Right ! "; "Count = "; C
300 PRINT STRING$(20, "*")
310 END
Ok
```

```
RUN
Hello ! I am computer.
Answer is 1 to 1000

TIME : [27]
Your answer >> 100
TOO BIG !!!  Try again !!!

TIME : [25]
Your answer >> 80
TOO BIG !!!  Try again !!!

TIME : [23]
Your answer >> 40
********************
Right ! Count =  6
********************
Ok
```

6. 呼叫副程式

GOSUB line no. {呼叫副程式}

從副程式返回

RETURN {從副程式返回}

【例題 8-15】

LIST
10 '*** sub-1 *** sub-1.bas
20 CLS
30 PRINT "MAIN PROGRAM"
40 GOSUB 100
50 PRINT "MAIN END"
60 END
100 '---- SUB-ROUTINE
110 PRINT " SUB-ROUTINE"
120 PRINT " SUB-ROUTINE END"
130 RETURN
Ok
	RUN
	MAIN PROGRAM
	  SUB-ROUTINE
	  SUB-ROUTINE END
	MAIN END
	Ok

【例題 8-16】模擬擲骰子 (二)

```
LIST
1  '*** RANGAME-3 *** GAME-3.BAS
10 CLS
20 RANDOMIZE VAL(RIGHT$(TIME$, 2))
30 DEF FN R = INT(RND * 6) + 1
40 FOR I = 1 TO 6
50     READ A$(I)
60 NEXT  I
70 S1 = FN R
80 D = S1: X = 25: GOSUB 1000
90 PRINT
100 S2 = FN R
110 D = S2: X = 45: GOSUB 1000
120 END
1000 '
1010'
1020 FOR I = 0 TO 6
1030    LOCATE I+8, X
1040     FOR J = 1 TO 7
1050         IF MID$(A$(D), I*7+J, 1) = "1" THEN PRINT "O";
          ELSE PRINT " ";
1060     NEXT J
1070     PRINT
1080 NEXT I
1090 RETURN
1100 '    1      2      3      4      5      6      7
1120 DATA 1111111100000110000011001001100000110000011111111 '1
1130 DATA 1111111100000110000011010101100000110000011111111 '2
1140 DATA 1111111100000110010011000001101010110000011111111 '3
1150 DATA 1111111100000110101011000001101010110000011111111 '4
1160 DATA 1111111100000110101011001001101010110000011111111 '5
1170 DATA 1111111100000110111011000001101110110000011111111 '6
Ok
RUN
  OOOOOOO          OOOOOOO
  O     O          O     O
  O O O O            O     O
  O     O          O O O O
  O O O O            O     O
  O     O          O     O
  OOOOOOO          OOOOOOO
OK
```

【例題 8-17】

```
LIST
10  '********** DIM-4 ************* DIM-4.BAS
20 CLS
30 INPUT "ENTER STUDENT NUMBER : ", N
40 DIM NO$(N), NAM$(N), CHI(N), CHE(N), MAT(N)
50 GOSUB 1000       '----------- INPUT DATA
60 PRINT : PRINT
70 GOSUB 2000       '----------- PRINT DATA
99 END
1000 '
1010 '
1020 '     ------------------- INPUT DATA
1030 PRINT "******* INPUT DATA ******"
1040 FOR I = 1 TO N
1050     PRINT TAB(10); I
1060     PRINT STRING$(20, "=")
1070     INPUT "NO. : ", NO$(I)
1080     INPUT "NAME: ", NAM$(I)
1090     INPUT "CHI : ", CHI(I)
1100     INPUT "CHE : ", CHE(I)
1110     INPUT "MAT : ", MAT(I)
1120 NEXT I
1130 RETURN
2000 '
2010 '
2020 '     ------------------- PRINT DATA
2030 PRINT "******* PRINT DATA ******"
2040 PRINT " NO.   NAME    CHI    CHE    MAT    AVE  DOWN"
2050 PRINT " ===   =====  =====  =====  =====  ===== ====="
2060 FOR I = 1 TO N
2070    AVE = (CHI(I) + CHE(I) + MAT(I)) / 3
2080    DOWN$ = " "
2090    IF AVE < 60 THEN DOWN$ = "*"
2100    PRINT USING
       " \\   \   \  ###.#  ###.#  ###.#  ###.#   !";
        NO$(I), NAM$(I), CHI(I), CHE(I), MAT(I), AVE, DOWN$
2110 NEXT I
2120 PRINT " ===   =====  =====  =====  =====  ===== ====="
OK
```

```
RUN
ENTER STUDENT NUMBER : 3
******* INPUT DATA ******
        1
====================
NO. : 001
NAME: JOHN
CHI   : 60
CHE  : 50
MAT : 65
        2
====================
NO. : 002
NAME: MARY
CHI   : 80
CHE  : 88
MAT : 75

        3
====================
NO. : 003
NAME: BOB
CHI   : 70
CHE  : 90
MAT : 88

 ******* PRINT DATA ******
  NO.   NAME    CHI    CHE    MAT     AVE    DOWN
  ===   =====  =====  =====  =====  =====  ====
  001   JOHN   60.0   50.0   65.0   58.3    *
  002   MARY   80.0   88.0   75.0   81.0
  003   BOB    70.0   90.0   88.0   82.7
  ===   =====  =====  =====  =====  =====  ====
 OK
```

【例題 8-18】

```
10 '****** STUDENT SCORE DATA ***** STUSORT.BAS
20 CLS
30 DIM NO(10), S1(10), S2(10), S3(10), AVG(10)
40 PRINT "  NO   HOWK  MIDTM  FINAL  AVERAGE"
50 PRINT " ====  ====  =====  =====  =======
60 FOR I = 1 TO 10
70     READ NO(I), S1(I), S2(I), S3(I)
80     AVG(I) = S1(I) * .3 + S2(I) *.3 + S3(I) * .4
90     GOSUB 810 '---- PRINT RECORD SUB-ROUTINE
100 NEXT I
110 PRINT " ====  ====  =====  =====  =======
120 PRINT: PRINT "PRESS ANY KEY TO CONTINUE ....."
130 K$ = INPUT$(1)
140 CLS
150 FOR I = 1 TO 9
160     FOR J = 1 TO I
170         IF AVG(I) > AVG(J) THEN SWAP AVG(I), AVG(J) : SWAP NO(I),NO(J):
                        SWAP S1(I), S1(J) : SWAP S2(I), S2(J)
180     NEXT J
190 NEXT I
200 '
210 PRINT "  NO   HOWK  MIDTM  FINAL  AVERAGE"
220 PRINT " =====  =====  ======  ======  =======
230 FOR I = 1 TO 10
240     GOSUB 810 '---- PRINT RECORD SUB-ROUTINE
250 NEXT I
260 PRINT " ===== =====  ======  ======  =======
270 END
800 '
800 '
810 '******* SUB-ROUTINE << PRINT RECORD >> ******
820 '
830 PRINT USING " ####   ##    ##     ##     ##.## ";NO(I),S1(I),S2(I),S3(I),AVG(I)
840 RETURN
850 DATA 9001,67,89,75
860 DATA 9002,69,82,74
870 DATA 9003,72,93,85
880 DATA 9004,75,66,84
890 DATA 9005,67,74,82
900 DATA 9006,60,72,83
910 DATA 9007,79,82,78
920 DATA 9008,95,88,75
930 DATA 9009,75,78,71
940 DATA 9010,56,68,85
OK
```

```
RUN

 NO     HOWK MIDTM  FINAL   AVERAGE
=====  =====  ======  =====  =========
 9001    67     89     75     76.80
 9002    69     82     74     74.90
 9003    72     93     85     83.50
 9004    75     66     84     75.90
 9005    67     74     82     75.10
 9006    60     72     83     72.80
 9007    79     82     78     79.50
 9008    95     88     75     84.90
 9009    75     78     71     74.30
 9010    56     68     85     71.20
=====  =====  ======  =====  =========

PRESS ANY KEY TO CONTINUE ......

 NO     HOWK  MIDTM  FINAL  AVERAGE
=====  =====  ======  =====  =========
 9008    95     88     75     84.90
 9003    72     93     85     83.50
 9007    79     82     78     79.50
 9001    67     89     75     76.80
 9004    75     66     84     75.90
 9005    67     74     82     75.10
 9002    69     82     74     74.90
 9009    75     78     71     74.30
 9006    60     72     83     72.80
 9010    56     68     85     71.20
=====  =====  ======  =====  =========
OK
```