## FLORIDA HIGH SCHOOLS COMPUTING COMPETITION '85
## JUDGING CRITERIA

```
1.1  INPUT: Enter command: ADD
     INPUT: Enter number: 18
     INPUT: Enter command: TAKE
    OUTPUT: 18
     INPUT: Enter command: ADD
     INPUT: Enter number: 5
     INPUT: Enter command: ADD
     INPUT: Enter number: 99
     INPUT: Enter command: TAKE
    OUTPUT: 99
     INPUT: Enter command: ADD
     INPUT: Enter number: 34
     INPUT: Enter command: TAKE
    OUTPUT: 34
     INPUT: Enter command: TAKE
    OUTPUT: 5
     INPUT: Enter command: QUIT
    OUTPUT: (program ends)
```

```
1.2  INPUT: Enter N, AV: 28, 15
    OUTPUT: NUMBER ERASED WAS 1

     INPUT: Enter N, AV: 31, 16.2
    OUTPUT: NUMBER ERASED WAS 10

     INPUT: Enter N, AV: 101, 50.68
    OUTPUT: NUMBER ERASED WAS 83
```

```
1.3  INPUT: Enter N, D: 18, -4
    OUTPUT: S=   4.2426
            SUM=18

     INPUT: Enter N, D: 1562500, 2
    OUTPUT: S=1300.000
            SUM= 4

     INPUT: Enter N, D: 1194, -1
    OUTPUT: S=  34.6000
            SUM=13
```

**1.4** RUN PROGRAM:

OUTPUT: A time dial simulation will be displayed in the center of the screen. The count starts with 1985, and then steadily increases the years by 1 until the year 2345 is reached: The time interval between each new year will decrease as the numbers increase, starting with one new year every second, to steadily and rapidly counting faster than the eye can comprehend, ending with the year 2345, which remains on the screen. The displays should not flicker. The program should take less than 60 seconds to run.

```
1.5  INPUT: Enter N: 18
    OUTPUT: ROUND 1   9 GAMES
            ROUND 2   4 GAMES  1 BYE
            ROUND 3   2 GAMES  1 BYE
            ROUND 4   1 GAMES  1 BYE
            ROUND 5   1 GAMES
            TOTAL    17 GAMES  3 BYES

     INPUT: Enter N: 67
    OUTPUT: ROUND 1  33 GAMES  1 BYE
            ROUND 2  17 GAMES
            ROUND 3   8 GAMES  1 BYE
            ROUND 4   4 GAMES  1 BYE
            ROUND 5   2 GAMES  1 BYE
            ROUND 6   1 GAMES  1 BYE
            ROUND 7   1 GAMES
            TOTAL    66 GAMES  5 BYES
```

```
1.6  INPUT: Enter N, M: 900, 1300
    OUTPUT: SMALLEST = 912
            LARGEST = 987
            SUM = 53172

     INPUT: Enter N, M: 33, 333
    OUTPUT: SMALLEST = 123
            LARGEST = 329
            SUM = 27990
```

```
1.7  INPUT: Enter name: DOUG
            Enter part#: T100
            Enter time: 3

    OUTPUT: CUSTOMER NAME: DOUG
            PART #: T100
            DESCRIPTION: 27X1 INCH TIRE TUBE
            PART COST:   12.50
            LABOR COST:  30.00
            5% TAX:       0.63
            TOTAL:       43.13


     INPUT: Enter name: BRAD
            Enter part#: S445
            Enter time: 2.5

    OUTPUT: CUSTOMER NAME: BRAD
            PART #: S445
            DESCRIPTION: COMPUCYCLE COMPUTER
            PART COST:   33.95
            LABOR COST:  25.00
            5% TAX:       1.70
            TOTAL:       60.65
```

**1.8** INPUT: Enter # of lines on label: **4**

```
    OUTPUT:
            PARKER, HARRY
            222-3333


            SIMON, BILL
            123-4567


            SIMON, BOB
            123-4455


            SPINXS, LISA
            987-6543


            TROUTMAN, HARRY
            876-2174
```

**1.9** RUN PROGRAM: A 5x5 matrix of 25 letters, A through Y, is randomly generated and centered on the top part of the screen, with every adjacent letter on a row separated by a space.

SECRETLY CHOOSE THE LETTER 'Y' AND NOTE ITS POSITION IN THE ARRAY.

The computer must ask the user yes(Y)-or-no(N) questions to logically determine the secret letter (using similar questions as shown in the example). The computer will start with a score of 11 points and will deduct 1 point for each question that is asked and answered. The score is displayed in the upper right corner after each question is asked. If the program does not determine the letter before the computer score reaches 0, then no credit is awarded at this time. If the letter Y is guessed and the score is greater than 0, then run this program one more time and ensure that the new matrix is different from the previous matrix:

SECRETLY CHOOSE THE LETTER 'P' AND NOTE ITS POSITION IN THE ARRAY.

```
    OUTPUT:        Q W E R T         SCORE=11
                   Y U I O P
                   A S D F G
                   H J K L M
                   X C V B N

     OUTPUT/INPUT: IS THE LETTER IN ROW 1? N
     OUTPUT: (The score decreases to 10 at the top right)
     OUTPUT/INPUT: IS THE LETTER IN ROW 2? Y
     OUTPUT: (The score decreases to 9)
     OUTPUT/INPUT: IS THE LETTER IN COL 1? Y
     OUTPUT: (The score decreases to 8)
            YOUR LETTER IS Y
```

```
1.10  RUN PROGRAM:  Press the appropriate keys I,J,K,M to place
                    the cursor in the center of the screen.
     INPUT: 1
    OUTPUT: The box below with respect to the cursor (#):

                  #
                  *********
                  *       *
                  *   1   *
                  *       *
                  *********

RUN PROGRAM:  Place the cursor in the center of the screen.
     INPUT: 2
    OUTPUT:               #
                  *********
                  *       *
                  *   2   *
                  *       *
                  *********

RUN PROGRAM: Place the cursor in the center of the screen.
     INPUT: 3
    OUTPUT:       *********
                  *       *
                  *   3   *
                  *       *
                  *********
                          #

RUN PROGRAM: Place the cursor in the center of the screen.
     INPUT: 4
    OUTPUT:       *********
                  *       *
                  *   4   *
                  *       *
                  *********
                  #

RUN PROGRAM: Place the cursor at the absolute left side of the
             screen
     INPUT: 2
    OUTPUT: OFF THE SCREEN

RUN PROGRAM: Place the cursor at the top of the screen.
     INPUT: 3
    OUTPUT: OFF THE SCREEN
```

**2.1** RUN PROGRAM:

OUTPUT: A random letter outlines the border of the screen, then upon pressing the space bar, the inside border of the new screen will be outlined by a random letter; afterwards, when the space bar is pressed, the inside border of the new screen will be outlined by a random letter, and so on.  These rectangles are drawn until the whole screen is filled, then press the space bar once again and the screen will clear and start over with a new outer border.  A miniature sample run would look like this:

```
RRRRRRRRRRR          RRRRRRRRRRR          RRRRRRRRRRR
R         R          RQQQQQQQQQR          RQQQQQQQQQR
R         R          RQ       QR          RQYYYYYYYQR
R         R          RQ       QR          RQYYYYYYYQR
R         R          RQQQQQQQQQR          RQQQQQQQQQR
RRRRRRRRRRR          RRRRRRRRRRR          RRRRRRRRRRR
```

**2.2**

```
 INPUT: Enter N: 10
        Enter letter: G
        Enter letter: H
        Enter letter: L
        Enter letter: L
        Enter letter: R
        Enter letter: S
        Enter letter: S
        Enter letter: Q
        Enter letter: B
        Enter letter: A
OUTPUT: G H L
        L R S

 INPUT: Enter N: 15
        Enter letter: Z
        Enter letter: Z
        Enter letter: A
        Enter letter: C
        Enter letter: B
        Enter letter: G
        Enter letter: P
        Enter letter: Q
        Enter letter: Y
        Enter letter: T
        Enter letter: W
        Enter letter: E
        Enter letter: F
        Enter letter: M
        Enter letter: X
OUTPUT: B G P Q Y
```

```
2.3  INPUT: Enter text: PROVIDE A 5 CHARACTER LEFT MARGIN.  DO
                        NOT PUT MORE THAN 30 CHARACTERS ON A
                        LINE.  THE LAST WORD IS FOLLOWED BY A
                        PERIOD.

    OUTPUT:               PROVIDE A 5 CHARACTER
                     LEFT MARGIN.  DO NOT PUT MORE
                     THAN 30 CHARACTERS ON A LINE.
                     THE LAST WORD IS FOLLOWED BY A
                     PERIOD.


     INPUT: Enter text: A WORD IS DEFINED AS A SET OF CHARACTERS
                        IN BETWEEN TWO SPACES (EXCEPT FOR THE
                        FIRST AND LAST WORDS OF THE STRING).

    OUTPUT:               A WORD IS DEFINED AS A
                     SET OF CHARACTERS IN BETWEEN
                     TWO SPACES (EXCEPT FOR THE
                     FIRST AND LAST WORDS OF THE
                     STRING).

2.4  INPUT: Enter word: INTERNATIONAL
    OUTPUT: ALNANNERIITOT

     INPUT: Enter word: CLASS
    OUTPUT: CLASS

     INPUT: Enter word: UNIVERSITY
    OUTPUT: ENIRISTUVY


2.5  INPUT: Enter number of words: 5
            Enter word: COMPUTER
            Enter word: APPLE
            Enter word: PERSONAL
            Enter word: CREATIVE
            Enter word: POPULAR
    OUTPUT: NO COMMON LETTERS

     INPUT: Enter N: 6
            Enter word: CREATIVE
            Enter word: ELECTRONIC
            Enter word: PROCESS
            Enter word: PEACH
            Enter word: EDUCATION
            Enter word: COMPLEX
    OUTPUT: C E
     INPUT: Choose letter: E
    OUTPUT:    CREATIVE
                 ELECTRONIC
             PROCESS
                PEACH
                 EDUCATION
            COMPLEX
```

```
2.6  INPUT: Place 1: T                INPUT: Place 1: A
            Place 2: D                       Place 2: B
            Place 3: C                       Place 3: A
            Place 4: T                       Place 4: C
            Place 5: D                       Place 5: C
            Place 6: C                       Place 6: B
            Place 7: T                       Place 7: A
            Place 8: D                       Place 8: A
            Place 9: C                       Place 9: B
            Place 10: C                      Place 10: C
            Place 11: D                      Place 11: C
            Place 12: T                      Place 12: A
            Place 13: C                      Place 13: C
            Place 14: D                      Place 14: B
            Place 15: C                      Place 15: A
            Place 16: D                      Place 16: A
            Place 17: T                      Place 17: B
            Place 18: T                      Place 18: B
            Place 19: C                      Place 19: B
            Place 20: D                      Place 20: C
            Place 21: T                      Place 21: C

    OUTPUT: (in any order)           OUTPUT: (in any order)
            TEAM T: 28 POINTS                TEAM A: 23 POINTS
            TEAM D: 28 POINTS                TEAM B: 34 POINTS
            TEAM D WINS!                     TEAM A WINS!

            TEAM T: 28 POINTS                TEAM A: 23 POINTS
            TEAM C: 28 POINTS                TEAM C: 32 POINTS
            TEAM C WINS!                     TEAM A WINS!

            TEAM D: 27 POINTS                TEAM B: 29 POINTS
            TEAM C: 28 POINTS                TEAM C: 26 POINTS
            TEAM D WINS!                     TEAM C WINS!
```

```
2.7 RUN PROGRAM:
    OUTPUT: A. EDIT OR CHANGE A VALUE
            B. DISPLAY THE RESULTS
            C. QUIT
     INPUT: Enter option: B
    OUTPUT:  10.11   20.22   30.33   60.66
             11.10   22.20   33.30   66.60
             10.00   20.00   30.00   60.00
             31.21   62.42   93.63  187.26
     INPUT: (press any key)
    OUTPUT: A. EDIT OR CHANGE A VALUE
            B. DISPLAY THE RESULTS
            C. QUIT
     INPUT: Enter option: A
            Enter row, col: 2, 1
            Enter number: 5.5
     INPUT: (press any key)
    OUTPUT: A. EDIT OR CHANGE A VALUE
            B. DISPLAY THE RESULTS
            C. QUIT
     INPUT: Enter option: B
    OUTPUT:  10.11   20.22   30.33   60.66
              5.50   22.20   33.30   61.00
             10.00   20.00   30.00   60.00
             25.61   62.42   93.63  181.66
     INPUT: (press any key)
    OUTPUT: A. EDIT OR CHANGE A VALUE
            B. DISPLAY THE RESULTS
            C. QUIT
     INPUT: Enter option: A
            Enter row, col: 1, 3
            Enter number: 29.67
     INPUT: (press any key)
    OUTPUT: A. EDIT OR CHANGE A VALUE
            B. DISPLAY THE RESULTS
            C. QUIT
     INPUT: Enter option: A
            Enter row, col: 3, 2
            Enter number: 39
     INPUT: (press any key)
    OUTPUT: A. EDIT OR CHANGE A VALUE
            B. DISPLAY THE RESULTS
            C. QUIT
     INPUT: Enter option: B
    OUTPUT:  10.11   20.22   29.67   60.00
              5.50   22.20   33.30   61.00
             10.00   39.00   30.00   79.00
             25.61   81.42   92.97  200.00
     INPUT: (press any key)
    OUTPUT: A. EDIT OR CHANGE A VALUE
            B. DISPLAY THE RESULTS
            C. QUIT
     INPUT: Enter option: C
    OUTPUT: (program terminates)
```

2.8  RUN PROGRAM:

```
    OUTPUT: 2  5  1  0    2 X 5 = 10
            2  7  1  4    2 X 7 = 14
            2  8  1  6    2 X 8 = 16
            2  9  1  8    2 X 9 = 18
            3  4  1  2    3 X 4 = 12
            3  6  1  8    3 X 6 = 18
            3  7  2  1    3 X 7 = 21
            3  8  2  4    3 X 8 = 24
            3  9  2  7    3 X 9 = 27
            4  5  2  0    4 X 5 = 20
            4  7  2  8    4 X 7 = 28
            4  8  3  2    4 X 8 = 32
            4  9  3  6    4 X 9 = 36
            5  6  3  0    5 X 6 = 30
            5  8  4  0    5 X 8 = 40
            6  7  4  2    6 X 7 = 42
            6  9  5  4    6 X 9 = 54
            7  8  5  6    7 X 8 = 56
            7  9  6  3    7 X 9 = 63
            8  9  7  2    8 X 9 = 72
            TOTAL = 20
```

```
2.9  INPUT: Enter N: 11
            Enter word: CREATE
            Enter word: CREATION
            Enter word: CREATIVE
            Enter word: CREATURE
            Enter word: EVERYBODY
            Enter word: EVERYONE
            Enter word: ELECTION
            Enter word: CREDIT
            Enter word: COMPUTER
            Enter word: PRINTER
            Enter word: EMPTY
     INPUT: Enter string: CREAT*
    OUTPUT: CREATE
            CREATION
            CREATIVE
            CREATURE
     INPUT: Enter string: *TION
    OUTPUT: CREATION
            ELECTION
     INPUT: Enter string: E*Y
    OUTPUT: EVERYBODY
            EMPTY
     INPUT: Enter string: *ATER
    OUTPUT: NO WORDS FOUND
     INPUT: Enter string: *PRINTER
    OUTPUT: PRINTER
     INPUT: Enter string: END
    OUTPUT: (program terminates)
```

**2.10** INPUT: Enter last 5-minutes: **90**

OUTPUT: (Briefly scan only the messages from 40 MIN to 90 MIN)

```
OF CO DS  OFFICE  COMP.   DRY.   MIN:SE
 :  :  :   :       :       :       :
 :  :  :   :       :       :       :
 1  0  0   72.5    68.0    83.0    40:00
 0  0  0   71.7    68.4    83.1    40:30
 0  1  0   72.6    70.2    83.3    42:45
 0  1  0   73.5    67.5    83.5    45:00
 0  0  0   74.4    64.8    83.7    47:15
 0  0  0   75.5    67.0    84.0    50:00
 0  1  0   77.1    70.2    84.4    54:00
 0  1  0   77.5    69.0    84.5    55:00
 1  1  0   78.1    67.2    84.7    56:30
 1  1  1   76.0    66.5    85.0    60:00
 1  1  1   74.7    67.2    82.2    65:00
 1  1  1   73.3    67.8    79.3    70:00
 0  1  1   72.0    68.5    76.5    75:00
 0  1  0   72.7    68.1    74.9    76:45
 0  0  0   73.8    64.8    75.2    79:30
 0  0  0   74.0    65.2    75.3    80:00
 0  0  0   76.0    69.2    75.8    85:00
 0  1  0   76.4    70.0    75.9    86:00
 0  1  0   78.0    65.2    76.3    90:00
```

```
3.1  INPUT: Enter top, front: 1, 3
    OUTPUT: TOP=1  FRONT=3  RIGHT=5
            BACK=4  LEFT=2  BOTTOM=6

     INPUT: Enter top, front: 2, 3
    OUTPUT: TOP=2  FRONT=3  RIGHT=1
            BACK=4  LEFT=6  BOTTOM=5

     INPUT: Enter top, front: 4, 6
    OUTPUT: TOP=4  FRONT=6  RIGHT=2
            BACK=1  LEFT=5  BOTTOM=3

     INPUT: Enter top, front: 6, 2
    OUTPUT: TOP=6  FRONT=2  RIGHT=4
            BACK=5  LEFT=3  BOTTOM=1
```

```
3.2  INPUT: Enter A, B, C: 1, 0, -1
    OUTPUT: (X-1)(X+1)               or  (X+1)(X-1)

     INPUT: Enter A, B, C: -6, 7, -2
    OUTPUT: (3X-2)(2X-1)             or  (2X-1)(3X-2)

     INPUT: Enter A, B, C: 18, 12, 2
    OUTPUT: 2(3X+1)(3X+1)

     INPUT: Enter A, B, C: 1, 2, 3
    OUTPUT: CANNOT BE FACTORED
```

```
3.3  INPUT: Enter expression: 5/8/100*100       OUTPUT:   0.625

     INPUT: Enter expression: 6-4+5/4*10        OUTPUT:  14.500

     INPUT: Enter expression: 4*1*0/6           OUTPUT:   0.000

     INPUT: Enter expression: 12/3+5-3*6*2+7    OUTPUT: -20.000
```

```
3.4  INPUT: Enter N: 12
    OUTPUT: 479001600

     INPUT: Enter N: 40
    OUTPUT: 815915283247897734345611269596115894272000000000
```

```
3.5  INPUT: Enter #1: 5678901234.5
            Enter #2: 45.610987

    OUTPUT: SUM = 5678901280.110987
            DIFFERENCE = 5678901188.889013


     INPUT: Enter #1: 8765432109.8765432109
            Enter #2: 2109.87654321

    OUTPUT: SUM = 8765434219.7530864209
            DIFFERENCE = 8765430000.0000000009


     INPUT: Enter #1: 69.1
              Enter #2: 2.3456

    OUTPUT: SUM = 71.4456
            DIFFERENCE = 66.7544
```

**3.6** RUN PROGRAM: A snake (a trail of 30 asterisks '*') is centered on the screen. Upon hitting appropriate keys, designated by students, the snake's head moves in the appropriate direction while the rest of the snake slithers along the same right angle paths. The snake must move CONTINUOUSLY in the designated direction UNTIL a new directional key is hit. The snake must be 30 asterisks long throughout the entire run; It must not leave a sketched path. The snake continues moving until it runs into itself or it runs off the screen or a non-directional key is pressed.

Run the program and have the snake move in all directions. Have the snake run into itself to check that the program will STOP. For the next execution, have the snake attempt to leave the screen, which should cause the program to STOP.

```
3.7  INPUT: Enter word: LIFE
            Enter K: 5

    OUTPUT: ELFI  FILE  IFEL


     INPUT: Enter word: COMPUTE
            Enter K: 721

    OUTPUT: ECMOPTU  MCEOPUT  OCEMTPU
```

**3.8** Check to see that no two pennies (asterisks) are in the same column, row, or main diagonal: Check that the Row equals the Column at most once; Check that the sum of the coordinates equals N+1 at most once.
NOTE: PLACEMENT OF THE ASTERISKS WILL VARY ALONG WITH THE SUMS.

```
     INPUT: Enter N: 6
    OUTPUT: TOTAL = 6
              1 2 3 4 5 6
            1   *          (1,2) SUM = 3
            2       *      (2,4) SUM = 6
            3           *  (3,6) SUM = 9
            4 *            (4,1) SUM = 5
            5     *        (5,3) SUM = 8
            6         *    (6,5) SUM = 11

     INPUT: Enter N: 7
    OUTPUT: TOTAL = 7
              1 2 3 4 5 6 7
            1 *              (1,1) SUM = 2
            2     *          (2,3) SUM = 5
            3         *      (3,5) SUM = 8
            4             *  (4,7) SUM = 11
            5   *            (5,2) SUM = 7
            6       *        (6,4) SUM = 10
            7           *    (7,6) SUM = 13

     INPUT: Enter N: 8
    OUTPUT: (similar format as first two runs)
            TOTAL = 8
              1 2 3 4 5 6 7 8
              :

     INPUT: Enter N: 14
    OUTPUT: (similar format as first two runs)
            TOTAL = 14
              1 2 3 4 5 6 7 8 9 0 1 2 3 4
              :
```

```
3.9  INPUT: Enter N: 5
    OUTPUT: 31

     INPUT: Enter N: 10
    OUTPUT: 1023

     INPUT: Enter N: 12
    OUTPUT: 4095
```

```
3.10 INPUT: Enter S: 36
    OUTPUT: P = 15678  Q = 39  R = 402

     INPUT: Enter S: 62
    OUPTUT: P = 58401  Q = 63  R = 927
```