TCEA
HIGH SCHOOL
PROGRAMMING CONTEST

JUDGE'S PACKET

AREA PROBLEM SET
FEBRUARY, 2002

Problem 0.0 Average

Data File: pr00.dat

```
17 15 23 88 75 33 89 42 0
```

Output: AVERAGE = 47.75

Format Required: all letters upper case
                     answer rounded to 2 decimal places

Problem 2.1 Newspaper Profit Or Loss

Data File: pr21.dat

```
3 45 31 100 63 200 92
```

Output: `$4.25 PROFIT`
`           $6.50 PROFIT`
`           $4.00 LOSS`

Format Required: all letters upper case
                    dollar sign ($) in front of each amount
                    amount rounded to 2 decimal places
                    1 trailing zero on output #2
                    2 trailing zeros on output #3

Problem 2.2 Dog Food Days

Data File: pr22.dat

```
4
30 4.0
10 1.5
40 3.75
20 5.25
```

Output: 37 DAYS
               33 DAYS
               53 DAYS
               19 DAYS

Format Required: all letters upper case

Problem 2.3 Shrink Then Expand

Data File: pr23.dat

```
4
ATTACH
LABEL
PICK
UP
```

Output: ```
ATTACH
ATTAC
ATTA
ATT
AT
A
AT
ATT
ATTA
ATTAC
ATTACH

LABEL
LABE
LAB
LA
L
LA
LAB
LABE
LABEL

PICK
PIC
PI
P
PI
PIC
PICK

UP
U
UP
```

Format Required:     all letters upper case

**Not** Important:     amount of white space between outputs

**Problem 2.4 Pizza Order**

Data File:    pr24.dat

```
17 12 25 40 0
```

Output: $16 FOR 2 MEDIUM AND 0 LARGE
              $11 FOR 0 MEDIUM AND 1 LARGE
              $19 FOR 1 MEDIUM AND 1 LARGE
              $30 FOR 1 MEDIUM AND 2 LARGE

Format Required: all letters upper case
                    dollar sign ($) in front of cost

Problem 2.5 Framed

Data File: pr25.dat

              4 5 7 6 4 16 10 15 12

Output: $47.95
              $40.80
              $110.00
              $117.20

Format Required: dollar sign ($) in front of each amount
                    amount rounded to 2 decimal places
                    1 trailing zero on output #2
                    2 trailing zeros on output #3
                    1 trailing zero on output #4

Problem 2.6 Recipe Adjuster

Data File: pr26.dat

               1.5 3 6 0

Output: 3 C FLOUR
               1.5 C SUGAR
               2 EGG(S)
               1.5 TSP VANILLA

               6 C FLOUR
               3 C SUGAR
               3 EGG(S)
               3 TSP VANILLA

               12 C FLOUR
               6 C SUGAR
               6 EGG(S)
               6 TSP VANILLA

Format Required: all letters upper case
                   decimal values in output #1 rounded to 1 decimal place

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Not Important: trailing zeros after decimal point
                     period after abbreviations C and TSP

Problem 5.1 Longest Word

Data File: pr51.dat

```
3
ANTEATERS ARE AARDVARKS
FIND THE LONGEST WORD IN THE STRINGS
TYPE OR PRINT REQUIRED INFORMATION
```

Output: AARDVARKS ANTEATERS
              LONGEST STRINGS
              INFORMATION

Format Required: all letters upper case
                    1 space between words in output #1
                    1 space between words in output #2

Problem 5.2 Split Sort

Data File: pr52.dat

```
3
2 4 6 8 19 12 0
9 8 7 6 5 4 3 0
6 23 2 31 3 29 4 30 0
```

Output: 6 4 2 8 12 19
               9 8 7 6 3 4 5
               31 23 6 2 3 4 29 30

Format Required: 1 space between adjacent numbers

Problem 5.3 Replace The Question Mark

Data File: pr53.dat

```
3
APPLES ? BANANAS ? ORANGES ARE GREAT. AND
COMPLETE AND ATTACH ?. LABEL
? ? QUITE CONTRARY. MARY
```

Output: APPLES AND BANANAS AND ORANGES ARE GREAT.
              COMPLETE AND ATTACH LABEL.
              MARY MARY QUITE CONTRARY.

Format Required: all letters upper case
                    period at end of sentence

Problem 5.4 Sum Table

Data Files: pr54.dat

```
3 -10 -10 5 -20 10 25
```

Output: 50 + 100 = 150
               40 + 90 = 130
               30 + 80 = 110
               20 + 70 = 90
               10 + 60 = 70

               10 + 100 = 110
               15 + 80 = 95
               20 + 60 = 80
               25 + 40 = 65
               30 + 20 = 50

               10 + 10 = 20
               20 + 35 = 55
               30 + 60 = 90
               40 + 85 = 125

Format Required: plus sign (+) between first 2 numbers
                     equal sign (=) before answer

Not Important: amount of white space between outputs
                 amount of white space around the +
                 amount of white space around the =

Problem 5.5 Decoder

Data File: pr55.dat

```
3
8 21 24 24 21 39 0 35 36 0 39 21 28 0 21 28 40 35 28 29 35 -1
40 25 48 21 39 -1
32 36 35 27 36 21 33 33 29 28 27 0 23 35 28 40 25 39 40 -1
```

Output: DALLAS OR SAN ANTONIO
               TEXAS
               PROGRAMMING CONTEST

Format Required: all letters upper case
                    exactly 1 space between words

Problem 5.6 Matrix Word

Data File: pr56.dat

```
3
MAJESTY
ZEBRA
ORANGE
```

Output:
```
MAJES
TYBCD
FGHIK
LNOPQ
RUVWX

ZEBRA
CDFGH
IJKLM
NOPQS
TUVWX

ORANG
EBCDF
HIJKL
MPQST
UVWXY
```

Format Required: all letters upper case
                     some white space between outputs

Not Important: amount of white space between outputs

Problem 9.1 Square Sum

Data File: pr91.dat

```
16 7 12 2 0
```

Output: SQUARE SUM OF 16 IS 73
           SQUARE SUM OF 7 IS 48
           SQUARE SUM OF 12 IS 54
           SQUARE SUM OF 2 IS 119

Format Required: all letters upper case

Problem 9.2 Centered Words

Data File: pr92.dat

```
3
HAMBURGER HELPER
BURGER AND FRIES AND COCA COLA
BLUE CHEESE
```

Output:

```
H
A
MH
BE
UL
RP
GE
ER
R

B F
UARACC
RNINOO
GDEDCL
E S AA
R

 C
BH
LE
UE
ES
 E
```

Format Required: all letters upper case
                    letters in columns as specified above
                    some white space between outputs

Not Important: amount of white space between outputs

Problem 9.3 Ticket To Ride

Data File: pr93.dat

```
MMAAAWWAANNAWWX
```

Output:
```
 ABC DEF
1### ###
2### ###
3### #O#
4### ###
5### #O#
```

Format Required: A..F on top row (upper case)
                     1..5 in left-most column
                     # and O lined up as shown
                     white space between columns C and D

Not Important: amount of white space between columns C and D

Problem 9.4 Even/Odd Diagonal Words

Data File: pr94.dat

```
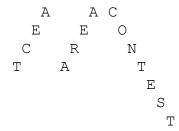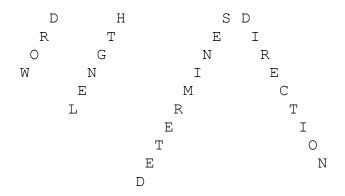3
TCEA AREA CONTEST
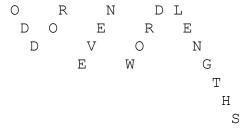WORD LENGTH DETERMINES DIRECTION
ODD OR EVEN WORD LENGTHS
```

Output:
```
      A     A C
     E     E   O
    C     R       N
   T     A         T
                    E
                     S
                      T



     D       H         S D
    R       T         E   I
   O       G         N     R
  W       N         I       E
   E             M           C
    L           R             T
     E                         I
      T                         O
       E                         N
        D



   O     R     N   D L
    D O     E     R   E
     D     V     O     N
      E     W         G
                     T
                      H
                       S
```

Format Required: all letters upper case
                    first letter of odd-length and last letter of even-length on a horizontal line

Problem 9.5   TV Decades

Data File: pr95.dat

```
8
1998 FRIENDS
1983 THE DONNY AND MARIE SHOW
1961 JULIA
1965 THE SMOTHERS BROTHERS SHOW
1982 THE SONNY AND CHER SHOW
1965 MAVERICK
1996 FRASIER
1948 THE MILTON BERLE SHOW
```

Output:

```
40S THE MILTON BERLE SHOW

60S JULIA
    MAVERICK
    THE SMOTHERS BROTHERS SHOW

80S THE DONNY AND MARIE SHOW
    THE SONNY AND CHER SHOW

90S FRASIER
    FRIENDS
```

Format Required: all letters upper case
                   white space after each decade list
                   space between decade and TV show name
                   TV show names all begin in the same column

Not Important: amount of white space between decade lists

Problem 9.6 Multiplying Fractions

Data File: pr96.dat

```
4
2 3 6 10
5 7 10 21
4 9 9 12
1 16 6 11
```

Output: 2/5
               50/147
               1/3
               3/88

Format Required: slash sign (/) between numerator and denominator

Not Important: amount of white space s urrounding the slash sign