TCEA
HIGH SCHOOL
PROGRAMMING CONTEST

JUDGE'S PACKET

AREA PROBLEM SET
FEBRUARY 2009

Texas Computer Education Association
2009 High School Programming Contest
Area Problem Set

Problem 2.1   Making Money

Data File: pr21.dat

Test Input: 7
                 187 201
                 0 1234
                 0 0
                 25000 25000
                 987654 987655
                 9 1000
                 33 1233

Test Output: 14
                 1234
                 0
                 0
                 1
                 991
                 1200

Problem 2.2   Adding Articles

Data File: pr22.dat

Test Input: 9
                  eagle
                  no
                  country
                  hippopotamus
                  it
                  ostrich
                  arrow
                  understanding
                  rainbow

Test Output: an eagle
                a no
                a country
                a hippopotamus
                an it
                an ostrich
                an arrow
                an understanding
                a rainbow

Problem 2.3   Trend Tracking

Data File: pr23.dat

Test Input: 9
               0 0 0
               9 50 100
               100 20 3
               60 70 8
               40 40 39
               40 39 39
               49 49 50
               99 100 100
               79 80 79

Test Output: NO TREND
               INCREASING
               DECREASING
               NO TREND
               DECREASING
               DECREASING
               INCREASING
               INCREASING
               NO TREND

Problem 2.4   Star Strings

Data File: pr24.dat

Test Input: 7
```
*** ** *** ** *** ** ***
***
**
*** **** *** **** ***
** * * ** * * *** * * *** * *
* **** * **** * **** *
**** *** ** * **** *** ** * **** ***
```

Test Output: 4 3
```
1 0
0 1
5 0
2 10
3 4
6 4
```

Problem 2.5   Hidden Hypotenuses

Data File: pr25.dat

Test Input: 9
                 2 3 1
                 5 4 3
                 12 13 5
                 16 12 20
                 3 9 10
                 11 8 6
                 6 6 9
                 7 25 24
                 48 14 50

Test Output: NOT RIGHT
                 RIGHT
                 RIGHT
                 RIGHT
                 NOT RIGHT
                 NOT RIGHT
                 NOT RIGHT
                 RIGHT
                 RIGHT

Problem 2.6   Draw Four

Data File: pr26.dat

Test Input: 9
```
Y4 B5
Y4 B4
R0 G0
R2 B1
G5 G0
B3 B9
B1 Y1
R1 G0
Y0 R9
```

Test Output:
```
ILLEGAL
LEGAL
LEGAL
ILLEGAL
LEGAL
LEGAL
LEGAL
ILLEGAL
ILLEGAL
```

Problem 5.1   Coding Conundrum

Data File: pr51.dat

Test Input: ```
7
116 248 12 282 582 351 50 204 72 741 31
122739
1 0 137 351 894 297 4 27 2705
2693 1500 10789 33318 46 5 219 23643 14990 101
109 39 201 81 15 1368 567 122 42 155 197 36 14 61
735 9 76 32 270 286 45 150 2 93 194 40
145 335 162 71 912 837 27322 485
```

Test Output:     ```
HELLO WORLD
X
A B C D E
TOP SECRET
ALL OR NOTHING
FIVE PROBLEM
JK QU YZ
```

Problem 5.2   Maintaining Membership

Data File: pr52.dat

Test Input: 7
                PQRSTU OPRST
                ABCDEFGHIJ BDFHJLNP
                CGI ABCDEFGHIJ
                WXYZ ABCD
                KNOW KNOW
                ABCDEFGHIJ CGI
                D HKPQXZ

Test Output: O QU
                LNP ACEGI
                ABDEFHJ none
                ABCD WXYZ
                none none
                none ABDEFHJ
                HKPQXZ D

Problem 5.3   Rise over Run

Data File: pr53.dat

Test Input: 7
                 0 0 10 30
                 -12 100 12 -140
                 50 50 45 -25
                 4 5 5 4
                 100 0 -100 0
                 16 -5 20 27
                 5 20 15 -20

Test Output: y=3x+0
                 y=-10x-20
                 y=15x-700
                 y=-1x+9
                 y=0x+0
                 y=8x-133
                 y=-4x+40

Problem 5.4   A-Team

Data File: pr54.dat

Test Input: 7
                 3 ABCXYZJKLDEFG
                 10 XAXXXXXXXXXBX
                 1 ZYXZYXADCBDCB
                 2 ZYXZYXADCBDCB
                 5 ONETWOTHREEXAFOURFIVEX
                 3 PQRXYAPQRSTUBCDXYZZY
                 2 ZYXWVUTSRQPONMLKJIHGFEDCBA

Test Output: DGJX
                 B
                 BBCCDDXXYYZZ
                 BCDXYZ
                 EFH
                 DRRUZ
                 CEGIKMOQSUWY

Problem 5.5   Next Unique Number

Data File: pr55.dat

Test Input: 7
                   1988
                   9877
                   8
                   44
                   98766
                   799
                   770

Test Output: 2013
                   10234
                   8
                   45
                   102345
                   801
                   780

Problem 5.6   MasterMind

Data File: pr56.dat

Test Input: 7
                 YOYO
                 GBRP
                 YYYY
                 OOOY
                 BOYR
                 OOYY
                 OYOY
                 YOYO

Test Output: 0 0
                 2 0
                 1 2
                 2 0
                 2 2
                 0 4
                 4 0

Problem 9.1   Letters Left

Data File: pr91.dat

Test Input: ```
6 7 9
MREHTIE
IEEGALL
RHMHCEC
RTSNTSS
OAUNTOU
RFCISUM
FATHER
MOTHER
AUNT
UNCLE
EITHER
MIRROR
RASH
MUSIC
MUSCLE
```

Test Output:        ```
GAMES
```

Problem 9.2   Simplifying Sums

Data File: pr92.dat

Test Input: 7
               1/3 1/6
               12/6 21/7
               5/11 1/2
               1/8 14/16
               5/5 7/8
               3/10 4/100
               0/2 0/37

Test Output: 1/2
               5/1
               21/22
               1/1
               15/8
               17/50
               0/1

Problem 9.3   Four Square

Data File: pr93.dat

Test Input: ```
7
RRRR GBKR KSYW WWYR
GBKY BRRR ROWK SKKS
WXYZ CZAB FCDE SWFR
ABCD DDDD ABCD EFAC
RYRY RYRY YRYR RYRY
WXYZ BYAX BCDE WCZE
JKLM LMJK JKLM LMJK
```

Test Output:      ```
1
6
10
5
1
7
0
```

Problem 9.4   Seating Solutions

Data File: pr94.dat

Test Input: 7
                 5 4 5 5 4
                 2 2 2 2 6 6 6 6
                 3 3 3 3 3 3 2 2 2
                 6 3 6 6 6 6 5
                 8
                 8 8 4 5 1 2 4
                 4 2 5 2 5 4

Test Output: 4
                 4
                 3
                 6
                 1
                 4
                 3

Problem 9.5   TransDate

Data File: pr95.dat

Test Input: `7`
`dd/yyyy/m 07/1997/2 mm/d/yy`
`yy/mm/dd 15/12/09 m/d/yyyy`
`m/d/yy 7/14/21 yyyy/mm/dd`
`yyyy/dd/m 1970/01/2 m/yy/d`
`mm/dd/yyyy 11/30/2000 yy/m/d`
`mm/dd/yyyy 03/09/1999 yy/m/d`
`yy/d/m 00/4/8 dd/mm/yyyy`

Test Output: `02/7/97`
`12/9/2015`
`2021/07/14`
`2/70/1`
`00/11/30`
`99/3/9`
`04/08/2000`

Problem 9.6   An Honor Just to be Nominated

Data File: pr96.dat

Test Input: ```
7
UOIEAUOIEUOIUOU 3
ANDTHENOMINEESARE 1
WXYZWWXXYZYZYZ 2
ZYXWVUTSRQ 10
WHOWHATWHEREWHENWHY 3
QWERTYWERTYERTYRTYTY 5
AAABBCDDDEEFABCDEF 2
```

Test Output:      ```
IOU
E
YZ
QRSTUVWXYZ
EHW
ERTWY
AD
```