

Computer Science Competition

2000 State Finals Programming Set

Judges' Answers

I. General Notes

1. Unless the exact formatting is specifically part of the problem, an answer should NOT be judged wrong for minor formatting variations such as indent/no indent, extra/no blank lines, and so forth.
2. The answer is only correct if their program successfully runs ALL of the judge's data sets for a given problem.
3. Note that the input data file for each problem begins with the examples from the problems, and then goes on to more complex cases. The testing is (by definition) not exhaustive in any sense and it is of course possible that an incorrect program will pass all of the tests provided.

II. Point Values and Names of Problems

Number	Name	Point Value
Problem 1	User Profiling	8
Problem 2	Blockbuster Connections	11
Problem 3	Variable Key String Sort	5
Problem 4	Kangaroo Checks	4
Problem 5	Bouncing Marbles	9
Problem 6	Consonant Blends	5
Problem 7	Change for a Peso?	6
Problem 8	Are we there yet?	3
Total		51

Program Name: profile.cpp**Input Data File:** profile.dat**Input File**

```
00053325 LOGIN alfalfa
00063932 TRANS alfalfa
00784932 LOGIN izzod
00923523 TRANS izzod
00939482 TRANS izzod
01023458 LOGIN lizard
01080384 LOGOUT izzod
01103848 LOGIN stevie
01203902 TRANS lizard
01213842 LOGIN izzod
01218293 TRANS izzod
01223483 LOGIN unused
01228293 TRANS stevie
01230012 LOGOUT izzod
02313483 LOGIN darrell
02348203 TRANS lizard
03020389 TRANS stevie
03062384 TRANS alfalfa
03123834 LOGOUT unused
03256432 TRANS darrell
03289893 TRANS stevie
03349583 LOGOUT lizard
03560823 TRANS alfalfa
04038208 LOGOUT stevie
04253236 TRANS darrell
04256345 LOGOUT alfalfa
04268342 LOGIN weaser
04278234 TRANS weaser
04308004 LOGOUT weaser
05523535 TRANS darrell
05823592 TRANS darrell
05992384 LOGIN weaser
06023489 TRANS weaser
06108423 TRANS weaser
06184023 TRANS weaser
06238420 LOGOUT weaser
06304302 LOGOUT darrell
```

Output to screen

```
ASL=1772443
SSL=16170
LSL=4203020
MTBA=603182
```

Program Name: block.cpp

Input Data File: block.dat

Input File

```
QUIPDFNHBWLCZRMKSOGT:scNLFUhIWpbrGTOZ:
LVJGMDRPUAKXCNOEFSh:vKXQfcPRNug:
QUIPDFNHBWLCZRMKSOGT:scNLFUhIWpbrGT:
NDGUHPITOBQAMFJWKRE:pcjNDgiqWTAKuomhbfRE:
GMCVQTLJXSAHPNZFUDKY:cPnxVKUd:
GMCVQTLJXSAHPNZFUDKY:cPnxVKUdj:
ZMFQHDVARXKTGUPJBNWS:vMDfAqrWWSN:
ZMFQHDVARXKTGUPJBNWS:vMDfAqrGuWSN:
```

Output to screen

```
Family Pair Wins
Solo Player Wins
No Winner Yet
Family Pair Wins
No Winner Yet
Solo Player Wins
No Winner Yet
Family Pair Wins
```

Program Name: sort.cpp

Input Data File: sort.dat

Input file

```
RFVEDCWSXQAZTGBYHNUJMIKOLP
LAKESIDE
RED
EDUCATION
I
FORTUNE
SORTING
VLASIC
VLADIMIR
SCHOLZBOT
MORK
GROOVY
FONZIE
ORSON
ORK
COMPULSORY
ADDITIONAL
FORTUNATE
BUCKWHEAT
ALFALFA
WEASER
SPANKY
PORKY
FROGGY
DARLA
```

Output to screen

```
RED
FROGGY
FORTUNE
FORTUNATE
FONZIE
VLADIMIR
VLASIC
EDUCATION
DARLA
COMPULSORY
WEASER
SCHOLZBOT
SORTING
SPANKY
ADDITIONAL
ALFALFA
GROOVY
BUCKWHEAT
MORK
I
ORSON
ORK
LAKESIDE
PORKY
```

Problem 4**Kangaroo Checks****4 Points**

Program Name: kangaroo.cpp

Input Data File: kangaroo.dat

Input File

```
15
322525 -803
353839 23923
484595 409439
999999 100000
923884 283923
002305 82385
103592 -9239
268358 190909
039842 87352
352920 58285
235235 2948234
000102 28523
253093 -123
111111 100000
325001 32952
C 268358 10293
D 322525 35252
D 353839 45823
D 999999 34265
D 111111 23253
D 353839 23455
C 923884 382942
D 268358 5000
D 111111 253998
D 999999 23523
D 322525 5000
D 039842 43985
C 923884 24353
D 268358 19382
C 039842 12342
D 322525 19203
C 923884 32523
D 352920 85492
D 999999 235234
C 268358 1092
D 039842 3886
D 268358 28345
C 322525 92385
D 999999 235235
C 111111 23902
C 923884 23423
D 353839 32523
C 353839 123952
D 111111 23528
D 039842 28342
D 999999 235235
C 103592 29395
D 353839 90934
D 039842 23482
D 322525 23852
C 353839 2535
D 999999 23243
C 268358 17398
```

C 322525 2359
D 353839 83499

Output to screen

353839 (\$1258.24)
999999 (\$6867.35)
039842 (\$0.01)
352920 (\$272.07)
253093 (\$1.23)
111111 (\$1768.77)

Problem 5**Bouncing Marbles****9 Points**

Program Name: marbles.cpp

Input Data File: marbles.dat

Input File

```
.O....OOO.  
..\\....\\O.  
...O./....  
..//.....  
/...../.O  
.....O  
./...O...O  
..O.../.O  
...../..  
..OOOOOO/.
```

```
.....\\..  
.....  
.../.O..  
.....\\..  
..O.....  
.....O..  
.../.../..  
.....O.  
.../.....  
..\\..O...
```

```
.....  
.....  
.....  
.../.\\..  
.....  
...\\./..  
.....  
.....  
.....  
.....
```

```
O.....\\  
/.....\\.  
./.....\\.  
../.\\..  
.../.....  
...../..  
...\\../.  
..\\...../  
.\\...../  
\\...../
```

```
O.....\\  
/.....\\.  
./.....\\.  
../.\\..  
.../.....  
.....O/  
...\\../.  
..\\...../  
.\\...../  
\\...../
```

```

O.....
.O.....
..O.....
...O.....
....O.....
.....O.....
.....O.....
.....O.....
.....O.....
.....O.....
.....O

```

```

\.....
.\.....
.\.....
.\.....
.\.....
.\.....
.\.....
.\.....
.\.....
.\.....
.\.....
.\.....
.\.....
.\.....

```

Output to screen
Imperfect Maze
Perfect Maze
Imperfect Maze
Perfect Maze
Imperfect Maze
Perfect Maze
Perfect Maze

Program Name: blends.cpp

Input Data File: blends.dat

Input File

NCAA Division I Womens Basketball
Recap
(3) TEXAS TECH 76, (6) TULANE 59

LUBBOCK, Texas (Ticker) -- Texas Tech marched into its second straight "Sweet 16" as freshman Plenette Pierson led four players in double figures with 19 points en route to a 76-59 victory over Tulane in the Mideast Region.

Aleah Johnson, Katrisa O'Neal and Tanisha Ellison had 12 points apiece for third-seeded Texas Tech (27-4), which plays No. 2 Notre Dame on Saturday in Memphis, Tennessee.

The other "Sweet 16" matchup at Memphis will be top-seeded Tennessee and No. 4 Virginia.

Conference USA Player of the Year Grace Daley scored 24 points for Tulane (27-5), which failed to set a school record for victories in a season. The Green Wave have never advanced to the regionals.

The Lady Raiders used a pair of first-half runs to put away the Green Wave. Ellison scored seven points during an 11-0 burst that gave Texas Tech a 22-16 lead with 7:24 to play before the break.

But the key run started 2:48 before intermission, when Pierson ignited a half-ending, 10-0 run with a jumper that made it 36-24. Amber Tarr hit a 3-pointer with 24 seconds left and Keitha Dickerson added one at the buzzer after a steal by Pierson.

The Lady Raiders scored the first basket of the second half -- a 3-pointer by Melinda Pharies with 16:59 left -- and led by at least 10 points the rest of the way.

The Green Wave got within 49-39 with 10:24 left but Texas Tech scored the next six points on baskets by Tarr, Ellison and O'Neal.

The Lady Raiders shot just 44 percent (30-of-69) from the field but held a 38-28 rebounding advantage, scored 34 points off 27 turnovers and recorded 25 assists.

Dickerson finished with nine points, 11 rebounds, six assists and six steals in 40 minutes.

Daley shot 8-of-13 from the floor and 8-of-8 from the line but committed eight turnovers. Tulane finished the game at 44 percent (18-of-41) from the field.

12:29 a.m. ET 03/21/00

Output to screen

th 36
nd 15
nt 15
rs 14
st 13

Problem 7**Change for a Peso?****6 Points**

Program Name: change.cpp

Input Data File: change.dat

Input File

```
1 3 0 0 0 0 1 0 0 0 0 016
4 5 5 5 5 0 3 3 3 0 0 016
1 1 1 1 1 1 1 1 1 1 1 019
5 5 5 5 5 5 5 5 5 5 5 045
4 3 5 0 3 2 5 3 5 2 3 123
3 4 5 5 5 5 4 1 2 3 5 753
1 1 1 1 1 1 1 1 1 1 1 111
2 2 2 2 2 2 2 2 2 2 2 111
3 3 3 3 3 3 3 3 3 3 3 111
0 0 2 1 2 1 0 2 5 2 1 023
4 4 4 4 4 4 4 4 4 4 4 111
5 5 5 5 5 5 5 5 5 5 5 111
```

Output to screen

```
$0.16
$3.84
No monetary exchange
$31.95
$13.53
$30.12
$1.11
$12.21
$18.87
No monetary exchange
$25.53
$31.08
```

Problem 8**Are we there yet?****3 Points****Program Name:** there.cpp**Input Data File:** there.dat**Input File**

```
110 12:00:00 310 14:00:00 610
417 10:45:17 278 13:12:27 116
27 01:25:44 96 02:21:59 816
29 11:00:00 110 12:07:03 275
275 09:05:37 261 09:25:51 29
261 09:25:51 254 09:31:43 29
```

Output to screen

```
03:00:00
02:51:31
09:46:57
02:16:35
05:35:17
03:08:34
```