

Computer Science Competition

2003 Regional 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	Make 'em Look Good	6
Problem 2	Master Index	6
Problem 3	The Path Less Traversed	6
Problem 4	Bomberman!	6
Problem 5	Does This Equate?	6
Problem 6	The Logging Industry	6
Problem 7	Desperately Seeking Austin	6
Problem 8	Every Rose Has Its Thorn	6
Problem 9	There is No 'I' in TEAM	6
Problem 10	Freddy's Fast Fingers	6
Total		60

Problem 1**Make 'em Look Good****6 Points**

Program Name: baseball.cpp

Input File: baseball.dat

Input File

START

1 3

1 3

3 4

2 4

1 3

3 5

1 7

4 5

1 4

2 5

END

START

4 4

2 3

3 5

1 3

1 4

1 3

2 4

4 5

3 6

3 3

END

START

0 3

0 3

0 3

0 3

0 3

0 3

0 3

0 3

0 3

0 3

END

START

9 9

9 9

9 9

9 9

9 9

9 9

9 9

9 9

9 9

9 9

END

Output to screen

BATTING .500 FOR THE LAST 6 GAME(S)

BATTING 1.000 FOR THE LAST 1 GAME(S)

BATTING .000 FOR THE LAST 10 GAME(S)

BATTING 1.000 FOR THE LAST 10 GAME(S)

Input File

```
START broccoli 7
138
140
141
142
144
145
150
END
START cheese 1
138
END
START doughnuts 2
28
30
END
START milk 5
100
101
102
103
104
END
START trivial 1
1
END
START trivialseries 2
1
2
END
START firstmix 4
1
3
4
6
END
START secondmix 5
1
2
4
6
7
END
START indextermboundarysiz 1
1
END
START indexpagesboundary 100
1
2
3
4
5
```

6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
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51
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53
54
55
56
57
58
59
60
61
62
63
64
65

66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

END

START adjacentseries 4

1

2

4

5

END

Output to screen

broccoli,138,140-142,144-145,150

cheese,138

doughnuts,28,30

milk,100-104

trivial,1

trivialseries,1-2

firstmix,1,3-4,6

secondmix,1-2,4,6-7

indextermboundarysiz,1

indexpagesboundary,1-100

adjacentseries,1-2,4-5

Problem 3

The Path Less Traversed

6 Points

Input File: path.dat

Input file

```
/subdir1/subdir2 ../subdir1/../subdir1
/subdir1/subdir2/subdir3 ../../../subdir1/subdir2/subdir3/../../subdir2
/subdir1/subdir2/subdir3 ../../../subdir1/subdir2/subdir3/../../subdir3
/234567890/234567890/234567890/234567890/234567890/234567890/234567890/234567
890/234567890/234567890
/../../../234567890/../../../234567890/../../../234567890/../../../234567
890/../../../234567890
/ /
```

[illegible]

Output to screen

```

/subdir1
/subdir1/subdir2
INVALID DIRECTORY
/234567890/234567890/234567890/234567890/234567890
/
/
/
/a
/a
/
/a
INVALID DIRECTORY
INVALID DIRECTORY
/a/b/c/d
/a/b/c/d
/a/b/c/d
/

```

Problem 4**Bombberman!****6 Points**

Program Name: bomberman.cpp Input File: bomberman.dat

Input File

```
START 4 4 3
(0,0) (1,2) (3,0)
END
START 5 3 5
(0,0) (0,2) (2,1) (4,0) (4,2)
END
START 1 1 1
(0,0)
END
START 1 1 5
(0,0) (0,0) (0,0) (0,0) (0,0)
END
START 4 4 4
(0,0) (3,3) (0,3) (3,0)
END
START 5 1 2
(0,0) (4,0)
END
START 1 5 2
(0,0) (0,4)
END
START 3 3 1
(1,1)
END
START 2 2 4
(0,0) (0,1) (1,0) (1,1)
END
START 2 2 4
(0,0) (0,0) (0,0) (0,0)
END
```

Output to screen

```
(0,3) (2,1) (2, 3) (3,2) (3,3)
BOMBERMAN'S TOAST!
BOMBERMAN'S TOAST!
BOMBERMAN'S TOAST!
(1,1) (1,2) (2,1) (2,2)
(2,0)
(0,2)
(0,0) (0,2) (2,0) (2,2)
BOMBERMAN'S TOAST!
(1,1)
```

Problem 5**Does This Equate?****6 Points**Program Name: `equate.cpp`Input File: `equate.dat`**Input File**

```
x = 100
x = 200 + 4 - 8
x = 5 * 10 - 2 + 10 * 3
x = 1
x = 1 + 2
x = 1 - 2
x = 1 * 2
x = 5 + 3 * 2
x = 5 + 3 - 2
x = 5 - 3 + 2
x = 5 * 3 + 2
x = 5 * 3 - 2
x = 1 * 2 - 3 + 4
x = 1 + 2 * 3 - 4
x = 1 + 2 - 3 * 4
x = 1 - 2 + 3 * 4
x = 0 * 0
x = 0 + 0 - 0 * 0
x = 0 * 0 + 0 - 0
x = 9999 * 0
x = 9999 * 1 - 1 + 1
```

Output to screen

```
x = 100
x = 196
x = 78
x = 1
x = 2
x = -1
x = 2
x = 11
x = 6
x = 4
x = 17
x = 13
x = 3
x = 3
x = -9
x = 11
x = 0
x = 0
x = 0
x = 0
x = 9999
```


Problem 6**The Logging Industry****6 Points**

Program Name: log.cpp

Input File: log.dat

Input File

```
DATABASE 1
James 1000
Marc 1000
Tim 1000
LOG
Insert Laura 100
Delete Tim
Update Marc 500
DATABASE 2
Nochange 0
LOG
DATABASE 3
LOG
Insert Allnew 1
DATABASE 4
James 100
LOG
Insert Marc 100
Insert Tim 0
Update Tim 6000
Update Marc 1000
Delete Tim
DATABASE 5
LOG
DATABASE 6
LOG
Insert Jerry 100
Insert James 600
Insert Bob 1000
Insert Sarah -1000
Insert Marc 9999
Insert Zoey 2
Update Sarah 500
Delete Sarah
Insert Sarah 500
Update Sarah -1000
DATABASE 7
A 1
B 2
C 3
D 4
E 5
F 6
G 7
H 8
I 9
J 10
LOG
Delete A
Delete B
Delete C
Delete D
Delete E
Delete F
```

```
Delete G
Delete H
Delete I
Delete J
DATABASE 8
A 1
B 2
C 3
D 4
E 5
F 6
G 7
H 8
I 9
J 10
LOG
Update A 10
Update B 9
Update C 8
Update D 7
Update E 6
Update F 5
Update G 4
Update H 3
Update I 2
Update J 1
DATABASE 9
A 1
B 2
C 3
D 4
E 5
F 6
G 7
H 8
I 9
J 10
LOG
Insert K -9999
Insert L 9
Insert M 8
Insert N 7
Insert O 6
Insert P 5
Insert Q 4
Insert R 3
Insert S 2
Insert T 9999
DATABASE 10
LOG
DATABASE 11
LOG
Output to screen
DATABASE 1
James 1000
Laura 100
Marc 500
DATABASE 2
Nochange 0
DATABASE 3
```

Allnew 1
DATABASE 4
James 100
Marc 1000
DATABASE 5
DATABASE 6
Bob 1000
James 600
Jerry 100
Marc 9999
Sarah -1000
Zoey 2
DATABASE 7
DATABASE 8
A 10
B 9
C 8
D 7
E 6
F 5
G 4
H 3
I 2
J 1
DATABASE 9
A 1
B 2
C 3
D 4
E 5
F 6
G 7
H 8
I 9
J 10
K -9999
L 9
M 8
N 7
O 6
P 5
Q 4
R 3
S 2
T 9999
DATABASE 10
DATABASE 11

Problem 7**Desperately Seeking Austin****6 Points**

Program Name: findut.cpp

Input File: findut.dat

Input File

```
DATASET 5
4 Dallas Austin Houston SanAntonio
Dallas SanAntonio 275
Dallas Houston 238
SanAntonio Austin 79
Houston Austin 162
```

DATASET 2

```
2 MyHouse YourHouse
MyHouse YourHouse 1
```

DATASET 4

```
3 MyHouse YourHouse Somewhere
MyHouse YourHouse 300
YourHouse Somewhere 100
MyHouse Somewhere 100
```

DATASET 10

```
9 A I B C D E F G H
```

```
A I 1000
```

```
A B 125
```

```
B C 125
```

```
C D 125
```

```
D E 125
```

```
E F 125
```

```
F G 125
```

```
G H 125
```

```
H I 124
```

DATASET 10

```
5 A D B C E
```

```
A B 2
```

```
A C 2
```

```
A E 1
```

```
B C 2
```

```
B D 2
```

```
B E 1
```

```
C D 2
```

```
C E 1
```

```
D E 1
```

DATASET 8

```
6 F A E C D B
```

```
C B 3
```

```
B A 3
```

```
C A 7
```

```
F E 3
```

```
E D 3
```

```
F D 5
```

```
C D 3
```

DATASET 3

```
3 Left Middle Right
```

```
Left Middle 1
```

```
Middle Right 1
```

Output to screen**DATASET 5**

```
Dallas SanAntonio Austin 354
```

DATASET 2

```
MyHouse YourHouse 1
```

DATASET 4
MyHouse Somewhere YourHouse 200
DATASET 10
A B C D E F G H I 999
DATASET 10
A E D 2
DATASET 8
F D C B A 14
DATASET 3
Left Middle 1

Problem 8**Every Rose Has Its Thorn****6 Points**

Program Name: rose.cpp

Input File: rose.dat

Input File

```
START 4
1.00 5.00 6.00 8.00
2.00 3.00 4.00 7.00
0.25 0.50 5.75 8.75
0.50 0.75 4.00 4.25
END
START 5
2.00 3.00 4.00 5.00 6.00
5.00 6.00 7.00 8.00 9.00
2.25 3.43 6.89 7.00 8.40
1.24 4.58 6.78 7.12 8.34
END
START 1
0.00
1.00
2.00
3.00
END
START 3
1.25 2.00 9.00
3.00 4.00 9.50
5.00 6.00 10.00
7.00 8.00 10.50
END
START 4
0.00 2.00 4.00 6.00
1.00 3.00 5.25 7.00
2.00 3.00 8.24 9.00
3.00 4.75 5.00 5.50
END
START 10
0.00 1.00 2.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00
1.00 2.00 3.24 4.00 5.00 6.00 7.00 8.00 9.00 10.00
2.00 3.25 3.50 4.00 5.00 6.00 7.00 8.00 9.00 10.00
2.00 3.75 4.00 5.00 6.00 7.00 8.00 9.00 10.00 10.50
END
```

Output to screen

```
A ROSE FOR MY LOVE
A THORN FOR MY TROUBLES
A ROSE FOR MY LOVE
A ROSE FOR MY LOVE
A THORN FOR MY TROUBLES
A THORN FOR MY TROUBLES
```

Problem 9**There is No 'I' in TEAM****6 Points**

Program Name: set.cpp

Input File: set.dat

Input File

```
START 4
500 0 0 0
0 200 200 200
0 200 200 200
0 200 200 200
END
START 5
500 -500 -500 -500 500
-100 300 100 100 500
-100 100 300 100 500
-100 100 50 300 500
0 0 0 0 0
END
START 3
0 0 0
0 0 0
0 0 0
END
START 9
50 0 0 0 0 0 0 0 0
0 100 0 0 0 0 0 0 0
0 0 150 0 0 0 0 0 0
0 0 0 200 0 0 0 0 0
0 0 0 0 250 0 0 0 0
0 0 0 0 0 300 0 0 0
0 0 0 0 0 0 350 0 0
0 0 0 0 0 0 0 400 0
0 0 0 0 0 0 0 0 450
END
START 9
-50 0 0 0 0 0 0 0 0
0 -100 0 0 0 0 0 0 0
0 0 -150 0 0 0 0 0 0
0 0 0 -200 0 0 0 0 0
0 0 0 0 -250 0 0 0 0
0 0 0 0 0 -300 0 0 0
0 0 0 0 0 0 -350 0 0
0 0 0 0 0 0 0 -400 0
0 0 0 0 0 0 0 0 -450
END
```

Output to screen

```
2 3 4 1800
2 3 5 1800
1 2 3 0
7 8 9 1200
1 2 3 -300
```

Problem 10**Freddy's Fast Fingers****6 Points**

Program Name: typing.cpp

Input File: typing.dat

Input File

```
asdf jkl;  
the quick brown fox jumps over the lazy dog.
```

```
a  
j  
asdfjkl;  
qweruiop  
zxcvm, ./  
gh  
ty  
bn  
qjxkelv;  
qjzjqjzj  
fyan  
untb
```

Output to screen

```
90  
1280  
10  
10  
10  
80  
130  
130  
70  
120  
120  
130  
400  
220  
340
```