

A+ Computer Science

Computer Science Competition

Judges Packet

Problem #1
60 Points

Advertising

No Data File

Test Output To Screen

```
+-----+
|  M   M   AAA   RRR   SSSS |
| MM MM  A   A  R   R   S   |
| M M M  A A A  RRRRR  SSS   |
| M   M  A   A  R   R       S |
| M   M  A   A  R   R  SSSS  |
+-----+
```

Problem #2
60 Points

Basalt

Test Input File

```
10
72.475
4.665
921.07
10836.12
7803.567
1.23
0.095
1.001
347.382
94523.37
```

Test Output To Screen

```
0.095
94523.37
```

Problem #3
60 Points

Boring

Test Input File

```
17
Space
Boring
Space is boring
Roadster on mars, because we can
The engineer's pace
Typing is BORING
Too many spaces
musktrat
:::0
SpaceBoring
SpaceSpace
sPACE
Spaces Borings
Borings
Space Space Space Space Space
impossible
b o r i n g
```

Test Output To Screen

```
true
true
true
false
false
true
false
false
false
false
false
false
true
false
false
true
false
false
false
```


Problem #5
60 Points

Diplomacy

Test Input File

```
7
3 3
? ? ? D E F G H I
A B C
A-B B-C
C-D A-F B-H
4 2
Green ? Red ? ? ? Orange Yellow
Purple Gray Blue Pink
Red-Purple Red-Blue Orange-Blue Orange-Gray
Green-Purple Blue-Yellow
3 3
I II ? III IV ? ? ? V
VI VII VIII IX
V-VII
II-VII II-VIII II-IX IV-IX III-VII
8 2
ONE TWO THREE FOUR FIVE SIX SEVEN ? NINE TEN ELEVEN TWELVE THIRTEEN FOURTEEN
FIFTEEN SIXTEEN
EIGHT
ONE-EIGHT
SEVEN-EIGHT
2 2
? ? I O
A E
A-O A-I
A-E E-O
4 4
Red Green Navy Purple White Magenta Gold Blue ? ? ? ? ? ? ?
Cyan Yellow Orange Maroon Black Lime Brown Gray
Blue-Brown Orange-Black Black-White Orange-Yellow Orange-Brown Orange-Gray
Gray-Lime
Blue-Lime Orange-Cyan Black-Gray Maroon-White
3 3
A B C ? ? D E F G
Z Y
Y-A Y-E Y-B Y-F
Z-G
```

Test Output To Screen

```
A B C D E F G H I
Green Pink Red Purple Blue Gray Orange Yellow
I II VI III IV VII IX VIII V
ONE TWO THREE FOUR FIVE SIX SEVEN EIGHT NINE TEN ELEVEN TWELVE THIRTEEN
FOURTEEN FIFTEEN SIXTEEN
E A I O
Red Green Navy Purple White Magenta Gold Blue Cyan Black Orange Brown Maroon
Yellow Gray Lime
A B C Y Z D E F G
```

Problem #6
60 Points

Launch Date

Test Input File

```
6
5
Wednesday, August 14 - 80% Rain
Thursday, August 15 - 50% Rain
Friday, August 16 - 30% Rain
Saturday, August 17 - 25% Rain
Sunday, August 18 - 0% Rain
4
Thursday, November 2 - 15% Rain
Friday, November 3 - 50% Rain
Monday, November 6 - 0% Rain
Thursday, November 9 - 0% Rain
4
Monday, January 20 - 20% Rain
Thursday, January 23 - 20% Rain
Monday, January 27 - 50% Rain
Thursday, February 5 - 5% Rain
9
Friday, April 2 - 90% Rain
Saturday, April 3 - 100% Rain
Sunday, April 4 - 100% Rain
Friday, April 9 - 90% Rain
Saturday, April 10 - 90% Rain
Sunday, April 11 - 75% Rain
Friday, April 16 - 100% Rain
Saturday, April 17 - 100% Rain
Sunday, April 18 - 80% Rain
2
Monday, December 12 - 0% Rain
Friday, December 16 - 90% Rain
13
Tuesday, January 1 - 7% Rain
Friday, February 1 - 80% Rain
Friday, March 1 - 100% Rain
Monday, April 1 - 0% Rain
Wednesday, May 1 - 15% Rain
Saturday, June 1 - 100% Rain
Monday, July 1 - 0% Rain
Thursday, August 1 - 25% Rain
Monday, September 1 - 50% Rain
Tuesday, October 1 - 0% Rain
Friday, November 1 - 50% Rain
Sunday, December 1 - 5% Rain
Wednesday, January 1 - 0% Rain
```

Test Output To Screen

```
Launch Date: Saturday, August 17
Launch Date: Monday, November 6
Launch Date: Thursday, February 5
Launch Date: Sunday, April 11
Launch Date: Monday, December 12
Launch Date: Sunday, December 1
```

Problem #7
60 Points

Martian Potatoes

Test Input File

```
16
68.14
82.29
70.00
67.97
70.01
100.00
0.00
81.55
32.67
32.00
91.09
70.00
69.99
47.17
99.99
2.80
```

Test Output To Screen

```
1.03 degrees warmer
6.83 degrees cooler
No change
1.13 degrees warmer
0.01 degrees cooler
16.67 degrees cooler
38.89 degrees warmer
6.42 degrees cooler
20.74 degrees warmer
21.11 degrees warmer
11.72 degrees cooler
No change
0.01 degrees warmer
12.68 degrees warmer
16.66 degrees cooler
37.33 degrees warmer
```


Problem #8
60 Points

Phobos

Test Input File

```
15
RMIOKE IQE IV
SUX VPUX MMUZ IF
RJ SOIZ AAT PUD AX
TSOI TE TICIJQ
EEEEG EG EG
RED PLANET
SIMEKN CIQ
EE EEEEE EEE EEEE
AA AAAAA AAA AAAA
YE EY
ZA AZ
AEIOU EIOUA IOUAE OUA EI UAEIO
QWRTYP SDFGHJKL ZXCVBNM
BANANA BANANA
EMEMEZ EMEMEZ
```

Test Output To Screen

```
WE ARE ALIENS
DO YALL WANT WAR
WE CAN SEE YOUR HQ
PHOBOS IS OURS
HA HA HAAAA
SIMEKN CIQ
POB MJILOR
AAAA AAA AAAAA AA
UUUU UUU UUUUU UU
ZA AZ
BU UB
IEAUO EAUOI AUOIE UOIEA OIEAU
LMZTBWY KJHGFDCR NXSQVP
UPUPUC UPUPUC
BANANA BANANA
```

Problem #9
60 Points

Recruiting

Test Input File

```
6
6
*01: 06
*02: 03
03: 02
04: 06
05: 04
**06: 01, 04
4
A1: A3
A2: A4, A3
A3: A2
*A4: A2
10
A:
B:
C: D
D: C
*E: E
*F: E, G, J
G: F
H: I
I: H, J
J: F
2
AWINNER:
LOSER:
5
**01: 02, 03
**02: 01, 03, 04
**03: 01, 02
04: 02, 05
05: 04
4
*Z: Y, X, A
*Y: Y, X
X: Z, Y, A
A: Z, X
```

Test Output To Screen

```
04 03 05
A2 A3 A1
G J I A B C D H
AWINNER LOSER
04 05
X A
```

Problem #10
60 Points

Rocket

Test Input File

```
8
5 5
..##.
#..##
#....
##...#
..#..
2 6
..#...#
...#..
4 4
#...
#.#.
#.#.
..#.
2 2
##
##
4 4
....
....
....
....
1 3
#..
6 5
..#..
#...#
..#..
.#...#
..#..
.####
20 20
.....#
.....#
.....#
.....#
.....#####.##
.....#
...#####.
.....#
#####
.....#...#
.....#...#
.....#...#
.....#...#
.....#...#
.....#...#
.....#...#
.....#...#
.....#...#
.....#...#
.....#...#
.....#...#
.....#...#
.....#...#
.....#...#
```

Test Output To Screen

```
Destination: Mars
Destination: Mars
Destination: Asteroid
Destination: Asteroid
Destination: Mars
Destination: Asteroid
Destination: Mars
Destination: Mars
```


Problem #12
60 Points

Topography

Test Input File

```
7
10 5
2211222222
2122222233
3222222344
3333333333
2343232233
3 2
989
999
2 2
00
00
4 4
3455
2345
1345
1125
11 3
22222122222
22222122222
22222222222
2 2
18
81
6 8
151212
512121
121212
212121
121212
212121
444444
555544
```

Test Output To Screen

```
2 coordinate(s) with elevation 1 from (3, 1) to (4, 1)
1 coordinate(s) with elevation 1 from (2, 2) to (2, 2)
1 coordinate(s) with elevation 4 from (3, 5) to (3, 5)
2 coordinate(s) with elevation 4 from (9, 3) to (10, 3)

5 coordinate(s) with elevation 9 from (1, 1) to (3, 2)
1 coordinate(s) with elevation 8 from (2, 1) to (2, 1)

4 coordinate(s) with elevation 0 from (1, 1) to (2, 2)

5 coordinate(s) with elevation 5 from (3, 1) to (4, 4)
3 coordinate(s) with elevation 1 from (1, 3) to (2, 4)

31 coordinate(s) with elevation 2 from (1, 1) to (11, 3)
2 coordinate(s) with elevation 1 from (6, 1) to (6, 2)

1 coordinate(s) with elevation 1 from (1, 1) to (1, 1)
1 coordinate(s) with elevation 8 from (2, 1) to (2, 1)
1 coordinate(s) with elevation 8 from (1, 2) to (1, 2)
1 coordinate(s) with elevation 1 from (2, 2) to (2, 2)

1 coordinate(s) with elevation 1 from (1, 1) to (1, 1)
1 coordinate(s) with elevation 5 from (2, 1) to (2, 1)
1 coordinate(s) with elevation 5 from (1, 2) to (1, 2)
1 coordinate(s) with elevation 1 from (3, 1) to (3, 1)
1 coordinate(s) with elevation 1 from (2, 2) to (2, 2)
1 coordinate(s) with elevation 1 from (1, 3) to (1, 3)
1 coordinate(s) with elevation 1 from (5, 1) to (5, 1)
1 coordinate(s) with elevation 1 from (4, 2) to (4, 2)
1 coordinate(s) with elevation 1 from (3, 3) to (3, 3)
1 coordinate(s) with elevation 1 from (2, 4) to (2, 4)
1 coordinate(s) with elevation 1 from (1, 5) to (1, 5)
1 coordinate(s) with elevation 1 from (6, 2) to (6, 2)
1 coordinate(s) with elevation 1 from (5, 3) to (5, 3)
1 coordinate(s) with elevation 1 from (4, 4) to (4, 4)
1 coordinate(s) with elevation 1 from (3, 5) to (3, 5)
1 coordinate(s) with elevation 1 from (2, 6) to (2, 6)
4 coordinate(s) with elevation 5 from (1, 8) to (4, 8)
1 coordinate(s) with elevation 1 from (6, 4) to (6, 4)
1 coordinate(s) with elevation 1 from (5, 5) to (5, 5)
1 coordinate(s) with elevation 1 from (4, 6) to (4, 6)
1 coordinate(s) with elevation 1 from (6, 6) to (6, 6)
```