UIL Computer Science Competition

Region 2016

JUDGES PACKET - CONFIDENTIAL

I. Instructions

1. The attached printouts of the judge test data are provided for the reference of the contest director and programming judges. Additional copies may be made if needed for this purpose.

2. This packet must remain CONFIDENTIAL. Additional copies may be made and returned to schools when other confidential contest material is returned.

II. Table of Contents

Note: For all floating output values, a tolerance of ±1 in the final significant digit is acceptable.

Problem #1
60 Points

1. Magda

Test Input File: magda.dat

```
.140625
.111
.105
.45
.25
.125
.001
```

Test Output To Screen

```
.001001
.0001110001
.0001101011
.0111001100
.01
.001
.0000000001
```

Problem #2
60 Points

2. Nicole

Test Input File: nicole.dat

```
1 0 4 9
1 1 2 5
1 1 1 10
1 3 5 12
-1 -2 -3 10
2 4 6 8
5 10 15 6
```

Test Output To Screen

```
25
1
-51
670
-386
91
88
```

Problem #3
60 Points

3. Oleg

Test Input File: oleg.dat

```
O-O--X-XOO-X-X-OO-X-X-X---O 5
XO--X-O--O---X-XXO--X---O-O 11
X-X-X-O-OO-O-O-X-XX-X---O-O 23
-XO--XO-OOO--X-O-X--O-X-X-X 22
-X-OX-XOO-OXX----O-O-X--X-O 3
XO--X-OX-O-OXOOX-X-O--XOOXX 17
-OOXO-XX-OX-OO-XOXOOX-X--X- 25
OO-O-XXXO-OOXOOX-X-X-XX-O-- 19
OX--OOO-X-XXOO------XX----- 15
---OX-XOOX-OX-XOOX-OX-X---O 14
O--XX-OOX-O---O--XOXX-XX-OO 14
-O--OXOXOOXOXXOX-XXOXO-XOXO 23
```

Test Output To Screen

```
5 14 23

1 11 21
11 14 17

NO WIN

6 14 22

3 5 7

8 17 26
16 17 18

7 16 25
21 23 25

7 13 19

9 15 21

5 14 23
7 14 21
10 14 18
13 14 15

4 14 24
5 14 23

NO WIN
```

Problem #4
60 Points

4. Paulina

Test Input File: paulina.dat

```
2 5 45 4 -30
4 2 90 2 180 2 270 2 0
3 2 120 2 -330 2 60
3 2 -45 2 -300 2 -60
3 2 240 2 150 2 200
3 2 -90 2 -180 2 -270
3 2 30 2 330 2 360
4 2 315 2 300 2 -210 2 -150
4 2 -360 2 -240 2 135 2 225
4 2 -45 2 -135 2 -225 2 -315
4 2 30 2 30 2 -120 2 -180
5 2 0 2 90 2 -90 2 -270 2 -180
```

Test Output To Screen

```
(6.9996, 1.5355)
(0.0000, 0.0000)
(1.7321, 4.4641)
(3.4142, -1.4142)
(-2.7321, -0.7321)
(-2.0000, 0.0000)
(5.4641, 0.0000)
(-1.0499, -3.1463)
(-1.8284, 1.7321)
(0.0000, 0.0000)
(0.4641, 0.2679)
(0.0000, 2.0000)
```

Note: For all floating output values, a tolerance of ±1 in the final significant digit is acceptable.

Problem #5
60 Points

5. Quincy

Test Input File: quincy.dat (blank lines included below, but not in data file)

```
123456.7089

3.141592653589793115997963468544185161590576171875

3.14159265358979323846264338327950288419716939937510582097494459230781640628620899862803482534211
7067982148086513282306647093844609550582231725359408128481117450284102701938521105559644622948954
930381964428810975665

2.718281828459045090795598298427648842334747314453125

1.4142135623730951454746218587388284504413604736328125

0.571428571428571396850770724995527416467666625976562554

0.888888888888888839545643349993042647838592529296875

1797693134862315708145274237317043567980705675258449965989174768031572607800285387605895586327668
78171540458.9535143824642343213268894641827684675467035375169860499105765512820762454900903893289
4407586850845513394230458323690322294816580855933212334827479782620414472316873817718091929988125
0404026184124858368309

0.00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
0000000000000000000000000000000000494065645841246544176568792868221372365059802614324764425585682
5006755072702087518652998363616359923797965646954457177309266567103559397963987747960107818781263
0071319031140452784581716784898210368871863605699873072305000638740915356498438731247339727316961
5140031715385398074126238565591171026658556686768187039560310624931945271591492455329305456544401
1274801297099995419319894090804165633245247571478690147267801593552386115501348035264934720193790
2681071074917033322268447533357208324319360923828934583680601060115061698097530783422773183292479
0498252473077637592724787465608477820373446969953364701797267771758512566055119913150489110145103
786273816725095583738973359899
```

Test Output To Screen

```
123456.7089
61728.35445
246913.4178
0 *||
1 *|*|**
2 *|*|*
3 *|*|*
4 *|**|**
5 *|**|
6 *|*|*
7 *|*|*
8 *|*|*
9 *||*

3.141592653589793115997963468544185161590576171875
1.5707963267948965579989817342720925807952880859375
6.283185307179586231995926937088370323181152343750
0 *|****|****
1 *********|**|******
2 *|*****|*****
3 ****|***|*********
4 ****|**|*
5 *********|*******|*****
6 *****|***|***
7 *****|********|*****
8 ****|*******|******
9 *******|*********|*****
```

```
3.14159265358979323846264338327950288419716939937510582097494
1.57079632679489661923132169163975144209858469968755291048747
6.28318530717958647692528676655900576839433879875021164194988
0 ********************|********************|*****************
1 ********************|26*s|*************************
2 *************************|*************************|************************
3 ********************|*****************|*****************
4 ************************|27*s|******************
5 ********************|**********************|********************
6 ******************|********************|29*s
7 *************|**********************|********************
8 27*s|*************|************************
9 ************************|************************|*************************

2.71828182845904509079559829842764884233474731445312 5
1.35914091422952254539779914921382442116737365722656 25
5.43656365691809018159119659685529768466949462890625 0
0 ***|*|****
1 ****|*******|*****
2 *******|**********|***
3 ****|*****|**
4 *********|******|****
5 ******|*******|********
6 *|****|***********
7 *****|*****|*
8 ********|*|*****
9 *****|*******|*********

1.41421356237309514547462185873882845044136047363281 25
0.70710678118654757273731092936941422522068023681640 625
2.82842712474619029094924371747765690088272094726562 50
0 ***|*******|******
1 *******|******|***
2 ******|********|**********
3 *******|****|*
4 *********|****|*******
5 ******|****|***
6 ****|*******|*****
7 ****|*******|********
8 ******|****|****
9 *|***|******

0.57142857142857139685077072499552741646766662597656255 4
0.28571428571428569842538536249776370823383331298828127 7
1.14285714285714279370154144999105483293533325195312510 8
0 ***|**|***
1 ****|****|**********
2 ******|*********|******
3 *|********|*******
4 ******|****|*******
5 **********|*****|********
6 *********|***|
7 *********|*******|****
8 ***|**********|****
9 ****|***|******

0.88888888888888883954564334999304264783859252929687 5
0.44444444444444419772821674996521323919296264648437 5
1.77777777777777679091286699986085295677185058593750
0 **|*|****
1 |****|***
2 ****|******|**
3 *****|***|*
4 *****|********************|
5 *****|**|******
6 ***|*****|*****
7 **|****|******************
8 ******************|**|*****
9 *******|******|*******
```

```
17976931348623157081452742373170435679807056752584499659891 7
89884656743115785407263711865852178399035283762922498299458 7
35953862697246314162905484746340871359614113505168999319783 4
0 28*s|27*s|29*s
1 26*s|33*s|32*s
2 31*s|36*s|**********
3 32*s|31*s|33*s
4 35*s|36*s|29*s
5 33*s|27*s|33*s
6 28*s|30*s|42*s
7 31*s|32*s|31*s
8 41*s|28*s|31*s
9 27*s|32*s|31*s

0.0000000000000000000000000000000000000000000000000000000000000000
0.0000000000000000000000000000000000000000000000000000000000000000
0.0000000000000000000000000000000000000000000000000000000000000000
0 390*s|384*s|390*s
1 69*s|52*s|74*s
2 56*s|72*s|65*s
3 72*s|79*s|73*s
4 61*s|51*s|70*s
5 74*s|76*s|65*s
6 69*s|76*s|69*s
7 79*s|63*s|64*s
8 61*s|69*s|54*s
9 68*s|78*s|75*s
```

Problem #6
60 Points

6. Raj

Test Input File: raj.dat

```
10
4.0 5.0 3.0 2.0 1.0
1.0 1.0 1.0 1.0 -1.0
-1000.33 0.33 0.45 10.1
0.0
1.0 0.0
1 -1 100 3 3 -3
-100000000.0 0.001
1 1 1 1 1 1 1 1
100.0
-1000.0 10
```

Test Output To Screen

```
180.00
5.00
30629.93
0.00
Infinity
5400.00
100000000.00
8.00
100.00
1010.00
```

Note: For all floating output values, a tolerance of ±1 in the final significant digit is acceptable.

Problem #7
60 Points

7. Sakshi

Test Input File: sakshi.dat

```
10 2
100 .5
4.5 3
1.1 5
13.97 0
100 2.5
12 8.2
99.9 .33
1937.471 3.4
0 4.35
```

Test Output To Screen

```
100.000
10.000
91.125
1.611
1.000
100000.000
706783199.459
4.569
150175717806.293
0.000
```

Note: For all floating output values, a tolerance of ±1 in the final significant digit is acceptable.

Problem #8
60 Points

8. Thiago

Test Input File: thiago.dat

```
Magda
Nicole
Oleg
Paulina
Quincy
Raj
Sakshi
Thiago
Veronika
Wayne
Yaroslav
Zoe
```

Test Output To Screen

```
MAGDA 4152
NICOLE 5304
OLEG 3540
PAULINA 6264
QUINCY 5676
RAJ 2652
SAKSHI 5412
THIAGO 5328
VERONIKA 7284
WAYNE 4656
YAROSLAV 7500
ZOE 2856
```

Problem #9
60 Points

9. Veronika

Test Input File: veronika.dat

```
UIL
REGION
STATE
JAVA
PROGRAM
ABCDEFGHIJKLMNOPQRSTUVWXY
YO
```

Test Output To Screen

```
UUUUU
UIIIU
UILIU
UIIIU
UUUUU

RRRRRRRRRR
REEEEEEEER
REGGGGGGER
REGIIIIIGER
REGIOOOIGER
REGIONOIGER
REGIOOOIGER
REGIIIIIGER
REGGGGGGER
REEEEEEEER
RRRRRRRRRR

SSSSSSSSS
STTTTTTTS
STAAAAATS
STATTTATS
STATETATS
STATTTATS
STAAAAATS
STTTTTTTS
SSSSSSSSS

JJJJJJJ
JAAAAAJ
JAVVVAJ
JAVAVAJ
JAVVVAJ
JAAAAAJ
JJJJJJJ

PPPPPPPPPPPPP
PRRRRRRRRRRP
PROOOOOOOOORP
PROGGGGGGGORP
PROGRRRRRGORP
PROGRAAARGORP
PROGRAMARGORP
PROGRAAARGORP
PROGRRRRRGORP
PROGGGGGGGORP
PROOOOOOOOORP
PRRRRRRRRRRP
PPPPPPPPPPPPP
```

```
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
ABBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBA
ABCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCBA
ABCDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDBA
ABCDEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEDCBA
ABCDEFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFEDCBA
ABCDEFGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGFEDCBA
ABCDEFGHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHGFEDCBA
ABCDEFGHIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIHGFEDCBA
ABCDEFGHIJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJIHGFEDCBA
ABCDEFGHIJKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKJIHGFEDCBA
ABCDEFGHIJKLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLKJIHGFEDCBA
ABCDEFGHIJKLMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMLKJIHGFEDCBA
ABCDEFGHIJKLMNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNMLKJIHGFEDCBA
ABCDEFGHIJKLMNOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSSSSSSSSSSSSSSSSSSSSSSSSSSSSSRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSTTTTTTTTTTTTTTTTTTTTTTTTTTTTRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSTUUUUUUUUUUUUUUUUUUUUUUUUUUTSRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSTUVVVVVVVVVVVVVVVVVVVVVVVVVTSRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSTUVWWWWWWWWWWWWWWWWWWWWWWWTSRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSTUVWXXXWWWWWWWWWWWWWWWWWWWWTSRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSTUVWXYXWWWWWWWWWWWWWWWWWWWWTSRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSTUVWXXXWWWWWWWWWWWWWWWWWWWWTSRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSTUVWWWWWWWWWWWWWWWWWWWWWWWTSRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSTUVVVVVVVVVVVVVVVVVVVVVVVVVTSRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSTUUUUUUUUUUUUUUUUUUUUUUUUUUTSRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSTTTTTTTTTTTTTTTTTTTTTTTTTTTTRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRSSSSSSSSSSSSSSSSSSSSSSSSSSSSSRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQQPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPONMLKJIHGFEDCBA
ABCDEFGHIJKLMNOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOONMLKJIHGFEDCBA
ABCDEFGHIJKLMNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNMLKJIHGFEDCBA
ABCDEFGHIJKLMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMLKJIHGFEDCBA
ABCDEFGHIJKLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLKJIHGFEDCBA
ABCDEFGHIJKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKJIHGFEDCBA
ABCDEFGHIJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJJIHGFEDCBA
ABCDEFGHIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIHGFEDCBA
ABCDEFGHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHGFEDCBA
ABCDEFGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGFEDCBA
ABCDEFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFEDCBA
ABCDEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEDCBA
ABCDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDCBA
ABCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCBA
ABBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

YYY
YOY
YYY
```

Problem #10
60 Points

10. Wayne

Test Input File: wayne.dat

```
BINARYTREE
RESEARCH
TWOAHEAD
UIL
PROGRAMMINGCONTEST
WRITTENTEST
SUPERCALIFRAGILISTICEXPIALIDOCIOUS
YOU
```

Test Output To Screen

```
25 21 4 BETTER
16 16 SAME
19 21 2 WORSE
3 2 1 BETTER
59 58 1 BETTER
33 25 8 BETTER
162 163 1 WORSE
3 2 1 BETTER
```

Problem #11
60 Points

11. Yaroslav

Test Input File: yaroslav.dat

```
10
0.0 0.0 0.0
2.0 2.0 2.0
60
1
59721986000000000000000000.0 100000000.0 100000000.0 100000000.0
0.0 0.0 0.0
0.0 0.0 0.0
60
2
59721986000000000000000000.0 100000000.0 100000000.0 100000000.0
59721986000000000000000000.0 100000000.0 -100000000.0 -100000000.0
1.0 7.0 6.0
5.0 5.0 5.0
30
3
5972198600000000000000.0 100000.0 200000.0 300000.0
5972198600000000000000.0 3000000.0 2000000.0 1000000.0
5972198600000000000000.0 200000.0 300000.0 100000.0
0.0 0.0 0.0
0.0 0.0 0.0
60
6
59721986000000000000000000.0 100000000.0 100000000.0 100000000.0
59721986000000000000000000.0 200000000.0 100000000.0 100000000.0
59721986000000000000000000.0 300000000.0 100000000.0 100000000.0
59721986000000000000000000.0 400000000.0 100000000.0 100000000.0
59721986000000000000000000.0 500000000.0 100000000.0 100000000.0
59721986000000000000000000.0 600000000.0 100000000.0 100000000.0
0.0 0.0 0.0
10.0 10.0 10.0
200
1
5972198600000.0 100000000.0 100000000.0 100000000.0
10000.0 0.0 0.0
0.0 6.0 6.0
60
1
59721986000000000000000000.0 0.0 100000000.0 100000000.0
0.0 0.0 0.0
0.0 0.0 0.0
100
7
59721986000000000000000000.0 100000000.0 100000000.0 100000000.0
59721986000000000000000000.0 -100000000.0 -100000000.0 -100000000.0
59721986000000000000000000.0 -100000000.0 100000000.0 100000000.0
59721986000000000000000000.0 100000000.0 -100000000.0 -100000000.0
59721986000000000000000000.0 100000000.0 -100000000.0 100000000.0
59721986000000000000000000.0 -100000000.0 100000000.0 -100000000.0
59721986000000000000000000.0 100000000.0 100000000.0 -100000000.0
0.0 0.0 0.0
0.0 0.0 0.0
120
8
59721986000000000000000000.0 100000000.0 100000000.0 100000000.0
59721986000000000000000000.0 -100000000.0 -100000000.0 -100000000.0
59721986000000000000000000.0 -100000000.0 100000000.0 100000000.0
59721986000000000000000000.0 100000000.0 -100000000.0 -100000000.0
59721986000000000000000000.0 100000000.0 -100000000.0 100000000.0
```

```
59721986000000000000000000.0 -100000000.0 100000000.0 -100000000.0
59721986000000000000000000.0 100000000.0 100000000.0 -100000000.0
59721986000000000000000000.0 -100000000.0 -100000000.0 100000000.0
0.0 0.0 0.0
0.0 0.0 0.0
120
2
59721986000000000000000000.0 1000000.0 1000000.0 1000000.0
59721986000000000000000000.0 -1000000.0 -1000000.0 -1000000.0
0.0 0.0 0.0
0.0 0.0 0.0
120
3
59721986000000000000000000.0 100000000.0 100000000.0 100000000.0
19890000000000000000000000000000.0 -149600000000.0 0.0 0.0
62900000000000000000000.0 0.0 0.0 5460000000.0
```

Test Output To Screen

```
YAROSLAV IS AT POSITION (-18.08, -18.08, -18.08).
YAROSLAV IS AT POSITION (-478.31, -0.00, -0.00).
YAROSLAV IS AT POSITION (-14164.83, -17573.83, -10698.49).
YAROSLAV IS AT POSITION (-485.96, -107.71, -107.71).
YAROSLAV IS AT POSITION (2000.00, 2000.00, 2000.00).
YAROSLAV IS AT POSITION (10000.03, 106.34, 106.34).
YAROSLAV IS AT POSITION (-2275.56, -2318.17, 3327.49).
YAROSLAV IS AT POSITION (0.00, 0.00, 0.00).
YAROSLAV IS AT POSITION (0.00, 0.00, 0.00).
YAROSLAV IS AT POSITION (352.51, -481.54, -1248.37).
```

Note: For all floating output values, a tolerance of ±1 in the final significant digit is acceptable.

Problem #12
60 Points

12. Zoe

Test Input File: zoe.dat

```
10
1
86
30
56
4
1
100
0
200
300
365
500
```

Test Output To Screen

```
05/15/16
05/24/16
02/29/16
04/25/16
03/30/16
05/21/16
05/24/16
02/15/16
05/25/16
11/07/15
07/30/15
05/26/15
01/11/15
```