UIL Computer Science Competition

Invitational A 2022

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

Number	Name
Problem 1	Artur
Problem 2	Carolina
Problem 3	Dhruv
Problem 4	Eva
Problem 5	Harold
Problem 6	Ishika
Problem 7	Krish
Problem 8	Mia
Problem 9	Paloma
Problem 10	Renata
Problem 11	Sheal
Problem 12	Tom

Problem #1
60 Points

1. Artur

Program Name: Artur.java   **Input File: None**

Test Input File: NONE

Test Output To Screen:

```
             /\
            /  \--->0.01%
           /    \
          /------\
         /        \
        /          \--->0.1%
       /            \
      /--------------\
     /                \
    /                  \--->1%
   /                    \
  /----------------------\
 /                        \
/                          \--->10%
                            \
/--------------------------\
                            \
                             \--->100%
                              \
/----------------------------------\
```

Problem #2
60 Points

2. Carolina

Program Name: Carolina.java   **Input File: carolina.dat**

Test Input File:
```
76.53 Wireless Keyboard and Mouse
117.75 HD LED Monitor 24"
453.39 Color Laser Printer
41.99 Wireless Headset with Microphone
329.95 HD LED Monitor 27"
187.49 Speaker System 5.1 Channel Bluetooth
229.58 Flatbed Scanner Color
45.99 10-Pack USB Drives 64GB
89.97 External 4TB Hardrive
1247.39 Laptop QuadCore 32GB 1TB 17"
26.99 Laptop 17" Shoulder Case
25.49 Laptop Stand Adjustable Multi-Angle
19.99 USB-C Hub
28.99 Webcam 1080P USB with Microphone
129.88 Portable Rechargeable Power Station
```

Test Output To Screen:
```
$76.53 + $6.31 = $82.84 Wireless Keyboard and Mouse
$117.75 + $9.71 = $127.46 HD LED Monitor 24"
$453.39 + $37.40 = $490.79 Color Laser Printer
$41.99 + $3.46 = $45.45 Wireless Headset with Microphone
$329.95 + $27.22 = $357.17 HD LED Monitor 27"
$187.49 + $15.47 = $202.96 Speaker System 5.1 Channel Bluetooth
$229.58 + $18.94 = $248.52 Flatbed Scanner Color
$45.99 + $3.79 = $49.78 10-Pack USB Drives 64GB
$89.97 + $7.42 = $97.39 External 4TB Hardrive
$1247.39 + $102.91 = $1350.30 Laptop QuadCore 32GB 1TB 17"
$26.99 + $2.23 = $29.22 Laptop 17" Shoulder Case
$25.49 + $2.10 = $27.59 Laptop Stand Adjustable Multi-Angle
$19.99 + $1.65 = $21.64 USB-C Hub
$28.99 + $2.39 = $31.38 Webcam 1080P USB with Microphone
$129.88 + $10.72 = $140.60 Portable Rechargeable Power Station
$3051.37 + $251.74 = $3303.11 Combined Single Purchase
$3303.09 Sum of Individual Purchases
```

Problem #3
60 Points

3. Dhruv

Program Name: Dhruv.java   **Input File: dhruv.dat**

Test Input File:
```
KEYS 1410
KTTB 600
KFST 860
KTEM 1400
KBME 790
WOAI 1200
KRLD 1080
KKSA 1260
10
1200
1400
880
1110
1700
1230
535
1605
1425
600
```

Test Output To Screen:
```
WOAI
KTEM
KFST
KRLD
BAD INPUT
KKSA
KTTB
KEYS
KEYS
KTTB
```

Problem #4
60 Points

4. Eva

Program Name: Eva.java   **Input File: eva.dat**

Test Input File:
```
25
1
2
3
4
5
6
7
8
9
10
12
13
14
15
19
20
21
22
23
25
26
27
28
29
30
```

Test Output To Screen:
```
Start of Triangle #1
*
End of Triangle #1
Start of Triangle #2
 *
***
End of Triangle #2
Start of Triangle #3
  *
 ***
*****
End of Triangle #3
Start of Triangle #4
   *
  ***
 *****
*******
End of Triangle #4
Start of Triangle #5
    *
   ***
  *****
 *******
*********
End of Triangle #5
Start of Triangle #6
     *
    ***
   *****
  *******
 *********
***********
End of Triangle #6
```

```
Start of Triangle #7
      *
     ***
    *****
   *******
  *********
 ***********
*************
End of Triangle #7
Start of Triangle #8
       *
      ***
     *****
    *******
   *********
  ***********
 *************
***************
End of Triangle #8
Start of Triangle #9
        *
       ***
      *****
     *******
    *********
   ***********
  *************
 ***************
*****************
End of Triangle #9
Start of Triangle #10
         *
        ***
```

```
        ***
       *****
      *******
     *********
    ***********
   *************
  ***************
 *****************
*******************
End of Triangle #10
Start of Triangle #11
          *
         ***
        *****
       *******
      *********
     ***********
    *************
   ***************
  *****************
 *******************
*********************
End of Triangle #11
Start of Triangle #12
           *
          ***
         *****
        *******
       *********
      ***********
     *************
    ***************
   *****************
  *******************
 *********************
***********************
End of Triangle #12
Start of Triangle #13
            *
           ***
          *****
         *******
        *********
       ***********
      *************
     ***************
    *****************
   *******************
  *********************
 ***********************
*************************
End of Triangle #13
Start of Triangle #14
             *
            ***
           *****
          *******
         *********
        ***********
       *************
      ***************
     *****************
    *******************
   *********************
  ***********************
 *************************
***************************
End of Triangle #14
Start of Triangle #15
              *
             ***
            *****
           *******
          *********
         ***********
        *************
       ***************
      *****************
     *******************
    *********************
   ***********************
  *************************
 ***************************
*****************************
End of Triangle #15
Start of Triangle #16
               *
              ***
```
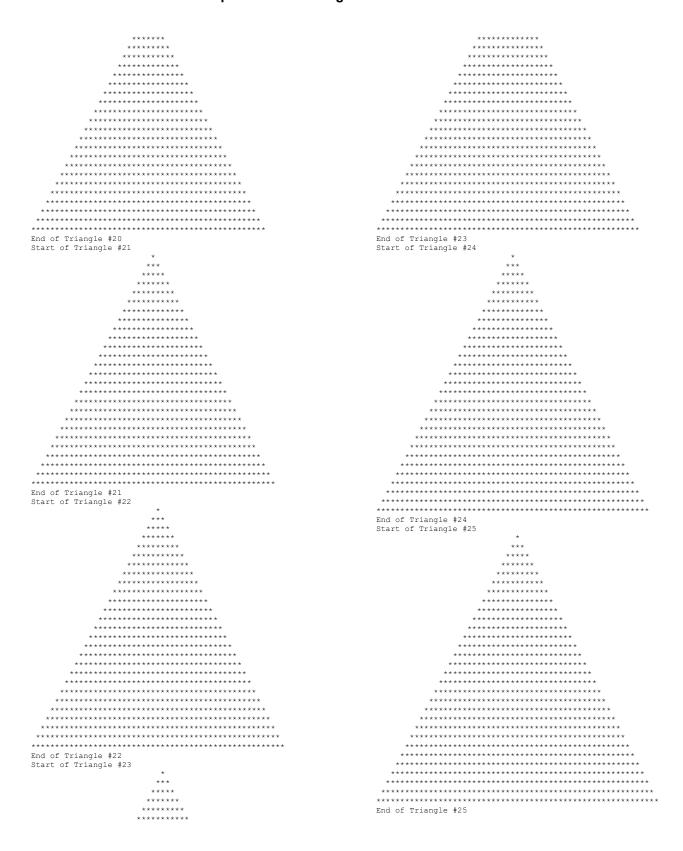
```
               *
              ***
             *****
            *******
           *********
          ***********
         *************
        ***************
       *****************
      *******************
     *********************
    ***********************
   *************************
  ***************************
 *****************************
*******************************
End of Triangle #16
Start of Triangle #17
                *
               ***
              *****
             *******
            *********
           ***********
          *************
         ***************
        *****************
       *******************
      *********************
     ***********************
    *************************
   ***************************
  *****************************
 *******************************
*********************************
End of Triangle #17
Start of Triangle #18
                 *
                ***
               *****
              *******
             *********
            ***********
           *************
          ***************
         *****************
        *******************
       *********************
      ***********************
     *************************
    ***************************
   *****************************
  *******************************
 *********************************
***********************************
End of Triangle #18
Start of Triangle #19
                  *
                 ***
                *****
               *******
              *********
             ***********
            *************
           ***************
          *****************
         *******************
        *********************
       ***********************
      *************************
     ***************************
    *****************************
   *******************************
  *********************************
 ***********************************
*************************************
End of Triangle #19
Start of Triangle #20
                   *
                  ***
                 *****
```

```
                    *******
                   *********
                  ***********
                 *************
                ***************
               *****************
              *******************
             *********************
            ***********************
           *************************
          ***************************
         *****************************
        *******************************
       *********************************
      ***********************************
     *************************************
    ***************************************
   *****************************************
  *******************************************
 *********************************************
***********************************************
End of Triangle #20
Start of Triangle #21
                      *
                     ***
                    *****
                   *******
                  *********
                 ***********
                *************
               ***************
              *****************
             *******************
            *********************
           ***********************
          *************************
         ***************************
        *****************************
       *******************************
      *********************************
     ***********************************
    *************************************
   ***************************************
  *****************************************
 *******************************************
***********************************************
End of Triangle #21
Start of Triangle #22
                       *
                      ***
                     *****
                    *******
                   *********
                  ***********
                 *************
                ***************
               *****************
              *******************
             *********************
            ***********************
           *************************
          ***************************
         *****************************
        *******************************
       *********************************
      ***********************************
     *************************************
    ***************************************
   *****************************************
  *******************************************
 *********************************************
***********************************************
End of Triangle #22
Start of Triangle #23
                       *
                      ***
                     *****
                    *******
                   *********
                  ***********
```

```
                ************
               **************
              ***************
             *****************
            *******************
           *********************
          ***********************
         *************************
        ***************************
       *****************************
      *******************************
     *********************************
    ***********************************
   *************************************
  ***************************************
 *****************************************
*******************************************
End of Triangle #23
Start of Triangle #24
                      *
                     ***
                    *****
                   *******
                  *********
                 ***********
                *************
               ***************
              *****************
             *******************
            *********************
           ***********************
          *************************
         ***************************
        *****************************
       *******************************
      *********************************
     ***********************************
    *************************************
   ***************************************
  *****************************************
 *******************************************
*********************************************
***********************************************
End of Triangle #24
Start of Triangle #25
                       *
                      ***
                     *****
                    *******
                   *********
                  ***********
                 *************
                ***************
               *****************
              *******************
             *********************
            ***********************
           *************************
          ***************************
         *****************************
        *******************************
       *********************************
      ***********************************
     *************************************
    ***************************************
   *****************************************
  *******************************************
 *********************************************
***********************************************
*************************************************
End of Triangle #25
```

Problem #5
60 Points

5. Harold

Program Name: Harold.java   **Input File: harold.dat**

Test Input File:
```
11
1
12
123
1234
12345
123456
1234567
12345678
123456789
2147483646
2147483647
```

Test Output To Screen:
```
1=1*10^0
12=1.2*10^1
123=1.23*10^2
1234=1.234*10^3
12345=1.2345*10^4
123456=1.23456*10^5
1234567=1.234567*10^6
12345678=1.2345678*10^7
123456789=1.23456789*10^8
2147483646=2.147483646*10^9
2147483647=2.147483647*10^9
```

Problem #6
60 Points

6. Ishika

Program Name: Ishika.java   **Input File: ishika.dat**

Test Input File:
```
16
3 15 8 13
2 9 10
5 3 5 7 9 11
5 15 21 7 4 8
2 12 50
5 20 9 10 11 2
6 10 12 14 16 18 20
5 18 1 1 1 3
2 9 8
2 8 9
5 1 2 3 2 15
5 20 11 20 13 9
2 32 64
5 6 7 19 18 31
6 12 11 16 15 13 14
5 25 30 27 33 28
```

Test Output To Screen:
```
21
NOT POSSIBLE
20
22
62
20
22
21
NOT POSSIBLE
NOT POSSIBLE
NOT POSSIBLE
20
96
24
23
52
```

Problem #7
60 Points

7. Krish

Program Name: Krish.java   **Input File: krish.dat**

Test Input File:
```
20
3805
-127
123456
-802
40091
54321
-90105
-1
394857
-254601
-111111
333333
100001
123
-976
-9076
-900760
907060
976000
900000
```

Test Output To Screen:
```
3805 16 120 5083 19340815
-127 -10 -14 -721 91567
123456 21 720 654321 80779853376
-802 -10 16 -208 166816
40091 14 36 19004 761889364
54321 15 120 12345 670592745
-90105 -15 -45 -50109 4515071445
-1 -1 -1 -1 1
394857 36 30240 758493 299496270501
-254601 -18 -240 -106452 27102785652
-111111 -6 1 -111111 12345654321
333333 18 729 333333 111110888889
100001 2 1 100001 10000200001
123 6 6 321 39483
-976 -22 -378 -679 662704
-9076 -22 -378 -6709 60890884
-900760 -22 -378 -67009 60359026840
907060 22 378 60709 55066705540
976000 22 378 679 662704000
900000 9 9 9 8100000
```

Problem #8
60 Points

8. Mia

Program Name: Mia.java   **Input File: mia.dat**

Test Input File:

```
11
2
1 0
0 1
2
0 1
1 0
3
1 0 1
0 1 0
0 0 1
6
1 0 0 0 0 0
0 1 0 0 0 0
0 0 1 0 0 0
0 0 0 1 0 0
0 0 0 0 1 0
0 0 0 0 0 1
6
0 0 0 0 0 1
0 0 0 0 1 0
0 0 0 1 0 0
0 0 1 0 0 0
0 1 0 0 0 0
1 0 0 0 0 0
6
0 0 0 0 0 1
0 0 0 0 1 0
0 0 0 0 0 0
0 0 1 0 0 0
0 1 0 0 0 0
1 0 0 0 0 0
1
1
1
0
25
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
25
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
25
0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

Mia continued

Test Output To Screen:
```
Matrix 1: Identity Matrix - No swaps needed
Matrix 2: Identity Matrix - Swaps needed
Matrix 3: This is not an Identity Matrix
Matrix 4: Identity Matrix - No swaps needed
Matrix 5: Identity Matrix - Swaps needed
Matrix 6: This is not an Identity Matrix
Matrix 7: Identity Matrix - No swaps needed
Matrix 8: This is not an Identity Matrix
Matrix 9: Identity Matrix - No swaps needed
Matrix 10: This is not an Identity Matrix
Matrix 11: Identity Matrix - Swaps needed
```

Problem #9
60 Points

9. Paloma

Program Name: Paloma.java   **Input File: paloma.dat**

Test Input File:
```
20
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
```

Test Output To Screen:
```
1
2
3
5
8
13
21
34
55
89
144
233
377
610
987
1597
2584
4181
6765
10946
```

Problem #10
60 Points

10. Renata

Program Name: Renata.java   **Input File: renata.dat**

Test Input File:

```
5
5
7 8 8 8 7
8 9 9 9 8
8 9 10 9 8
8 9 9 9 8
7 8 8 8 7
2
2 4
5 1
6
6 8 8 8 8 6
7 8 9 9 8 7
8 9 10 10 9 8
8 9 10 10 9 8
7 8 9 9 8 7
6 8 8 8 8 6
4
2 4
5 1
2 2
3 4
9
2 3 4 5 6 5 4 3 2
3 4 5 6 7 6 5 4 3
4 5 6 7 8 7 6 5 4
5 6 7 8 9 8 7 6 5
6 7 8 9 10 9 8 7 6
5 6 7 8 9 8 7 6 5
4 5 6 7 8 7 6 5 4
3 4 5 6 7 6 5 4 3
2 3 4 5 6 5 4 3 2
10
5 5
6 5
4 5
4 3
2 3
7 4
9 8
1 2
1 8
8 9
```

```
12
1 2 3 4 5 5 5 5 4 3 2 1
2 3 4 5 6 6 6 6 5 4 3 2
3 4 5 6 7 7 7 7 6 5 4 3
4 5 6 7 7 8 8 7 7 6 5 4
4 5 6 7 8 9 9 8 7 6 5 4
5 6 7 8 9 10 10 9 8 7 6 5
5 6 7 8 9 10 10 9 8 7 6 5
4 5 6 7 8 9 9 8 7 6 5 4
4 5 6 7 7 8 8 7 7 6 5 4
3 4 5 6 7 7 7 7 6 5 4 3
2 3 4 5 6 6 6 6 5 4 3 2
1 2 3 4 5 5 5 5 4 3 2 1
12
6 6
6 7
7 6
7 7
1 1
1 12
12 1
12 12
2 2
3 3
5 5
7 7
9 9
11 11
```

```
15
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 3 3 3 3 3 3 3 3 3 3 3 3 3 1
1 3 5 5 5 5 5 5 5 5 5 5 5 3 1
1 3 5 6 6 6 6 6 6 6 6 6 5 3 1
1 3 5 6 7 7 7 7 7 7 7 6 5 3 1
1 3 5 6 7 8 8 8 8 7 6 5 3 1
1 3 5 6 7 8 9 9 9 8 7 6 5 3 1
1 3 5 6 7 8 9 10 9 8 7 6 5 3 1
1 3 5 6 7 8 9 9 9 8 7 6 5 3 1
1 3 5 6 7 8 8 8 8 7 6 5 3 1
1 3 5 6 7 7 7 7 7 7 7 6 5 3 1
1 3 5 6 6 6 6 6 6 6 6 6 5 3 1
1 3 5 5 5 5 5 5 5 5 5 5 5 3 1
1 3 3 3 3 3 3 3 3 3 3 3 3 3 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
15
1 2
2 3
3 4
4 5
5 6
6 7
7 8
8 9
9 10
10 11
11 12
12 13
13 14
14 15
8 8
```

Test Output To Screen:
```
1: 16
2: 34
3: 59
4: 70
5: 27
```

Problem #11
60 Points

11. Sheal

Program Name: Sheal.java   **Input File: sheal.dat**

Test Input File:
```
10
A 1
AB 2
AAB 2
AABB 6
ABCDE 119
AABBC 20
ABAAAA 4
AABBCCDD 1000
AABBCDEF 10000
AABBCDEF 7
```

Test Output To Screen:
```
A
AB
AA
ABA
BEAD
ABBC
AAAA
ACBDAC
BCAABFE
AABBCDE
```

Problem #12
60 Points

12. Tom

Program Name: Tom.java   **Input File: tom.dat**

Test Input File:
```
20
catachthonian
kamik
zouk
grilse
decanal
windrose
mumpsimus
electrometer
youthquake
xylometer
stotious
wicket
knurl
eulogomania
whangam
zoophilia
tristisonous
hypsography
jenneting
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
```

Test Output To Screen:
```
20
6
4
6
8
8
14
20
11
10
11
6
5
13
8
11
18
14
13
1378
```