

Assignment 2

CS2336.504

Pattern Recognition

Write a program that asks the user for the name of a file that contains a two-dimensional array. The first number in the file will be the number of rows and the second will be the number of columns. The rest of the lines will be the actual array. See the sample below for detail. This is similar to exercise 8.19 in the textbook.

Your program is to search the array for a sequence of four consecutive equal numbers and display the matrix. If it contains such a sequence, print "Sequence of n starts at x,y", where n is the number and x,y are the coordinates of the first number of the sequence of four. If it does not contain such a sequence, print, "No sequence found." The sequence may be across, down, or on a diagonal. If a file contains more than one such sequence your program needs to find only one. For the data shown below, your program should print "Sequence of 2 starts at 2,2". Note that array use zero-origin indexing but people use 1-origin.

I have provided test data for your program, but it may be tested with files other than these, so it must work correctly in the general case, not just for these specific cases.

Once you have processed a file, the program must return and ask for a new file name. If you enter an asterisk (*, a sentinel value) the program exits. If the file does not exist, the program must display an error and request a new file.

You must have at least two classes for this project. One is main, which may have a function to ask for file names and such. The other does the actual work. The function or functions which search the matrix may neither request input nor print anything. Remember that structs or classes may be a good way to return multiple values from a function. You can write recursive functions or not, your choice.

To hand in: Your .java files Nothing else. You can use your favorite IDE to write this, of course. Name your main file CS2336Asg2-<netID>.java. Thus if I were handing it in it would be CS2336Asg2-jxc064000.java

Grading Criteria	
Comments and variable names	10
Program correctly finds sequences or identifies files that do not contain a sequence.	70
Program is structured well according to object-oriented principles, and uses a minimum number of functions.	20
Total	100

Additional grading comments:

1. Everything in main: -20
2. Misses patterns in a particular direction: -15

3. Misses all patterns: -45 or more
4. Finds patterns that aren't there: -20
5. Uses static methods: -10
6. No header comments: -5

Sample data:

```
6 6
0 4 0 1 0 3
0 2 1 2 3 4
1 2 9 7 3 7
1 2 5 9 1 4
4 2 1 4 8 1
0 1 0 3 9 2
```