

Hi –

We are pleased you have taken an interest in Zonar Systems and are looking forward to your participation in this interview process.

Blob
Detection

Imagine we have a data set that looks like this

```
0 0 0 0 X 0 0 0 0
0 0 X X 0 0 0 0 0
X X X X 0 0 0 0 X
0 0 0 X 0 0 0 X X
0 0 X X X 0 0 X 0
0 X X 0 0 0 X 0 0
0 X X X X X 0 0 0
```

We'd like a python program that can detect the largest groups (blobs) of "X"s and "O"s in a two dimensional array. A "blob" is defined as any contiguous group of X's and O's (i.e they are touching). Only adjacent values in cardinal directions (up, down, left, right) are considered to be "touching".

i.e
0 X 0
X X X
0 X 0

Is a blob of X values with a size of 5

but this:
0 X 0
0 0 X
0 0 0

Is two blobs of X's with a size of 1

We want to know the size of the largest blob of both X's and O's, along with your program we would also like to see a unit test suite.

Input Format:

Input will be read in from a text file. Each line of the file will represent a row, and there will be a space between each X or O. The input file will always only contain X's, O's, spaces and new lines. We also guarantee that the length of each row in the file will be identical, as well as the length of each column (the data will be rectangular). The input will never exceed 250 rows by 250 columns of data.

The name of this text file will be specified as the first and only argument of the program.

i.e python blob_finder.py ./test_blob.txt

Output Format:

We want a python dictionary, printed to standard out, that contains two entries, the size of our largest blob of X's and the size of our largest blob of O's

Example Input and Output:

Imagine our application is called with a text file containing:

```
X X O  
X O O  
O X X
```

We would expect the following dictionary printed:

```
{'X': 3, 'O': 3}
```