Given a 4x4 matrix of letters chosen from A-Z (with replacement*), and a list of English words. Write a program to output all the words present in a matrix per the rules of boggle. Your program should be able to accept pre-set 4x4 matrices and word lists in a reasonable (text-based) format of your choosing.

*You put the chosen letter back

- **Recursive Boggle Step**(Word, 4x4 Letter Matrix, Cur Index, Prev Indices):
  - **if** (word = ( )):
    - **return**: true;
  - **if** (first letter of Word = letter of cur Index):
    - call **Recursive Boggle Step** in each direction except prev. visited spaces and without the 1st letter in word,
  - **else**: halt

- **Find All Words from A Position**(matrix Index, 4x4 Letter Matrix):
  - **returns**: all of the words in a 4x4 Letter Matrix that start at Matrix Index

- **Find Given Word in Boggle**(4x4 Letter Matrix, Word):
  - **returns**: True if a given Word is in 4x4 Letter Matrix, and false if it is not

- **Ultimate Boggle Solver**(4x4 Letter Matrix, List of Words):
  - **returns**: all of the words from the List of Words that are present in 4x4 Letter Matrix

Req: no words less than 3 letters

- **Boggle Demonstrator**():
  - generate Random Boggle Matrix
  - **return**: all words in Boggle

Visualize?

- Non Recursive Boggle Seq: (Word, 4x4 Letter Matrix):

If (all letters of Word are in 4x4 Letter Matrix):
  if (each letter is sequentially adjacent):
    if (No Repeat Indices):
      Word is a Boggle
else: false;

W: y, x-1
NW: y-1, x-1
N: y-1, x
NE: y-1, x+1
E: y, x+1
SE: y+1, x+1
S: y+1, x
SW: y+1, x-1

	0	1	2	3
0	[0	1	2	3]
1	[0	⊕	2	3]
2	[0	1	2	3]
3	[0	1	2	3]

(0, 0, F)

[y coor, x coor] ← index data type