Bonus Assignment

Submit to canvas the file, and specify via the comments what you want the assignment to count for: attendance or an assignment grade. You can only pick one.

I would like you to write a piece of code which can solve a word search. The program should take in a 2D list (list of lists) and an array of words to find. Then it should search the word search for each word returning a dictionary of whether or not the word was found.

Please pick one of the following solutions to implement, do not find another strategy. If you pick the difficult route you get 10% extra bonus points. Specify which strategy you picked.

1. (medium) Iterate over each letter and check each of the surrounding letters, if it is not out of bounds, and it matches your character, proceed checking in that direction.
2. (medium) Flatten all rows, columns, and diagonals into temporary lists, check if the word exists forwards or backwards in each of your temporary lists
3. (difficult) Iterate over the 2D array and create a tree data structure of the directions proceeding from each character. Search the tree at the end for your word.

Example input:

```
grid = [['D', 'B', 'E', 'P', 'J'],
        ['A', 'B', 'K', 'S', 'J'],
        ['F', 'B', 'O', 'T', 'J'],
        ['T', 'B', 'C', 'U', 'P'],
        ['P', 'U', 'N', 'K', 'S']]

words = ['CUP', 'PUP', 'BOT', 'JJJPT', 'COKE', 'DAFT', 'PUNK', 'SPUNK']
```

Example Output:

```
{'CUP': True, 'PUP': False, 'BOT': True, 'JJJPT': False, 'COKE': True, 'DAFT': True, 'PUNK': True, 'SPUNK': False}
```