CENG212 – Concepts of Programming Languages – Homework 2

June 15, 2023

Problem

You are expected to write a Prolog program that solves crossword puzzles in a specific way.

Imagine a puzzle grid as such:

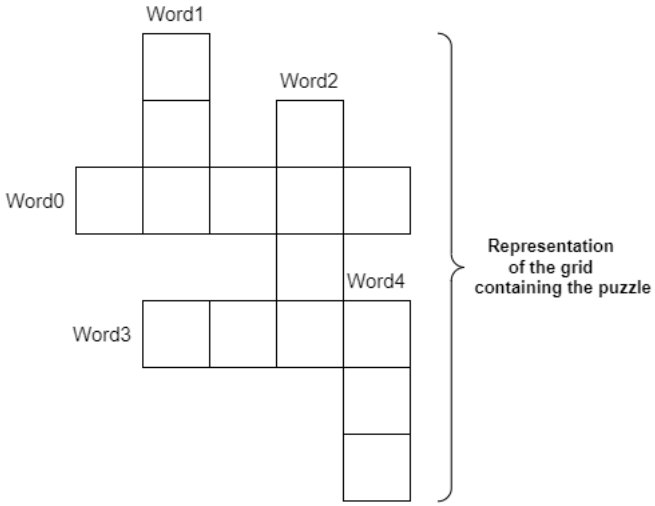

Figure 1
Representation of the Grid

Your program will work on queries such as the one below:

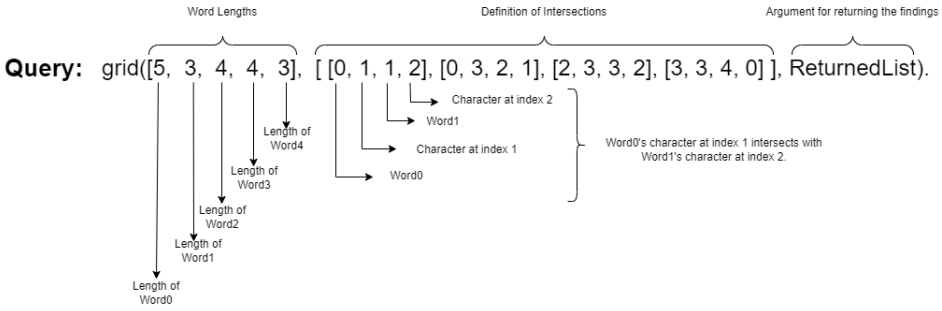

Figure 2
Example query.

Your program should return at least one grid that complies with the rules stated previously, should at least one such grid exists. Here are a few examples of valid returns:

ReturnedList = [obama, sob, emma, adam, mug] ;
ReturnedList = [obama, sob, emma, adam, mat] ;
ReturnedList = [obama, sob, emma, adam, max] ;

Figure 3
A few possible returns.

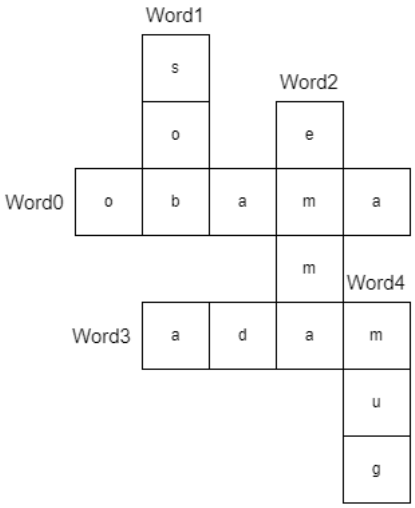

Figure 4
A valid grid.

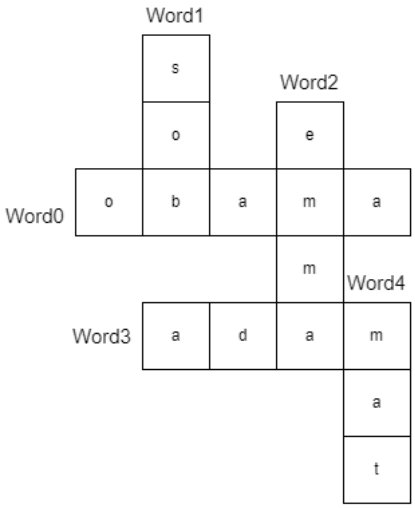

Figure 5
Another valid grid.

Keep in mind that one word can at most be used once on one grid. A word **CANNOT** appear more than once in a grid!

You will be provided with a 'dictionary' that contains all the words your program will have to check through:

```
word(rae).
word(rye).
word(sea).
word(snl).
word(ann).
word(anne).
word(are).
word(ares).
word(asp).
word(edu).
word(ene).
word(est).
word(etna).
word(ice).
word(ido).
```

Figure 6
Contents of the word.txt file.

Though such queries might take too much time, your code will be tested on grids of at least four intersections, like the examples given above.

You should include the words.txt file in your Prolog code by running a command similar to this one:

consult('/home/USER_NAME/PROJECT_FOLDER/words.txt')

This command should work on both SWI-Prolog and GNU Prolog.

Submission

Due Date: June 28, 2023, 23:59
Follow the rules stated below:

- Submit only **one** .pl file containing your code.
- Name the file the same as your Student ID.
- Do not, under any circumstances, compress your submission in any way.

Submission that are not compliant with the rules stated above **will not be graded**.

Hints

Keep in mind that all visuals on this document are just representations. Your code should be written dynamically and should work on queries of different dimensions.