

## SE-1106 HOMEWORK-2

In this homework you are supposed to write a class that represents a Words Puzzle. In the Words Puzzle there are small letters organized as NxN grid (2D-array) and there is a list of words that are supposed to be placed somewhere on the grid in 8 possible orientation. Specifically, the orientations are left-to-right, right-to-left, bottom-to-top, top-to-bottom, topleft-to-bottomright, bottomright-to-topleft, topright-to-bottomleft, bottomleft-to-topright. (See the example demonstrating a word puzzle) Note that words can intersect with each other on the puzzle.

### Example

<b>Puzzle:</b> akflandmers ngthgmecimt aoryexqklpp cslelirtnrt wedeskdflye opylmuencnz canitnrtode	<b>Words:</b> land mice melon one can	<b>Solution:</b> akf <b>LAND</b> mers <b>Ng</b> thgm <b>ECIM</b> t <b>A</b> Oryexqklpp <b>Cs</b> <b>L</b> elirtnrt wed <b>E</b> skdfly <b>E</b> opyl <b>M</b> uenc <b>N</b> z <b>CAN</b> itnrt <b>O</b> de
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Write at least the following classes and methods:

<b>WordPuzzle</b>	Stores the 2D-array of characters(grid) and a list of words	
	<b>Copy constructor</b>	
	<b>Constructor</b>	Takes the attributes (grid, word list) as parameters
	<b>toString()</b>	Returns the string containing the grid and the list of the words
	<b>findWords()</b>	Returns a PuzzleSolution object that stores the solution of the puzzle(see the description below) Note that this method should not change the grid
	<b>printSolution()</b>	prints the solution as shown in the example above. Note that this method should not change the grid.
<b>WordOrientation</b>	enumeration of 8 different orientation	
<b>WordPosition</b>	stores a word(String) , the row and column of the first letter of the word and the orientation of the word	
	<b>Copy constructor</b>	
	<b>toString()</b>	Returns a proper string representation of the object attributes

	<b>intersects(WordPosition other)</b>	Returns true if this word position intersects with the other words position. Returns false otherwise
<b>PuzzleSolution</b>	Stores a list of the WordPosition objects representing a solution of a puzzle	
	<b>Copy constructor</b>	
	<b>toString()</b>	Returns a string containing the list of the WordPosition objects
<b>Demo</b>	Makes a demonstration of your homework	
	<b>main(..)</b>	Creates an arbitrary 20x20 puzzle with at least 5 words. Prints the puzzle and prints the solution of the puzzle by using printSolution() method.

**Hint:** Check out the documentation of the String class. You may find some of the String methods useful.