

Project #4

Due Dates: Saturday, October 29 at 11:59pm

Submit: eLearning

Late Policy: -10 points per hour late

Instructions: This is an individual assignment. All work should be your own.

Objectives:

- Create a hash table.
- Use the hash table to solve a word puzzle.

Description:

A grid consisting of letters is to be checked against a dictionary of words to see if the grid contains any of the words.

The user can input a value for the rows and columns of the grid and the program will create a grid of random characters.

The program will read in a dictionary file (provided) and check if any of the words exist in the grid, considering 8 possible directions (horizontal, vertical, diagonal).

The checking for words will be performed in one of three ways:

- a) when the dictionary list is kept in a linked list.
- b) when the dictionary list is kept in a tree.
- c) when the dictionary list is kept in a hash table.

The linked list and tree may be the ones from the textbook.

The hash table should be your own creation, not copied from the textbook or other sources. You should design and code it yourself. It can be any of the hash table types discussed in the slides.

Questions:

Submit answers to these questions in addition to your source code:

- 1) Explain the algorithm used in each case of a, b, c above.
- 2) Explain the big-O running time in each case of a, b, c above.

Scoring:

Main program: 30 points
Hash table: 50 points
Questions: 20 points

Submit to eLearning:

WordPuzzle.java
MyHashTable.java
Questions.txt (or .doc, .docx, etc.)