Department of Electrical and Computer Engineering
ECE 3326: Optimization Methods
Fall 2012

Project #3

Write a program that solves a word search puzzle. The program reads an n x n grid of letters from a file and prints out all the words that can be found in the grid. Words can be found in the array by starting from any letter and reading left, right, up, down, or along any of the four diagonals. Words can also wrap around the edges of the array. Words must be at least 5 characters long.

The list of k possible words is included in the file `dictionary`. Several sample word search puzzles are also provided.

The goal is to find an algorithm that solves this problem that runs as quickly as possible for large n and k.

Part a

1. Implement a class called `dictionary` that reads the words from the dictionary file and stores them in a vector. The class should handle all word lookups.
2. Implement a class called `grid` that reads the letters in the grid from a file and stores them in a matrix.
3. Implement a function `findMatches` that is passed the dictionary and the grid as parameters and which prints out all words that can be found in the grid.
4. Implement a function `testSearch` which reads the name of the grid file from the keyboard and prints out all words from the dictionary that can be found in the grid.

```
n y d m k u a s l m o q y r c
u o t e u i t n m o o t w w p
e m r w t u h i d t n r m p h
g s b t d a t q k i r a a y o
d f q e h r c h f v i m u v i
d g n e m e i u b a v s p c l
q t j r q q a w d t p s b a j
s b h y s f u s o e a r e r e
o o r e n m j f t d d n s a p
y e j n a c w j o e k n b w p
v n f a k m k n c c r v r p c
d e t n e l a t r c u n k i q
z s c k q c d c n y l o t g n
s p a q n a w c g s f c i l h
h x p p i z u t w x b g m r a
```