**Project Proposal**

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This program is been created by Eddie Greathouse.

**Purpose**

The developed software is a word game called “Words”. A 3x3 square will show on the screen that holds a letter in each location. The user must then type in all possible words that can be made from connecting letters within the square while under stress from the dooming clock. A sample of the screen looks like this:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Time: 30 second  
| A | B | C |   
| E | F | G | Words: 0

| I | J | L |

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Initially, the proposed game would consist of a 4x4 matrix. However, in order to simplify the game to provide better performance, a 3x3 matrix was used instead.

This game is designed to be fun and intriguing to players. The audience includes all ages, which means a large market.

**Context**

There are many games that are interacting and engaging. “Words” goes beyond the normal every day game and expands your inner dictionary provoking the fulfillment of both artistic expansion and cognitive development. In addition, a game as simple as this allows individuals from all ages to play, expanding the market and potential profit.

**Goals**

This project is targeting creativity and an ever expanding dictionary. It will be designed to be easily expanded if necessary and it will keep the focus of players for a long length of time.

**Audience**

The Audience is all ages. As long as the individual can press buttons on the keyboard, he/she will be able to play. It is both fun and competitive. Even if the user does know have a large enough dictionary, he or she would enjoy typing random configurations of letters and possibly learning a word.

**Functionality**

The game will begin as soon as the program is run. It will instantly display the box with a random configuration of letters. The time will then begin to count down from 30 seconds. The user types his/her “words” and presses enter. He or she will continue to do this until the timer reaches zero. The word count will keep track of the correct number of words. The game will repeat until the user enters “10” as her/his “word.”

**Utilized Data Structures**

A 2-dimesional array was used to store random integers that are produced at the start of the game. In addition, a vector was chosen to store the “dictionary.” In reality, the dictionary is actually just a text file where each new line is a word. When the program loads the dictionary, each word becomes a separate element in the vector.

**Big O Analysis**

The vector is filled with strings from a file “dictionary.txt.” The big O analysis is 2 + 2n, where n is the number of words in the dictionary. One operation is the opening of the dictionary. The second operation is the initializing of the vector. The second operation is storing each word to a temp variable. The final operation is storing the temp variable in the vector.

**Resources**

* Codeblocks
* C++
* #include <stdlib.h>
* #include <stdio.h>
* #include "dictionary.h"
* #include<iostream>
* #include<fstream>
* #include<sstream>
* #include<string>
* #include<cctype>
* #include <cmath>
* #include <vector>
* #include <algorithm>
* #include <iterator>
* #include <algorithm>
* #include <cctype>
* <http://www.cplusplus.com/reference/ctime/clock/>
* http://www.daniweb.com/software-development/cpp/code/216933/a-countdown-timer-in-c

**Challenges**

The most challenging obstacle to overcome is comparing a string entered by the user, with a list of strings in a vector. Although this sounds easy and straight forward, the program could not make this comparison. I tried many methods and left a couple of the attempts in the program to give an idea of what was intended.   
Another challenge was completing the countdown timer for the game. However, this challenge was successfully completed.

**Measures**

The project reaches the goals required by the assignment. It uses complex data structures as learned from the course. There are 2 classes, and many more could be produced if the game were to be modified in the future. However, it is a great disappointment that the program does not compile and run.