Programming Project

Directions:

You will be creating a single player game that requires using a two-dimensional grid. Your game program **must** adhere to the following guidelines:

☐ Your program can **only** use the libraries *iostream*, *iomanip*, *sstream*, *fstream*, *string*, *cmath*, *cstdlib*, *ctime* and *cctype*.

☐ Your program **must** define at least four (4) functions excluding the main function.

☐ The program can **only** use variables, selection statements, functions, arrays, iterations and structs.

☐ The program **must not** have global variables and arrays.

☐ Documentation for your program **must** be provided prior to the submission of the program. The instructions for the documentation will be provided in an accompanying document. It must be approved before the program can be graded.

☐ You **must** define a void display function. It should display the board along with any additional statistics needed for the following and/or current turn. Furthermore, the display must include a numerical labels for the rows and columns that the user will use to select positions on the grid.

☐ You **must** define a void game function takes no parameters. It is responsible for creating all game objects, which are variables, arrays and structs necessary to play the game. Furthermore, it will run the game loop i.e. it will contain a loop that calls all the necessary functions to change the state of the game and the display function. Likewise, it will display the final result of the game.

☐ You **must** define an introduction function. It will initialize the game objects. For the board object(s), the function will read in at least five (5) board puzzles from a file and randomly assign one of them to the board object(s).

☐ The main function **must only** call the game function.

Word Search Puzzle

The objective of *Word Search Puzzle* is to find all the hidden words in a 15×15 alphabet grid. A word find is only valid if it appears either horizontally, vertically or diagonally in the grid (backwards or forwards). A possible grid looks like the image below

```
R R S C T S E N E N O S A P R
E T T E U U D I S G A R N T P
S P R T S B R A P O O M E T A
N C I O E M E R H A S M E O P
U A A E N O C M E I N A L A P
P O E M S A H R E M E O I C N
P T N R A G S I D U U E T T E
P A L A N I E M C O N E A A U
A T E M O O P A R B S T R P S
R P A S O N E N E S T C S R R
A T E M O O P A R B S T R P S
N C I O E M E R H A S M E O P
P O E M S A H R E M E O I C N
R R S C T S E N E N O S A P R
S P R T S B R A P O O M E T A
```

Unlike a typical word search puzzle, your game will not list the search words; instead, it will provide the number of words to search for, and it will by reduced every time a new word is found. Do further research for more clarity.

You may make changes to the rules of your game so that you can create your own version of it or to simplify the programming; however, you must provide the information in your documentation. Moreover, your modifications cannot change the fundamental structure of the game. The modifications must be approved.