CS 360 Assignment 1
100 points

Date Assigned: Thursday, March 30, 2022
Date Due: Monday, April 11th, 2022 @ 11:59pm – Submit via Canvas

Assignment Description

For this assignment, you will write a C++ program that implements the popular New York Times game "Wordle".

About the Game

"*Wordle* is a web-based word game created and developed by Welsh software engineer Josh Wardle, and owned and published by The New York Times Company since 2022. Players have six attempts to guess a five-letter word, with feedback given for each guess in the form of colored tiles indicating when letters match or occupy the correct position.
...
Over 300,000 people played *Wordle* on January 2, 2022, up from 90 players on November 1, 2021, a figure that rose to over 2 million a week later. Between January 1 and 13, 1.2 million *Wordle* results were shared on Twitter."
– source Wikipedia

If a letter is green, then you know that letter is in the solution AND in the proper place. If a letter is yellow, you know that the letter is in the solution, but NOT in the proper place.

To play the game go to this link:
https://www.nytimes.com/games/wordle/index.html
Beware you can only play once per day on the New York Times site! Note that there are many other Wordle sites or apps where you can play multiple times per day.

Your implementation of the game *must* adhere to the following guidelines.

WordleBoard Class

- This class is responsible for printing out the current and previous guesses, including determining the proper color for each letter of the guesses.
- This class needs to keep track of all the previous guesses, along with the solution.
- This class should have at least 2 methods, not counting the constructor.
- The class must be named WordleBoard, and needs to be in a files called WorldBoard.h and WorldBoard.cpp.

Main

- This code needs to read in all of the possible 5 letter words from the provided file. You can find a link to the words file in the Notes section below.
- This code must check that all words input by the user are of valid length, and are valid words.
- This code must randomly pick one of the words from the file as the solution.
- This code must accept up to 6 guesses from the user.
- This code will create and use the WordleBoard class to print the board after each guess. If an invalid value for the guess is given, prompt the user again until they enter a valid guess.
- This code must be in a file called main.cpp.

Other Requirements

1. Your submission should include only three files: WordleBoard.h, WordleBoard.cpp, and main.cpp. The class declaration of WordleBoard should appear in the header file, and the definitions of the functions should appear in the .cpp file.
2. These 3 files should be placed into a directory called yourlastnameP1, and that directory should be compressed into a zip file. The zip file is what you should submit to Canvas. Failure to do this will mean a points deduction.
3. Please ensure that your code compiles and runs before submitting. Pay particular attention to this: I will compile your code with the following statement: g++ *.cpp So make sure that what you turn in compiles this way.
4. Each file must have a comment header with your name, the date, the course, and a short description.

Hints

- One challenge for this assignment is to get the command prompt terminal to display colored letters. See this link for help on this: https://stackoverflow.com/questions/2616906/how-do-i-output-coloured-text-to-a-linux-terminal
- Consider using the C++ provided “vector” container as a way of storing your guesses inside the WordleBoard class. See this link: http://cplusplus.com/reference/vector/vector/
- Consider using the C++ provided “array” container as a way to store the list of all valid words. If you store your words in an “array” container, then you can use the C++ provided binary_search() method to easily search the array. See this link: http://cplusplus.com/reference/array/array/. Also, see this link: http://cplusplus.com/reference/algorithm/binary_search/

Formatting, Comments, and Submission Guidelines

See the document “Programming Assignment Guidelines” on Canvas.

Sample Output – Note: Your program should look exactly like this. You must follow the color scheme of green and yellow letters.

Example One:

```
Welcome to EOU Wordle!

Enter a word: hello
1 h e l l o
2 _ _ _ _ _
3 _ _ _ _ _
4 _ _ _ _ _
5 _ _ _ _ _
6 _ _ _ _ _
Enter a word: point
1 h e l l o
2 p o i n t
3 _ _ _ _ _
4 _ _ _ _ _
5 _ _ _ _ _
6 _ _ _ _ _
Enter a word: crane
1 h e l l o
2 p o i n t
3 c r a n e
4 _ _ _ _ _
5 _ _ _ _ _
6 _ _ _ _ _
Enter a word: brake
1 h e l l o
2 p o i n t
3 c r a n e
4 b r a k e
5 _ _ _ _ _
6 _ _ _ _ _
Enter a word: brash
1 h e l l o
2 p o i n t
3 c r a n e
4 b r a k e
5 b r a s h
6 _ _ _ _ _
Enter a word: brays
1 h e l l o
2 p o i n t
3 c r a n e
4 b r a k e
5 b r a s h
6 b r a y s
you win!
```

Example Two:

```
Welcome to EOU Wordle!

Enter a word: crane
1 c r a n e
2 _ _ _ _ _
3 _ _ _ _ _
4 _ _ _ _ _
5 _ _ _ _ _
6 _ _ _ _ _
Enter a word: sheat
word not found
Enter a word: shet
must be 5 letters
Enter a word: shear
1 c r a n e
2 s h e a r
3 _ _ _ _ _
4 _ _ _ _ _
5 _ _ _ _ _
6 _ _ _ _ _
Enter a word: reath
word not found
Enter a word: meath
word not found
Enter a word: heath
1 c r a n e
2 s h e a r
3 h e a t h
4 _ _ _ _ _
5 _ _ _ _ _
6 _ _ _ _ _
Enter a word: harem
1 c r a n e
2 s h e a r
3 h e a t h
4 h a r e m
5 _ _ _ _ _
6 _ _ _ _ _
Enter a word: hawed
1 c r a n e
2 s h e a r
3 h e a t h
4 h a r e m
5 h a w e d
6 _ _ _ _ _
Enter a word: hazed
1 c r a n e
2 s h e a r
3 h e a t h
4 h a r e m
5 h a w e d
6 h a z e d
you lose!
solution was: haled
```

Notes

Here is a link to the file of valid 5 letter words: https://www-cs-faculty.stanford.edu/~knuth/sgb-words.txt