The University of Texas
Computer Science

313E Programming Assignment 03
Command Line Wordle

Setup

This assignment may be completed individually or with a pair programming partner. Be sure to include your and your partner's name and EID in the Python file header. If you are working alone, you may delete one of them.

Complete these steps to prepare for the Assignment.

Check	Description
▢	Download wordle.py, secret_words.txt, valid_guesses.txt, and the test case files. You will be working on the wordle.py file.
▢	Place all files in the same folder/directory.
▢	You may not change the file names. Otherwise, the grading script will not work.

This programming assignment uses three files: wordle.py, secret_words.txt, and valid_guesses.txt. wordle.py contains predefined functions that you will be modifying. wordle.py will be able to read from the two text files, secret_words.txt and valid_guesses.txt. ***secret_words.txt*** contains a list of words that will be used to assign the secret word. ***valid_guesses.txt*** will be used to create a list of words that you will use to check for valid guesses. wordle.py will handle the entire logic of the game, which includes setting up the game, choosing the secret word, checking for valid guesses, and providing feedback for each guess.

A format called ANSI is used in this assignment to color the letters. ANSI escape codes are characters recognized by the terminal and interpreted as ways to color any characters that are surrounded by them.

The colors in the VSCode terminal may be hard to see because of the font size. You can increase the terminal font size by going to the Settings editor by navigating to File > Preferences > Settings (On Mac, you will have to go to Code > Settings). Then, search for **terminal.integrated.font** in the search bar. Set the font size to your desired size. You may also want to switch between light and dark themes on VSCode, or use the color blind mode for readability.

If you would like to turn on autosave in VSCode, click on File -> Autosave.

Problem Description

Wordle

For this programming assignment, you will be creating the command-line version of the game Wordle. Wordle is a web-based word game in which players have 6 attempts to guess a 5 letter word. For each attempt, the player is given feedback in the form of colored tiles. A green tile indicates that the player has guessed a correct letter in the correct position, a yellow tile indicates a correct letter in the incorrect position, and a gray tile indicates an incorrectly guessed letter. If the player can correctly guess the word in 6 attempts or less, they win. If they do not guess the secret word after 6 attempts, they lose the game, and the correct word is revealed. In the official game, there is only one game of wordle per day. For this assignment, the game can be played as many times as the player wishes. You can find the official game here. If you have not played Wordle before, we recommend giving it a try to understand what you will accomplish in this programming assignment. Additionally, you can use this website to create your own Wordle for checking what the expected behavior is.

Requirements

Write a program that allows you to play Wordle in your terminal. You will modify each function to return or print something according to each function's purpose.

1. Your program should be able to initialize a game of wordle with the option to manually choose a secret word, utilize a seed, and/or read guesses from a text file. On user input error, you must print out the string in the constant INVALID_INPUT.
2. Your program uses the text file **valid_guesses.txt** provided to create your list of valid guesses, and you will create the functionality to randomly choose a secret word from the file **secret_words.txt**.
3. Your program should **only** accept and display lowercase input, **except** when the program is accepting a seed to set random. On user input error, you should raise a **ValueError**, which will be handled in main to print out INVALID_INPUT, a constant in wordle.py.
4. **You may not change the names of the functions listed. They must have the functionality as given in the specifications. You can always add more functions than those listed.**
5. **You may not import any additional external libraries in your solution except random and sys.**

The following functions are written for you already.

color_word(colors, word):

This function will format the guessed word to have the correct coloring.

main()

This function will call *prepare_game()* to set up the game of Wordle. If setup fails and *prepare_game()* returns None, it prints out the INVALID_INPUT message and returns instead of continuing with the game. It will loop for 6 **valid** guesses, display feedback for each valid guess, and it will stop once the player wins the game or runs out of guesses. On invalid guesses, the loop will not count it as an attempt and prints out the error message stored in the variable INVALID_INPUT ("Bad input detected. Please try again.").

You will modify the following functions to implement the functionality below.

prepare_game()

This function will set up the game by choosing the secret word and creating a **list** of valid guesses. The **list** of valid guesses is already created for you from the text file **valid_guesses.txt**; any word not in **valid_guesses.txt** is considered an invalid guess**.** The secret word will either be chosen from **secret_words.txt *OR*** it will be manually chosen, depending on the command that is entered. There can only be one argument provided to Wordle upon startup. Only a lowercase 5 letter word **or** an integer for the seed should be accepted. **Note that the seed should be converted to the integer type for the correct behavior.** All other variations of arguments given to wordle.py are considered invalid, and the function should raise a **ValueError** on user input error. Examples of this can be found in the **Input** and **Output** section.

For using random and setting a seed, you should review and look into the documentation here on random.seed() and random.choice(). A seed can be set by calling it before using random to choose something:

```
random.seed(1)

x = random.choice([1, 2, 3])
```

get_feedback(secret_word, guessed_word)

This function should generate the proper feedback by providing the corresponding colors based on the guessed letters that were given. wordle.py contains 3 constant colors: `CORRECT_COLOR`, `WRONG_SPOT_COLOR`, `NOT_IN_WORD_COLOR`. The function will store the color information in a feedback list. This list will be used to color the letters at the end of the function, with each index corresponding to the letter of the guessed word. For a correct letter in the correct position, the element at that index is assigned `CORRECT_COLOR`, the remaining correct letter(s) in the incorrect position(s) are assigned `WRONG_SPOT_COLOR` from left to right, and an incorrectly guessed letter is assigned `NOT_IN_WORD_COLOR`. The get_feedback() function will return the correct feedback based on these criteria.

It is important to note that if the player guesses a word containing a repeating letter, the colored letters in the feedback will only reflect the amount of letters contained in the secret word. Below are some examples to illustrate this.

In this example, the secret word is **“aback”**, and the player guessed “abaca”.

```
Enter your guess: abaca
                  abaca
```

In this example, the secret word is **“shell”**, and the player guessed “hello”.

```
Enter your guess: hello
                  hello
```

In this example, the secret word is **“aargh”**, and the player guessed “abaca”.

```
Enter your guess: abaca
                  abaca
```

If you are green-yellow colorblind or prefer the high-contrast version, here is the alternative coloring that is available on the project. The top of the file wordle.py has instructions for how to enable it.

```
Enter your guess: abaca
                  abaca
```

In this example, the secret word is **"shell"**, and the player guessed "hello".

```
Enter your guess: hello
                  hello
```

In this example, the secret word is **"lever"**, and the player guessed "level".

```
Enter your guess: abaca
                  abaca
```

Input

This project will use the command line to initialize a game of Wordle. **len(sys.argv)** checks the length of the command line arguments. Your program will start a game of Wordle with the given arguments in the command line as instructions. Your project should be able to initialize a game with each of the following commands:

`python3 wordle.py`
This example will initialize a default game of wordle. A secret word will be chosen randomly when launching wordle.py. The player will be able to manually guess words for 6 attempts.

`python3 wordle.py 123`
In this example, 123 is the number that will be set to random.seed() to choose the secret word. This means that your program will support having the random seed set (an integer) when launching wordle.py. The player will be able to manually guess words for 6 attempts, and the random word chosen should be the same every time with the same seed.

`python3 wordle.py hello`
In this example, we are manually choosing the secret word to be "hello". The player will be able to manually guess words for 6 attempts.

`python3 wordle.py 123 < 123.in`
In this example, we are choosing the random seed and accepting an input file containing guesses. The file name will correspond with the command line argument you should use (123 would be the command line argument, and this would correspond to the 123.in file). Each attempt to guess the secret word will be contained in the input file, meaning the user will not type guesses into the command line. Instead, every call to input() will automatically read a single line from the file. It is guaranteed that the input file will have no more than six valid guesses (invalid guesses do not count). The input redirection will be handled by the shell (terminal); you will not have to implement this in your code. Alternatively, if you are using a Windows computer and are having trouble with input redirection <, you can run:

`cat guesses.txt | python3 wordle.py`

which will do functionally the same behavior.

`python3 wordle.py hello < hello.in`

In this example, the secret word is manually chosen and it accepts an input file of guesses. The file name will correspond with the command line argument you should use (hello would be the command line argument, and this would correspond to the hello.in file). Each attempt to guess the secret word will be contained in the input file, meaning the user will not type guesses into the command line. Instead, every call to input() will automatically read a single line from the file. It is guaranteed that the input file will have no more than six valid guesses (invalid guesses do not count). Alternatively, if you are using a windows computer and are having trouble with the redirection operator <, you can run:

```
cat input.txt | python3 wordle.py hello
```

which will do functionally the same behavior.

Output

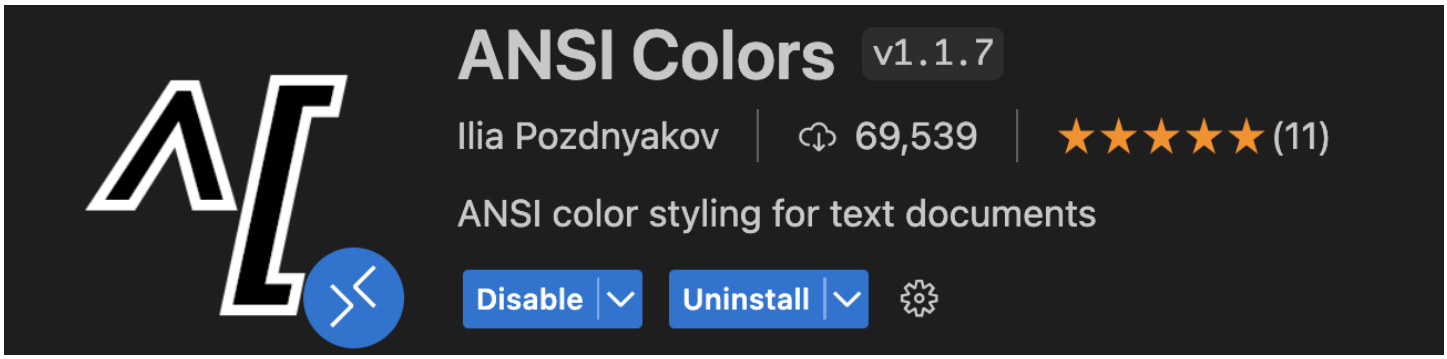
If you are having a hard time viewing your output, then you can try **output redirection**. The command should be:

```
python3 wordle.py > output.ansi
```

The > output.ansi will now create a file called output.ansi. It will contain all of your program's output, and you may choose to combine it with any of the commands we listed above. For example:

```
python3 wordle.py 123 < 123.txt > output.ansi
```

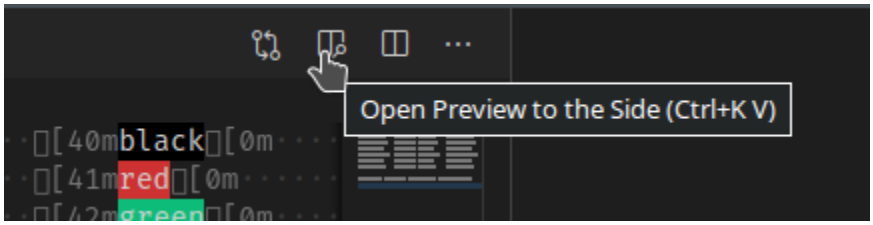
You can then install the ANSI Colors VSCode extension:



Select the ANSI Text language mode to highlight text marked up with ANSI escapes. Files with the .ans and .ansi extensions will be highlighted by default.

Type in "ANSI Text: Open Preview" and choose the option in the command palette (cmd+shift+P for Mac or ctrl+shift+p for Windows) for the prettified read-only preview.

Or try clicking the preview icon in the editor title to open the preview in a new tab. Alt-click to open in the current tab.



The following commands are examples of what will be used in the test cases. The first output will be the standard coloring, and the second output will be the high-contrast coloring.

`python3 wordle.py sport`

Your output will look like the following:

Standard Coloring:

```
Welcome to Command Line Wordle!

How To Play
Guess the secret word in 6 tries.
Each guess must be a valid 5-letter word.
The color of the letters will change to show
how close your guess was.

Examples:
weary
w is in the word and in the correct spot.
pills
i is in the word but in the wrong spot.
vague
u is not in the word in any spot.

Enter your 1st guess: civic
                      civic
Enter your 2nd guess: 123ad
Bad input detected. Please try again.
Enter your 2nd guess: mamba
                      mamba
Enter your 3rd guess: oddly
                      oddly
Enter your 4th guess: those
                      those
Enter your 5th guess: snout
                      snout
Enter your 6th guess: sport
                      sport
Congratulations! You guessed the word 'sport' correctly.
```

High Contrast Coloring:

```
Welcome to Command Line Wordle!

How To Play
Guess the secret word in 6 tries.
Each guess must be a valid 5-letter word.
The color of the letters will change to show
how close your guess was.

Examples:
weary
w is in the word and in the correct spot.
pills
i is in the word but in the wrong spot.
vague
u is not in the word in any spot.

Enter your 1st guess: civic
                      civic
Enter your 2nd guess: 123ad
Bad input detected. Please try again.
Enter your 2nd guess: mamba
                      mamba
Enter your 3rd guess: oddly
                      oddly
Enter your 4th guess: those
                      those
Enter your 5th guess: snout
                      snout
Enter your 6th guess: sport
                      sport
Congratulations! You guessed the word 'sport' correctly.
```

python3 wordle.py 123

Your output will look like the following:

Standard Coloring:

```
Welcome to Command Line Wordle!

How To Play
Guess the secret word in 6 tries.
Each guess must be a valid 5-letter word.
The color of the letters will change to show
how close your guess was.

Examples:
weary
w is in the word and in the correct spot.
pills
i is in the word but in the wrong spot.
vague
u is not in the word in any spot.

Enter your 1st guess: flood
                      flood
Enter your 2nd guess: puppy
                      puppy
Enter your 3rd guess: batch
                      batch
Enter your 4th guess: grate
                      grate
Enter your 5th guess: smart
                      smart
Enter your 6th guess: tiara
                      tiara
Sorry, you've run out of attempts. The correct word was
'bleed'.
```

High-Contrast Coloring:

```
Welcome to Command Line Wordle!

How To Play
Guess the secret word in 6 tries.
Each guess must be a valid 5-letter word.
The color of the letters will change to show
how close your guess was.

Examples:
weary
w is in the word and in the correct spot.
pills
i is in the word but in the wrong spot.
vague
u is not in the word in any spot.

Enter your 1st guess: flood
                      flood
Enter your 2nd guess: puppy
                      puppy
Enter your 3rd guess: batch
                      batch
Enter your 4th guess: grate
                      grate
Enter your 5th guess: smart
                      smart
Enter your 6th guess: tiara
                      tiara
Sorry, you've run out of attempts. The correct word was
'bleed'.
```

```
python3 wordle.py a12++
```

Your output will look like the following:

```
Bad input detected. Please try again.
```

Grading

Visible Test Cases - 60/100 points

The program output exactly matches the sample solution's output. To receive full credit, the program must produce the correct output based on all requirements in this document and pass all the test cases.

Hidden Test Cases - 30/100 points

The program output exactly matches the sample solution's output. To receive full credit, the program must produce the correct output based on all requirements in this document and pass all the test cases.

Style Grading - 10/100 points

The wordle.py file must comply with the PEP 8 Style Guide.

If you are confused about how to comply with the style guide, paste the error or the error ID (e.g. C0116 for missing function or method docstring) in the search bar here in the Pylint Documentation, and you should find

The TAs will complete a manual code review for each assignment to confirm that you have followed the requirements and directions on this document. Deductions will occur on each test case that fails to follow requirements.

Submission

Follow these steps for submission.

Check	Description
▢	Verify that you have no debugging statements left in your code. These will cause your test cases to fail.
▢	Run the visible test cases on your implementation. This is recommended prior to submission, as you have a maximum of 15 tries to test your code on the hidden test cases via Gradescope.
▢	Ensure that you are following PEP 8 style guidelines via Pylint. ***NOTE***: To receive full credit for style points on your programming assignment, you must have addressed ALL problems detected by Pylint.
▢	Submit wordle.py to the assignment in Gradescope. To submit as a group, follow the instructions here. This will run the grading scripts (hidden + visible tests). You **must** submit via Github.

Check	Description
▢	When the grading scripts are complete, check the results. If there are errors, evaluate the script feedback, fix your code, test your code, and then re-submit the file to Gradescope. You can submit on Gradescope up to 15 times until the due date. **You will not be able to submit after your 15th submission**. So, if you're failing hidden test cases, try to narrow down and fix your bug prior to submitting! More techniques on this are described in the Gradescope guide here and in the VS Code Debugger guide here. ***NOTE***: By default, only the most recent submission will be considered for grading. If you want to use a previous submission for your final grade, you must activate it from your submission history on Gradescope before the due date.

Academic Integrity

Please review the Academic Integrity section of the syllabus. We will be using plagiarism checkers as well as checking for AI-generated code. Remember, the goal in this class is not to write the perfect solution; we already have many of those! The goal is to learn how to problem-solve, so:

- don’t hesitate to ask for guidance from the instructional staff, and
- be sure you stay within the Academic Integrity discussion guidelines outlined in the syllabus.

Attribution

Thanks to Dr. Carol Ramsey for the instruction template.