45101618 - Sannidhi Bosamia

CSSE1001 — Assignment 3

Additional Feature
The additional feature implemented in this assignment is the classic **Hangman** game. The entire game has been built around the `Canvas` class in `tkinter`. I chose `Canvas` as it allows me to draw different shapes and allow the user to interact more with the game.

The total number of wrong guesses (attempts) the player is allowed is seven. This accounts for the six wrong guesses which make up the actual man, as well as one additional one that determines whether he will actually be hanged or if he will have that last chance to live.

Brief User Manual
In order to play Hangman, click on the menubar located at the top of the queue and click on 'New Game'. This will open up the window that allows the user to play Hangman. To guess letters, click on the letters on the QWERTY keyboard. Your used letters will show up beneath it.

See how to play the game Hangman here: https://en.wikipedia.org/wiki/Hangman

Approach
Firstly, it is important to note which file does what:
- `hangman_gui.py`: the View of the game
- `hangman_controls.py`: the Controller of the game
- `hangman_model.py`: the Model of the game

The main approach to this task was by using a model-view-controller (MVC) method, which has been taught and applied in the CSSE1001 course. The methods and classes have been explained in the actual files.

How I went about solving this is that I decided to write up all the functionalities I would need on a piece of paper and then linked them up together. I then used this to decide how to make it fit the MVC archetype.

Moving on, I would like to cover is why I decided to use `tkinter`'s `Canvas` class as my basis of this entire game. One of the main reasons is that it allows me to draw things onto it very easily, such as the hanging station and the keyboard which allows player to select letters. Another reason is that `Canvas` makes it easy to position certain items in a particular place which is important for my game as it not being structured properly can largely affect the way it is played.

One of the main problems I encountered was actually getting the keyboard to work when the player clicked on the keys. To solve this, I added methods to the `Letter` class which gives each key its own coordinate and therefore allows me to figure out which exact key the player pressed on.

Another problem that I encountered was that it was somewhat difficult to figure out how to declare that the player has won. After some trial and error, I decided that `set(arg1).issubset(arg2)` was the best way to go about doing so.

Although simplistic, I believe that this game is truly enjoyable as it was a huge part of my life growing up, especially during classes where the teacher was absent or showed up late. I also believe that most people know how to play Hangman and therefore it is not too hard of a game for a student to play while they are waiting on their turn on the queue. I think that the simplicity of this game is what makes it so great; being able to play it easily and effortlessly anywhere is one of the main reasons why I decided to create this game over countless other choices.