**Stack game:**

Started: 28/11/2022

**Main objectives:**

* There will be a desired height on the screen to reach every few seconds and you need to reach that height within the time limit otherwise you lose.
* Answer maths questions or correctly spell the word to travel up and down the stack or pop/ push items off and onto the stack.

**Features to add:**

* Timer that counts down from 5 seconds (from when the game has started and when every 5 seconds after)
  + Timer needs to stop when in the menus.
    - Track how long the player was in the menu and take that away from the time ingame
* Draw the stack onto the screen
  + The stack will have 6 elements in it
  + Create a random list for the stack with the values 0 or 1. 1 is the element that the player must be at by the time that the timer has reached 0 (otherwise they lose)
  + Feed this random list into the Stack class.
    - Create a method for the stack class which will update the items list inside of the stack (Much more efficient than creating a new stack instance each time the question is answered correctly)
* Draw the player on a random element of the stack
  + Generate a random index for the player to spawn on.
* Generate random questions
  + Draw the questions at the top of the screen
  + Generate new question if the player has answered correctly
* Take user input
  + The “u” key is to move up the stack
    - Move the player up the stack
  + The “j” key is to move down the stack
    - Move the player down the stack
* Add a game over state
  + If the player doesn’t answer the question within the time limit, then show the restart menu
* Reset the game when the player returns to the main menu
* Modify the random question generator (Adjusting difficulty based on the mathematical operation)
* Make it clearer as to where the player is on the stack (Illustrated pointers, a circle on the stack element the player is at, etc.)
* Add a scoring system
  + Whenever the player reaches the goal element, increase the score by one
    - Or you could also add a bonus feature which is if they reach the goal element, the amount of score they receive would be greater
* Give the players a choice whether they want to play the stack game with maths questions or spelling bee questions
  + In the spelling bee version, they just have to correctly spell the letter to travel up and down.
  + If maths mode is on:
    - Generate maths questions
    - User can only type numbers
  + If spelling mode is on:
    - Generate spelling questions
    - User can only type letters of the alphabet
      * Create a list containing the unicode values of all the letters in the alphabet and set it as a condition before concatenating the letter to the user text.
* Add a text that is displayed on the screen for 1 second that displays whether the player answered the question correctly/incorrectly
* Limit the fps using clock.tick(60)
* Add the controls to the controls menu and change the aesthetic of all of the menus
* Moving all of the current stack game into its own function
* Create a menu for choosing which version of the stack game they want to play
* Make a different version of the stack game, the first one is to travel to the goal element. The second one is that every 5 seconds, there will be a specific height that the player has to be in by the timer is up.
  + Create a new function for the other version of the stack game
  + Add a new score system for the game 2
    - Make the seconds slowly decrease by 0.2 seconds every 5 seconds and limit it to 3 seconds.
    - Score is based on how many “rounds” the player can survive
  + Change the functionality of the stack (i.e. add popping and pushing elements
    - You can push and pop elements under the player, onto the stack to reach the height desired.
  + Have a threshold height that the player must be at by the time the timer runs out.
    - Draw the dashed lines at the threshold height (which is randomly generated)
* Change the timer for the second game so that when it runs out, it checks if the player is at the given threshold height (this can be done by checking the length of the stack list).
  + If the player has reached the desired height, then:
    - Reset the timer
      * Could add a feature where every iteration, it will remove 0.2 seconds every time until it reaches a specific limit e.g. 6 seconds.
    - Generate a new word and reset the user text
    - Generate a new threshold height
      * Ensure that the new threshold height is not the same as the last one.
  + Otherwise end the game
* Modify the reset\_game function to work with both versions of the game (or make a new one)
  + Add conditions where if it was menu.game\_v1 or menu.game\_v2, and then reset the variables accordingly
* Have separate high scores for the two games