A PROGRAMMER'S GUIDE

A brief discussion of the design decisions taken

The Serial Monitor has been removed from the design completely, in order to make the game as easily playable as possible. That way no matter who is playing, they do not need to understand how to use the Serial Monitor, they are only going to press buttons.

Both buttons are very intuitive and easy to use and thus are suitable for all ages.

I have added 2 additional LEDs to indicate in a very straightforward way whether or not the user's guess was correct. This is being done using only green and red colours, indicating right and wrong respectively. I am also using different lighting patterns to indicate things like wins or just space selection.

I have also decided to add a touch component, which adds additional feedback. It makes different movement patterns to indicate right and wrong answers, as well as wins. The touch component has been added to ensure complete understanding of what is happening in the game at any given moment.

All of these design decisions have been taken to ensure optimum usage of all components, as well as accommodate any special needs or disabilities the player might have.

Breadboard layout sheet for your final circuit
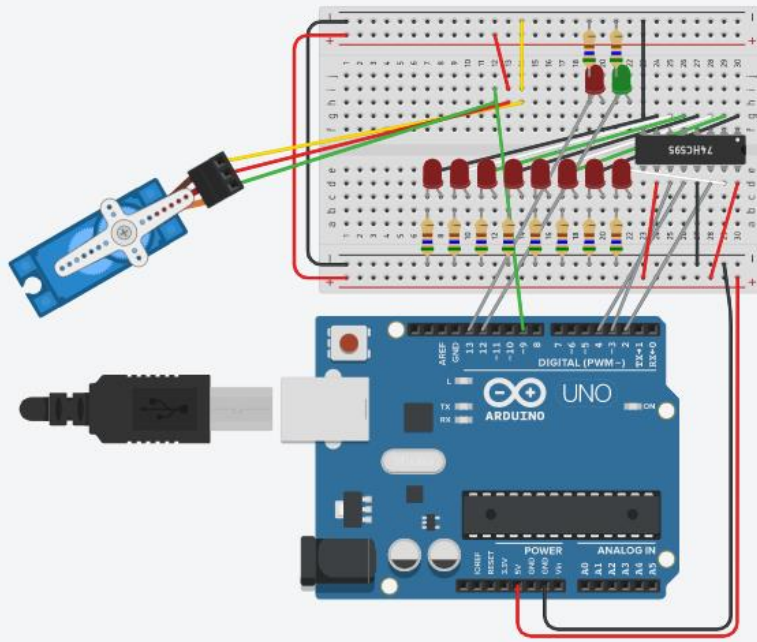
Layout sheet for Part 1 (Serial Monitor used for input)
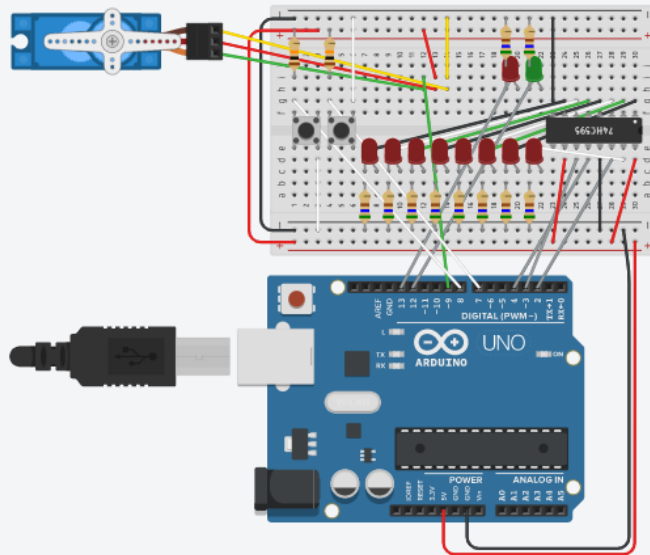
Layout sheet for Part 2 (Buttons used for input)

Testing conducted

Each function in the code has been thoroughly tested and has been created in such a manner that the code has been optimised and debugged, using many different manners, such as dry testing, using the Serial Monitor, etc.

Dry Run:

While planning all functions (new and ones that have been added onto), dry running has been performed to be certain that their functionalities are exactly as expected.

Separate Functions Testing:

All functions have been tested separately during the coding process to make sure they can all interact as intended: they have been given the input values that they are expected to receive and checked that the output value corresponds to the input given.

Function Interaction:

Lastly, all functions were tested together to make sure they all can interact well with each other: They pass appropriate inputs to the rest of the functions and give the expected outputs.

Any known shortcomings

No shortcomings known so far.