Flippity Floppity

<https://github.com/KadeemJonas/FinalProject.git>

Caitlin Richardson and Kadeem Jonas

# Project summary

There are three game modes, a timed mode, an attempted try/fail mode, and a classic mode. There are multiple levels and as the level increases the grid sizes will also increase. Flip two cards over at a time and if they match, they remain flipped over. To complete the level, you must fully match all the cards either under the given amount of time or in the number of attempts you have.

# Goals and objectives

To provide an entertaining way to improve visual recognition and give space to critical thinking and paying attention to detail. The game will build thinking skills, concentration, attention, and persistence.

# GPIO goals

When you flip two cards over, lights will flash green or red to signify a match or not. The circuit also acts as a buffer in our code. If you click the buttons too fast the program glitches and bugs out. The flashing of the lights allows us to control how fast the user can interact with our program while preventing it from breaking.

# GUI goals

We will use Tkinter to present the cards and allow for user interaction with the buttons to “flip” cards over on the screen. The GUI will present our code as a simple memory game while in a loop from the home screen to the levels and back to the home screen.

Graphical user interface

Description automatically generated

# Timeline

Insert your project's final Gantt chart here.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Title** | **Week** | | | | | | | | | | | | | | | **Finals** | |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** |  |
| **Make the matching** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |
| **-setup gui** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |
| **Set up GPIO** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |
| **Set up timed mode** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |
| **Bug fixes** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |
| **Make it look pretty** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |
| **Final project presentation** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |

# Future development plans

With more time we would like to better improve our time mode. We would do this by implementing a bonus when you finish a level early, then the extra time can be added to the next level. We would also switch the platform to pygame to create the interface which would allow for more animations. We would also like to add more levels to expand the game and potentially switch the cards to images instead of words/numbers. Some minor changes would be to add a counter to show how many matches one has gotten out of how many are left on all modes and levels. On the attempt mode, we would add a box displaying how many attempts they have left after each card flip.

# Lessons learned

We learned that Tkinter is not the most user-friendly when it comes to creating games. From this, we learned that we should do a little more research when planning all the components of the project before diving in. This has been beneficial to problem-solving because it has taught us persistence and creativity when it comes to a task where we cannot figure out how to accomplish it. It pushed us to think outside of the box and try multiple methods until we could create the solution we were looking for. This will benefit us in future courses because we will learn from our mistakes now and hopefully not repeat them in the future.