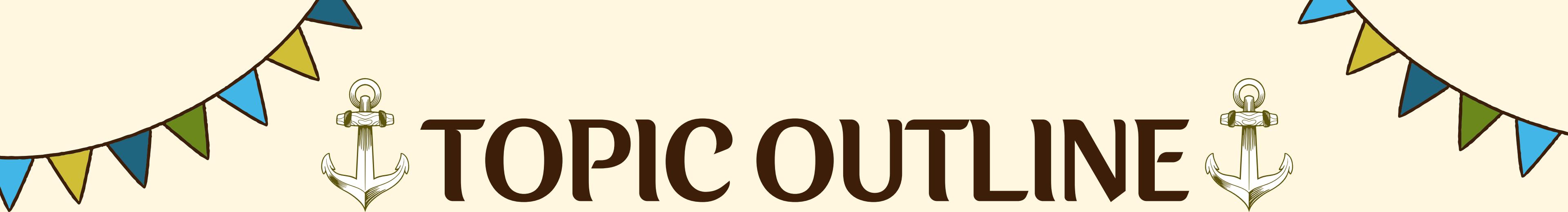


LET'S TALK ABOUT

BATTLESHIP

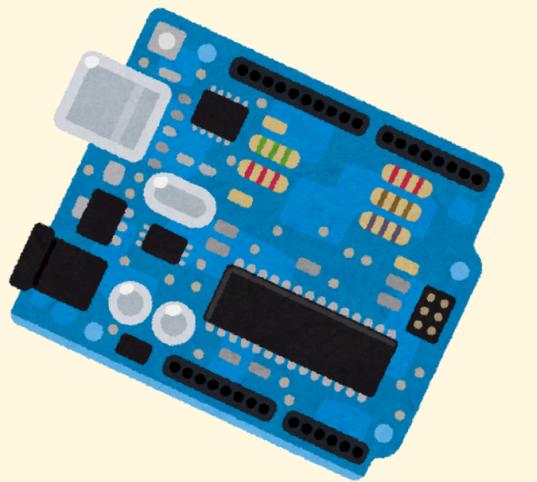
PRESENTED BY: LARISA PELE & DARIUS ROTARI



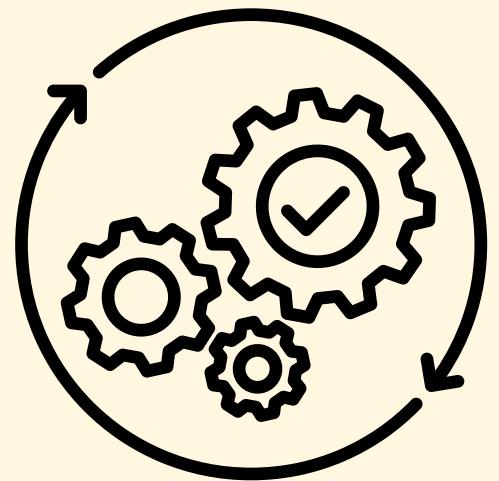
TOPIC OUTLINE



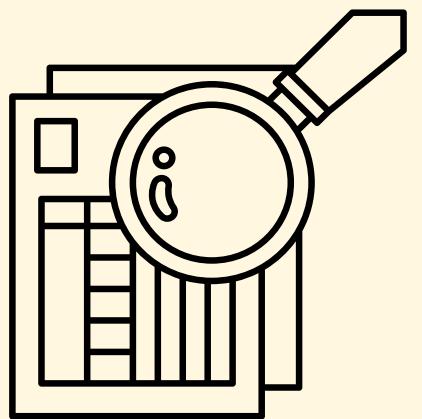
A. The Project



B. Architecture



C. Way of operation



D. System testing



E. Conclusions



Our project : Battleship Game Implementation

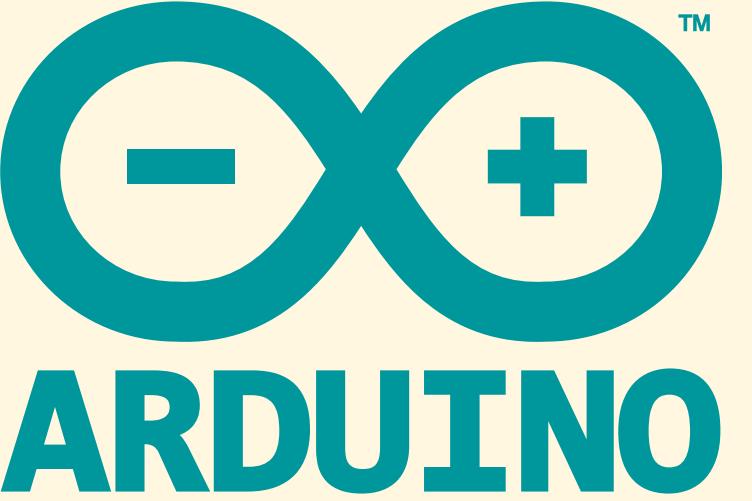
PROJECT THEME:

Implementation of the Battleship game, using a microcontroller

CHARACTERISTICS:

- The display will be divided into two equal regions, one for each player;
- At least two different forms of ships / ships will be generated for each player, randomly placed on the game space;
- The kicking position will be selected by a player using 4 left, right, up, down directional buttons or a joystick. Position confirmation will be done using another button;
- Once a "ship" has been hit and sunk, its LEDs will light up in a certain color (eg red) and stay lit for the duration of the game;
- The positions on the matrix where a hit was attempted, but they were free, will remain lit for the duration of the game in a certain color (eg green);
- When a player wins, an appropriate message / pattern will be displayed, as well as the score (score counting by a mechanism of the students' choice is required)





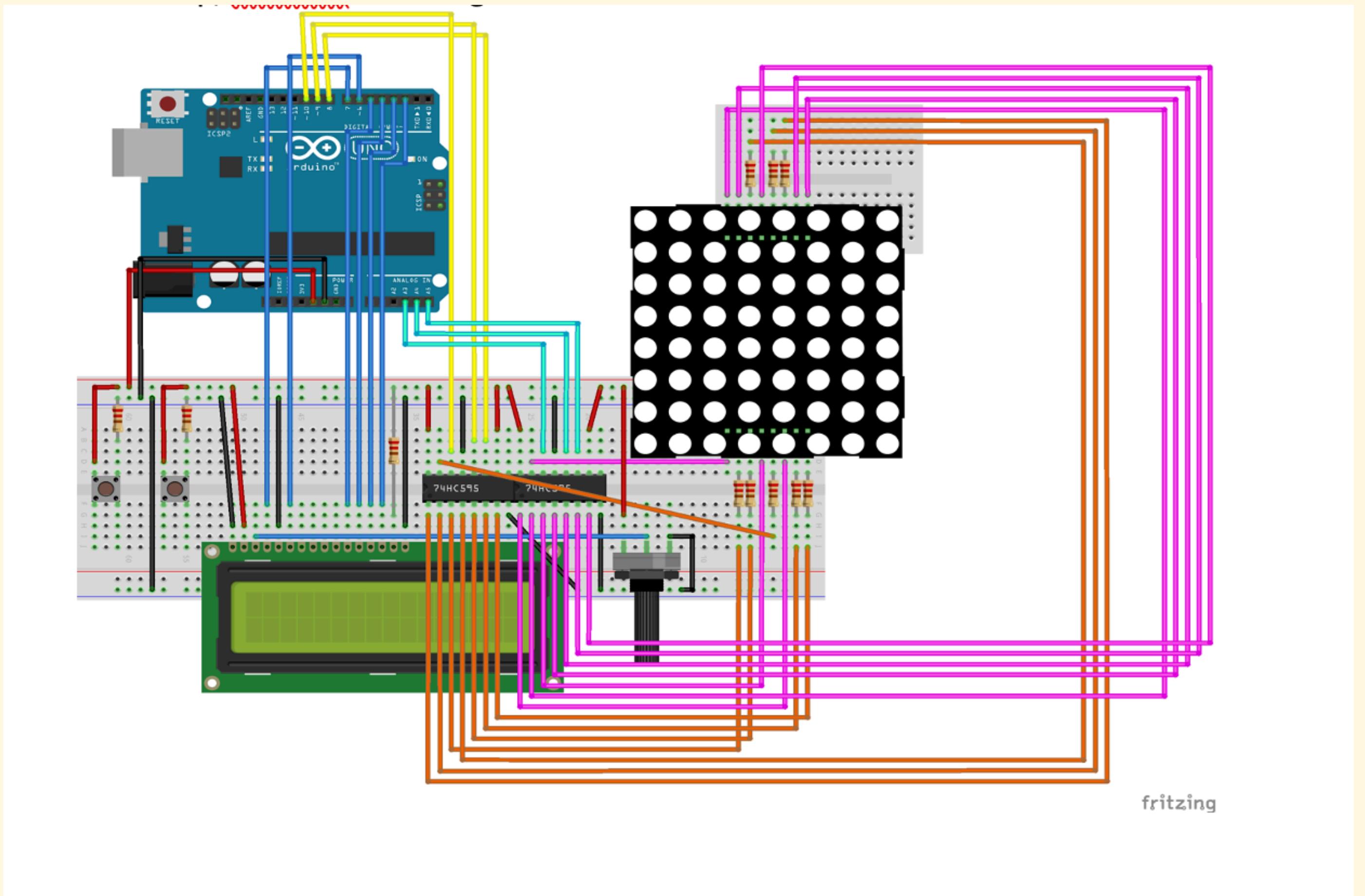
THE COMPONENTS USED IN THIS
PROJECT:

- 2 Arduino UNO boards
- 2 LCD screens (Liquid Crystal Display)
- 4 buttons
- 2 potentiometers
- 2 two-color matrices of size 8x8
- 4 8-bit shift registers
- 4 resistors of $10\text{ k}\Omega$
- 18 resistors of $220\ \Omega$
- 4 breadboard plates
- Male-to-male and female-to-female wires



WORK HARD
PLAY HARD

The hardware architecture of our project



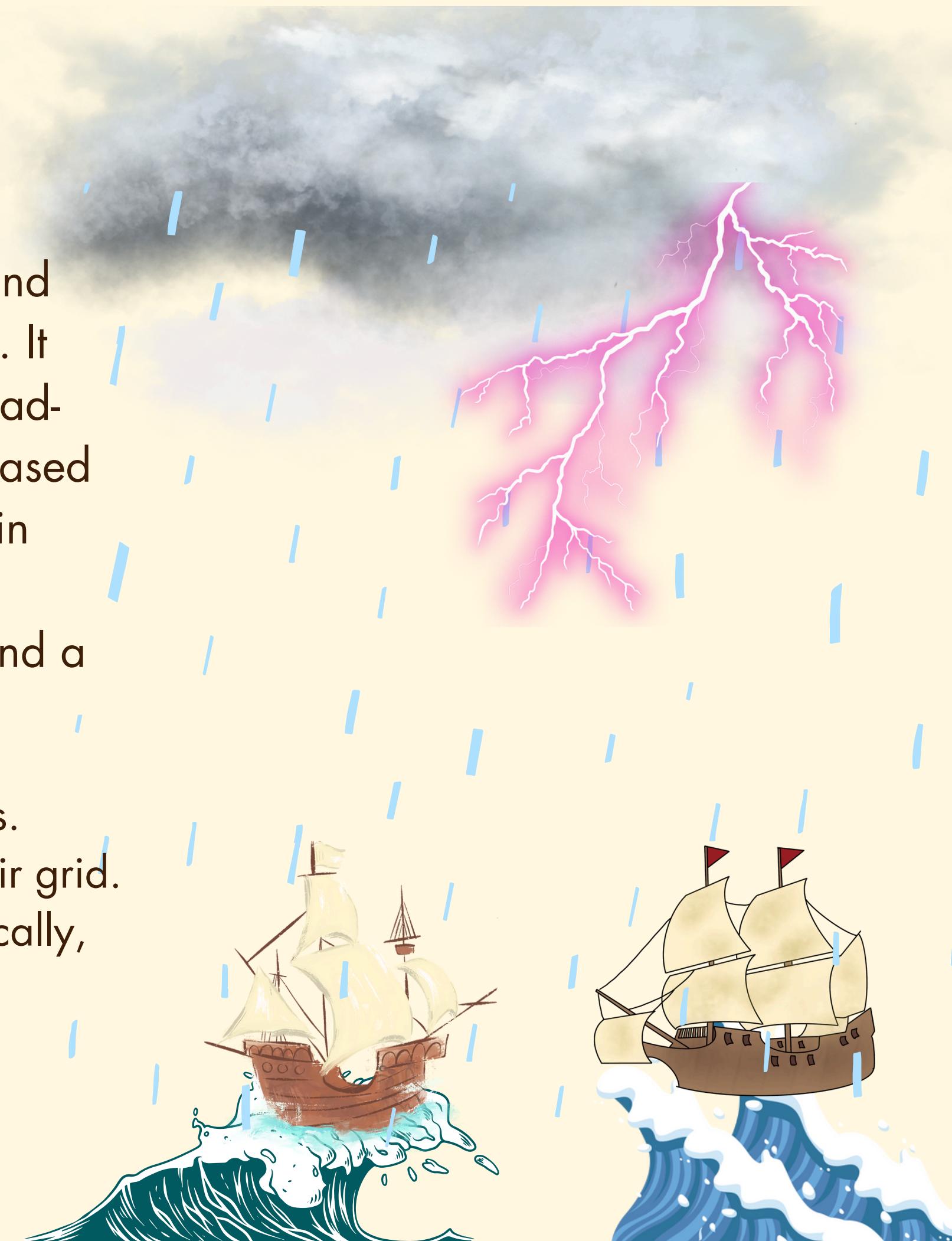
Way of operation

OVERVIEW:

Battleship is known worldwide as a pencil and paper game which dates from World War I. It was published by various companies as a pad-and-pencil game in the 1930s and was released as a plastic board game by Milton Bradley in 1967. The game has spawned electronic versions, video games, smart device apps and a film.

HOW TO PLAY:

1. Each player has their own grid, 8x8 squares.
2. Each player secretly places their ships on their grid. The ships can be placed horizontally or vertically, but not diagonally.





The most important: HOW DO YOU WIN?



OBJECTIVE:



- The game continues until one player has sunk all of their opponent's ships.
- The player who sinks all of their opponent's ships first wins the game.





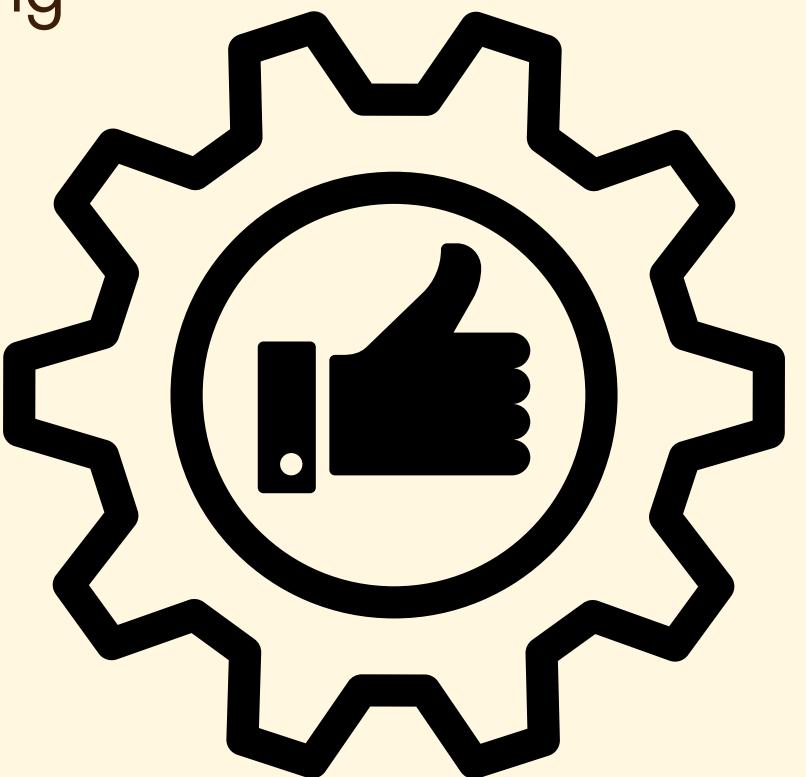
System Testing

OUR GAME TESTING WENT THROUGH 2 PHASES



1. The phase in which we tested each hardware component separately, understanding its mode of operation. Then, after the project was properly assembled, we started the code testing phase.

2. The testing phase that we liked the most was the one in which we played this game, making some adjustments where necessary.



Conclusions

PRACTICAL DEMONSTRATION OF KNOWLEDGE:

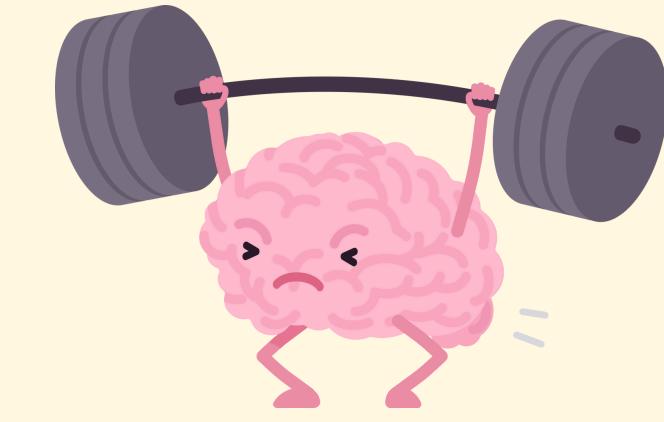
EFFECTIVE INTEGRATION OF TECHNOLOGIES:

RESOLVING TECHNICAL CHALLENGES:

The project was a great way to apply theoretical knowledge in a practical context. Implementing the Battleship game on Arduino boards required using programming and electronics concepts in a concrete and applicable way.

The integration of touch sensors and LED displays on the Arduino board has been successfully achieved, demonstrating the ability to use different technologies and components to create a functional and interactive application.

During implementation, various technical challenges were encountered, such as managing the limited resources of the Arduino board and optimizing the game algorithm. These challenges were overcome through careful analysis, testing and iteration.



Thank
You

you're
AWESOME!