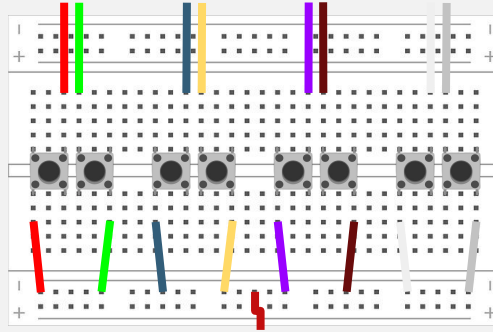


Mastermind Project

Alessandro Benassi
Daniele Calvo
Niccolò Cristoforetti
Matteo Gottardelli

Introduction



Aim

🎯 Produce a version of the game Mastermind

🎲 Purpose is to guess a sequence of colors

Settings

🎨 Colors inserted via external buttons

⚙️ Different settings are available via GUI

Hardware

🧰 MSP432

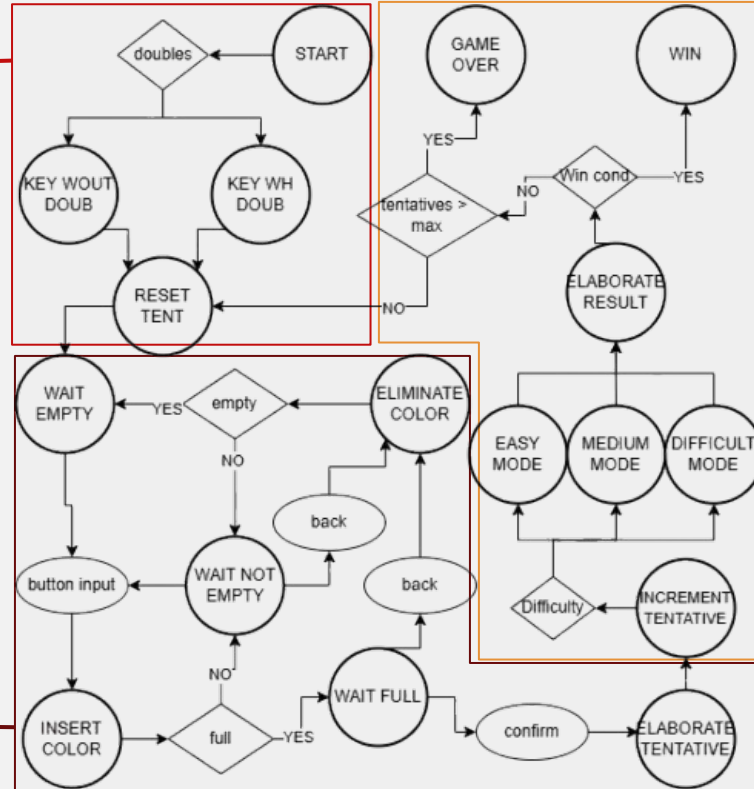
📺 Boosterpack

🕹️ Breadboard with 8 buttons

Finite State Machine

gamelogic1

- setup part
- generate color sequence



gamelogic3




- tentatives management
- difficulty
- correction
- chronology
- win check


gamelogic2

- color input management




Interrupts and SW/HW Interaction

1. Buttons


 Buttons: Confirm
( P3.5) & Back ( P5.1)
& Breadboard


 Movement through GUI
interfaces

 Game features


Breadboard:  Insert
Back:  Delete
Confirm:  Continue


2. Timer

 Continuous Timer
(48 MHz)

 Multiple almost
simultaneous input
blocking

3. ADC Joystick





 Reading joystick position
x(P6.0) y(P4.4)

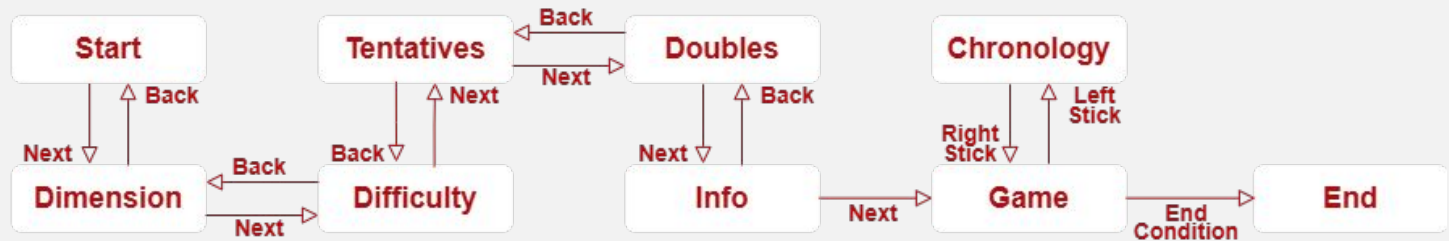
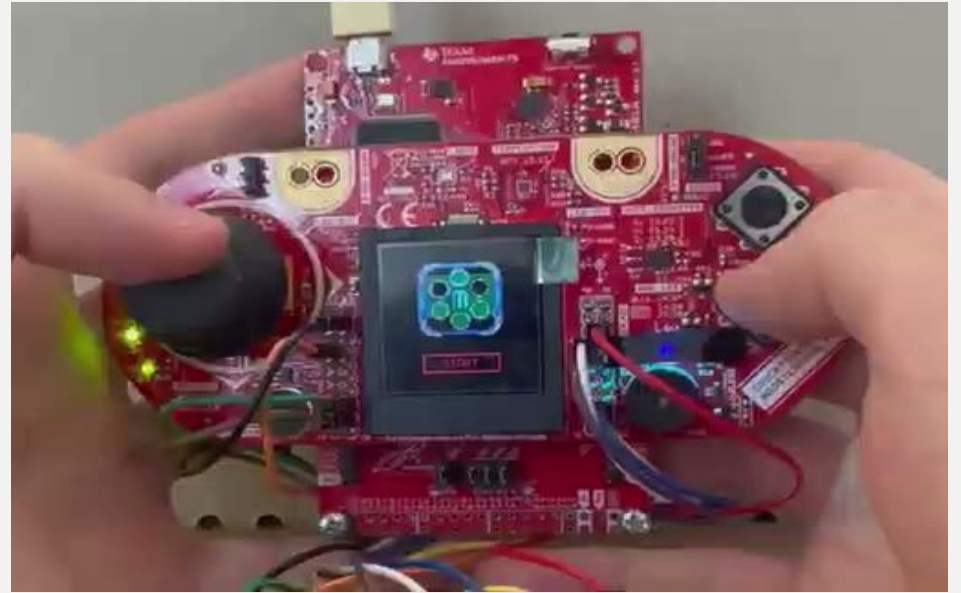
 Movement limited inside
GUI interface

  Sliding Game-Chronology
Interaction

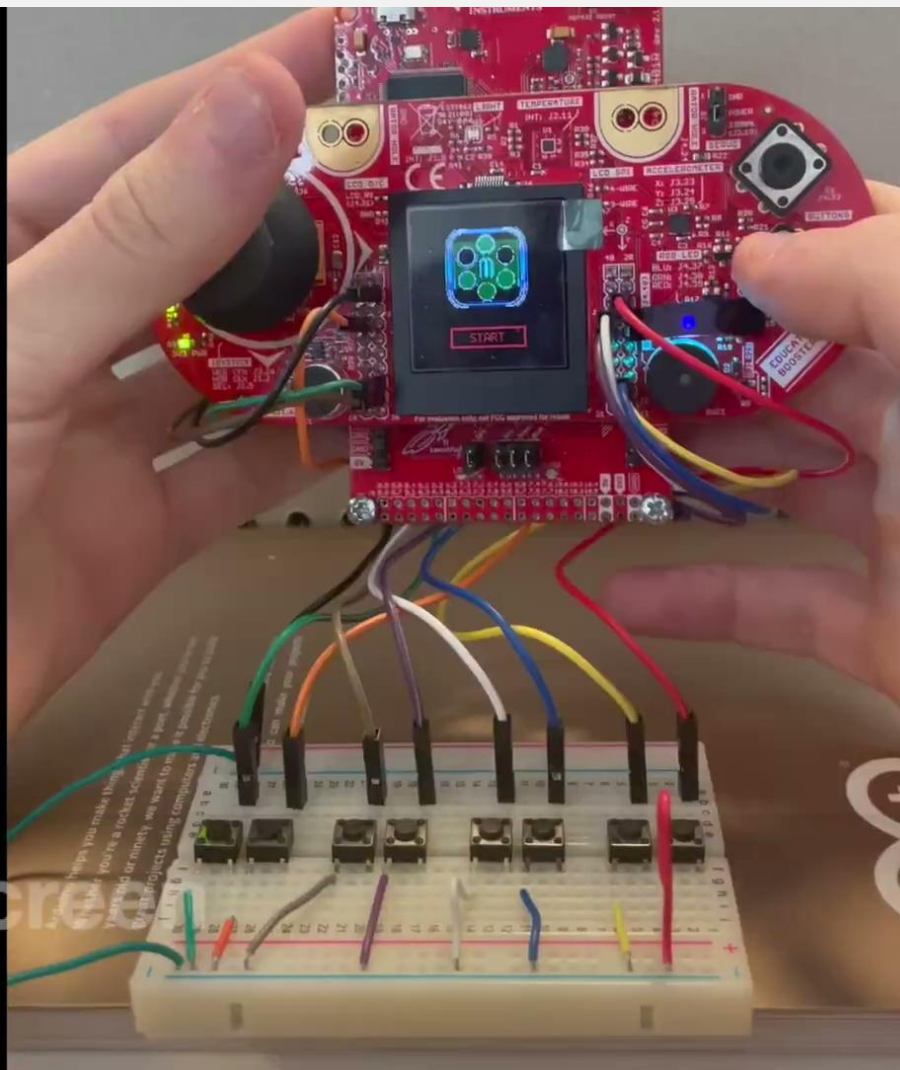
Workflow GUI

Relevant features:

-  Memory
-  Responsive interaction
-  Intuitive interfaces
-  Adaptability



Start screen





Difficulties Encountered



Difficulties	Below Average	Average	Advanced
Interrupt Management		●	
Game/Chronology Dynamic Implementation		●	
Correction Algorithm	●		
Multiple pressure management			●

✓ Future Improvements ✓

ESP32 connection

Connects with an ESP32 to display the game on another device.

Sound emission

Adds audio feedback explaining the outcome of each combination.

Theme customization

Allows players to customize the game's appearance.

Real-time engine

Implements a system that enables pausing and resuming a game using the embedded system's main memory.

Memory extension

Expands system memory to allow for more attempts (maximum of 8 due to hardware limitations).