

4-Player Reaction Game System with 5 Exciting Modes

What it is:

This project is a **multiplayer reaction challenge** game, designed for **4 players**. Players use physical buttons, a buzzer, an LED, and a **LiquidCrystal I2C LCD screen** for interaction.

Before starting, players **choose from 5 unique game modes** — each testing speed, memory, teamwork, or strategy!

How it works:

- **Hardware Setup:**
 - **4 player buttons** (pins 2–5)
 - **5 mode-select buttons** (pins 7–11)
 - **1 LED** (pin 13)
 - **1 Buzzer** (pin 6)
 - **LCD Display** for messages and scores
- **Startup:**
 - The LCD asks you to select a mode using the mode buttons.
 - Once a mode is picked, the LCD shows instructions and the game begins.
- **Gameplay Modes:**
 - **Classic Race**
 - Wait for the LED/buzzer, then *race* to press your button first.
 - Fastest player earns points — first to 5 wins!

- **Troy Says**
 - Simon-Says style: Only press when "Troy says" your player number.
 - Press wrong = lose a point!
- **Grab the Prize**
 - A "prize" starts with a random player.
 - Press your button to "grab" it away before the timer runs out.
- **Team Memory**
 - Memorize a random sequence of player numbers.
 - Work as a team to reproduce it under time pressure!
- **Last Man Standing**
 - Fast reaction elimination round!
 - Miss the LED cue or be the slowest = you're out.
 - Last player standing wins.
- **Sound Effects:**
 - **Victory tunes** and **Mario-style death sounds** play using the buzzer, adding fun and excitement.
- **Win Condition:**
 - In most modes, the first to **5 points** wins. In "Last Man Standing," the winner is the *last player remaining*.

Why it's COOL:

- **Multiplayer Fun:** Everyone can play together — perfect for parties, tournaments, or family game night!

- **Multiple Games in One:** No need to reprogram — players can switch between 5 different games on the fly!
- **Skill Variety:** Tests reaction speed, memory, and decision-making, making it **challenging and unpredictable**.
- **Real Hardware Interaction:** LED flashes, buzzer sounds, button smashing — way more fun than a screen-only game!
- **Customization Ready:** You could easily tweak scores, add sounds, new modes, or modify difficulty levels.