

ReflexMaster: A Reflex-Based Arduino Game

Tagline: Blink & Beat ... Don't Blink, Don't Miss!

1. Introduction

ReflexMaster is an Arduino-based interactive reflex training game designed to test speed, memory, and accuracy. Players respond to LED signals using push-buttons, while their performance is tracked on an LCD. The game offers three modes (Easy, Medium, Hard), increasing in complexity from single reflex checks to memory and reverse-sequence challenges.

2. System Overview

Hardware Components:

- Arduino Uno/Mega
- 16x2 LCD
- LEDs
- Push-buttons
- Buzzer
- Reset button

Software: Arduino IDE (C++ with LiquidCrystal library)

3. Game Flow

Startup splash screen → Player selection (1–5) → Tries selection (5–50) → Difficulty selection (Easy, Medium, Hard). Idle auto-confirm after 3s ensures smooth flow.

4. Modes of Play

Easy: Single LED blink, react quickly. Blink time starts at 1000 ms.

Medium: Sequence memory (3, 5, 7...). Blink time starts at 700 ms and decreases.

Hard: Reverse memory challenge. Blink time starts at 500 ms and decreases.

5. Scoring System

Correct: +10 pts

Wrong: -5 pts

Miss: -2 pts

Streak bonus: +3 every 3 in a row

Lives: ♥■ xN, max wrongs = 5 → Game Over

6. User Feedback

LCD shows motivational/savage lines, buzzer gives sound effects for correct, wrong, start, and gameover events.

7. Multiplayer Support

Up to 5 players with individual scores. Final winner displayed. Tie detection included.

8. Innovation & Highlights

- ✓ Dynamic difficulty scaling
- ✓ Multi-mode gameplay
- ✓ Idle auto-confirm
- ✓ Savage feedback lines
- ✓ Streak bonuses

9. Applications

Entertainment, reflex training, eSports, education, elderly-friendly interaction.

10. Future Scope

Bluetooth multiplayer, EEPROM high scores, OLED/TFT UI, adaptive AI, more game modes.

11. Conclusion

ReflexMaster blends hardware, coding, and game design into a fun project. It's modular, expandable, and engaging for both players and learners.

- *Blink & Beat (start)*
- *Don't Blink, Don't Miss (end)*