```
#include <Arduino.h>

// Pin Definitions
#define START_BUTTON A0

// Player 1
#define P1_BUTTON_RED 2
#define P1_BUTTON_GREEN 3
#define P1_BUTTON_BLUE 4
#define P1_LED_R 5
#define P1_LED_G 6
#define P1_LED_B 7

// Player 2
#define P2_BUTTON_RED 8
#define P2_BUTTON_GREEN 9
#define P2_BUTTON_BLUE 10
#define P2_LED_R 11
#define P2_LED_G 12
```

```
#define P2_LED_B 13

// Variables
int scorePlayer1 = 0;
int scorePlayer2 = 0;
bool gameStarted = false;

// Functions
void setupGame() {
    gameStarted = true;
    scorePlayer1 = 0;
    scorePlayer2 = 0;
    Serial.println("Game Started!");
}

void displayScore() {
    Serial.print("Player 1: ");
    Serial.print(scorePlayer1);
    Serial.print(" | Player 2: ");
    Serial.println(scorePlayer2);
}
```

```
int showRGB(int player) {
    int randomColor = random(0, 3); // 0 =
Red, 1 = Green, 2 = Blue
    int ledR, ledG, ledB;

    if (player == 1) {
        ledR = P1_LED_R;
        ledG = P1_LED_G;
        ledB = P1_LED_B;
    } else {
        ledR = P2_LED_R;
        ledG = P2_LED_G;
        ledB = P2_LED_B;
    }

    // Turn off all LEDs first
    digitalWrite(ledR, LOW);
    digitalWrite(ledG, LOW);
    digitalWrite(ledB, LOW);
```

```
    // Turn on the selected color
    if (randomColor == 0) digitalWrite(ledR,
HIGH);
    if (randomColor == 1) digitalWrite(ledG,
HIGH);
    if (randomColor == 2) digitalWrite(ledB,
HIGH);

    return randomColor;
}

bool waitForResponse(int player, int
correctColor) {
    int buttonRed, buttonGreen, buttonBlue;

    if (player == 1) {
        buttonRed = P1_BUTTON_RED;
        buttonGreen = P1_BUTTON_GREEN;
        buttonBlue = P1_BUTTON_BLUE;
    } else {
        buttonRed = P2_BUTTON_RED;
```

```
        buttonGreen = P2_BUTTON_GREEN;
        buttonBlue = P2_BUTTON_BLUE;
    }

    unsigned long startTime = millis();
    while (millis() - startTime < 3000) { // 3-
second response time
        if (digitalRead(buttonRed) == LOW &&
correctColor == 0) return true;
        if (digitalRead(buttonGreen) == LOW
&& correctColor == 1) return true;
        if (digitalRead(buttonBlue) == LOW &&
correctColor == 2) return true;
    }
    return false;
}

void playGame() {
    // Show colors for both players
    int player1Color = showRGB(1);
    int player2Color = showRGB(2);
```

```
    // Wait for responses
    bool response1 = waitForResponse(1,
player1Color);
    bool response2 = waitForResponse(2,
player2Color);

    // Update scores
    if (response1) scorePlayer1++;
    if (response2) scorePlayer2++;

    // Display updated score
    displayScore();

    delay(1000); // Pause between rounds
}

// Setup and Loop
void setup() {
    Serial.begin(9600);
```

```
    // Initialize pins
    pinMode(START_BUTTON,
INPUT_PULLUP);

    pinMode(P1_BUTTON_RED,
INPUT_PULLUP);
    pinMode(P1_BUTTON_GREEN,
INPUT_PULLUP);
    pinMode(P1_BUTTON_BLUE,
INPUT_PULLUP);
    pinMode(P1_LED_R, OUTPUT);
    pinMode(P1_LED_G, OUTPUT);
    pinMode(P1_LED_B, OUTPUT);

    pinMode(P2_BUTTON_RED,
INPUT_PULLUP);
    pinMode(P2_BUTTON_GREEN,
INPUT_PULLUP);
    pinMode(P2_BUTTON_BLUE,
INPUT_PULLUP);
    pinMode(P2_LED_R, OUTPUT);
```

```
    pinMode(P2_LED_G, OUTPUT);
    pinMode(P2_LED_B, OUTPUT);

    Serial.println("Press the Start button to
begin!");
}

void loop() {
    if (!gameStarted) {
        if (digitalRead(START_BUTTON) ==
LOW) {
            delay(300); // Debounce
            setupGame();
        }
    } else {
        playGame();
    }
}
```