

# Rock-Paper-Scissors Game Report

## 1. Overall Functionality

The Rock-Paper-Scissors game is a simple turn-based game where a player competes against the computer or another player. The game follows these basic steps:

- The player selects one of three options: **Rock, Paper, or Scissors**.
- The opponent (either AI or another player) selects an option.
- The game determines the winner based on standard rules:
  - **Rock beats Scissors**
  - **Scissors beats Paper**
  - **Paper beats Rock**
- The result (Win, Lose, or Draw) is displayed to the player.
- The game may include a score tracker, animations, and sound effects for better engagement.

## 2. Code Structure

A well-structured Rock-Paper-Scissors game in Unity typically follows **good object-oriented practices** with clear separation of logic. The common files and their purposes might include:

### (A) Game Manager (GameManager.cs)

- Handles the main game flow and decision-making logic.
- Keeps track of player and AI choices.
- Displays the result based on the chosen options.
- Updates UI elements (e.g., score, winner text).

### (B) Player Controller (PlayerController.cs)

- Detects user input (button clicks for Rock, Paper, Scissors).
- Sends the player's choice to the GameManager.

## 3. Specific Aspect – AI Decision Making

A key feature in the game is how the AI selects its move. There are different approaches:

### 1. Random Choice (Basic AI)

- The AI selects Rock, Paper, or Scissors randomly using `Random.Range(0, 3)`.

### 2. Pattern-Based AI

- The AI detects player patterns and selects the best counter-move (e.g., if the player frequently picks Rock, AI may favor Paper).

### 3. Machine Learning AI (Advanced)

- Using reinforcement learning, the AI improves over time based on the player's tendencies.

## 4. Possible Enhancements

- **Multiplayer Mode** (Local or Online).
- **Leaderboard and Score Tracking**.
- **Animated Character Reactions** when winning/losing.
- **Sound Effects and Background Music** for better engagement.