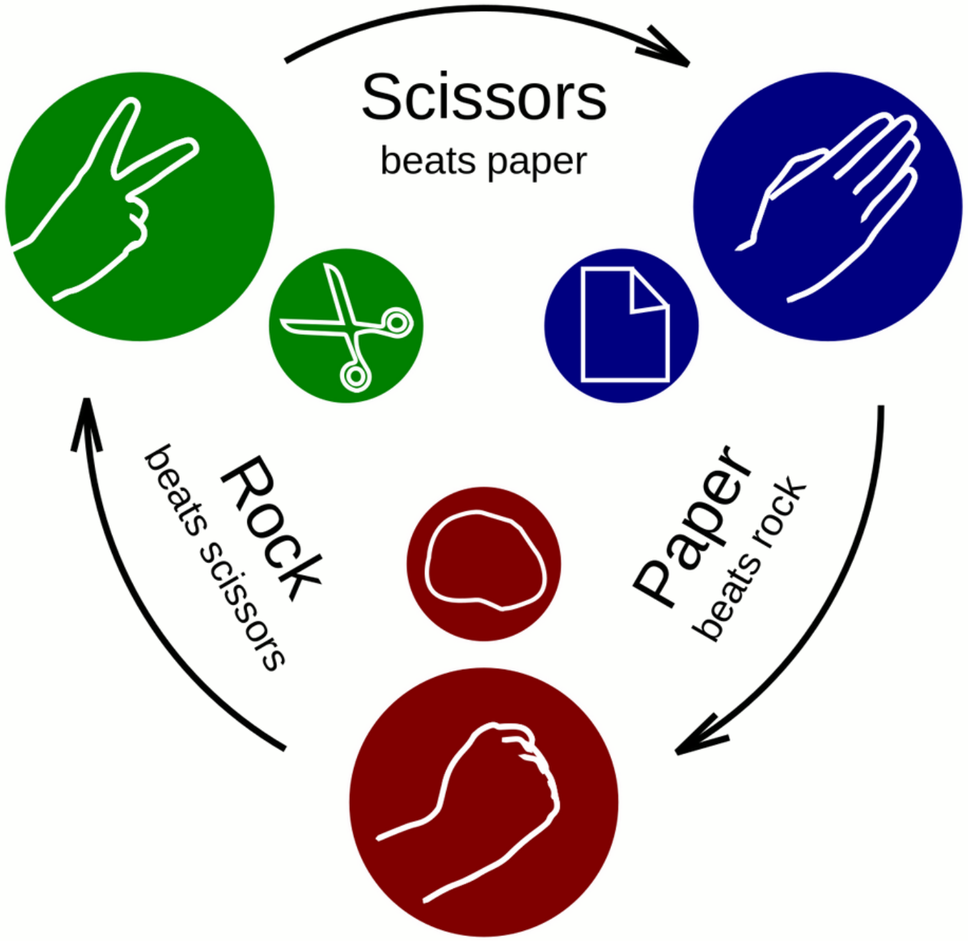
PUTTING ROCK, PAPER, SCISSORS TO THE TEST

What is rock paper scissors?

Rock, Paper, Scissors is a hand game played between two people. Each player simultaneously chooses one of three shapes: rock, paper, or scissors. The winner is determined by the rules: rock crushes scissors, scissors cut paper, and paper covers rock.



How do we go about testing?

1. Understand the game mechanics thoroughly.
2. Identify and list various test scenarios.
3. Prioritize scenarios based on importance.
4. Develop a comprehensive test plan.
5. Review and iterate based on feedback.

Requirement Analysis

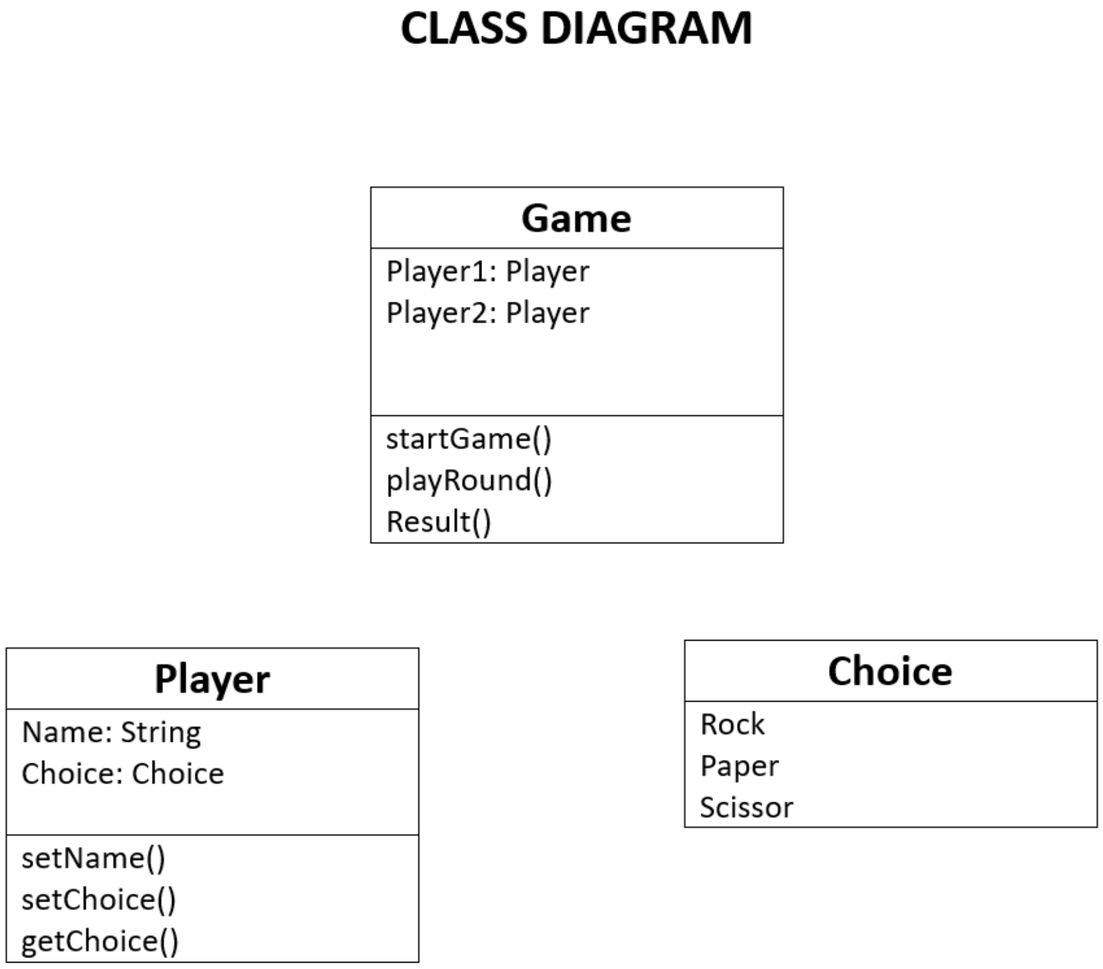
Technical

1. Players can play against the computer.
2. Players choose Rock, paper, or scissors.
3. The computer randomly selects its move.
4. Winner is determined by the rules:
   - Rule 1: Rock beats scissors.
   - Rule 2: Paper beats rock.
   - Rule 3: Scissors beat paper.
   - Rule 4: A tie occurs if both players choose the same gesture.
5. The game tracks the score, with the winning point set at 10.
6. Results of each round (win, lose, or draw) are displayed.

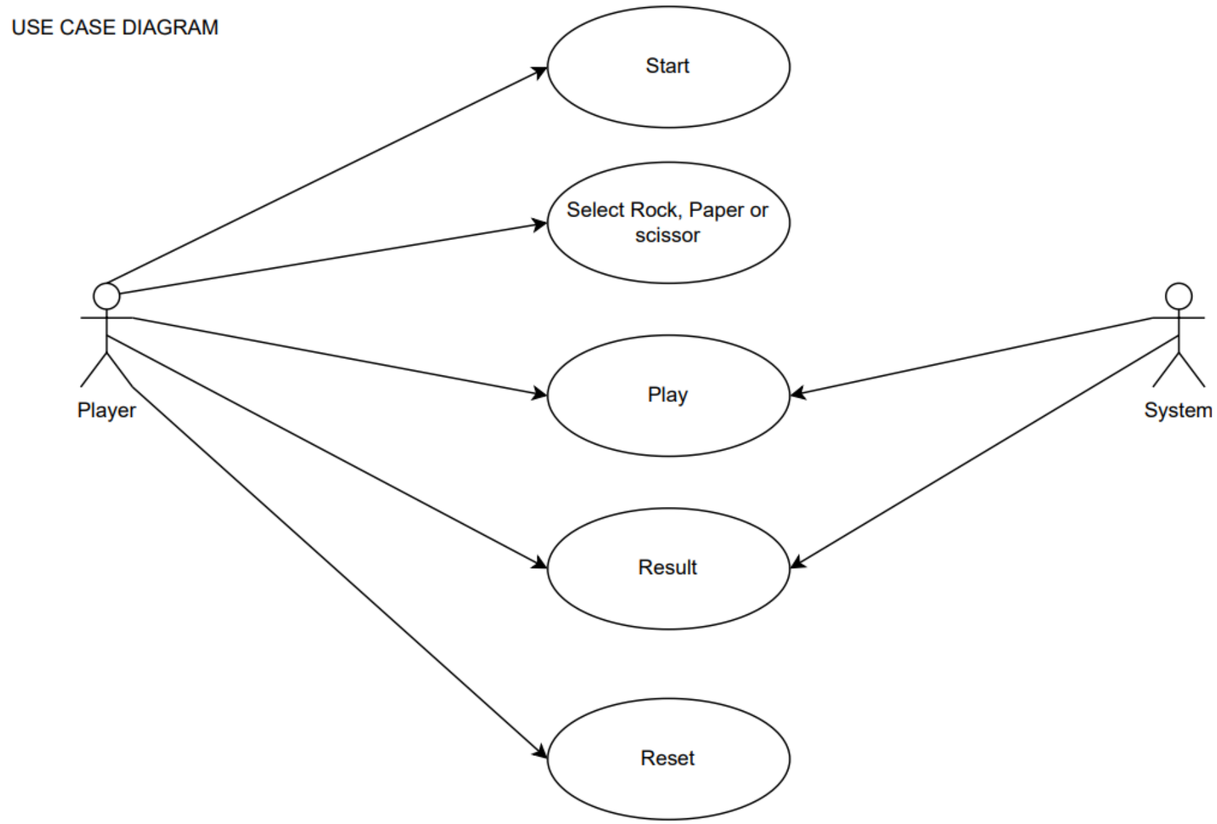
Non-Technical

- Able to play on any platform (i.e Windows, MacOS, Android)
- Able to handle a larger number of audience at the same time
- Should be reliable and handle error or crashes

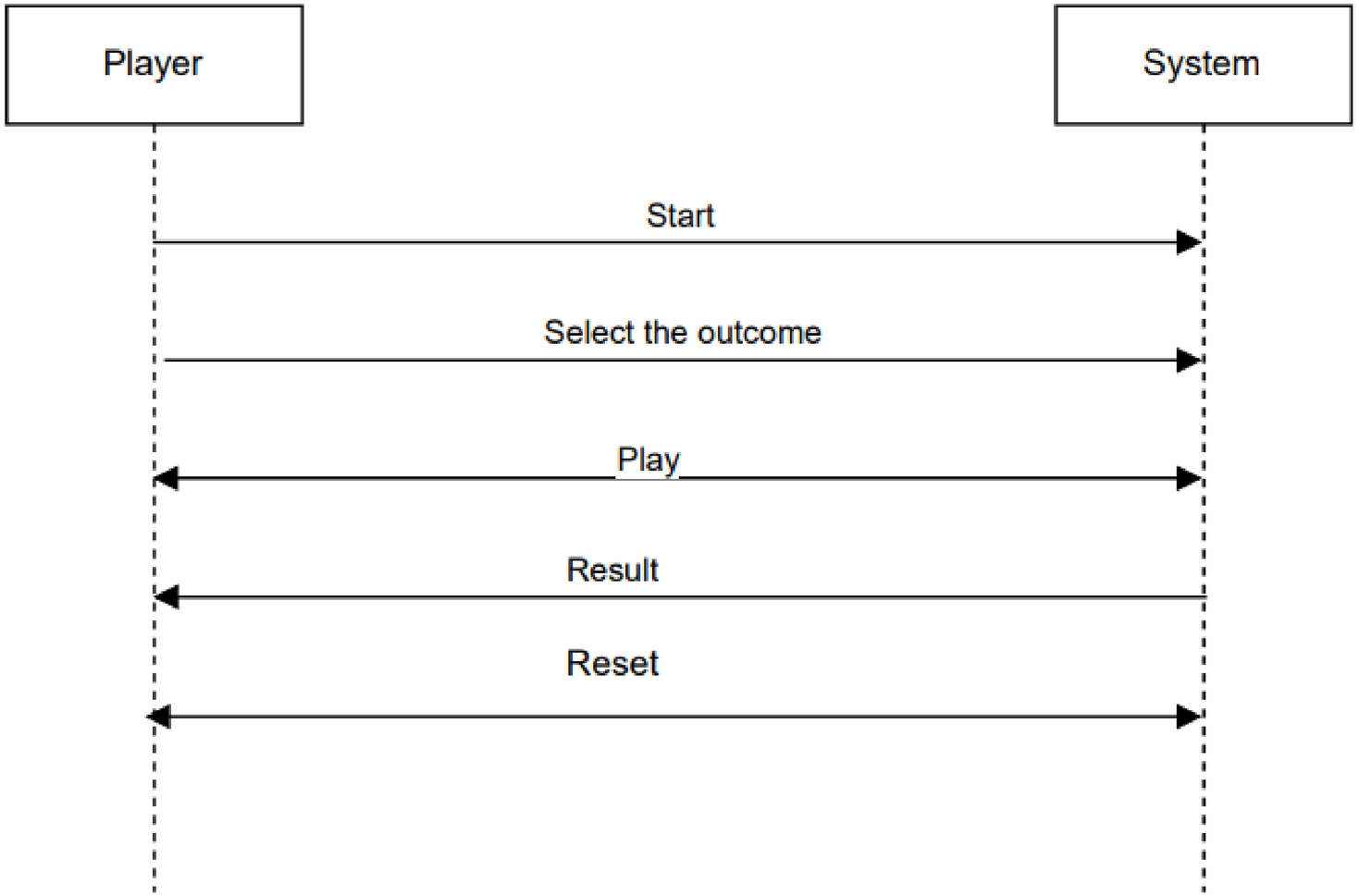
Understanding Class Diagram



Use Case Diagram



Sequence Diagram



Decision Table

Player 1	Player 2	Result
Rock	Scissors	Y
Rock	Rock	N
Rock	Paper	Y
Scissors	Scissors	N
Scissors	Rock	Y
Scissors	Paper	Y
Paper	Scissors	Y
Paper	Rock	Y
Paper	Paper	N

Equivalence Partitioning

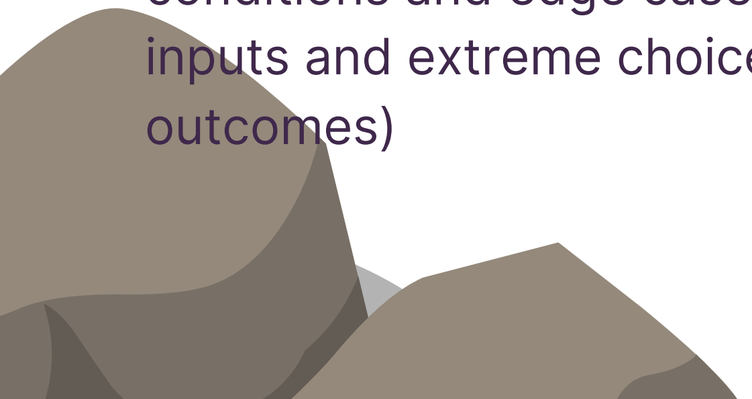
Possible Combinations = 3*3 = 9			
User	**Computer**	**User wins**	**Computer wins**
ROCK	PAPER	0	1
PAPER	ROCK	1	0
PAPER	SCISSORS	0	1
SCISSORS	PAPER	1	0
ROCK	SCISSORS	1	0
SCISSORS	ROCK	0	1
PAPER	PAPER	DRAW	DRAW
ROCK	ROCK	DRAW	DRAW
SCISSORS	SCISSORS	DRAW	DRAW

Probability of win, lose and draw matches		
C1: Win	**C2: Lose**	**C3: Draw**
1/3 --> 33.33%	1/3 --> 33.33%	1/3 --> 33.33%

White Box Testing

Examining internal structure, logics, paths within code to design test cases.
Example:

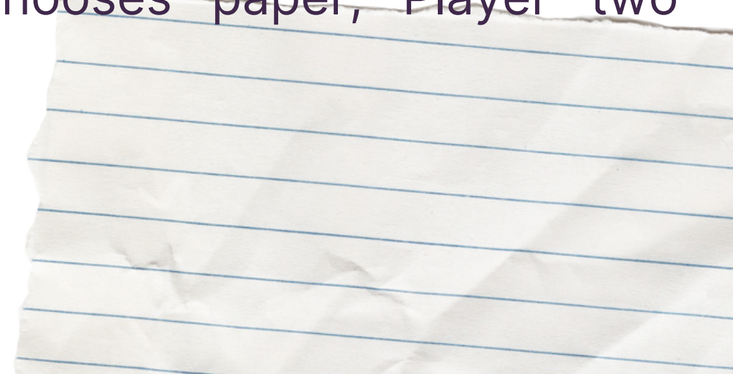
- Path Coverage Test: Ensure that all possible paths through the code are exercised.
- Validate that the game handles boundary conditions and edge cases, such as invalid inputs and extreme choices. (3!=6 possible outcomes)



Black Box Testing

Test's application functionality without looking internal code.
Inputs: Outputs: System behavior:
Example:

- Input: Player one chooses Rock; Player two chooses scissor;
  Expected output: Player two wines.
- Input: Player one chooses paper; Player two chooses paper;
  Expected output: TIE.



Testing Strategy

Make sure the software works as expected by carefully planning tests and carrying them out with great care.

Example:
Game Reset:
Objective: Verify game's ability to reset.
Steps:

- Play a round of the game.
- Initiate game reset.

Outcome: Game resets, ready for a new round with fresh player choices.

CDT- Combinatorial Driven Testing

In the game of rock-paper-scissors, there are 3 choices (rock, paper, scissors), that gives us a total combinations of 3 * 3 = 9 and if there’s some other kind of possible combinations when two players make their selections.

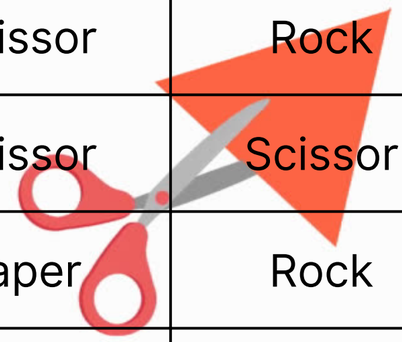
But using CDT let’s cut down the tests to make our work easier

Test Factors

Action1: Rock, Paper, Scissor
Action2: Rock, Paper, Scissor
Winner: Tie, Rock, Paper, Scissor
if [Action1] = [Action2] then [Winner] = "Tie";
if [Action2] = "Rock" and [Action1] = "Scissor" then [Winner] = "Rock";
if [Action2] = "Paper" and [Action1] = "Scissor" then [Winner] = "Scissor";
if [Action2] = "Paper" and [Action1] = "Rock" then [Winner] = "Paper";
if [Action2] = "Scissor" and [Action1] = "Rock" then [Winner] = "Rock";
if [Action2] = "Scissor" and [Action1] = "Paper" then [Winner] = "Scissor";
if [Action2] = "Rock" and [Action1] = "Paper" then [Winner] = "Paper";

Test Results

Action1	Action2	Winner
Rock	Rock	Tie
Paper	Scissor	Scissor
Scissor	Rock	Rock
Scissor	Scissor	Tie
Paper	Rock	Paper
Scissor	Paper	Scissor
Rock	Paper	Paper
Rock	Scissor	Rock
Paper	Paper	Tie



Do you have any questions?