

Rock Paper Scissors

1. Project Overview

Build a simple **Rock Paper Scissors** game in Python where the player competes against the computer.

The computer makes a random choice, then the program compares both choices according to the game rules. The game can continue for multiple rounds until the player chooses to quit.

2. Features

- Player vs computer
- Rock, Paper and Scissors choices
- Random computer selection
- Winner detection
- Draw detection
- Score tracking
- Input validation
- Multiple rounds
- Play again option

3. Technologies

- Python 3
- random
- Lists
- Functions
- Loops
- Conditional statements
- User input

Python's `random.choice()` can select a random element from a sequence, making it suitable for the computer's move.

4. Folder Structure

```
rock_paper_scissors/  
  main.py  
  game.py  
  README.md
```

5. How the Game Works

```
Player chooses  
    
Computer chooses randomly  
    
Compare choices  
    
Determine winner  
    
Update score  
    
Play again?
```

Winning Rules

```
Rock    beats Scissors  
Scissors beats Paper  
Paper   beats Rock  
Same    = Draw
```

These are the standard rules used in the referenced implementation.

6. Game Logic

game.py

```
import random
```

```
class RockPaperScissors:
```

```
    choices = [  
        "rock",  
        "paper",  
        "scissors"  
    ]
```

```
    winning_moves = {  
        "rock": "scissors",  
        "paper": "rock",  
        "scissors": "paper"  
    }
```

```
    def __init__(self):  
        self.player_score = 0  
        self.computer_score = 0  
        self.draws = 0
```

```
    def computer_choice(self):  
        return random.choice(self.choices)
```

```
    def play_round(self, player_choice):
```

```
        player_choice = player_choice.lower()
```

```
        if player_choice not in self.choices:  
            return {  
                "valid": False,  
                "message": "Invalid choice."  
            }
```

```
computer_choice = self.computer_choice()
```

```
if player_choice == computer_choice:  
    self.draws += 1  
    winner = "draw"
```

```
elif (  
    self.winning_moves[player_choice]  
    == computer_choice  
):  
    self.player_score += 1  
    winner = "player"
```

```
else:  
    self.computer_score += 1  
    winner = "computer"
```

```
return {  
    "valid": True,  
    "player": player_choice,  
    "computer": computer_choice,  
    "winner": winner  
}
```

```
def get_score(self):  
    return {  
        "player": self.player_score,  
        "computer": self.computer_score,  
        "draws": self.draws  
    }
```

7. Main Application

main.py

```
from game import RockPaperScissors

def display_rules():
    print("\n===== ROCK PAPER SCISSORS =====")

    print("\nWinning Rules:")
    print("Rock beats Scissors")
    print("Scissors beats Paper")
    print("Paper beats Rock")
    print("Same choice results in a draw.")

def display_score(game):
    score = game.get_score()

    print("\n===== SCORE =====")
    print(f"You: {score['player']}")
    print(f"Computer: {score['computer']}")
    print(f"Draws: {score['draws']}")

def main():

    game = RockPaperScissors()

    display_rules()

    while True:

        print("\nChoose:")
        print("1. Rock")
        print("2. Paper")
        print("3. Scissors")
```

```
print("4. Quit")
```

```
choice = input(  
    "\nEnter your choice: "  
).strip().lower()
```

```
choice_map = {  
    "1": "rock",  
    "2": "paper",  
    "3": "scissors",  
    "rock": "rock",  
    "paper": "paper",  
    "scissors": "scissors"  
}
```

```
if choice == "4" or choice == "quit":  
    break
```

```
if choice not in choice_map:  
    print(  
        "Invalid choice. "  
        "Please select 1, 2, or 3."  
    )  
    continue
```

```
result = game.play_round(  
    choice_map[choice]  
)
```

```
print(  
    f"\nYou chose: "  
    f"{result['player'].title()}"  
)
```

```
print(
    f"Computer chose: "
    f"{result['computer'].title()}"
)

if result["winner"] == "player":
    print("You win!")

elif result["winner"] == "computer":
    print("Computer wins!")

else:
    print("It's a draw!")

display_score(game)

print("\nThanks for playing!")
display_score(game)

if __name__ == "__main__":
    main()
```

8. README

README.md

Rock Paper Scissors

A simple command line Rock Paper Scissors game
built with Python.

Run

python main.py

Choices

1. Rock
2. Paper
3. Scissors
4. Quit

Rules

Rock beats Scissors.
Scissors beats Paper.
Paper beats Rock.

Matching choices result in a draw.

9. Example Output

===== ROCK PAPER SCISSORS =====

Winning Rules:

Rock beats Scissors
Scissors beats Paper
Paper beats Rock

Same choice results in a draw.

Choose:

1. Rock
2. Paper
3. Scissors
4. Quit

Enter your choice: 1

You chose: Rock

Computer chose: Scissors

You win!

===== SCORE =====

You: 1

Computer: 0

Draws: 0

10. Basic Testing

Test the following:

1. Choose Rock
2. Choose Paper
3. Choose Scissors
4. Enter an invalid choice
5. Play multiple rounds
6. Check score tracking
7. Test a draw
8. Quit the game

11. Small Improvements

Possible next improvements:

- Tkinter GUI
- Best of 3 mode
- Best of 5 mode
- Game history
- Player names
- Persistent high scores
- Sound effects
- Difficulty levels

- Rock Paper Scissors Lizard Spock

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