

Rock, Paper, Scissors Game Report

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Date: [11/03/2025]

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Introduction

The game "**Rock, Paper, Scissors**" is a classic hand game played between two participants, traditionally used as a decision-making tool or for entertainment. In this project, we

implemented a **digital version** of the game using Python. The program allows a user to play against the computer, where the computer makes a random selection among the three possible choices: **rock, paper, or scissors**.

Game Rules:

- . **Rock** beats **Scissors**
- . **Scissors** beat **Paper**
- . **Paper** beats **Rock**

The objective of this project is to demonstrate the use of **Python programming concepts** such as

loops, conditionals, user input handling, and randomization.

Methodology

The implementation of the game follows these key steps:

1. **User Input Handling:** The program prompts the user to enter their choice (**rock, paper, or scissors**). Input validation ensures that only valid choices are accepted.
2. **Random Selection by Computer:** The computer makes a

random choice from the list of valid options.

3. **Comparison and Decision**

Logic: The program compares the user's choice with the computer's choice and determines the winner based on predefined game rules.

4. **Loop for Replaying:** The program continuously runs in a loop, allowing the user to play multiple rounds until they choose to exit.

5. **Modular Approach:** Functions are used to enhance **code reusability** and **readability**.

Code Implementation

```
import random
```

```
def get_user_choice():
```

```
    """Gets and validates the user's  
    choice."""
```

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

```
    while True:
```

```
        user_input = input("Enter your  
        choice (rock, paper, or scissors):  
        ").strip().lower()
```

```
        if user_input in choices:
```

```
            return user_input
```

```
print("Invalid choice. Please enter  
rock, paper, or scissors.")
```

```
def determine_winner(user_choice,  
computer_choice):
```

```
    """Determines the winner based on  
game rules."""
```

```
    if user_choice == computer_choice:
```

```
        return "It's a tie!"
```

```
    elif (user_choice == "rock" and  
computer_choice == "scissors") or \
```

```
        (user_choice == "paper" and  
computer_choice == "rock") or \
```

```
(user_choice == "scissors" and  
computer_choice == "paper"):
```

```
    return "You win!"
```

```
    return "Computer wins!"
```

```
def play_game():
```

```
    """Runs the rock-paper-scissors  
    game."""
```

```
    print("Welcome to Rock, Paper,  
    Scissors!")
```

```
while True:
```

```
    user_choice = get_user_choice()
```

```
computer_choice =  
random.choice(["rock", "paper",  
"scissors"])
```

```
print(f"\nYou chose:  
{user_choice}")
```

```
print(f"Computer chose:  
{computer_choice}")
```

```
print(determine_winner(user_choice,  
computer_choice))
```

```
play_again = input("\nPlay again?  
(yes/no): ").strip().lower()
```



```
    if play_again != "yes":  
        print("Thanks for playing!  
Goodbye!")  
        break  
  
# Run the game  
play_game()
```

SAMPLE OUTPUT

```
Enter your choice (rock, paper, or scissors): rock
You chose: rock
Computer chose: scissors
You win!
Play again? (yes/no): yes
Enter your choice (rock, paper, or scissors): paper
You chose: paper
Computer chose: paper
It's a tie!
Play again? (yes/no): yes
Enter your choice (rock, paper, or scissors): scissors
You chose: scissors
Computer chose: paper
You win!
Play again? (yes/no): yes
Enter your choice (rock, paper, or scissors): stone
Invalid choice. Please enter rock, paper, or scissors.
Enter your choice (rock, paper, or scissors): rock
You chose: rock
Computer chose: paper
Computer wins!
Play again? (yes/no): no
```