



Challenge 5: Rock Paper Scissors

Game Development: Rock Paper Scissors

Overview: "Rock Paper Scissors" is a classic hand game typically played between two people, where each player simultaneously forms one of three shapes with an outstretched hand. The possible shapes are "rock" (a fist), "paper" (an open hand), and "scissors" (a fist with the index and middle fingers extended, forming a V). The outcome of the game is determined by the chosen shapes: rock crushes scissors, scissors cuts paper, and paper covers rock.

Game Mechanics:

1. **Player Input:** The game starts by prompting each player to choose one of the three shapes: rock, paper, or scissors.
2. **Outcome Determination:** Once both players have made their selections, the game compares the choices to determine the winner based on the rules: rock crushes scissors, scissors cuts paper, and paper covers rock. If both players choose the same shape, the game is a tie.
3. **Display Result:** After determining the winner or declaring a tie, the game displays the result to the players.

Implementation:

1. **User Interface:** Develop a user-friendly interface to prompt players for their choices and display the game result.
2. **Randomization:** Use a random number generator to simulate the computer's choice if playing against the computer.
3. **Input Handling:** Implement input validation to ensure that players enter valid choices (rock, paper, or scissors) and handle any incorrect input gracefully.
4. **Game Loop:** Design a loop structure to allow multiple rounds of the game if desired, with options for players to continue playing or exit.
5. **Scalability:** Consider expanding the game by adding features such as a graphical interface, sound effects, or additional game modes (e.g., multiplayer, advanced AI).



Example Code (Python):

```
import random

def play_round(player_choice, computer_choice):
    if player_choice == computer_choice:
        return "It's a tie!"
    elif (player_choice == "rock" and computer_choice == "scissors") or \
        (player_choice == "scissors" and computer_choice == "paper") or \
        (player_choice == "paper" and computer_choice == "rock"):
        return "You win!"
    else:
        return "Computer wins!"

def main():
    choices = ["rock", "paper", "scissors"]

    while True:
        player_choice = input("Enter your choice (rock, paper, scissors): ").lower()
        if player_choice not in choices:
            print("Invalid choice. Please enter rock, paper, or scissors.")
            continue

        computer_choice = random.choice(choices)
        print(f"Computer chose {computer_choice}.")

        print(play_round(player_choice, computer_choice))

        play_again = input("Do you want to play again? (yes/no): ").lower()
        if play_again != "yes":
            break

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

Output:

```
/root/PycharmProjects/pythonProject/.venv/bin/python /root/PycharmProjects/pythonProject/24.py
Enter your choice (rock, paper, scissors): rock
Computer chose rock.
It's a tie!
Do you want to play again? (yes/no):
```

**Conclusion:**

Developing "Rock Paper Scissors" involves implementing the game mechanics, handling user input, determining outcomes, and providing feedback to the players. With a well-designed interface and intuitive gameplay, the game offers simple yet enjoyable entertainment for players of all ages.