Simple Rock-Paper-Scissors AI Game

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Introduction:

This project presents the development of a **Simple Rock-Paper-Scissors AI Game** using **Python** programming language. The game allows a user to play against an AI that randomly selects one of three choices: **Rock**, **Paper**, or **Scissors**. The aim of this project is to demonstrate the interaction between a user and an AI, using a rule-based system where the AI randomly selects its move and the game determines the winner based on traditional game rules.

The game follows the well-known rules:

- **Rock beats Scissors**
- **Scissors beats Paper**
- **Paper beats Rock**

This report outlines the methodology for building the game, the implementation of the game logic, and provides the Python code used to create the AI-based game.

Methodology:

The Rock-Paper-Scissors game was built using the Python programming language, with the AI making random choices from the three available options. The methodology behind this implementation involves the following steps:

1. **User Input**:
    - The user is prompted to input their choice (either **Rock**, **Paper**, or **Scissors**).
    - Input validation ensures that only valid choices are accepted.
2. **AI Selection**:
    - The AI randomly selects one of the three options using the random.choice() function.
3. **Game Rules & Winner Determination**:
    - A function checks the rules of the game to determine the winner based on the user's and AI's choices:
        - **Rock beats Scissors**
        - **Scissors beats Paper**
        - **Paper beats Rock**
    - The program compares both choices and displays whether the user won, the AI won, or if it was a tie.
4. **Game Flow**:
    - After the comparison, the game outputs the result (win/loss/tie).
    - This implementation could be extended to allow for multiple rounds or even track scores over several rounds.

Code:

```
# Function to get the user's choice
def get_user_choice():
    """Prompt the user to input their choice (rock, paper, or scissors)"""
    user_choice = input("Enter your choice (rock, paper, scissors): ").lower()

    while user_choice not in ['rock', 'paper', 'scissors']:
        print("Invalid input. Please try again.")
        user_choice = input("Enter your choice (rock, paper, scissors): ").lower()

    return user_choice

# Function to randomly choose the AI's move
def get_ai_choice():
    """Generate a random choice for the AI (rock, paper, or scissors)"""
    return random.choice(['rock', 'paper', 'scissors'])

# Function to determine the winner of the game
def determine_winner(user_choice, ai_choice):
    """Determine the outcome of the game based on the rules of Rock-Paper-Scissors"""

    if user_choice == ai_choice:
        return "It's a tie!"

    if (user_choice == 'rock' and ai_choice == 'scissors') or \
       (user_choice == 'scissors' and ai_choice == 'paper') or \
       (user_choice == 'paper' and ai_choice == 'rock'):
        return "You win!"
```

```
    return "AI wins!"

# Function to run the game
def play_game():
    """Main function to play a single round of Rock-Paper-Scissors"""
    print("Welcome to Rock-Paper-Scissors!")

    user_choice = get_user_choice()
    ai_choice = get_ai_choice()

    print(f"Your choice: {user_choice}")
    print(f"AI's choice: {ai_choice}")

    result = determine_winner(user_choice, ai_choice)
    print(result)

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

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5. **Screenshots/Output Photo Pasted**