AI MSE EXAMINATION

Problem Statement: 14. Simple Game AI for Rock-Paper-Scissors

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INTRODUCTION

The problem is about to create a famous game “Rock,paper and scissors”.This game have very simple rules yet it is very interesting to play with friend and its sometimes deciders between the friends or siblings like what should we do or get that was the fun part .Now let us head to the problem we have:

In this game we have two player in which each players have to choose one from “rock, paper or scissors”. The rules are very basic like let us assume two players playing this and define the rules.

Player 1: rock

Player 2: Paper

Then Player 2 wins..

The game follows these rules:

Rock beats scissors, Scissor cuts the paper, paper holds the rock

And that is all about the rule and the problem we have.

Now we are going to create a random based AI game which plays this game with a player considering the above rules.

METHODOLOGY

Here we are using random function of python by which AI Is going to get a random choice between

“rock ,paper ,scissor and based on the predefined or obvious rules of this game we are going to declare the winner .

So firstly importing random function to use it .

Now getting random choice from AI and ask the player to enter his choice then based on rules defined we have to find out it’s a tie or AI wins or the player wins.

So that’s very basic methodology so let’s code and create this game.

Code

```
import random  # Importing the random module for AI's choice


def get_computer_choice():
    """
    Function to randomly select a choice for the computer (AI).
    Returns:
        str: One of "rock", "paper", or "scissors".
    """
    return random.choice(["rock", "paper", "scissors"])


def get_winner(player, computer):
    """
    Function to determine the winner of the game.
    Args:
        player (str): The player's choice.
        computer (str): The computer's choice.
    Returns:
        str: A message indicating the result (win, lose, or tie).
    """
    if player == computer:
        return "It's a tie!"  # Both choices are the same
    elif (player == "rock" and computer == "scissors") or \
         (player == "scissors" and computer == "paper") or \
         (player == "paper" and computer == "rock"):
        return "You win!"  # Player wins based on game rules
    else:
```

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


def play_game():
    """
    Function to run the Rock-Paper-Scissors game.
    It asks the user for input, generates a computer choice, and displays the result.
    """
    print("Rock-Paper-Scissors Game!")  # Game introduction

    # Taking user input and converting it to lowercase for case insensitivity
    player_choice = input("Enter rock, paper, or scissors: ").lower()

    # Validating user input
    if player_choice not in ["rock", "paper", "scissors"]:
        print("Invalid choice! Please enter 'rock', 'paper', or 'scissors'.")
        return  # Exit the function if input is invalid

    # Get computer's choice
    computer_choice = get_computer_choice()
    print(f"Computer chose: {computer_choice}")  # Display computer's choice

    # Determine and print the winner
    result = get_winner(player_choice, computer_choice)
    print(result)

# Run the game
play_game()
```

Output/Result

```python
import random  # Importing the random module for AI's choice

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    Function to randomly select a choice for the computer (AI).
    Returns:
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    return random.choice(["rock", "paper", "scissors"])

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    """
    Function to determine the winner of the game.
    Args:
        player (str): The player's choice.
        computer (str): The computer's choice.
    Returns:
        str: A message indicating the result (win, lose, or tie).
    """
    if player == computer:
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         (player == "scissors" and computer == "paper") or \
         (player == "paper" and computer == "rock"):
        return "You win!"  # Player wins based on game rules
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def play_game():
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# Run the game
play_game()
```

```
Rock-Paper-Scissors Game!
Enter rock, paper, or scissors: Rock
Computer chose: rock
It's a tie!
```

Here above is the output part.