

Simple Game AI for Rock-Paper-Scissors

Problem Statement: Develop a simple AI-powered Rock-Paper-Scissors game where a user can play against a computer. The AI should randomly select a move and determine the winner based on the standard game rules.

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Introduction:

Rock-Paper-Scissors is a classic hand game played between two participants. The goal of this project is to create a Python-based Rock-Paper-Scissors game where the user plays against an AI opponent. The AI selects its move randomly, and

the game determines the winner based on the traditional rules. The project is implemented in Python and executed on Google Colab.

Methodology:

1. ***User Input Handling***: The program prompts the user to enter either "rock," "paper," or "scissors." It also provides an option to quit the game.
2. ***AI Move Generation***: The AI opponent randomly selects one of the three choices using Python's `random.choice()` function.
3. ***Winner Determination***: The game logic compares the user's choice and AI's choice to determine the winner based on standard Rock-Paper-Scissors rules.
4. ***Game Loop***: The program runs in a loop, allowing the user to play multiple rounds until they choose to quit.

5. ***Result Display***: The game prints the AI's choice and the result of each round.

6. ***Code Execution in Google Colab***: The program is written in Python and executed in Google Colab with proper comments for clarity.

Code:

```
import random
```

```
# Function to get the computer's choice  
randomly
```

```
def get_computer_choice():  
    return random.choice(["rock", "paper",  
"scissors"])
```

```
# Function to determine the winner based on the  
game rules
```

```
def determine_winner(player, computer):  
    if player == computer:
```

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

    elif (player == "rock" and computer ==
"scissors") or \

        (player == "scissors" and computer ==
"paper") or \

        (player == "paper" and computer == "rock"):
        return "You win!"

    else:

        return "Computer wins!"
```

Main function to handle the game loop

```
def main():

    print("Welcome to Rock-Paper-Scissors!")

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

    while True:

        # Prompt the user for input
```

```
player_choice = input("Enter rock, paper, or  
scissors (or 'quit' to exit): ").lower()
```

Allow the user to exit the game

```
if player_choice == 'quit':  
    print("Thanks for playing!")  
    break
```

Validate user input

```
if player_choice not in choices:  
    print("Invalid choice. Please try again.")  
    continue
```

Get the computer's choice

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

Determine and display the result

```
result = determine_winner(player_choice,  
computer_choice)
```

```
print(result)
```

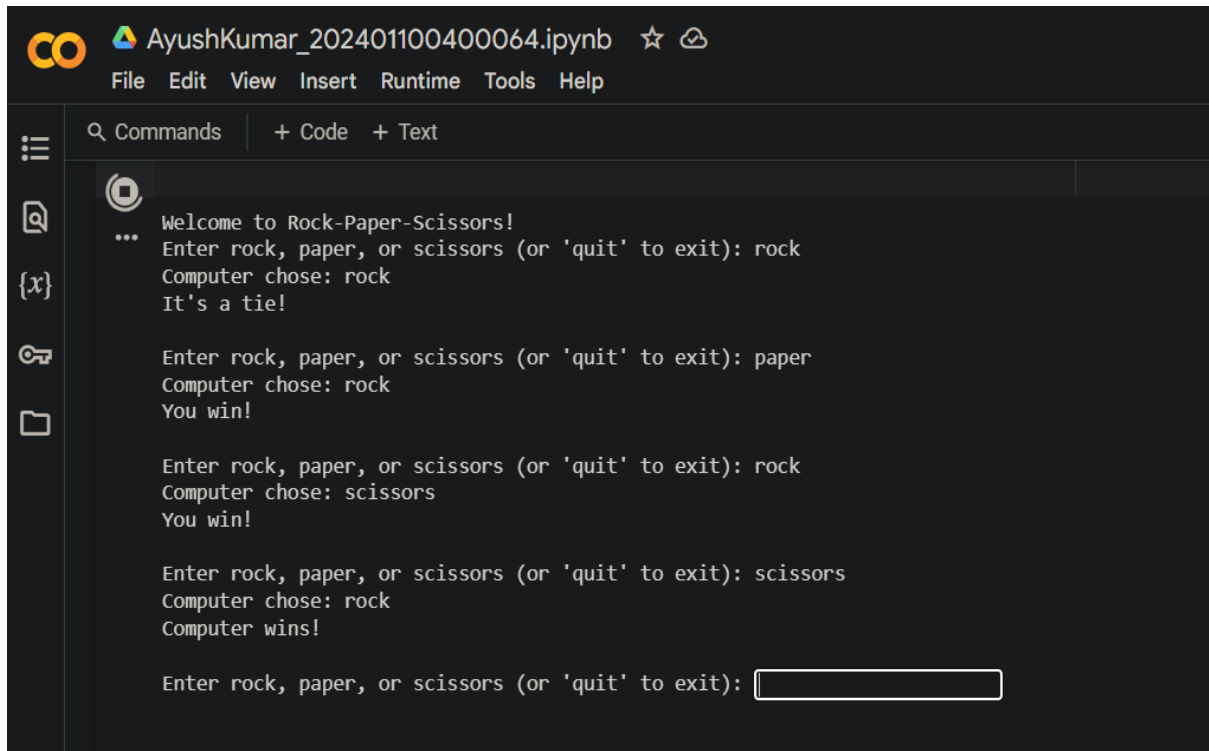
```
print()
```

Entry point of the program

```
if __name__ == "__main__":
```

```
    main()
```

Output:



The screenshot shows a Jupyter Notebook interface with a dark theme. The top bar displays the Colab logo, the file name 'AyushKumar_202401100400064.ipynb', and icons for star and share. Below the top bar is a menu bar with 'File', 'Edit', 'View', 'Insert', 'Runtime', 'Tools', and 'Help'. The left sidebar contains icons for a menu, a notebook, a variable explorer, a key, and a folder. The main area has a search bar labeled 'Commands' and tabs for '+ Code' and '+ Text'. The code cell is expanded, showing the following output:

```
Welcome to Rock-Paper-Scissors!  
Enter rock, paper, or scissors (or 'quit' to exit): rock  
Computer chose: rock  
It's a tie!  
  
Enter rock, paper, or scissors (or 'quit' to exit): paper  
Computer chose: rock  
You win!  
  
Enter rock, paper, or scissors (or 'quit' to exit): rock  
Computer chose: scissors  
You win!  
  
Enter rock, paper, or scissors (or 'quit' to exit): scissors  
Computer chose: rock  
Computer wins!  
  
Enter rock, paper, or scissors (or 'quit' to exit): 
```

Special Thanks:

~Bikki Sir

~Mayank Sir