

Rock-Paper-Scissors Game

21CSS101J – PROGRAMMING FOR PROBLEM SOLVING

Mini Project Report

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Problem Statement

Python is a multipurpose language and one can do anything with it. Python can also be used for game development. Let's create a simple command-line Rock-Paper-Scissor game without using any external game libraries like PyGame. In this game, the user gets the first chance to pick the option between Rock, paper, and scissors. After the computer select from the remaining two choices(randomly), the winner is decided as per the rules. For getting random inputs from the computer random module in python has been used in this program which makes the game more interesting.

Methodology/Procedure

- The code starts by printing a message that states the rules of the game.
- The first line in the code prints **“Rock vs paper->paper wins.”**
- This is because if you have a rock, and you play against someone who has a piece of paper, the rock will beat the paper.
- The next line in the code prints **“Rock vs scissor->Rock wins.”**
- This is because if you have a rock, and you play against someone who has a scissors, the rock will beat the scissors.
- The last line in the code prints **“paper vs scissor->scissor wins.”**
- This is because if you have a piece of paper, and you play against someone who has a scissors, then the piece of paper will beat the scissors.
- The code will print the following output: Winning Rules of the Rock paper scissor game as follows: Rock vs paper->paper wins Rock vs scissor->Rock wins paper vs scissor->scissor wins
- The code starts by asking the user for a choice.
- The code then checks to see if the input is 1, 2, or 3.

- If it is not one of those values, the code sets the **choice_name** variable to **'Rock'** if **choice == 1**, **'paper'** if **choice == 2**, and **'scissor'** if **choice == 3**.
- The next part of the code asks the user for their computer turn.
- The code uses a random number generator to choose between 1, 2, and 3.
- This value is stored in **comp_choice_name**.
- Next, the code loops until **comp_choice** equals choice.
- In each loop iteration, **comp_choice** will be randomly chosen from 1-3 and stored in **comp_choice_name**.
- Once **comp_choice** equals choice, this means that the computer has chosen rock as its turn!
- Finally, it prints out both choices so that everyone can see what happened (user choice is: Rock V/s paper; Computer choice is: Rock V/s scissor).
- The code will ask the user for a choice between rock, paper and scissors.
- Once the user enters their choice, the code will randomly choose one of those options as the computer's turn.
- The code then prints out the chosen option and the user's choice.

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Winning Rules as follows:

Rock vs paper-> paper wins

Rock vs scissor-> Rock wins

paper vs scissor-> scissor wins.

- In this game, randint() inbuilt function is used for generating random integer values within the given range.

Code (Python)

```
# import random module
import random

# Print multiline instruction
# performstring concatenation of string
print("Winning Rules of the Rock paper scissor
game as follows: \n"
      + "Rock vs paper->paper wins \n"
      + "Rock vs scissor->Rock wins \n"
      + "paper vs scissor->scissor wins \n")

while True:
    print("Enter choice \n 1 for Rock, \n 2 for paper,
and \n 3 for scissor \n")

    # take the input from user
    choice = int(input("User turn: "))

    # OR is the short-circuit operator
    # if any one of the condition is true
    # then it return True value

    # looping until user enter invalid input
```

```
while choice > 3 or choice < 1:
    choice = int(input("enter valid input: "))

# initialize value of choice_name variable
# corresponding to the choice value
if choice == 1:
    choice_name = 'Rock'
elif choice == 2:
    choice_name = 'paper'
else:
    choice_name = 'scissor'

# print user choice
print("user choice is: " + choice_name)
print("\nNow its computer turn.....")

# Computer chooses randomly any number
# among 1 , 2 and 3. Using randint method
# of random module
comp_choice = random.randint(1, 3)

if comp_choice == 1:
    comp_choice_name = 'Rock'
elif comp_choice == 2:
    comp_choice_name = 'paper'
else:
```



```
comp_choice_name = 'scissor'

print("Computer choice is: " +
comp_choice_name)

print(choice_name + " V/s " +
comp_choice_name)
# we need to check of a draw
if choice == comp_choice:
    print("Draw=> ", end="")
    print("<== Its a tie ==>")

# condition for winning
if((choice == 1 and comp_choice == 2) or
    (choice == 2 and comp_choice == 1)):
    print("paper wins => ", end="")
    print("<== User wins ==>")

elif((choice == 1 and comp_choice == 3) or
      (choice == 3 and comp_choice
== 1)):
    print("Rock wins =>", end="")
    print("<== User wins ==>")
elif((choice == 2 and comp_choice == 3) or
      (choice == 3 and comp_choice
== 2)):
```

```
        print("scissor wins =>", end="")
        print("<== User wins ==>")

    else:
        print("<== Computer wins ==>")
    break

# after coming out of the while loop
# we print thanks for playing
print("\nThanks for playing")
```

Result

OUTPUT

Winning Rules of the Rock paper scissor game as follows:

Rock vs paper->paper wins

Rock vs scissor->Rock wins

paper vs scissor->scissor wins

Enter choice

1 for Rock,

2 for paper, and

3 for scissor

User turn: 3

user choice is: scissor

Now its computer turn.....

Computer choice is: paper

scissor V/s paper

scissor wins ==> < == User wins ==>

Thanks for playing

Conclusion

Python in current times is used for developing websites and software, task automation, data analysis, and data visualization. Since it's relatively easy to learn, Python has been adopted by many non-programmers such as accountants and scientists, for a variety of everyday tasks, like organizing finances. Therefore, with the help of a python program we have created a Rock-Paper-Scissors game