# Rock_Paper_Scissor – Document

```
from tkinter import*
import random
```

01.tkinter is imported to create a GUI window.
02.random is used to let the computer randomly choose between rock, paper, and scissors.

```
rps = Tk()
rps.geometry("300x300")
rps.title("Rock Paper Scissor")
```

01.Tk() initializes the main application window.
02.geometry("300x300") sets the window size to 300x300 pixels.
03.title("Rock Paper Scissor") sets the window title.

```
user_score = 0
comp_score = 0
user_choice = ""
comp_choice = ""
```

01.user_score and comp_score track the player's and computer’s scores.
02.user_choice and comp_choice store the choices made by the user and the computer.

```
def choice_to_number(choice):
    rps = {'rock': 0, 'paper': 1, 'scissor': 2}
    return rps[choice]

def number_to_choice(number):
    rps = {0: 'rock', 1: 'paper', 2: 'scissor'}
    return rps[number]
```

01.choice_to_number(choice): Converts 'rock', 'paper', 'scissor' into numbers (0, 1, 2).
02.number_to_choice(number): Converts numbers (0,1,2) back to their respective choices.

```
def random_computer_choice():
    return random.choice(['rock', 'paper', 'scissor'])
```

01.This function randomly selects 'rock', 'paper', or 'scissor' for the computer.

```
def result(human_choice, comp_choice):
    global user_score
    global comp_score
    user = choice_to_number(human_choice)
    comp = choice_to_number(comp_choice)
```

01.The function takes human_choice and comp_choice as input.
02.choice_to_number() is used to convert choices into numbers.

```
    if user == comp:
        print("Tie")
    elif (user - comp) % 3 == 1:
        print("You Win")
        user_score += 1
    else:
        print("Computer wins")
        comp_score += 1
```

01.If both choices are the same, it results in a Tie.
02.Winning formula: (user - comp) % 3 == 1

- Example:
  - Rock (0) vs. Scissors (2): (0 - 2) % 3 = 1 → User wins.
  - Paper (1) vs. Rock (0): (1 - 0) % 3 = 1 → User wins.
  - Scissors (2) vs. Paper (1): (2 - 1) % 3 = 1 → User wins.

03.Otherwise, computer wins.

```
text_area = Text(master=rps, font=("arial", 15, "italic bold"),
relief=RIDGE, bg="#033642", fg="white", width=26)
text_area.grid(column=0, row=4)
```

01.A Text widget is created to display the result.
02.relief=RIDGE gives a raised effect to the text box.
03.bg="#033642" sets a dark blue background.
04.fg="white" sets white text color.

```
answer = "Your Choice:   {uc} \n Computer's Choice:   {cc} \n
Your Score:    {u}  \n Computer Score :  {c}".format(
       uc=user_choice, cc=comp_choice, u=user_score,
c=comp_score)
text_area.insert(END, answer)
```

01.This string displays the user’s choice, computer’s choice, and scores

```
def rock():
   global user_choice
   global comp_choice
   user_choice = "rock"
   comp_choice = random_computer_choice()
   result(user_choice, comp_choice)

def paper():
   global user_choice
   global comp_choice
   user_choice = "paper"
   comp_choice = random_computer_choice()
   result(user_choice, comp_choice)

def scissor():
   global user_choice
   global comp_choice
   user_choice = "scissor"
   comp_choice = random_computer_choice()
   result(user_choice, comp_choice)
```

01.Each function sets user_choice, generates a random comp_choice, and calls result()

```
button_rock = Button(text="      ROCK      ", bg="#808487",
font=("arial", 15, "italic bold"), relief=RIDGE,
                    activebackground="#059458",
activeforeground="white", width=24, command=rock)
button_rock.grid(column=0, row=1)
```

01.text="ROCK": Button label.
02.bg="#808487": Gray background.
03.activebackground="#059458": Green background when clicked.
04.activeforeground="white": White text when clicked.
05.width=24: Button width.
06.command=rock: Calls rock() function when clicked.

```
button_paper = Button(text="      PAPER      ", bg="#808487",
font=("arial", 15, "italic bold"), relief=RIDGE,
                     activebackground="#059458",
activeforeground="white", width=24, command=paper)
button_paper.grid(column=0, row=2)

button_scissor = Button(text="      SCISSOR      ",
bg="#808487", font=("arial", 15, "italic bold"), relief=RIDGE,
                       activebackground="#059458",
activeforeground="white", width=24, command=scissor)
button_scissor.grid(column=0, row=3)
```

01.The same structure is used for **Paper** and **Scissors** buttons:

```
rps.mainloop()
```

01.This keeps the Tkinter window open, waiting for user interactions