Rock, Paper, Scissors

Introduction

In this project you will make a Rock, Paper, Scissors game and play against the computer.

Rules: You and the computer both choose rock, paper or scissors. The winner is decided by these rules:

- [ ] Rock blunts scissors
- [ ] Paper covers rock
- [ ] Scissors cut paper

```
rock (r), paper (p) or scissors (s)? s
>8 vs ___
Player wins!
```

Step 1: Player's Turn

First, let the player choose Rock, Paper or Scissors.

✅ Activity Checklist

- [ ] Open this trinket: **jumpto.cc/rps-go**.
- [ ] The project already contains the code to import a function that you are going to use in this project.

```
main.py
#!/bin/python3

from random import randint
```

You'll use `randint` later to generate random numbers.

- [ ] First, let the player choose Rock, Paper or Scissors by typing the letter 'r', 'p' or 's'.

```
from random import randint
player = input('rock (r), paper (p) or scissors (s)?')
```
```
rock (r), paper (p) or
scissors (s)? r
```

- [ ] Now print out what the player chose:

```
player = input('rock (r), paper (p) or scissors (s)?')
print(player, 'vs')
```
```
rock (r), paper (p) or
scissors (s)? p
p vs
```

- [ ] Test your code by clicking Run . Click in the trinket output window and enter your choice.

Step 2: Computer's Turn

Now it's the computer's turn. You can use the `randint` function to generate a random number to decide between rock, paper and scissors.

✅ Activity Checklist

- [ ] Use `randint` to generate a random number to decide whether the computer has chosen rock, paper or scissors.

```
player = input('rock (r), paper (p) or scissors (s)?')    rock (r), paper (p) or
                                                          scissors (s)? s
print(player, 'vs')                                       s vs
                                                          3
chosen = randint(1,3)
print(chosen)
```

☐ Run your script lots of times (you'll need to enter 'r', 'p' or 's' each time.)

You should see that 'chosen' is randomly set to either 1, 2 or 3.

☐ Let's say:

☐ 1 = rock (r)
☐ 2 = paper (p)
☐ 3 = scissors (s)

Use `if` to check if the chosen number is `1` (`==` is used to see if 2 things are the same).

```
chosen = randint(1,3)
print(chosen)
                    ← Don't forget the colon ':'
if chosen == 1:
```

☐ Python uses **indentation** (moving the code to the right) to show which code is inside the `if` . You can either use two spaces (tap the spacebar twice) or tap the **tab key** (usually above CAPSLOCK on the keyboard.)

Set `computer` to 'r' inside the `if` using indentation:

```
if chosen == 1:
  computer = 'r'

  ↖
    Two spaces or a 'tab'
```

☐ You can add an alternative check using `elif` (short for *else if*):

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```
if chosen == 1:
    computer = 'r'

elif chosen == 2:
    computer = 'p'
```

indent with two spaces or tab

This condition will only be checked if the first condition fails (if the computer didn't choose 1)

☐ And finally, if the computer didn't choose 1 or 2 then it must have chosen 3 .

This time we can just use else which means otherwise.

```
if chosen == 1:
    computer = 'r'

elif chosen == 2:
    computer = 'p'

else:
    computer = 's'
```

☐ Now, instead of printing out the random number that the computer chose you can print the letter.

```
chosen = randint(1,3)
#print(chosen)          Comment out this line
                        by putting a '#' at the start
if chosen == 1:
    computer = 'r'

elif chosen == 2:
    computer = 'p'

else:
    computer = 's'

print(computer)
```

```
rock (r), paper (p) or
scissors (s)? r
r vs
s
```

You can either delete the line print(chosen) , or make the computer ignore it by adding a # at the start of the line.

☐ Test your code by clicking Run and choosing your option.

☐ Hmm, the computer's choice gets printed on a new line. You can fix that by adding `end=''` after `vs`, that tells Python to end with a space instead of a new line.

```
print(player, 'vs', end=' ')

chosen = randint(1,3)
#print(chosen)
```

```
rock (r), paper (p) or
scissors (s)? p
p vs r
```

☐ Play the game a few times by clicking Run and making a choice.

For now you'll have to work out who won yourself. Next you'll add the Python code to work this out.

Save Your Project

Step 3: Check the Result

Now let's add the code to see who won.

✅ Activity Checklist

☐ You need to compare the `player` and `computer` variables to see who won.

If they're the same then it's a draw:

```
print(computer)

if player == computer:
    print('DRAW!')
```

```
rock (r), paper (p) or scissors (s)? s
s vs s
DRAW!
```

☐ Test your code by playing the game a few times until you get a draw.

You'll need to click `Run` to start a new game.

☐ Now let's look at the cases where the player chose 'r' (rock) but the computer didn't.

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If the computer chose 's' (scissors) then the player wins (rock beats scissors).

If the computer chose 'p' (paper) then the computer wins (paper beats rock).

We can check the player choice *and* the computer choice using `and` .

```python
if player == computer:
    print('DRAW!')

elif player == 'r' and computer == 's':
    print('Player wins!')

elif player == 'r' and computer == 'p':
    print('Computer wins!')
```

☐ Next let's look at the cases where the player chose 'p' (paper) but the computer didn't:

```python
elif player == 'r' and computer == 's':
    print('Player wins!')

elif player == 'r' and computer == 'p':
    print('Computer wins!')

elif player == 'p' and computer == 'r':
    print('Player wins!')

elif player == 'p' and computer == 's':
    print('Computer wins!')
```

☐ And finally, can you add the code to check for the winner when the player chose 's' (scissors) and the computer chose rock or paper?

☐ Now play the game to test your code.

```
rock (r), paper (p) or scissors (s)? s
s vs p
Player wins!
```

Click `Run` to start a new game.

Save Your Project

Challenge: ASCII Art

Instead of using the letters r, p and s to represent rock, paper and scissors, can you use ASCII art?

For example:

```
rock (r), paper (p) or scissors
(s)? s
>8 vs ___
Player wins!
```

Where:

```
rock: O
paper: ___
scissors: >8
```

☐ Instead of saying `print computer` you'll need to add a new line to each of the options in the `if` to print out the correct ASCII art.

Hints:

```
if chosen == 1:
    computer = 'r'
    print('O')  ——— ASCII art rock
```

```
#print(computer)
```

☐ Instead of saying `print player` you'll need to add a new if statement to check which item the player chose and print out the correct ASCII art:

Hint:

```
player = input('rock (r), paper (p) or scissors (s)?')

if player == 'r':
    print('0', end=' ')
```

Remember that adding `end=' '` to the end of a `print` makes it end with a space instead of a new line.

Save Your Project

Challenge: Create a new game

Can you create your own game like Rock, Paper, Scissors with different objects?

Click the 'Duplicate' button to make a copy of your Rock, Paper Scissors project to start from.

This example uses Fire, Logs and Water:

```
Fire, Logs, Water
Fire burns Logs
Logs make a bridge over Water.
Water puts out Fire
fire (f), logs (l) or water (w)? l
@@@ vs ~~~
Player wins!
```

Save Your Project