STEM Workshop: Coding!

Lesson 1: Rock, Paper, Scissors in Python

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Access this lesson and extra materials online!

Visit our Wiki Page:

What is Python?

Science, math, games, NASA!

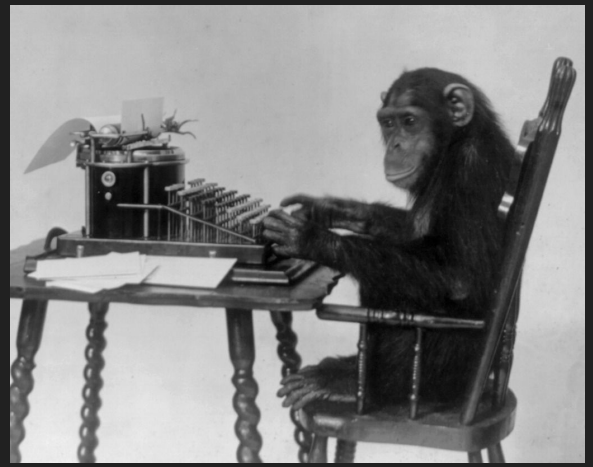
Google → repl.it

Print Statement

Syntax: print(message)

Example (try it): print(“Hello World”)

Or, print numbers: print(10)



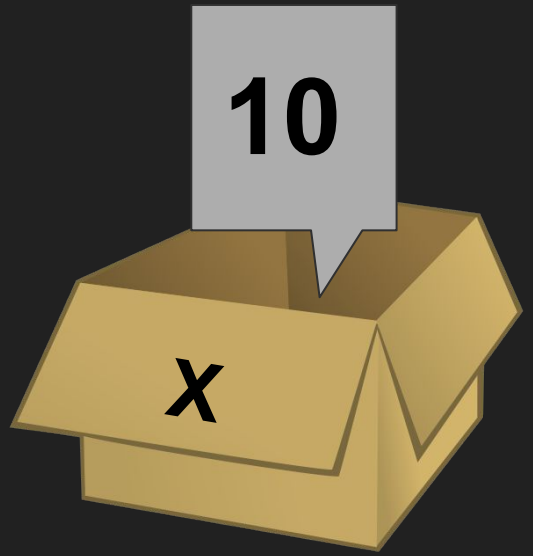
The print statement displays messages in the console (area on the right).

If you use quotations, it will output the **String** (Word/phrase) inside!

What is a Variable?

A variable can take any value, and have any name

It’s like a labeled box that holds whatever you put into it!



X = 10 Variable called “X”, with number value 10

word = “Hello” Variable called “Word”, with **String** value “Hello”

Variable Example

Try typing in this code:

```
word = “Hello everyone”

print(word)
```

```
word = 5280

print(word)
```

User Input

Syntax: input(message)

Example (try it): input(“Input your favorite word!”)

The user input statement is similar to the **print** statement, while also asking for the user to put in an answer.

The next thing typed in will be the input.

User Input Example

Try typing in this code:

```
word = input(“Input your favorite word!”)

print(word)
```

After running the code, input your favorite word!

What prints out?

Random Numbers

Syntax: random.randint(starting number, ending number)

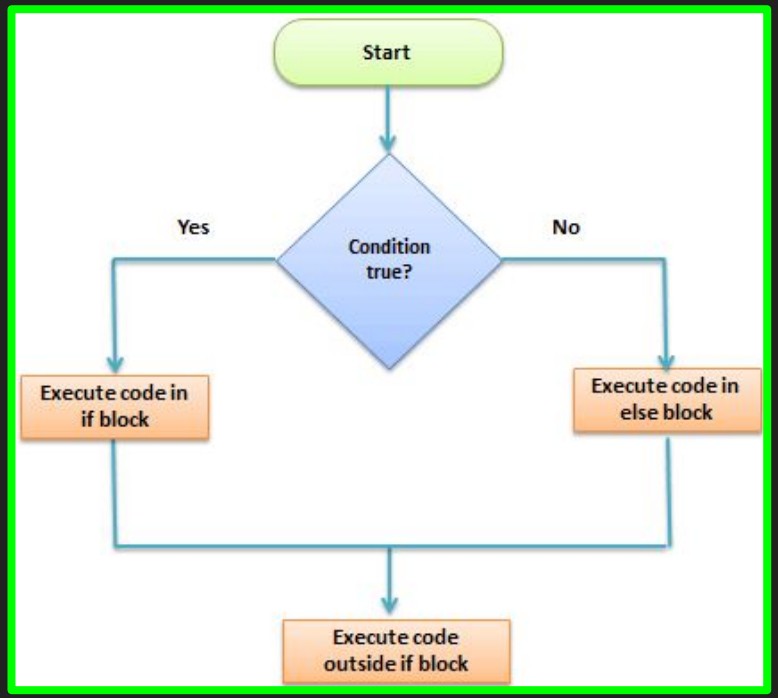
Chooses a random number from the starting number to the ending number.

So: random.randint(1, 3) will give us either 1, 2, or 3.

Conditional Statements

- Conditional statements: carry out a certain task based *if something else happens*
  - e.g. if statements, if-else statements

- Indentations: used to define blocks of code (in conditional statements)
  - You can create an indentation by using the “Tab” key

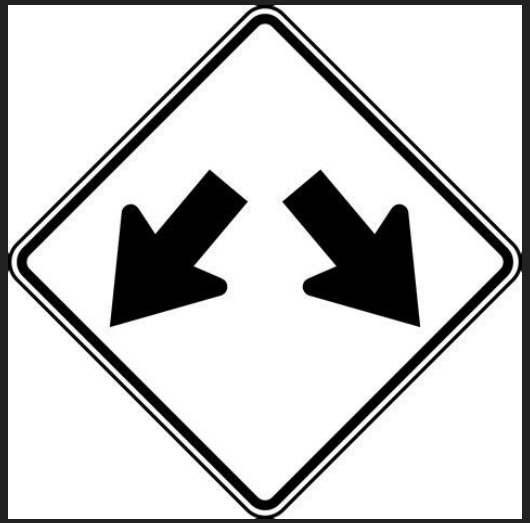


“If” Statement

This is an incredibly important logic statement. If the condition is true, it will perform the statement inside:

```
if (condition):
    Statement
```

(note the indentation)



“If” examples

```
num1 = 5

if (num1 == 6):

    print(“Hello Friend”)
```

```
num1 = 6

if (num1 == 6):

    print(“Hello Friend”)
```

Note: “=” means “make this equal this”, and “==” means “is this equal to this?”

“Else if” Statement

This is the next step after the “if” statement. The computer will first check the “if”, then check each “else if” so you can check multiple conditions at once!

```
if(condition):
    Action
elif(another condition):
    Another action
```

“Else if” Example

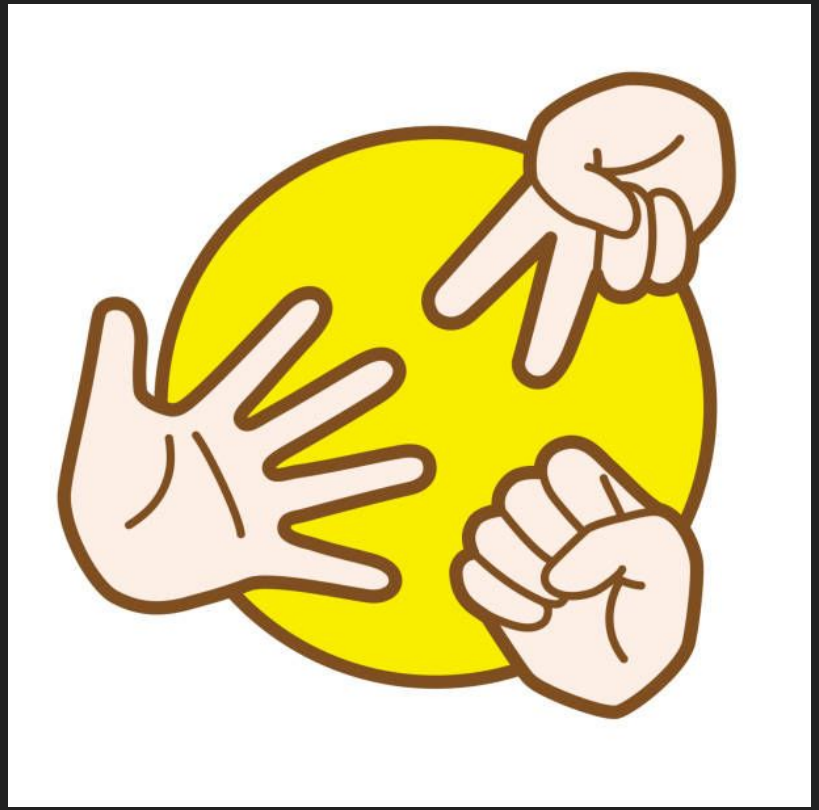
```
num1 = 5

if(num1 == 4):
    print(“Howdy partner”)
elif(num1 == 5):
    print(“Hello, friend”)
```

```
num1 = 4

if(num1 == 4):
    print(“Howdy partner”)
elif(num1 == 5):
    print(“Hello, friend”)
```

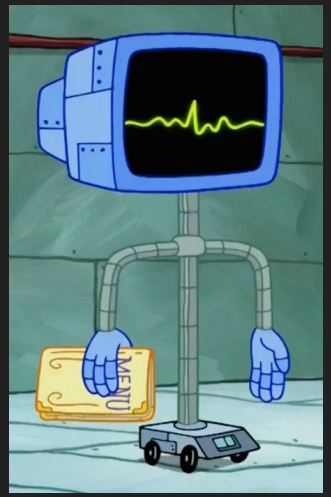
Now let’s apply what we learned!



It’s time to design a game!

Access the code and follow along!

https://replit.com/@JeremyKuznetso1/RockPaperScissors#main.py

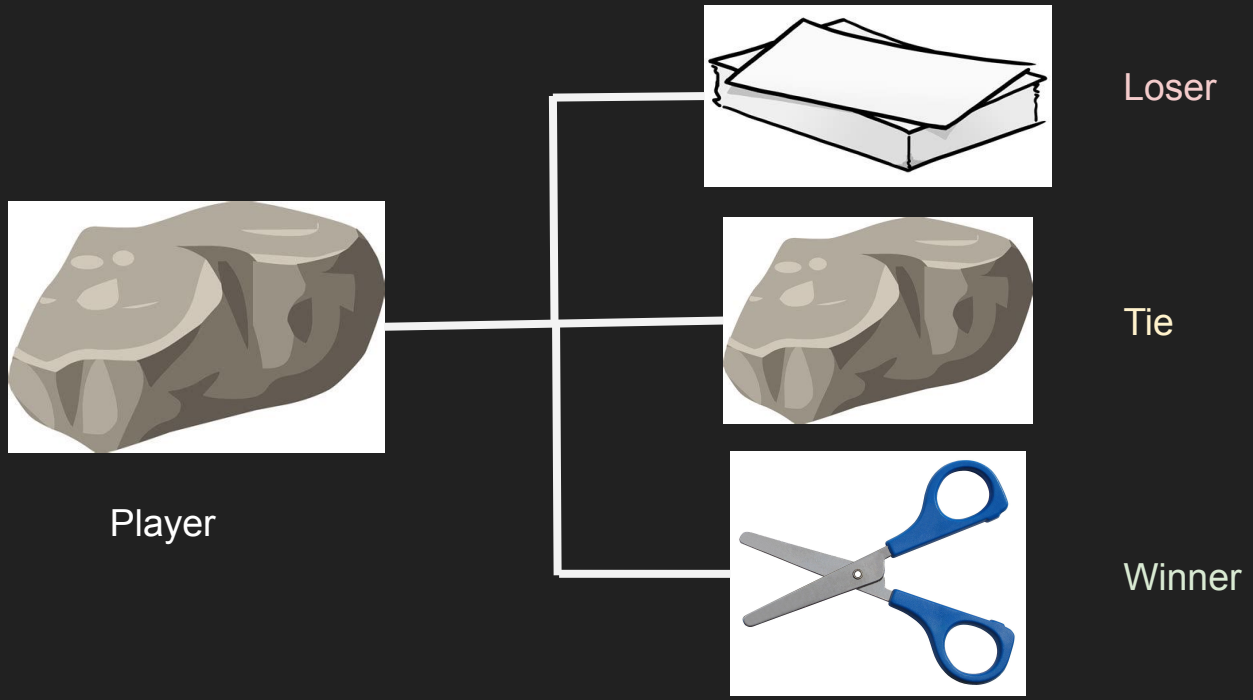


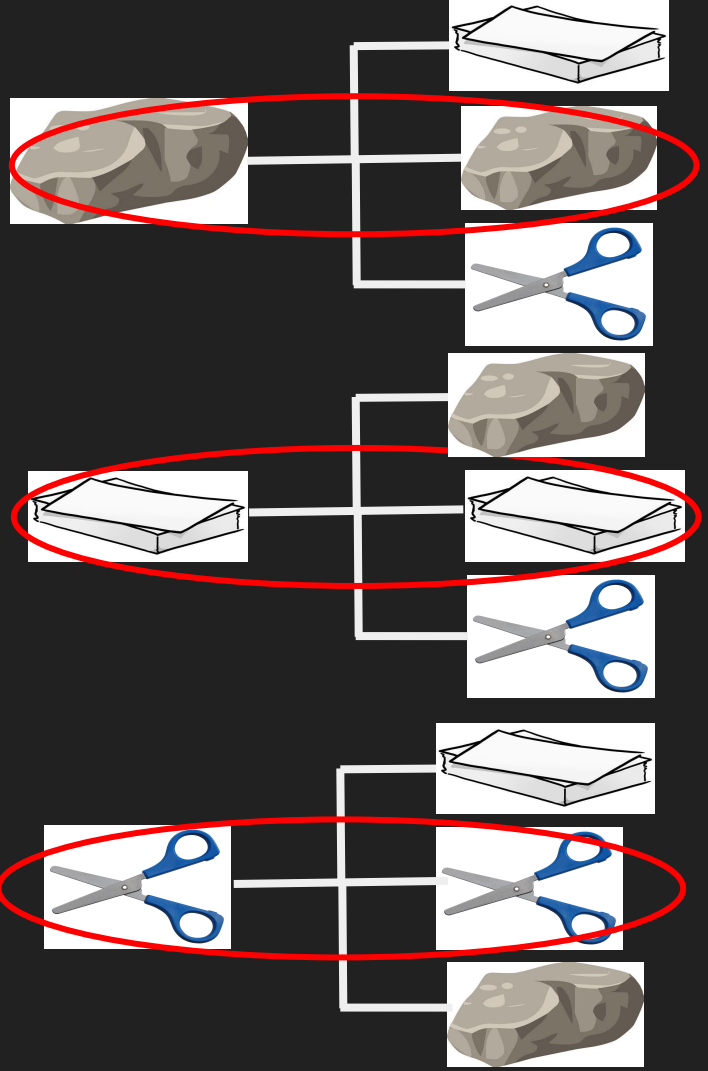
Rock Paper Scissors

Rules:

1. Each player randomly chooses: Rock, Paper, or Scissors
2. Rock beats Scissors beats Paper beats Rock
3. If both players select the same thing, it's a Tie

The Possibilities

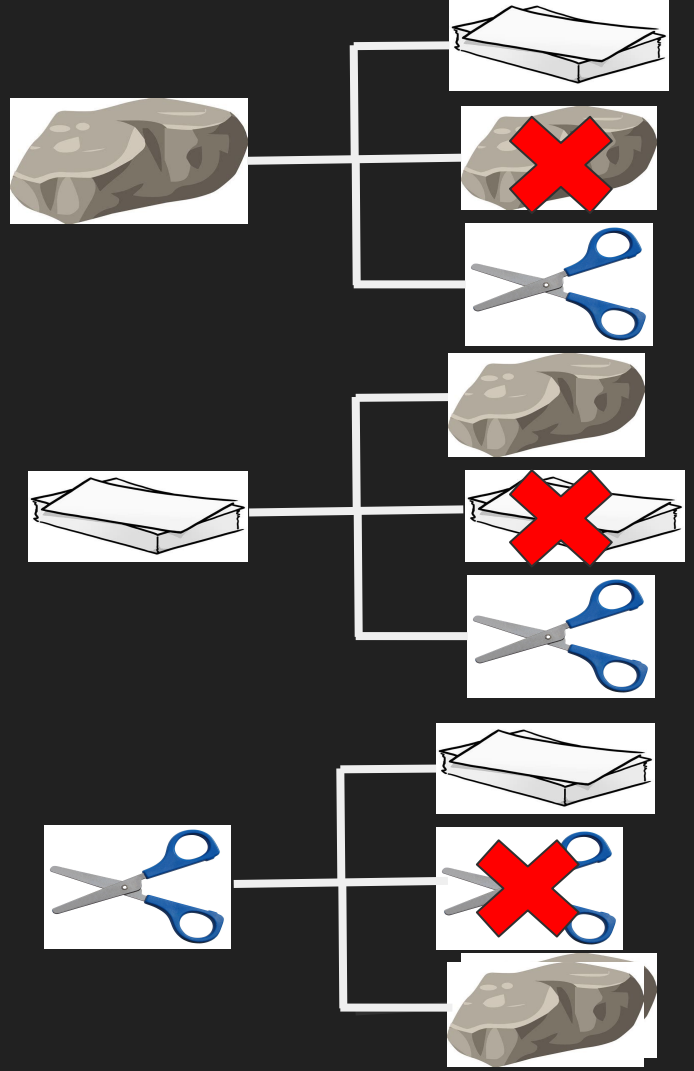




3. If both players select the same thing, it's a Tie

```
# both player and computer choose the same option
if (user == comp):
  winner = "tie"
```

1 line of code, 3 combinations!



6 options left!

```
# Player chooses Rock, computer chooses scissors
elif (user == 1) and (comp == 2):
  winner = "computer wins"

# Player chooses Rock, computer chooses scissors
elif (user == 1) and (comp == 3):
  winner = "user wins"

# Player chooses Paper, computer chooses rock
elif (user == 2) and (comp == 1):
  winner = "user wins"

# Player chooses Paper, computer chooses scissors
elif (user == 2) and (comp == 3):
  winner = "computer wins"

# Player chooses Scissors, computer chooses rock
elif (user == 3) and (comp == 1):
  winner = "computer wins"

# Player chooses Scissors, computer chooses paper
elif (user == 3) and (comp == 2):
  winner = "user wins"
```

Selection: Explanation

```
# Print the choices
choices = ["rock", "paper", "scissors"]
print("Computer chose: " + choices[comp-1])
print("User chose: " + choices[player-1])
```

THANKS!