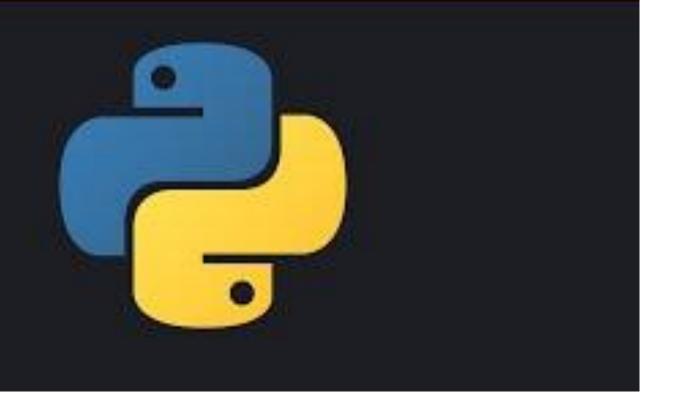
Introduction to Python



Fondren Library

Research Data Services

100 SECONDS OF



Terminology

Library: A library is a collection of modules that includes pre-written code (code blocks) to help with common tasks.

Modules: Established and External Tools that serves a specific function, such as file handling, data analysis, web development.

Import: Allows one to bring in modules to execute a specific module or library (package) in your coding environment (env).

Function: Is a reusable block of code that performs a specific task. Functions input, process, and return a specific output.

Variable: A variable is a name that refers to a value that is stored overtime in a computer's memory. It is used as a label for a piece of data, that allows you to manipulate the data in your code.

Classes (Python): Define what objects are used for, and also, the types of behaviors and processes that can be executed by an object.

Objects: An instance of a class (modules, variables, etc), that has an attached set of attributes and behaviors, with specific types of conditions that can be executed from that block of code.



Python knows various types of data. Common ones are:

- Strings "a", "hi"
- Integer numbers 2, 4, 6,
- Floating point numbers 3.14, 2.0, 2.12
- · Boolean True/False

Strings - Used to represent text in our coding blocks. Ex. print("Hello World")

Integers (int) - Whole Numbers that don't have fractional components (ex. No decimals or fractions).

Ex. sum = 42 + 76 print(sum)

Floating Point Numbers (floats) - are used to represent numbers with decimal points (also show fractional numbers such as 1/4, 5/2, 8/10).

Ex. pi = 3.14 print(pi)

Boolean Values (bool/bools) - True or False Values | Computer represents as true or absent of true values (false)

Ex. is_student = False print(is_student)

CHECK AND CHANGE TYPES BUILT-IN FUNCTION type



Arithmetic Operators

Operator	Meaning	Example
+	Addition	4 + 7 → 11
-	Subtraction	12 - 5 - → 7
*	Multiplication	6 * 6 → 36
1	Division	30/5 → 6
%	Modulus	10 % 4 → 2
11	Quotient	18 ∥ 5 → 3
**	Exponent	3 ** 5 → 243

Operands -

Characters, symbols, strings, objects that are being operated on

USE AS A CALCULATOR MATHEMATIC OPERATORS

+, -, /, *, %

```
In [1]: 1 3+4
Out[1]: 7

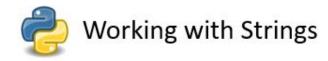
In [2]: 1 ((5+6-1)*2/5)**2
Out[2]: 16.0
```

Exercise 1:

Radius=5, π =3.14, calculate the area of the circle

radius = 5 pi = 3.14159265359 area = pi * radius * 2 print("The area of the circle is:", area)

OPERATORS WORK DIFFERENTLY BASE ON DATA TYPE



len("word")

Word.capitalize()

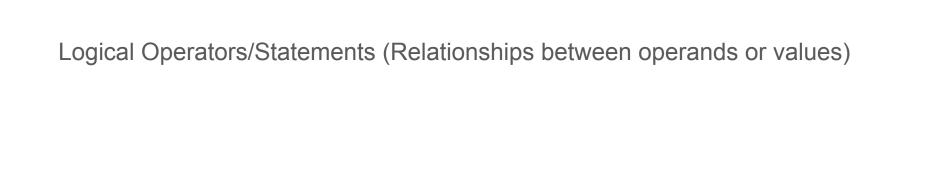
Word.upper()

Word.lower()

Word.title()

LOGIC OPERATORS <, >, ==, !=, <=, >= AND STATEMENTS and, or, not RETURN BOOLEAN DATA TYPE

```
In [10]:
Out[10]: False
             True and False
In [11]:
Out[11]: False
In [12]:
             True or False
Out[12]: True
In [13]:
Out[13]: False
```



ASSIGNING VARIABLES

11.571428571428571

```
In [28]: 1  a = 3
2  b = 4
3
4  c = a + b
5  d = a*b + c
6  e = a**b/c
7
8  print (c)
9  print (d)
10  print (e)
11
7
19
```



```
How old are you? 6

How old are you? 6

How old are you? 6

Your age is 6

In [20]: 1 Age = input("How old are you?")
2 print ("Your age is ", Age)
```

Exercise 2:

Create a variable affiliation, prompt a question, "Are you a student or a staff member?"

print "You are a " + input

@ USER-DEFINED FUNCTION

Exercise 3: Create a BMI function and calculate BMI for person1

and person2. BMI = weight/height²

person1: height:1.65m, weight:60kg # person2: height:1.75m, weight:75kg



- Lists [1,2,3] ordered and changeable
- Tuples (1,2,3) ordered and unchangeable
- Dictionary {'a': 1, 'b':2, 'c':3} changeable, key-value pairs



Create a list:

```
1 mylist = ['apple', 'orange', 'banana']
2 print (mylist)
['apple', 'orange', 'banana']
```

Access item:

```
mylist = ['apple', 'orange', 'banana']
print (mylist[1])
```

orange

Change Item Value:

```
mylist = ['apple', 'orange', 'banana']
mylist[1] = 'cherry'
print (mylist)
```

```
['apple', 'cherry', 'banana']
```

Add Items:

```
mylist = ['apple', 'orange', 'banana']
mylist.append('pear')
print(mylist)
```

```
['apple', 'orange', 'banana', 'pear']
```

Remove Items:

```
mylist = ['apple', 'orange', 'banana']
mylist.remove('apple')
print(mylist)
```

```
['orange', 'banana']
```

Exercise 4:

- 1) Create a list of your favorite songs, print the list
- 2) Print the 3rd item in the list
- 3) Change the 3rd item into another song
- 4) Add one more song
- 5) Remove one song

Welcome to Rice!

Exercise 5: Create a variable called "behavior", assign a value "good" to it

```
# if "good" print "candy"
# elif "bad" print "no candy"
# else print "ask your mom"
```





```
1 for x in range(1,6):
2 print (x)

1
2
3
4
5
```

Exercise 6:

Create a list called "animals" and put "cat", "dog", "pig"...in it Use for loop to print each one out

```
5 animals=['cat','dog','pig']
6 for x in animals:
7 print (x)
```



Additional Resources

- · datacamp.com
- · software-carpentry.org
- · stackoverflow.com

Office Hours - 8PM to 9PM

