

Introduction to Python

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Abstract

In this report we studied a very important features about python and how implement the mathematical and statistical activities using python. The core of this report is to learn python functions and basic operations in google colaboratory environment.

1 Introduction

Python is very powerful tool and the number of users are expanding an extraordinary rate. Currently, most of Python users are dealing with data science as well as artificial intelligence activities. The platform is very simple and user friendly to implement our projects.

2 Theory

Python libraries are another significance aspect for coding. There are several types of python libraries to work with different type of activities. For example, numpy is the one of very famous library that used to deal with n- dimensional arrays such as matrices.

3 Basic Python Codes

3.1 Basic operations

In this section shows some basic python command in google colab.

```
# print command use for print something
print ('Hello World')
```

```
# assignment
x = 5
y = 10
x = y
print ("x = ", x)
print ("y = ", y)
```

```

#print using input function
myName = input(" Please enter your name: ")
myAge = input("What about your age: ")

# If condition
userInput = input('Enter 1 or 2: ')
if userInput == "1":
    print (" Hello World")
    print ('How are you?')
elif userInput == "2":
    print ("Python Rocks!")
    print ('I love Python')
else:
    print ("You did not enter a valid number")

#for loop
pets = ['cats ', 'dogs ', 'rabbits ', 'hamsters ']
for myPets in pets:
    print (myPets)

#while loop
counter = 5

while counter > 0:
    print('Counter = ', counter)
    counter = counter - 1

```

3.1.1 Command Lines

Simple arithmetic operations and mathematical activities.

```

# Simple arithmetic .
2 + 3 - 36 / 2 - 5

```

```

x = 3 # Assign a variable .
x**2 + 1 # Work with the variable .
type(x) # x is type (class) integer .
x1 = 4.2; x2 = 2.675; # Assign x1 and x2 .

```

```

z1=2 + 3j; z2 = 3 - 1j # Assign z1 and z2. complex numbers
type(z1) # z1 is class complex.
z1**2 - 2 * z2 # Complex arithmetic.
z1.conjugate() # The complex conjugate.

```

3.1.2 Command Lines for list of integers

```

a=[1, 2, 3, 4, 5] # A list of integers.
a[0] # 1st element, 0 based indexing.
a[-1] # The last element.
len(a) # The number of elements.
max(a) # The largest element.
5 in a # True, 5 is in the list a.
2 * a # [1,2,3,4,5,1,2,3,4,5]
a.append(6) # Now a=[1,2,3,4,5,6].

```

3.1.3 Importing and dealing with basic libraries

```

import math # Import all under name space math.
from math import sin # Import sine command only.
from math import * # Import all math commands.
sin(pi) # Sine function.
acos(0) # Inverse cosine.
exp(0.3) # Exponential function.
log10(0.3) # Log base 10.
floor(2.35) # Return floor as integer.

```

4 Conclusions

There are several types of libraries have own characteristics to deal with operations.

Installing and importing libraries more important when we coding executing specific functions and command lines.(except basic ones likes addition)

References

- [1] *Expected value*, available at [https://en.wikipedia.org/wiki/Python\(programming_language\)](https://en.wikipedia.org/wiki/Python(programming_language)).