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Office 402

google Colab

```
# Arithmetich operations
# + / // * ** %
print(21%3)
```

```
0
```

```
# Assignment
# =
a = 2
print(a)
a = a + 2 #increment
print(a)
```

```
2
4
```

```
print(type(2.0)) # int float
print(type(True)) #bool
print(type(None))
```

```
<class 'float'>
<class 'bool'>
<class 'NoneType'>
```

```
s = 'I am '
print(s)
s = 'Pierfrancesco'
print(s + s2)
```

```
I am
PierfrancescoPierfrancesco
```

```
s[-1] = 'f'
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-22-0a01ba7e9baa> in <cell line: 1>()
----> 1 s[-1] = 'f'

TypeError: 'str' object does not support item assignment

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```

```
n = 32123478645
str(n)
'9' in str(n)
```

```
False
```

```
if <condition1>:
  <body>
elif <condition2>:
  <body>
else:
  <body>
```

```
# == != <= >= and not or
```

```
d = 15
if (d>=20):
  print('d greater or equal than 20')
elif (d<20 and d >5):
  print('d between 5 and 20')
else:
  print('d less than 5')
  print('hello')
```

```
    d between 5 and 20
```

```
b = False
if (b):
  print('b true')
```

```
# loops
for <var> in <set_of_values>:
  <body>
```

```
for i in [0,1,2,3,4]:
  print(i)
```

```
    0
    1
    2
    3
    4
```

```
for i in range(2,12,2):
  print(i)
```

```
    2
    4
    6
    8
    10
```

```
while <true_condition>:
  <body>
```

```
counter = 0
while (counter < 10):
  counter = counter + 1
  print(counter)
```

```
    1
    2
    3
    4
    5
    6
    7
    8
    9
    10
```

```
#list
l = []
print(type(l))
```

```
    <class 'list'>
```

```
l = [0,1,2,3,4,5,6]
print(l)
```

```
    [0, 1, 2, 3, 4, 5, 6]
```

```
l = list()
print(l)
```

```
    []
```

```
l = list(range(10))
print(l)
```

```
    [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
```

```
len(l)
```

```
    10
```

```
l.append(10)
```

```
print(l)
```

```
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
```

```
l.append('hello')
print(l)
```

```
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 'hello']
```

```
l.append('pier')
```

```
l.index('hello')
```

```
11
```

```
l.pop(11)
```

```
'hello'
```

```
print(l)
```

```
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 'pier']
```

```
l.pop()
print(l)
```

```
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
```

```
l = [210, 85, 1, 8, 9, 41]
print(sorted(l))
print(l)
```

```
[1, 8, 9, 41, 85, 210]
[210, 85, 1, 8, 9, 41]
```

```
l.sort()
print(l)
```

```
[1, 8, 9, 41, 85, 210]
```

```
l1 = [1,2,3,'hello',5,[3,2,1]]
print(l1)
l1.pop()
print(l1)
```

```
[1, 2, 3, 'hello', 5, [3, 2, 1]]
[1, 2, 3, 'hello', 5]
```

```
l2 = l1
print(l2)
```

```
[1, 2, 3, 'hello', 5]
```

```
l2.pop()
```

```
5
```

```
print(l2)
```

```
[1, 2, 3, 'hello']
```

```
print(l1)
```

```
[1, 2, 3, 'hello']
```

```
l3 = l1.copy()
print(l3)
```

```
[1, 2, 3, 'hello']
```

```
l3.pop(0)
print(l3)
```

```
[3, 'hello']
```

```
print(l1)
```

```
[1, 2, 3, 'hello']
```

```
l1 = [1,2,3]
l2 = l1
l3 = l1.copy()
l1 is l3
```

```
False
```

```
l1.append('hello')
1 in l1
```

```
True
```

```
# tuples
t = ()
print(type(t))
```

```
<class 'tuple'>
```

```
t = (1,2,3,4,6,'hello')
```

```
t = tuple(range(10))
print(t)
```

```
(0, 1, 2, 3, 4, 5, 6, 7, 8, 9)
```

```
t[2] = 'hi'
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-99-4a11de840e0b> in <cell line: 1>()
----> 1 t[2] = 'hi'

TypeError: 'tuple' object does not support item assignment
```

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```
f = 'Hi'
s = 'everybody'
packed_tuple = (f,s) #packing
print(packed_tuple)
```

```
('Hi', 'everybody')
```

```
c, d = packed_tuple #unpacking
print(c)
print(d)
```

```
Hi
everybody
```

```
t = tuple(range(100))
a,b,*rest = t
print(a)
print(b)
print(rest)
```

```
0
1
[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
```

```
# functions
def name_function(arg1,arg2,arg3):
  <body>
  return #optional
```

```
def func(x):
  print("Your x: ",x)
func('Hello')
```

```
Your x:  Hello
```

```
def func(s1,s2):
  return s1 + s2
func('Hi ', 'everybody')
```

```
'Hi everybody'
```

```
def func(x):
  x = x + 1
  return x*x
```

```
func(5) # positional
```

```
36
```

```
func(x=5) #keywords
```

```
36
```

```
def info_about_you(name, language):
  print('Hi, I am ' + name + ' and I speak ' + language)
info_about_you(language ='French', name ='Pluto')
```

```
Hi, I am Pluto and I speak French
```

```
def many_names(*names): #positional
  print('Hi ', names)
  print(type(names))
many_names('Luca', 'Aurora', 'Pier', 'Pluto')
```

```
Hi  ('Luca', 'Aurora', 'Pier', 'Pluto')
<class 'tuple'>
```

```
def many_data(**names_and_ages): #keywords argument
  print(names_and_ages)
  print(type(names_and_ages))

many_data(Pier = 20, Aurora = 18, Pippo = 85)
```

```
{'Pier': 20, 'Aurora': 18, 'Pippo': 85}
<class 'dict'>
```

```
def many_names(*names, tol=1e-12): #positional
  print(names)
  print(tol)

many_names('Pluto',tol=1)
```

```
('Pluto',)
1
```

```
import math #math.py
math.sqrt(25)
math.factorial(5)
math.cos(75)
```

```
0.9217512697247493
```

```
from math import *
sqrt(4)
```

```
2.0
```

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