# Goals

- Learn how to use Jupyter and play with Python basics

# 1. Python Basics

## 1) loop

Write a for loop to check each number i in the range of 0~10. If i is even, print 2*i, other write print i+3

In [5]:
```
items = [i*2 if i%2 == 0 else i+3 for i in range(0, 10)]
print(items)
for i in range(0, 10):
    print((str(i*2) if i%2 == 0 else str(i+3)))
```

```
[0, 4, 4, 6, 8, 8, 12, 10, 16, 12]
0
4
4
6
8
8
12
10
16
12
```

## 2) function

Define a simple function that returns the square of a number that passes into the function as a parameter. Test your function using 2 and -3, respectively.

In [7]:
```
def sqr(input):
    return input**2

print(sqr(2), str(2*2))
print(sqr(-3), str(-3*-3))
```

```
4 4
9 9
```

# 2. Common Data Structures in Python

## 1) Working with lists

Define two lists xList = [1,2,3] and yList = [4,5] and then append yList to Xlist. Iterate over the new Xlist and print each value.

In [10]:
```
xList = [1,2,3]
yList = [4,5]
xList.extend(yList)
for item in xList:
    print(item)
```

```
1
2
3
4
5
```

## 2) Working with tuples

Define a tuple with mixed datatype values (1, "Diabetes", 3.4) and print the last two values.

In [12]:
```
data = (1, "Diabetes", 3.4)

print(data[-2], data[-1])
```

```
Diabetes 3.4
```

## 3) Working with Dictionaries

Dictionaries are useful for storing and retrieving data as key-value pairs. Define a short dictionary of molar masses. The keys are molecular formulas, and the values are the corresponding molar masses.mw = {'CH4': 16.04, 'H2O': 18.02, 'O2':32.00}. Add a new key-value pair ['CO2': 44.01] and then print all the key-value pairs in the dictionary.

In [15]:
```
mw = {'CH4': 16.04, 'H2O': 18.02, 'O2':32.00}
mw['CO2'] = 44.01

for k,v in mw.items():
    print(k, v)
```

```
CH4 16.04
H2O 18.02
O2 32.0
CO2 44.01
```