Manipulating strings & Lists

# Check if a smaller string is *in* a bigger string

testMessage="Avicenna was a Persian polymath"

True

False

False

print("poly" in testMessage)

print("roly" in testMessage)

print("poly" not in testMessage)

# Change Case of a string

testMessage="Avicenna was a Persian polymath"

avicenna was a persian polymath

AVICENNA WAS A PERSIAN POLYMATH

print(testMessage.lower())

print(testMessage.upper())

# Checking the Case of a string

testMessage="Avicenna was a Persian polymath"

testMessage2="AVICENNA WAS A PERSIAN POLYMATH"

False

False

True

False

print(testMessage.isupper())

print(testMessage.islower())

print(testMessage2.isupper())

print(testMessage2.islower())

# Counting parts of a string and replacement

testMessage3="Minions really like Bananas"

27

2

MiniOOOns really like Bananas

print(len(testMessage3))

print(testMessage3.count("an"))

print(testMessage3.replace("o","OOO"))

print(len(testMessage3))

print(testMessage3.count("an"))

print(testMessage3.replace("o","OOO"))

print(len(testMessage3))

print(testMessage3.count("an"))

print(testMessage3.replace("o","OOO"))

# A String is a Python List!

### Note the square brackets

## Slicing

testMessage="Avicenna was a Persian polymath"

P

e

r

s

i

a

n

Persia

Persian

h

poly

was a Persian polymath

Avicenna

print(testMessage[15])

print(testMessage[16])

print(testMessage[17])

print(testMessage[18])

print(testMessage[19])

print(testMessage[20])

print(testMessage[21])

print(testMessage[15:21])

print(testMessage[15:22])

print(testMessage[-1])

print(testMessage[-8:-4])

print(testMessage[9:])

print(testMessage[:9])

List basics - Square Brackets

A list in Python is just an ordered collection of items which can be of any type. By comparison an array is an ordered collection of items of a single type - so in principle a list is more flexible than an array but it is this flexibility that makes things slightly harder when you want to work with a regular structure. A list is also a dynamic mutable type and this means you can add and delete elements from the list at any time.  
To define a list you simply write a comma separated list of items in square brackets:  
months = ['January', 'February', 'March', 'April', 'May', 'June', 'July', 'August', 'September', 'October', 'November', '  December']

At first it may appear that a Python List is an array but you can only add items to the end of a List using append, you can't assign a value to a List if the element in the List doesn't already exist.

Eg. **This WILL NOT WORK because there are no existing elements in the List!**  
myList=[ ]  
print(myList)   
for i in range(10):  
    myList[i]=i   
print(myList)

**but this WILL** because it is adding elements on to the END of the List.  
myList=[ ]  
print(myList)   
for i in range(10):  
    myList.append(i)   
print(myList)

NB If elements already exist in the List, you CAN change their contents  
myList = [5, 17, 12, 66, 103, 2, 9, 8, 5]  
print(myList)   
myList[3]=29   
print(myList)

# Sorting Lists

myList = [5, 17, 12, 66, 103, 2, 9, 8, 5]

months = ['March', 'April', 'May', 'June', 'July', 'August']

myList.sort()

[2, 5, 5, 8, 9, 12, 17, 66, 103]

[103, 66, 17, 12, 9, 8, 5, 5, 2]

['April', 'August', 'July', 'June', 'March', 'May']

['May', 'March', 'June', 'July', 'August', 'April']

print(myList)

myList.reverse()

print(myList)

months.sort()

print(months)

months.reverse()

print(months)

# Splitting and Joining

myString = "This is a string that can be split into items in a List"

myList2 = ['Th', 'i', 's Lis', 't', ' can ', 'b', 'e', " turne", 'd int', 'o a str', 'ing']

myStringSplit=myString.split()

['This', 'is', 'a', 'string', 'that', 'can', 'be', 'split', 'into', 'items', 'in', 'a', 'List']

This List can be turned into a string

print(myStringSplit)

print("".join(myList2))

*NB The chosen separator in this example is null string*