PythonNote2

# ## Creating a list

# \* A string is a sequence of characters

# \* A list contains a sequence of any type

# \* A list is denoted with brackets [ and ]

# \* Can contain a nested list ?

mylist = ["a", "b", "c"]

print (mylist)

print (len(mylist))

print (mylist[0])

vocabulary = ["iteration", "selection", "control"]

numbers = [17, 123]

empty = []

mixedlist = ["hello", 2.0, 5\*2, [10, 20]]

print (numbers)

print (mixedlist)

print (empty)

newlist = [numbers, vocabulary,['test string', 'and' ,'another']]

print (newlist)

print (len(newlist))

## Common operations

* len returns the length of the list
* concatentation (+) and repetition (\*)
  + creates new list objects
* access elements ([i] where i=>0)
* slicing ([i:j] for elements between i and up to but not including j)
* membership tests (a in b)

browncoats = ["Zoe", "Malcolm"]

crew = ["Hoban", "Kaylee"]

passengers = ["River", "Shepherd", "Simon", "Inara"]

cargo = ["Contrabrand"]

print (len(passengers))

print (len(cargo))

print('hello')

firefly = browncoats + crew + passengers

firefly

firefly = firefly + cargo\*2

print (firefly)

firefly[0]

firefly[-3]

print (firefly[1:3])

firefly[1:3][0]

if 'River' in firefly:

print (firefly)

## Lists are mutable objects

Unlike strings, you can modify lists.

# Replace a value

firefly[1] = "Kirk"

print (firefly)

#Del deletes elements

print(firefly)

del firefly[0]

print(firefly)

del firefly[2:4]

print(firefly)

del firefly[-2:]

print(firefly)

Lists can be considered objects. **Objects** are like animals: they know how to do stuff (like eat and sleep), they know how to interact with others (like make children), and they have characteristics (like height, weight).

"Knowing how to do stuff" with itself is called a method. In this case "append" is a method which, when invoked, is an action that changes the characteristics (the data vector of the list itself).

Append is used to add new elements to the list

firefly.append("Reaver")

firefly.append(["Reaver", "Spock"]) # inserts a list

print(firefly)

#Extending the list allows new elements from another list to be added

firefly.extend(["Sulu", "McCoy"])

print(firefly)

#Another way to extend a list is using the addition operator

firefly += ["Uhura"] *# this is almost the same as extend but doesn't use a function call so its slightly faster*

print(firefly)

#We can also treat a list a bit like a queue, remove the last element

print(firefly)

whatwaspopped = firefly.pop()

print(whatwaspopped)

#... or remove the first element (or any we like as indicated by the index)

firefly.pop(0)

#> We can also insert elements at arbitrary points