Python Lists

Python Collection Data Types

- LIST
- TUPLE
- SET
- DICTIONARY

Python Collection Data Type: List

- A LIST contains multiple values in a ordered sequence and can be changed.
- Enclosed in [ ].
- Used to store a collection of data.
- **TIP:** Keep values in a list of the same data type.
- However, values in lists can be different types, **NOT RECOMMENDED**.

Examples for a LIST of values

- Scores in all courses taken
  scores = [76, 88, 95]
- Shopping List
  grocery = [“bread”, “carrots”, “cheese”]
- Athletic team roster
  roster = [“John”, “Lee”, “Jackie”]
- Guest list for a wedding
  guests = [“Mike”, “Sandy”, “Kelly”]
- Names in a phone book
  names = [“Jane”, “Chris”, “Al”, “Phil”]

List Syntax

empty_list = [ ]

list_name = [item1, item2, … separated by commas]

guests = [“Michael”, “Sandy”, “Kelly”, “Joe”]

You can create an empty list and add values to it.

guests = [ ]

scores = [ ]

animals = [ ]

List Syntax

guests = [‘Michael’, ‘Sandy’, ‘Kelly’, ‘Joe’]

print(guests[0])

print(guests[1])

print(guests[2])

print(guests[3])

#values in list begins with #index 0.

#index must be integers

#Error if index number exceeds list

guests	guests[0]	guests[1]	guests[2]	guests[3]
	Michael	Sandy	Kelly	Joe

Accessing an Item in a List by specifying it's position in the list (called the INDEX)

```
animals = ['cat', 'bat', 'rat']
```

```
print(animals)
print(animals[0])
print(animals[1])
```

What is the output?

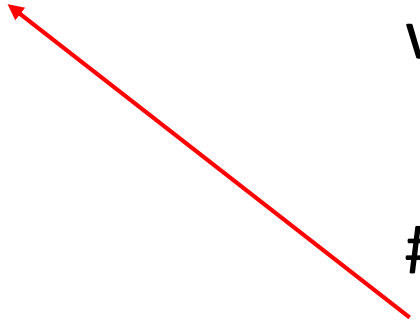
Accessing an Item in a List by their INDEX

EXAMPLE:

```
scores = [78, 85, 62, 49, 98]          #scores is the list

print(scores)                          #[78, 85, 62, 49, 98]
print(scores[2])                       #62
print(scores[1] + scores[2])           #147
```

You can even access a list backwards (Negative Indexes)

```
animals = [‘cat’, ‘bat’, ‘rat’]

print(animals[-1])

print(animals[-2])
```



```
#REMINDER: values in list begins with index 0.

# OUTPUT: rat

#-1 refers to last index in list

# OUTPUT: bat

#-2 refers to 2nd to last index in list
```

Updating Values in a List

```
animals = [‘cat’, ‘bat’, ‘rat’, ‘bird’]

animals[1] = ‘ant’
print(animals)
```

```
#you can also use an index of a list
#to update the value at that index
#using an assignment = statement
```

OUTPUT:

[‘cat’, ‘ant’, ‘rat’, ‘bird’]

List ERRORS

```
animals = [‘cat’, ‘bat’, ‘rat’]
```

#**REMINDER:** values in list begins with index 0.

```
print(animals[1.0])
```

#ERROR: index must be INTEGER

```
print(animals[9])
```

#ERROR: index cannot exceed range of list