Introduction to Python

CMP 201 (2019/2020)

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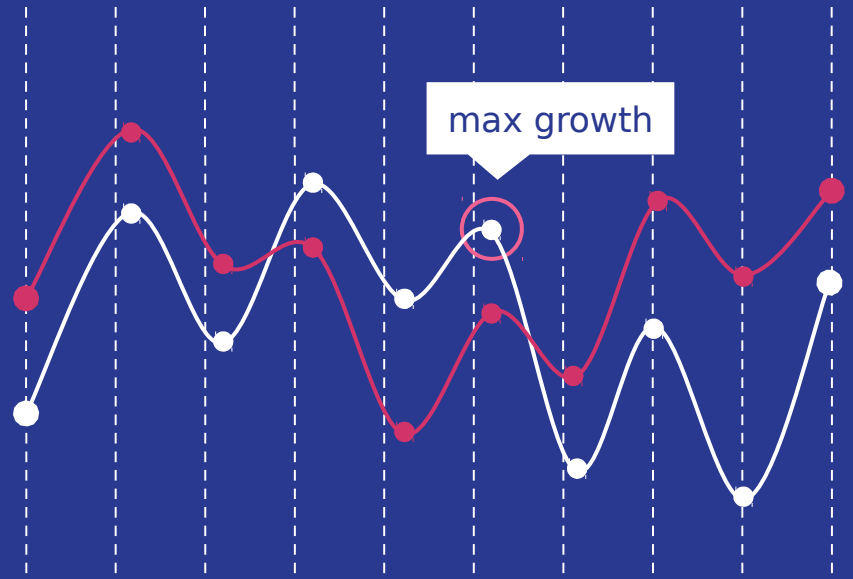


LESSON 7:
Be a Ninja Coder!

Objectives

The aim of this lesson is to introduce the **python programming language**.

Content(Week 1)

- Lists ✓
- Tuples ✓
- Sets ✓
- Dictionary ✓

Python Dictionary:

A dictionary is a collection which is unordered, changeable and indexed. In Python dictionaries are written with curly brackets, and they have keys and values.

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964
}
print(thisdict)
```

Accessing a dictionary:

You can access the items of a dictionary by referring to its key name, inside square brackets

```
#Get the value of the "model" key
x = thisdict["model"]
y = thisdict.get(“year")
print(x)
print(y)
```

Change value:

You can change the value of a specific item by referring to its key name

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964
}
thisdict["year"] = 2019
```

Adding items:

Adding an item to the dictionary is done by using a new index key and assigning a value to it

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964
}
thisdict["color"] = "red"
print(thisdict)
```

Removing items:

There are several methods to remove items from a dictionary

#The pop() method removes the item with the specified key name:

```
thisdict.pop("model")
```

#The popitem() method removes the last inserted item:

```
thisdict.popitem()
```

Removing items:

#The clear() keyword empties the dictionary:

```
thisdict.clear()
```

#The del keyword removes the item with the specified key name:

```
del thisdict["model“]
```

#The del keyword can also delete the dictionary completely

```
del thisdict
```

Loop through a dictionary:

You can loop through a dictionary by using a for loop. When looping through a dictionary, the return value are the keys of the dictionary, but there are methods to return the values as well.

```
#Print all key names in the dictionary, one by one
for x in thisdict:
  print(x)
```

Loop through a dictionary:

```
#Print all values in the dictionary, one by one
for x in thisdict:
  print(thisdict[x])
```

Loop through a dictionary:

You can also use the values() function to return values of a dictionary

```
#Print all values in the dictionary, one by one
for x in thisdict.values():
  print(x)
```

Loop through a dictionary:

Loop through both keys and values, by using the items() function

```
#Print all keys and values in the dictionary, one by one
for x,y in thisdict.items():
  print(x,y)
```

Dictionary length:

To determine how many items a dictionary has, use the len() method:

```
x=len(thisdict)
print(x)
```

Dictionary Methods:

Python has a set of built-in methods that you can use on dictionary.

Method	Description
clear()	Removes all the elements from the dictionary
copy()	Returns a copy of the dictionary
fromkeys()	Returns a dictionary with the specified keys and values
get()	Returns the value of the specified key
items()	Returns a list containing the a tuple for each key value pair
keys()	Returns a list containing the dictionary's keys
pop()	Removes the element with the specified key
popitem()	Removes the last inserted key-value pair
setdefault()	Returns the value of the specified key. If the key does not exist: insert the key, with the specified value
update()	Updates the dictionary with the specified key-value pairs
values()	Returns a list of all the values in the dictionary

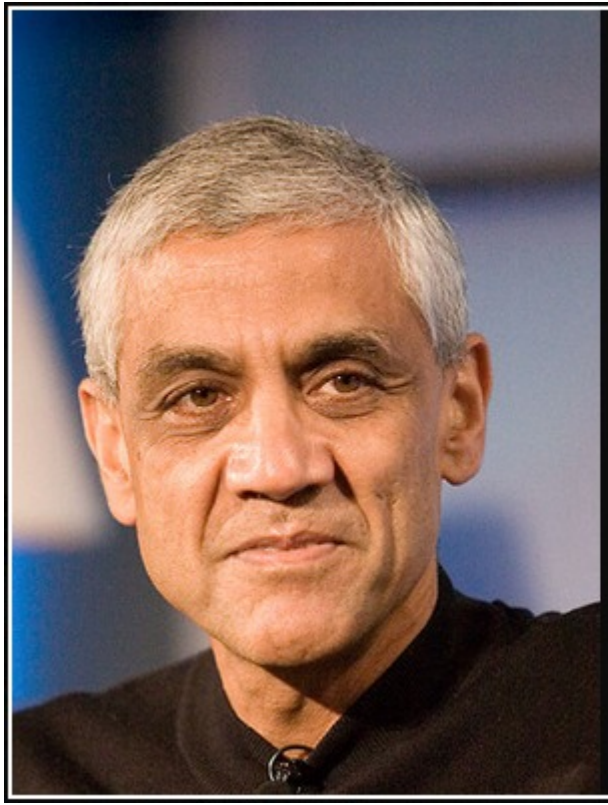
Task

To do in class

EXERCISE

(Uniqueness in code earns extra credit).

1. **Each question should be kept in a single .py file**
2. **then all zipped in a file**
3. **with your matric No. as name of the file**



Doctors can be replaced by software – 80% of them can. I'd much rather have a good machine learning system diagnose my disease than the median or average doctor.

— Vinod Khosla —

AZ QUOTES