

Data Structures & Programmatic Thinking

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2020-04-20

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Plan for this session

- Learn about dictionaries

Dictionaries

Dictionaries are another kind of collection in Python. Dictionaries map keys to values.

Creating dictionaries

We use curly brackets (`{}`) to declare dictionaries.

```
translations = {  
    "es": "Hola!",  
    "it": "Ciao!",  
    "en": "Hello!"  
}
```

colon for separating key and value

comma for separating entries

Creating dictionaries

We can also create empty dictionaries

```
translations = {}
```

Creating dictionaries

Adding elements

We add elements to dictionaries given their specific index:

```
translations = {}  
translations["en"] = "Hello"  
translations["it"] = "Ciao"  
translations["es"] = "Hola"
```


Adding elements

Updating elements

we always can change a value in the dictionary by re-assigning the key

```
translations = {}  
translations["en"] = "Hello"  
translations["en"] = "WHATUP!"
```

Updating elements

Deleting elements

We can delete an element of the dictionary using the **pop** method

```
translations = {}  
translations["en"] = "Hello"  
translations.pop("en")
```

Deleting elements

Getting all keys or values

We can always get all **keys** or **values** from the dict as a list using either the **.keys()** or **.values()** method

```
users = {  
    1: "Pepe",  
    22: "Peter",  
    44143: "Johnny",  
    2: "Chuck"  
}
```

```
users.keys()
```

```
users.values()
```

Getting all keys or values

for loops

In the same way we used **for** loops to iterate over elements of a list, we can use them to iterate over elements of a dictionary.

The difference is that, with dictionaries, the **iteration variable** will represent the **current key**, not the **current value**.

for loops

```
band = {  
    "johnny": "plays drums",  
    "joey": "plays guitar",  
    "markee": "sings",  
    "dee-dee": "plays bass-guitar"  
}  
  
for member in band:  
    print(member + " " + band[member] + " in The Ramones")
```

for loops

Exercises

1. Create a function that receives a text and returns the frequency of each word in the text (as a dictionary).
2. Create a function that uses the previously generated dictionary and prints a bars diagram of the frequencies. For example, the following:

```
dictionary = {"a": 4, "hello": 1, "world": 3, "another": 2}  
diagram(dictionary)
```

should print:

```
a          | ****  
hello      | *  
world      | ***  
another    | **
```