Data Structures & Programmatic Thinking

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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 = {}
```

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!"
```

Deleting elements

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

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

Deleting elements

Getting all keys or values

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

```python
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 t
   each word in the text (as a dictionary).

2. Create a function that uses the previously generated
   prints a bars diagram of the frequencies. For examp
   following:

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

   should print:

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