CSCI 127: Joy and Beauty of Data

Lecture 11: Dictionaries

Reese Pearsall

Summer 2021

https://reesep.github.io/classes/summer2021/127/main.html

Announcements

Lab 6 due **TONIGHT** @ 11:59 PM

Program 3 due **Monday 6/7** @ 11:59 PM

Midterm Exam grade are posted on D2L

- In general, people did very well
- Average score was in the 90s
- If you want the details of where you lost points, email me

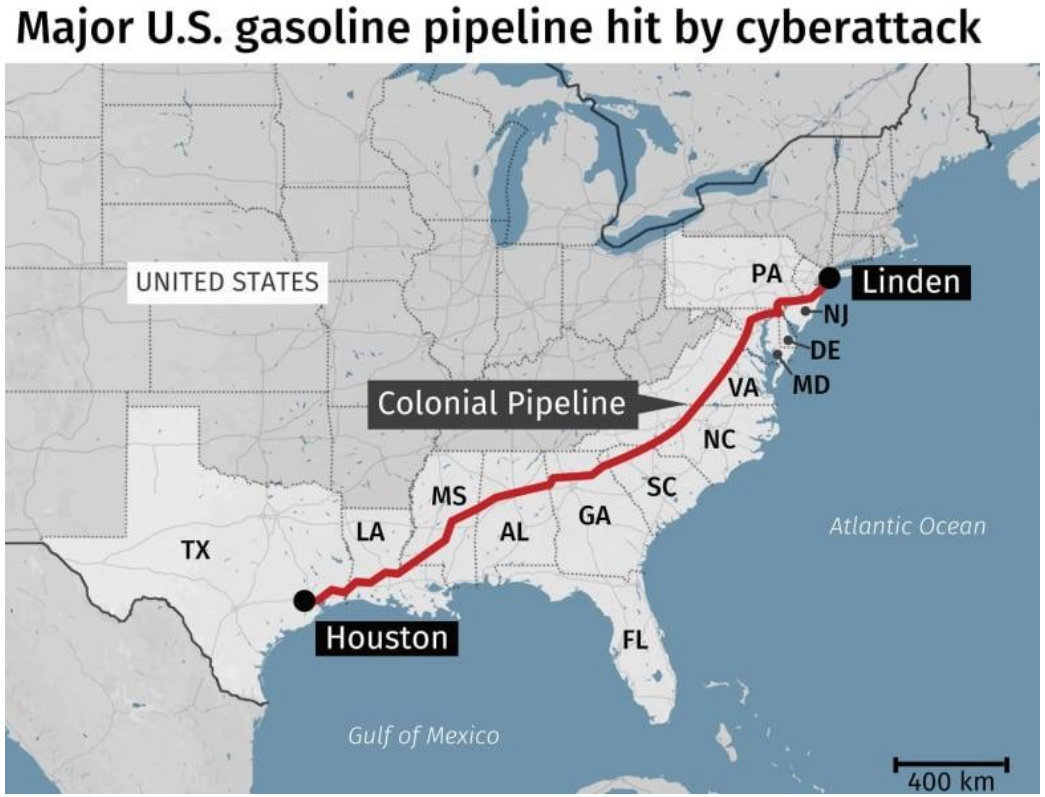
Computer Science in the News

BEATING THE MEAT INDUSTRY

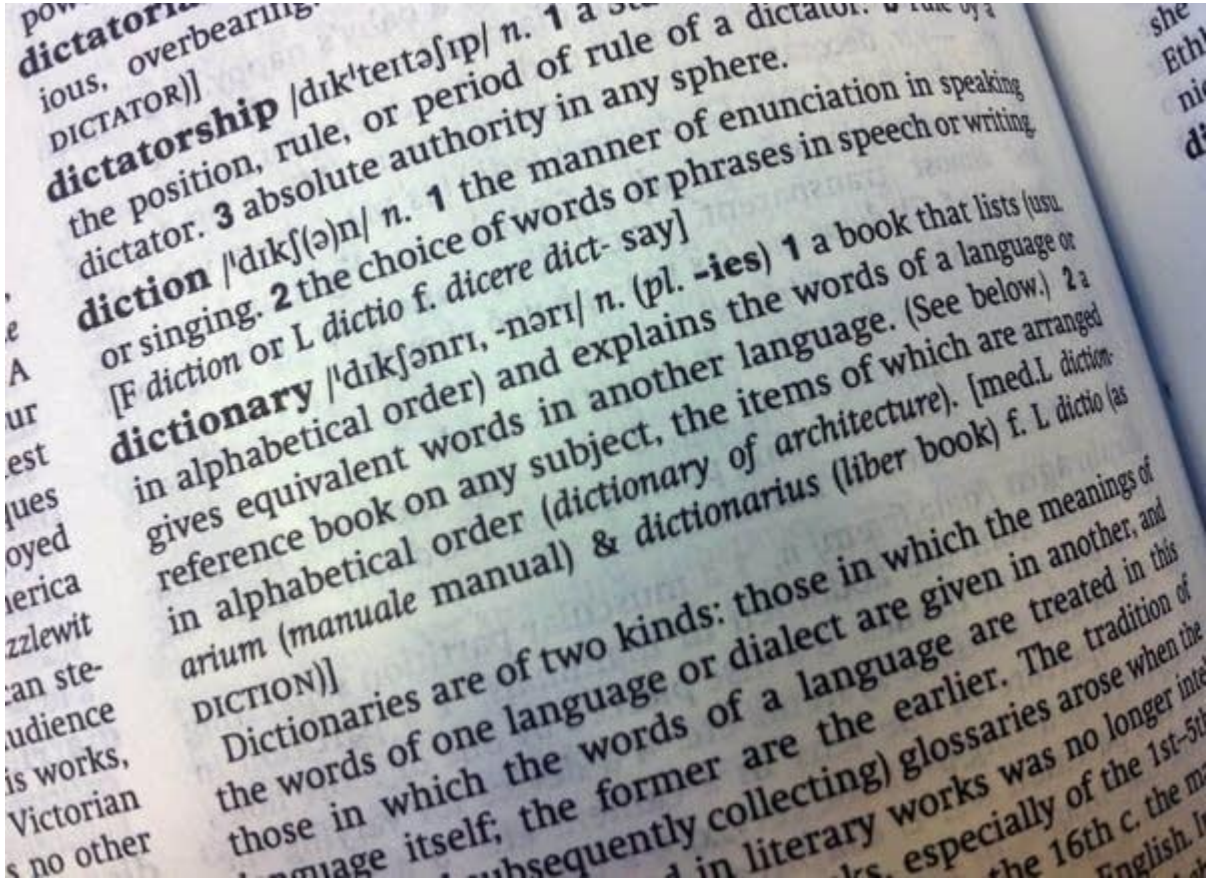
HACKERS SHUT DOWN ALMOST A QUARTER OF THE US BEEF SUPPLY

THE FBI IS INVESTIGATING.

Computer Science in the News



Dictionaries

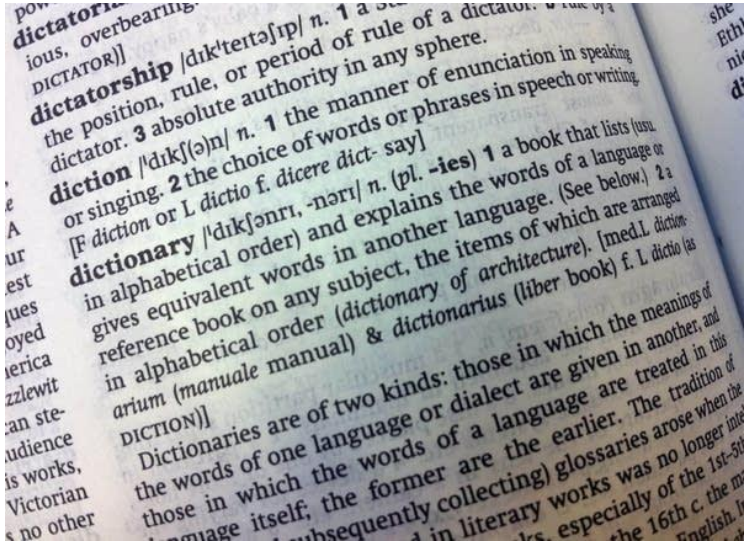


Dictionaries

A new data structure that is an unordered collection of key-value pairs

‘`dict`’ data type

Denoted by curly brackets {}



Lists vs. Dictionary

Lists

my_list = [“Bob”, “Dan”, “Sarah”]

Ordered based on **index**

Lists vs. Dictionary

Lists

my_list = [“Bob”, “Dan”, “Sarah”]

0 1 2

Ordered based on **index**

Lists vs. Dictionary

Lists

my_list = [“Bob”, “Dan”, “Sarah”]

0 1 2

Ordered based on **index**

“Bob” → `print(my_list[0])`

“Dan” → `print(my_list[1])`

Lists vs. Dictionary

Lists

my_list = [“Bob”, “Dan”, “Sarah”]

0 1 2

Ordered based on **index**

“Bob” → `print(my_list[0])`

“Dan” → `print(my_list[1])`

Dictionary

d = { “Tom Brady”: 43, “Drew Brees”: 42, “Aaron Rodgers”: 37 }

Lists vs. Dictionary

Lists

my_list = [“Bob”, “Dan”, “Sarah”]

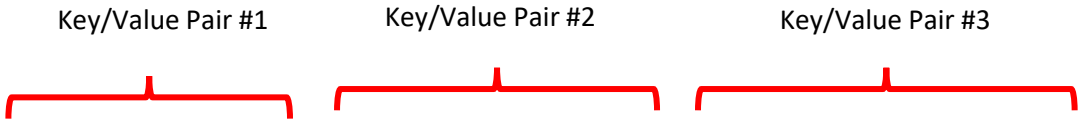
0 1 2

Ordered based on **index**

“Bob” → `print(my_list[0])`

“Dan” → `print(my_list[1])`

Dictionary



d = { “Tom Brady”: 43, “Drew Brees”: 42, “Aaron Rodgers”: 37 }

An unordered collected of **key-value pairs**

Lists vs. Dictionary

Lists

my_list = [“Bob”, “Dan”, “Sarah”]

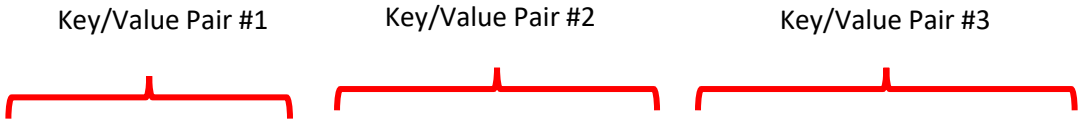
0 1 2

Ordered based on **index**

“Bob” → `print(my_list[0])`

“Dan” → `print(my_list[1])`

Dictionary



d = { “Tom Brady”: 43, “Drew Brees”: 42, “Aaron Rodgers”: 37 }

An unordered collected of **key-value pairs**

To retrieve a certain value, we need to give the dictionary the key that associated with it

Lists vs. Dictionary

Lists

my_list = [“Bob”, “Dan”, “Sarah”]

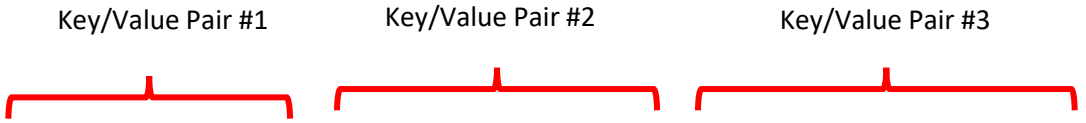
0 1 2

Ordered based on **index**

“Bob” → `print(my_list[0])`

“Dan” → `print(my_list[1])`

Dictionary



d = { “Tom Brady”: 43, “Drew Brees”: 42, “Aaron Rodgers”: 37 }

An unordered collected of **key-value pairs**

To retrieve a certain value, we need to give the dictionary the key that associated with it

42 → `print(d[“Drew Brees”])`

37 → `print(d[“Aaron Rodgers”])`

Adding a key-value pair:

```
homeruns = {}

homeruns["Babe Ruth"] = 713
```

Deleting an item

```
del homeruns["Babe Ruth"]
```

Updating an item

```
homeruns["Babe Ruth"] = 714
```

Determining Number of Items in dictionary

```
print(len(homeruns))
```

To retrieve all keys in dictionary named inventory

```
inventory.keys()

print(list(inventory.keys())
```

To retrieve all keys one at a time (for loop)

```
for each_key in inventory:
     print(each_key)
```

To check in a key named “kiwi” exists

```
If “kiwi” in inventory:
```

To retrieve all values in dictionary named inventory

```
inventory.values()

print(list(inventory.values()))
```

To retrieve all values one at a time (for loop)

```
for each_val in inventory.values():
    print(each_val)
```

To retrieve a specific value, producing a runtime error if the key is not present:

```
inventory[key-name]
```

NO runtime error if the key is not present:

```
inventory.get(key-name)

inventory.get(key-name, value-to-return-if-key-not-present)
```

To retrieve all key-value pairs in dictionary named inventory

```
inventory.items()

print(list(inventory.items()))
```

To retrieve all items one at a time (for loop)

```
for key,val in inventory.items():
    print(key,val)
```

Dictionary Examples

Write a function named `translator` that takes a parameter containing a sentence in English (no punctuation and all words in lowercase) and returns that sentence translated to Pirate.
For example, the sentence “hello there students” should be translated to “avast there swabbies”.

Write a program that will count the number of times each word occurs in some text file

More Examples

Using video_games.csv, write a python function that uses a dictionary to print out the number of video games that received a review score of 90-100, 80 – 89, 70 – 79, 60- 69, etc.

Then, modify the code so that it prints out the number of games that are rated E, T, M for each of the categories you found above

For examples, in the games rated between 90-100: 10 were rated E, 7 rated M, etc