

21: file I/O and dictionaries review

Tuesday, February 22, 2022 10:44 PM

#Dictionaries cheat sheet

Tuesday, February 22, 2022 11:28 PM

Create :

$$d = \{ \text{key1: val1, key2: val2, ...} \}$$

↑
must be unique

Immutable (No lists, no variables)

Yes tuples
Yes strings
Yes ints

Show

1. err
2. froze

Access Values:

| | | |
|----------------------------|-------|---------------|
| $d[\text{key}]$ => | value | key not found |
| $d.\text{get}(\text{key})$ | value | error |

| | | |
|--|-------|------|
| $d.\text{get}(\text{key}, \text{alt})$ | value | None |
|--|-------|------|

| | | |
|--|-------|--------------------------------------|
| $d.\text{get}(\text{key}, \text{alt})$ | value | alt ↑ nicer to have a default! |
|--|-------|--------------------------------------|

Assign:

$$d[\text{key}] = \text{new_value}$$

Membership:

Key in d

Removal:

$$\text{del } d[\text{key}]$$

Returns

Iterating:

for key in grades

... [] ...

> Same can get
[] ...

for key in grades

for key in grades.keys()

for val in grades.values()

for key, val in grades.items() both

> same
can get
val out if you
have key.

val (but no key)

File writing pt1

Sunday, February 27, 2022 11:29 PM

let's start with writing to a file

① open
output_file = open(file name, "w")
 ↑
 create in this dir
 if not existing
 w for 'write'
 w for 'wipe out': anything
 already in that file is gone
② write
 output_file.write("a string \n")
 ↑
 Newlines not automatic

③ close
 output_file.close()

3 parts

```
1 import random
2
3 #create the file, csv means comma separated values
4 output_file = open("creatures.csv", "w")
5
6 #create 5 random creatures and save them
7 for i in range(5):
8     #wings, teeth, tails
9     creature = [random.randint(1,4), random.randint(1,30), random.randint(1,3)]
10    #wouldn't it be better as a dictionary so we can remember what is what? more later...
11
12    creature_csv = ",".join(creature)
13    #new thing! take a list, make a string, with commas in between
14
15    output_file.write(creature_csv + "\n")
```

```
All ×
File "C:\Users\hardinc3.CSCI\OneDrive - Western Washington University\Documents\pythonScrat
chpad.py", line 12, in <module>
    creature_csv = ",".join(creature)
TypeError: sequence item 0: expected str instance, int found
```

Join only works on strings! we know how to fix that!

```
9 creature = [str(random.randint(1,4)), str(random.randint(1,30)), str(random.randint(1,3))]
```

(open file: oops empty! What did we forget?)

```
17 output_file.close()
```

So remember the computer uses RAM for fast temporary memory
and hard disk drives for slow, permanent memory

Python (and many computer things) wait to save it to the HDD
because it's so slow

(open creatures.csv in notepad)

Try yourself!

Write your favorite song lyrics to a
file, one line at a time

File reading pt 2

Sunday, February 27, 2022 11:51 PM

```
input_file = open("creatures.csv", "r")
for line in input_file:
    print(line)
```

File in this directory [] Read

pythonScratchpad.py *

```
1 input_file = open("creatures.csv", "r")
2
3 for line in input_file:
4     print(line)
```

Shell *

```
3,4,55
5,4,22
4,11,3
```

```
1 input_file = open("creatures.csv", "r")
2
3 #a list to hold all the creatures
4 all_creatures = []
5
6 for line in input_file:
7
8     line = line.strip('\n') #remove the newline
9     line_list = line.split(",") #make it a list
10
11     #but as a list, which was wings and which was teeth? let's make it a dict
12     a_creature = {"wings":line_list[0], "teeth":line_list[1], "tails":line_list[2]}
13
14     #and add that dictionary to the end of the list of creatures
15     all_creatures.append(a_creature)
```

Now we have a beautiful & useful list of dictionaries
where each creature is a dictionary
and we put each creature dictionary in a list for easy
for-loops

Why do we like this? It's so easy to do
cool things with the data.
a simple example:

```
total_wings = 0
for creature in all_creatures:
    total_wings += creature["wings"]
```

```
total_wings = 0
for creature in all_creatures:
    total_wings += int(creature["wings"])
```

Try it yourself! Read in and print the lyrics you saved