2019

Python dictionary

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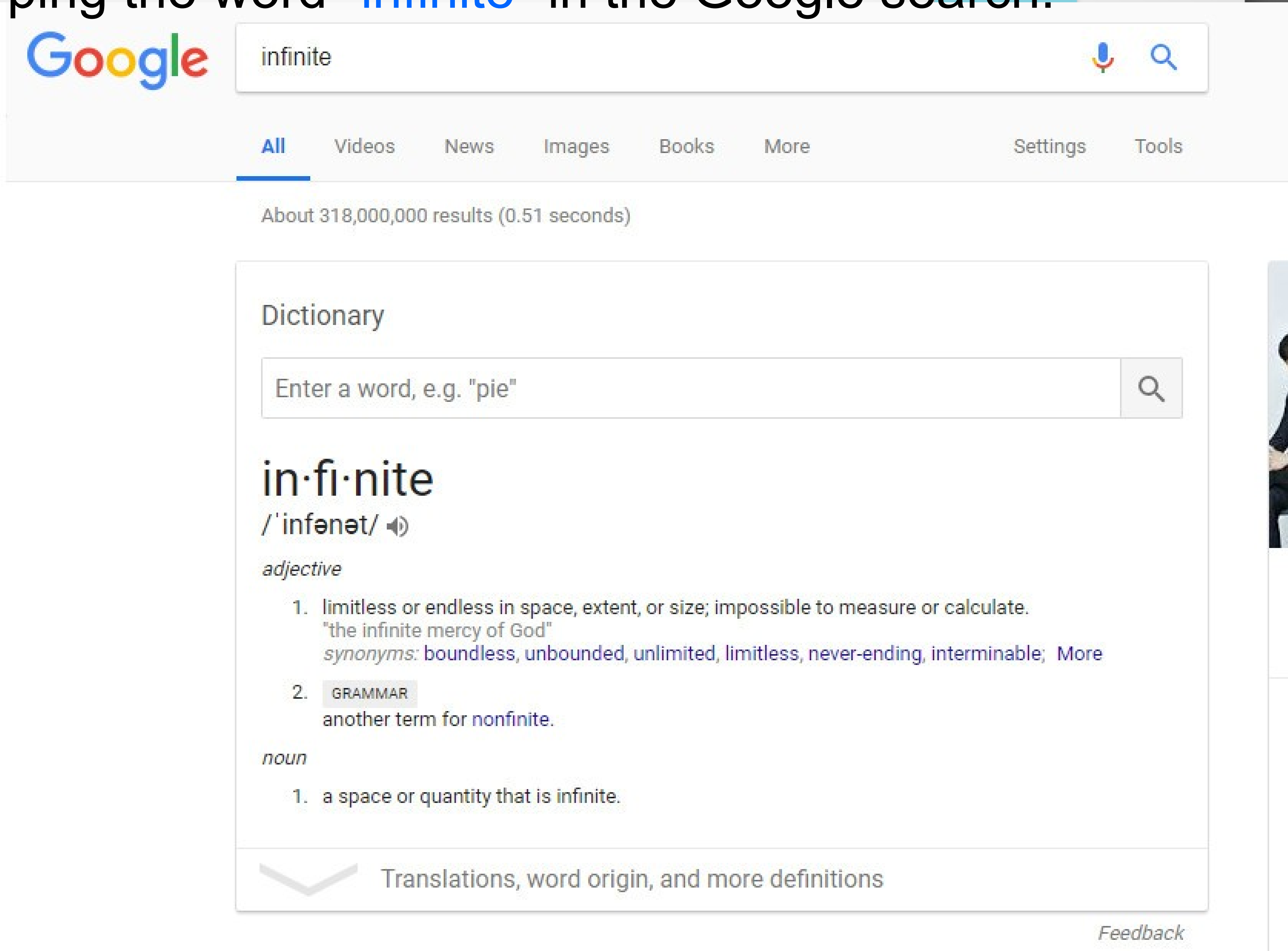
Dictionary basics

Consider typing the word “infinite” in the Google search:



infinite

About 318,000,000 results (0.51 seconds)

Dictionary

Enter a word, e.g. "pie"

in·fi·nite

/ˈinfənət/

adjective

1. limitless or endless in space, extent, or size; impossible to measure or calculate.
"the infinite mercy of God"
synonyms: boundless, unbounded, unlimited, limitless, never-ending, interminable; More
2. GRAMMAR
another term for nonfinite.

noun

1. a space or quantity that is infinite.

Translations, word origin, and more definitions

Feedback

Dictionary basics

A *dictionary* is a Python *container* used to describe associative relationships.

A *dictionary* is represented by the **`dict`** object type.

A *dictionary* *associates* (or "*maps*") *keys* with *values*.

A *key* is a term that can be located in a *dictionary*, such as the word "infinite" in the Google search.

A *value* describes some data associated with a *key*, such as a definition.

A *key* can be any immutable type, such as a number, string, or tuple; a *value* can be any type.

Dictionary basics

A **dict** object is created using curly braces { } to surround the key:value pairs that comprise the dictionary contents.

Example:

```
myDict = {
  “street address”: ”2155 University Avenue”,
  “city”: “Bronx”,
  “state” : ”New York”,
  “zip code” : 10453,
  “phone” : “(718) 289-5100”,
  “admissions” : “(718) 289-5895”}
```

Dictionary basics

Dictionaries are typically used in place of lists when an associative relationship exists.

Example: If a program contains a collection of anonymous student test scores, those scores should be stored in a list. However, if each score is associated with a student name, a dictionary could be used to associate student names to their score.

Dictionary basics: in-class work

I have 5 students: Cute Princess, Fairy Queen, Evil Don, Fussy Cat, and Lazy Daisy.

I also have the record of 4 of their test scores.

Let's create a dictionary `students`, where student's IDs will serve as *`keys`*, and the *`value`* will be a *`list`* with five elements/members: student's name, and 4 test scores.

Name	ID	Test 1	Test 2	Test 3	Test 4
Cute Princess	846563	89	67	98	100
Fairy Queen	736542	76	56	83	99
Evil Don	287563	52	81	79	27
Fussy Cat	294512	27	38	100	75
Lazy Daisy	975321	88	99	66	77

Download and save file Dict1.py from our web-site

Dictionary basics: in-class work

`students` dictionary we got:

keys
846563
736542
287563
294512
975321

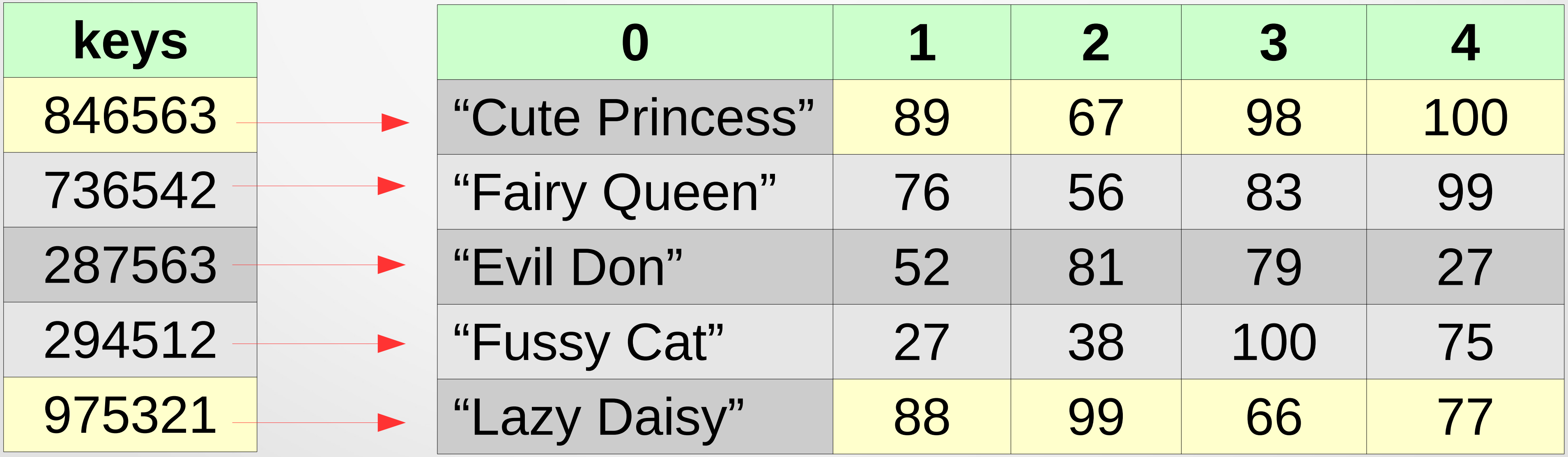
0	1	2	3	4
“Cute Princess”	89	67	98	100
“Fairy Queen”	76	56	83	99
“Evil Don”	52	81	79	27
“Fussy Cat”	27	38	100	75
“Lazy Daisy”	88	99	66	77

Dictionary basics: in-class work

Now, let's print some information: put the following lines into *Dict1.py:*

```
print(students[975321])
print(students[846563])
```

See what happens!



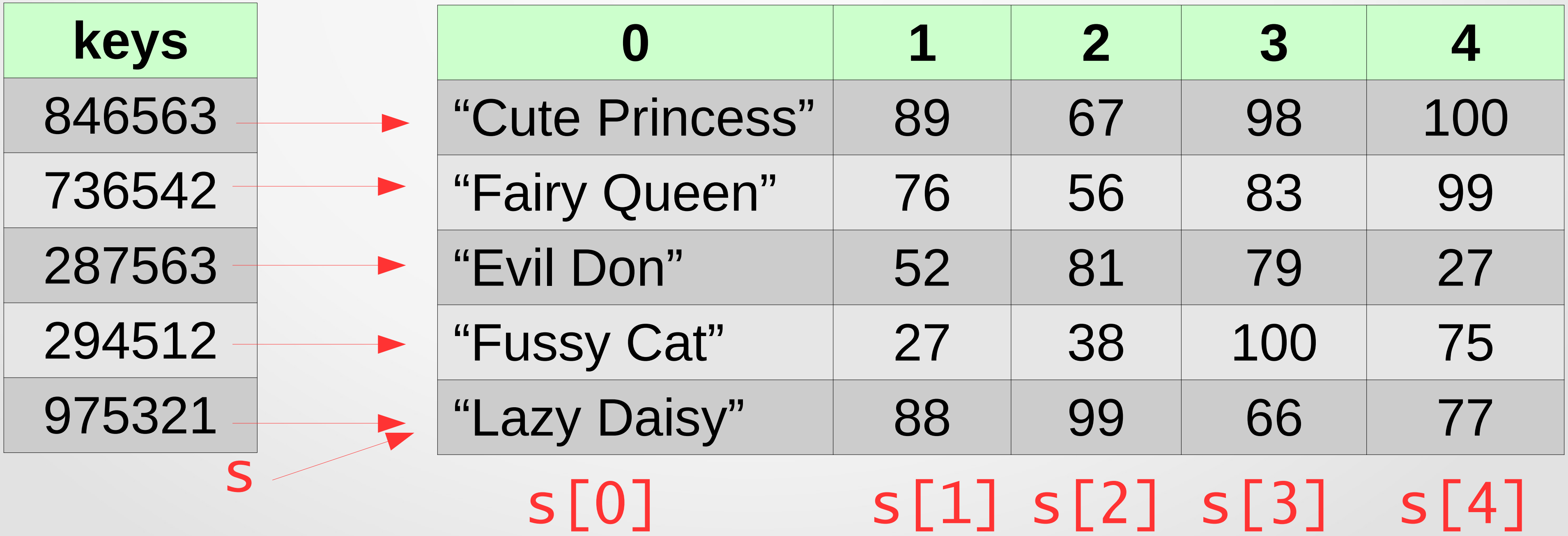
keys
846563
736542
287563
294512
975321

0	1	2	3	4
"Cute Princess"	89	67	98	100
"Fairy Queen"	76	56	83	99
"Evil Don"	52	81	79	27
"Fussy Cat"	27	38	100	75
"Lazy Daisy"	88	99	66	77

Dictionary basics: in-class work

Let’s now calculate Lazy Daisy’s average test score: add the following lines of code into *Dict1.py*

```
s = students[975321]
averageTestScore = (s[1]+s[2]+s[3]+s[4])/4
print(“Lazy Daisy average test score is”,
   averageTestScore)
```



keys
846563
736542
287563
294512
975321

0	1	2	3	4
“Cute Princess”	89	67	98	100
“Fairy Queen”	76	56	83	99
“Evil Don”	52	81	79	27
“Fussy Cat”	27	38	100	75
“Lazy Daisy”	88	99	66	77

Dictionary basics: in-class work

Now, let’s add one more record and display the dictionary:

Name	ID	Test 1	Test 2	Test 3	Test 4
“Glad Lad”	625342	98	76	48	80

By adding the following line in *Dict1.py*:

```
students[625342] = [“Glad Lad”,98,76,48,80]
print(students)
```

keys
846563
736542
287563
294512
975321
625342

0	1	2	3	4
“Cute Princess”	89	67	98	100
“Fairy Queen”	76	56	83	99
“Evil Don”	52	81	79	27
“Fussy Cat”	27	38	100	75
“Lazy Daisy”	88	99	66	77
“Glad Lad”	98	76	48	80

Dictionary basics: in-class work

Now, let’s delete the record about Fussy Cat from the dictionary
By adding the following line in *Dict1.py*:

```
del students[294512]
print(students)
```

keys	0	1	2	3	4
846563	“Cute Princess”	89	67	98	100
736542	“Fairy Queen”	76	56	83	99
287563	“Evil Don”	52	81	79	27
~~294512~~	~~“Fussy Cat”~~	~~27~~	~~38~~	~~100~~	~~75~~
975321	“Lazy Daisy”	88	99	66	77
625342	“Glad Lad”	98	76	48	80

Dictionary basics: in-class work

Review all operations we did in the file *Dict1.py* with dictionary `students` before proceeding to the handout.

In class activity: follow the handout

This OER material was produced as a result of the CS04ALL CUNY OER project.