

Container

A container is a data structure that can store and organize multiple values or objects.

The common types of container : lists, strings, dictionaries, sets, tuples

propriétés :

Capacité à supporter le test d'appartenance, for example, 'to' in 'toto' return True

Capacité à supporter la fonction len() renvoyant la longueur du container.

ordonné/ordered; indexable/subscriptable; itérable/iterable

immuable, identifiant id(), hachable (hasable, hashability) hash()

Tuplet

iterable, ordered, indexable, similar to lists but immutable.

Avoid containing mutable variables, such as list, dictionary

(1,2,3)

tuplet()

create a new tuplet and add element

(different id)

set1 = (1, 2, 3)

set1 = set1 + (2,)

operators

>>> (1, 2) + (3, 4)

(1, 2, 3, 4)

>>> (1, 2) * 4

(1, 2, 1, 2, 1, 2, 1, 2)

iteration

dic1.items() return a list contains tuples, each tuplet contains key/value pair

similar to enumerate()

>>> for bidule in enumerate([75, -75, 0]):

... print(bidule, type(bidule))

Tuplet (cont)

...

(0, 75) <class 'tuple'>

(1, -75) <class 'tuple'>

(2, 0) <class 'tuple'>

Dictionary

```
dic = {key1: value1, key2: value2, ...}
```

iterable by key

```
dic.items() & dic.keys() &
```

```
dic.values()
```

ordered by key or value

sorted (dic) # by key

sorted (dic, reverse=True)

sorted (dic, key=dict.get) #

by value

```
min(dic, key=dict.get) &
```

```
max(dic, key=dict.get)
```

return the key with maximum or minimum value

get value

```
dic[key] & dic.get(key)
```

if the key exist, dic[key]

return error

modify value / add new key-value pair / remove key

```
dic[key] = value
```

```
del dic[key]
```

```
dict.pop(key)
```

```
dict.update({key: value})
```

#duplicate a dictionary (same to lists)

```
dic2 = dic1.copy()
```

transform list of list to

dictionary

```
dic1 = dict(['a', 1], ['b', 2])
```

list of dictionary & iteration

```
>>> animaux = [ani1, ani2]
```

```
>>> animaux
```

```
[{'n': 'g', 'p': 1, 't': 5},
```

```
{'n': 's', 'p': 7, 't': 1}]
```

```
>>> for ani in animaux:
```

```
... print(ani["n"])
```

```
...
```

Dictionary (cont)

> girafe

singe

```
>>>len(animaux)
```

2 # length of dictionaries in a list

les objets utilisés comme clé doivent être hachables

Si un des sous-éléments a plus de 2 éléments (ou moins), Python renvoie une erreur

Set

iterable, mutable, unordered, indexable, a list without duplicated element

{1,2,3}

transforme a list to a set

```
set()
```

add the new element at the end

```
set.add()
```

remove element

```
set.discard()
```

```
set.remove()
```

remove() raises an exception if the element is not present, but discard() does not

add multiple elements to a set

```
set.update()
```

This method takes any iterable object as an argument, such as another set, a list, a tuple, or a dictionary. For example, set s = {1, 2, 3}, add {4, 5} and [6, 7] to it by calling s.update({4, 5}, [6, 7]). This will result in s = {1, 2, 3, 4, 5, 6, 7}

operations of sets

```
set(list1) & set(list2) # elements
```

```
set(list1) | set(list2) # union
```

```
set(list1) - set(list2) # difference
```

Range

range(start, stop, step)
step could be negative, for example
range(5, 1, -1)
similar to lists, but immutable/hashable
transform range to list
list(range())

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