

LENGUAJES y HERRAMIENTA PARA CIENCIAS DE DATOS I

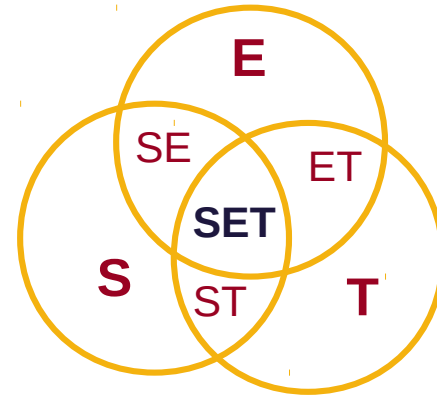
Conjuntos I



UCO
ONLINE

Tipo set

- Colección de elementos
 - ◆ Sin orden
 - ◆ No repetidos
- Son objetos mutables



Crear un conjunto

- Secuencia de elementos entre {}
 - ◆ conjunto = {el1, el2, el3, ..., el4}
 - ◆ conjunto = **set**(iterable)

```
>>> s = {1, 2, 3, 5, 2, 1, 3}
>>> s
{1, 2, 3, 5}
>>> t = {1, "hola", 3.2}
>>> t
{1, 3.2, 'hola'}
>>> r = set ([1,2,3,1,3,4,5])
>>> r
{1, 2, 3, 4, 5}
>>> q = {r}
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
TypeError: unhashable type: 'set'
```

Crear un conjunto

- Casos especiales
 - ◆ Conjunto vacío $\rightarrow s = \text{set}()$
 - ◆ Definición por comprensión

```
>>> conjunto = set()
>>> conjunto
set()
>>> s = {x for x in [1,2,3,4,5,6] if x%2 == 0}
>>> s
{2, 4, 6}
>>> 
```

Acceso a los elementos

- Recorrido con bucle for

```
>>> s = {5, 8, 2, 9, 7}
>>> s[0]
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
TypeError: 'set' object does not support indexing
>>> for i in s:
...     print(i)
...
2
5
7
8
9
```

Modificar un conjunto

- Añadir elementos
 - ◆ `set.add(elemento)`
 - ◆ `set.update(iterable)`

```
>>> s = {2, 5, 7, 8, 1, 9, 6}
>>> s
{1, 2, 5, 6, 7, 8, 9}
>>> s.add(56)
>>> s
{1, 2, 5, 6, 7, 8, 9, 56}
>>> s.update(range(10,29))
>>> s
{1, 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 56}
>>> 
```

Modificar un conjunto

- Eliminar elementos
 - ◆ `set.discard(elemento)`
 - ◆ `set.remove(elemento)`
 - ◆ `set.pop()`
 - ◆ `set.clear()`

```
>>> s = set(range(10))
>>> s
{0, 1, 2, 3, 4, 5, 6, 7, 8, 9}
>>> s.remove(2)
>>> s
{0, 1, 3, 4, 5, 6, 7, 8, 9}
>>> s.discard(3)
>>> s
{0, 1, 4, 5, 6, 7, 8, 9}
>>> s.remove(10)
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
KeyError: 10
>>> s.discard(10)
>>> s.pop()
0
>>> s
{1, 4, 5, 6, 7, 8, 9}
>>> s.clear()
>>> s
set()
>>>
```

Otras operaciones

- N.º elementos de un conjunto
 - ◆ `len(conjunto)`
- Copia de un conjunto
 - ◆ `set.copy()`
- Pertenencia a un conjunto
 - ◆ `in` / `not in`

```
>>> s = {x for x in range(5, 15) if x%3 == 0}
>>> s
{9, 12, 6}
>>> len(s)
3
>>> c = s.copy()
>>> c
{9, 12, 6}
>>> 9 in c
True
>>> 5 in c
False
>>> 
```


Frozen set

- Conjuntos inmutables
 - ◆ Conjunto = `frozenset(iterable)`

```
m luque@hydrogen: ~  
File Edit View Search Terminal Help  
m luque@hydrogen:~$ python3  
Python 3.6.9 (default, Jan 26 2021, 15:33:00)  
[GCC 8.4.0] on linux  
Type "help", "copyright", "credits" or "license" for more information.  
>>> conjunto = frozenset('hola que tal')  
>>> conjunto  
frozenset({'l', 'u', ' ', 'h', 'o', 'e', 't', 'q', 'a'})  
>>> conjunto.add('d')  
Traceback (most recent call last):  
  File "<stdin>", line 1, in <module>  
AttributeError: 'frozenset' object has no attribute 'add'  
>>> 
```

