Sesión 3
Listas, tuplas y diccionarios

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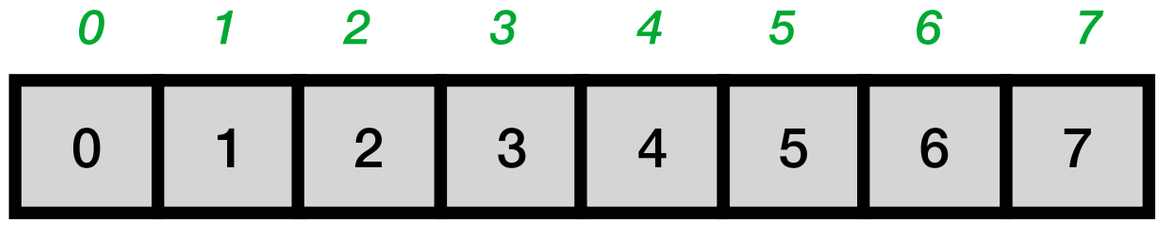
Curso: Introducción a Python
Almería, 2 Abril 2019

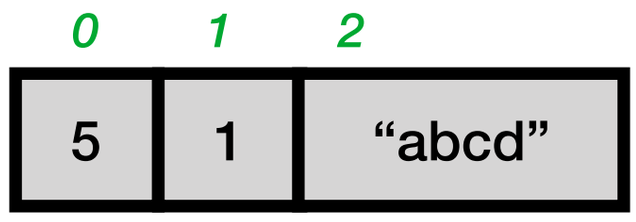
Listas - definición e indexación

CDTIME

```
x = [0,1,2,3,4,5,6,7]
```




```
y = [5, 1, "abcd"]
```




```
z = []
```

```
In [2]: len(x)
Out[2]: 8

In [3]: len(y)
Out[3]: 3

In [4]: len(z)
Out[4]: 0
```

La función len( ) permite obtener la longitud

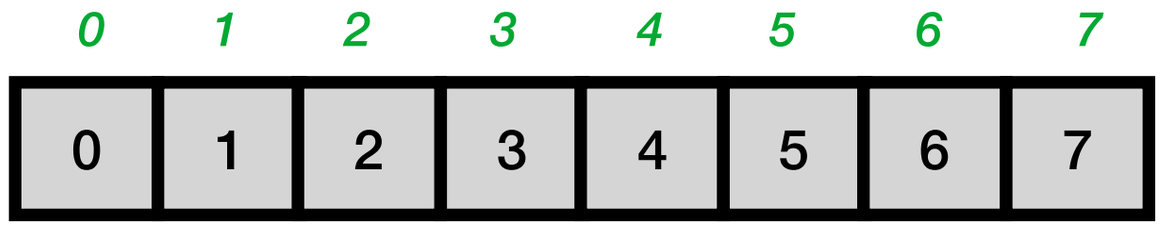
```
In [5]: x[2]
Out[5]: 2

In [6]: y[2]
Out[6]: 'abcd'

In [7]: x[-1]
Out[7]: 7
```

La **indexación** permite obtener el elemento en una determinada posición

Listas - definición e indexación

CDTIME

```
x = [0,1,2,3,4,5,6,7]
```



- Hay 2 maneras de definir un bucle para definir una lista:

```
In [8]: for i in range(0, len(x)):
            print(x[i])
```

```
0
1
2
3
4
5
6
7
```

Recorriendo los índices

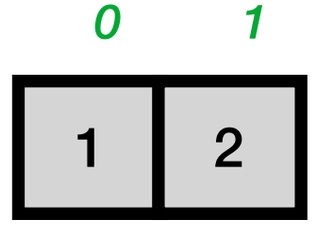
```
In [9]: for elem in x:
            print(elem)
```

```
0
1
2
3
4
5
6
7
```

Recorriendo los elementos

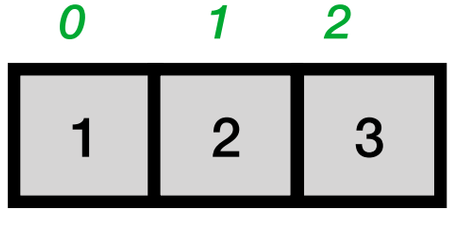
Listas - modificación

```
x = [1,2]
```

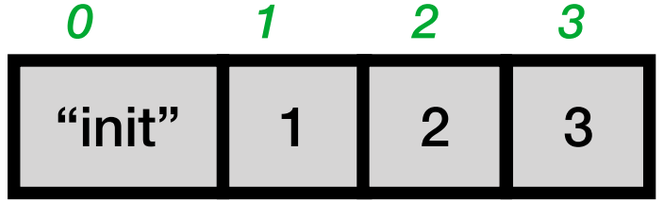



```
x.append(3)
```

elemento

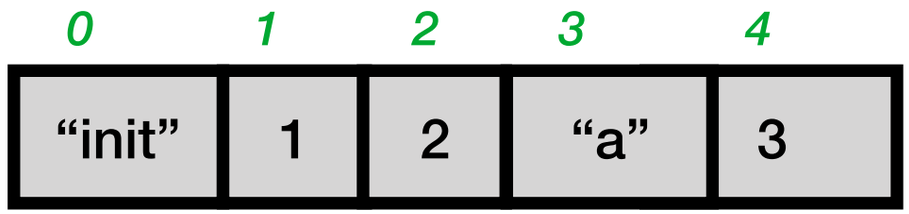



```
x.insert(0,"init")
```




```
x.insert(-1,”a")
```

posición elemento



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- **Ejercicio:** ¿Qué lista se imprime por pantalla?

```
x = []
x.append(9)
x.insert(0,0)
x.insert(0,2)
x.insert(-1,1)

print(x)
```

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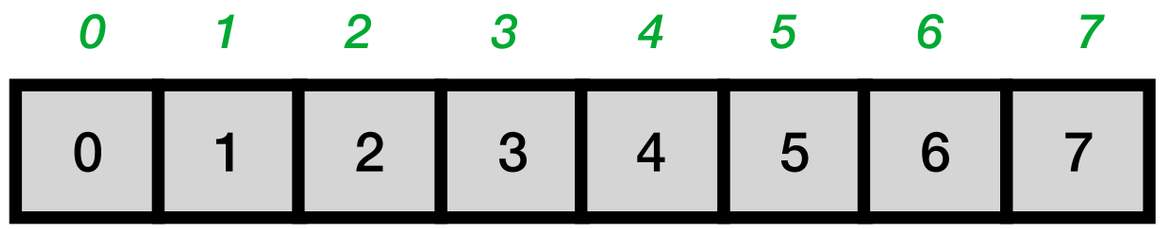
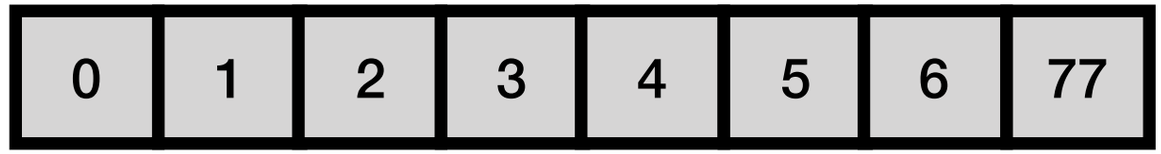
- Se pueden sobrescribir y borrar elementos

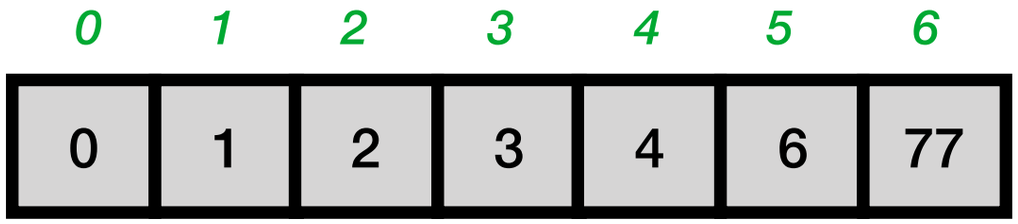
```
x = [0,1,2,3,4,5,6,7,8,9]
```




```
x[7] = 77
```




```
del x[5]
```



- Atención: el borrado de un elemento puede afectar a la posición que ocupan otros elementos de la lista

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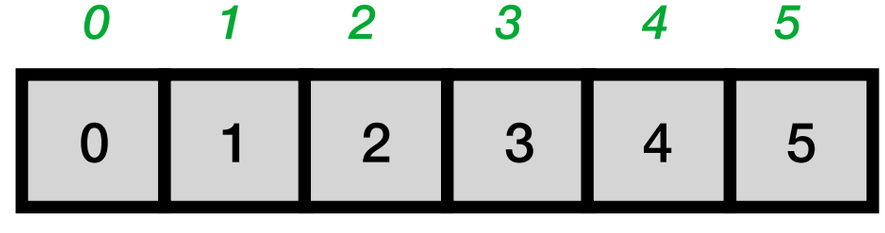
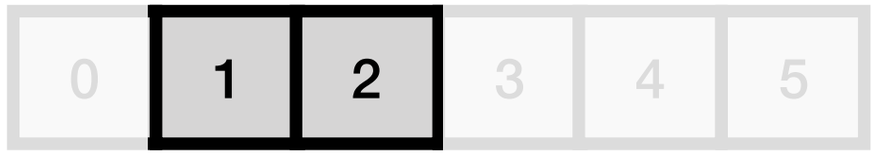
Slicing

```
x = [0,1,2,3,4,5]
```



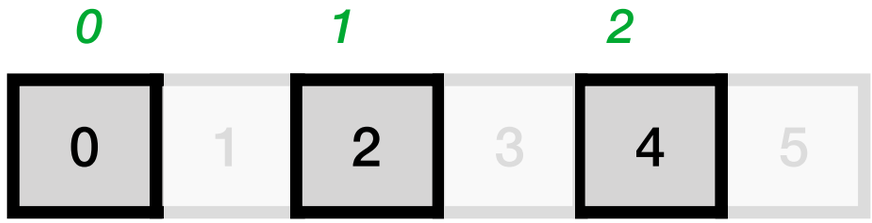

```
x[1:3]
```

inicio (incluído) — final (no incluído)




```
x[0:5:2]
```

inicio (incluído) — final (no incluído) — salto



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- Los operadores `*` y `+` no son operadores aritméticos con listas

```
In [11]: [0,1] + [1,2]
Out[11]: [0, 1, 1, 2]
```

Concatenación

```
In [12]: [0,1,2] * 5
Out[12]: [0, 1, 2, 0, 1, 2, 0, 1, 2]
```

Repetición

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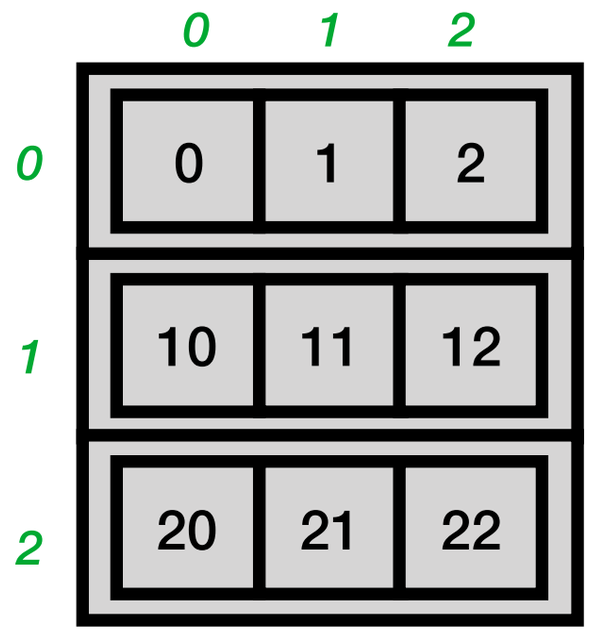
- Una lista puede estar compuesta a por cualquier tipo de elemento: incluso otras listas

```
x = [[0,1,2],[10,12,13],[20,21,22]]
```




```
x[1][0] == 10
```

```
len(x) == 3
```

Listas - comprensión

```
x2 = []
for elem in x:
    x2.append(2*elem)
```



```
x2 = [2*elem for elem in x]
```

expresión de salida

variable

lista de entrada

```
x2 = []
for elem in x:
    if elem>3:
        x2.append(2*elem)
```



```
x2 = [2*elem for elem in x if elem>3]
```

predicado de filtrado (opcional)

CDTIME

- Una tupla es un objeto multidimensional **inmutable**

```
t = (1,2)
```

- Admite la mayoría de operaciones que se pueden realizar sobre una lista

```
len(t)
t[0:2]
```

- No se puede modificar

```
t[0] = 4
```

Error !!!

- Se pueden transformar las listas en tuplas y vice-versa

```
x = list(t)
t = tuple(x)
```

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- Cada elemento en un diccionario está compuesto por una clave (única) y un valor

```
temp_dict = {"ene": 8, "feb":7, "mar":10,
             "abr": 16, "may": 18, "jun": 20,
             "jul": 25, "ago": 27, "sept": 20,
              "oct":17, "nov":14
             }
```

- Indexación

```
temp_dict["feb"]
```

- Modificación

```
temp_dict.update({“dic":11})
```

```
dict_vacio = {}
```