INDEXACIÓN Y SLICING EN PANDAS

Selección de datos de Pandas

Hay varias formas de seleccionar e indexar filas y columnas en Pandas :

- **Seleccionar datos por posición (.iloc)**

- **Seleccionar datos por etiqueta o por una declaración condicional (.loc)**

Para verificar la estructura que devuelve la selección (Series o Dataframe) asignar a una variable la selección y posteriormente aplicar type().

SLICING EN PANDAS CON ILOC

Indexación en Pandas

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)
```

```
>>> import pandas as pd
>>> datos = pd.read_csv('Salaries.csv')
>>> print(datos)
     order      rank discipline  yrs.since.phd  yrs.service   sex  salary
0        1      Prof          B             19           18  Male  139750
1        2      Prof          B             20           16  Male  173200
2        3  AsstProf          B              4            3  Male   79750
3        4      Prof          B             45           39  Male  115000
4        5      Prof          B             40           41  Male  141500
..     ...       ...        ...            ...          ...   ...     ...
392    393      Prof          A             33           30  Male  103106
393    394      Prof          A             31           19  Male  150564
394    395      Prof          A             42           25  Male  101738
395    396      Prof          A             25           15  Male   95329
396    397  AsstProf          A              8            4  Male   81035

[397 rows x 7 columns]
```

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	1	Prof	B	19	18	Male	139750
1	2	Prof	B	20	16	Male	173200
2	3	AsstProf	B	4	3	Male	79750
3	4	Prof	B	45	39	Male	115000
4	5	Prof	B	40	41	Male	141500
5	6	AssocProf	B	6	6	Male	97000
6	7	Prof	B	30	23	Male	175000
7	8	Prof	B	45	45	Male	147765
8	9	Prof	B	21	20	Male	119250
9	10	Prof	B	18	18	Female	129000
10	11	AssocProf	B	12	8	Male	119800
11	12	AsstProf	B	7	2	Male	79800
12	13	AsstProf	B	1	1	Male	77700
13	14	AsstProf	B	2	0	Male	78000
14	15	Prof	B	20	18	Male	104800

El dataset que se utiliza en los ejemplos tiene 397 filas

Seleccionar una fila

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')
print(datos)

datos.iloc[4]
```

En esta selección pandas devuelve una Serie

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	1	Prof	B	19	18	Male	139750
1	2	Prof	B	20	16	Male	173200
2	3	AsstProf	B	4	3	Male	79750
3	4	Prof	B	45	39	Male	115000
4	***5***	***Prof***	***B***	***40***	***41***	***Male***	***141500***
5	6	AssocProf	B	6	6	Male	97000
6	7	Prof	B	30	23	Male	175000
7	8	Prof	B	45	45	Male	147765
8	9	Prof	B	21	20	Male	119250
9	10	Prof	B	18	18	Female	129000
10	11	AssocProf	B	12	8	Male	119800
11	12	AsstProf	B	7	2	Male	79800
12	13	AsstProf	B	1	1	Male	77700
13	14	AsstProf	B	2	0	Male	78000
14	15	Prof	B	20	18	Male	104800

Seleccionar última fila

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')
print(datos)

datos.iloc[-1]

# podemos ingresar una lista, con un solo índice entero,
# cuando usamos iloc. Esto indexará una fila, pero la salida
# será diferente en comparación con el ejemplo anterior:
datos.iloc[[-1]]
```

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	383	AssocProf	A	8	5	Male	86895
1	384	Prof	A	44	44	Male	105000
2	385	Prof	A	27	21	Male	125192
3	386	Prof	A	15	9	Male	114330
4	387	Prof	A	29	27	Male	139219
5	388	Prof	A	29	15	Male	109305
6	389	Prof	A	38	36	Male	119450
7	390	Prof	A	33	18	Male	186023
8	391	Prof	A	40	19	Male	166605
9	392	Prof	A	30	19	Male	151292
10	393	Prof	A	33	30	Male	103106
11	394	Prof	A	31	19	Male	150564
12	395	Prof	A	42	25	Male	101738
13	396	Prof	A	25	15	Male	95329
14	*397*	*AsstProf*	*A*	*8*	*4*	*Male*	*81035*

Seleccionar una celda específica

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)

datos.iloc[9,5]
```

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	1	Prof	B	19	18	Male	139750
1	2	Prof	B	20	16	Male	173200
2	3	AsstProf	B	4	3	Male	79750
3	4	Prof	B	45	39	Male	115000
4	5	Prof	B	40	41	Male	141500
5	6	AssocProf	B	6	6	Male	97000
6	7	Prof	B	30	23	Male	175000
7	8	Prof	B	45	45	Male	147765
8	9	Prof	B	21	20	Male	119250
9	10	Prof	B	18	18	Female	129000
10	11	AssocProf	B	12	8	Male	119800
11	12	AsstProf	B	7	2	Male	79800
12	13	AsstProf	B	1	1	Male	77700
13	14	AsstProf	B	2	0	Male	78000
14	15	Prof	B	20	18	Male	104800

Seleccionar múltiples filas

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)

datos.iloc[[7, 2, 0]]
```

En esta selección pandas devuelve un Dataframe

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	***1***	***Prof***	***B***	***19***	***18***	***Male***	***139750***
1	2	Prof	B	20	16	Male	173200
2	***3***	***AsstProf***	***B***	***4***	***3***	***Male***	***79750***
3	4	Prof	B	45	39	Male	115000
4	5	Prof	B	40	41	Male	141500
5	6	AssocProf	B	6	6	Male	97000
6	7	Prof	B	30	23	Male	175000
7	***8***	***Prof***	***B***	***45***	***45***	***Male***	***147765***
8	9	Prof	B	21	20	Male	119250
9	10	Prof	B	18	18	Female	129000
10	11	AssocProf	B	12	8	Male	119800
11	12	AsstProf	B	7	2	Male	79800
12	13	AsstProf	B	1	1	Male	77700
13	14	AsstProf	B	2	0	Male	78000
14	15	Prof	B	20	18	Male	104800

Seleccionar parte de los datos de una fila

```
Import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)

datos.iloc[3, [1, 2, 3]]
```

En esta selección pandas devuelve una Serie

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	1	Prof	B	19	18	Male	139750
1	2	Prof	B	20	16	Male	173200
2	3	AsstProf	B	4	3	Male	79750
3	4	***Prof***	***B***	***45***	39	Male	115000
4	5	Prof	B	40	41	Male	141500
5	6	AssocProf	B	6	6	Male	97000
6	7	Prof	B	30	23	Male	175000
7	8	Prof	B	45	45	Male	147765
8	9	Prof	B	21	20	Male	119250
9	10	Prof	B	18	18	Female	129000
10	11	AssocProf	B	12	8	Male	119800
11	12	AsstProf	B	7	2	Male	79800
12	13	AsstProf	B	1	1	Male	77700
13	14	AsstProf	B	2	0	Male	78000
14	15	Prof	B	20	18	Male	104800

Seleccionar rango de filas y todas las columnas

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)

datos.iloc[8:13]
```

Al seleccionar varias columnas o varias filas , las filas / columnas seleccionadas se ejecutarán desde el primer número hasta ***uno menos*** del segundo valor, por ejemplo, [1: 5] será 1, 2, 3, 4.

		Índice de columnas						
		0	1	2	3	4	5	6
		order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
Índice de filas	0	1	Prof	B	19	18	Male	139750
	1	2	Prof	B	20	16	Male	173200
	2	3	AsstProf	B	4	3	Male	79750
	3	4	Prof	B	45	39	Male	115000
	4	5	Prof	B	40	41	Male	141500
	5	6	AssocProf	B	6	6	Male	97000
	6	7	Prof	B	30	23	Male	175000
	7	8	Prof	B	45	45	Male	147765
	8	*9*	*Prof*	*B*	*21*	*20*	*Male*	*119250*
	9	*10*	*Prof*	*B*	*18*	*18*	*Female*	*129000*
	10	*11*	*AssocProf*	*B*	*12*	*8*	*Male*	*119800*
	11	*12*	*AsstProf*	*B*	*7*	*2*	*Male*	*79800*
	12	*13*	*AsstProf*	*B*	*1*	*1*	*Male*	*77700*
	13	14	AsstProf	B	2	0	Male	78000
	14	15	Prof	B	20	18	Male	104800

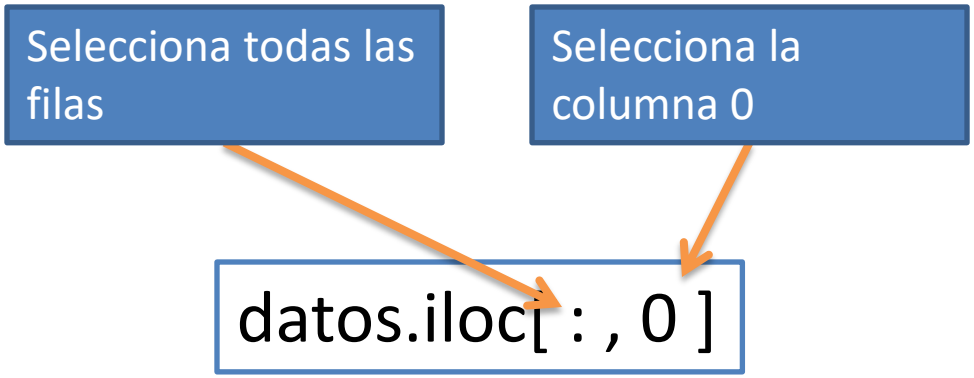
Seleccionar columnas

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)

datos.iloc[:, 0]
```



		Índice de columnas						
		0	1	2	3	4	5	6
		order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
Índice de filas	0	1	Prof	B	19	18	Male	139750
	1	2	Prof	B	20	16	Male	173200
	2	3	AsstProf	B	4	3	Male	79750
	3	4	Prof	B	45	39	Male	115000
	4	5	Prof	B	40	41	Male	141500
	5	6	AssocProf	B	6	6	Male	97000
	6	7	Prof	B	30	23	Male	175000
	7	8	Prof	B	45	45	Male	147765
	8	9	Prof	B	21	20	Male	119250
	9	10	Prof	B	18	18	Female	129000
	10	11	AssocProf	B	12	8	Male	119800
	11	12	AsstProf	B	7	2	Male	79800
	12	13	AsstProf	B	1	1	Male	77700
	13	14	AsstProf	B	2	0	Male	78000
	14	15	Prof	B	20	18	Male	104800

Seleccionar columnas

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)

datos.iloc[:, -1]
```

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	1	Prof	B	19	18	Male	139750
1	2	Prof	B	20	16	Male	173200
2	3	AsstProf	B	4	3	Male	79750
3	4	Prof	B	45	39	Male	115000
4	5	Prof	B	40	41	Male	141500
5	6	AssocProf	B	6	6	Male	97000
6	7	Prof	B	30	23	Male	175000
7	8	Prof	B	45	45	Male	147765
8	9	Prof	B	21	20	Male	119250
9	10	Prof	B	18	18	Female	129000
10	11	AssocProf	B	12	8	Male	119800
11	12	AsstProf	B	7	2	Male	79800
12	13	AsstProf	B	1	1	Male	77700
13	14	AsstProf	B	2	0	Male	78000
14	15	Prof	B	20	18	Male	104800

Seleccionar parte de filas y una columna

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)

 datos.iloc[1:5, 3]
```

En esta selección pandas devuelve una Serie

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	1	Prof	B	19	18	Male	139750
1	2	Prof	B	20	16	Male	173200
2	3	AsstProf	B	4	3	Male	79750
3	4	Prof	B	45	39	Male	115000
4	5	Prof	B	40	41	Male	141500
5	6	AssocProf	B	6	6	Male	97000
6	7	Prof	B	30	23	Male	175000
7	8	Prof	B	45	45	Male	147765
8	9	Prof	B	21	20	Male	119250
9	10	Prof	B	18	18	Female	129000
10	11	AssocProf	B	12	8	Male	119800
11	12	AsstProf	B	7	2	Male	79800
12	13	AsstProf	B	1	1	Male	77700
13	14	AsstProf	B	2	0	Male	78000
14	15	Prof	B	20	18	Male	104800

Seleccionar todas las filas y un rango de columnas

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)

datos.iloc[ : , 1: 6]
```

En esta selección pandas devuelve un Dataframe

Índice de filas		Índice de columnas						
		0	1	2	3	4	5	6
		order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0		1	Prof	B	19	18	Male	139750
1		2	Prof	B	20	16	Male	173200
2		3	AsstProf	B	4	3	Male	79750
3		4	Prof	B	45	39	Male	115000
4		5	Prof	B	40	41	Male	141500
5		6	AssocProf	B	6	6	Male	97000
6		7	Prof	B	30	23	Male	175000
7		8	Prof	B	45	45	Male	147765
8		9	Prof	B	21	20	Male	119250
9		10	Prof	B	18	18	Female	129000
10		11	AssocProf	B	12	8	Male	119800
11		12	AsstProf	B	7	2	Male	79800
12		13	AsstProf	B	1	1	Male	77700
13		14	AsstProf	B	2	0	Male	78000
14		15	Prof	B	20	18	Male	104800

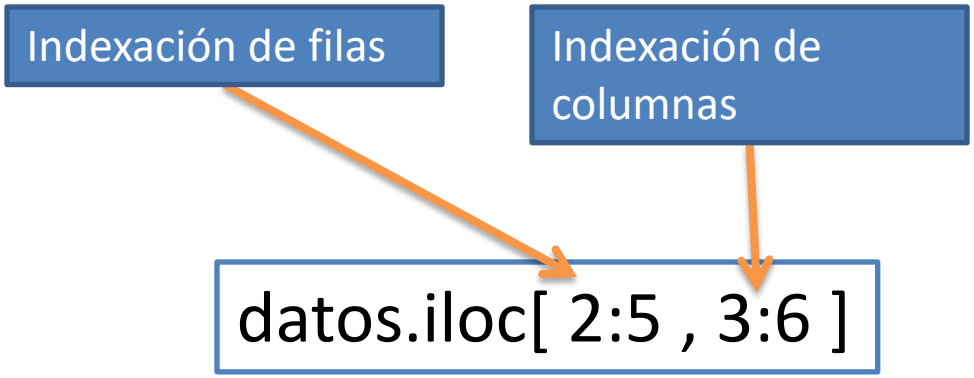
Seleccionar subconjuntos de celdas

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)

datos.iloc[2:5, 3:6]
```



Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	1	Prof	B	19	18	Male	139750
1	2	Prof	B	20	16	Male	173200
2	3	AsstProf	B	**4**	**3**	**Male**	79750
3	4	Prof	B	**45**	**39**	**Male**	115000
4	5	Prof	B	**40**	**41**	**Male**	141500
5	6	AssocProf	B	6	6	Male	97000
6	7	Prof	B	30	23	Male	175000
7	8	Prof	B	45	45	Male	147765
8	9	Prof	B	21	20	Male	119250
9	10	Prof	B	18	18	Female	129000
10	11	AssocProf	B	12	8	Male	119800
11	12	AsstProf	B	7	2	Male	79800
12	13	AsstProf	B	1	1	Male	77700
13	14	AsstProf	B	2	0	Male	78000
14	15	Prof	B	20	18	Male	104800

SLICING EN PANDAS CON LOC

Seleccionar fila

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)

datos.loc[3]
datos.loc[[3]]
```

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	1	Prof	B	19	18	Male	139750
1	2	Prof	B	20	16	Male	173200
2	3	AsstProf	B	4	3	Male	79750
3	***4***	***Prof***	***B***	***45***	***39***	***Male***	***115000***
4	5	Prof	B	40	41	Male	141500
5	6	AssocProf	B	6	6	Male	97000
6	7	Prof	B	30	23	Male	175000
7	8	Prof	B	45	45	Male	147765
8	9	Prof	B	21	20	Male	119250
9	10	Prof	B	18	18	Female	129000
10	11	AssocProf	B	12	8	Male	119800
11	12	AsstProf	B	7	2	Male	79800
12	13	AsstProf	B	1	1	Male	77700
13	14	AsstProf	B	2	0	Male	78000
14	15	Prof	B	20	18	Male	104800

Seleccionar subconjunto

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)

datos.loc[1:5]
```

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	1	Prof	B	19	18	Male	139750
1	*2*	*Prof*	*B*	*20*	*16*	*Male*	*173200*
2	*3*	*AsstProf*	*B*	*4*	*3*	*Male*	*79750*
3	*4*	*Prof*	*B*	*45*	*39*	*Male*	*115000*
4	*5*	*Prof*	*B*	*40*	*41*	*Male*	*141500*
5	*6*	*AssocProf*	*B*	*6*	*6*	*Male*	*97000*
6	7	Prof	B	30	23	Male	175000
7	8	Prof	B	45	45	Male	147765
8	9	Prof	B	21	20	Male	119250
9	10	Prof	B	18	18	Female	129000
10	11	AssocProf	B	12	8	Male	119800
11	12	AsstProf	B	7	2	Male	79800
12	13	AsstProf	B	1	1	Male	77700
13	14	AsstProf	B	2	0	Male	78000
14	15	Prof	B	20	18	Male	104800

Seleccionar filas alternadas

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

print(datos)

datos.loc[[1, 3, 7, 10, 13]]
```

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	1	Prof	B	19	18	Male	139750
1	*2*	*Prof*	*B*	*20*	*16*	*Male*	*173200*
2	3	AsstProf	B	4	3	Male	79750
3	*4*	*Prof*	*B*	*45*	*39*	*Male*	*115000*
4	5	Prof	B	40	41	Male	141500
5	6	AssocProf	B	6	6	Male	97000
6	7	Prof	B	30	23	Male	175000
7	*8*	*Prof*	*B*	*45*	*45*	*Male*	*147765*
8	9	Prof	B	21	20	Male	119250
9	10	Prof	B	18	18	Female	129000
10	*11*	*AssocProf*	*B*	*12*	*8*	*Male*	*119800*
11	12	AsstProf	B	7	2	Male	79800
12	13	AsstProf	B	1	1	Male	77700
13	*14*	*AsstProf*	*B*	*2*	*0*	*Male*	*78000*
14	15	Prof	B	20	18	Male	104800

Seleccionar con nombres de columnas

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

datos.loc[:, 'rank']
```

		Índice de columnas						
		0	1	2	3	4	5	6
		order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
Índice de filas	0	1	*Prof*	B	19	18	Male	139750
	1	2	*Prof*	B	20	16	Male	173200
	2	3	*AsstProf*	B	4	3	Male	79750
	3	4	*Prof*	B	45	39	Male	115000
	4	5	*Prof*	B	40	41	Male	141500
	5	6	*AssocProf*	B	6	6	Male	97000
	6	7	*Prof*	B	30	23	Male	175000
	7	8	*Prof*	B	45	45	Male	147765
	8	9	*Prof*	B	21	20	Male	119250
	9	10	*Prof*	B	18	18	Female	129000
	10	11	*AssocProf*	B	12	8	Male	119800
	11	12	*AsstProf*	B	7	2	Male	79800
	12	13	*AsstProf*	B	1	1	Male	77700
	13	14	*AsstProf*	B	2	0	Male	78000
	14	15	*Prof*	B	20	18	Male	104800

Seleccionar con nombres de columnas

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

datos.loc[1:5, ['rank', 'yrs.service']]
```

		Índice de columnas						
		0	1	2	3	4	5	6
		order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
Índice de filas	0	1	Prof	B	19	18	Male	139750
	1	2	***Prof***	B	20	***16***	Male	173200
	2	3	***AsstProf***	B	4	***3***	Male	79750
	3	4	***Prof***	B	45	***39***	Male	115000
	4	5	***Prof***	B	40	***41***	Male	141500
	5	6	***AssocProf***	B	6	***6***	Male	97000
	6	7	Prof	B	30	23	Male	175000
	7	8	Prof	B	45	45	Male	147765
	8	9	Prof	B	21	20	Male	119250
	9	10	Prof	B	18	18	Female	129000
	10	11	AssocProf	B	12	8	Male	119800
	11	12	AsstProf	B	7	2	Male	79800
	12	13	AsstProf	B	1	1	Male	77700
	13	14	AsstProf	B	2	0	Male	78000
	14	15	Prof	B	20	18	Male	104800

Seleccionar con nombres de columnas

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

datos.loc[1:5, 'rank':'yrs.service']
```

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
0	1	Prof	B	19	18	Male	139750
1	2	***Prof***	***B***	***20***	***16***	Male	173200
2	3	***AsstProf***	***B***	***4***	***3***	Male	79750
3	4	***Prof***	***B***	***45***	***39***	Male	115000
4	5	***Prof***	***B***	***40***	***41***	Male	141500
5	6	***AssocProf***	***B***	***6***	***6***	Male	97000
6	7	Prof	B	30	23	Male	175000
7	8	Prof	B	45	45	Male	147765
8	9	Prof	B	21	20	Male	119250
9	10	Prof	B	18	18	Female	129000
10	11	AssocProf	B	12	8	Male	119800
11	12	AsstProf	B	7	2	Male	79800
12	13	AsstProf	B	1	1	Male	77700
13	14	AsstProf	B	2	0	Male	78000
14	15	Prof	B	20	18	Male	104800

Seleccionar con el nombre de una columna un dato determinado

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

datos.loc[datos['rank'] == 'Prof']
```

		Índice de columnas						
		0	1	2	3	4	5	6
		order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
Índice de filas	0	*1*	*Prof*	*B*	*19*	*18*	*Male*	*139750*
	1	*2*	*Prof*	*B*	*20*	*16*	*Male*	*173200*
	2	3	AsstProf	B	4	3	Male	79750
	3	*4*	*Prof*	*B*	*45*	*39*	*Male*	*115000*
	4	*5*	*Prof*	*B*	*40*	*41*	*Male*	*141500*
	5	6	AssocProf	B	6	6	Male	97000
	6	*7*	*Prof*	*B*	*30*	*23*	*Male*	*175000*
	7	*8*	*Prof*	*B*	*45*	*45*	*Male*	*147765*
	8	*9*	*Prof*	*B*	*21*	*20*	*Male*	*119250*
	9	*10*	*Prof*	*B*	*18*	*18*	*Female*	*129000*
	10	11	AssocProf	B	12	8	Male	119800
	11	12	AsstProf	B	7	2	Male	79800
	12	13	AsstProf	B	1	1	Male	77700
	13	14	AsstProf	B	2	0	Male	78000
	14	*15*	*Prof*	*B*	*20*	*18*	*Male*	*104800*

Seleccionar filas usando múltiples condiciones

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

datos.loc[(datos['yrs.service'] > 25) & (datos['rank'] == 'AssocProf')]
```

Índice de filas	Índice de columnas						
	0	1	2	3	4	5	6
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
	...						
	187	AssocProf	B	13	10	Female	103750
	188	Prof	B	18	10	Male	107500
188	*189*	*AssocProf*	*B*	*28*	*28*	*Male*	*106300*
	190	Prof	B	25	19	Male	153750
	...						
	193	Prof	B	19	18	Male	122100
	194	AssocProf	B	19	19	Male	86250
194	*195*	*AssocProf*	*B*	*48*	*53*	*Male*	*90000*
	196	AssocProf	B	9	7	Male	113600
	197	AsstProf	B	4	4	Male	92700
	...						
	259	AsstProf	A	9	3	Male	73800
	260	Prof	A	32	30	Male	92550
260	*261*	*AssocProf*	*A*	*41*	*33*	*Male*	*88600*
	262	Prof	A	45	45	Male	107550
	263	Prof	A	31	26	Male	121200
	...						
	284	Prof	A	45	43	Male	155865
	285	AssocProf	A	8	6	Male	88650
285	*286*	*AssocProf*	*A*	*49*	*49*	*Male*	*81800*
	287	Prof	A	28	27	Male	115800
	288	AsstProf	A	2	0	Male	85000
	...						
	298	Prof	A	17	11	Male	148800
	299	Prof	A	49	43	Male	72300
299	*300*	*AssocProf*	*A*	*45*	*39*	*Male*	*70700*
	301	Prof	A	39	36	Male	88600
	302	Prof	A	27	16	Male	127100

Seleccionar filas usando múltiples condiciones

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

 datos.loc[(datos['yrs.service'] > 25) & (datos['rank'] == 'AssocProf'), 'yrs.since.phd' : 'sex']
```

Índice de filas		Índice de columnas						
		0	1	2	3	4	5	6
		order	rank	discipline	yrs.since.phd	yrs.service	sex	salary
		....						
		187	AssocProf	B	13	10	Female	103750
		188	Prof	B	18	10	Male	107500
188		189	AssocProf	B	*28*	*28*	*Male*	106300
		190	Prof	B	25	19	Male	153750
		....						
		193	Prof	B	19	18	Male	122100
		194	AssocProf	B	19	19	Male	86250
194		195	AssocProf	B	*48*	*53*	*Male*	90000
		196	AssocProf	B	9	7	Male	113600
		197	AsstProf	B	4	4	Male	92700
		....						
		259	AsstProf	A	9	3	Male	73800
		260	Prof	A	32	30	Male	92550
260		261	AssocProf	A	*41*	*33*	*Male*	88600
		262	Prof	A	45	45	Male	107550
		263	Prof	A	31	26	Male	121200
		....						
		284	Prof	A	45	43	Male	155865
		285	AssocProf	A	8	6	Male	88650
285		286	AssocProf	A	*49*	*49*	*Male*	81800
		287	Prof	A	28	27	Male	115800
		288	AsstProf	A	2	0	Male	85000
		....						
		298	Prof	A	17	11	Male	148800
		299	Prof	A	49	43	Male	72300
299		300	AssocProf	A	*45*	*39*	*Male*	70700
		301	Prof	A	39	36	Male	88600
		302	Prof	A	27	16	Male	127100

Agregando columna y dato según una condición

```
import pandas as pd

datos = pd.read_csv('Salaries.csv')

datos.loc[datos['yrs.service'] > 25, 'Antigüedad'] = 'Jubilable'
datos.loc[datos['yrs.service'] > 25, 'yrs.since.phd':'Antigüedad']
```

Índice de filas	Índice de columnas							
	0	1	2	3	4	5	6	
	order	rank	discipline	yrs.since.phd	yrs.service	sex	salary	Antigüedad
0	1	Prof	B	19	18	Male	139750	NaN
1	2	Prof	B	20	16	Male	173200	NaN
2	3	AsstProf	B	4	3	Male	79750	NaN
3	***4***	***Prof***	***B***	***45***	***39***	***Male***	***115000***	***Jubilable***
4	***5***	***Prof***	***B***	***40***	***41***	***Male***	***141500***	***Jubilable***
5	6	AssocProf	B	6	6	Male	97000	NaN
6	7	Prof	B	30	23	Male	175000	NaN
7	***8***	***Prof***	***B***	***45***	***45***	***Male***	***147765***	***Jubilable***
8	9	Prof	B	21	20	Male	119250	NaN
9	10	Prof	B	18	18	Female	129000	NaN
10	11	AssocProf	B	12	8	Male	119800	NaN
11	12	AsstProf	B	7	2	Male	79800	NaN
12	13	AsstProf	B	1	1	Male	77700	NaN
13	14	AsstProf	B	2	0	Male	78000	NaN
14	15	Prof	B	20	18	Male	104800	NaN

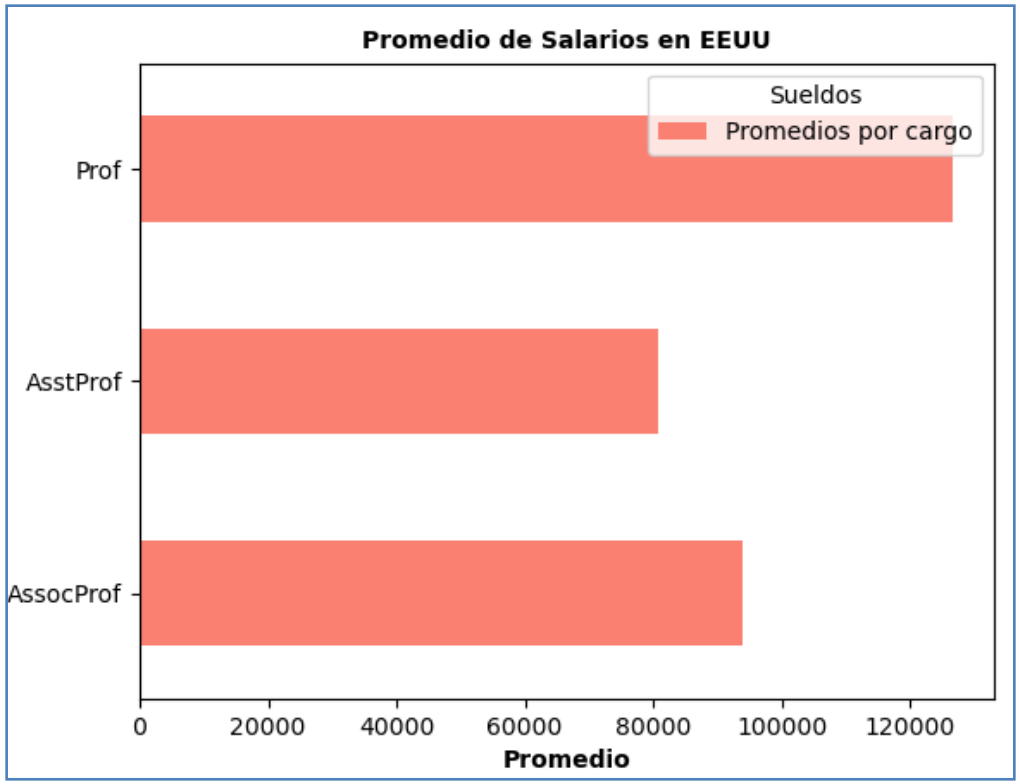
Gráfico agrupando datos

```
import pandas as pd
import matplotlib.pyplot as plt

datos = pd.read_csv('Salaries.csv')

datos.groupby('rank')['salary'].mean().plot(kind='barh',
                        color='salmon',
                        label='Promedios por cargo')

plt.xlabel('Promedio de Salarios', weight='bold')
plt.ylabel('Cargos Docentes')
plt.title('Salarios',
        weight='bold',
        size=10)
plt.legend(title='Sueldos')
plt.plot(data=None)
plt.show()
```

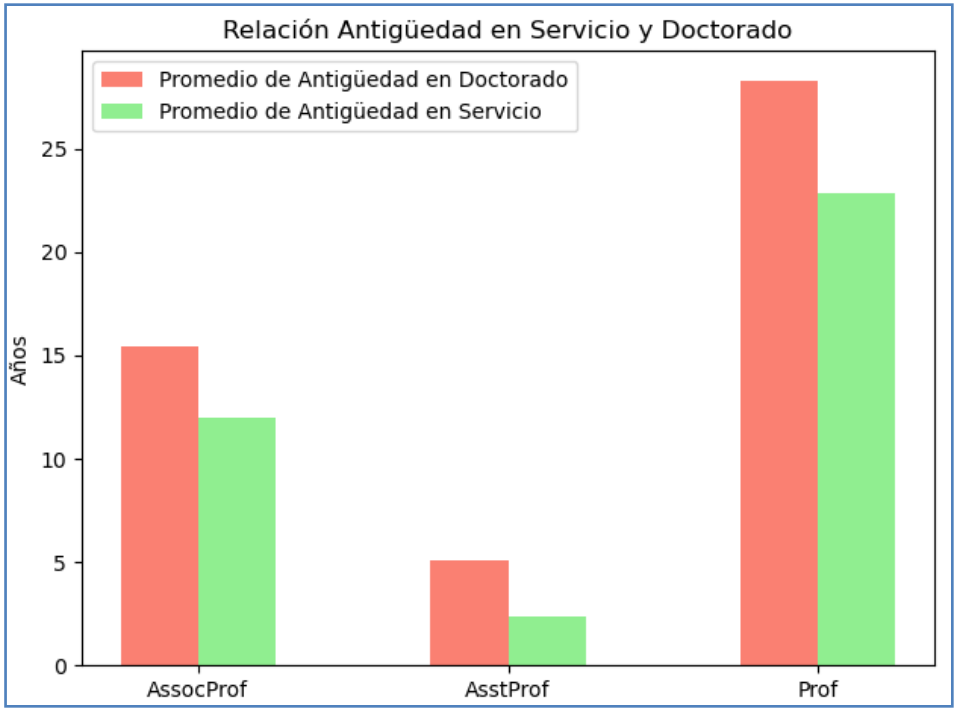


Graficando con valores de columnas aplicando funciones

```
import pandas as pd
import matplotlib
import matplotlib.pyplot as plt
import numpy as np

datos = pd.read_csv('Salaries.csv')
cargos = ['AssocProf', 'AsstProf','Prof']
phd_means = pd.Series(datos.groupby('rank')['yrs.since.phd'].mean())
serv_means = pd.Series(datos.groupby('rank')['yrs.service'].mean())

#Obtenemos la posicion de cada etiqueta en el eje de X
x = np.arange(len(cargos))
fig, ax = plt.subplots()
width=0.25
```




```
#Generamos las barras para el conjunto de promedios de salari
os
ax.bar(x -
 width/2, phd_means, width, label='Promedio de Antigüedad e
n Doctorado',color='salmon')
#Generamos las barras para el conjunto de promedios de antigü
edad
ax.bar(x + width/2, serv_means, width, label='Promedio de Anti
güedad en Servicio',color='lightgreen')

#Agregamos las etiquetas de identificación de valores en el grafi
co
ax.set_ylabel('Años')
ax.set_title('Relación Antigüedad en Servicio y Doctorado')
ax.set_xticks(x)
ax.set_xticklabels(cargos)

#Agregamos legen() para mostrar con colores a que pertenece c
ada valor.
ax.legend()
fig.tight_layout()
plt.show()
```

https://pandas.pydata.org/pandas-docs/stable/reference/api/pandas.DataFrame.html

https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html

https://pandas.pydata.org/pandas-docs/stable/reference/api/pandas.DataFrame.plot.barh.html