```
1 import numpy as np;
2 import pandas as pd;
```

```
1 arr = np.random.randint(0,10,(5,3))
2 arr
```

```
array([[3, 3, 2],
       [0, 5, 0],
       [3, 7, 5],
       [1, 7, 8],
       [8, 5, 1]])
```

```
1 arr.shape
```

```
(5, 3)
```

```
1 df=pd.DataFrame(arr)
2 df
```

	0	1	2
0	3	3	2
1	0	5	0
2	3	7	5
3	1	7	8
4	8	5	1

```
1 df
```

1 to 5 of 5 entries   Filter

index	0	1 ▼	2
2	3	7	5
3	1	7	8
1	0	5	0
4	8	5	1
0	3	3	2

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```
1 df.shape
```

```
(5, 3)
```

```
1 df.index #columnwise
```

```
RangeIndex(start=0, stop=5, step=1)
```

```
1 df.columns #columnwise index
```

```
RangeIndex(start=0, stop=3, step=1)
```

```
1 df.values
```

```
array([[3, 3, 2],
       [0, 5, 0],
       [3, 7, 5],
       [1, 7, 8],
       [8, 5, 1]])
```

```
1 #this is implicit indexing as i have not indexed , system has indexed
```

```
1 df.values[0]
```

```
array([3, 3, 2])
```

```
1 df.values[0,2]
```

```
2
```

```
1 df.index=['r1','r2','r3','r4','r5']
2 df
```

	0	1	2
r1	3	3	2
r2	0	5	0
r3	3	7	5
r4	1	7	8
r5	8	5	1

```
1 df.columns=['c1','c2','c3']
2 df
```

	c1	c2	c3
r1	3	3	2
r2	0	5	0
r3	3	7	5
r4	1	7	8
r5	8	5	1

```
1 df
```

1 to 5 of 5 entries   Filter

index ▲	c1	c2	c3
r1	3	3	2
r2	0	5	0
r3	3	7	5
r4	1	7	8
r5	8	5	1

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```
1 #this is explicit index
```

```
1 df.loc['r2','c2']
```

    5

```
1 df.iloc[1,1]
```

    5

```
1 df
```

	c1	c2	c3
r1	3	3	2
r2	0	5	0
r3	3	7	5
r4	1	7	8
r5	8	5	1

```
1 df.iloc[2:4,1:3]
```

	c2	c3
r3	7	5
r4	7	8

```
1 df.loc['r3':'r4','c2':'c3']
```

```
1 df.T
```

	r1	r2	r3	r4	r5
c1	3	0	3	1	8
c2	3	5	7	7	5
c3	2	0	5	8	1

```
1  #func to create , df with r rowa and c columns , min1,mmax number
```

```
1  def generdf(mn,mx,r,c) :
2      df=pd.DataFrame(np.random.randint(mn,mx,(r,c)))
3      df.index = ['r'+str(x) for x in range(1,r+1)]
4      df.columns = ['c'+str(x) for x in range(1,c+1)]
5      return(df)
```

```
1  df2=generdf(10,50,5,10)
2  df2
```

	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10
r1	36	23	12	41	44	44	24	15	30	38
r2	24	35	30	17	12	44	32	19	23	40
r3	39	39	42	26	11	40	26	36	41	27
r4	17	40	13	20	36	43	36	42	41	26
r5	22	32	17	28	36	40	20	39	11	16