

```
In [1]: import numpy as np
import pandas as pd
```

```
In [2]: a=pd.read_csv(r"C:\Users\user\Downloads\8_BreastCancerPrediction.csv")
a
```

Out[2]:

	id	diagnosis	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness_
0	842302	M	17.99	10.38	122.80	1001.0	0.
1	842517	M	20.57	17.77	132.90	1326.0	0.0
2	84300903	M	19.69	21.25	130.00	1203.0	0.0
3	84348301	M	11.42	20.38	77.58	386.1	0.0
4	84358402	M	20.29	14.34	135.10	1297.0	0.0
...
564	926424	M	21.56	22.39	142.00	1479.0	0.0
565	926682	M	20.13	28.25	131.20	1261.0	0.0
566	926954	M	16.60	28.08	108.30	858.1	0.0
567	927241	M	20.60	29.33	140.10	1265.0	0.0
568	92751	B	7.76	24.54	47.92	181.0	0.0

569 rows × 33 columns

```
In [3]: a.mean()
```

```
Out[3]: id                3.037183e+07
radius_mean            1.412729e+01
texture_mean           1.928965e+01
perimeter_mean         9.196903e+01
area_mean              6.548891e+02
smoothness_mean        9.636028e-02
compactness_mean       1.043410e-01
concavity_mean         8.879932e-02
concave points_mean    4.891915e-02
symmetry_mean          1.811619e-01
fractal_dimension_mean 6.279761e-02
radius_se              4.051721e-01
texture_se             1.216853e+00
perimeter_se           2.866059e+00
area_se               4.033708e+01
smoothness_se          7.040979e-03
compactness_se         2.547814e-02
concavity_se           3.189372e-02
concave points_se      1.179614e-02
symmetry_se            2.054230e-02
fractal_dimension_se   3.794904e-03
radius_worst           1.626919e+01
texture_worst          2.567722e+01
perimeter_worst        1.072612e+02
area_worst             8.805831e+02
smoothness_worst       1.323686e-01
compactness_worst      2.542650e-01
concavity_worst        2.721885e-01
concave points_worst   1.146062e-01
symmetry_worst         2.900756e-01
fractal_dimension_worst 8.394582e-02
Unnamed: 32            NaN
dtype: float64
```

```
In [4]: a.median()
```

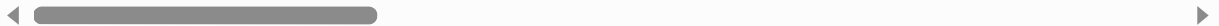
```
Out[4]: id          906024.000000
radius_mean      13.370000
texture_mean     18.840000
perimeter_mean   86.240000
area_mean        551.100000
smoothness_mean  0.095870
compactness_mean 0.092630
concavity_mean   0.061540
concave points_mean 0.033500
symmetry_mean    0.179200
fractal_dimension_mean 0.061540
radius_se        0.324200
texture_se       1.108000
perimeter_se     2.287000
area_se          24.530000
smoothness_se    0.006380
compactness_se   0.020450
concavity_se     0.025890
concave points_se 0.010930
symmetry_se      0.018730
fractal_dimension_se 0.003187
radius_worst     14.970000
texture_worst    25.410000
perimeter_worst  97.660000
area_worst       686.500000
smoothness_worst 0.131300
compactness_worst 0.211900
concavity_worst  0.226700
concave points_worst 0.099930
symmetry_worst   0.282200
fractal_dimension_worst 0.080040
Unnamed: 32      NaN
dtype: float64
```

In [5]: `a.mode()`

Out[5]:

	id	diagnosis	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness
0	8670	B	12.34	14.93	82.61	512.2	
1	8913	NaN	NaN	15.70	87.76	NaN	
2	8915	NaN	NaN	16.84	134.70	NaN	
3	9047	NaN	NaN	16.85	NaN	NaN	
4	85715	NaN	NaN	17.46	NaN	NaN	
...	
564	911157302	NaN	NaN	NaN	NaN	NaN	
565	911296201	NaN	NaN	NaN	NaN	NaN	
566	911296202	NaN	NaN	NaN	NaN	NaN	
567	911320501	NaN	NaN	NaN	NaN	NaN	
568	911320502	NaN	NaN	NaN	NaN	NaN	

569 rows × 33 columns

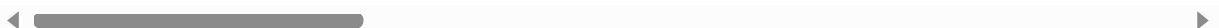


In [6]: `a.describe()`

Out[6]:

	id	radius_mean	texture_mean	perimeter_mean	area_mean	smoothness_mea
count	5.690000e+02	569.000000	569.000000	569.000000	569.000000	569.000000
mean	3.037183e+07	14.127292	19.289649	91.969033	654.889104	0.09636
std	1.250206e+08	3.524049	4.301036	24.298981	351.914129	0.01406
min	8.670000e+03	6.981000	9.710000	43.790000	143.500000	0.05263
25%	8.692180e+05	11.700000	16.170000	75.170000	420.300000	0.08637
50%	9.060240e+05	13.370000	18.840000	86.240000	551.100000	0.09587
75%	8.813129e+06	15.780000	21.800000	104.100000	782.700000	0.10530
max	9.113205e+08	28.110000	39.280000	188.500000	2501.000000	0.16340

8 rows × 32 columns




```
In [8]: a.cumsum()
```

Out[8]:

	id	diagnosis	rate
0	842302	M	
1	1684819	MM	
2	85985722	MMM	
3	170334023	MMMM	
4	254692425	MMMMM	
...	
564	17278698457	MMMMMMMMMMMMMMMMMMMMBBBBMMMMMMMMMMMMMMMMBMMMMMMMM...	
565	17279625139	MMMMMMMMMMMMMMMMMMMMBBBBMMMMMMMMMMMMMMMMBMMMMMMMM...	
566	17280552093	MMMMMMMMMMMMMMMMMMMMBBBBMMMMMMMMMMMMMMMMBMMMMMMMM...	
567	17281479334	MMMMMMMMMMMMMMMMMMMMBBBBMMMMMMMMMMMMMMMMBMMMMMMMM...	
568	17281572085	MMMMMMMMMMMMMMMMMMMMBBBBMMMMMMMMMMMMMMMMBMMMMMMMM...	

569 rows × 33 columns

```
In [9]: a.count()
```

```
Out[9]: id 569
diagnosis 569
radius_mean 569
texture_mean 569
perimeter_mean 569
area_mean 569
smoothness_mean 569
compactness_mean 569
concavity_mean 569
concave points_mean 569
symmetry_mean 569
fractal_dimension_mean 569
radius_se 569
texture_se 569
perimeter_se 569
area_se 569
smoothness_se 569
compactness_se 569
concavity_se 569
concave points_se 569
symmetry_se 569
fractal_dimension_se 569
radius_worst 569
texture_worst 569
perimeter_worst 569
area_worst 569
smoothness_worst 569
compactness_worst 569
concavity_worst 569
concave points_worst 569
symmetry_worst 569
fractal_dimension_worst 569
Unnamed: 32 0
dtype: int64
```

```
In [10]: a.min()
```

```
Out[10]: id                        8670
diagnosis                        B
radius_mean                      6.981
texture_mean                     9.71
perimeter_mean                   43.79
area_mean                       143.5
smoothness_mean                  0.05263
compactness_mean                 0.01938
concavity_mean                   0.0
concave points_mean              0.0
symmetry_mean                    0.106
fractal_dimension_mean           0.04996
radius_se                        0.1115
texture_se                       0.3602
perimeter_se                     0.757
area_se                          6.802
smoothness_se                    0.001713
compactness_se                   0.002252
concavity_se                     0.0
concave points_se                0.0
symmetry_se                      0.007882
fractal_dimension_se             0.000895
radius_worst                     7.93
texture_worst                    12.02
perimeter_worst                  50.41
area_worst                       185.2
smoothness_worst                 0.07117
compactness_worst                0.02729
concavity_worst                  0.0
concave points_worst             0.0
symmetry_worst                   0.1565
fractal_dimension_worst          0.05504
Unnamed: 32                      NaN
dtype: object
```



```
In [11]: a.max()
```

```
Out[11]: id          911320502
diagnosis          M
radius_mean       28.11
texture_mean      39.28
perimeter_mean    188.5
area_mean         2501.0
smoothness_mean   0.1634
compactness_mean  0.3454
concavity_mean    0.4268
concave points_mean 0.2012
symmetry_mean     0.304
fractal_dimension_mean 0.09744
radius_se         2.873
texture_se        4.885
perimeter_se      21.98
area_se           542.2
smoothness_se     0.03113
compactness_se    0.1354
concavity_se      0.396
concave points_se 0.05279
symmetry_se       0.07895
fractal_dimension_se 0.02984
radius_worst      36.04
texture_worst     49.54
perimeter_worst   251.2
area_worst        4254.0
smoothness_worst  0.2226
compactness_worst 1.058
concavity_worst   1.252
concave points_worst 0.291
symmetry_worst    0.6638
fractal_dimension_worst 0.2075
Unnamed: 32       NaN
dtype: object
```

```
In [12]: from numpy import cov
```

```
In [14]: d1=a['radius_mean']  
d2=a['texture_mean']  
d1  
d2
```

```
Out[14]: 0      10.38  
1      17.77  
2      21.25  
3      20.38  
4      14.34  
      ...  
564    22.39  
565    28.25  
566    28.08  
567    29.33  
568    24.54  
Name: texture_mean, Length: 569, dtype: float64
```

```
In [15]: cov(d1,d2)
```

```
Out[15]: array([[12.41892013,  4.90758156],  
                [ 4.90758156, 18.49890868]])
```

```
In [16]: from scipy.stats import pearsonr  
print(pearsonr(d1,d2))  
  
(0.323781890927733, 2.360374375922593e-15)
```

```
In [17]: from scipy.stats import spearmanr  
print(spearmanr(d1,d2))  
  
SpearmanrResult(correlation=0.3409562685372812, pvalue=5.900189597213798e-17)
```

```
In [ ]:
```