

```
import pandas as pd
import seaborn as sb
```

```
facebook = pd.read_csv("dataset_Facebook.csv", sep=";")
```

```
facebook
```

	Page	total likes	Type	Category	Post Month	Post Weekday
Post Hour \						
0		139441	Photo	2	12	4
3						
1		139441	Status	2	12	3
10						
2		139441	Photo	3	12	3
3						
3		139441	Photo	2	12	2
10						
4		139441	Photo	2	12	2
3						
..	
...						
495		85093	Photo	3	1	7
2						
496		81370	Photo	2	1	5
8						
497		81370	Photo	1	1	5
2						
498		81370	Photo	3	1	4
11						
499		81370	Photo	2	1	4
4						

	Paid	Lifetime Post Total Reach	Lifetime Post Total Impressions
\			
0	0.0	2752	5091
1	0.0	10460	19057
2	0.0	2413	4373
3	1.0	50128	87991
4	0.0	7244	13594
..
495	0.0	4684	7536
496	0.0	3480	6229
497	0.0	3778	7216

498	0.0	4156	7564
-----	-----	------	------

499	NaN	4188	7292
-----	-----	------	------

	Lifetime Engaged Users	Lifetime Post Consumers \
0	178	109
1	1457	1361
2	177	113
3	2211	790
4	671	410
..
495	733	708
496	537	508
497	625	572
498	626	574
499	564	524

	Lifetime Post Consumptions \
0	159
1	1674
2	154
3	1119
4	580
..	...
495	985
496	687
497	795
498	832
499	743

	Lifetime Post Impressions by people who have liked your Page \
0	3078
1	11710
2	2812
3	61027
4	6228
..	...
495	4750
496	3961
497	4742
498	4534
499	3861

	Lifetime Post reach by people who like your Page \
0	1640
1	6112
2	1503
3	32048

4	3200
..	...
495	2876
496	2104
497	2388
498	2452
499	2200

Lifetime People who have liked your Page and engaged with your post \	
0	119

1	1108
2	132
3	1386
4	396
..	...
495	392
496	301
497	363
498	370
499	316

	comment	like	share	Total Interactions
0	4	79.0	17.0	100
1	5	130.0	29.0	164
2	0	66.0	14.0	80
3	58	1572.0	147.0	1777
4	19	325.0	49.0	393
..
495	5	53.0	26.0	84
496	0	53.0	22.0	75
497	4	93.0	18.0	115
498	7	91.0	38.0	136
499	0	91.0	28.0	119

[500 rows x 19 columns]

facebook.shape

(500, 19)

```
facebook.columns
```

```
Index(['Page total likes', 'Type', 'Category', 'Post Month', 'Post Weekday',  
      'Post Hour', 'Paid', 'Lifetime Post Total Reach',  
      'Lifetime Post Total Impressions', 'Lifetime Engaged Users',  
      'Lifetime Post Consumers', 'Lifetime Post Consumptions',  
      'Lifetime Post Impressions by people who have liked your Page',  
      'Lifetime Post reach by people who like your Page',  
      'Lifetime People who have liked your Page and engaged with your  
post',  
      'comment', 'like', 'share', 'Total Interactions'],  
      dtype='object')
```

```
facebook.head()
```

	Page total likes	Type	Category	Post Month	Post Weekday	Post Hour \
0	139441	Photo	2	12	4	
3						
1	139441	Status	2	12	3	
10						
2	139441	Photo	3	12	3	
3						
3	139441	Photo	2	12	2	
10						
4	139441	Photo	2	12	2	
3						

	Paid	Lifetime Post Total Reach	Lifetime Post Total Impressions \
0	0.0	2752	5091
1	0.0	10460	19057
2	0.0	2413	4373
3	1.0	50128	87991
4	0.0	7244	13594

	Lifetime Engaged Users	Lifetime Post Consumers \
0	178	109
1	1457	1361
2	177	113
3	2211	790
4	671	410

	Lifetime Post Consumptions \
0	159
1	1674
2	154
3	1119
4	580

	Lifetime Post Impressions by people who have liked your Page \
0	3078
1	11710
2	2812
3	61027
4	6228

	Lifetime Post reach by people who like your Page \
0	1640
1	6112
2	1503
3	32048
4	3200

	Lifetime People who have liked your Page and engaged with your post \
0	119
1	1108
2	132
3	1386
4	396

	comment	like	share	Total Interactions
0	4	79.0	17.0	100
1	5	130.0	29.0	164
2	0	66.0	14.0	80
3	58	1572.0	147.0	1777
4	19	325.0	49.0	393

facebook.tail()

Hour	Page total likes \	Type	Category	Post Month	Post Weekday	Post
495	85093	Photo	3	1	7	
2						
496	81370	Photo	2	1	5	
8						
497	81370	Photo	1	1	5	
2						
498	81370	Photo	3	1	4	
11						
499	81370	Photo	2	1	4	
4						

Paid	Lifetime Post Total Reach	Lifetime Post Total Impressions
\		

495	0.0	4684	7536
496	0.0	3480	6229
497	0.0	3778	7216
498	0.0	4156	7564
499	NaN	4188	7292
Lifetime Engaged Users Lifetime Post Consumers \			
495	733	708	
496	537	508	
497	625	572	
498	626	574	
499	564	524	
Lifetime Post Consumptions \			
495	985		
496	687		
497	795		
498	832		
499	743		
Lifetime Post Impressions by people who have liked your Page \			
495		4750	
496		3961	
497		4742	
498		4534	
499		3861	
Lifetime Post reach by people who like your Page \			
495		2876	
496		2104	
497		2388	
498		2452	
499		2200	
Lifetime People who have liked your Page and engaged with your post \			
495		392	
496		301	
497		363	
498		370	
499		316	

	comment	like	share	Total Interactions
495	5	53.0	26.0	84
496	0	53.0	22.0	75
497	4	93.0	18.0	115
498	7	91.0	38.0	136
499	0	91.0	28.0	119

facebook.dtypes

Page total likes

int64

Type

object

Category

int64

Post Month

int64

Post Weekday

int64

Post Hour

int64

Paid

float64

Lifetime Post Total Reach

int64

Lifetime Post Total Impressions

int64

Lifetime Engaged Users

int64

Lifetime Post Consumers

int64

Lifetime Post Consumptions

int64

Lifetime Post Impressions by people who have liked your Page

int64

Lifetime Post reach by people who like your Page

int64

Lifetime People who have liked your Page and engaged with your post

int64

comment

int64

like

float64

share

float64

Total Interactions

int64

dtype: object

```
facebook.describe()
```

	Page total likes	Category	Post Month	Post Weekday	Post Hour \
count	500.000000	500.000000	500.000000	500.000000	500.000000
mean	123194.176000	1.880000	7.038000	4.150000	7.840000
std	16272.813214	0.852675	3.307936	2.030701	4.368589
min	81370.000000	1.000000	1.000000	1.000000	1.000000
25%	112676.000000	1.000000	4.000000	2.000000	3.000000
50%	129600.000000	2.000000	7.000000	4.000000	9.000000
75%	136393.000000	3.000000	10.000000	6.000000	11.000000
max	139441.000000	3.000000	12.000000	7.000000	23.000000

	Paid	Lifetime Post Total Reach	Lifetime Post Total Impressions \
count	499.000000	500.000000	5.000000e+02
mean	0.278557	13903.36000	2.958595e+04
std	0.448739	22740.78789	7.680325e+04
min	0.000000	238.00000	5.700000e+02
25%	0.000000	3315.00000	5.694750e+03
50%	0.000000	5281.00000	9.051000e+03
75%	1.000000	13168.00000	2.208550e+04
max	1.000000	180480.00000	1.110282e+06

	Lifetime Engaged Users	Lifetime Post Consumers \
count	500.000000	500.000000
mean	920.344000	798.772000
std	985.016636	882.505013
min	9.000000	9.000000
25%	393.750000	332.500000
50%	625.500000	551.500000
75%	1062.000000	955.500000
max	11452.000000	11328.000000

Lifetime Post Consumptions \	
count	500.000000
mean	1415.130000
std	2000.594118
min	9.000000
25%	509.250000
50%	851.000000
75%	1463.000000
max	19779.000000

Lifetime Post Impressions by people who have liked your Page \	
count	5.000000e+02
mean	1.676638e+04
std	5.979102e+04
min	5.670000e+02
25%	3.969750e+03
50%	6.255500e+03
75%	1.486050e+04
max	1.107833e+06

Lifetime Post reach by people who like your Page \	
count	500.000000
mean	6585.488000
std	7682.009405
min	236.000000
25%	2181.500000
50%	3417.000000
75%	7989.000000
max	51456.000000

Lifetime People who have liked your Page and engaged with your post \	
count	500.000000
mean	609.986000
std	612.725618
min	9.000000
25%	291.000000
50%	412.000000
75%	656.250000
max	4376.000000

comment	like	share	Total Interactions
---------	------	-------	--------------------

count	500.00000	499.000000	496.000000	500.000000
mean	7.48200	177.945892	27.266129	212.120000
std	21.18091	323.398742	42.613292	380.233118
min	0.00000	0.000000	0.000000	0.000000
25%	1.00000	56.500000	10.000000	71.000000
50%	3.00000	101.000000	19.000000	123.500000
75%	7.00000	187.500000	32.250000	228.500000
max	372.00000	5172.000000	790.000000	6334.000000

```
facebook.isnull().sum()
```

```
Page total likes
```

```
0
```

```
Type
```

```
0
```

```
Category
```

```
0
```

```
Post Month
```

```
0
```

```
Post Weekday
```

```
0
```

```
Post Hour
```

```
0
```

```
Paid
```

```
1
```

```
Lifetime Post Total Reach
```

```
0
```

```
Lifetime Post Total Impressions
```

```
0
```

```
Lifetime Engaged Users
```

```
0
```

```
Lifetime Post Consumers
```

```
0
```

```
Lifetime Post Consumptions
```

```
0
```

```
Lifetime Post Impressions by people who have liked your Page
```

```
0
```

```
Lifetime Post reach by people who like your Page
```

```
0
```

```
Lifetime People who have liked your Page and engaged with your post
```

```
0
```

```
comment
```

```
0
```

```
like
```

```
1
```

```
share
```

```
4
```

```
Total Interactions
```

```
0
```

```
dtype: int64
```

```

facebook = facebook.fillna(facebook['Paid'].mode())
facebook = facebook.fillna(facebook['like'].mean())
facebook = facebook.fillna(facebook[['share']].mean())
facebook.isnull().sum()

Page total likes
0
Type
0
Category
0
Post Month
0
Post Weekday
0
Post Hour
0
Paid
0
Lifetime Post Total Reach
0
Lifetime Post Total Impressions
0
Lifetime Engaged Users
0
Lifetime Post Consumers
0
Lifetime Post Consumptions
0
Lifetime Post Impressions by people who have liked your Page
0
Lifetime Post reach by people who like your Page
0
Lifetime People who have liked your Page and engaged with your post
0
comment
0
like
0
share
0
Total Interactions
0
dtype: int64

mean = facebook.mean(numeric_only = True)
mean

```

```
Page total likes
123194.176000
Category
1.880000
Post Month
7.038000
Post Weekday
4.150000
Post Hour
7.840000
Paid
0.633892
Lifetime Post Total Reach
13903.360000
Lifetime Post Total Impressions
29585.948000
Lifetime Engaged Users
920.344000
Lifetime Post Consumers
798.772000
Lifetime Post Consumptions
1415.130000
Lifetime Post Impressions by people who have liked your Page
16766.376000
Lifetime Post reach by people who like your Page
6585.488000
Lifetime People who have liked your Page and engaged with your post
609.986000
comment
7.482000
like
177.945892
share
28.471567
Total Interactions
212.120000
dtype: float64
```

```
median = facebook.median(numeric_only = True)
median
```

```
Page total likes
129600.0
Category
2.0
Post Month
7.0
Post Weekday
4.0
Post Hour
```

```
9.0
Paid
0.0
Lifetime Post Total Reach
5281.0
Lifetime Post Total Impressions
9051.0
Lifetime Engaged Users
625.5
Lifetime Post Consumers
551.5
Lifetime Post Consumptions
851.0
Lifetime Post Impressions by people who have liked your Page
6255.5
Lifetime Post reach by people who like your Page
3417.0
Lifetime People who have liked your Page and engaged with your post
412.0
comment
3.0
like
101.0
share
19.0
Total Interactions
123.5
dtype: float64
```

```
mode = facebook[["Page total likes"]].mode(numeric_only = True)
mode
```

```
Page total likes
0          136393
```

```
mode = facebook[["Category"]].mode(numeric_only = True)
mode
```

```
Category
0          1
```

```
mode = facebook[["Post Month"]].mode(numeric_only = True)
mode
```

```
Post Month
0          10
```

```
mode = facebook[["Post Weekday"]].mode(numeric_only = True)
mode
```

	Post Weekday
0	7

```
mode = facebook[["Post Hour"]].mode(numeric_only = True)
mode
```

	Post Hour
0	3

```
mode = facebook[["Paid"]].mode(numeric_only = True)
mode
```

	Paid
0	0.0

```
mode = facebook[["Lifetime Post Total Reach"]].mode(numeric_only =
True)
mode
```

	Lifetime Post Total Reach
0	677
1	2232
2	2645
3	2938
4	3322
5	3358
6	3414
7	3528
8	3754
9	5280
10	5290
11	6692
12	9528
13	13544
14	32208

```
mode = facebook[["Lifetime Post Total Impressions"]].mode(numeric_only
= True)
mode
```

	Lifetime Post Total Impressions
0	4372
1	6503
2	7004
3	8533
4	8745
5	12735

```
mode = facebook[["Lifetime Engaged Users"]].mode(numeric_only = True)
mode
```

```
Lifetime Engaged Users
0 537
```

```
mode = facebook[["Lifetime Post Consumers"]].mode(numeric_only = True)
mode
```

```
Lifetime Post Consumers
0 182
1 298
2 319
3 322
4 335
5 374
6 482
7 503
8 513
9 642
```

```
mode = facebook[["Lifetime Post Impressions by people who have liked
your Page"]].mode(numeric_only = True)
mode
```

```
Lifetime Post Impressions by people who have liked your Page
0 1210
1 1284
2 2541
3 2888
4 3675
5 4911
6 4935
7 5010
8 5732
```

```
mode = facebook[["Lifetime Post reach by people who like your
Page"]].mode(numeric_only = True)
mode
```

```
Lifetime Post reach by people who like your Page
0 690
1 704
2 1228
3 1640
4 1674
5 1722
6 2044
7 2124
8 2162
9 2174
10 2388
11 2426
12 2604
```

13	2616
14	2644
15	2660
16	2704
17	2752
18	2868
19	3114
20	3216
21	3230
22	3298
23	3768
24	5348
25	5372
26	7020
27	7800
28	8032
29	8120
30	20608

```
mode = facebook[["Lifetime People who have liked your Page and engaged
with your post"]].mode(numeric_only = True)
mode
```

```
    Lifetime People who have liked your Page and engaged with your post
0                                     403
```

```
mode = facebook[["comment"]].mode(numeric_only = True)
mode
```

```
    comment
0         0
```

```
mode = facebook[["like"]].mode(numeric_only = True)
mode
```

```
    like
0  98.0
```

```
mode = facebook[["share"]].mode(numeric_only = True)
mode
```

```
    share
0   13.0
1   14.0
```

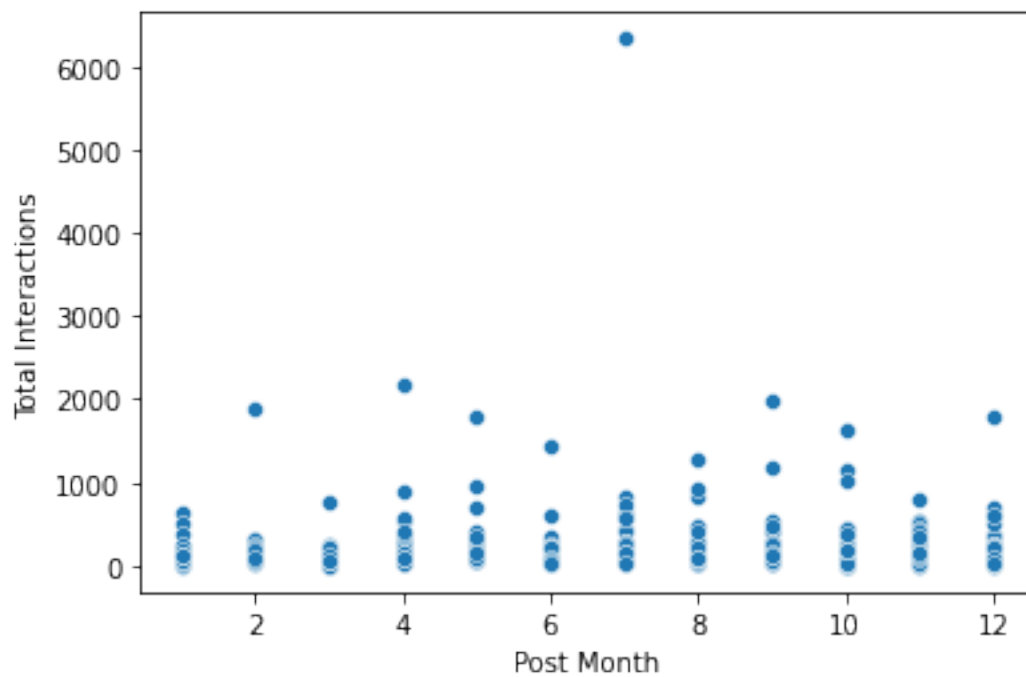
```
mode = facebook[["Total Interactions"]].mode(numeric_only = True)
mode
```

```
    Total Interactions
0                      0
```

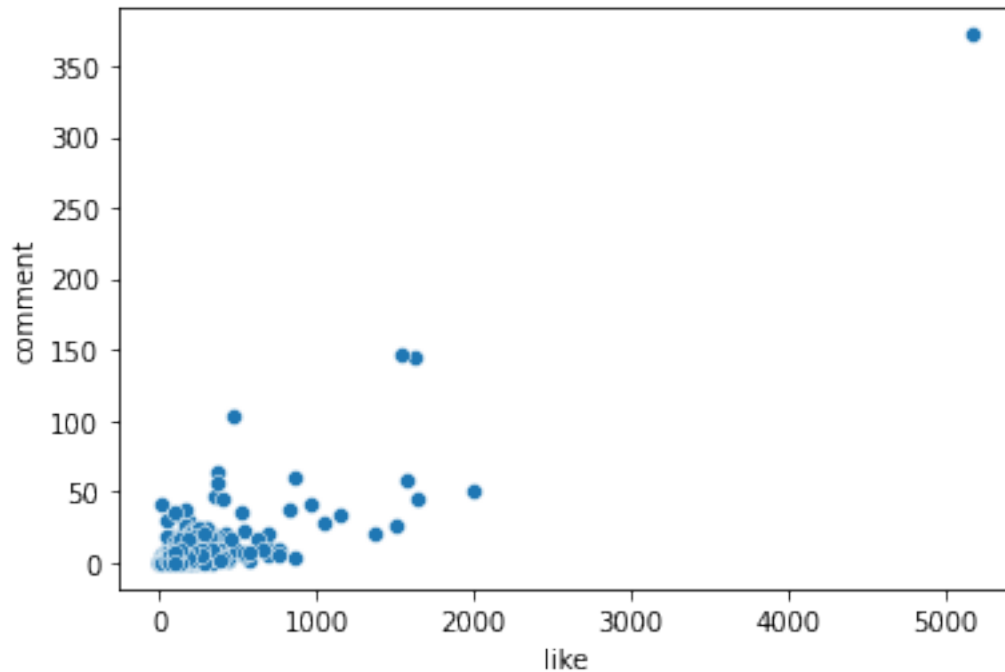


```
1 39
2 75
```

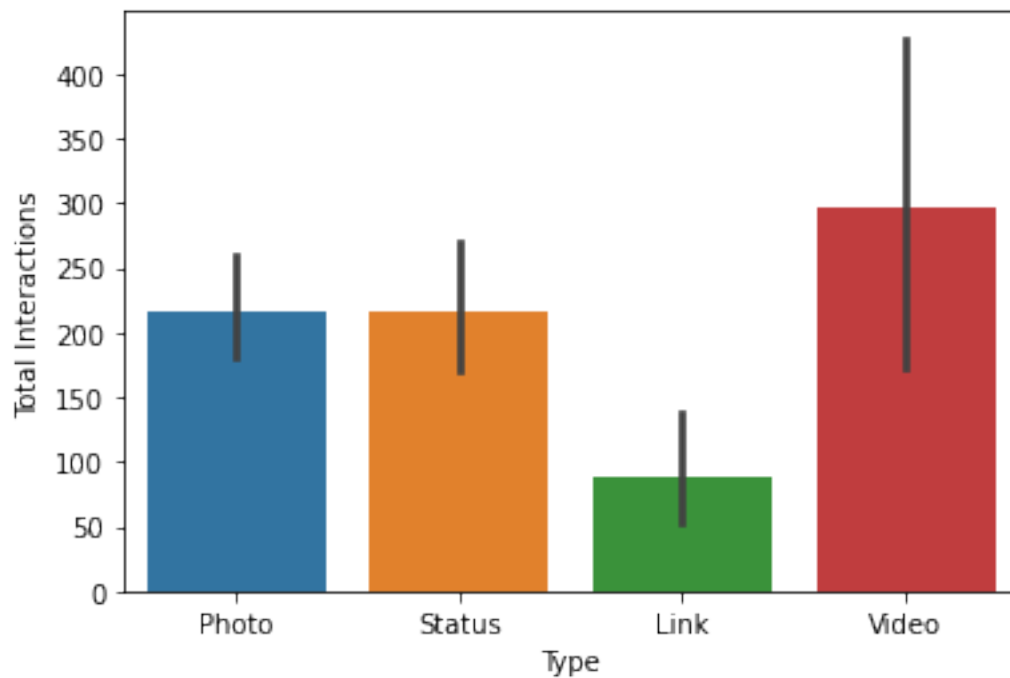
```
sb.scatterplot(data=facebook, x="Post Month",y="Total Interactions")
<AxesSubplot:xlabel='Post Month', ylabel='Total Interactions'>
```



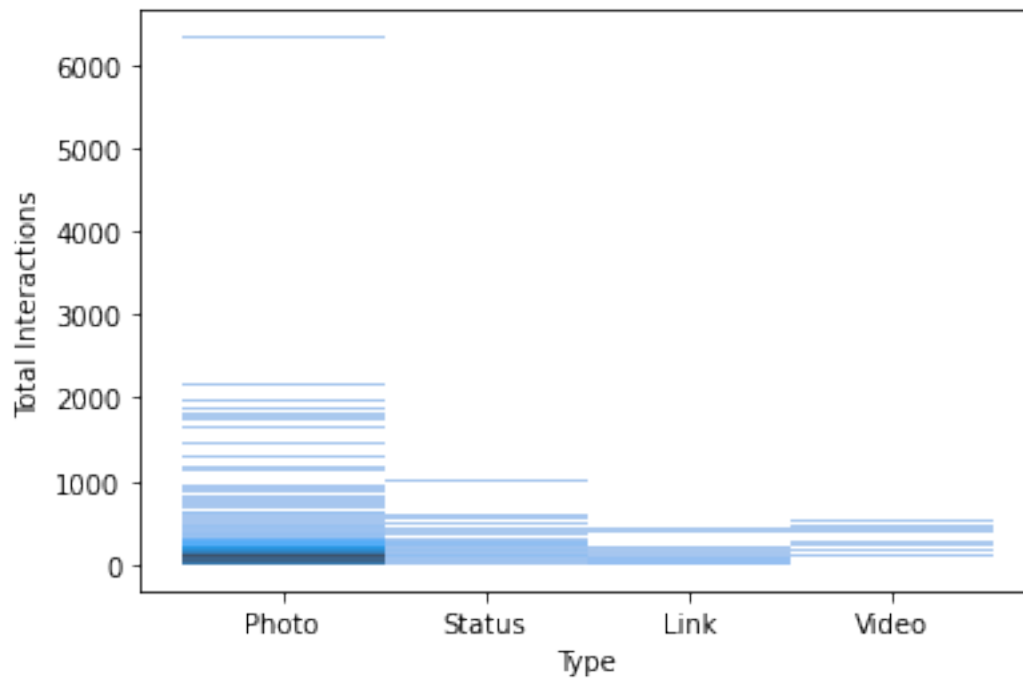
```
sb.pairplot(facebook, hue="Type")
<seaborn.axisgrid.PairGrid at 0x7fc08d45e040>
```

```
sb.barplot(data=facebook, x="Type",y="Total Interactions")
<AxesSubplot:xlabel='Type', ylabel='Total Interactions'>
```



```
sb.histplot(data=facebook, x="Type",y="Total Interactions")
<AxesSubplot:xlabel='Type', ylabel='Total Interactions'>
```



```
df = facebook
df.head()
```

	Page total likes	Type	Category	Post Month	Post Weekday	Post Hour \
0	139441	Photo	2	12	4	3
1	139441	Status	2	12	3	10
2	139441	Photo	3	12	3	3
3	139441	Photo	2	12	2	10
4	139441	Photo	2	12	2	3

	Paid	Lifetime Post Total Reach	Lifetime Post Total Impressions \
0	0.0	2752	5091
1	0.0	10460	19057
2	0.0	2413	4373
3	1.0	50128	87991
4	0.0	7244	13594

	Lifetime Engaged Users	Lifetime Post Consumers \
0	178	109
1	1457	1361
2	177	113
3	2211	790
4	671	410

	Lifetime Post Consumptions \
0	159
1	1674
2	154
3	1119
4	580

	Lifetime Post Impressions by people who have liked your Page \
0	3078
1	11710
2	2812
3	61027
4	6228

	Lifetime Post reach by people who like your Page \
0	1640
1	6112
2	1503
3	32048
4	3200

	Lifetime People who have liked your Page and engaged with your post \
0	119
1	1108
2	132
3	1386
4	396

	comment	like	share	Total Interactions
0	4	79.0	17.0	100
1	5	130.0	29.0	164
2	0	66.0	14.0	80
3	58	1572.0	147.0	1777
4	19	325.0	49.0	393

```
sb1 = df[['Total Interactions','Lifetime Post reach by people who like your Page','comment','share','Lifetime Engaged Users','Lifetime Post Total Impressions','Category','Lifetime Post Consumptions']]
```

```
sb1
```

	Total Interactions	Lifetime Post reach by people who like your Page \
0	100	

1640	
1	164
6112	
2	80
1503	
3	1777
32048	
4	393
3200	
..	...
...	
495	84
2876	
496	75
2104	
497	115
2388	
498	136
2452	
499	119
2200	

	comment	share	Lifetime Engaged Users	Lifetime Post Total
Impressions \				
0	4	17.0	178	
5091				
1	5	29.0	1457	
19057				
2	0	14.0	177	
4373				
3	58	147.0	2211	
87991				
4	19	49.0	671	
13594				
..	
...				
495	5	26.0	733	
7536				
496	0	22.0	537	
6229				
497	4	18.0	625	
7216				
498	7	38.0	626	
7564				
499	0	28.0	564	
7292				

Category	Lifetime Post Consumptions
0	2
	159

1	2	1674
2	3	154
3	2	1119
4	2	580
..
495	3	985
496	2	687
497	1	795
498	3	832
499	2	743

[500 rows x 8 columns]

```
sb2 = df[['Total Interactions','Lifetime Post reach by people who like
your Page','comment','share','Lifetime Engaged Users','Lifetime Post
Total Impressions','Category','Lifetime Post Consumptions','Page total
likes','Type']]
```

sb2

	Total Interactions	Lifetime Post reach by people who like your
Page \		
0	100	
1640		
1	164	
6112		
2	80	
1503		
3	1777	
32048		
4	393	
3200		
..	...	
...		
495	84	
2876		
496	75	
2104		
497	115	
2388		
498	136	
2452		
499	119	
2200		

	comment	share	Lifetime Engaged Users	Lifetime Post Total
Impressions \				
0	4	17.0	178	
5091				
1	5	29.0	1457	

19057			
2	0	14.0	177
4373			
3	58	147.0	2211
87991			
4	19	49.0	671
13594			
..
...			
495	5	26.0	733
7536			
496	0	22.0	537
6229			
497	4	18.0	625
7216			
498	7	38.0	626
7564			
499	0	28.0	564
7292			

	Category	Lifetime Post Consumptions	Page total likes	Type
0	2	159	139441	Photo
1	2	1674	139441	Status
2	3	154	139441	Photo
3	2	1119	139441	Photo
4	2	580	139441	Photo
..
495	3	985	85093	Photo
496	2	687	81370	Photo
497	1	795	81370	Photo
498	3	832	81370	Photo
499	2	743	81370	Photo

[500 rows x 10 columns]

```
sb3 = df[['Total Interactions','Lifetime Post reach by people who like
your Page','comment','share','Lifetime Engaged Users','Lifetime Post
Total Impressions','Category','Lifetime Post Consumptions','Page total
likes','Type','Post Month','Post Weekday','Post Hour']]
```

sb3

	Total Interactions	Lifetime Post reach by people who like your
Page \		
0	100	
1640		
1	164	
6112		
2	80	
1503		

3	1777
32048	
4	393
3200	
..	...
...	
495	84
2876	
496	75
2104	
497	115
2388	
498	136
2452	
499	119
2200	

	comment	share	Lifetime Engaged Users	Lifetime Post Total
Impressions \				
0	4	17.0	178	
5091				
1	5	29.0	1457	
19057				
2	0	14.0	177	
4373				
3	58	147.0	2211	
87991				
4	19	49.0	671	
13594				
..	
...				
495	5	26.0	733	
7536				
496	0	22.0	537	
6229				
497	4	18.0	625	
7216				
498	7	38.0	626	
7564				
499	0	28.0	564	
7292				

	Category	Lifetime Post Consumptions	Page total likes	Type \
0	2	159	139441	Photo
1	2	1674	139441	Status
2	3	154	139441	Photo
3	2	1119	139441	Photo
4	2	580	139441	Photo
..

495	3	985	85093	Photo
496	2	687	81370	Photo
497	1	795	81370	Photo
498	3	832	81370	Photo
499	2	743	81370	Photo

	Post Month	Post Weekday	Post Hour
0	12	4	3
1	12	3	10
2	12	3	3
3	12	2	10
4	12	2	3
..
495	1	7	2
496	1	5	8
497	1	5	2
498	1	4	11
499	1	4	4

[500 rows x 13 columns]

```
sb4 = sb3[sb3['Type']=='Photo']
```

```
sb4.shape
```

(426, 13)

```
sb5 = sb3[sb2['Type']=='Status']
```

```
sb5.shape
```

(45, 13)

```
merge12 = pd.merge(sb1, sb2)
```

```
merge12
```

	Total Interactions	Lifetime Post reach by people who like your
Page \		
0	100	
1640		
1	164	
6112		
2	80	
1503		
3	1777	
32048		
4	393	
3200		
..	...	
...		

495	84
2876	
496	75
2104	
497	115
2388	
498	136
2452	
499	119
2200	

	comment	share	Lifetime Engaged Users	Lifetime Post Total
Impressions \				
0	4	17.0	178	
5091				
1	5	29.0	1457	
19057				
2	0	14.0	177	
4373				
3	58	147.0	2211	
87991				
4	19	49.0	671	
13594				
..	
...				
495	5	26.0	733	
7536				
496	0	22.0	537	
6229				
497	4	18.0	625	
7216				
498	7	38.0	626	
7564				
499	0	28.0	564	
7292				

	Category	Lifetime Post Consumptions	Page total likes	Type
0	2	159	139441	Photo
1	2	1674	139441	Status
2	3	154	139441	Photo
3	2	1119	139441	Photo
4	2	580	139441	Photo
..
495	3	985	85093	Photo
496	2	687	81370	Photo
497	1	795	81370	Photo
498	3	832	81370	Photo
499	2	743	81370	Photo

[500 rows x 10 columns]

```
merge23 = pd.merge(sb2, sb3, how = "outer")
merge23
```

	Total Interactions	Lifetime Post reach by people who like your
Page \		
0	100	
1640		
1	164	
6112		
2	80	
1503		
3	1777	
32048		
4	393	
3200		
..	...	
...		
495	84	
2876		
496	75	
2104		
497	115	
2388		
498	136	
2452		
499	119	
2200		

	comment	share	Lifetime Engaged Users	Lifetime Post Total
Impressions \				
0	4	17.0	178	
5091				
1	5	29.0	1457	
19057				
2	0	14.0	177	
4373				
3	58	147.0	2211	
87991				
4	19	49.0	671	
13594				
..	
...				
495	5	26.0	733	
7536				
496	0	22.0	537	
6229				
497	4	18.0	625	
7216				
498	7	38.0	626	
7564				

```
499      0    28.0      564
7292
```

	Category	Lifetime Post Consumptions	Page total likes	Type \
0	2	159	139441	Photo
1	2	1674	139441	Status
2	3	154	139441	Photo
3	2	1119	139441	Photo
4	2	580	139441	Photo
..
495	3	985	85093	Photo
496	2	687	81370	Photo
497	1	795	81370	Photo
498	3	832	81370	Photo
499	2	743	81370	Photo

	Post Month	Post Weekday	Post Hour
0	12	4	3
1	12	3	10
2	12	3	3
3	12	2	10
4	12	2	3
..
495	1	7	2
496	1	5	8
497	1	5	2
498	1	4	11
499	1	4	4

```
[500 rows x 13 columns]
```

```
merge12 = pd.merge(sb1, sb2, how="inner")
merge12
```

	Total Interactions	Lifetime Post reach by people who like your
Page \		
0	100	
1640		
1	164	
6112		
2	80	
1503		
3	1777	
32048		
4	393	
3200		
..	...	
...		
495	84	
2876		

496	75
2104	
497	115
2388	
498	136
2452	
499	119
2200	

	comment	share	Lifetime Engaged Users	Lifetime Post Total
Impressions \				
0	4	17.0	178	
5091				
1	5	29.0	1457	
19057				
2	0	14.0	177	
4373				
3	58	147.0	2211	
87991				
4	19	49.0	671	
13594				
..	
...				
495	5	26.0	733	
7536				
496	0	22.0	537	
6229				
497	4	18.0	625	
7216				
498	7	38.0	626	
7564				
499	0	28.0	564	
7292				

	Category	Lifetime Post Consumptions	Page total likes	Type
0	2	159	139441	Photo
1	2	1674	139441	Status
2	3	154	139441	Photo
3	2	1119	139441	Photo
4	2	580	139441	Photo
..
495	3	985	85093	Photo
496	2	687	81370	Photo
497	1	795	81370	Photo
498	3	832	81370	Photo
499	2	743	81370	Photo

[500 rows x 10 columns]

merge45 = pd.merge(sb4, sb5, how="outer")

merge45

	Total Interactions	Lifetime Post reach by people who like your
Page \		
0	100	
1640		
1	80	
1503		
2	1777	
32048		
3	393	
3200		
4	279	
9328		
..	...	
...		
466	67	
8980		
467	255	
21352		
468	166	
7200		
469	587	
11408		
470	34	
8004		

	comment	share	Lifetime Engaged Users	Lifetime Post Total
Impressions \				
0	4	17.0	178	
5091				
1	0	14.0	177	
4373				
2	58	147.0	2211	
87991				
3	19	49.0	671	
13594				
4	3	27.0	481	
19479				
..	
...				
466	2	10.0	1636	
17099				
467	6	39.0	1701	
42313				
468	1	36.0	908	
16811				
469	17	123.0	2750	
34774				
470	3	6.0	951	

14759

	Category	Lifetime Post Consumptions	Page total likes	Type \
0	2	159	139441	Photo
1	3	154	139441	Photo
2	2	1119	139441	Photo
3	2	580	139441	Photo
4	3	364	139441	Photo
..
466	2	2755	119198	Status
467	1	2838	116435	Status
468	2	1967	116091	Status
469	2	6591	113028	Status
470	1	1290	104070	Status

	Post Month	Post Weekday	Post Hour
0	12	4	3
1	12	3	3
2	12	2	10
3	12	2	3
4	12	1	3
..
466	5	1	2
467	5	4	3
468	5	5	7
469	4	6	3
470	3	3	15

[471 rows x 13 columns]

```
df.sort_values('Post Month', ascending=True)
```

	Page total likes	Type	Category	Post Month	Post Weekday
Post Hour \					
499	81370	Photo	2	1	4
4					
475	86909	Photo	3	1	6
16					
476	86909	Photo	1	1	6
10					
477	86909	Link	1	1	6
4					
478	86909	Photo	3	1	5
13					
..
...					
29	138895	Video	1	12	4
11					

283	138895	Photo	2	12	5
273	138458	Photo	3	12	5
389	138895	Status	2	12	7
03	139441	Photo	2	12	4

	Paid Impressions \	Lifetime Post Total	Reach	Lifetime Post Total
499	177.945892		4188	
7292				
475	1.000000		5754	
9238				
476	1.000000		37088	
10966				
477	0.000000		39600	
7927				
478	0.000000		5536	
8745				
..	
...				
29	1.000000		36208	
61262				
28	0.000000		9560	
18264				
27	0.000000		2478	
4306				
38	0.000000		17576	
33058				
0	0.000000		2752	
5091				

	Lifetime Engaged Users	Lifetime Post Consumers \
499	564	524
475	1179	1143
476	2728	2288
477	572	496
478	1141	1099
..
29	1141	1068
28	973	559
27	212	124
38	5352	5202
0	178	109

	Lifetime Post Consumptions \
499	743
475	1452

476	3183
477	581
478	1461
..	...
29	1728
28	885
27	149
38	6547
0	159

Lifetime Post Impressions by people who have liked your Page \

499	3861
475	6101
476	66311
477	12522
478	5225
..	...
29	30131
28	9217
27	2612
38	23135
0	3078

Lifetime Post reach by people who like your Page \

499	2200
475	3546
476	34352
477	8176
478	3098
..	...
29	14112
28	4748
27	1443
38	11792
0	1640

Lifetime People who have liked your Page and engaged with your post \

499	316
475	420
476	2021
477	167
478	483
..	...

29	559
28	621
27	166
38	4104
0	119

	comment	like	share	Total Interactions
499	0	91.0	28.0	119
475	0	65.0	19.0	84
476	7	579.0	47.0	633
477	1	101.0	5.0	107
478	1	74.0	31.0	106
..
29	18	143.0	13.0	174
28	36	523.0	63.0	622
27	0	100.0	17.0	117
38	11	227.0	31.0	269
0	4	79.0	17.0	100

[500 rows x 19 columns]

df.sort_values('Post Month',ascending = False)

	Page total likes	Type	Category	Post Month	Post Weekday
Post Hour \					
0	139441	Photo	2	12	4
3					
38	138895	Status	2	12	7
9					
28	138895	Photo	2	12	5
3					
29	138895	Video	1	12	4
11					
30	138895	Photo	2	12	4
2					
..
...					
478	86909	Photo	3	1	5
13					
477	86909	Link	1	1	6
4					
476	86909	Photo	1	1	6
10					
475	86909	Photo	3	1	6
16					

499	81370	Photo	2	1	4
4					

	Paid	Lifetime Post Total	Reach	Lifetime Post Total
Impressions \				
0	0.000000		2752	
5091				
38	0.000000		17576	
33058				
28	0.000000		9560	
18264				
29	1.000000		36208	
61262				
30	0.000000		4940	
9390				
..	
...				
478	0.000000		5536	
8745				
477	0.000000		39600	
7927				
476	1.000000		37088	
10966				
475	1.000000		5754	
9238				
499	177.945892		4188	
7292				

	Lifetime Engaged Users	Lifetime Post Consumers \
0	178	109
38	5352	5202
28	973	559
29	1141	1068
30	385	306
..
478	1141	1099
477	572	496
476	2728	2288
475	1179	1143
499	564	524

	Lifetime Post Consumptions \
0	159
38	6547
28	885
29	1728
30	501
..	...
478	1461
477	581

476	3183
475	1452
499	743

Lifetime Post Impressions by people who have liked your Page \	
0	3078
38	23135
28	9217
29	30131
30	5860
..	...
478	5225
477	12522
476	66311
475	6101
499	3861

Lifetime Post reach by people who like your Page \	
0	1640
38	11792
28	4748
29	14112
30	2930
..	...
478	3098
477	8176
476	34352
475	3546
499	2200

Lifetime People who have liked your Page and engaged with your post \	
0	119
38	4104
28	621
29	559
30	273
..	...
478	483
477	167
476	2021

475	420
499	316

	comment	like	share	Total Interactions
0	4	79.0	17.0	100
38	11	227.0	31.0	269
28	36	523.0	63.0	622
29	18	143.0	13.0	174
30	33	107.0	22.0	162
..
478	1	74.0	31.0	106
477	1	101.0	5.0	107
476	7	579.0	47.0	633
475	0	65.0	19.0	84
499	0	91.0	28.0	119

[500 rows x 19 columns]

```
transpose = df.transpose()
```

```
transpose
```

	0	1
2 \		
Page total likes	139441	139441
139441		
Type	Photo	Status
Photo		
Category	2	2
3		
Post Month	12	12
12		
Post Weekday	4	3
3		
Post Hour	3	10
3		
Paid	0.0	0.0
0.0		
Lifetime Post Total Reach	2752	10460
2413		
Lifetime Post Total Impressions	5091	19057
4373		
Lifetime Engaged Users	178	1457
177		
Lifetime Post Consumers	109	1361
113		
Lifetime Post Consumptions	159	1674

154		
Lifetime Post Impressions by people who have li...	3078	11710
2812		
Lifetime Post reach by people who like your Page	1640	6112
1503		
Lifetime People who have liked your Page and en...	119	1108
132		
comment	4	5
0		
like	79.0	130.0
66.0		
share	17.0	29.0
14.0		
Total Interactions	100	164
80		
	3	4
5 \		
Page total likes	139441	139441
139441		
Type	Photo	Photo
Status		
Category	2	2
2		
Post Month	12	12
12		
Post Weekday	2	2
1		
Post Hour	10	3
9		
Paid	1.0	0.0
0.0		
Lifetime Post Total Reach	50128	7244
10472		
Lifetime Post Total Impressions	87991	13594
20849		
Lifetime Engaged Users	2211	671
1191		
Lifetime Post Consumers	790	410
1073		
Lifetime Post Consumptions	1119	580
1389		
Lifetime Post Impressions by people who have li...	61027	6228
16034		
Lifetime Post reach by people who like your Page	32048	3200
7852		
Lifetime People who have liked your Page and en...	1386	396
1016		
comment	58	19

1		
like	1572.0	325.0
152.0		
share	147.0	49.0
33.0		
Total Interactions	1777	393
186		
	6	7
8 \		
Page total likes	139441	139441
139441		
Type	Photo	Photo
Status		
Category	3	3
2		
Post Month	12	12
12		
Post Weekday	1	7
7		
Post Hour	3	9
3		
Paid	1.0	1.0
0.0		
Lifetime Post Total Reach	11692	13720
11844		
Lifetime Post Total Impressions	19479	24137
22538		
Lifetime Engaged Users	481	537
1530		
Lifetime Post Consumers	265	232
1407		
Lifetime Post Consumptions	364	305
1692		
Lifetime Post Impressions by people who have li...	15432	19728
15220		
Lifetime Post reach by people who like your Page	9328	11056
7912		
Lifetime People who have liked your Page and en...	379	422
1250		
comment	3	0
0		
like	249.0	325.0
161.0		
share	27.0	14.0
31.0		
Total Interactions	279	339
192		

491 \	9	...	490
Page total likes	139441	...	85979
85979			
Type	Photo	...	Photo
Photo			
Category	3	...	3
3			
Post Month	12	...	1
1			
Post Weekday	6	...	6
6			
Post Hour	10	...	11
3			
Paid	0.0	...	0.0
1.0			
Lifetime Post Total Reach	4694	...	5280
6184			
Lifetime Post Total Impressions	8668	...	8703
10228			
Lifetime Engaged Users	280	...	951
956			
Lifetime Post Consumers	183	...	911
901			
Lifetime Post Consumptions	250	...	1237
1140			
Lifetime Post Impressions by people who have li...	4309	...	5757
6085			
Lifetime Post reach by people who like your Page	2324	...	3300
3502			
Lifetime People who have liked your Page and en...	199	...	431
437			
comment	3	...	1
1			
like	113.0	...	79.0
105.0			
share	26.0	...	30.0
46.0			
Total Interactions	142	...	110
152			
	492	493	
494 \			
Page total likes	85979	85093	
85093			
Type	Link	Photo	
Photo			
Category	1	3	
3			

Post Month	1	1
1		
Post Weekday	5	1
7		
Post Hour	11	2
10		
Paid	0.0	0.0
0.0		
Lifetime Post Total Reach	45920	8412
5400		
Lifetime Post Total Impressions	5808	13960
9218		
Lifetime Engaged Users	753	1179
810		
Lifetime Post Consumers	655	1111
756		
Lifetime Post Consumptions	763	1632
1003		
Lifetime Post Impressions by people who have li...	15766	8632
5654		
Lifetime Post reach by people who like your Page	10720	5348
3230		
Lifetime People who have liked your Page and en...	220	699
422		
comment	0	17
10		
like	128.0	185.0
125.0		
share	9.0	55.0
41.0		
Total Interactions	137	257
176		
	495	496
497 \		
Page total likes	85093	81370
81370		
Type	Photo	Photo
Photo		
Category	3	2
1		
Post Month	1	1
1		
Post Weekday	7	5
5		
Post Hour	2	8
2		
Paid	0.0	0.0
0.0		

Lifetime Post Total Reach	4684	3480
3778		
Lifetime Post Total Impressions	7536	6229
7216		
Lifetime Engaged Users	733	537
625		
Lifetime Post Consumers	708	508
572		
Lifetime Post Consumptions	985	687
795		
Lifetime Post Impressions by people who have li...	4750	3961
4742		
Lifetime Post reach by people who like your Page	2876	2104
2388		
Lifetime People who have liked your Page and en...	392	301
363		
comment	5	0
4		
like	53.0	53.0
93.0		
share	26.0	22.0
18.0		
Total Interactions	84	75
115		
	498	499
Page total likes	81370	81370
Type	Photo	Photo
Category	3	2
Post Month	1	1
Post Weekday	4	4
Post Hour	11	4
Paid	0.0	177.945892
Lifetime Post Total Reach	4156	4188
Lifetime Post Total Impressions	7564	7292
Lifetime Engaged Users	626	564
Lifetime Post Consumers	574	524
Lifetime Post Consumptions	832	743

Lifetime Post Impressions by people who have li...	4534	3861
Lifetime Post reach by people who like your Page	2452	2200
Lifetime People who have liked your Page and en...	370	316
comment	7	0
like	91.0	91.0
share	38.0	28.0
Total Interactions	136	119

[19 rows x 500 columns]

transpose.shape

(19, 500)

pd.pivot_table(df,index="Type",values="like",columns="Post Month")

Post Month	1	2	3	4	5
6 \					
Type					
Link	61.500000	114.00	35.333333	151.000000	46.000000
NaN					
Photo	134.571429	196.12	89.406250	179.065217	229.030303
134.065217					
Status	NaN	NaN	25.000000	447.000000	131.333333
88.000000					
Video	NaN	NaN	NaN	NaN	NaN
204.000000					
Post Month	7	8	9	10	11
12					
Type					
Link	NaN	NaN	NaN	66.333333	130.000000
53.166667					
Photo	292.113636	209.1	233.806452	141.815222	152.578947
197.258065					
Status	143.285714	118.5	180.250000	283.625000	137.000000
169.333333					
Video	315.000000	NaN	345.000000	NaN	204.333333
143.000000					

```
pivots = pd.pivot_table(df, index="Category", columns="Type",
values="Paid")
pivots
```

Type	Link	Photo	Status	Video
Category				
1	0.3	0.286486	0.333333	0.571429
2	0.0	2.208197	0.236842	NaN
3	0.0	0.286667	0.000000	NaN

```
df.stack()
```

```
0    Page total likes
```

```
139441
```

```
    Type
```

```
Photo
```

```
    Category
```

```
2
```

```
    Post Month
```

```
12
```

```
    Post Weekday
```

```
4
```

```
...
```

```
499 Lifetime People who have liked your Page and engaged with your
post      316
```

```
    comment
```

```
0
```

```
    like
```

```
91.0
```

```
    share
```

```
28.0
```

```
    Total Interactions
```

```
119
```

```
Length: 9500, dtype: object
```

```
df.unstack()
```

```
Page total likes
```

```
0    139441
```

```
1    139441
```

```
2    139441
```

```
3    139441
```

```
4    139441
```

```
...
```

```
Total Interactions
```

```
495    84
```

```
496    75
```

```
497   115
```

```
498   136
```

499 119
Length: 9500, dtype: object