DAY-24

OCTOBER-10

PANDAS:

1. To add a column to the table
   Example: create a new column with hp/wt.
   d2['temp']=d2['hp']/d2['wt']

	manufacturer	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb	temp
0	Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4	41.984733
1	Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4	38.260870
2	Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1	40.086207
3	Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1	34.214619
4	Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2	50.872093
5	Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1	30.346821
6	Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4	68.627451

2. To update a column:
   Example: add 10 to all the carb values

	manufacturer	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb	temp
0	Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	14	41.984733
1	Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	14	38.260870
2	Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	11	40.086207
3	Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	11	34.214619
4	Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	12	50.872093
5	Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	11	30.346821
6	Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	14	68.627451

3. To find unique records in the column: d2['gear'].unique()
   o/p: array([4, 3, 5], dtype=int64)
4. To count how many records of each unique value is present in the table:
   d2['gear'].value_counts()
   o/p:
   gear
   3 15
   4 12

5 5

Name: count, dtype: int64

5. To print unique records of all columns:

```
for i in d2.columns:
    print(d2[i].unique())
```

o/p:

```
['Mazda RX4' 'Mazda RX4 Wag' 'Datsun 710' 'Hornet 4 Drive'
 'Hornet Sportabout' 'Valiant' 'Duster 360' 'Merc 240D' 'Merc 230'
 'Merc 280' 'Merc 280C' 'Merc 450SE' 'Merc 450SL' 'Merc 450SLC'
 'Cadillac Fleetwood' 'Lincoln Continental' 'Chrysler Imperial' 'Fiat 128'
 'Honda Civic' 'Toyota Corolla' 'Toyota Corona' 'Dodge Challenger'
 'AMC Javelin' 'Camaro Z28' 'Pontiac Firebird' 'Fiat X1-9' 'Porsche 914-2'
 'Lotus Europa' 'Ford Pantera L' 'Ferrari Dino' 'Maserati Bora'
 'Volvo 142E']
[21.  22.8 21.4 18.7 18.1 14.3 24.4 19.2 17.8 16.4 17.3 15.2 10.4 14.7
 32.4 30.4 33.9 21.5 15.5 13.3 27.3 26.  15.8 19.7 15. ]
[6 4 8]
[160.  108.  258.  360.  225.  146.7 140.8 167.6 275.8 472.  460.  440.
  78.7  75.7  71.1 120.1 318.  304.  350.  400.   79.  120.3  95.1 351.
 145.  301.  121. ]
[110  93 175 105 245  62  95 123 180 205 215 230  66  52  65  97 150  91
 113 264 335 109]
[3.9  3.85 3.08 3.15 2.76 3.21 3.69 3.92 3.07 2.93 3.   3.23 4.08 4.93
 4.22 3.7  3.73 4.43 3.77 3.62 3.54 4.11]
[2.62  2.875 2.32  3.215 3.44  3.46  3.57  3.19  3.15  4.07  3.73  3.78
 5.25  5.424 5.345 2.2   1.615 1.835 2.465 3.52  3.435 3.84  3.845 1.935
 2.14  1.513 3.17  2.77  2.78 ]
[16.46 17.02 18.61 19.44 20.22 15.84 20.   22.9  18.3  18.9  17.4  17.6
 18.   17.98 17.82 17.42 19.47 18.52 19.9  20.01 16.87 17.3  15.41 17.05
 16.7  16.9  14.5  15.5  14.6  18.6 ]
[0 1]
[1 0]
[4 3 5]
[14 11 12 13 16 18]
[41.98473282 38.26086957 40.0862069  34.21461897 50.87209302 30.34682081
 68.62745098 19.43573668 30.15873016 35.75581395 44.22604423 48.25737265
 47.61904762 39.04761905 39.63864307 43.03086997 30.         32.19814241
 35.42234332 39.35091278 42.61363636 43.66812227 63.80208333 45.5136541
 34.10852713 42.52336449 74.6860542  83.2807571  63.17689531 93.83753501
 39.20863309]
```

Categorical data in d2: manufacturer,cyl,vs,am,gear,carb

6. find mean,median,max,min,count of mpg column.

Code:

```
d2.mpg.mean()
d2['mpg'].median()
d2['mpg'].max()
d2['mpg'].min()
```

d2['mpg'].count()

7. Rename manufacturer column by maf:
   d2.rename({'manufacturer':'maf'},axis=1,inplace=True)

	maf	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb	temp
0	Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	14	41.984733
1	Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	14	38.260870
2	Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	11	40.086207
3	Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	11	34.214619

8. Extract 3 gear car records
   d2[d2['gear']==3]
   o/p:

	maf	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb	temp
3	Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	11	34.214619
4	Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	12	50.872093
5	Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	11	30.346821
6	Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	14	68.627451
11	Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	13	44.226044
12	Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	13	48.257373
13	Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	13	47.619048
14	Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	14	39.047619
15	Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	14	39.638643
16	Chrysler Imperial	14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	14	43.030870
20	Toyota Corona	21.5	4	120.1	97	3.70	2.465	20.01	1	0	3	11	39.350913
21	Dodge Challenger	15.5	8	318.0	150	2.76	3.520	16.87	0	0	3	12	42.613636
22	AMC Javelin	15.2	8	304.0	150	3.15	3.435	17.30	0	0	3	12	43.668122
23	Camaro Z28	13.3	8	350.0	245	3.73	3.840	15.41	0	0	3	14	63.802083
24	Pontiac Firebird	19.2	8	400.0	175	3.08	3.845	17.05	0	0	3	12	45.513654

9. print d2 in ascending order of mpg values
   d2.sort_values('mpg')
   o/p:

	maf	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb	temp
15	Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	14	39.638643
14	Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	14	39.047619
23	Camaro Z28	13.3	8	350.0	245	3.73	3.840	15.41	0	0	3	14	63.802083
6	Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	14	68.627451
16	Chrysler Imperial	14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	14	43.030870
30	Maserati Bora	15.0	8	301.0	335	3.54	3.570	14.60	0	1	5	18	93.837535
13	Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	13	47.619048
22	AMC Javelin	15.2	8	304.0	150	3.15	3.435	17.30	0	0	3	12	43.668122
21	Dodge Challenger	15.5	8	318.0	150	2.76	3.520	16.87	0	0	3	12	42.613636
28	Ford Pantera L	15.8	8	351.0	264	4.22	3.170	14.50	0	1	5	14	83.280757
11	Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	13	44.226044
12	Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	13	48.257373
10	Merc 280C	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	14	35.755814

To print in descending order:
d2.sort_values('mpg',ascending=True)

	maf	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb	temp
15	Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	14	39.638643
14	Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	14	39.047619
23	Camaro Z28	13.3	8	350.0	245	3.73	3.840	15.41	0	0	3	14	63.802083
6	Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	14	68.627451
16	Chrysler Imperial	14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	14	43.030870
30	Maserati Bora	15.0	8	301.0	335	3.54	3.570	14.60	0	1	5	18	93.837535
13	Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	13	47.619048
22	AMC Javelin	15.2	8	304.0	150	3.15	3.435	17.30	0	0	3	12	43.668122
21	Dodge Challenger	15.5	8	318.0	150	2.76	3.520	16.87	0	0	3	12	42.613636
28	Ford Pantera L	15.8	8	351.0	264	4.22	3.170	14.50	0	1	5	14	83.280757