```python
!pip install pandas
!pip install numpy
!pip install matplotlib
!pip install seaborn
```

Show hidden output

```python
!pip install pandas
!pip install numpy
!pip install matplotlib
!pip install seaborn
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from matplotlib import rcParams as mrc
```

```python
%matplotlib inline
mrc['figure.figsize']=5,4
```

```python
x=range(0,9)
y=[1,2,3,4,0,4,3,2,1]
fig=plt.figure()
ax=fig.add_axes([.1,.1,1,1])
ax.plot(x,y)
```

```
[<matplotlib.lines.Line2D at 0x7a8d0054f1a0>]
```



```python
x=range(0,9)
y=[1,2,3,4,0,4,3,2,1]
```
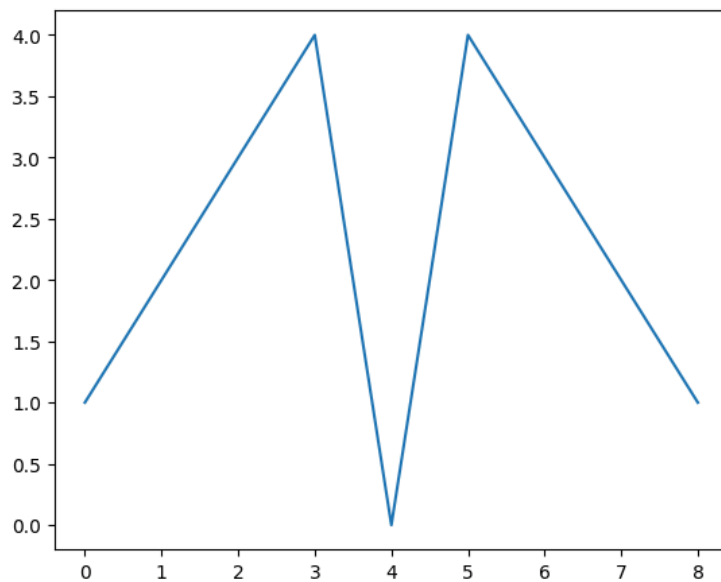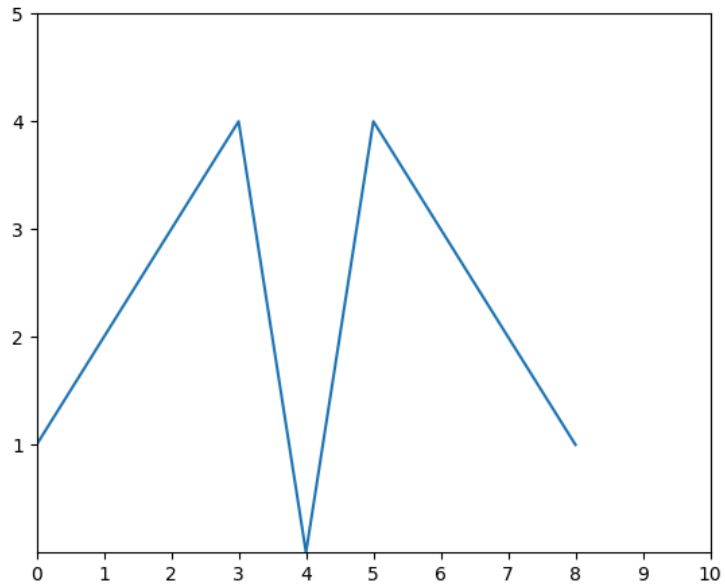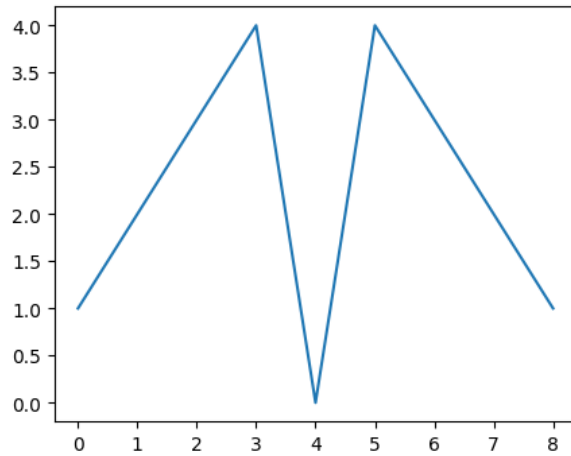
```
fig=plt.figure()
ax=fig.add_axes([.1,.1,1,1])
ax.set_xlim([1,9])
ax.set_ylim([-0,5])
ax.set_xticks([0,1,2,3,4,5,6,7,8,9,10])
ax.set_yticks([1,2,3,4,5])
ax.plot(x,y)
```

```
[<matplotlib.lines.Line2D at 0x7a8d00390da0>]
```



```
x= range(0,9)
y=[1,2,3,4,0,4,3,2,1]
plt.plot(x,y)
```
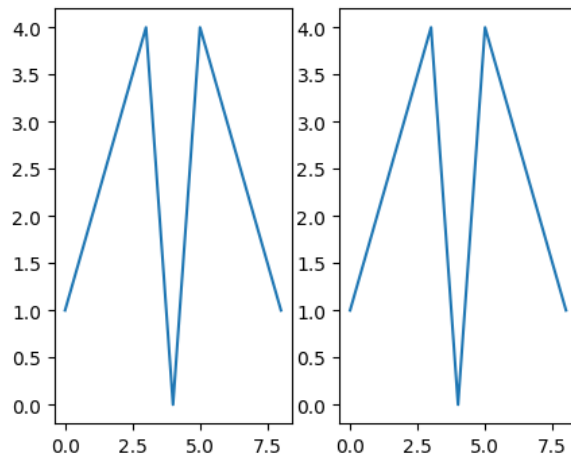
```
[<matplotlib.lines.Line2D at 0x7a8d00447f50>]
```



```
fig=plt.figure()
fig,(ax1,ax2)=plt.subplots(1,2)
ax1.plot(x,y)
ax2.plot(x,y)
```

```
[<matplotlib.lines.Line2D at 0x7a8cfdefc0b0>]
<Figure size 500x400 with 0 Axes>
```


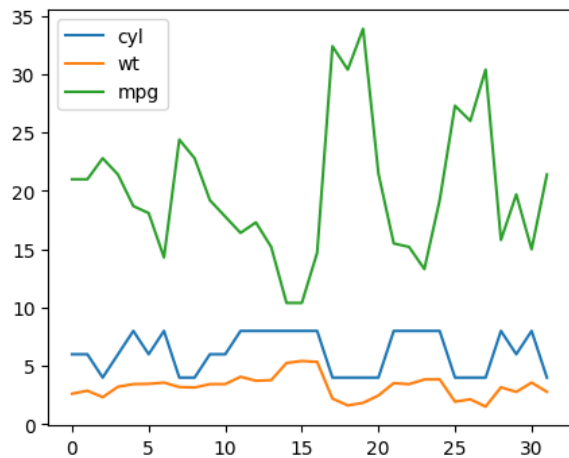Start coding or generate with AI.

```
address = "/content/mtcars.csv"
```

```
df=pd.read_csv(address)
df
```

	Unnamed: 0	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
0	Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
1	Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
2	Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
3	Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
4	Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
5	Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1
6	Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
7	Merc 240D	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
8	Merc 230	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
9	Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
10	Merc 280C	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
11	Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
12	Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
13	Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	3
14	Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	4
15	Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4
16	Chrysler Imperial	14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	4
17	Fiat 128	32.4	4	78.7	66	4.08	2.200	19.47	1	1	4	1
18	Honda Civic	30.4	4	75.7	52	4.93	1.615	18.52	1	1	4	2
19	Toyota Corolla	33.9	4	71.1	65	4.22	1.835	19.90	1	1	4	1
20	Toyota Corona	21.5	4	120.1	97	3.70	2.465	20.01	1	0	3	1
21	Dodge Challenger	15.5	8	318.0	150	2.76	3.520	16.87	0	0	3	2
22	AMC Javelin	15.2	8	304.0	150	3.15	3.435	17.30	0	0	3	2
23	Camaro Z28	13.3	8	350.0	245	3.73	3.840	15.41	0	0	3	4
24	Pontiac Firebird	19.2	8	400.0	175	3.08	3.845	17.05	0	0	3	2
25	Fiat X1-9	27.3	4	79.0	66	4.08	1.935	18.90	1	1	4	1
26	Porsche 914-2	26.0	4	120.3	91	4.43	2.140	16.70	0	1	5	2
27	Lotus Europa	30.4	4	95.1	113	3.77	1.513	16.90	1	1	5	2
28	Ford Pantera L	15.8	8	351.0	264	4.22	3.170	14.50	0	1	5	4
29	Ferrari Dino	19.7	6	145.0	175	3.62	2.770	15.50	0	1	5	6
30	Maserati Bora	15.0	8	301.0	335	3.54	3.570	14.60	0	1	5	8
31	Volvo 142E	21.4	4	121.0	109	4.11	2.780	18.60	1	1	4	2

```python
df.rename(columns={'Unnamed: 0': 'Car_name'}, inplace=True)
df.columns
```

```
Index(['Car_name', 'mpg', 'cyl', 'disp', 'hp', 'drat', 'wt', 'qsec', 'vs',
       'am', 'gear', 'carb'],
      dtype='object')
```
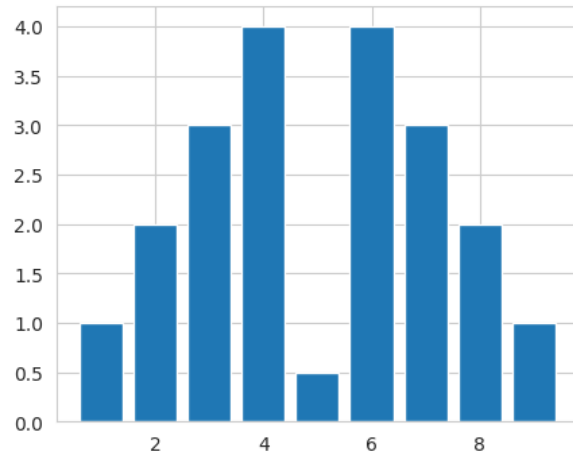
```python
df[['cyl','wt','mpg']].plot()
plt.savefig('fname')
```



```python
%matplotlib inline
mrc['figure.figsize']=5,4
sns.set_style('whitegrid')
```

```python
x=range(1,10)
y=[1,2,3,4,0.5,4,3,2,1]
plt.bar(x,y)
```
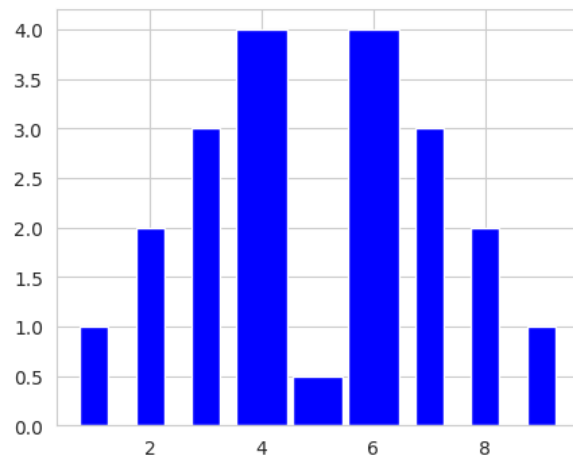
```
<BarContainer object of 9 artists>
```



```
wide=[0.5,0.5,0.5,0.9,0.9,0.9,0.5,0.5,0.5]
color=['blue']
plt.bar(x,y,width=wide,color=color,align='center')
```
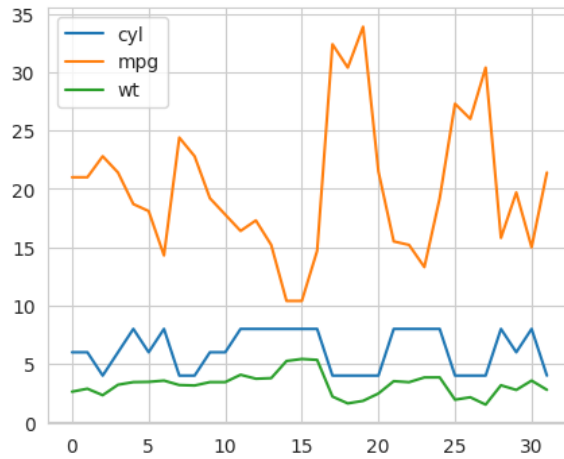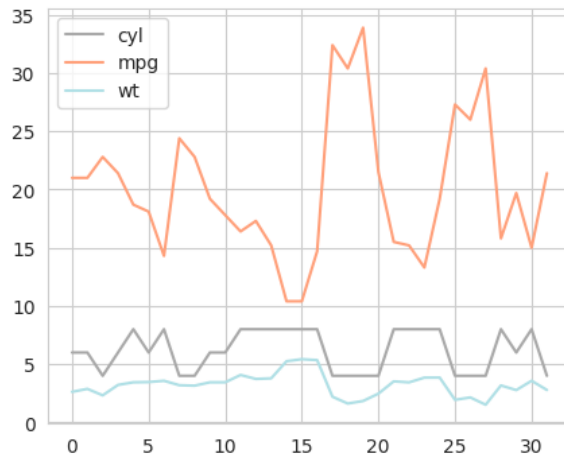
```
<BarContainer object of 9 artists>
```



```
df=cars[['cyl','mpg','wt']]
df.plot()
```

```
<Axes: >
```



```
df.plot(color=["darkgray","lightsalmon","powderblue"])
```

```
<Axes: >
```



```
!pip install pandas
!pip install numpy
!pip install matplotlib
!pip install seaborn
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from matplotlib import rcParams as mrc
```

```
Requirement already satisfied: pandas in /usr/local/lib/python3.12/dist-packages (2.2.2)
Requirement already satisfied: numpy>=1.26.0 in /usr/local/lib/python3.12/dist-packages (from pandas) (2.0.2)
Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/python3.12/dist-packages (from pandas) (2.9.0.post0)
```

```
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.12/dist-packages (from pandas) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.12/dist-packages (from pandas) (2025.2)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.12/dist-packages (from python-dateutil>=2.8.2->pandas) (1.17.0)
Requirement already satisfied: numpy in /usr/local/lib/python3.12/dist-packages (2.0.2)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.12/dist-packages (3.10.0)
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (1.3.3)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (4.59.2)
Requirement already satisfied: kiwisolver>=1.3.1 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (1.4.9)
Requirement already satisfied: numpy>=1.23 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (2.0.2)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (25.0)
Requirement already satisfied: pillow>=8 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (11.3.0)
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (3.2.3)
Requirement already satisfied: python-dateutil>=2.7 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (2.9.0.post0)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.12/dist-packages (from python-dateutil>=2.7->matplotlib) (1.17.0)
Requirement already satisfied: seaborn in /usr/local/lib/python3.12/dist-packages (0.13.2)
Requirement already satisfied: numpy!=1.24.0,>=1.20 in /usr/local/lib/python3.12/dist-packages (from seaborn) (2.0.2)
Requirement already satisfied: pandas>=1.2 in /usr/local/lib/python3.12/dist-packages (from seaborn) (2.2.2)
Requirement already satisfied: matplotlib!=3.6.1,>=3.4 in /usr/local/lib/python3.12/dist-packages (from seaborn) (3.10.0)
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.12/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (1.3.3)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.12/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.12/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (4.59.2)
Requirement already satisfied: kiwisolver>=1.3.1 in /usr/local/lib/python3.12/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (1.4.9)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.12/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (25.0)
Requirement already satisfied: pillow>=8 in /usr/local/lib/python3.12/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (11.3.0)
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.12/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (3.2.3)
Requirement already satisfied: python-dateutil>=2.7 in /usr/local/lib/python3.12/dist-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.12/dist-packages (from pandas>=1.2->seaborn) (2025.2)
Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.12/dist-packages (from pandas>=1.2->seaborn) (2025.2)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.12/dist-packages (from python-dateutil>=2.7->matplotlib!=3.6.1,>=3.4->seaborn) (1.17.0)
```

```python
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from matplotlib import rcParams as mrc
```

Start coding or generate with AI.

```python
adress = "/content/Superstore-Sales.csv"
df = pd.read_csv(adress, encoding="cp1252",index_col="Order Date",parse_dates=True)
df.columns
```

```
Index(['Row ID', 'Order ID', 'Order Priority', 'Order Quantity', 'Sales',
       'Discount', 'Ship Mode', 'Profit', 'Unit Price', 'Shipping Cost',
       'Customer Name', 'Province', 'Region', 'Customer Segment',
       'Product Category', 'Product Sub-Category', 'Product Name',
       'Product Container', 'Product Base Margin', 'Ship Date'],
      dtype='object')
```

```python
%matplotlib inline
mrc['figure.figsize']=5,4
sns.set_style('whitegrid')
```

```python
df2=df.sample(n=100,random_state=25, axis=0)
df2 = df2.sort_index()
```

```
df2['Order Quantity'].plot()
plt.savefig("order_quantity.png")
```
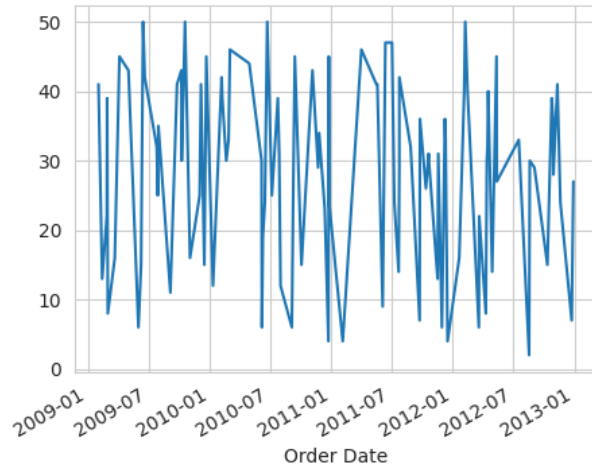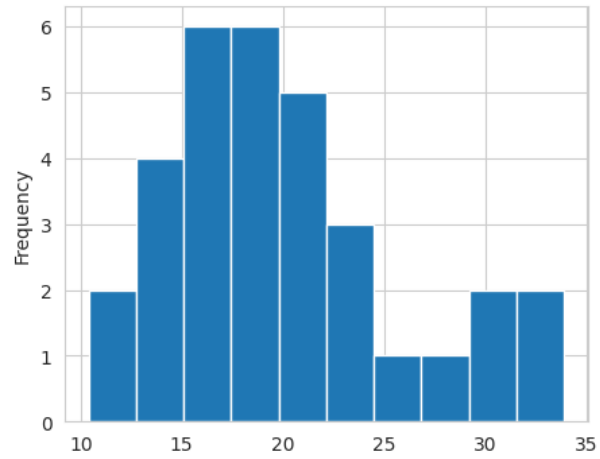


```
adress = "/content/mtcars.csv"
df = pd.read_csv(adress)
df
```

	Unnamed: 0	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
0	Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
1	Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
2	Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
3	Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
4	Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
5	Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1
6	Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
7	Merc 240D	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
8	Merc 230	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
9	Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
10	Merc 280C	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
11	Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
12	Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
13	Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	3
14	Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	4
15	Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4
16	Chrysler Imperial	14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	4
17	Fiat 128	32.4	4	78.7	66	4.08	2.200	19.47	1	1	4	1
18	Honda Civic	30.4	4	75.7	52	4.93	1.615	18.52	1	1	4	2
19	Toyota Corolla	33.9	4	71.1	65	4.22	1.835	19.90	1	1	4	1
20	Toyota Corona	21.5	4	120.1	97	3.70	2.465	20.01	1	0	3	1
21	Dodge Challenger	15.5	8	318.0	150	2.76	3.520	16.87	0	0	3	2
22	AMC Javelin	15.2	8	304.0	150	3.15	3.435	17.30	0	0	3	2
23	Camaro Z28	13.3	8	350.0	245	3.73	3.840	15.41	0	0	3	4
24	Pontiac Firebird	19.2	8	400.0	175	3.08	3.845	17.05	0	0	3	2
25	Fiat X1-9	27.3	4	79.0	66	4.08	1.935	18.90	1	1	4	1
26	Porsche 914-2	26.0	4	120.3	91	4.43	2.140	16.70	0	1	5	2
27	Lotus Europa	30.4	4	95.1	113	3.77	1.513	16.90	1	1	5	2
28	Ford Pantera L	15.8	8	351.0	264	4.22	3.170	14.50	0	1	5	4
29	Ferrari Dino	19.7	6	145.0	175	3.62	2.770	15.50	0	1	5	6
30	Maserati Bora	15.0	8	301.0	335	3.54	3.570	14.60	0	1	5	8
31	Volvo 142E	21.4	4	121.0	109	4.11	2.780	18.60	1	1	4	2

```python
df['mpg'].plot(kind='hist')
```

```
<Axes: ylabel='Frequency'>
```



```python
sns.displot(df['mpg'])
```
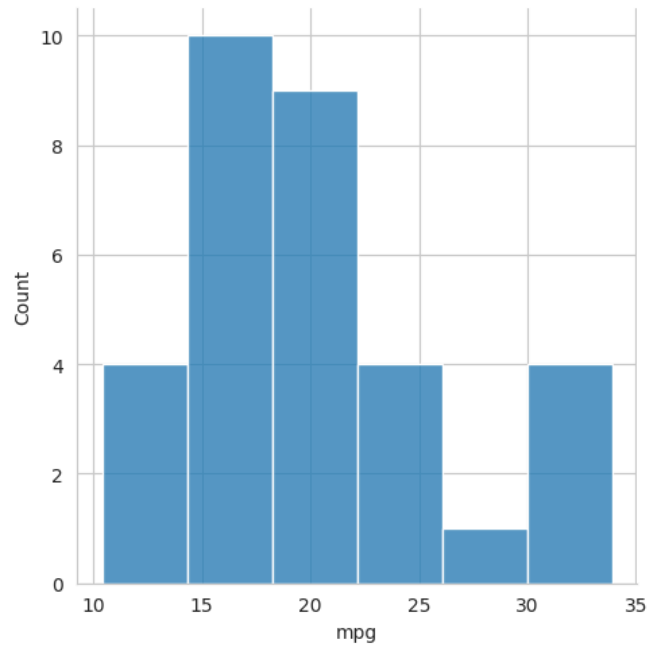
```
<seaborn.axisgrid.FacetGrid at 0x7ac1f686a6c0>
```
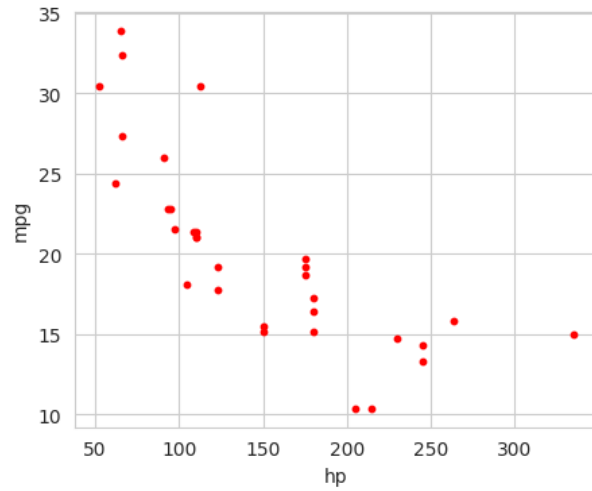


```python
df.plot(kind="scatter",x="hp",y='mpg',c=['red'],s=10)
```
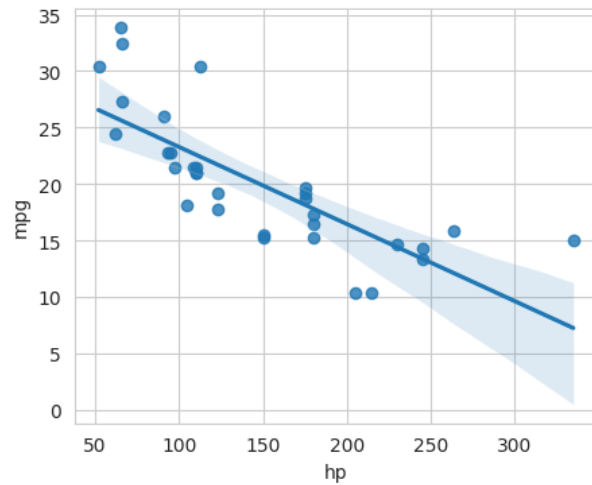
<Axes: xlabel='hp', ylabel='mpg'>


```
sns.regplot(x="hp",y='mpg',data=df,scatter=True)
```

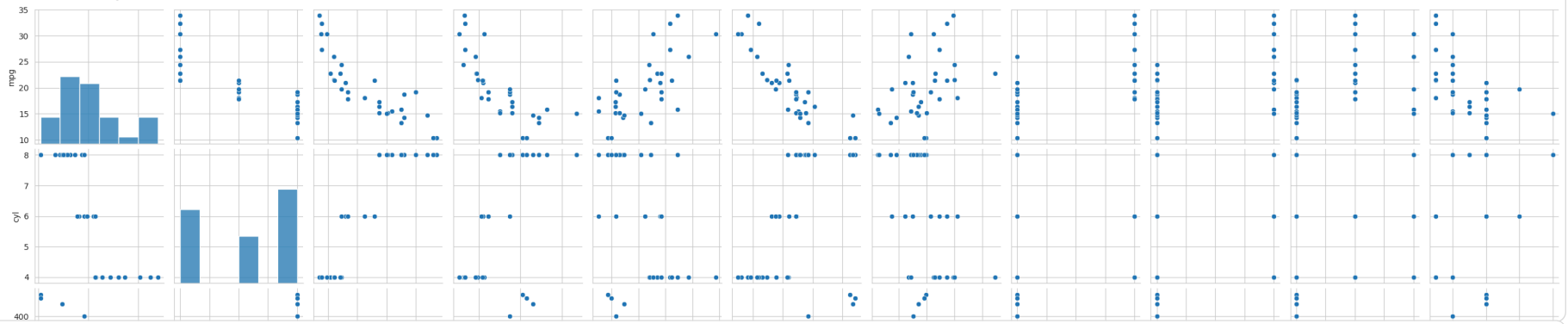<Axes: xlabel='hp', ylabel='mpg'>
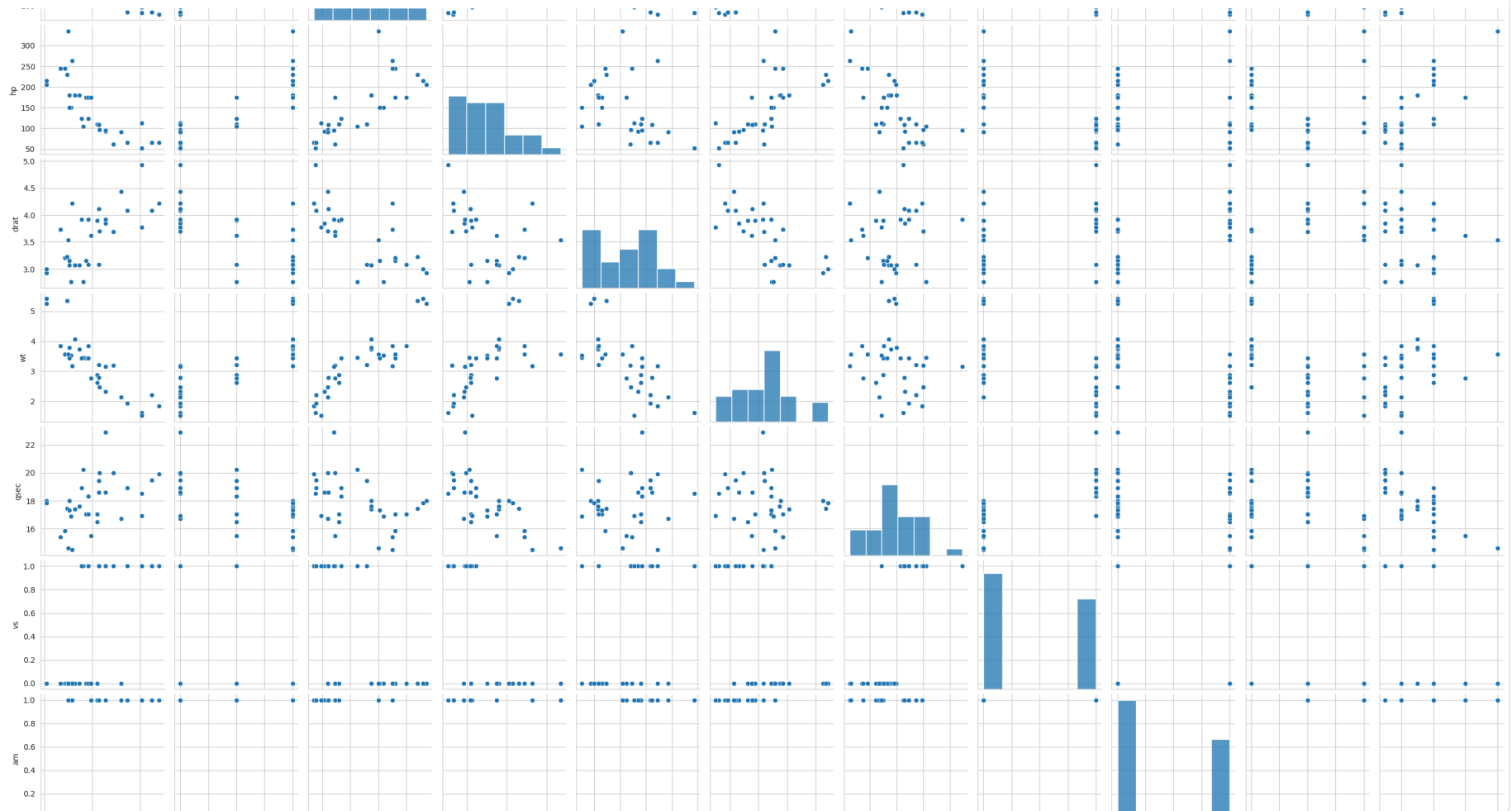


```
sns.pairplot(df)
```

<seaborn.axisgrid.PairGrid at 0x7ac1ecf84c20>
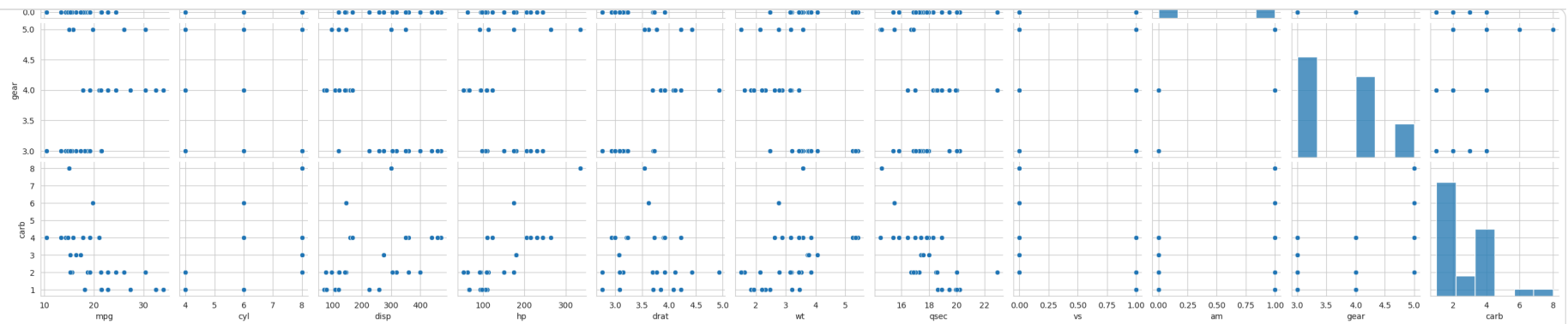


```
cars=df[['mpg','disp','hp','wt']]
sns.pairplot(cars)
plt.show
```

```
matplotlib.pyplot.show
def show(*args, **kwargs) -> None
```
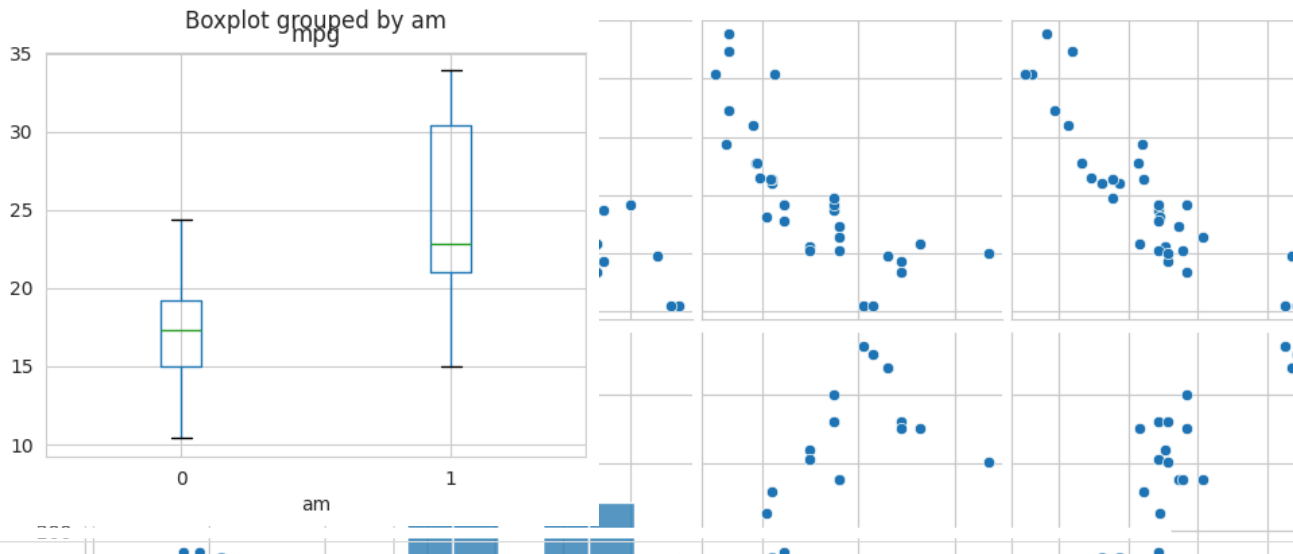
```
df.boxplot(column="mpg", by="am")
```
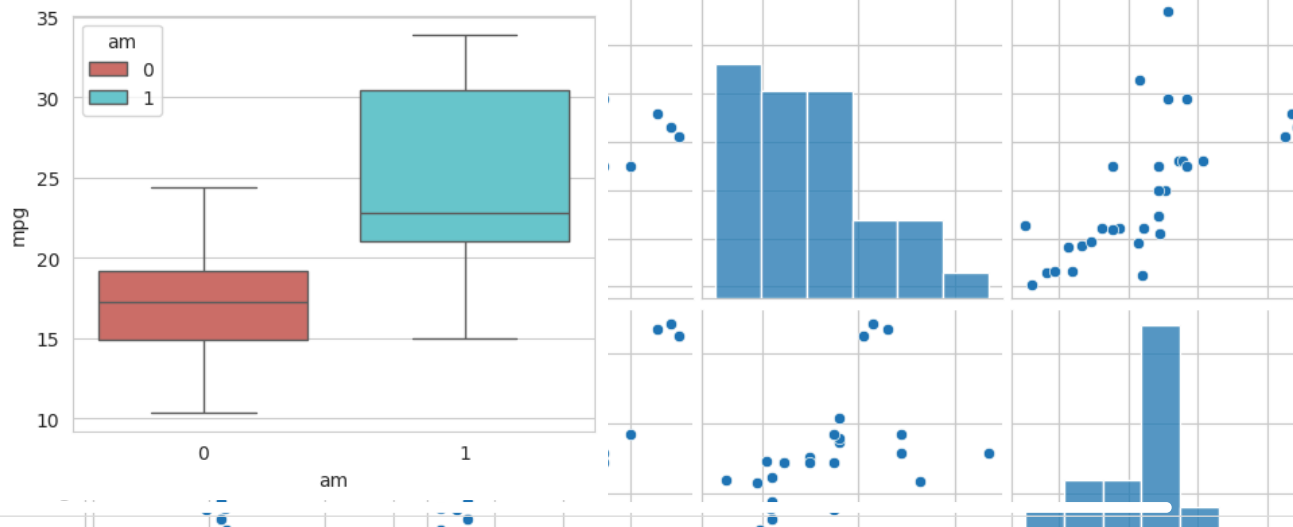
<Axes: title={'center': 'mpg'}, xlabel='am'>


```
sns.boxplot(x='am',y='mpg',data=df,hue='am',palette='hls')
```

<Axes: xlabel='am', ylabel='mpg'>


```
import numpy as np
import pandas as pd
```

```python
import scipy as sp
```

```python
cars=pd.read_csv('/content/mtcars.csv')
cars.head()
```

	Unnamed: 0	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
0	Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
1	Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
2	Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
3	Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
4	Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2

```python
cars.sum(axis=1,numeric_only=True)
```

	0
0	328.980
1	329.795
2	259.580
3	426.135
4	590.310
5	385.540
6	656.920
7	270.980
8	299.570
9	350.460
10	349.660
11	510.740
12	511.500
13	509.850
14	728.560
15	726.644
16	725.695
17	213.850
18	195.165
19	206.955
20	273.775
21	519.650
22	506.085
23	646.280
24	631.175
25	208.215
26	272.570
27	273.683
28	670.690
29	379.590
30	694.710
31	288.890

dtype: float64

```
cars.median(numeric_only='True')
```

	0
mpg	19.200
cyl	6.000
disp	196.300
hp	123.000
drat	3.695
wt	3.325
qsec	17.710
vs	0.000
am	0.000
gear	4.000
carb	2.000

dtype: float64

```
cars.mean(numeric_only='True')
```

	0
mpg	20.090625
cyl	6.187500
disp	230.721875
hp	146.687500
drat	3.596563
wt	3.217250
qsec	17.848750
vs	0.437500
am	0.406250
gear	3.687500
carb	2.812500

dtype: float64

```
cars.max()
```

	0
Unnamed: 0	Volvo 142E
mpg	33.9
cyl	8
disp	472.0
hp	335
drat	4.93
wt	5.424
qsec	22.9
vs	1
am	1
gear	5
carb	8

dtype: object

```
cars.std(numeric_only='True')
```

	0
mpg	6.026948
cyl	1.785922
disp	123.938694
hp	68.562868
drat	0.534679
wt	0.978457
qsec	1.786943
vs	0.504016
am	0.498991
gear	0.737804
carb	1.615200

dtype: float64

```
cars.var(numeric_only='True')
```

	0
mpg	36.324103
cyl	3.189516
disp	15360.799829
hp	4700.866935
drat	0.285881
wt	0.957379
qsec	3.193166