

```
In [2]: import pandas as pd
import warnings
import matplotlib.pyplot as plt
import warnings
warnings.filterwarnings("ignore")
```

```
In [3]: data=pd.read_csv("/home/placement/Downloads/Advertising.csv")
```

```
In [4]: data.describe()
```

Out[4]:

	Unnamed: 0	TV	radio	newspaper	sales
count	200.000000	200.000000	200.000000	200.000000	200.000000
mean	100.500000	147.042500	23.264000	30.554000	14.022500
std	57.879185	85.854236	14.846809	21.778621	5.217457
min	1.000000	0.700000	0.000000	0.300000	1.600000
25%	50.750000	74.375000	9.975000	12.750000	10.375000
50%	100.500000	149.750000	22.900000	25.750000	12.900000
75%	150.250000	218.825000	36.525000	45.100000	17.400000
max	200.000000	296.400000	49.600000	114.000000	27.000000

```
In [5]: data1=data.drop(['Unnamed: 0'],axis=1)
```

```
In [6]: data1
```

```
Out[6]:
```

	TV	radio	newspaper	sales
0	230.1	37.8	69.2	22.1
1	44.5	39.3	45.1	10.4
2	17.2	45.9	69.3	9.3
3	151.5	41.3	58.5	18.5
4	180.8	10.8	58.4	12.9
...
195	38.2	3.7	13.8	7.6
196	94.2	4.9	8.1	9.7
197	177.0	9.3	6.4	12.8
198	283.6	42.0	66.2	25.5
199	232.1	8.6	8.7	13.4

200 rows × 4 columns

```
In [7]: y=data1['sales']  
x=data1.drop(['sales'],axis=1)
```

In [8]:

y

Out[8]:

```
0      22.1
1      10.4
2       9.3
3      18.5
4      12.9
...
195     7.6
196     9.7
197    12.8
198    25.5
199    13.4
Name: sales, Length: 200, dtype: float64
```

In [9]:

x

Out[9]:

	TV	radio	newspaper
0	230.1	37.8	69.2
1	44.5	39.3	45.1
2	17.2	45.9	69.3
3	151.5	41.3	58.5
4	180.8	10.8	58.4
...
195	38.2	3.7	13.8
196	94.2	4.9	8.1
197	177.0	9.3	6.4
198	283.6	42.0	66.2
199	232.1	8.6	8.7

200 rows × 3 columns

```
In [10]: data1=data.drop(['sales'],axis=1)
```

```
In [11]: data1
```

```
Out[11]:
```

	Unnamed: 0	TV	radio	newspaper
0	1	230.1	37.8	69.2
1	2	44.5	39.3	45.1
2	3	17.2	45.9	69.3
3	4	151.5	41.3	58.5
4	5	180.8	10.8	58.4
...
195	196	38.2	3.7	13.8
196	197	94.2	4.9	8.1
197	198	177.0	9.3	6.4
198	199	283.6	42.0	66.2
199	200	232.1	8.6	8.7

200 rows × 4 columns

```
In [12]: from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.33,random_state=42)
```

```
In [13]: from sklearn.model_selection import GridSearchCV
from sklearn.linear_model import Lasso

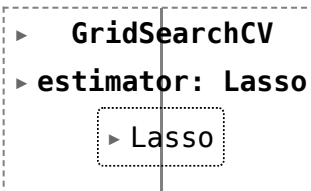
lasso = Lasso()

parameters = {'alpha': [1e-15, 1e-10, 1e-8, 1e-4, 1e-3, 1e-2, 1, 5, 10, 20]}

lasso_regressor = GridSearchCV(lasso, parameters)

lasso_regressor.fit(x_train, y_train)
```

```
Out[13]:
```



```
  ▶ GridSearchCV
  ▶ estimator: Lasso
    ▶ Lasso
```

```
In [14]: lasso_regressor.best_params_
```

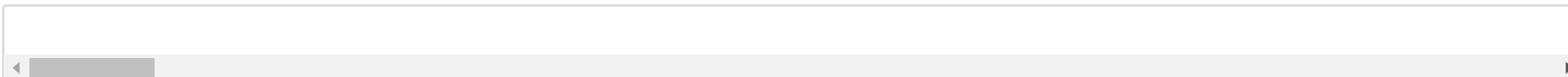
```
Out[14]: {'alpha': 1}
```

```
In [15]: lasso=Lasso(alpha=30)
lasso.fit(x_train,y_train)
y_pred_lasso=lasso.predict(x_test)
```

```
In [16]: from sklearn.metrics import r2_score
r2_score(y_test,y_pred_lasso)
```

```
Out[16]: 0.7659327162791038
```

```
In [ ]:
```



```
In [ ]:
```

