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In [ ]: import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

```
In [4]: from sklearn.datasets import make_regression
```

```
In [8]: X,y=make_regression(n_samples=500,n_features=5,coef=False,bias=12,noise=10,random
```

```
In [11]: X,y,w=make_regression(n_samples=500,n_features=5,coef=True,bias=12,noise=10,randc
```

```
In [12]: X
```

```
Out[12]: array([[ 0.77913208, -1.09701784, -0.14239962,  1.02427891, -1.0708024 ],
                [-0.6925009 ,  0.45535977,  0.34707569, -0.32456746,  0.21970203],
                [-0.03901601, -0.3265115 ,  0.59793721,  0.61686653, -0.6237489 ],
                ...,
                [ 0.33412665,  0.11474505,  0.62425899, -0.09658955, -0.81613498],
                [-1.41673418, -0.96799608, -1.00597234, -0.05460157,  1.20460091],
                [-0.63173072, -0.12198402,  0.59411585,  0.04694857, -1.97796558]])
```

```
In [13]: X.shape,y.shape
```

```
Out[13]: ((500, 5), (500,))
```

```
In [14]: #w is coef of x
w
```

```
Out[14]: array([29.45661718, 60.14529878, 61.7409438 , 13.32437893, 99.08122896])
```

```
In [15]: X[0:5]
```

```
Out[15]: array([[ 0.77913208, -1.09701784, -0.14239962,  1.02427891, -1.0708024 ],
                [-0.6925009 ,  0.45535977,  0.34707569, -0.32456746,  0.21970203],
                [-0.03901601, -0.3265115 ,  0.59793721,  0.61686653, -0.6237489 ],
                [-0.61566117, -0.11782129, -0.98234619, -0.78292727,  0.42713048],
                [ 1.30822207, -0.72541559,  0.60187975,  0.33285998,  1.48506184]])
```

```
In [16]: y[0:5]
```

```
Out[16]: array([-136.21858395,  49.83118244, -29.81097858, -31.74001475,
                193.0687778 ])
```

```
In [17]: from sklearn.model_selection import train_test_split
```

```
In [19]: X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.3,random_state=252
```

```
In [20]: #train the model
```

```
In [21]: from sklearn.linear_model import LinearRegression
```

```
In [22]: model=LinearRegression()
```

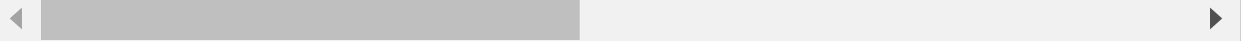
```
In [25]: model.fit(X_train,y_train)
```

```
Out[25]: LinearRegression()
```

```
In [26]: model.intercept_
```

```
Out[26]: 12.804677404011848
```

```
In [27]: #bias introduced at the time of generating dataset was 12 and predicted intercept
```



```
In [28]: model.coef_
```

```
Out[28]: array([30.14690156, 59.8508539 , 61.00591796, 13.33058614, 98.52732683])
```

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In [29]: #predictions
```

```
In [30]: y_pred=model.predict(X_test)
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```
In [31]: #model evaluation
```

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In [34]: from sklearn.metrics import mean_absolute_error,mean_squared_error,r2_score
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In [35]: mean_squared_error(y_test,y_pred)
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Out[35]: 93.17298608096334
```

```
In [37]: mean_absolute_error(y_test,y_pred)
```

```
Out[37]: 7.861503882499261
```

```
In [38]: r2_score(y_test,y_pred)
```

```
Out[38]: 0.9944221597296871
```

```
In [ ]:
```