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])
```

In [29]:
```
 #predictions
```

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

In [31]:
```
#model evaluation
```

In [34]:
```
from sklearn.metrics import mean_absolute_error,mean_squared_error,r2_score
```

In [35]:
```
mean_squared_error(y_test,y_pred)
```

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 [ ]:
```

```