In [1]:
```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
import sklearn
```

In [2]:
```python
df = pd.read_csv('../Desktop/DS/Heart_Disease_Prediction.csv')
df
```

Out[2]:

	Age	Sex	Chest pain type	BP	Cholesterol	FBS over 120	EKG results	Max HR	Exercise angina	ST depression	Slope of ST	Number of vessels fluro	T
0	70	1	4	130	322	0	2	109	0	2.4	2	3	
1	67	0	3	115	564	0	2	160	0	1.6	2	0	
2	57	1	2	124	261	0	0	141	0	0.3	1	0	
3	64	1	4	128	263	0	0	105	1	0.2	2	1	
4	74	0	2	120	269	0	2	121	1	0.2	1	1	
...	...	...	...	...	...	...	...	...	...	...	...	...	
265	52	1	3	172	199	1	0	162	0	0.5	1	0	
266	44	1	2	120	263	0	0	173	0	0.0	1	0	
267	56	0	2	140	294	0	2	153	0	1.3	2	0	
268	57	1	4	140	192	0	0	148	0	0.4	2	0	
269	67	1	4	160	286	0	2	108	1	1.5	2	3	

270 rows × 14 columns

In [3]:
```python
#data Cleaning-------------------------->
df.rename(columns={'BP' : 'BP_'},inplace=True)
df
```

Out[3]:

	Age	Sex	Chest pain type	BP_	Cholesterol	FBS over 120	EKG results	Max HR	Exercise angina	ST depression	Slope of ST	Number of vessels fluro	T
0	70	1	4	130	322	0	2	109	0	2.4	2	3	
1	67	0	3	115	564	0	2	160	0	1.6	2	0	
2	57	1	2	124	261	0	0	141	0	0.3	1	0	
3	64	1	4	128	263	0	0	105	1	0.2	2	1	
4	74	0	2	120	269	0	2	121	1	0.2	1	1	
...	...	...	...	...	...	...	...	...	...	...	...	...	
265	52	1	3	172	199	1	0	162	0	0.5	1	0	
266	44	1	2	120	263	0	0	173	0	0.0	1	0	
267	56	0	2	140	294	0	2	153	0	1.3	2	0	
268	57	1	4	140	192	0	0	148	0	0.4	2	0	
269	67	1	4	160	286	0	2	108	1	1.5	2	3	

270 rows × 14 columns

In [4]:
```python
# Adding New Cloumns (Data Transformation)
df['new_Column'] = pd.NaT
df
```

Out[4]:

	Age	Sex	Chest pain type	BP_	Cholesterol	FBS over 120	EKG results	Max HR	Exercise angina	ST depression	Slope of ST	Number of vessels fluro	T
0	70	1	4	130	322	0	2	109	0	2.4	2	3	
1	67	0	3	115	564	0	2	160	0	1.6	2	0	
2	57	1	2	124	261	0	0	141	0	0.3	1	0	
3	64	1	4	128	263	0	0	105	1	0.2	2	1	
4	74	0	2	120	269	0	2	121	1	0.2	1	1	
...	...	...	...	...	...	...	...	...	...	...	...	...	
265	52	1	3	172	199	1	0	162	0	0.5	1	0	
266	44	1	2	120	263	0	0	173	0	0.0	1	0	
267	56	0	2	140	294	0	2	153	0	1.3	2	0	
268	57	1	4	140	192	0	0	148	0	0.4	2	0	
269	67	1	4	160	286	0	2	108	1	1.5	2	3	

270 rows × 15 columns

In [5]:
```python
#Replacing none values with 0(error correcting)
df.isnull().sum()
```

Out[5]:
```
Age                        0
Sex                        0
Chest pain type            0
BP_                        0
Cholesterol                0
FBS over 120               0
EKG results                0
Max HR                     0
Exercise angina            0
ST depression              0
Slope of ST                0
Number of vessels fluro    0
Thallium                   0
Heart Disease              0
new_Column               270
dtype: int64
```

In [6]:
```python
df['new_Column'] = df['new_Column'].replace(np.nan, 0)
df.isna().sum()
```

```
Out[6]:  Age                        0
         Sex                        0
         Chest pain type            0
         BP_                        0
         Cholesterol                0
         FBS over 120               0
         EKG results                0
         Max HR                     0
         Exercise angina            0
         ST depression              0
         Slope of ST                0
         Number of vessels fluro    0
         Thallium                   0
         Heart Disease              0
         new_Column                 0
         dtype: int64
```

In [8]:
```python
#Model Building
from sklearn.linear_model import LinearRegression
```
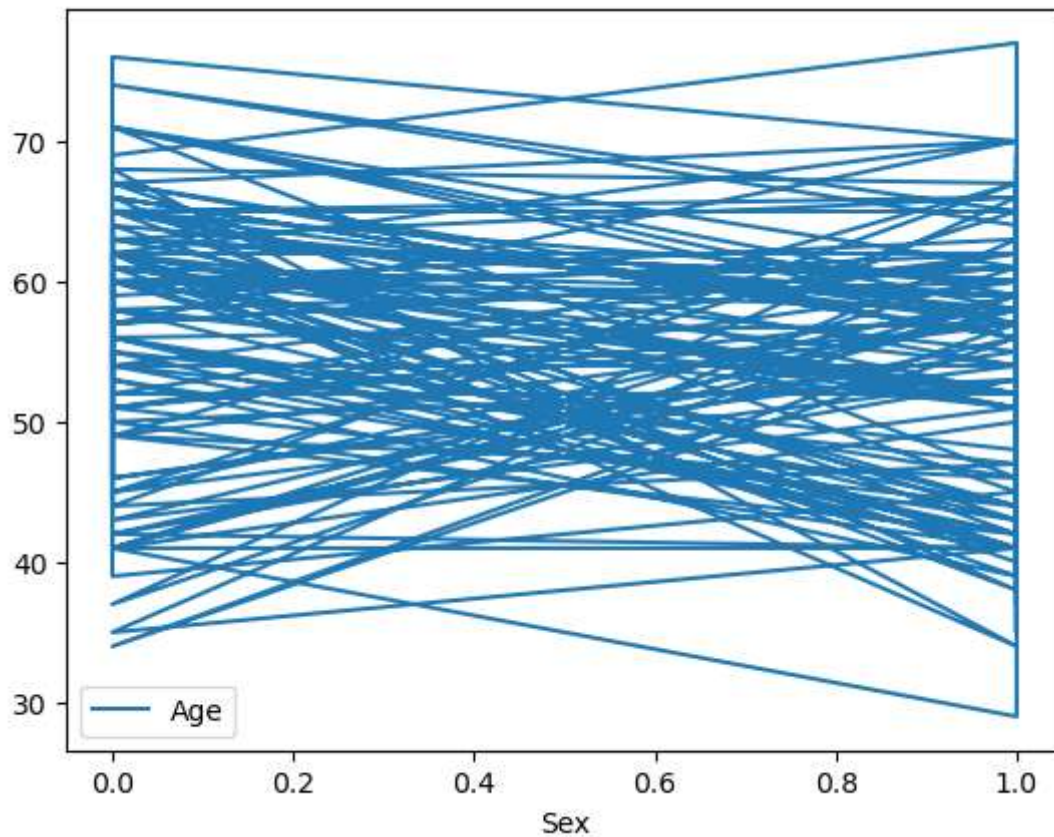
In [14]:
```python
X = df['Sex']
Y = df['Age']
```

In [18]:
```python
lm=LinearRegression(fit_intercept=False)
lm.fit(df[['Sex']],df.Age)
```

Out[18]:
```
       ▼          LinearRegression

    LinearRegression(fit_intercept=False)
```

In [19]:
```python
df.plot(kind='line',x='Sex',y='Age')
```

Out[19]:
```
<Axes: xlabel='Sex'>
```

In [22]:
```python
#coef_ ---> is used to display 2D Array
lm.coef_
```

Out[22]: array([53.84153005])

In [24]:
```python
lm.predict([[8]])
```

C:\Users\HP\anaconda3\lib\site-packages\sklearn\base.py:420: UserWarning: X does not have valid feature names, but LinearRegression was fitted with feature names
  warnings.warn(

Out[24]: array([430.73224044])

In [ ]: