In [5]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn import metrics
```

In [6]:

```
df=pd.read_csv('BostonHousing.csv')
df
```

Out[6]:

	crim	zn	indus	chas	nox	rm	age	dis	rad	tax	ptratio	b
0	0.00632	18.0	2.31	0	0.538	6.575	65.2	4.0900	1	296	15.3	396.90
1	0.02731	0.0	7.07	0	0.469	6.421	78.9	4.9671	2	242	17.8	396.90
2	0.02729	0.0	7.07	0	0.469	7.185	61.1	4.9671	2	242	17.8	392.83
3	0.03237	0.0	2.18	0	0.458	6.998	45.8	6.0622	3	222	18.7	394.63
4	0.06905	0.0	2.18	0	0.458	7.147	54.2	6.0622	3	222	18.7	396.90
...	...	...	...	...	...	...	...	...	...	...	...	...
501	0.06263	0.0	11.93	0	0.573	6.593	69.1	2.4786	1	273	21.0	391.99
502	0.04527	0.0	11.93	0	0.573	6.120	76.7	2.2875	1	273	21.0	396.90
503	0.06076	0.0	11.93	0	0.573	6.976	91.0	2.1675	1	273	21.0	396.90
504	0.10959	0.0	11.93	0	0.573	6.794	89.3	2.3889	1	273	21.0	393.45
505	0.04741	0.0	11.93	0	0.573	6.030	80.8	2.5050	1	273	21.0	396.90

506 rows × 14 columns

In [ ]:

```
print("\nMissing values:")
print(df.isnull().sum())
```

```
Missing values:
crim       0
zn         0
indus      0
chas       0
nox        0
rm         5
age        0
dis        0
rad        0
tax        0
ptratio    0
b          0
lstat      0
medv       0
dtype: int64
```

In [ ]:

```
df.dropna(inplace=True)
```

In [ ]:
```
X = df.drop('medv', axis=1)
y = df['medv']
```

In [ ]:
```
X_train, X_test, y_train, y_test = train_test_split(
    X, y, test_size=0.2, random_state=42)
```

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

Out[ ]:
```
▾ LinearRegression

LinearRegression()
```

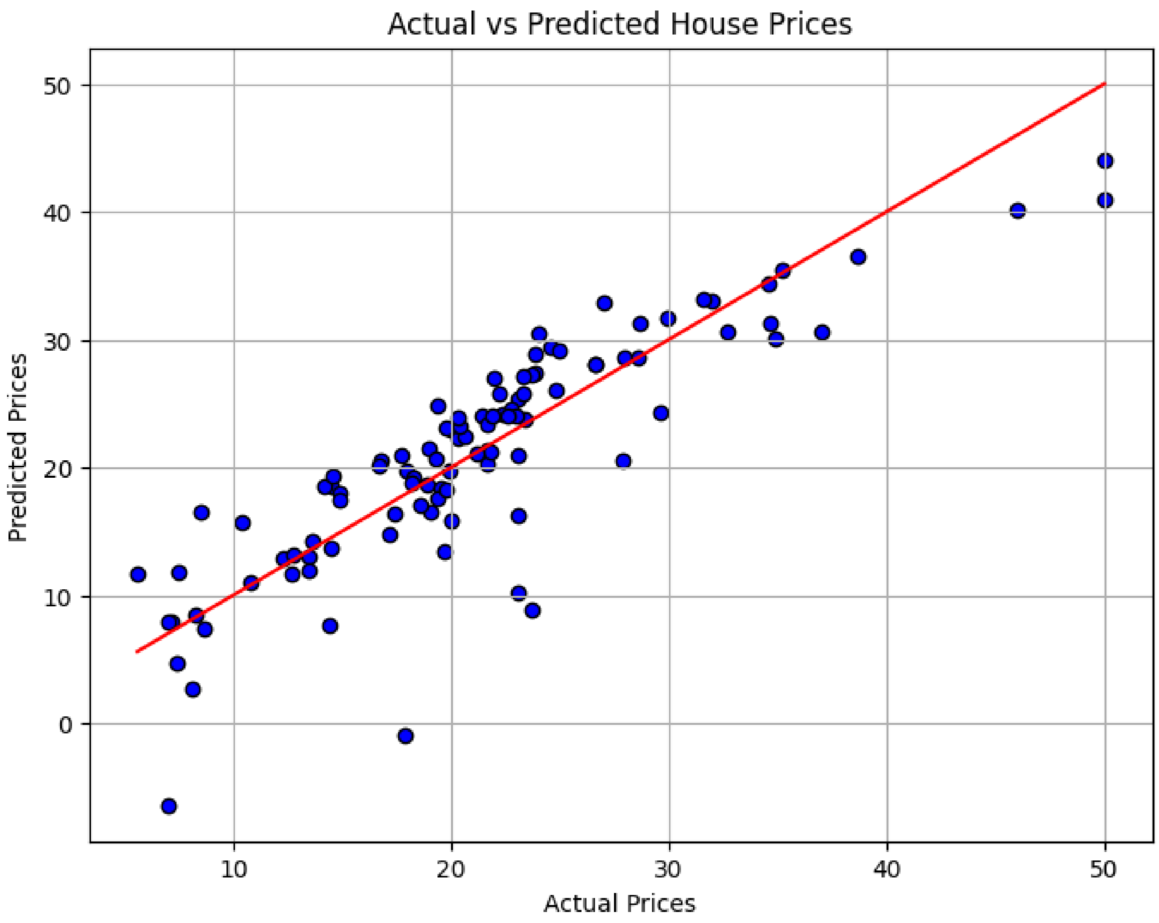
In [ ]:
```
y_pred = model.predict(X_test)
```

In [ ]:
```
mae = metrics.mean_absolute_error(y_test, y_pred)
mse = metrics.mean_squared_error(y_test, y_pred)
rmse = np.sqrt(mse)
r2 = metrics.r2_score(y_test, y_pred)
```

In [ ]:
```
print(f"\nModel Performance:")
print(f"Mean Absolute Error (MAE): {mae:.2f}")
print(f"Mean Squared Error (MSE): {mse:.2f}")
print(f"Root Mean Squared Error (RMSE): {rmse:.2f}")
print(f"R² Score: {r2:.2f}")
```

```
Model Performance:
Mean Absolute Error (MAE): 3.24
Mean Squared Error (MSE): 20.69
Root Mean Squared Error (RMSE): 4.55
R² Score: 0.72
```

In [ ]:
```
plt.figure(figsize=(8,6))
plt.scatter(y_test, y_pred, color='blue', edgecolors='black')
plt.xlabel("Actual Prices")
plt.ylabel("Predicted Prices")
plt.title("Actual vs Predicted House Prices")
plt.plot([min(y_test), max(y_test)], [min(y_test), max(y_test)], color='red')  #
plt.grid(True)
plt.show()
```


Actual vs Predicted House Prices
Predicted Prices
Actual Prices
0
10
20
30
40
50
10
20
30
40
50

```
In [ ]:
```