In [168…
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score
```

In [176…
```
# Load the dataset
file_path = "C:/Users/gundr/Downloads/Civil_Engineering_Regression_Dataset.csv"
df = pd.read_csv(file_path)
```

In [178…
```
# Define independent and dependent variables
X = df[['Building_Height']]
y = df['Construction_Cost']
```

In [180…
```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
```

In [182…
```
model = LinearRegression()
model.fit(X_train, y_train)
```

Out[182…

▾ LinearRegression

LinearRegression()

In [184…
```
intercept = model.intercept_
coefficient = model.coef_[0]
print(f"Regression Equation: Construction_Cost = {intercept:.2f} + {coefficient:.2f} * Building_Height")
```

```
Regression Equation: Construction_Cost = 992.19 + 49.67 * Building_Height
```

In [186…
```
print(f"Interpretation: For each unit increase in Building Height, Construction Cost increases by {coefficient:.2f} units.")
```

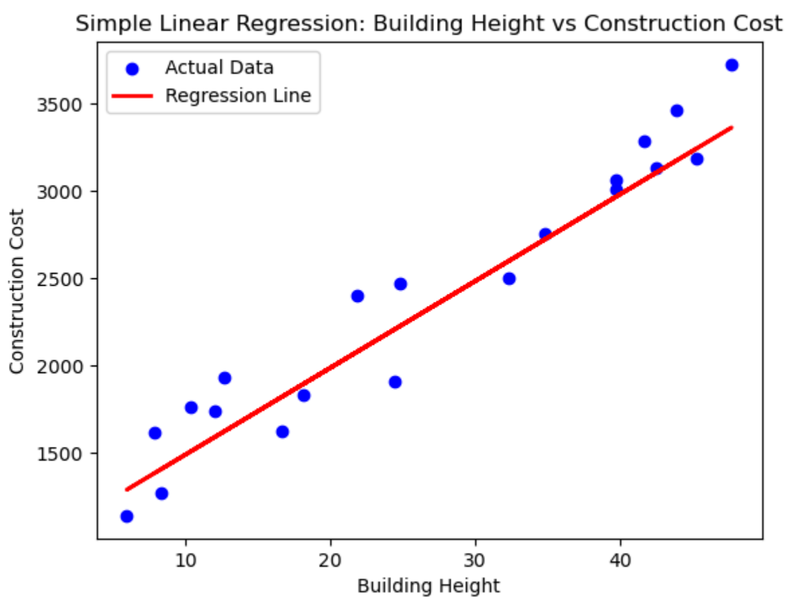
```
Interpretation: For each unit increase in Building Height, Construction Cost increases by 49.67 units.
```

In [188…
```
y_pred = model.predict(X_test)
```

In [190…
```
r2 = r2_score(y_test, y_pred)
mse = mean_squared_error(y_test, y_pred)
print(f"R-squared: {r2:.4f}")
print(f"Mean Squared Error: {mse:.4f}")
```

```
R-squared: 0.9251
Mean Squared Error: 42990.6478
```

In [192…
```
plt.scatter(X_test, y_test, color='blue', label='Actual Data')
plt.plot(X_test, y_pred, color='red', linewidth=2, label='Regression Line')
plt.xlabel('Building Height')
plt.ylabel('Construction Cost')
plt.title('Simple Linear Regression: Building Height vs Construction Cost')
plt.legend()
plt.show()
```



In [ ]:

In [ ]: