```
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
```

```
# Load data from CSV
data = pd.read_csv('train.csv')
```

```
# Select relevant features
features = ['GrLivArea', 'BedroomAbvGr', 'FullBath', 'HalfBath']
target = 'SalePrice'
X = data[features]
y = data[target]
```

```
# Split the data into training and testing sets (80% train, 20% test)
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
```

```
# Train the linear regression model
model = LinearRegression()
model.fit(X_train, y_train)
```

```
▾ LinearRegression
LinearRegression()
```

```
# Make predictions
train_predictions = model.predict(X_train)
test_predictions = model.predict(X_test)
```

```
# Evaluate the model
train_rmse = np.sqrt(mean_squared_error(y_train, train_predictions))
test_rmse = np.sqrt(mean_squared_error(y_test, test_predictions))
```

```
print("Train RMSE:", train_rmse)
print("Test RMSE:", test_rmse)
```

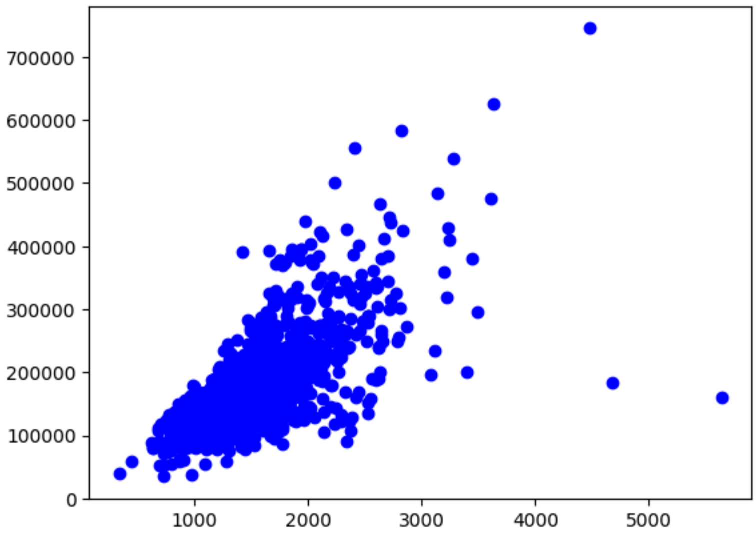
```
Train RMSE: 50882.59484766233
Test RMSE: 53018.32669198515
```

```
# Plotting
plt.figure(figsize=(12, 6))
```

```
<Figure size 1200x600 with 0 Axes>
<Figure size 1200x600 with 0 Axes>
```

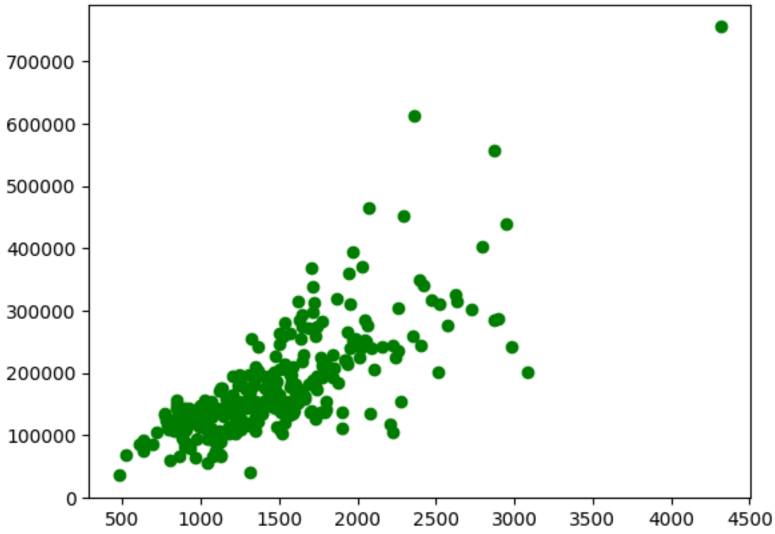
```
# Plotting training data
plt.scatter(X_train['GrLivArea'], y_train, color='blue', label='Training Data')
```

```
<matplotlib.collections.PathCollection at 0x7b8b86aa4df0>
```



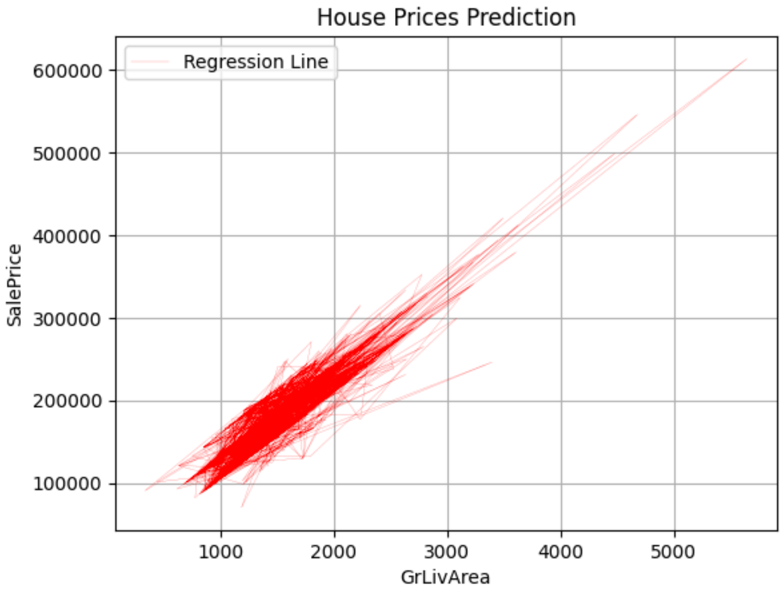
```
# Plotting testing data
plt.scatter(X_test['GrLivArea'], y_test, color='green', label='Testing Data')
```

```
<matplotlib.collections.PathCollection at 0x7b8b8884c7f0>
```



```
# Plotting regression line
plt.plot(X_train['GrLivArea'], model.predict(X_train), color='red', linewidth=0.5, label='Regression Line')

plt.title('House Prices Prediction')
plt.xlabel('GrLivArea')
plt.ylabel('SalePrice')
plt.legend()
plt.grid(True)
plt.show()
```


House Prices Prediction
Regression Line
SalePrice
GrLivArea