In [1]:
```
pip install numpy pandas matplotlib scikit-learn
```

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ite-packages (from scikit-learn) (1.11.1)
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a3\lib\site-packages (from scikit-learn) (2.2.0)
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packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
Note: you may need to restart the kernel to use updated packages.
```

In [2]:
```
# Import necessary libraries
import numpy as np
import matplotlib.pyplot as plt
from sklearn.linear_model import LinearRegression

# Data (size of the house in square feet and house price in $1000s)
X = np.array([600, 800, 1000, 1200, 1500, 1800, 2000]).reshape(-1, 1)
y = np.array([300, 350, 400, 475, 550, 600, 650])

# Create a linear regression model
model = LinearRegression()

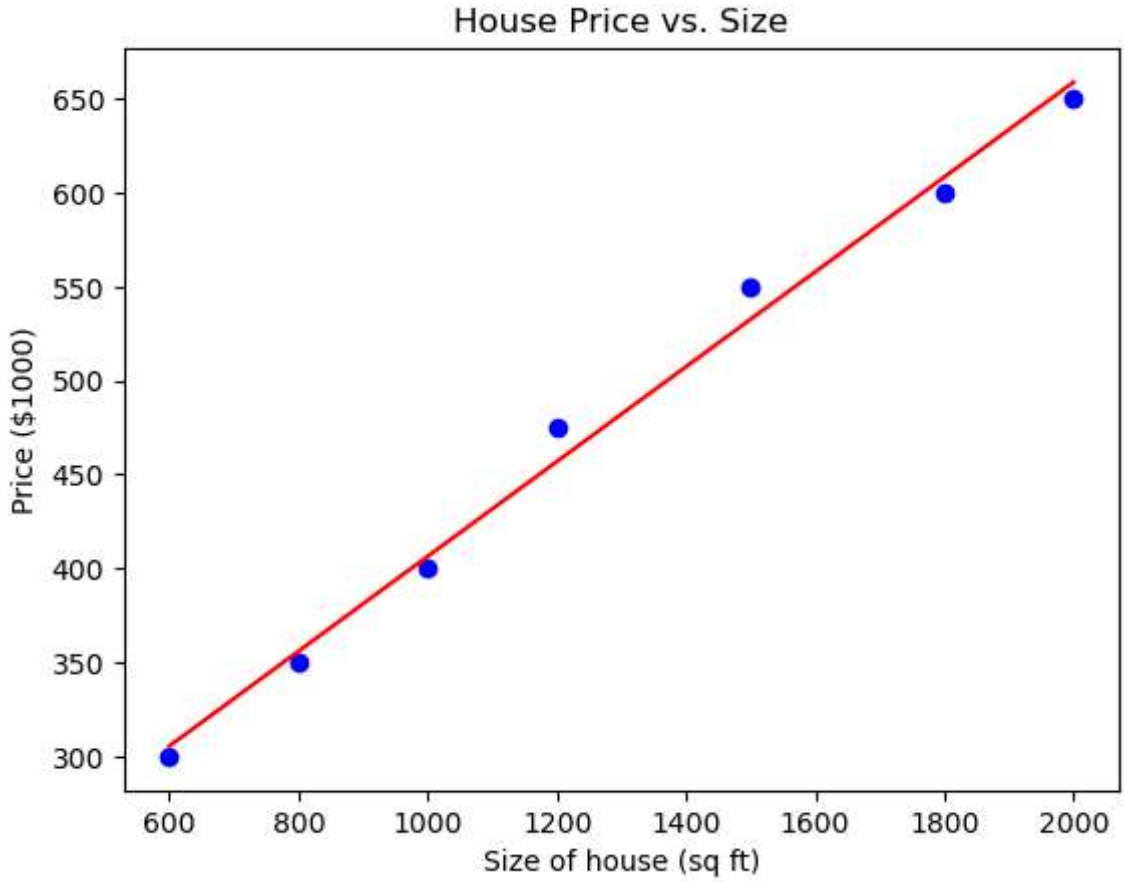
# Fit the model
model.fit(X, y)

# Make predictions
y_pred = model.predict(X)

# Plotting the data points and the regression line
plt.scatter(X, y, color='blue') # Plot the actual data points
plt.plot(X, y_pred, color='red') # Plot the regression line
plt.xlabel('Size of house (sq ft)')
plt.ylabel('Price ($1000)')
plt.title('House Price vs. Size')
plt.show()

# Model parameters
print(f"Intercept: {model.intercept_}")
print(f"Coefficient: {model.coef_[0]}")

# Prediction example (predict the price of a house of 2100 sq ft)
predicted_price = model.predict([[2100]])
print(f"Predicted price for a house of 2100 sq ft: ${predicted_price[0]}k")
```




```
Intercept: 154.0486725663717
Coefficient: 0.25243362831858407
Predicted price for a house of 2100 sq ft: $684.1592920353983k
```

In [3]:
```
# Import necessary libraries
import numpy as np
import pandas as pd
from sklearn.linear_model import LinearRegression

# Example data (Size of the house, Number of bedrooms, Price)
data = {
    'Size': [600, 800, 1000, 1200, 1500, 1800, 2000],
    'Bedrooms': [1, 2, 2, 3, 3, 4, 4],
    'Price': [300, 350, 400, 475, 550, 600, 650]
}

# Convert data to a pandas DataFrame
df = pd.DataFrame(data)

# Define independent variables (X) and dependent variable (y)
X = df[['Size', 'Bedrooms']]
y = df['Price']

# Create and fit the linear regression model
model = LinearRegression()
model.fit(X, y)

# Make predictions
y_pred = model.predict(X)

# Model parameters
print(f"Intercept: {model.intercept_}")
print(f"Coefficients: {model.coef_}")

# Prediction for a new house (Size: 2100 sq ft, Bedrooms: 4)
new_house = np.array([[2100, 4]])
predicted_price = model.predict(new_house)
print(f"Predicted price for a house of 2100 sq ft with 4 bedrooms: ${predicted
```

```
Intercept: 153.0594405594406
Coefficients: [ 0.22727273 12.15034965]
Predicted price for a house of 2100 sq ft with 4 bedrooms: $678.9335664335665
k

C:\Users\janam\anaconda3\Lib\site-packages\sklearn\base.py:464: UserWarning:
X does not have valid feature names, but LinearRegression was fitted with fea
ture names
  warnings.warn(
```

In [4]:
```
from sklearn.metrics import mean_squared_error, r2_score

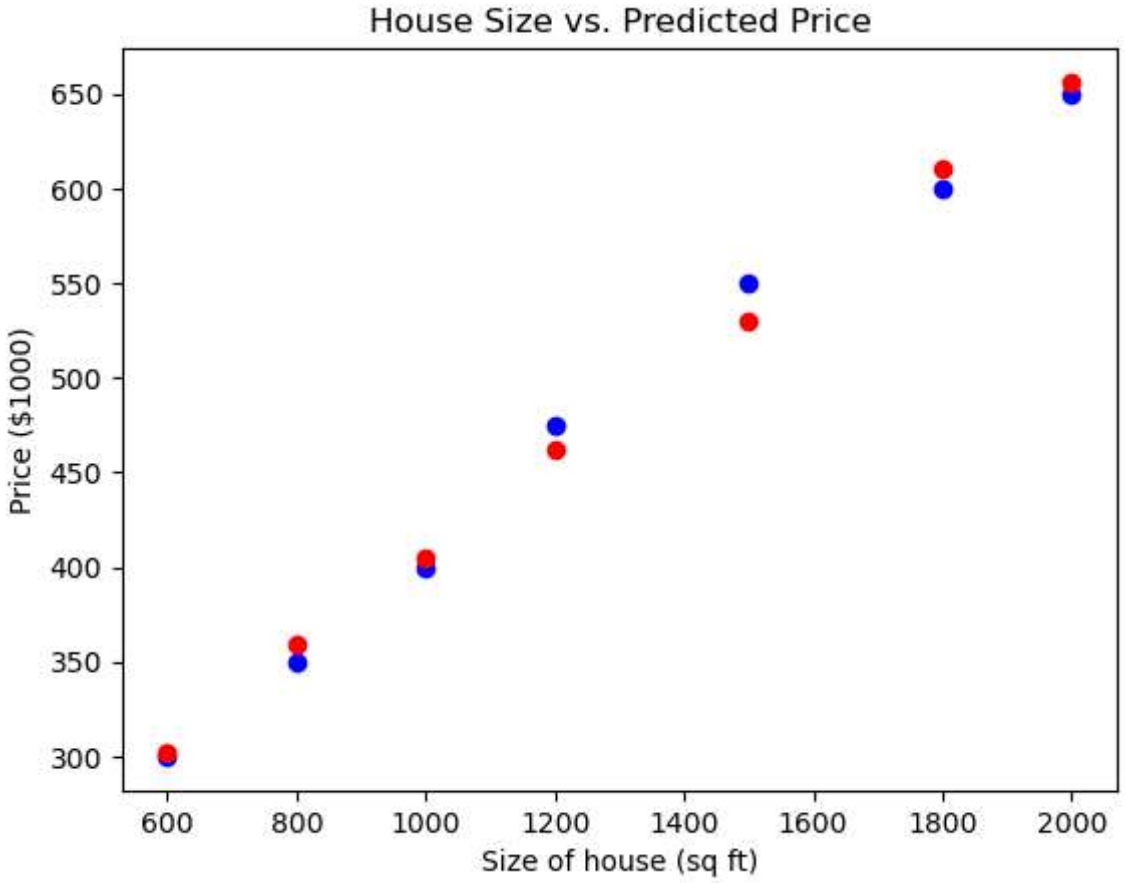
# Calculate MSE and R-squared
mse = mean_squared_error(y, y_pred)
r2 = r2_score(y, y_pred)

print(f"Mean Squared Error: {mse}")
print(f"R-squared: {r2}")
```

```
Mean Squared Error: 115.50949050949102
R-squared: 0.9922065885921307
```

In [5]:
```
import matplotlib.pyplot as plt

# Plot the relationship between the size of the house and the predicted price
plt.scatter(df['Size'], y, color='blue') # Actual prices
plt.scatter(df['Size'], y_pred, color='red') # Predicted prices
plt.xlabel('Size of house (sq ft)')
plt.ylabel('Price ($1000)')
plt.title('House Size vs. Predicted Price')
plt.show()
```



In [ ]: