In [3]:
```
import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import r2_score, mean_squared_error, mean_absolute_error
import matplotlib.pyplot as plt
import seaborn as sns
```

In [4]:
```
data = pd.read_csv("C:/Users/Atharva/OneDrive/Desktop/House_Rent_Dataset.csv")
print(data.head())
```

```
   Posted On  BHK   Rent  Size            Floor    Area Type  \
0  2022-05-18    2  10000  1100  Ground out of 2   Super Area
1  2022-05-13    2  20000   800       1 out of 3   Super Area
2  2022-05-16    2  17000  1000       1 out of 3   Super Area
3  2022-07-04    2  10000   800       1 out of 2   Super Area
4  2022-05-09    2   7500   850       1 out of 2  Carpet Area

              Area Locality     City Furnishing Status  Tenant Preferred  \
0                    Bandel  Kolkata       Unfurnished  Bachelors/Family
1  Phool Bagan, Kankurgachi  Kolkata    Semi-Furnished  Bachelors/Family
2   Salt Lake City Sector 2  Kolkata    Semi-Furnished  Bachelors/Family
3              Dumdum Park  Kolkata       Unfurnished  Bachelors/Family
4            South Dum Dum  Kolkata       Unfurnished         Bachelors

   Bathroom Point of Contact
0         2    Contact Owner
1         1    Contact Owner
2         1    Contact Owner
3         1    Contact Owner
4         1    Contact Owner
```

In [5]:
```
# Pre-process dataset
# Convert 'Posted On' to datetime, if necessary
data['Posted On'] = pd.to_datetime(data['Posted On'])
```

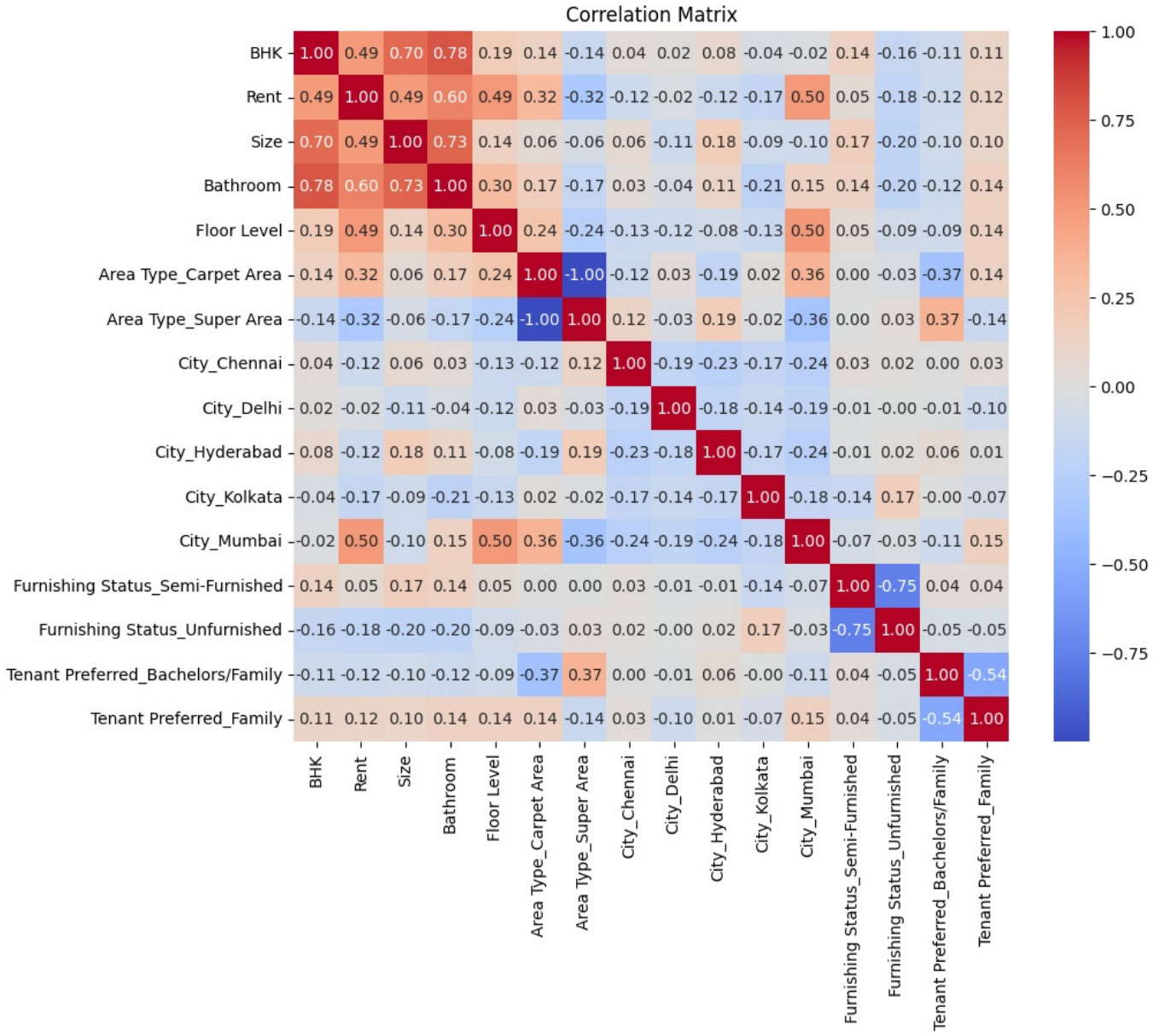
In [6]:
```
# Extract numerical values from the 'Floor' column
data['Floor Level'] = data['Floor'].str.extract(r'(\d+)').fillna(0).astype(int)
```

In [7]:
```
# One-hot encode categorical columns (e.g., 'Area Type', 'City', 'Furnishing Status')
data = pd.get_dummies(data, columns=['Area Type', 'City', 'Furnishing Status', 'Tenant Preferred'], drop_first=
```

In [8]:
```
# Drop unnecessary columns
data.drop(['Posted On', 'Floor', 'Area Locality', 'Point of Contact'], axis=1, inplace=True)
```

In [9]:
```
# Identify outliers based on 'Rent' (99th percentile)
data = data[data['Rent'] < data['Rent'].quantile(0.99)]
```

In [10]:
```
# Check correlation
plt.figure(figsize=(10, 8))
sns.heatmap(data.corr(), annot=True, fmt=".2f", cmap="coolwarm")
plt.title("Correlation Matrix")
plt.show()
```



In [11]:
```
# Prepare data for training
X = data.drop(['Rent'], axis=1)
y = data['Rent']
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
```

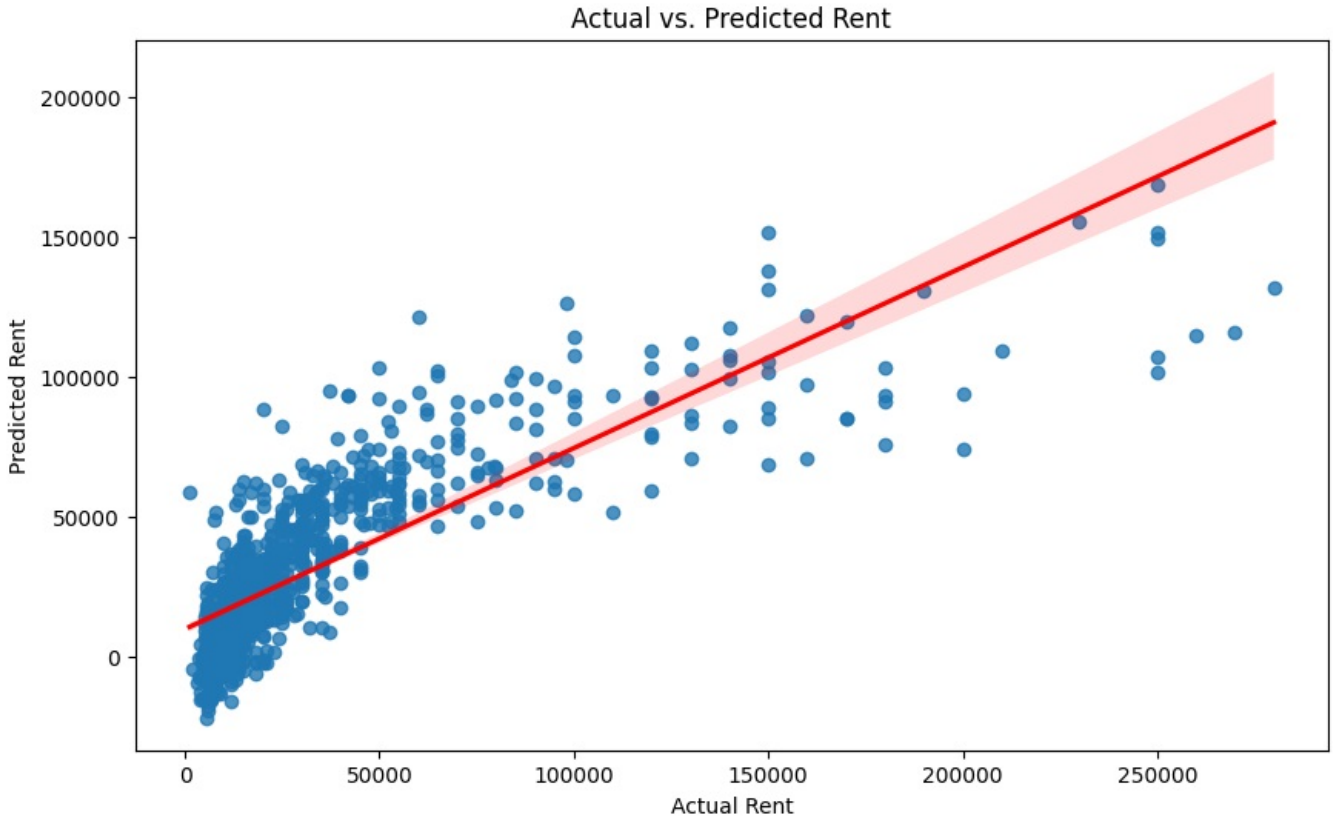
In [12]:
```
# Train linear regression model
model = LinearRegression()
model.fit(X_train, y_train)
```

Out[12]:
```
LinearRegression()
```

In [13]:
```
# Evaluate model
y_pred = model.predict(X_test)
print("R2 Score:", r2_score(y_test, y_pred))
print("RMSE:", np.sqrt(mean_squared_error(y_test, y_pred)))
print("MAE:", mean_absolute_error(y_test, y_pred))
```

```
R2 Score: 0.6593245415708426
RMSE: 22942.337960853245
MAE: 14322.210200018913
```

In [14]:
```
# Plot actual vs. predicted values
plt.figure(figsize=(10, 6))
sns.regplot(x=y_test, y=y_pred, line_kws={'color': 'red'})
plt.xlabel("Actual Rent")
plt.ylabel("Predicted Rent")
plt.title("Actual vs. Predicted Rent")
plt.show()
```



In [ ]: