

INSY661

Database and Distributed Systems for
Analytics

Individual Project- Part 2

Graph Model of Airbnb



*(101)

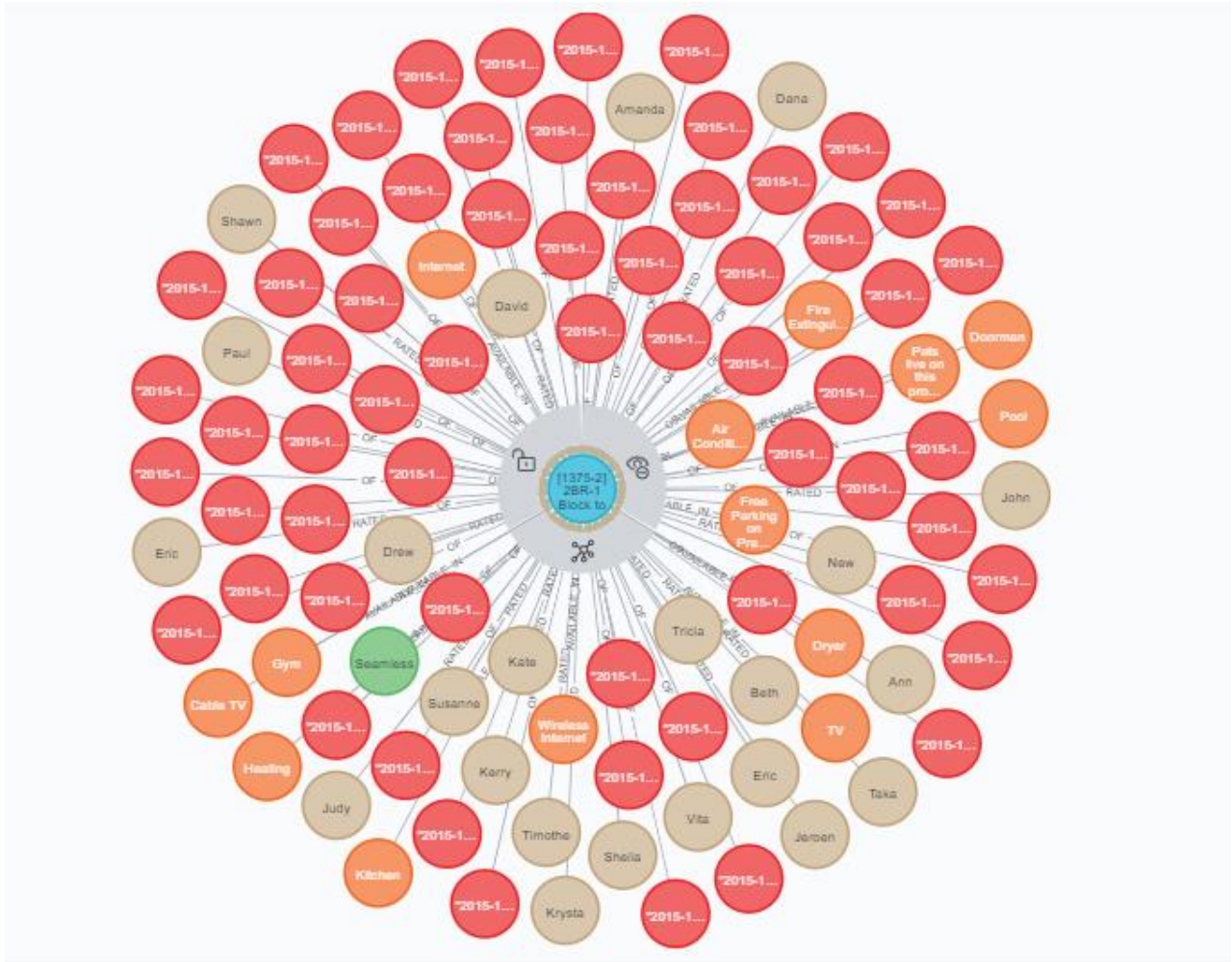
Listing(1)

Host(1)

Reviewer(23)

Amenity(14)

Calendar(62)



Queries

- 1) How many listings are associated to each property type and what are their average rating for the overall experience as well as for the cleanliness. (Query 1 in SQL)

MATCH(r:Reviewer)-[:RATED]-(l:Listing)

RETURN l.propertyType, count(l.listingId), avg(r.reviewCleanliness) AS Avg_Clean_Rating, avg(r.overallExperience) AS Avg_Total_Rating

ORDER BY Avg_Total_Rating DESC

Cypher Output

| "l.propertyType" | "Num_Of_Listings" | "Avg_Clean_Rating" | "Avg_Total_Rating" |
|-------------------|-------------------|--------------------|--------------------|
| "Loft" | 91 | 5.670329670329671 | 7.153846153846154 |
| "Condominium" | 2 | 2.5 | 7.0 |
| "Townhouse" | 99 | 5.636363636363633 | 6.8585858585858586 |
| "Apartment" | 3301 | 5.480157528021815 | 6.812178127840041 |
| "House" | 1309 | 5.545454545454546 | 6.4965622612681475 |
| "Bed & Breakfast" | 6 | 5.5 | 5.6666666666666666 |
| "Dorm" | 2 | 6.0 | 5.0 |

SQL Output

| Property_Type | Num_of_Listings | Avg_Clean_Rating | Avg_Total_Rating |
|-----------------|-----------------|------------------|------------------|
| Loft | 91 | 5.6703 | 7.1538 |
| Condominium | 2 | 2.5000 | 7.0000 |
| Townhouse | 99 | 5.6364 | 6.8586 |
| Apartment | 3301 | 5.4802 | 6.8122 |
| House | 1309 | 5.5455 | 6.4966 |
| Bed & Breakfast | 6 | 5.5000 | 5.6667 |
| Dorm | 2 | 6.0000 | 5.0000 |

- 2) How many listings each city have and what are their average monthly price and average overall price.(Query 3 in SQL)

MATCH(l:Listing)

RETURN l.city, count(l.listingId) AS Num_of_Listings, avg(l.monthlyPrice) AS Avg_Monthly_Price, avg(l.price)AS Avg_Total_Price

ORDER BY Avg_Monthly_Price DESC, Avg_Total_Price DESC

Cypher Output

| "l.city" | "Num_of_Listings" | "Avg_Monthly_Price" | "Avg_Total_Price" |
|--------------------|-------------------|---------------------|--------------------|
| "Washington" | 278 | 2238.6187050359727 | 181.53237410071932 |
| "Takoma Park" | 6 | 1275.0 | 119.5 |
| "Capitol Heights" | 1 | 800.0 | 38.0 |
| "Silver Spring" | 5 | 499.8 | 90.8 |
| "Hyattsville" | 2 | 350.0 | 36.5 |
| "Annapolis" | 1 | 0.0 | 375.0 |
| "Washington, D.C." | 2 | 0.0 | 109.5 |
| "Mount Rainier" | 4 | 0.0 | 73.0 |

SQL Output

| City | Num_of_Listings | Avg_Monthly_Price | Avg_Total_Price |
|------------------|-----------------|-------------------|-----------------|
| Washington | 278 | 2238.6187 | 181.5324 |
| Takoma Park | 6 | 1275.0000 | 119.5000 |
| Capitol Heights | 1 | 800.0000 | 38.0000 |
| Silver Spring | 5 | 499.8000 | 90.8000 |
| Hyattsville | 2 | 350.0000 | 36.5000 |
| Annapolis | 1 | 0.0000 | 375.0000 |
| Washington, D.C. | 2 | 0.0000 | 109.5000 |
| Mount Rainier | 4 | 0.0000 | 73.0000 |

3) Apartments in Washington with internet amenity and do not require security deposit (Query 5 in SQL)

MATCH(a:Amenity)-[:AVAILABLE_IN]-(l:Listing)

WHERE l.city = "Washington" and a.amenities = "Internet" and l.roomType="Entire home/apt" and l.securityDeposit=0

RETURN l.listingId, l.listingName, l.street,l.roomType,l.price

ORDER BY l.price DESC

Cypher Output

| "l.listingId" | "l.listingName" | "l.street" | "l.roomType" | "l.price" |
|---------------|---------------------------------------|--|-------------------|-----------|
| 6967482 | "Lux Furnished 2BR Apt in Newseum" | "Pennsylvania Avenue Northwest, Washington, DC 20001, United States" | "Entire home/apt" | 629 |
| 7629993 | "Luxury Furnished 2BR Apt in Newseum" | "Pennsylvania Avenue Northwest, Washington, DC 20001, United States" | "Entire home/apt" | 629 |
| 8286241 | "Lux 1BR NW Washington APT" | "Thomas Circle Northwest, Washington, DC 20005, United States" | "Entire home/apt" | 571 |
| 5869529 | "Lux Furnished 1BR Newseum Apt." | "Pennsylvania Avenue Northwest, Washington, DC 20001, United States" | "Entire home/apt" | 569 |
| 6781783 | "Logan Circle Lux Furnished 1BR Apt" | "M Street Northwest, Washington, DC 20005, United States" | "Entire home/apt" | 569 |
| 6846210 | "Lux Fully Furnished 1BR Newseum Apt" | "Pennsylvania Avenue Northwest, Washington, DC 20001, United States" | "Entire home/apt" | 569 |
| 6953508 | "Lux Furnished 1BR Newseum Apt" | "Pennsylvania Avenue Northwest, Washington, DC 20001, United States" | "Entire home/apt" | 569 |
| 6953706 | "Lux Furnished 1BR Apt in Newseum" | "Pennsylvania Avenue Northwest, Washington, DC 20001, United States" | "Entire home/apt" | 569 |
| 7630675 | "Luxury 1BR Apt in Newseum." | "Pennsylvania Avenue Northwest, Washington, DC 20001, United States" | "Entire home/apt" | 569 |
| 5990979 | "Dupont Circle, 14th ST Unbeatable!" | "S Street Northwest, Washington, DC 20009, United States" | "Entire home/apt" | 480 |

SQL Output

| Listing_ID | Listing_name | Street | Room_Type | Price |
|------------|-------------------------------------|---|-----------------|-------|
| 7629993 | Luxury Furnished 2BR Apt in Newseum | Pennsylvania Avenue Northwest, Washington, ... | Entire home/apt | 629 |
| 6967482 | Lux Furnished 2BR Apt in Newseum | Pennsylvania Avenue Northwest, Washington, ... | Entire home/apt | 629 |
| 8286241 | Lux 1BR NW Washington APT | Thomas Circle Northwest, Washington, DC 200... | Entire home/apt | 571 |
| 6953508 | Lux Furnished 1BR Newseum Apt | Pennsylvania Avenue Northwest, Washington, ... | Entire home/apt | 569 |
| 6953706 | Lux Furnished 1BR Apt in Newseum | Pennsylvania Avenue Northwest, Washington, ... | Entire home/apt | 569 |
| 6781783 | Logan Circle Lux Furnished 1BR Apt | M Street Northwest, Washington, DC 20005, U... | Entire home/apt | 569 |
| 5869529 | Lux Furnished 1BR Newseum Apt. | Pennsylvania Avenue Northwest, Washington, ... | Entire home/apt | 569 |
| 6846210 | Lux Fully Furnished 1BR Newseum Apt | Pennsylvania Avenue Northwest, Washington, ... | Entire home/apt | 569 |
| 7630675 | Luxury 1BR Apt in Newseum. | Pennsylvania Avenue Northwest, Washington, ... | Entire home/apt | 569 |
| 5990979 | Dupont Circle, 14th ST Unbeatable! | S Street Northwest, Washington, DC 20009, Un... | Entire home/apt | 480 |

4) Average price by property type for Washington City and where response rate of Host is greater than 90% (Query 7 in SQL)

MATCH(l:Listing)-[:OF]-(h:Host)

WHERE h.hostLocation CONTAINS "Washington" and h.hostResponseRate > 0.90

RETURN l.propertyType, avg(l.price) AS Avg_Price

ORDER BY Avg_Price DESC

Cypher Output

| "l.propertyType" | "Avg_Price" |
|------------------|--------------------|
| "Loft" | 195.25 |
| "Apartment" | 149.80459770114936 |
| "House" | 130.40625 |
| "Condominium" | 108.4 |
| "Townhouse" | 101.85714285714285 |
| "Boat" | 99.0 |
| "Dorm" | 38.0 |

SQL Output

| Property_Type | Average_Price |
|---------------|---------------|
| Apartment | 149.8046 |
| Boat | 99.0000 |
| Condominium | 108.4000 |
| Dorm | 38.0000 |
| House | 130.4063 |
| Loft | 195.2500 |
| Townhouse | 101.8571 |

- 5) Which listing has been referred the most by customers to their friends and how many friends have been referred to by the customers.(Query 9 in SQL)

```
MATCH(l:Listing)-[:RATED]-(r:Reviewer)
```

```
RETURN l.listingId, count(r.gender) AS Total_Customers, sum(r.numOfFriendRefer) AS Friends_Referred
```

```
ORDER BY Total_Customers DESC
```

Cypher Output

| "l.listingId" | "Total_Customers" | "Friends_Referred" |
|---------------|-------------------|--------------------|
| 14570 | 338 | 3393 |
| 1170249 | 245 | 2574 |
| 805490 | 169 | 1590 |
| 195344 | 163 | 1685 |
| 68962 | 150 | 1526 |
| 374043 | 139 | 1336 |
| 1173115 | 139 | 1453 |
| 1391504 | 136 | 1489 |
| 2517969 | 115 | 1036 |
| 536232 | 103 | 1043 |
| 3362 | 94 | 1041 |

SQL Output

| Listing_ID | Total_Customers | Friends_Referred |
|------------|-----------------|------------------|
| 14570 | 338 | 3393 |
| 1170249 | 245 | 2574 |
| 805490 | 169 | 1590 |
| 195344 | 163 | 1685 |
| 68962 | 150 | 1526 |
| 374043 | 139 | 1336 |
| 1173115 | 139 | 1453 |
| 1391504 | 136 | 1489 |

6) Which amenities were highly preferred by customers. (Query 13 in SQL)

```
MATCH(a:Amenity)-[:AVAILABLE_IN]-(l:Listing)-[:RATED]-(r:Reviewer)
```

```
RETURN a.amenities, count(r.reviewId) AS Num_of_customers
```

```
ORDER BY Num_of_customers DESC
```


Cypher Output

| "a.amenities" | "Num_of_customers" |
|---------------------|--------------------|
| "Air Conditioning" | 4804 |
| "Gym" | 4793 |
| "Wireless Internet" | 4762 |
| "Kitchen" | 4649 |
| "Internet" | 4362 |
| "TV" | 4108 |
| "Doorman" | 4042 |
| "Fire Extinguisher" | 3890 |

SQL Output

| Amenities | Num_of_customers |
|-------------------|------------------|
| Air Conditioning | 4804 |
| Gym | 4793 |
| Wireless Internet | 4762 |
| Kitchen | 4649 |
| Internet | 4362 |
| TV | 4108 |
| Doorman | 4042 |
| Fire Extinguisher | 3890 |
| Breakfast | 3074 |
| Hot Tub | 3046 |
| Cable TV | 3037 |

7) Total number of reviews received for each city by customers and what are their average overall ratings. (Query 14 in SQL)

```
MATCH(l:Listing)-[:RATED]-(r:Reviewer)
```

```
RETURN l.city, count(r.reviewId) AS Num_of_Reviews, avg(r.overallExperience) AS  
Avg_Rating
```

```
ORDER BY Avg_Rating DESC
```

Cypher Output

| "l.city" | "Num_of_Reviews" | "Avg_Rating" |
|--------------------|------------------|-------------------|
| "Silver Spring" | 1 | 9.0 |
| "Hyattsville" | 2 | 8.5 |
| "Capitol Heights" | 1 | 7.0 |
| "Washington, D.C." | 4 | 6.75 |
| "Washington" | 4790 | 6.73340292275572 |
| "Takoma Park" | 11 | 5.636363636363636 |
| "Mount Rainier" | 1 | 4.0 |

SQL Output

| City | Num_of_Reviews | Avg_Rating |
|------------------|----------------|------------|
| Silver Spring | 1 | 9.0000 |
| Hyattsville | 2 | 8.5000 |
| Capitol Heights | 1 | 7.0000 |
| Washington, D.C. | 4 | 6.7500 |
| Washington | 4790 | 6.7334 |
| Takoma Park | 11 | 5.6364 |
| Mount Rainier | 1 | 4.0000 |

8) Which SuperHost Listing accommodates more than 4 people for apartment style property type, what are their monthly and total prices as well as for how many days they are available out of 365 days. (Query 16 in SQL)

```
MATCH(h:Host)-[:OF]-(l:Listing)
```

```
WHERE h.hostSuperhost='t' and l.propertyType='Apartment' and l.accomodates > 4
```

```
RETURN l.listingId, l.listingName, h.hostId,h.hostName,h.hostSince,h.hostResponseRate,
```

```
l.availability365, l.monthlyPrice,l.price
```

Cypher Output

| "l.listingId" | "l.listingName" | "h.hostId" | "h.hostName" | "h.hostSince" | "h.hostResponseRate" | "l.availability365" | "l.monthlyPrice" | "l.price" |
|---------------|------------------------------------|------------|--------------|---------------|----------------------|---------------------|------------------|-----------|
| 7502313 | "Center of DC - 4 Beds in 2 BR" | 1642856 | "Jon" | "2012-01-23" | 1.0 | 156 | 5000 | 194 |
| 6074361 | "Modern 2Bed/2Bath Downtown Condo" | 6539620 | "Alexandra" | "2013-05-23" | 1.0 | 143 | 0 | 400 |
| 4629445 | "Huge Unit Near Everything!" | 23974493 | "Greg" | "2014-11-20" | 1.0 | 0 | 4500 | 155 |
| 6881600 | "Walk2Everything/Downtown Apt" | 25476243 | "Sara" | "2015-01-01" | 1.0 | 203 | 0 | 179 |

SQL Output

| Listing_ID | Listing_name | HostID | HostName | HostSince | HostResponseTime | Availability_365 | Monthly_Price | Price |
|------------|----------------------------------|----------|-----------|------------|--------------------|------------------|---------------|-------|
| 4629445 | Huge Unit Near Everything! | 23974493 | Greg | 2014-11-20 | within a few hours | 0 | 4500 | 155 |
| 6074361 | Modern 2Bed/2Bath Downtown Condo | 6539620 | Alexandra | 2013-05-23 | within a few hours | 143 | 0 | 400 |
| 6881600 | Walk2Everything/Downtown Apt | 25476243 | Sara | 2015-01-01 | within an hour | 203 | 0 | 179 |
| 7502313 | Center of DC - 4 Beds in 2 BR | 1642856 | Jon | 2012-01-23 | within an hour | 156 | 5000 | 194 |

9) How many hosts grouped by SuperHost and NonSuperHost have different types of cancellation policies where instant bookings are available. The “f” refer to NonSuperHost and “t” refers to SuperHost under HostSuperhost column. (Query 20 in SQL)

MATCH(h:Host)-[:OF]-(l:Listing)

WHERE l.instantBookable='t'

RETURN h.hostSuperhost, count(h.hostId)AS Num_of_Hosts, l.cancellationPolicy

ORDER BY h.hostSuperhost

Cypher Output

| "h.hostSuperhost" | "Num_of_Hosts" | "l.cancellationPolicy" |
|-------------------|----------------|------------------------|
| "f" | 9 | "moderate" |
| "f" | 11 | "flexible" |
| "f" | 11 | "strict" |
| "t" | 3 | "flexible" |
| "t" | 2 | "strict" |
| "t" | 2 | "moderate" |

SQL Output

| HostSuperhost | Num_of_Hosts | cancellation_policy |
|---------------|--------------|---------------------|
| f | 11 | flexible |
| f | 9 | moderate |
| f | 11 | strict |
| t | 3 | flexible |
| t | 2 | moderate |
| t | 2 | strict |

10) Listings that have TV, Air Conditioning and Free Parking on Premises as amenities, how much do they charge for cleaning and what are their monthly price sorted in descending order. (Query 22 in SQL)

```
MATCH(h:Host)-[:OF]-(l:Listing)-[:AVAILABLE_IN]-(a:Amenity)
```

```
WHERE a.amenities IN ["TV",'Air Conditioning','Free Parking on Premises']
```

```
RETURN distinct l.listingId,h.hostId,l.listingName,l.city,l.availability,l.monthlyPrice,  
l.cleaningFee
```

```
ORDER BY l.monthlyPrice DESC
```

Cypher Output

| "l.listingId" | "h.hostId" | "l.listingName" | "l.city" | "l.availability" | "l.monthlyPrice" | "l.cleaningFee" |
|---------------|------------|---------------------------------------|--------------|------------------|------------------|-----------------|
| 5990979 | 8008783 | "Dupont Circle, 14th ST Unbeatable!" | "Washington" | "t" | 10500 | 200 |
| 786693 | 25188 | "[1396-2/3]2BR at Newseum Residences" | "Washington" | "t" | 8829 | 0 |
| 786670 | 25188 | "[1396-2/2]2BR At Newseum Residences" | "Washington" | "t" | 8829 | 0 |
| 5952761 | 25188 | "[1375-2/2B]1 Block to White House" | "Washington" | "t" | 8519 | 0 |
| 786804 | 25188 | "[1375-2B]1 Block to White House" | "Washington" | "t" | 8519 | 0 |
| 6967482 | 30283594 | "Lux Furnished 2BR Apt in Newseum" | "Washington" | "t" | 8339 | 100 |
| 7629993 | 30283594 | "Luxury Furnished 2BR Apt in Newseum" | "Washington" | "t" | 8339 | 100 |
| 1085657 | 25188 | "[1686-1D] 1BR w/Den - Foggy Bottom" | "Washington" | "t" | 8200 | 0 |
| 892183 | 4280278 | "SHORT/LONG TERM: SPECTACULAR HOME !" | "Washington" | "t" | 8000 | 150 |

SQL Output

| Listing_ID | HostID | Listing_name | City | Availability | Monthly_Price | Cleaning_Fee |
|------------|----------|-------------------------------------|------------|--------------|---------------|--------------|
| 5990979 | 8008783 | Dupont Circle, 14th ST Unbeatable! | Washington | t | 10500 | 200 |
| 786693 | 25188 | [1396-2/3]2BR at Newseum Residences | Washington | t | 8829 | 0 |
| 786670 | 25188 | [1396-2/2]2BR At Newseum Residences | Washington | t | 8829 | 0 |
| 5952761 | 25188 | [1375-2/2B]1 Block to White House | Washington | t | 8519 | 0 |
| 786804 | 25188 | [1375-2B]1 Block to White House | Washington | t | 8519 | 0 |
| 7629993 | 30283594 | Luxury Furnished 2BR Apt in Newseum | Washington | t | 8339 | 100 |
| 6967482 | 30283594 | Lux Furnished 2BR Apt in Newseum | Washington | t | 8339 | 100 |
| 1085657 | 25188 | [1686-1D] 1BR w/Den - Foggy Bottom | Washington | t | 8200 | 0 |
| 892183 | 4280278 | SHORT/LONG TERM: SPECTACULAR HOME ! | Washington | t | 8000 | 150 |
| 3768871 | 19312635 | Luxury Rowhouse in Dupont Circle | Washington | t | 7995 | 0 |

11) Number of amenities available at each listing grouped by hosts and what are their average monthly price. (Query 24 in SQL)

```
MATCH(h:Host)-[:OF]-(l:Listing)-[:AVAILABLE_IN]-(a:Amenity)
```

```
RETURN h.hostId,count(a.amenities) AS Num_of_Amenities,
```

```
avg(l.monthlyPrice) AS Avg_Monthly_Price
```

```
ORDER BY Avg_Monthly_Price DESC
```

Cypher Output

| "h.hostId" | "Num_of_Amenities" | "Avg_Monthly_Price" |
|------------|--------------------|---------------------|
| 4280278 | 14 | 8000.0 |
| 19312635 | 12 | 7995.0 |
| 30283594 | 160 | 7039.574999999998 |
| 9419684 | 162 | 6688.518518518518 |
| 5750063 | 19 | 6500.0 |
| 25188 | 320 | 6495.19375 |
| 4028670 | 19 | 5950.0 |
| 9054845 | 16 | 5800.0 |
| 2944360 | 70 | 5639.071428571428 |
| 553227 | 13 | 5500.0 |

SQL Output

| Listing_ID | Listing_name | HostID | Num_of_Amenities | Avg_Monthly_Price |
|------------|-------------------------------------|----------|------------------|-------------------|
| 892183 | SHORT/LONG TERM: SPECTACULAR HOME ! | 4280278 | 14 | 8000.0000 |
| 3768871 | Luxury Rowhouse in Dupont Circle | 19312635 | 12 | 7995.0000 |
| 5869529 | Lux Furnished 1BR Newseum Apt. | 30283594 | 160 | 7039.5750 |
| 1839373 | Lux 1BR Newseum Apt on the Mall | 9419684 | 162 | 6688.5185 |
| 1086168 | 2bd/2ba A+ Logan Circle Penthouse | 5750063 | 19 | 6500.0000 |
| 17377 | Lux 1 BR - Near Convention Center | 25188 | 320 | 6495.1938 |
| 6790744 | critical mass | 4028670 | 19 | 5950.0000 |
| 2707225 | One Block from the White House! | 9054845 | 16 | 5800.0000 |
| 5039240 | Downtown Luxury 2bed by the Capitol | 2944360 | 70 | 5639.0714 |
| 195344 | New Luxury Downtown Private Apt. | 949856 | 13 | 5500.0000 |

12) Private rooms in Washington which do not require security deposit (Query 26 in SQL)

MATCH(a:Amenity)-[:AVAILABLE_IN]-(l:Listing)

WHERE l.city='Washington' and a.amenities='Internet' and l.roomType='Private room'
and l.securityDeposit=0

RETURN l.listingId,l.listingName,l.street,l.roomType,l.price,a.amenities

ORDER BY l.price DESC

Cypher Output

| "l.listingId" | "l.listingName" | "l.street" | "l.roomType" | "l.price" | "a.amenities" |
|---------------|---------------------------------------|---|----------------|-----------|---------------|
| 3362 | "Rowhouse" | "P St Nw, Washington, DC 20001, United States" | "Private room" | 250 | "Internet" |
| 1403549 | "Private room in center of DC!" | "6th Street Northwest, Washington, DC 20001, United States" | "Private room" | 150 | "Internet" |
| 8606829 | "Master Suite in Navy Yard" | "South Capitol Street Southwest, Washington, DC 20003, United States" | "Private room" | 125 | "Internet" |
| 7790166 | "Private room near Gallery Place" | "Massachusetts Avenue Northwest, Washington, DC 20001, United States" | "Private room" | 120 | "Internet" |
| 6911905 | "Brand New Apt in the NOMA district" | "H St, Washington, DC 20001, United States" | "Private room" | 110 | "Internet" |
| 7067790 | "Private Master Bedroom Capitol Hill" | "H St, Washington, DC 20001, United States" | "Private room" | 109 | "Internet" |

SQL Output

| Listing_ID | Listing_name | Street | Room_Type | Price | Amenities | AmenityID |
|------------|-------------------------------------|--|--------------|-------|-----------|-----------|
| 3362 | Rowhouse | P St Nw, Washington, DC 20001, United States | Private room | 250 | Internet | A3 |
| 1403549 | Private room in center of DC! | 6th Street Northwest, Washington, DC 20001, ... | Private room | 150 | Internet | A3 |
| 8606829 | Master Suite in Navy Yard | South Capitol Street Southwest, Washington, D... | Private room | 125 | Internet | A3 |
| 7790166 | Private room near Gallery Place | Massachusetts Avenue Northwest, Washington... | Private room | 120 | Internet | A3 |
| 6911905 | Brand New Apt in the NOMA district | H St, Washington, DC 20001, United States | Private room | 110 | Internet | A3 |
| 7067790 | Private Master Bedroom Capitol Hill | H St, Washington, DC 20001, United States | Private room | 109 | Internet | A3 |
| 1170249 | Private bedroom with private bath! | 12th Street Northwest, Washington, DC 20005,... | Private room | 105 | Internet | A3 |
| 5023531 | Comfortable studio with dinosaur. | Ames St, Washington, DC 20019, United States | Private room | 100 | Internet | A3 |
| 2339961 | Union Station/Chinatown/Downtown | Massachusetts Avenue Northwest, Washington... | Private room | 99 | Internet | A3 |
| 8428938 | Verizon Center: Chinatown | , Washington, DC 20001, United States | Private room | 99 | Internet | A3 |

13) Apartments in Washington which have internet and > 1 bedrooms and have moderate cancellation policy (Query 27 in SQL)

MATCH(a:Amenity)-[:AVAILABLE_IN]-(l:Listing)

WHERE l.city='Washington' and a.amenities='Internet' and l.roomType="Entire home/apt" and l.cancellationPolicy="moderate" and l.propertyType="Apartment" and l.bedrooms>1

RETURN l.listingId,l.listingName,l.city,l.bedrooms,l.price,l.monthlyPrice

ORDER BY l.monthlyPrice DESC

Cypher Output

| "l.listingId" | "l.listingName" | "l.city" | "l.bedrooms" | "l.price" | "l.monthlyPrice" |
|---------------|---------------------------------------|--------------|--------------|-----------|------------------|
| 5844616 | "Lux 2BR Apt near Convention Center " | "Washington" | 2 | 337 | 7770 |
| 7257104 | "Lux 2BR Apt near Convention Center" | "Washington" | 2 | 429 | 7770 |
| 1839589 | "Lux 2BR Newseum Apt on the Mall" | "Washington" | 2 | 311 | 7170 |
| 2171039 | "Lux 2BR Newseum Apt on the Mall" | "Washington" | 2 | 311 | 7170 |
| 1086168 | "2bd/2ba A+ Logan Circle Penthouse" | "Washington" | 2 | 372 | 6500 |
| 6790744 | "critical mass" | "Washington" | 2 | 269 | 5950 |
| 4629445 | "Huge Unit Near Everything!" | "Washington" | 2 | 155 | 4500 |
| 7916003 | "Luxury Corporate Apartment in NW DC" | "Washington" | 2 | 225 | 4500 |
| 7922208 | "Walking Distance to Everything!" | "Washington" | 2 | 175 | 3800 |
| 3635723 | "Super Chic & Gorgeous Downtown Apt." | "Washington" | 2 | 290 | 0 |
| 6288255 | "2 bedroom Condo w/private yard" | "Washington" | 2 | 120 | 0 |
| 7258774 | "2 Bed/2bath Apt. in Downtown DC" | "Washington" | 2 | 250 | 0 |

SQL Output

| Listing_ID | Street | Listing_name | City | Bedrooms | Price | Monthly_Price |
|------------|--|-------------------------------------|------------|----------|-------|---------------|
| 7257104 | CityCenterDC, 825 10th Street Northwest, Was... | Lux 2BR Apt near Convention Center | Washington | 2 | 429 | 7770 |
| 5844616 | CityCenterDC, 825 10th Street Northwest, Was... | Lux 2BR Apt near Convention Center | Washington | 2 | 337 | 7770 |
| 1839589 | Pennsylvania Avenue Northwest, Washington, ... | Lux 2BR Newseum Apt on the Mall | Washington | 2 | 311 | 7170 |
| 2171039 | Pennsylvania Avenue Northwest, Washington, ... | Lux 2BR Newseum Apt on the Mall | Washington | 2 | 311 | 7170 |
| 1086168 | Vermont Avenue Northwest, Washington, DC 2... | 2bd/2ba A+ Logan Circle Penthouse | Washington | 2 | 372 | 6500 |
| 6790744 | Massachusetts Avenue Northwest, Washington... | critical mass | Washington | 2 | 269 | 5950 |
| 7916003 | K Street Northwest, Washington, DC 20001, Un... | Luxury Corporate Apartment in NW DC | Washington | 2 | 225 | 4500 |
| 4629445 | 3rd Street Northwest, Washington, DC 20001, ... | Huge Unit Near Everything! | Washington | 2 | 155 | 4500 |
| 7922208 | New York Avenue Northwest, Washington, DC ... | Walking Distance to Everything! | Washington | 2 | 175 | 3800 |
| 3635723 | I Street Northwest, Washington, DC 20001, Uni... | Super Chic & Gorgeous Downtown Apt. | Washington | 2 | 290 | 0 |
| 7258774 | Mass Apartments, 425 Massachusetts Avenue ... | 2 Bed/2bath Apt. in Downtown DC | Washington | 2 | 250 | 0 |
| 6288255 | 4th Street Northwest, Washington, DC 20001, ... | 2 bedroom Condo w/private yard | Washington | 2 | 120 | 0 |

14) What are the average deposits in Washington for each property types. (Query 28 in SQL)

MATCH(h:Host)-[:OF]-(l:Listing)

WHERE h.hostLocation CONTAINS "Washington" and h.hostResponseRate>0.90

RETURN l.propertyType, avg(l.securityDeposit) AS Avg_Deposit

ORDER BY Avg_Deposit DESC

Cypher Output

| "l.propertyType" | "Avg_Deposit" |
|------------------|--------------------|
| "Loft" | 287.5 |
| "Townhouse" | 228.57142857142856 |
| "Apartment" | 119.51724137931033 |
| "House" | 83.59374999999999 |
| "Condominium" | 60.0 |
| "Boat" | 0.0 |
| "Dorm" | 0.0 |

SQL Output

| Property_Type | Average_Deposit |
|---------------|-----------------|
| Loft | 287.5000 |
| Townhouse | 228.5714 |
| Apartment | 119.5172 |
| House | 83.5938 |
| Condominium | 60.0000 |
| Boat | 0.0000 |
| Dorm | 0.0000 |

15) Average prices for different types of properties across different cities.(Query 29 in SQL)

MATCH(l:Listing)

RETURN l.city, l.roomType, avg(l.price) AS Avg_Price

ORDER BY Avg_Price DESC

Cypher Output

| "l.city" | "l.roomType" | "Avg_Price" |
|--------------------|-------------------|-------------------|
| "Annapolis" | "Entire home/apt" | 375.0 |
| "Washington" | "Entire home/apt" | 220.9137055837563 |
| "Silver Spring" | "Shared room" | 200.0 |
| "Takoma Park" | "Private room" | 122.75 |
| "Washington, D.C." | "Private room" | 120.0 |
| "Takoma Park" | "Entire home/apt" | 113.0 |
| "Washington, D.C." | "Entire home/apt" | 99.0 |
| "Washington" | "Private room" | 89.13888888888889 |
| "Mount Rainier" | "Entire home/apt" | 80.0 |
| "Silver Spring" | "Entire home/apt" | 68.0 |

SQL Output

| City | Room_Type | Average_Price |
|------------------|-----------------|---------------|
| Annapolis | Entire home/apt | 375.0000 |
| Washington | Entire home/apt | 220.9137 |
| Silver Spring | Shared room | 200.0000 |
| Takoma Park | Private room | 122.7500 |
| Washington, D.C. | Private room | 120.0000 |
| Takoma Park | Entire home/apt | 113.0000 |
| Washington, D.C. | Entire home/apt | 99.0000 |
| Washington | Private room | 89.1389 |
| Mount Rainier | Entire home/apt | 80.0000 |
| Silver Spring | Entire home/apt | 68.0000 |
| Washington | Shared room | 58.6667 |
| Mount Rainier | Private room | 52.0000 |
| Silver Spring | Private room | 50.0000 |
| Capitol Heights | Private room | 38.0000 |
| Hyattsville | Private room | 36.5000 |

16) The Listings which have Internet and Cable across various property types. (Query 30 in SQL)

```
MATCH(h:Host)-[:OF]-(l:Listing)-[:AVAILABLE_IN]-(a:Amenity)
```

```
WHERE a.amenities IN ['Cable TV', 'Internet']
```

```
RETURN distinct l.listingId, l.listingName, h.hostId, l.propertyType, a.amenities
```

Cypher Output

| "l.listingId" | "l.listingName" | "h.hostId" | "l.propertyType" | "a.amenities" |
|---------------|--------------------------------------|------------|------------------|---------------|
| 3362 | "Rowhouse" | 2798 | "House" | "Internet" |
| 8498095 | "Cozy DC Condo, Close to Metro!" | 4628 | "Condominium" | "Cable TV" |
| 130470 | "DuPont Retreat, walk 2 Metro" | 17633 | "Apartment" | "Internet" |
| 130470 | "DuPont Retreat, walk 2 Metro" | 17633 | "Apartment" | "Cable TV" |
| 4807923 | "1BR Lux Apt Near Convention Center" | 25188 | "Apartment" | "Internet" |
| 4807923 | "1BR Lux Apt Near Convention Center" | 25188 | "Apartment" | "Cable TV" |
| 5952761 | "[1375-2/2B]1 Block to White House" | 25188 | "Apartment" | "Internet" |
| 5952761 | "[1375-2/2B]1 Block to White House" | 25188 | "Apartment" | "Cable TV" |

SQL Output

| Listing_ID | Listing_name | HostID | Property_Type | Amenities |
|------------|-------------------------------------|--------|-----------------|-----------|
| 3362 | Rowhouse | 2798 | House | Internet |
| 8498095 | Cozy DC Condo, Close to Metro! | 4628 | Condominium | Cable TV |
| 130470 | DuPont Retreat, walk 2 Metro | 17633 | Apartment | Cable TV |
| 17377 | Lux 1 BR - Near Convention Center | 25188 | Apartment | Cable TV |
| 6900870 | Airy Loft In Downtown! | 37014 | Loft | Internet |
| 14570 | Downtown Spacious BR /Private Bath | 56646 | Apartment | Internet |
| 7825726 | Spacious room by Convention Center | 60683 | Apartment | Internet |
| 3504621 | Cozy Apt w/ Views of the Monument! | 112193 | Apartment | Cable TV |
| 1989187 | Convention Center/Downtown 1BR Apt. | 130539 | Apartment | Internet |
| 4430318 | Stunning Penthouse Loft Guestroom | 173592 | Apartment | Cable TV |
| 68962 | Sunny Bedroom with En Suite Bath | 343320 | House | Cable TV |
| 295345 | Elite Room w/private bath Eden Park | 347309 | Bed & Breakfast | Cable TV |
| 374043 | Capitol Hill Row-House w/ Priv Bath | 473055 | House | Internet |
| 93551 | Upscale Master Close to Everything | 481929 | House | Internet |

17) Total accommodations and total number of beds for each host and property type. (Query 31 in SQL)

MATCH(h:Host)-[:OF]-(l:Listing)

WHERE l.city="Washington"

RETURN h.hostId, l.propertyType, sum(l.accomodates) AS Total_Accommodation,

sum(l.beds) AS Total_Beds, avg(l.price) AS Avg_Price

ORDER BY Avg_Price DESC

Cypher Output

| "h.hostId" | "l.propertyType" | "Total_Accommodation" | "Total_Beds" | "Avg_Price" |
|------------|------------------|-----------------------|--------------|-------------------|
| 28254613 | "Apartment" | 6 | 3 | 725.0 |
| 30283594 | "Apartment" | 37 | 13 | 534.1818181818181 |
| 8008783 | "House" | 9 | 5 | 480.0 |
| 44834480 | "Condominium" | 4 | 2 | 450.0 |
| 4275311 | "Apartment" | 2 | 1 | 400.0 |
| 4280278 | "House" | 8 | 4 | 400.0 |
| 6277558 | "Apartment" | 3 | 2 | 400.0 |
| 3596189 | "Apartment" | 4 | 1 | 399.0 |
| 5750063 | "Apartment" | 6 | 3 | 372.0 |

SQL Output

| HostID | Property_Type | Total_Accommodation | Total_Beds | Avg_Price |
|----------|---------------|---------------------|------------|-----------|
| 28254613 | Apartment | 6 | 3 | 725.0000 |
| 30283594 | Apartment | 37 | 13 | 534.1818 |
| 8008783 | House | 9 | 5 | 480.0000 |
| 44834480 | Condominium | 4 | 2 | 450.0000 |
| 4275311 | Apartment | 2 | 1 | 400.0000 |
| 4280278 | House | 8 | 4 | 400.0000 |
| 6277558 | Apartment | 3 | 2 | 400.0000 |
| 3596189 | Apartment | 4 | 1 | 399.0000 |