

```
In [2]: from pyspark.sql import SparkSession  
        from pyspark.sql.functions import col
```

```
In [3]: spark = SparkSession.builder.appName("AirbnbAnalysis").getOrCreate()
```

```
In [4]: airbnb_data = spark.read.csv("C:/Users/deepa/Downloads/capstone_sample1.csv",
```

```
In [5]: airbnb_data.createOrReplaceTempView("airbnb")
```

```
In [53]: cleaned_data = spark.sql("""  
        SELECT *  
        FROM airbnb  
        WHERE neighbourhood IS NOT NULL AND room_type IS NOT NULL AND price IS NOT  
        """)
```

```
In [58]: cleaned_data.show()
```

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|      id|          name| host_id|          host_name|neighbourhood|neigh
bourhood_group|cleansed|          latitude|          longitude|          room_typ
e| price|minimum_nights|availability_365|number_of_reviews|last_review|calcu
lated_host_listings_count|reviews_per_month|
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 241032|Stylish Queen Ann...| 956883|          Maija|  Queen Anne|
Queen Anne|47.636289038357184|-122.37102519997764|Entire home/apt| $85.00|
1|          346|          207| 2016-01-02|
2|          4.07|
| 953595|Bright & Airy Que...| 5177328|          Andrea|  Queen Anne|
Queen Anne| 47.63912312136253|-122.36566646439582|Entire home/apt|$150.00|
2|          291|          43| 2015-12-29|
6|          1.48|
|3308979|New Modern House-...|16708587|          Jill|  Queen Anne|
Queen Anne| 47.62972413157736| -122.3694831756176|Entire home/apt|$975.00|
4|          220|          20| 2015-09-03|
2|          1.15|
|7421966|  Queen Anne Chateau| 9851441|          Emily|  Queen Anne|
Queen Anne|47.638473201766416|-122.36927912263018|Entire home/apt|$100.00|
1|          143|          0|          null|
1|          null|
| 278830|Charming craftsma...| 1452570|          Emily|  Queen Anne|
Queen Anne| 47.63291840276724|-122.37247063402224|Entire home/apt|$450.00|
1|          365|          38| 2015-10-24|
1|          0.89|
|5956968|Private unit in a...| 326758|          Andrew|  Queen Anne|
Queen Anne| 47.63052548240193|-122.36617406518856|  Private room|$120.00|
1|          302|          17| 2015-09-28|
1|          2.45|
|1909058|Queen Anne Privat...| 2497928|          Gary And Beth|  Queen Anne|
Queen Anne| 47.63660544532006|-122.36851905844937|  Private room| $80.00|
3|          346|          58| 2015-12-07|
1|          2.46|
| 856550|Tiny Garden cabin...| 4016632|          Jean-Marc|  Queen Anne|
Queen Anne| 47.64016054121466|-122.37585597885769|  Private room| $60.00|
2|          100|          173| 2016-01-01|
5|          4.73|
|4948745|Urban Charm || Do...| 2166277|          Aliza|  Queen Anne|
Queen Anne| 47.63241029982899|-122.35721606914028|  Private room| $90.00|
3|          341|          8| 2015-08-17|
1|          1.22|
|2493658|Airy + Bright Que...| 5177328|          Andrea|  Queen Anne|
Queen Anne| 47.63749172022628| -122.3668885909212|Entire home/apt|$150.00|
2|          324|          32| 2015-12-20|
6|          1.55|
| 175576|Private Apartment...| 239585|          Ray & Eileen|  Queen Anne|
Queen Anne| 47.63548170841016|-122.35847776162176|Entire home/apt| $95.00|
3|          153|          181| 2015-11-25|
1|          3.33|
|4454295|Upper Queen Anne ...| 4606439|          Nadia|  Queen Anne|

```

```

Queen Anne| 47.63721407513561| -122.3600457614146|Entire home/apt| $99.00|
3|          229|          8| 2015-12-16|
1|          0.98|
|8889257|Elegance in Histo...|25899989|          Ellie| Queen Anne|
Queen Anne| 47.62950680923431| -122.3676292967417|Entire home/apt|$165.00|
2|          337|          3| 2016-01-02|
1|          3.0|
|5680462|Stunning 6 bd in ...|22372266|          Sarah| Queen Anne|
Queen Anne| 47.63920265551509|-122.36586274154313|Entire home/apt|$461.00|
3|          327|          18| 2015-11-15|
1|          2.65|
|3245876|Park Life in Lowe...| 9465817|          Libby| Queen Anne|
Queen Anne| 47.62620037381708|-122.36660192617585| Private room| $66.00|
1|          364|          84| 2016-01-02|
1|          4.55|
|4933447|Private Garden Su...|25417834|Markus And Melissa| Queen Anne|
Queen Anne| 47.64064587578452|-122.37240588895553| Private room| $99.00|
2|          171|          45| 2015-11-06|
1|          4.58|
|7735464|Queen Anne Getawa...| 6170760|          Sam| Queen Anne|
Queen Anne| 47.63977587341084|-122.37223535879995| Private room|$200.00|
1|          125|          0| null|
1|          null|
|6291829|Grand Craftsman H...|32713558|          Kary| Queen Anne|
Queen Anne| 47.63602477658138|-122.35869359564737|Entire home/apt|$700.00|
3|          359|          5| 2015-08-10|
1|          0.82|
|4125779|Cozy Queen Anne F...|21401856|          Nick| Queen Anne|
Queen Anne|47.636374262238846|-122.36103343324052| Private room| $99.00|
1|          365|          11| 2015-10-18|
1|          0.71|
|8942678|Lovely Queen Anne...|46675077|          Susanna| Queen Anne|
Queen Anne| 47.63563222417987|-122.35888090262146|Entire home/apt|$450.00|
4|          53|          1| 2015-12-01|
1|          0.86|
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
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-+-----+-----+-----+-----+-----+-----+-----+-----+-----+
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only showing top 20 rows

```

```

In [72]: query = """
          SELECT neighbourhood,
                room_type,
                price
          FROM airbnb
          WHERE neighbourhood IS NOT NULL
          GROUP BY neighbourhood, room_type, price
          ORDER BY neighbourhood ASC, room_type, price
          """

```

```
In [73]: results = spark.sql(query)
```

```
In [74]: results.show(200)
```

neighbourhood	room_type	price
Alki	Entire home/apt	\$100.00
Alki	Entire home/apt	\$120.00
Alki	Entire home/apt	\$129.00
Alki	Entire home/apt	\$130.00
Alki	Entire home/apt	\$218.00
Alki	Entire home/apt	\$219.00
Alki	Entire home/apt	\$225.00
Alki	Entire home/apt	\$235.00
Alki	Entire home/apt	\$240.00
Alki	Entire home/apt	\$249.00
Alki	Entire home/apt	\$250.00
Alki	Entire home/apt	\$300.00
Alki	Entire home/apt	\$325.00
Alki	Entire home/apt	\$350.00
Alki	Entire home/apt	\$85.00
Alki	Entire home/apt	\$95.00

```
In [75]: results.write.csv("C:/Users/deepa/Downloads/output1", header=True, mode="overw
```

```
In [30]: airbnb_data.show()
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+-----+-----+-----+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|      id|          name| host_id|          host_name|neighbourhood|neigh
bourhood_group|cleansed|          latitude|          longitude|          room_typ
e| price|minimum_nights|availability_365|number_of_reviews|last_review|calcu
lated_host_listings_count|reviews_per_month|
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 241032|Stylish Queen Ann...| 956883|          Maija|  Queen Anne|
Queen Anne|47.636289038357184|-122.37102519997764|Entire home/apt| $85.00|
1|          346|          207| 2016-01-02|
2|          4.07|
| 953595|Bright & Airy Que...| 5177328|          Andrea|  Queen Anne|
Queen Anne| 47.63912312136253|-122.36566646439582|Entire home/apt|$150.00|
2|          291|          43| 2015-12-29|
6|          1.48|
|3308979|New Modern House-...|16708587|          Jill|  Queen Anne|
Queen Anne| 47.62972413157736| -122.3694831756176|Entire home/apt|$975.00|
4|          220|          20| 2015-09-03|
2|          1.15|
|7421966|  Queen Anne Chateau| 9851441|          Emily|  Queen Anne|
Queen Anne|47.638473201766416|-122.36927912263018|Entire home/apt|$100.00|
1|          143|          0|          null|
1|          null|
| 278830|Charming craftsma...| 1452570|          Emily|  Queen Anne|
Queen Anne| 47.63291840276724|-122.37247063402224|Entire home/apt|$450.00|
1|          365|          38| 2015-10-24|
1|          0.89|
|5956968|Private unit in a...| 326758|          Andrew|  Queen Anne|
Queen Anne| 47.63052548240193|-122.36617406518856|  Private room|$120.00|
1|          302|          17| 2015-09-28|
1|          2.45|
|1909058|Queen Anne Privat...| 2497928|          Gary And Beth|  Queen Anne|
Queen Anne| 47.63660544532006|-122.36851905844937|  Private room| $80.00|
3|          346|          58| 2015-12-07|
1|          2.46|
| 856550|Tiny Garden cabin...| 4016632|          Jean-Marc|  Queen Anne|
Queen Anne| 47.64016054121466|-122.37585597885769|  Private room| $60.00|
2|          100|          173| 2016-01-01|
5|          4.73|
|4948745|Urban Charm || Do...| 2166277|          Aliza|  Queen Anne|
Queen Anne| 47.63241029982899|-122.35721606914028|  Private room| $90.00|
3|          341|          8| 2015-08-17|
1|          1.22|
|2493658|Airy + Bright Que...| 5177328|          Andrea|  Queen Anne|
Queen Anne| 47.63749172022628| -122.3668885909212|Entire home/apt|$150.00|
2|          324|          32| 2015-12-20|
6|          1.55|
| 175576|Private Apartment...| 239585|          Ray & Eileen|  Queen Anne|
Queen Anne| 47.63548170841016|-122.35847776162176|Entire home/apt| $95.00|
3|          153|          181| 2015-11-25|
1|          3.33|
|4454295|Upper Queen Anne ...| 4606439|          Nadia|  Queen Anne|

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```

Queen Anne| 47.63721407513561| -122.3600457614146|Entire home/apt| $99.00|
3|          229|          8| 2015-12-16|
1|          0.98|
|3883392|Open Plan 2bdr/1b...|19932967|          Pat & Roberta|          null|
Queen Anne| 47.63554551151239|-122.37317075183506|Entire home/apt|$245.00|
3|          362|          13| 2015-10-02|
1|          0.92|
|8889257|Elegance in Histo...|25899989|          Ellie| Queen Anne|
Queen Anne| 47.62950680923431| -122.3676292967417|Entire home/apt|$165.00|
2|          337|          3| 2016-01-02|
1|          3.0|
|5680462|Stunning 6 bd in ...|22372266|          Sarah| Queen Anne|
Queen Anne| 47.63920265551509|-122.36586274154313|Entire home/apt|$461.00|
3|          327|          18| 2015-11-15|
1|          2.65|
|8988178|Lovely Queen Anne...| 2983711|          Paige|          null|
Queen Anne| 47.63564979343857|-122.37289282480928|Entire home/apt|$109.00|
3|          69|          1| 2015-11-25|
1|          0.73|
|3245876|Park Life in Lowe...| 9465817|          Libby| Queen Anne|
Queen Anne| 47.62620037381708|-122.36660192617585| Private room| $66.00|
1|          364|          84| 2016-01-02|
1|          4.55|
|4933447|Private Garden Su...|25417834|Markus And Melissa| Queen Anne|
Queen Anne| 47.64064587578452|-122.37240588895553| Private room| $99.00|
2|          171|          45| 2015-11-06|
1|          4.58|
|7735464|Queen Anne Getawa...| 6170760|          Sam| Queen Anne|
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1|          125|          0|          null|
1|          null|
|6291829|Grand Craftsman H...|32713558|          Kary| Queen Anne|
Queen Anne| 47.63602477658138|-122.35869359564737|Entire home/apt|$700.00|
3|          359|          5| 2015-08-10|
1|          0.82|
+-----+-----+-----+-----+-----+-----+-----+
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-+-----+-----+-----+-----+-----+-----+-----+
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only showing top 20 rows

```

In []: