**Database Project (SWE3033) (Fall 2023)**

**Homework #5 (50pts, Due date: 11/1)**

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**Instruction:** In this homework, we provide a dataset(airbnb-listings-newyork.json), and a jupyter notebook file(DBP\_Homework5.ipynb). You should follow the instructions in these documents carefully.

**Submit two files as follows:**

- DBP\_Homework5\_StudentID.zip

- DBP\_Homework5\_StudentI.ipynb

- DBP\_Homework5\_StudentID.pdf

**Important**: When submitting, you must delete your ***CONNECTION\_STRING***.

- Your *Username* and *Password* information are here.

- Be sure to remove this before submitting.

**Dataset description:**

|  |  |  |
| --- | --- | --- |
| **key** | **Type** | **description** |
| \_id | Int | Airbnb’s unique identifier for the listing |
| name | String | Name of the listing |
| property\_type | String | Property type of the listing |
| room\_type | Int | Room type of the listing |
| accommodates | Float | The maximum number of people a listing can accommodate |
| beds | Int | Number of beds |
| amenities | List | Amenities included in a listing |
| price | Float | Price per night |
| text | String | Description about listing |

**1. [10pts]** Capture the code and results.

a. Create a database and a collection. Specify the name of the database as ‘airbnb’.

**[Answer]**

Enter your code and result here. You must show your result (captured image).

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b. Save the provided documents to a collection and retrieve one document.

**[Answer]**

Enter your code and result here. You must show your result (captured image).

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**2. [20pts]** Fill in the blank and capture the code and results for the following questions.

1. Count the number of listings with 2 or more beds. (HINT: count\_documents())
2. Apply a 20% discount to a listing price with a room type of ‘**Shared room**,’ and then retrieve the top 5 listings with a room type of ‘**Shared room**’, sorted in descending order. (HINT: update\_many(), find(), sort())

**[Answer]**

|  |  |
| --- | --- |
| **a) The number of listings** | **b) Top 1 listing price** |
| 295 | 128, 96, 80, 80, 64 |

Enter your code and result here. You must show your result (captured image).

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**3. [20pts]** Fill in the blank and capture the code and results for the following questions.

1. Update the value of **‘amenities’** to **[‘Internet’, ‘Shampoo’]** for documents in the collection whose **‘property\_type’ is ‘Loft’**.
2. Add the element **‘Heating’** to the list of **‘amenities’** for the documents in the collection whose **‘property\_type’ is ‘Loft.**
3. Explain the operations used in ‘a’ and ‘b’ and describe their differences.

**[Answer]**

Fill in the table below. In the ***init***, write the initial document before the update. For both ***a)*** and ***b)***, write the document after the update.

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| --- | --- |
| **init** | {'\_id': 7858169, 'amenities': ['Internet', 'Wireless Internet', 'Air conditioning', 'Kitchen', 'Elevator in building', 'Buzzer/wireless intercom', 'Heating', 'Smoke detector', 'Carbon monoxide detector', 'Essentials']}  {'\_id': 13309763, 'amenities': ['TV', 'Cable TV', 'Internet', 'Wireless Internet', 'Air conditioning', 'Kitchen', 'Breakfast', 'Elevator in building', 'Buzzer/wireless intercom', 'Heating', 'Family/kid friendly', 'Washer', 'Dryer', 'Smoke detector', 'Carbon monoxide detector', 'First aid kit', 'Fire extinguisher', 'Essentials', 'Shampoo', 'Hangers', 'Hair dryer', 'Iron', 'Laptop friendly workspace']}  {'\_id': 15393322, 'amenities': ['TV', 'Internet', 'Wireless Internet', 'Air conditioning', 'Kitchen', 'Pets allowed', 'Elevator in building', 'Heating', 'Family/kid friendly', 'Washer', 'Dryer', 'Smoke detector', 'Essentials', 'Shampoo', 'Hangers', 'Hair dryer', 'Iron', 'Laptop friendly workspace']}  {'\_id': 14857830, 'amenities': ['TV', 'Internet', 'Wireless Internet', 'Air conditioning', 'Kitchen', 'Elevator in building', 'Heating', 'Washer', 'Dryer', 'Carbon monoxide detector', 'Essentials', 'Shampoo', 'Lock on bedroom door', 'Hangers', 'Hair dryer', 'Iron', 'translation missing: en.hosting\_amenity\_49', 'translation missing: en.hosting\_amenity\_50']}  {'\_id': 7648634, 'amenities': ['TV', 'Internet', 'Wireless Internet', 'Air conditioning', 'Kitchen', 'Heating', 'Smoke detector', 'Carbon monoxide detector', 'Fire extinguisher', 'Essentials', 'Shampoo', 'Hangers', 'Hair dryer', 'Iron', 'translation missing: en.hosting\_amenity\_49', 'translation missing: en.hosting\_amenity\_50']}  {'\_id': 15872852, 'amenities': ['TV', 'Wireless Internet', 'Air conditioning', 'Kitchen', 'Heating', 'Smoke detector', 'Carbon monoxide detector', 'Essentials', 'Lock on bedroom door', 'Hangers', 'Hair dryer', 'Iron', 'Laptop friendly workspace', 'translation missing: en.hosting\_amenity\_49', 'translation missing: en.hosting\_amenity\_50']}  {'\_id': 3530517, 'amenities': ['TV', 'Cable TV', 'Internet', 'Wireless Internet', 'Air conditioning', 'Kitchen', 'Breakfast', 'Buzzer/wireless intercom', 'Heating', 'Smoke detector', 'Carbon monoxide detector', 'First aid kit', 'Safety card', 'Fire extinguisher', 'Essentials', 'Shampoo', '24-hour check-in', 'Hangers', 'Hair dryer', 'Iron', 'Laptop friendly workspace', 'translation missing: en.hosting\_amenity\_49', 'translation missing: en.hosting\_amenity\_50', 'Self Check-In', 'Lockbox']}  {'\_id': 16363434, 'amenities': ['TV', 'Cable TV', 'Internet', 'Wireless Internet', 'Air conditioning', 'Kitchen', 'Heating', 'Family/kid friendly', 'Washer', 'Dryer', 'Smoke detector', 'Carbon monoxide detector', 'Fire extinguisher', 'Essentials', 'Hangers', 'Iron']}  {'\_id': 14824160, 'amenities': ['Wireless Internet', 'Air conditioning', 'Kitchen', 'Pets allowed', 'Heating', 'Family/kid friendly', 'Suitable for events', 'Smoke detector', 'Carbon monoxide detector', 'First aid kit', 'Safety card', 'Fire extinguisher', 'Essentials', 'Laptop friendly workspace', 'translation missing: en.hosting\_amenity\_50']}  {'\_id': 12088888, 'amenities': ['TV', 'Cable TV', 'Internet', 'Wireless Internet', 'Air conditioning', 'Kitchen', 'Buzzer/wireless intercom', 'Heating', 'Family/kid friendly', 'Washer', 'Dryer', 'Smoke detector', 'Essentials', 'Hangers', 'Hair dryer', 'Iron', 'Laptop friendly workspace']}  {'\_id': 1294438, 'amenities': ['Internet', 'Wireless Internet', 'Air conditioning', 'Kitchen', 'Buzzer/wireless intercom', 'Heating', 'Suitable for events', 'Smoke detector', 'translation missing: en.hosting\_amenity\_49', 'translation missing: en.hosting\_amenity\_50']}  {'\_id': 13995614, 'amenities': ['TV', 'Wireless Internet', 'Air conditioning', 'Kitchen', 'Smoking allowed', 'Indoor fireplace', 'Family/kid friendly', 'Smoke detector', 'Carbon monoxide detector', 'Essentials', 'Shampoo', 'Hangers', 'Hair dryer', 'Laptop friendly workspace', 'translation missing: en.hosting\_amenity\_50']}  {'\_id': 522081, 'amenities': ['Internet', 'Wireless Internet', 'Air conditioning', 'Kitchen', 'Pets live on this property', 'Dog(s)', 'Elevator in building', 'Hot tub', 'Buzzer/wireless intercom', 'Heating', 'Family/kid friendly', 'Washer', 'Dryer', 'Smoke detector', 'Carbon monoxide detector', 'First aid kit', 'Fire extinguisher', 'Essentials', 'Shampoo', 'Hangers', 'Hair dryer', 'Iron', 'Laptop friendly workspace', 'translation missing: en.hosting\_amenity\_50']} |
| **a)** | {'\_id': 7858169, 'amenities': ['Internet', 'Shampoo']}  {'\_id': 13309763, 'amenities': ['Internet', 'Shampoo']}  {'\_id': 15393322, 'amenities': ['Internet', 'Shampoo']}  {'\_id': 14857830, 'amenities': ['Internet', 'Shampoo']}  {'\_id': 7648634, 'amenities': ['Internet', 'Shampoo']}  {'\_id': 15872852, 'amenities': ['Internet', 'Shampoo']}  {'\_id': 3530517, 'amenities': ['Internet', 'Shampoo']}  {'\_id': 16363434, 'amenities': ['Internet', 'Shampoo']}  {'\_id': 14824160, 'amenities': ['Internet', 'Shampoo']}  {'\_id': 12088888, 'amenities': ['Internet', 'Shampoo']}  {'\_id': 1294438, 'amenities': ['Internet', 'Shampoo']}  {'\_id': 13995614, 'amenities': ['Internet', 'Shampoo']}  {'\_id': 522081, 'amenities': ['Internet', 'Shampoo']} |
| **b)** | {'\_id': 7858169, 'amenities': ['Internet', 'Shampoo', 'Heating']}  {'\_id': 13309763, 'amenities': ['Internet', 'Shampoo', 'Heating']}  {'\_id': 15393322, 'amenities': ['Internet', 'Shampoo', 'Heating']}  {'\_id': 14857830, 'amenities': ['Internet', 'Shampoo', 'Heating']}  {'\_id': 7648634, 'amenities': ['Internet', 'Shampoo', 'Heating']}  {'\_id': 15872852, 'amenities': ['Internet', 'Shampoo', 'Heating']}  {'\_id': 3530517, 'amenities': ['Internet', 'Shampoo', 'Heating']}  {'\_id': 16363434, 'amenities': ['Internet', 'Shampoo', 'Heating']}  {'\_id': 14824160, 'amenities': ['Internet', 'Shampoo', 'Heating']}  {'\_id': 12088888, 'amenities': ['Internet', 'Shampoo', 'Heating']}  {'\_id': 1294438, 'amenities': ['Internet', 'Shampoo', 'Heating']}  {'\_id': 13995614, 'amenities': ['Internet', 'Shampoo', 'Heating']}  {'\_id': 522081, 'amenities': ['Internet', 'Shampoo', 'Heating']} |
| **c)** | $set replaces the entire value of the field with the specified value  $push appends an element to an existing array field |

Enter your code and result here. You must show your result (captured image).

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