

Project Phase 3 Report

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Part 1: Description

In this phase of the project, I utilize Python to manipulate the concert ticket management system database we developed in the previous sections. Our Python application executes CRUD operations – **Create** (insert), **Read**, **Update**, and **Delete**—on selected tables, specifically focusing on the Venue and Address tables, as determined in the previous phase of the project.

Each CRUD operation is implemented independently to ensure efficient data management. The data to be inserted into the tables are hard-coded into the application rather than being user-provided. This method guarantees consistency and control over the data being handled, and was chosen to maintain a controlled environment for testing and validation.

The subsequent sections of this report elaborate on the implementation of each CRUD operation. We include the functions used for inserting, retrieving, updating, and deleting records, along with examples and logs that illustrate the changes made to the database at each step.

Part 2. Selected Tables

Two selected tables are address and venue as mentioned before.

2.1 Address Table

The Address table is designed to store detailed information about the locations of various venues. Each entry in the Address table includes a unique

identifier (AddressId), the complete address (Address), the city (City), and the country (Country). This table is crucial for providing a clear and structured representation of venue locations, enabling efficient data management and retrieval. This table can be seen in Figure 1 below.

	AddressId	Address	City	Country
	2	Cihannüma, Hasfırın Cd. No:26, 34353 Beşiktaş...	İstanbul	Turkey
	3	Caferağa, Namlı Market Yanı, Neşet Ömer Sk. 3...	İstanbul	Turkey
	4	Sinanpaşa, Ortabahçe Cd. no 23/4, 34022 Beşi...	İstanbul	Turkey
	5	Levazım, Kuru Sok. No:2, 34340 Beşiktaş/İstanbul	İstanbul	Turkey
	6	Harbiye, Kadirgalar Cd. No:4, 34367 Şişli/İstanbul	İstanbul	Turkey
	7	Vişnezade, Dolmabahçe Cd. No:1, 34357 Beşikt...	İstanbul	Turkey
	8	Mavişehir mah. Caher dudayev blv. A apt. No:4...	İzmir	Turkey
	9	Bahçelievler, Azerbaycan Cd. No:41, 06490 Ça...	Ankara	Turkey
	10	Pamucak Sahili, Selçuk/İzmir.	İzmir	Turkey
	11	Kavaklıdere, Kızılırmak Cd. No:14, 06420 Çanka...	Ankara	Turkey
	12	Mimar Sinan, Şair Eşref Blv. No.50, 35220 Kona...	İzmir	Turkey
	13	Harbiye, Taşkışla Cd. No:8, 34367 Şişli/İstanbul	İstanbul	Turkey
	16	Huzur, Uniq İstanbul, Maslak Ayazağa Cd. No:4...	İstanbul	Turkey

Figure 1: Address Table

2.1 Venue Table

The Venue table is designed to store information about the concert venues, including the venue's unique identifier (VenueId), name (Name), capacity (Capacity), and a reference to the address (AddressId). By linking to the Address table, we maintain normalization and ensure that address details are stored in a separate, dedicated table. This structure supports efficient data management and helps maintain data integrity. The Venue table can be seen in Figure 2.

	VenueId	Name	AddressId	Capacity
▶	1	Maximum Uniq Hall	16	1156
	2	IF Performance Hall	2	4500
	3	Dorock XL	3	1000
	4	Dorock XL	4	2000
	5	Zorlu PSM	5	3200
	6	KüçükÇiftlik Park	6	10000
	7	BJK Tüpraş Stadyumu	7	42590
	8	SoldOut Performance Hall	8	1200
	9	Milyon Performance Hall	9	2500
	10	What A Fest Festival Arena	10	13600
	11	Jolly Joker Ankara	11	1600
	12	Kültürpark Atatürk Outdoo...	12	3150
	13	Harbiye Outdoor Theatre	13	4532
	14	Zorlu PSM Yan Salon	5	859

Figure 2: Venue Table

Part 3. Create Operation

- Function for Inserting Records

The Figure 3 is the function that I implemented for inserting records.

```
def insert_operation(cursor, table_name, data):
    """Inserts data given which contains column names as the keys and corresponding values"""

    # get column names for generating query string
    columns = data.keys()
    values = data.values()

    """
    Example query string:
    "INSERT INTO salaries "
    "(emp_no, salary, from_date, to_date) "
    "VALUES %(emp_no)s, %(salary)s, %(from_date)s, %(to_date)s)"
    """

    # query string is constructed here
    query = (
        "INSERT INTO " + table_name + " (" + columns_string(columns) + ") "
        "VALUES (" + ", ".join(["%s"] * len(columns)) + ")"
    )

    print(f"{query}".format(data))

    try:
        print("Inserting {}: ".format(table_name))
        cursor.execute(query, list(values))
    except mysql.connector.Error as err:
        if err.errno == errorcode.ER_DUP_ENTRY:
            print("This instance already exists. \n", data)
        else:
            print(err.msg)
    else:
        print("OK\n")

    return True
```

Figure 3: Insert Operation

The *insert_operation* function constructs and executes an SQL "INSERT" statement to add a new row into a specified table using the provided data, with column names and values dynamically included in the query string. It also handles potential duplicate entry errors, printing appropriate messages based on the outcome.

- Sample Data Insertions

Here are the data to be inserted. I preferred to have these data as a list. I picked 10 different venues and I added these with their corresponding addresses. The data is separately demonstrated in these subsections below.

a. Data to be inserted on Address Table

This data is named as *insert_address_list* as demonstrated below.

```
insert_address_list = [
    {"AddressId":14,"Address":"Ayazağa Cendere Caddesi 109C Sarıyer","City":"İstanbul","Country":"Turkey"},
    {"AddressId":15,"Address":"Gümüşsuyu Tak-ı Zafer Caddesi Beyoğlu","City":"İstanbul","Country":"Turkey"},
    {"AddressId":17,"Address":"Huzur Mahallesi Maslak Ayazağa Caddesi 4/A Sarıyer","City":"İstanbul","Country":"Turkey"},
    {"AddressId":18,"Address":"Marmara Mahallesi Ulusum Caddesi 34/6 G Beylikdüzü","City":"İstanbul","Country":"Turkey"},
    {"AddressId":19,"Address":"Mehmet Akif Tabiat Parkı Bahçeköy Sarıyer","City":"İstanbul","Country":"Turkey"},
    {"AddressId":20,"Address":"Oran Mahallesi Kudüs Caddesi No:3/317 Çankaya","City":"Ankara","Country":"Turkey"},
    {"AddressId":21,"Address":"100. Yıl 428. Sokak Balgat","City":"Ankara","Country":"Turkey"},
    {"AddressId":22,"Address":"Anafartalar Altınsoy Caddesi no:4 Sıhhiye Altındağ","City":"Ankara","Country":"Turkey"},
    {"AddressId":23,"Address":"Sarıbalı Aspendos Yolu Serik","City":"Antalya","Country":"Turkey"},
    {"AddressId":24,"Address":"Kuşadası-Söke Yolu 6. kilometre Kuşadası","City":"Aydın","Country":"Turkey"},
]
```

Figure 4: *insert_address_list* data to be inserted

b. Data to be inserted on Venue Table

This data is named as *insert_venue_list* as demonstrated below.

```
insert_venue_list = [
    {"VenueId":15,"Name":"BtcTürk Vadi Açık hava","Capacity":2200,"AddressId":14},
    {"VenueId":16,"Name":"AKM Türk Telekom Opera Sahnesi","Capacity":2040,"AddressId":15},
    {"VenueId":17,"Name":"Jolly Joker Vadi İstanbul","Capacity":2000,"AddressId":14},
    {"VenueId":18,"Name":"Volkswagen Arena","Capacity":4500,"AddressId":17},
    {"VenueId":19,"Name":"Mask Beach","Capacity":800,"AddressId":18},
    {"VenueId":20,"Name":"Life Park","Capacity":3000,"AddressId":19},
    {"VenueId":21,"Name":"Oran Açık hava Sahnesi","Capacity":2500,"AddressId":20},
    {"VenueId":22,"Name":"ODTÜ MD Vişnelik","Capacity":6000,"AddressId":21},
    {"VenueId":23,"Name":"CerModern","Capacity":360,"AddressId":22},
    {"VenueId":24,"Name":"Aspendos Antik Tiyatro","Capacity":12000,"AddressId":23},
    {"VenueId":25,"Name":"Kuşadası Altın Güvercin Amfi Tiyatro","Capacity":2600,"AddressId":24}
]
```

Figure 5: *insert_address_list* data to be inserted

These selected data is implemented by using these queries

a. Insertion queries to address table

```
INSERT INTO Address (AddressId, Address, City, Country) VALUES (%s, %s, %s, %s) {'AddressId':  
14, 'Address': 'Ayazağa Cendere Caddesi 109C Sarıyer', 'City': 'İstanbul', 'Country': 'Turkey'}  
Inserting Address:  
OK  
  
INSERT INTO Address (AddressId, Address, City, Country) VALUES (%s, %s, %s, %s) {'AddressId':  
15, 'Address': 'Gümüşsuyu Tak-1 Zafer Caddesi Beyoğlu', 'City': 'İstanbul', 'Country':  
'Turkey'}  
Inserting Address:  
OK  
  
INSERT INTO Address (AddressId, Address, City, Country) VALUES (%s, %s, %s, %s) {'AddressId':  
17, 'Address': 'Huzur Mahallesi Maslak Ayazağa Caddesi 4/A Sarıyer', 'City': 'İstanbul',  
'Country': 'Turkey'}  
Inserting Address:  
OK  
  
INSERT INTO Address (AddressId, Address, City, Country) VALUES (%s, %s, %s, %s) {'AddressId':  
18, 'Address': 'Marmara Mahallesi Ulusum Caddesi 34/6 G Beylikdüzü', 'City': 'İstanbul',  
'Country': 'Turkey'}  
Inserting Address:  
OK  
  
INSERT INTO Address (AddressId, Address, City, Country) VALUES (%s, %s, %s, %s) {'AddressId':  
19, 'Address': 'Mehmet Akif Tabiat Parkı Bahçeköy Sarıyer', 'City': 'İstanbul', 'Country':  
'Turkey'}  
Inserting Address:  
OK  
  
INSERT INTO Address (AddressId, Address, City, Country) VALUES (%s, %s, %s, %s) {'AddressId':  
20, 'Address': 'Oran Mahallesi Kudüs Caddesi No:3/317 Çankaya', 'City': 'Ankara', 'Country':  
'Turkey'}  
Inserting Address:  
OK  
  
INSERT INTO Address (AddressId, Address, City, Country) VALUES (%s, %s, %s, %s) {'AddressId':  
21, 'Address': '100. Yıl 428. Sokak Balgat', 'City': 'Ankara', 'Country': 'Turkey'}  
Inserting Address:  
OK  
  
INSERT INTO Address (AddressId, Address, City, Country) VALUES (%s, %s, %s, %s) {'AddressId':  
22, 'Address': 'Anafartalar Altınoy Caddesi no:4 Sıhhiye Altındağ', 'City': 'Ankara',  
'Country': 'Turkey'}  
Inserting Address:  
OK  
  
INSERT INTO Address (AddressId, Address, City, Country) VALUES (%s, %s, %s, %s) {'AddressId':  
23, 'Address': 'Sarıbalı Aspendos Yolu Serik', 'City': 'Antalya', 'Country': 'Turkey'}  
Inserting Address:  
OK  
  
INSERT INTO Address (AddressId, Address, City, Country) VALUES (%s, %s, %s, %s) {'AddressId':  
24, 'Address': 'Kuşadası-Söke Yolu 6. kilometre Kuşadası', 'City': 'Aydın', 'Country':  
'Turkey'}  
Inserting Address:  
OK
```

Figure 6: insertion queries for address table

b. Insertion queries to venue table

```
INSERT INTO venue (VenueId, Name, Capacity, AddressId) VALUES (%s, %s, %s, %s) {'VenueId':  
15, 'Name': 'BtcTürk Vadi Açık hava', 'Capacity': 2200, 'AddressId': 14}  
Inserting venue:  
OK  
  
INSERT INTO venue (VenueId, Name, Capacity, AddressId) VALUES (%s, %s, %s, %s) {'VenueId':  
16, 'Name': 'AKM Türk Telekom Opera Sahnesi', 'Capacity': 2040, 'AddressId': 15}  
Inserting venue:  
OK  
  
INSERT INTO venue (VenueId, Name, Capacity, AddressId) VALUES (%s, %s, %s, %s) {'VenueId':  
17, 'Name': 'Jolly Joker Vadi İstanbul', 'Capacity': 2000, 'AddressId': 14}  
Inserting venue:  
OK  
  
INSERT INTO venue (VenueId, Name, Capacity, AddressId) VALUES (%s, %s, %s, %s) {'VenueId':  
18, 'Name': 'Volkswagen Arena', 'Capacity': 4500, 'AddressId': 17}  
Inserting venue:  
OK  
  
INSERT INTO venue (VenueId, Name, Capacity, AddressId) VALUES (%s, %s, %s, %s) {'VenueId':  
19, 'Name': 'Mask Beach', 'Capacity': 800, 'AddressId': 18}  
Inserting venue:  
OK  
  
INSERT INTO venue (VenueId, Name, Capacity, AddressId) VALUES (%s, %s, %s, %s) {'VenueId':  
20, 'Name': 'Life Park', 'Capacity': 3000, 'AddressId': 19}  
Inserting venue:  
OK  
  
INSERT INTO venue (VenueId, Name, Capacity, AddressId) VALUES (%s, %s, %s, %s) {'VenueId':  
21, 'Name': 'Oran Açık hava Sahnesi', 'Capacity': 2500, 'AddressId': 20}  
Inserting venue:  
OK  
  
INSERT INTO venue (VenueId, Name, Capacity, AddressId) VALUES (%s, %s, %s, %s) {'VenueId':  
22, 'Name': 'ODTÜ MD Vişnelik', 'Capacity': 6000, 'AddressId': 21}  
Inserting venue:  
OK  
  
INSERT INTO venue (VenueId, Name, Capacity, AddressId) VALUES (%s, %s, %s, %s) {'VenueId':  
23, 'Name': 'CerModern', 'Capacity': 360, 'AddressId': 22}  
Inserting venue:  
OK  
  
INSERT INTO venue (VenueId, Name, Capacity, AddressId) VALUES (%s, %s, %s, %s) {'VenueId':  
24, 'Name': 'Aspendos Antik Tiyatro', 'Capacity': 12000, 'AddressId': 23}  
Inserting venue:  
OK  
  
INSERT INTO venue (VenueId, Name, Capacity, AddressId) VALUES (%s, %s, %s, %s) {'VenueId':  
25, 'Name': 'Kuşadası Altın Güvercin Amfi Tiyatro', 'Capacity': 2600, 'AddressId': 24}  
Inserting venue:  
OK
```

Figure 7: insertion queries for venue table

- Logs Before and After Insertion

The important thing in this homework is to show clearly that I could manipulated the data using the Python code. With the code I used, several rows are inserted to the previous tables. Logs before and after insertion can be seen in these subsections.

a. For Address Table

- Before insertion

```
[(2, 'Cihannüma, Hasfırın Cd. No:26, 34353 Beşiktaş/İstanbul',  
'İstanbul ', 'Turkey'), (3, 'Caferağa, Namlı Market Yanı, Neşet  
Ömer Sk. 3C, 34710 Kadıköy/İstanbul', 'İstanbul ', 'Turkey'),  
(4, 'Sinanpaşa, Ortabahçe Cd. no 23/4, 34022 Beşiktaş/İstanbul',  
'İstanbul ', 'Turkey'), (5, 'Levazım, Koru Sok. No:2, 34340  
Beşiktaş/İstanbul', 'İstanbul ', 'Turkey'), (6, 'Harbiye,  
Kadırgalar Cd. No:4, 34367 Şişli/İstanbul', 'İstanbul ',  
'Turkey'), (7, 'Vişnezade, Dolmabahçe Cd. No:1, 34357  
Beşiktaş/İstanbul', 'İstanbul ', 'Turkey'), (8, 'Mavişehir mah.  
Caher dudayev blv. A apt. No:40, D:304, 35590 Karşıyaka/İzmir',  
'İzmir', 'Turkey'), (9, 'Bahçelievler, Azerbaycan Cd. No:41,  
06490 Çankaya/Ankara', 'Ankara', 'Turkey'), (10, 'Pamucak  
Sahili, Selçuk/İzmir.', 'İzmir', 'Turkey'), (11, 'Kavaklıdere,  
Kızıllırmak Cd. No:14, 06420 Çankaya/Ankara', 'Ankara',  
'Turkey'), (12, 'Mimar Sinan, Şair Eşref Blv. No.50, 35220  
Konak/İzmir', 'İzmir', 'Turkey'), (13, 'Harbiye, Taşkışla Cd.  
No:8, 34367 Şişli/İstanbul', 'İstanbul ', 'Turkey'), (16,  
'Huzur, Uniq İstanbul, Maslak Ayazağa Cd. No:4, 34485  
Sarıyer/İstanbul', 'İstanbul ', 'Turkey')]
```

Figure 8. Address Table Before Insertion

- After insertion

```
[(2, 'Cihannüma, Hasfırın Cd. No:26, 34353 Beşiktaş/İstanbul',  
'İstanbul ', 'Turkey'), (3, 'Caferağa, Namlı Market Yanı, Neşet  
Ömer Sk. 3C, 34710 Kadıköy/İstanbul', 'İstanbul ', 'Turkey'),  
(4, 'Sinanpaşa, Ortabahçe Cd. no 23/4, 34022 Beşiktaş/İstanbul',  
'İstanbul ', 'Turkey'), (5, 'Levazım, Koru Sok. No:2, 34340  
Beşiktaş/İstanbul', 'İstanbul ', 'Turkey'), (6, 'Harbiye,  
Kadırgalar Cd. No:4, 34367 Şişli/İstanbul', 'İstanbul ',  
'Turkey'), (7, 'Vişnezade, Dolmabahçe Cd. No:1, 34357  
Beşiktaş/İstanbul', 'İstanbul ', 'Turkey'), (8, 'Mavişehir mah.  
Caher dudayev blv. A apt. No:40, D:304, 35590 Karşıyaka/İzmir',  
'İzmir', 'Turkey'), (9, 'Bahçelievler, Azerbaycan Cd. No:41,  
06490 Çankaya/Ankara', 'Ankara', 'Turkey'), (10, 'Pamucak  
Sahili, Selçuk/İzmir.', 'İzmir', 'Turkey'), (11, 'Kavaklıdere,  
Kızılırmak Cd. No:14, 06420 Çankaya/Ankara', 'Ankara',  
'Turkey'), (12, 'Mimar Sinan, Şair Eşref Blv. No.50, 35220  
Konak/İzmir', 'İzmir', 'Turkey'), (13, 'Harbiye, Taşkışla Cd.  
No:8, 34367 Şişli/İstanbul', 'İstanbul ', 'Turkey'), (14,  
'Ayazağa Cendere Caddesi 109C Sarıyer', 'İstanbul', 'Turkey'),  
(15, 'Gümüşsuyu Tak-1 Zafer Caddesi Beyoğlu', 'İstanbul',  
'Turkey'), (16, 'Huzur, Uniq İstanbul, Maslak Ayazağa Cd. No:4,  
34485 Sarıyer/İstanbul', 'İstanbul ', 'Turkey'), (17, 'Huzur  
Mahallesi Maslak Ayazağa Caddesi 4/A Sarıyer', 'İstanbul',  
'Turkey'), (18, 'Marmara Mahallesi Ulusum Caddesi 34/6 G  
Beylikdüzü', 'İstanbul', 'Turkey'), (19, 'Mehmet Akif Tabiat  
Parkı Bahçeköy Sarıyer', 'İstanbul', 'Turkey'), (20, 'Oran  
Mahallesi Kudüs Caddesi No:3/317 Çankaya', 'Ankara', 'Turkey'),  
(21, '100. Yıl 428. Sokak Balgat', 'Ankara', 'Turkey'), (22,  
'Anafartalar Altınsoy Caddesi no:4 Sıhhiye Altındağ', 'Ankara',  
'Turkey'), (23, 'Sarıabalı Aspendos Yolu Serik', 'Antalya',  
'Turkey'), (24, 'Kuşadası-Söke Yolu 6. kilometre Kuşadası',  
'Aydın', 'Turkey')]
```

Figure 9. Address Table After Insertion

b. For Venue Table

- Before insertion

```
[(1, 'Maximum Uniq Hall', 16, 1156), (2, 'IF Performance Hall ', 2, 4500), (3, 'Dorock XL', 3, 1000), (4, 'Dorock XL', 4, 2500), (5, 'Zorlu PSM', 5, 3200), (6, 'KüçükÇiftlik Park', 6, 10000), (7, 'BJK Tüpraş Stadyumu', 7, 42590), (8, 'SoldOut Performance Hall', 8, 1200), (9, 'Milyon Performance Hall', 9, 2500), (10, 'What A Fest Festival Arena', 10, 13600), (11, 'Jolly Joker Ankara', 11, 1600), (12, 'Kültürpark Atatürk Outdoor Theatre', 12, 3150), (13, 'Harbiye Outdoor Theatre', 13, 4532), (14, 'Zorlu PSM Yan Salon', 5, 859)]
```

Figure 10. Venue Table Before Insertion

- After insertion

```
[(1, 'Maximum Uniq Hall', 16, 1156), (2, 'IF Performance Hall ', 2, 4500), (3, 'Dorock XL', 3, 1000), (4, 'Dorock XL', 4, 2500), (5, 'Zorlu PSM', 5, 3200), (6, 'KüçükÇiftlik Park', 6, 10000), (7, 'BJK Tüpraş Stadyumu', 7, 42590), (8, 'SoldOut Performance Hall', 8, 1200), (9, 'Milyon Performance Hall', 9, 2500), (10, 'What A Fest Festival Arena', 10, 13600), (11, 'Jolly Joker Ankara', 11, 1600), (12, 'Kültürpark Atatürk Outdoor Theatre', 12, 3150), (13, 'Harbiye Outdoor Theatre', 13, 4532), (14, 'Zorlu PSM Yan Salon', 5, 859), (15, 'BtcTürk Vadi Açık hava', 14, 2200), (16, 'AKM Türk Telekom Opera Sahnesi', 15, 2040), (17, 'Jolly Joker Vadi İstanbul', 14, 2000), (18, 'Volkswagen Arena', 17, 4500), (19, 'Mask Beach', 18, 800), (20, 'Life Park', 19, 3000), (21, 'Oran Açık hava Sahnesi', 20, 2500), (22, 'ODTÜ MD Vişnelik', 21, 6000), (23, 'CerModern', 22, 360), (24, 'Aspendos Antik Tiyatro', 23, 12000), (25, 'Kuşadası Altın Güvercin Amfi Tiyatro', 24, 2600)]
```

Figure 11. Venue Table After Insertion

Part 4. Read Operation

- Function for Retrieving Records

Figure 12 is the function that is implemented for retrieving records.

```
def select_operation(cursor, table_name, condition=None, filters=None):  
    """Selects instances with given filter array that contains dictionaries that has filter info"""  
    query = "SELECT * FROM {}".format(table_name)  
    query = filter_generation(query=query, condition=condition, filters=filters)  
    cursor.execute(query)  
    data = cursor.fetchall()  
    return data
```

Figure 12: Function to retrieve/select data

The `select_operation` function constructs and executes an SQL `SELECT` statement to retrieve rows from a specified table based on optional conditions and filters, using a helper function `filter_generation` to build the query. It then fetches and returns the resulting data.

- Sample Queries and Outputs

Here is the queries

- a. For Address Table

```
SELECT * FROM Address Where City in ("İzmir","Aydın")
```

Figure 13. Query for Retrieving Address Records

- b. For Venue Table

```
SELECT * FROM Venue Where Capacity >= 5000
```

Figure 14. Query for Retrieving Venue Records

- Logs of Retrieved Data

This operation does not provide any change, only returns the values in the table. After using the function for read operation, the outputs in Figure 15 and Figure 16 are generated.

```
[(8, 'Mavişehir mah. Caher dudayev blv. A apt. No:40, D:304, 35590 Karşıyaka/İzmir', 'İzmir', 'Türkiye'), (10, 'Pamucak Sahili, Selçuk/İzmir.', 'İzmir', 'Türkiye'), (12, 'Mimar Sinan, Şair Eşref Blv. No.50, 35220 Konak/İzmir', 'İzmir', 'Türkiye'), (24, 'Kuşadası-Söke Yolu 6. kilometre Kuşadası', 'Aydın', 'Turkey')]
```

Figure 15. Retrieved Address Records

```
[(6, 'Küçükçiftlik Park', 6, 10000), (7, 'BJK Tüpraş Stadyumu', 7, 42590), (10, 'What A Fest Festival Arena', 10, 13600), (22, 'ODTÜ MD Vişnelik', 21, 6000), (24, 'Aspendos Antik Tiyatro', 23, 12000)]
```

Figure 16. Retrieved Venue Records

Part 5. Update Operation

- Function for Updating Records

Figure 16 is the function that is implemented for updating records. Updating records is equivalent to “ALTER TABLE...” query type in SQL. See function below.

```
def update_operation(cursor, table_name, values, condition=None, filters=None):
    """Updates instances with given values which contains column names as keys and filter array which has dictionaries that contains filter info"""
    query = "UPDATE {}".format(table_name)
    query = set_query_generation(query, values=values)
    query = filter_generation(query=query, condition=condition, filters=filters)
    print(query, "\n")
    cursor.execute(query)
    print("Update operation successful", "\n")
    return True
```

Figure 17: Updating function

The *update_operation* function constructs and executes an SQL ‘UPDATE’ statement to modify rows in a specified table using the provided values, with optional conditions and filters. It uses helper functions ‘set_query_generation’ and ‘filter_generation’ to build the query, and then executes it, printing a success message upon completion.

- Sample Data Updates

Several rows are selected to test the functionality of update function, meaning that these samples are selected as subject to change. These updates can be found below.

- a. On Address table this query will be applied.

```
{'Country': 'Türkiye'}  
UPDATE Address SET Country = 'Türkiye' Where Country = 'Turkey'
```

Figure 18: Query for updating address table

- b. On Venue table this query will be applied.

```
{Capacity: 2500}  
UPDATE Venue Set Capacity = 2000 Where Capacity = 2500
```

Figure 19: Query for updating venue table

- **Logs Before and After Updates**

Before applying this functionality,

- a. Address Table was in the form of Figure 20

[(2, 'Cihannüma, Hasfırın Cd. No:26, 34353 Beşiktaş/İstanbul', 'İstanbul ', 'Turkey'), (3, 'Caferağa, Namlı Market Yanı, Neşet Ömer Sk. 3C, 34710 Kadıköy/İstanbul', 'İstanbul ', 'Turkey'), (4, 'Sinanpaşa, Ortabahçe Cd. no 23/4, 34022 Beşiktaş/İstanbul', 'İstanbul ', 'Turkey'), (5, 'Levazım, Kuru Sok. No:2, 34340 Beşiktaş/İstanbul', 'İstanbul ', 'Turkey'), (6, 'Harbiye, Kadırgalar Cd. No:4, 34367 Şişli/İstanbul', 'İstanbul ', 'Turkey'), (7, 'Vişnezade, Dolmabahçe Cd. No:1, 34357 Beşiktaş/İstanbul', 'İstanbul ', 'Turkey'), (8, 'Mavişehir mah. Caher dudayev blv. A apt. No:40, D:304, 35590 Karşıyaka/İzmir', 'İzmir', 'Turkey'), (9, 'Bahçelievler, Azerbaycan Cd. No:41, 06490 Çankaya/Ankara', 'Ankara', 'Turkey'), (10, 'Pamucak Sahili, Selçuk/İzmir.', 'İzmir', 'Turkey'), (11, 'Kavaklıdere, Kızıllırmak Cd. No:14, 06420 Çankaya/Ankara', 'Ankara', 'Turkey'), (12, 'Mimar Sinan, Şair Eşref Blv. No.50, 35220 Konak/İzmir', 'İzmir', 'Turkey'), (13, 'Harbiye, Taşkışla Cd. No:8, 34367 Şişli/İstanbul', 'İstanbul ', 'Turkey'), (14, 'Ayazağa Cendere Caddesi 109C Sarıyer', 'İstanbul', 'Turkey'), (15, 'Gümüşsuyu Tak-1 Zafer Caddesi Beyoğlu', 'İstanbul', 'Turkey'), (16, 'Huzur, Uniq İstanbul, Maslak Ayazağa Cd. No:4, 34485 Sarıyer/İstanbul', 'İstanbul ', 'Turkey'), (17, 'Huzur Mahallesi Maslak Ayazağa Caddesi 4/A Sarıyer', 'İstanbul', 'Turkey'), (18, 'Marmara Mahallesi Ulusum Caddesi 34/6 G Beylikdüzü', 'İstanbul', 'Turkey'), (19, 'Mehmet Akif Tabiat Parkı Bahçeköy Sarıyer', 'İstanbul', 'Turkey'), (20, 'Oran Mahallesi Kudüs Caddesi No:3/317 Çankaya', 'Ankara', 'Turkey'), (21, '100. Yıl 428. Sokak Balgat', 'Ankara', 'Turkey'), (22, 'Anafartalar Altınsoy Caddesi no:4 Sıhhiye Altındağ', 'Ankara', 'Turkey'), (23, 'Sarıbalı Aspendos Yolu Serik', 'Antalya', 'Turkey'), (24, 'Kuşadası-Söke Yolu 6. kilometre Kuşadası', 'Aydın', 'Turkey')]

Figure 20. Previous Address Table

b. Venue Table was in the form of Figure 21

```
[(1, 'Maximum Uniq Hall', 16, 1156), (2, 'IF Performance Hall ',  
2, 4500), (4, 'Dorock XL', 4, 2500), (5, 'Zorlu PSM', 5, 3200),  
(6, 'KüçükÇiftlik Park', 6, 10000), (7, 'BJK Tüpraş Stadyumu',  
7, 42590), (8, 'SoldOut Performance Hall', 8, 1200), (9, 'Milyon  
Performance Hall', 9, 2500), (10, 'What A Fest Festival Arena',  
10, 13600), (11, 'Jolly Joker Ankara', 11, 1600), (12,  
'Kültürpark Atatürk Outdoor Theatre', 12, 3150), (13, 'Harbiye  
Outdoor Theatre', 13, 4532), (15, 'BtcTürk Vadi Açık hava', 14,  
2200), (16, 'AKM Türk Telekom Opera Sahnesi', 15, 2040), (17,  
'Jolly Joker Vadi İstanbul', 14, 2000), (18, 'Volkswagen Arena',  
17, 4500), (19, 'Mask Beach', 18, 800), (20, 'Life Park', 19,  
3000), (21, 'Oran Açık hava Sahnesi', 20, 2500), (22, 'ODTÜ MD  
Vişnelik', 21, 6000), (23, 'CerModern', 22, 360), (24, 'Aspendos  
Antik Tiyatro', 23, 12000), (25, 'Kuşadası Altın Güvercin Amfi  
Tiyatro', 24, 2600)]
```

Figure 21. Previous Venue Table

After applying this functionality,

c. Address Table becomes the form of Figure 2

```
[(2, 'Cihannüma, Hasfırın Cd. No:26, 34353 Beşiktaş/İstanbul',  
'İstanbul ', 'Türkiye'), (3, 'Caferağa, Namlı Market Yanı, Neşet  
Ömer Sk. 3C, 34710 Kadıköy/İstanbul', 'İstanbul ', 'Türkiye'),  
(4, 'Sinanpaşa, Ortabahçe Cd. no 23/4, 34022 Beşiktaş/İstanbul',  
'İstanbul ', 'Türkiye'), (5, 'Levazım, Koru Sok. No:2, 34340  
Beşiktaş/İstanbul', 'İstanbul ', 'Türkiye'), (6, 'Harbiye,  
Kadırgalar Cd. No:4, 34367 Şişli/İstanbul', 'İstanbul ',  
'Türkiye'), (7, 'Vişnezade, Dolmabahçe Cd. No:1, 34357  
Beşiktaş/İstanbul', 'İstanbul ', 'Türkiye'), (8, 'Mavişehir mah.  
Caher dudayev blv. A apt. No:40, D:304, 35590 Karşıyaka/İzmir',  
'İzmir', 'Türkiye'), (9, 'Bahçelievler, Azerbaycan Cd. No:41,  
06490 Çankaya/Ankara', 'Ankara', 'Türkiye'), (10, 'Pamucak  
Sahili, Selçuk/İzmir.', 'İzmir', 'Türkiye'), (11, 'Kavaklıdere,  
Kızılırmak Cd. No:14, 06420 Çankaya/Ankara', 'Ankara',  
'Türkiye'), (12, 'Mimar Sinan, Şair Eşref Blv. No.50, 35220  
Konak/İzmir', 'İzmir', 'Türkiye'), (13, 'Harbiye, Taşkılla Cd.  
No:8, 34367 Şişli/İstanbul', 'İstanbul ', 'Türkiye'), (14,  
'Ayazağa Cendere Caddesi 109C Sarıyer', 'İstanbul', 'Türkiye'),  
(15, 'Gümüşsuyu Tak-1 Zafer Caddesi Beyoğlu', 'İstanbul',  
'Türkiye'), (16, 'Huzur, Uniq İstanbul, Maslak Ayazağa Cd. No:4,  
34485 Sarıyer/İstanbul', 'İstanbul ', 'Türkiye'), (17, 'Huzur  
Mahallesi Maslak Ayazağa Caddesi 4/A Sarıyer', 'İstanbul',  
'Türkiye'), (18, 'Marmara Mahallesi Ulusum Caddesi 34/6 G  
Beylikdüzü', 'İstanbul', 'Türkiye'), (19, 'Mehmet Akif Tabiat  
Parkı Bahçeköy Sarıyer', 'İstanbul', 'Türkiye'), (20, 'Oran  
Mahallesi Kudüs Caddesi No:3/317 Çankaya', 'Ankara', 'Türkiye'),  
(21, '100. Yıl 428. Sokak Balgat', 'Ankara', 'Türkiye'), (22,  
'Anafartalar Altınsoy Caddesi no:4 Sıhhiye Altındağ', 'Ankara',  
'Türkiye'), (23, 'Sarıabalı Aspendos Yolu Serik', 'Antalya',  
'Türkiye'), (24, 'Kuşadası-Söke Yolu 6. kilometre Kuşadası',  
'Aydın', 'Türkiye')]
```

Figure 22. Current Address Table

d. Venue Table becomes the form of Figure 23

```
[(1, 'Maximum Uniq Hall', 16, 1156), (2, 'IF Performance Hall ', 2, 4500), (4, 'Dorock XL', 4, 2000), (5, 'Zorlu PSM', 5, 3200), (6, 'KüçükÇiftlik Park', 6, 10000), (7, 'BJK Tüpraş Stadyumu', 7, 42590), (8, 'SoldOut Performance Hall', 8, 1200), (9, 'Milyon Performance Hall', 9, 2000), (10, 'What A Fest Festival Arena', 10, 13600), (11, 'Jolly Joker Ankara', 11, 1600), (12, 'Kültürpark Atatürk Outdoor Theatre', 12, 3150), (13, 'Harbiye Outdoor Theatre', 13, 4532), (15, 'BtcTürk Vadi Açık hava', 14, 2200), (16, 'AKM Türk Telekom Opera Sahnesi', 15, 2040), (17, 'Jolly Joker Vadi İstanbul', 14, 2000), (18, 'Volkswagen Arena', 17, 4500), (19, 'Mask Beach', 18, 800), (20, 'Life Park', 19, 3000), (21, 'Oran Açık hava Sahnesi', 20, 2000), (22, 'ODTÜ MD Vişnelik', 21, 6000), (23, 'CerModern', 22, 360), (24, 'Aspendos Antik Tiyatro', 23, 12000), (25, 'Kuşadası Altın Güvercin Amfi Tiyatro', 24, 2600)]
```

Figure 23. Current Venue Table

Part 6. Delete Operation

- Function for Deleting Records

Figure 21 is the function that is implemented for deleting selected records.

```
def delete_operation(cursor, table_name, condition=None, filters=None):  
    """Deletes instances with given filter array that contains dictionaries that has filter info"""  
    query = "DELETE FROM {}".format(table_name)  
    query = filter_generation(query, condition, filters)  
    print(query, "\n")  
    cursor.execute(query)  
    print("Deletion successfull", "\n")  
    return True
```

Figure 24: Deletion function

- Sample Data Deletions

These queries are selected to be performed deletion on these tables

a. For Address Table this query will be applied:

```
DELETE FROM Address Where City = 'Aydın'
```

Figure 25: Query applied for address table

- b. For Venue Table this query will be applied:

```
DELETE FROM Venue Where Capacity <= 1000
```

Figure 26: Query applied for venue table

- Logs Before and After Deletions

After deletion function is implemented for these tables, tables are no longer the same.

- a. Address table is as in Figure 27, but the current version is Figure 28.

```
[(2, 'Cihannüma, Hasfırın Cd. No:26, 34353 Beşiktaş/İstanbul',  
'İstanbul ', 'Türkiye'), (3, 'Caferağa, Namlı Market Yanı, Neşet Ömer  
Sk. 3C, 34710 Kadıköy/İstanbul', 'İstanbul ', 'Türkiye'), (4,  
'Sinanpaşa, Ortabahçe Cd. no 23/4, 34022 Beşiktaş/İstanbul', 'İstanbul  
' , 'Türkiye'), (5, 'Levazım, Kuru Sok. No:2, 34340 Beşiktaş/İstanbul',  
'İstanbul ', 'Türkiye'), (6, 'Harbiye, Kadırgalar Cd. No:4, 34367  
Şişli/İstanbul', 'İstanbul ', 'Türkiye'), (7, 'Vişnezade, Dolmabahçe  
Cd. No:1, 34357 Beşiktaş/İstanbul', 'İstanbul ', 'Türkiye'), (8,  
'Mavişehir mah. Caher dudayev blv. A apt. No:40, D:304, 35590  
Karşıyaka/İzmir', 'İzmir', 'Türkiye'), (9, 'Bahçelievler, Azerbaycan  
Cd. No:41, 06490 Çankaya/Ankara', 'Ankara', 'Türkiye'), (10, 'Pamucak  
Sahili, Selçuk/İzmir.', 'İzmir', 'Türkiye'), (11, 'Kavaklıdere,  
Kızıllırmak Cd. No:14, 06420 Çankaya/Ankara', 'Ankara', 'Türkiye'), (12,  
'Mimar Sinan, Şair Eşref Blv. No.50, 35220 Konak/İzmir', 'İzmir',  
'Türkiye'), (13, 'Harbiye, Taşkılla Cd. No:8, 34367 Şişli/İstanbul',  
'İstanbul ', 'Türkiye'), (14, 'Ayazağa Cendere Caddesi 109C Sarıyer',  
'İstanbul', 'Türkiye'), (15, 'Gümüşsuyu Tak-1 Zafer Caddesi Beyoğlu',  
'İstanbul', 'Türkiye'), (16, 'Huzur, Uniq İstanbul, Maslak Ayazağa Cd.  
No:4, 34485 Sarıyer/İstanbul', 'İstanbul ', 'Türkiye'), (17, 'Huzur  
Mahallesi Maslak Ayazağa Caddesi 4/A Sarıyer', 'İstanbul', 'Türkiye'),  
(18, 'Marmara Mahallesi Ulusum Caddesi 34/6 G Beylikdüzü', 'İstanbul',  
'Türkiye'), (19, 'Mehmet Akif Tabiat Parkı Bahçeköy Sarıyer',  
'İstanbul', 'Türkiye'), (20, 'Oran Mahallesi Kudüs Caddesi No:3/317  
Çankaya', 'Ankara', 'Türkiye'), (21, '100. Yıl 428. Sokak Balgat',  
'Ankara', 'Türkiye'), (22, 'Anafartalar Altınsoy Caddesi no:4 Sıhhiye  
Altındağ', 'Ankara', 'Türkiye'), (23, 'Sarıbalı Aspendos Yolu Serik',  
'Antalya', 'Türkiye'), (24, 'Kuşadası-Söke Yolu 6. kilometre Kuşadası',  
'Aydın', 'Türkiye')]
```

Figure 27: Previous Address Table

[(2, 'Cihannüma, Hasfırın Cd. No:26, 34353 Beşiktaş/İstanbul', 'İstanbul ', 'Türkiye'), (3, 'Caferağa, Namlı Market Yanı, Neşet Ömer Sk. 3C, 34710 Kadıköy/İstanbul', 'İstanbul ', 'Türkiye'), (4, 'Sinanpaşa, Ortabahçe Cd. no 23/4, 34022 Beşiktaş/İstanbul', 'İstanbul ', 'Türkiye'), (5, 'Levazım, Kuru Sok. No:2, 34340 Beşiktaş/İstanbul', 'İstanbul ', 'Türkiye'), (6, 'Harbiye, Kadırgalar Cd. No:4, 34367 Şişli/İstanbul', 'İstanbul ', 'Türkiye'), (7, 'Vişnezade, Dolmabahçe Cd. No:1, 34357 Beşiktaş/İstanbul', 'İstanbul ', 'Türkiye'), (8, 'Mavişehir mah. Caher dudayev blv. A apt. No:40, D:304, 35590 Karşıyaka/İzmir', 'İzmir', 'Türkiye'), (9, 'Bahçelievler, Azerbaycan Cd. No:41, 06490 Çankaya/Ankara', 'Ankara', 'Türkiye'), (10, 'Pamucak Sahili, Selçuk/İzmir.', 'İzmir', 'Türkiye'), (11, 'Kavaklıdere, Kızıllırmak Cd. No:14, 06420 Çankaya/Ankara', 'Ankara', 'Türkiye'), (12, 'Mimar Sinan, Şair Eşref Blv. No.50, 35220 Konak/İzmir', 'İzmir', 'Türkiye'), (13, 'Harbiye, Taşkışla Cd. No:8, 34367 Şişli/İstanbul', 'İstanbul ', 'Türkiye'), (14, 'Ayazağa Cendere Caddesi 109C Sarıyer', 'İstanbul', 'Türkiye'), (15, 'Gümüşsuyu Tak-1 Zafer Caddesi Beyoğlu', 'İstanbul', 'Türkiye'), (16, 'Huzur, Üniq İstanbul, Maslak Ayazağa Cd. No:4, 34485 Sarıyer/İstanbul', 'İstanbul ', 'Türkiye'), (17, 'Huzur Mahallesi Maslak Ayazağa Caddesi 4/A Sarıyer', 'İstanbul', 'Türkiye'), (18, 'Marmara Mahallesi Ulusum Caddesi 34/6 G Beylikdüzü', 'İstanbul', 'Türkiye'), (19, 'Mehmet Akif Tabiat Parkı Bahçeköy Sarıyer', 'İstanbul', 'Türkiye'), (20, 'Oran Mahallesi Kudüs Caddesi No:3/317 Çankaya', 'Ankara', 'Türkiye'), (21, '100. Yıl 428. Sokak Balgat', 'Ankara', 'Türkiye'), (22, 'Anafartalar Altınsoy Caddesi no:4 Sıhhiye Altındağ', 'Ankara', 'Türkiye'), (23, 'Sarıbalı Aspendos Yolu Serik', 'Antalya', 'Türkiye')]

Figure 28: Current Address Table

b. Venue table is as in Figure 29, but the current version is Figure 30.

```
[(1, 'Maximum Uniq Hall', 16, 1156), (2, 'IF Performance Hall ', 2, 4500), (4, 'Dorock XL', 4, 2000), (5, 'Zorlu PSM', 5, 3200), (6, 'KüçükÇiftlik Park', 6, 10000), (7, 'BJK Tüpraş Stadyumu', 7, 42590), (8, 'SoldOut Performance Hall', 8, 1200), (9, 'Milyon Performance Hall', 9, 2000), (10, 'What A Fest Festival Arena', 10, 13600), (11, 'Jolly Joker Ankara', 11, 1600), (12, 'Kültürpark Atatürk Outdoor Theatre', 12, 3150), (13, 'Harbiye Outdoor Theatre', 13, 4532), (15, 'BtcTürk Vadi Açık hava', 14, 2200), (16, 'AKM Türk Telekom Opera Sahnesi', 15, 2040), (17, 'Jolly Joker Vadi İstanbul', 14, 2000), (18, 'Volkswagen Arena', 17, 4500), (19, 'Mask Beach', 18, 800), (20, 'Life Park', 19, 3000), (21, 'Oran Açık hava Sahnesi', 20, 2000), (22, 'ODTÜ MD Vişnelik', 21, 6000), (23, 'CerModern', 22, 360), (24, 'Aspendos Antik Tiyatro', 23, 12000), (25, 'Kuşadası Altın Güvercin Amfi Tiyatro', 24, 2600)]
```

Figure 28: Previous Venue Table

```
[(1, 'Maximum Uniq Hall', 16, 1156), (2, 'IF Performance Hall ', 2, 4500), (4, 'Dorock XL', 4, 2000), (5, 'Zorlu PSM', 5, 3200), (6, 'KüçükÇiftlik Park', 6, 10000), (7, 'BJK Tüpraş Stadyumu', 7, 42590), (8, 'SoldOut Performance Hall', 8, 1200), (9, 'Milyon Performance Hall', 9, 2000), (10, 'What A Fest Festival Arena', 10, 13600), (11, 'Jolly Joker Ankara', 11, 1600), (12, 'Kültürpark Atatürk Outdoor Theatre', 12, 3150), (13, 'Harbiye Outdoor Theatre', 13, 4532), (15, 'BtcTürk Vadi Açık hava', 14, 2200), (16, 'AKM Türk Telekom Opera Sahnesi', 15, 2040), (17, 'Jolly Joker Vadi İstanbul', 14, 2000), (18, 'Volkswagen Arena', 17, 4500), (20, 'Life Park', 19, 3000), (21, 'Oran Açık hava Sahnesi', 20, 2000), (22, 'ODTÜ MD Vişnelik', 21, 6000), (24, 'Aspendos Antik Tiyatro', 23, 12000)]
```

Figure 28: Current Venue Table