USER GUIDE

Implementing the Olympics Database

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1. Prerequisites

Before proceeding with the database implementation, ensure that your system meets the following requirements:

- **Operating System:** Linux (e.g., Ubuntu, CentOS)
- **MySQL Server:** Installed and running (Version 5.7 or higher recommended)
- **Python 3:** Installed (Version 3.6 or higher recommended)
- **Pip:** Python package installer installed
- **MySQL Connector for Python:** mysql-connector-python library

1.1. Verify MySQL Installation

Open your terminal and execute:

mysql --version

1.2. Verify Python Installation

Open your terminal and execute:

python3 --version

1.3. Verify Pip Installation

Verify pip installation by opening your terminal and executing:

pip3 --version

If Pip is not installed, install it using:

sudo apt-get update
sudo apt-get install python3-pip

2. Implementing Database

The setupDB.sql script file provided automates the creation of the Olympics Database, including tables, triggers, stored procedures, sample data, and queries.

2.1. Prepare SQL Scripts

Ensure that all referenced SQL scripts (olympicsDB_tables.sql, olympicsDB_triggers_and_procedures.sql, olympicsDB_values.sql, checkDB_consistencies.sql, olympicsDB_queries.sql) are in the same directory as setupDB.sql.

mysql --version

2.2. Start up MySQL

Navigate to the directory where all your SQL script files are located.

Start up MySQL using:

mysql -u your_username -p

Replace your_username with your MySQL username.
-p prompts for your MySQL password.

2.3. Execute the setupDB.sql Script

Once logged into MySQL, run the setupDB.sql script using the command:

source setupDB.sql;

This should auto-setup the Olympics database with tables, values, triggers, procedures, views and indexes. It will also run a data consistency check script and a set of queries.

Should you wish to do the setup manually, source each of the given SQL script files one by one in this order:

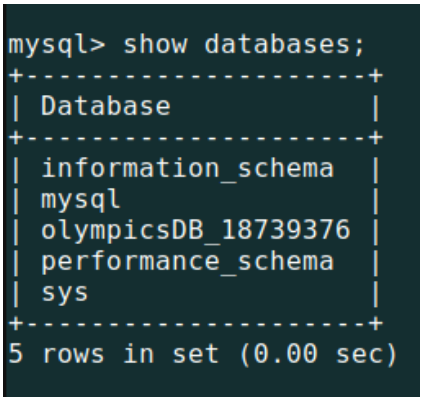
Tables -> triggers and procedures -> values -> consistency check -> queries

2.4. Verification of Database

After execution, verify that the database and tables are created by executing command:

SHOW DATABASES;

Expected Output:



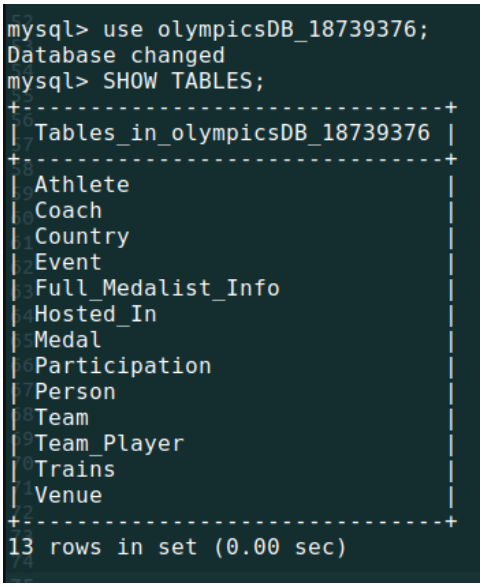
The olympicsDB_18739376 should be present in the list of databases available.

Next, select the Olympics database and check if all tables are present using commands:

USE olympicsDB_18739376;

SHOW TABLES;

Expected output:



3. Configuring Environment Variables

To ensure secure handling of database credentials, environment variables are used instead of hardcoding them into scripts.

Open your terminal and execute the following commands, replacing placeholder values with your actual credentials:

echo "export MYSQL_HOST='localhost'" >> ~/.bashrc # Typically 'localhost' for local installations
echo "export MYSQL_PORT='3306'" >> ~/.bashrc # Default MySQL port
echo "export MYSQL_USER='your_username'" >> ~/.bashrc # Your MySQL username
echo "export MYSQL_PASSWORD='your_password'" >> ~/.bashrc # Your MySQL password
echo "export MYSQL_DATABASE='olympicsDB_18739376'" >> ~/.bashrc # The database name
source ~/.bashrc

4. Connecting MySQL with Python

This will allow you to establish a connection between MySQL and Python and enable the execution of database operations programmatically.

If not already installed, install the mysql-connector-python library using pip:

pip3 install mysql-connector-python

5. Running the Python Script

The olympicsDB_operations.py script has functions that demonstrate establishing a connection to the SQL database and performing a set of operations on it.

5.1. Prepare the Python Script and Environment Variables

Ensure that the olympicsDB_operations.py file is located in your working directory and that you have set up your environment variables as outlined in Section 3.

5.2. Execute the Python Script

Run the script using Python 3:

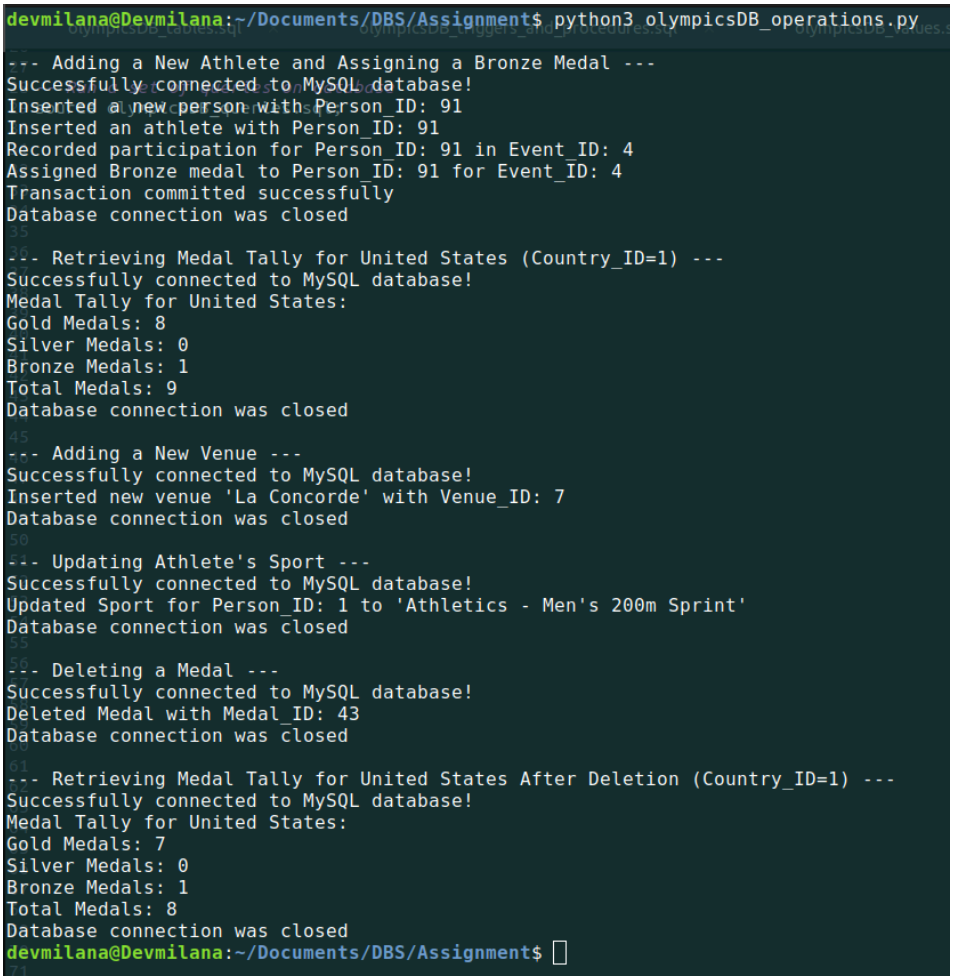
python3 olympicsDB_operations.py

5.3. Expected Output

The script performs the following operations sequentially:

1. Adding a New Athlete and Assigning a Bronze Medal
2. Retrieving Medal Tally for United States
3. Adding a New Venue
4. Updating an Athlete's Sport
5. Deleting a Medal
6. Retrieving Medal Tally for United States After Deletion

Expected output:



6. Verify Database Changes

After running the Python script, verify the changes in the MySQL database.

Login to MySQL:

mysql -u your_username -p

Select the Olympics Database:

USE olympicsDB_18739376;

6.1. Verify New Athlete Entry

Check that the new athlete, Melissa Hudgen, has been added successfully using command:

Expected output:

```
mysql> SELECT * FROM Person WHERE Person_ID = 91;
+-----------+------------+-----------+------------+--------+
| Person_ID | First_Name | Last_Name | DOB        | Gender |
+-----------+------------+-----------+------------+--------+
|        91 | Melissa    | Hudgens   | 1999-01-01 | F      |
+-----------+------------+-----------+------------+--------+
1 row in set (0.00 sec)
```

6.2. Verify Medal Assignment

Check that the new athlete, Melissa Hudgen, has been assigned a new bronze medal using command:

SELECT * FROM Medal WHERE Person_ID = 91;

Expected output:

```
mysql> SELECT * FROM Medal WHERE Person_ID = 91;
+----------+----------+-----------+---------+------------+------------+
| Medal_ID | Event_ID | Person_ID | Team_ID | Country_ID | Medal_Type |
+----------+----------+-----------+---------+------------+------------+
|       51 |        4 |        91 |    NULL |          1 | Bronze     |
+----------+----------+-----------+---------+------------+------------+
1 row in set (0.00 sec)
```

6.3. Verify Medal Tally Update

Verify that the medal tally for USA has been updated after medal deletion from the script using command:

SELECT * FROM Country WHERE Country_ID = 1;

Expected output (total medal count down from 9 to 8):

```
mysql> SELECT * FROM Country WHERE Country_ID = 1;
+------------+--------------+------------------+--------------------+--------------------+------------------+
| Country_ID | Country_Name | Total_Gold_Medals | Total_Silver_Medals | Total_Bronze_Medals | Total_Medal_Count |
+------------+--------------+------------------+--------------------+--------------------+------------------+
|          1 | United States |                7 |                  0 |                  1 |                8 |
+------------+--------------+------------------+--------------------+--------------------+------------------+
1 row in set (0.00 sec)
```

6.4. Exit MySQL

Exit the MySQL session after completing database operations using command:

EXIT;