

# Gracernote Assignment

**This assignment is completed using Java language and MySQL database.**

Step 1. Please extract the archive file “gracernote\_assignment” to run this assignment.

Step 2. Create database schemas and database tables using MySQL.

Here are the queries below which needs to be executed of both task 1 and task 4 mentioned in the assignment.

## **Task1-**

---

```
CREATE DATABASE theater;
```

```
USE theater;
```

```
CREATE TABLE theater_data(  
chain_id INT NOT NULL,  
chain_name VARCHAR(20) NOT NULL,  
theater_id INT NOT NULL,  
theater_name VARCHAR(50) NOT NULL,  
movie_id INT NOT NULL,  
movie_title VARCHAR(50) NOT NULL,  
show_date DATETIME NOT NULL,  
show_time VARCHAR(20) NOT NULL,  
attributes VARCHAR(50) NULL,  
PRIMARY KEY (chain_id,theater_id,movie_id,show_date,show_time)  
);
```

---

## **Task4-**

---

```
CREATE DATABASE enhanced_theater;
```

```
USE enhanced_theater;
```

```
CREATE TABLE chains (  
chain_id INT NOT NULL,  
chain_name VARCHAR(20) NOT NULL,  
PRIMARY KEY (chain_id)  
);
```

```
CREATE TABLE theater (  
theater_id INT NOT NULL,  
theater_name VARCHAR(50) NOT NULL,  
PRIMARY KEY (theater_id)  
);
```

```
CREATE TABLE movie (  
movie_id INT NOT NULL,  
movie_title VARCHAR(50) NOT NULL,  
PRIMARY KEY (movie_id)  
);
```

```
CREATE TABLE attributes (  
attribute_id INT AUTO_INCREMENT,  
attribute_name VARCHAR(50) NULL,  
PRIMARY KEY (attribute_id)  
);
```

```
CREATE TABLE show_details(  
chain_id INT NOT NULL,  
theater_id INT NOT NULL,  
movie_id INT NOT NULL,  
show_date DATE NOT NULL,  
show_time VARCHAR(20) NOT NULL,  
attribute_id INT NOT NULL,  
PRIMARY KEY (chain_id,theater_id,movie_id,show_date,show_time),  
CONSTRAINT fk_chain_id  
FOREIGN KEY (chain_id) REFERENCES chains(chain_id),  
CONSTRAINT fk_theater_id  
FOREIGN KEY (theater_id) REFERENCES theater(theater_id),  
CONSTRAINT fk_movie_id  
FOREIGN KEY (movie_id) REFERENCES movie(movie_id),  
CONSTRAINT fk_attribute_id  
FOREIGN KEY (attribute_id) REFERENCES attributes(attribute_id)  
);
```

---

**Please make sure to run all the queries of task 1 and task 4 and create both the schemas and their respective tables before running the Java code.**

Step 3. Once all the queries are executed to create schema and tables. Please open the project mentioned in 1<sup>st</sup> step and make sure to change the **dbUrl**, **user** and **password** under “DatabaseConnection” class and replace it with the current user and password which is used for creating database and tables. Make sure the port is 3306, if it’s something else then replace it in dbUrl.

Below are the code lines where step 3 needs to be performed.

```
dbUrl = "jdbc:mysql://127.0.0.1:3306/theater?useSSL=false";
```

```
dbUrl = "jdbc:mysql://127.0.0.1:3306/enhanced_theater?useSSL=false";
```

```
public final String user = "root";
```

```
public final String password = "Gracenote@123";
```

This is required to connect to the database through Java program.

Step 4. Now Please run the java code from Main class under the package name “com.neilson.movieinfo.main”.

When we run the program, it will ask you to give user input as 1 or 2 under the console.

If you choose to give user input **1** then it will perform the **task 2** mentioned in the assignment as

“Create a program to parse and store the CSV data in the database table from #1. “

If you choose to give user input **2** then it will perform the **task 5** mentioned in the assignment as

“Create another program that will parse the CSV file and store the data in the new database schema from #4”

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Once we have performed above steps-

Here are the queries for **task 3** and **task 6** mentioned in the assignment-

Write a SQL select statement to return the theater chain, theatre name, movie title, showtimes, and attributes for all “Regal” theaters.

#### **Task 3 Query-**

```
SELECT chain_name, theater_name, movie_title, show_date, show_time, attributes
FROM theater.theater_data
WHERE chain_name = 'Regal';
```

#### **Task 6 Query-**

USE enhanced\_theater;

```
SELECT c.chain_name, t.theater_name, movie_title, show_date, show_time, attribute_name
FROM show_details sd
INNER JOIN chains c
ON c.chain_id = sd.chain_id
INNER JOIN theater t
ON t.theater_id = sd.theater_id
INNER JOIN movie m
ON m.movie_id = sd.movie_id
INNER JOIN attributes a
ON a.attribute_id = sd.attribute_id
WHERE c.chain_name = 'Regal';
```

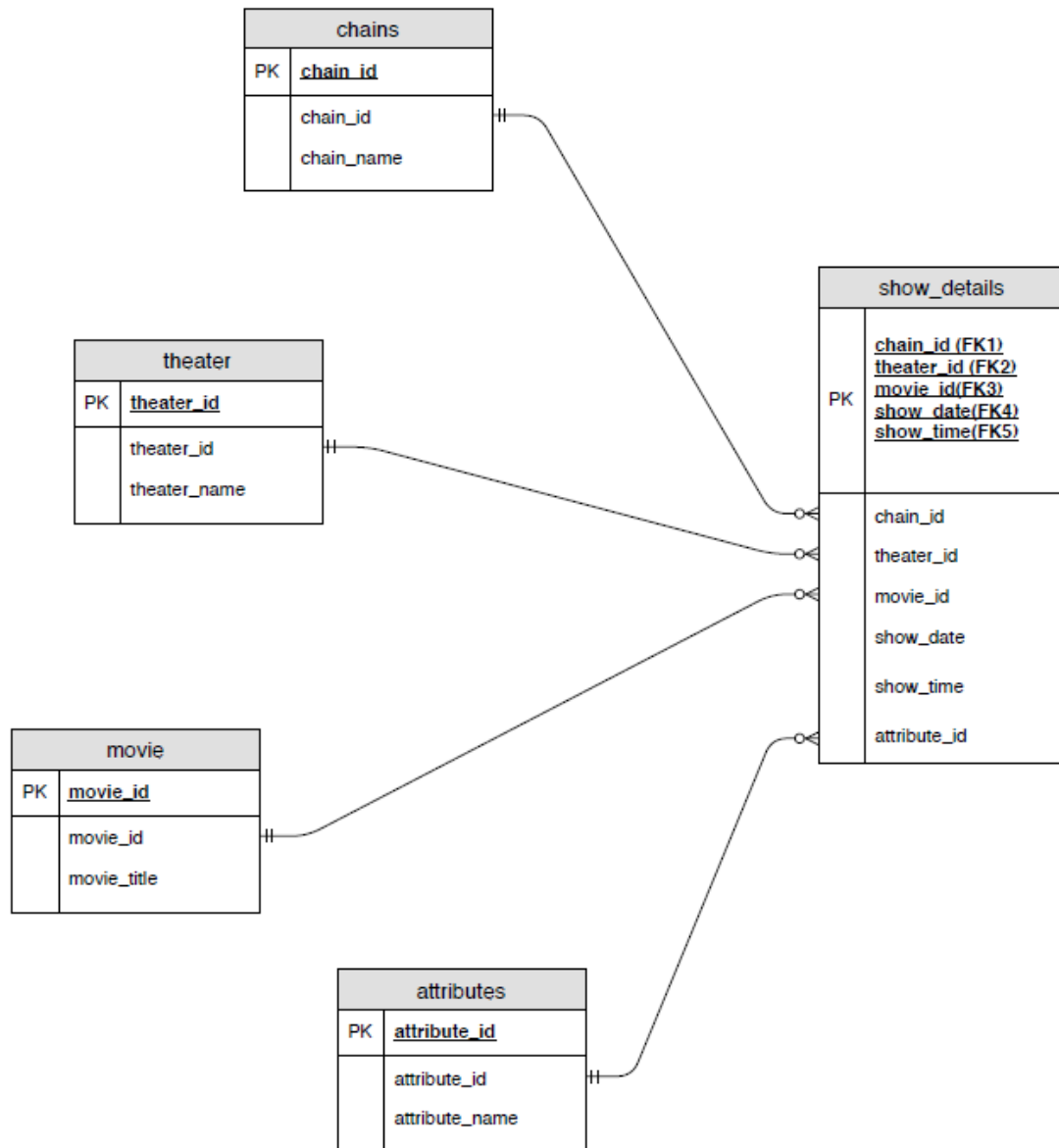
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#### **Explanation of Database Schema-**

For **task 1**, I am creating a schema named “theater” and one table as “theater\_data”. Then, Inserting the data from the CSV file to the database table.

For **task 4**, I am creating another schema named “enhanced\_theater” and relational tables such as “theater”, “movie”, “chains”, “attributes”, “show\_details” to reduce data duplication. The relation between these tables is shown in the “Theater Data Model” below-

## Theater Data Model



### Explanation of Program 1-

I am calling DAO method named as "insertTheatreInformation (int task)" where I have written the program to perform it as a **task -1 (To Insert all the data from CSV file into one table)** by getting 1 as an input.

That method is also passing the task selected as 1 to “DatabaseConnection” class so that with the help of the parameter, it will choose the appropriate Schema “theater” through String dbURL.

Now when the method gets executed, the following steps will be performed which is shown below-

1. Getting Database connection with the appropriate schema.
2. Reading CSV file with the help of Buffered Reader and setting the parameter to the prepared statement.
3. After that adding it to the batch as addBatch() so that it can execute all the queries altogether once when csv file get closed.
4. In this way, it will parse the CSV file and insert the contents of the CSV file into the database table “theater”.
5. At last, it's closing the statement and the connection since now they are no longer needed.

Now if we perform the select query on the table. It will return all the records from the table.

### Explanation of Program 2-

I am calling DAO method named as “insertEnhancedTheaterInformation (int task)” where I have written the program to perform it as a **task-2 (To Insert all the data from CSV file into relational tables)** by getting 2 as an input.

That method is also passing the task selected as 2 to “DatabaseConnection” class so that with the help of the parameter, it will choose the appropriate Schema “enhanced\_theater” through String dbURL.

Now when the method gets executed, the following steps will be performed which is shown below-

1. Reading CSV file with the help of Buffered Reader.
2. Storing all the data from CSV file by taking (id,name) as (key,value) pair using HashMap for chains, theater, movie table and separately storing attribute name using LinkedHashSet for attributes table.
3. Getting Database connection with appropriate schema.
4. Iterating all the values and set the parameters in their respective prepared statement to prepare the queries. Then adding it to the batch to execute it all at once later.
5. Once the 4<sup>th</sup> step is performed successfully, it will insert all the data into respectively four tables ‘chains’, ‘theater’, ‘movie’ and ‘attributes’ table.

6. We read the file again to set the values for the table "show\_details" using preparedstatement and execute it.
  7. At last, it's closing the statement and the connection since now they are no longer needed.
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