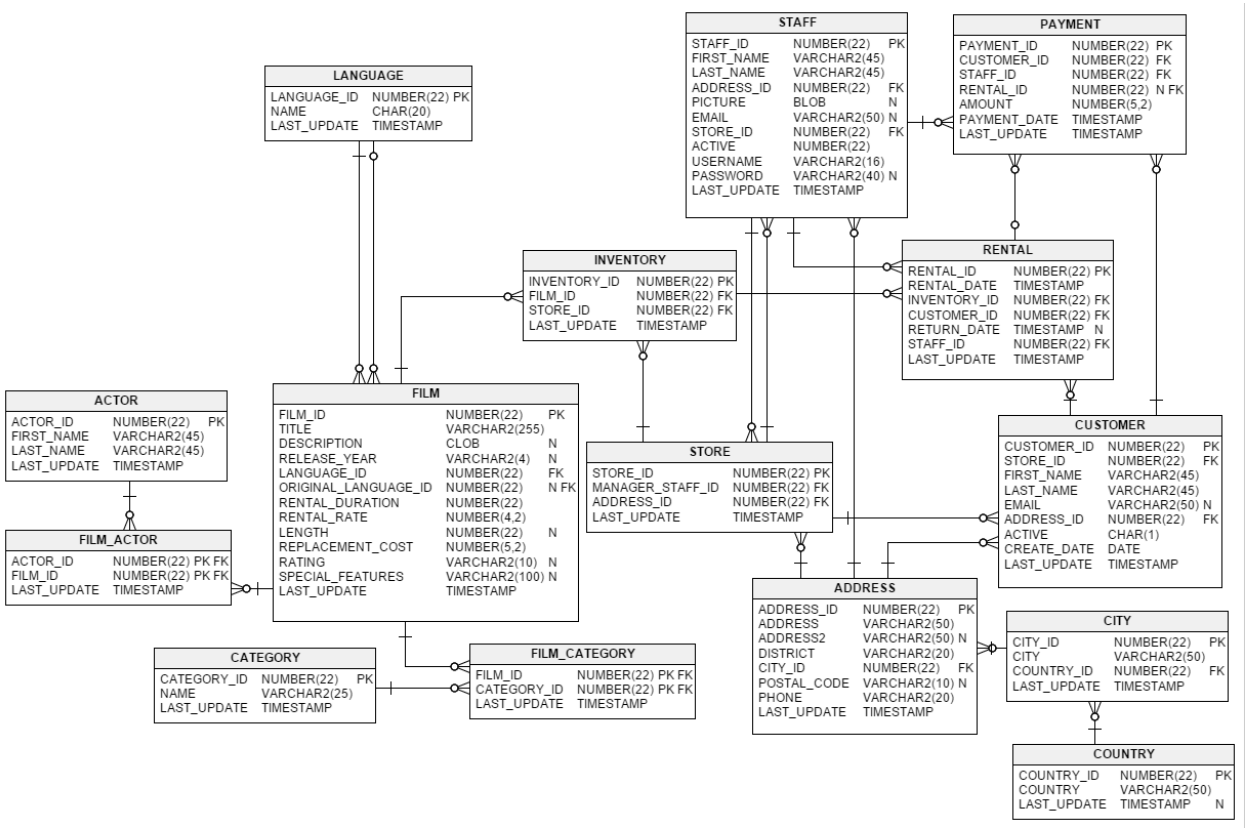
Introduction

The Sakila database is a nicely normalised schema modelling a DVD rental store, featuring things like films, actors, film-actor relationships, and a central inventory table that connects films, stores, and rentals.



Installation

Download from https://downloads.mysql.com/docs/sakila-db.zip

A downloadable archive is available in compressed **tar** file or Zip format. The archive contains three files: `sakila-schema.sql`, `sakila-data.sql`, and `sakila.mwb`.

The `sakila-schema.sql` file contains all the `CREATE` statements required to create the structure of the Sakila database including tables, views, stored procedures, and triggers.

The `sakila-data.sql` file contains the `INSERT` statements required to populate the structure created by the `sakila-schema.sql` file, along with definitions for triggers that must be created after the initial data load.

The `sakila.mwb` file is a MySQL Workbench data model that you can open within MySQL Workbench to examine the database structure

To install the Sakila sample database, follow these steps:

1. Extract the installation archive to a temporary location such as `C:\temp\` or `/tmp/`. When you unpack the archive, it creates a directory named `sakila-db` that contains the `sakila-schema.sql` and `sakila-data.sql` files.
2. Connect to the MySQL server using the **mysql** command-line client with the following command:

   ```
   $> mysql -u root -p
   ```

   Enter your password when prompted.

3. Execute the `sakila-schema.sql` script to create the database structure, and execute the `sakila-data.sql` script to populate the database structure, by using the following commands:

   ```
   mysql> SOURCE C:/temp/sakila-db/sakila-schema.sql;

   mysql> SOURCE C:/temp/sakila-db/sakila-data.sql;
   ```

   Replace the paths to the `sakila-schema.sql` and `sakila-data.sql` files with the actual paths on your system.

4. Confirm that the sample database is installed correctly. Execute the following statements. You should see output similar to that shown here.

```
mysql> USE sakila;
Database changed

mysql> SHOW FULL TABLES;
+----------------------------+------------+
| Tables_in_sakila           | Table_type |
+----------------------------+------------+
| actor                      | BASE TABLE |
| actor_info                 | VIEW       |
| address                    | BASE TABLE |
| category                   | BASE TABLE |
| city                       | BASE TABLE |
| country                    | BASE TABLE |
| customer                   | BASE TABLE |
| customer_list              | VIEW       |
| film                       | BASE TABLE |
| film_actor                 | BASE TABLE |
| film_category              | BASE TABLE |
| film_list                  | VIEW       |
| film_text                  | BASE TABLE |
| inventory                  | BASE TABLE |
| language                   | BASE TABLE |
| nicer_but_slower_film_list | VIEW       |
| payment                    | BASE TABLE |
| rental                     | BASE TABLE |
| sales_by_film_category     | VIEW       |
| sales_by_store             | VIEW       |
| staff                      | BASE TABLE |
| staff_list                 | VIEW       |
| store                      | BASE TABLE |
+----------------------------+------------+
23 rows in set (0.01 sec)
```

```
mysql> SELECT COUNT(*) FROM film;
+----------+
| COUNT(*) |
+----------+
|     1000 |
+----------+
1 row in set (0.00 sec)

mysql> SELECT COUNT(*) FROM film_text;
+----------+
| COUNT(*) |
+----------+
|     1000 |
+----------+
1 row in set (0.00 sec)
```

Tables

https://dev.mysql.com/doc/sakila/en/sakila-structure-tables.html

Exercises

1. Display the first and last name of each actor in a single column in upper case letters in alphabetic order. Name the column Actor Name.

```
mysql> select *,upper(concat(first_name,' ', last_name)) as fullname
    -> from actor
    -> order by fullname
    -> limit 10;
+----------+------------+-------------+---------------------+--------------------+
| actor_id | first_name | last_name   | last_update         | fullname           |
+----------+------------+-------------+---------------------+--------------------+
|       71 | ADAM       | GRANT       | 2006-02-15 04:34:33 | ADAM GRANT         |
|      132 | ADAM       | HOPPER      | 2006-02-15 04:34:33 | ADAM HOPPER        |
|      165 | AL         | GARLAND     | 2006-02-15 04:34:33 | AL GARLAND         |
|      173 | ALAN       | DREYFUSS    | 2006-02-15 04:34:33 | ALAN DREYFUSS      |
|      146 | ALBERT     | JOHANSSON   | 2006-02-15 04:34:33 | ALBERT JOHANSSON   |
|      125 | ALBERT     | NOLTE       | 2006-02-15 04:34:33 | ALBERT NOLTE       |
|       29 | ALEC       | WAYNE       | 2006-02-15 04:34:33 | ALEC WAYNE         |
|       65 | ANGELA     | HUDSON      | 2006-02-15 04:34:33 | ANGELA HUDSON      |
|      144 | ANGELA     | WITHERSPOON | 2006-02-15 04:34:33 | ANGELA WITHERSPOON |
|       76 | ANGELINA   | ASTAIRE     | 2006-02-15 04:34:33 | ANGELINA ASTAIRE   |
+----------+------------+-------------+---------------------+--------------------+
```

2. Find all actors whose last name contain the letters GEN:

```
mysql> select last_name from actor where last_name like '%gen%';
+-----------+
| last_name |
+-----------+
| BERGEN    |
| DEGENERES |
| DEGENERES |
| DEGENERES |
+-----------+
```

3. Using IN, display the country_id and country columns of the following countries: Afghanistan, Bangladesh, and China:

```
mysql> select country_id,country from country
    -> where country in('Afghanistan','Bangladesh','China');
+------------+-------------+
| country_id | country     |
+------------+-------------+
|          1 | Afghanistan |
|         12 | Bangladesh  |
|         23 | China       |
+------------+-------------+
```

4. List the last names of actors, as well as how many actors have that last name.

```
mysql> select last_name,
    -> count(*) as actor_count
    -> from actor
    -> group by last_name
    -> limit 10;
+-----------+-------------+
| last_name | actor_count |
+-----------+-------------+
| AKROYD    |           3 |
| ALLEN     |           3 |
| ASTAIRE   |           1 |
| BACALL    |           1 |
| BAILEY    |           2 |
| BALE      |           1 |
| BALL      |           1 |
| BARRYMORE |           1 |
| BASINGER  |           1 |
| BENING    |           2 |
+-----------+-------------+
```

5. List last names of actors and the number of actors who have that last name, but only for names that are shared by at least two actors

```
mysql> select last_name,
    -> count(*) as actor_count
    -> from actor
    -> group by last_name
    -> having actor_count >=2
    -> limit 10;
+-----------+-------------+
| last_name | actor_count |
+-----------+-------------+
| AKROYD    |           3 |
| ALLEN     |           3 |
| BAILEY    |           2 |
| BENING    |           2 |
| BERRY     |           3 |
| BOLGER    |           2 |
| BRODY     |           2 |
| CAGE      |           2 |
| CHASE     |           2 |
| CRAWFORD  |           2 |
+-----------+-------------+
```

6. The actor HARPO WILLIAMS was accidentally entered in the actor table as GROUCHO WILLIAMS. Write a query to fix the record.

```
mysql> update actor
    -> set
    -> first_name = "HARPO "
    -> where actor_id = 172;
Query OK, 1 row affected (0.05 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from actor where actor_id = 172;
+----------+------------+-----------+---------------------+
| actor_id | first_name | last_name | last_update         |
+----------+------------+-----------+---------------------+
|      172 | HARPO      | WILLIAMS  | 2024-06-16 15:41:24 |
+----------+------------+-----------+---------------------+
```

7. Use JOIN to display the first and last names, as well as the address, of each staff member. Use the tables staff and address:

```
mysql>  select staff.first_name, staff.last_name, address.address from staff left join address  on staff.address_id = address.address_id;
+------------+-----------+---------------------+
| first_name | last_name | address             |
+------------+-----------+---------------------+
| Mike       | Hillyer   | 23 Workhaven Lane   |
| Jon        | Stephens  | 1411 Lillydale Drive |
+------------+-----------+---------------------+
```

8. List each film and the number of actors who are listed for that film. Use tables film_actor and film. Use inner join.

```
mysql> select film.title,
    -> count(film_actor.actor_id) as actor_count
    -> from film
    -> inner join film_actor on film.film_id = film_actor.film_id
    -> group by film.title
    -> limit 10;
+------------------+-------------+
| title            | actor_count |
+------------------+-------------+
| ACADEMY DINOSAUR |          10 |
| ACE GOLDFINGER   |           4 |
| ADAPTATION HOLES |           5 |
| AFFAIR PREJUDICE |           5 |
| AFRICAN EGG      |           5 |
| AGENT TRUMAN     |           7 |
| AIRPLANE SIERRA  |           5 |
| AIRPORT POLLOCK  |           4 |
| ALABAMA DEVIL    |           9 |
| ALADDIN CALENDAR |           8 |
+------------------+-------------+
10 rows in set (0.00 sec)
```

9. How many copies of the film Hunchback Impossible exist in the inventory system?

```
mysql> select
    -> count(*) as copies
    -> from inventory
    -> inner join film on inventory.film_id = film.film_id
    -> where film.title = "Hunchback Impossible";
+--------+
| copies |
+--------+
|      6 |
+--------+
```

10. Using the tables payment and customer and the JOIN command, list the total paid by each customer. List the customers alphabetically by last name

```
mysql>  select customer.customer_id, customer.first_name, customer.last_name, customer.email, payment.payment_id, payment.amount, payment.payment_date, payment.last_upd
ate from customer left join payment on customer.customer_id = payment.customer_id order by customer.last_name limit 10;
+-------------+------------+-----------+-----------------------------+------------+--------+---------------------+---------------------+
| customer_id | first_name | last_name | email                       | payment_id | amount | payment_date        | last_update         |
+-------------+------------+-----------+-----------------------------+------------+--------+---------------------+---------------------+
|         505 | RAFAEL     | ABNEY     | RAFAEL.ABNEY@sakilacustomer.org |      13605 |   2.99 | 2005-05-26 01:34:28 | 2006-02-15 22:20:29 |
|         505 | RAFAEL     | ABNEY     | RAFAEL.ABNEY@sakilacustomer.org |      13606 |   2.99 | 2005-05-28 19:14:09 | 2006-02-15 22:20:29 |
|         505 | RAFAEL     | ABNEY     | RAFAEL.ABNEY@sakilacustomer.org |      13607 |   5.99 | 2005-06-16 20:17:20 | 2006-02-15 22:20:29 |
|         505 | RAFAEL     | ABNEY     | RAFAEL.ABNEY@sakilacustomer.org |      13608 |   4.99 | 2005-06-17 03:36:02 | 2006-02-15 22:20:29 |
|         505 | RAFAEL     | ABNEY     | RAFAEL.ABNEY@sakilacustomer.org |      13609 |   7.99 | 2005-06-19 18:04:18 | 2006-02-15 22:20:30 |
|         505 | RAFAEL     | ABNEY     | RAFAEL.ABNEY@sakilacustomer.org |      13610 |   5.99 | 2005-06-20 19:41:28 | 2006-02-15 22:20:30 |
|         505 | RAFAEL     | ABNEY     | RAFAEL.ABNEY@sakilacustomer.org |      13611 |   5.99 | 2005-07-07 00:26:43 | 2006-02-15 22:20:30 |
|         505 | RAFAEL     | ABNEY     | RAFAEL.ABNEY@sakilacustomer.org |      13612 |   6.99 | 2005-07-08 02:22:45 | 2006-02-15 22:20:30 |
|         505 | RAFAEL     | ABNEY     | RAFAEL.ABNEY@sakilacustomer.org |      13613 |   9.99 | 2005-07-11 00:16:35 | 2006-02-15 22:20:30 |
|         505 | RAFAEL     | ABNEY     | RAFAEL.ABNEY@sakilacustomer.org |      13614 |   4.99 | 2005-07-11 17:23:33 | 2006-02-15 22:20:30 |
+-------------+------------+-----------+-----------------------------+------------+--------+---------------------+---------------------+
```

11. The music of Queen and Kris Kristofferson have seen an unlikely resurgence. As an unintended consequence, films starting with the letters `K` and `Q` have also soared in popularity. Use subqueries to display the titles of movies starting with the letters `K` and `Q` whose language is English.

```
mysql> SELECT
    ->     title
    -> FROM
    ->     film
    -> WHERE
    ->     language_id = (SELECT language_id FROM language WHERE name = 'English')
    ->     AND (title LIKE 'K%' OR title LIKE 'Q%');
+------------------+
| title            |
+------------------+
| KANE EXORCIST    |
| KARATE MOON      |
| KENTUCKIAN GIANT |
| KICK SAVANNAH    |
| KILL BROTHERHOOD |
| KILLER INNOCENT  |
| KING EVOLUTION   |
| KISS GLORY       |
| KISSING DOLLS    |
| KNOCK WARLOCK    |
| KRAMER CHOCOLATE |
| KWAI HOMEWARD    |
| QUEEN LUKE       |
| QUEST MUSSOLINI  |
| QUILLS BULL      |
+------------------+
```

12. Use subqueries to display all actors who appear in the film `Alone Trip`.

```
mysql> select first_name,
    -> last_name
    -> from actor
    -> where actor_id in (select actor_id from film_actor
    -> where film_id = (select film_id from film where title = "Alone trip"));
+------------+-----------+
| first_name | last_name |
+------------+-----------+
| ED         | CHASE     |
| KARL       | BERRY     |
| UMA        | WOOD      |
| WOODY      | JOLIE     |
| SPENCER    | DEPP      |
| CHRIS      | DEPP      |
| LAURENCE   | BULLOCK   |
| RENEE      | BALL      |
+------------+-----------+
8 rows in set (0.01 sec)
```

13. You want to run an email marketing campaign in Canada, for which you will need the names and email addresses of all Canadian customers. Use joins to retrieve this information.

```
mysql> select c.first_name,
    -> c.last_name,
    -> c.email
    -> from customer c
    -> join address a on c.address_id = a.address_id
    -> join city ci on a.city_id = ci.city_id
    -> join country co on ci.country_id = co.country_id
    -> where co.country = "Canada";
+------------+-----------+-------------------------------------+
| first_name | last_name | email                               |
+------------+-----------+-------------------------------------+
| DERRICK    | BOURQUE   | DERRICK.BOURQUE@sakilacustomer.org  |
| DARRELL    | POWER     | DARRELL.POWER@sakilacustomer.org    |
| LORETTA    | CARPENTER | LORETTA.CARPENTER@sakilacustomer.org |
| CURTIS     | IRBY      | CURTIS.IRBY@sakilacustomer.org      |
| TROY       | QUIGLEY   | TROY.QUIGLEY@sakilacustomer.org     |
+------------+-----------+-------------------------------------+
```

14. Sales have been lagging among young families, and you wish to target all family movies for a promotion. Identify all movies categorized as famiy films.

```
mysql> select f.title
    -> from film f
    -> join film_category fc on f.film_id = fc.film_id
    -> join category c on fc.category_id = c.category_id
    -> where c.name = "Family";
+----------------------+
| title                |
+----------------------+
| AFRICAN EGG          |
| APACHE DIVINE        |
| ATLANTIS CAUSE       |
| BAKED CLEOPATRA      |
| BANG KWAI            |
| BEDAZZLED MARRIED    |
| BILKO ANONYMOUS      |
| BLANKET BEVERLY      |
| BLOOD ARGONAUTS      |
| BLUES INSTINCT       |
| BRAVEHEART HUMAN     |
| CHASING FIGHT        |
| CHISUM BEHAVIOR      |
| CHOCOLAT HARRY       |
| CONFUSED CANDLES     |
| CONVERSATION DOWNHILL|
| DATE SPEED           |
| DINOSAUR SECRETARY   |
| DUMBO LUST           |
| EARRING INSTINCT     |
| EFFECT GLADIATOR     |
| FEUD FROGMEN         |
| FINDING ANACONDA     |
| GABLES METROPOLIS    |
| GANDHI KWAI          |
| GLADIATOR WESTWARD   |
| GREASE YOUTH         |
| HALF OUTFIELD        |
```

15. Create a Stored procedure to get the count of films in the input category (IN category_name, OUT count)

```
DELIMITER $$

create procedure GetFilmCount(
    In category_name varchar(255),
    out film_count int
)

begin
   select count(f.film_id)
into
    film_count
from
    film f
join
    film_category fc on f.film_id = fc.film_id
join
    category c on fc.category_id = c.category_id
where
    c.name = category_name;
end$$

DELIMITER ;
```

```
mysql> call GetFilmCount('Action',@film_count);
Query OK, 1 row affected (0.01 sec)

mysql> select @film_count;
+-------------+
| @film_count |
+-------------+
|          64 |
+-------------+
1 row in set (0.00 sec)
```

16. Display the most frequently rented movies in descending order.

```
mysql> select f.title,
    -> count(r.rental_id) as rental_count
    -> from film f
    -> join inventory i on f.film_id = i.film_id
    -> join rental r on i.inventory_id = r.inventory_id
    -> group by f.title
    -> order by rental_count desc
    -> limit 10;
+---------------------+--------------+
| title               | rental_count |
+---------------------+--------------+
| BUCKET BROTHERHOOD  |           34 |
| ROCKETEER MOTHER    |           33 |
| RIDGEMONT SUBMARINE |           32 |
| GRIT CLOCKWORK      |           32 |
| SCALAWAG DUCK       |           32 |
| JUGGLER HARDLY      |           32 |
| FORWARD TEMPLE      |           32 |
| HOBBIT ALIEN        |           31 |
| ROBBERS JOON        |           31 |
| ZORRO ARK           |           31 |
+---------------------+--------------+
```

17. Write a query to display for each store its store ID, city, and country.

```
mysql> select
    -> s.store_id,
    -> ci.city,
    -> co.country
    -> from store s
    -> join address a on s.address_id = a.address_id
    -> join city ci on a.city_id = ci.city_id
    -> join country co on ci.country_id = co.country_id;
+----------+------------+-----------+
| store_id | city       | country   |
+----------+------------+-----------+
|        1 | Lethbridge | Canada    |
|        2 | Woodridge  | Australia |
+----------+------------+-----------+
```

18. List the genres and its gross revenue.

```
mysql> select
    -> c.name as genre,
    -> sum(p.amount) as gross_revenue
    -> from
    -> category c
    -> join film_category fc on c.category_id = fc.category_id
    -> join film f on fc.film_id = f.film_id
    -> join inventory i on f.film_id = i.film_id
    -> join rental r on i.inventory_id = r.inventory_id
    -> join payment p on r.rental_id =  p.rental_id
    -> group by c.name
    -> order by gross_revenue desc;
+-------------+---------------+
| genre       | gross_revenue |
+-------------+---------------+
| Sports      |       5314.21 |
| Sci-Fi      |       4756.98 |
| Animation   |       4656.30 |
| Drama       |       4587.39 |
| Comedy      |       4383.58 |
| Action      |       4375.85 |
| New         |       4351.62 |
| Games       |       4281.33 |
| Foreign     |       4270.67 |
| Family      |       4226.07 |
| Documentary |       4217.52 |
| Horror      |       3722.54 |
| Children    |       3655.55 |
| Classics    |       3639.59 |
| Travel      |       3549.64 |
| Music       |       3417.72 |
+-------------+---------------+
```

19. Create a View for the above query(18)

```
mysql> create view GenreRevenue as
    -> select
    -> c.name as genre,
    -> sum(p.amount) as gross_revenue
    -> from
    -> category c
    -> join film_category fc on c.category_id = fc.category_id
    -> join film f on fc.film_id = f.film_id
    -> join inventory i on f.film_id = i.film_id
    -> join rental r on i.inventory_id = r.inventory_id
    -> join payment p on r.rental_id =  p.rental_id
    -> group by c.name
    -> order by gross_revenue desc;
Query OK, 0 rows affected (0.03 sec)

mysql> select * from GenreRevenue;
+-------------+---------------+
| genre       | gross_revenue |
+-------------+---------------+
| Sports      |       5314.21 |
| Sci-Fi      |       4756.98 |
| Animation   |       4656.30 |
| Drama       |       4587.39 |
| Comedy      |       4383.58 |
| Action      |       4375.85 |
| New         |       4351.62 |
| Games       |       4281.33 |
| Foreign     |       4270.67 |
| Family      |       4226.07 |
| Documentary |       4217.52 |
| Horror      |       3722.54 |
| Children    |       3655.55 |
| Classics    |       3639.59 |
| Travel      |       3549.64 |
| Music       |       3417.72 |
+-------------+---------------+
```

20. Select top 5 genres in gross revenue view.

```
mysql> create view GenreRevenue as
    -> select
    -> c.name as genre,
    -> sum(p.amount) as gross_revenue
    -> from
    -> category c
    -> join film_category fc on c.category_id = fc.category_id
    -> join film f on fc.film_id = f.film_id
    -> join inventory i on f.film_id = i.film_id
    -> join rental r on i.inventory_id = r.inventory_id
    -> join payment p on r.rental_id =  p.rental_id
    -> group by c.name
    -> order by gross_revenue desc;
Query OK, 0 rows affected (0.03 sec)

mysql> select * from GenreRevenue;
+-------------+---------------+
| genre       | gross_revenue |
+-------------+---------------+
| Sports      |       5314.21 |
| Sci-Fi      |       4756.98 |
| Animation   |       4656.30 |
| Drama       |       4587.39 |
| Comedy      |       4383.58 |
| Action      |       4375.85 |
| New         |       4351.62 |
| Games       |       4281.33 |
| Foreign     |       4270.67 |
| Family      |       4226.07 |
| Documentary |       4217.52 |
| Horror      |       3722.54 |
| Children    |       3655.55 |
| Classics    |       3639.59 |
| Travel      |       3549.64 |
| Music       |       3417.72 |
+-------------+---------------+
```