

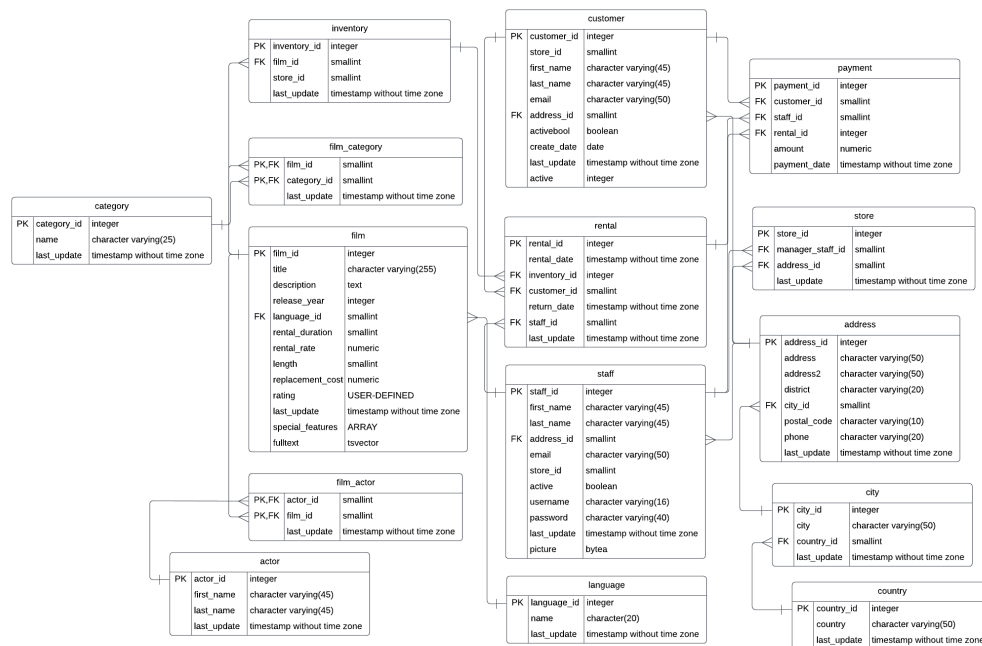
## 3.2: Data Storage & Structure

### Step 1. Create your Answers document:

Create a new text document and call it “Answers 3.2.” You'll save a copy of your ERD, data dictionary, and written answers in this document.

### Step 2. Extract the ERD:

- Download and install DbVisualizer or Lucidchart (if you haven't already done so).
- Extract the ERD from the Rockbuster database and save it as an image (PNG or JPEG) using the instructions in the Exercise.
- Copy-paste the ERD into your answers document.



### Step 3. Create the first draft of a data dictionary:

- Take a moment to examine your ERD. Does the Rockbuster database have a snowflake schema or a star schema? Write a brief explanation for your answer.  
It's a snowflake schema.  
There are multiple dimensions and sub-dimensions.

- List all the fact tables and all the dimension tables in the schema. For each table, list every column and its data type, and write a brief description of the column. To get an idea of what this should look like, check out these [example fact and dimension tables](#).
- If a column name doesn't tell you enough to write a description, you can also view the tables in pgAdmin 4. The SQL syntax for selecting a table is `SELECT * FROM table_name`. So `SELECT * FROM film` would return the film table, for example.

| Table     | Columns          | Data Type         | Description               |
|-----------|------------------|-------------------|---------------------------|
| Payment   | Payment_id       | Integer           | Payment ID number         |
|           | Customer_id      | Smallint          | Customer ID number        |
|           | Staff_id         | Smallint          | Staff ID number           |
|           | Rental_id        | Integer           | Rental ID number          |
|           | Amount           | Numeric (5,2)     | Value USD                 |
| Rental    | Payment_date     | Timestamp         | Payment date and time     |
|           | Rental_id        | Integer           | Rental ID number          |
|           | Rental_date      | Timestamp         | Rental date and time      |
|           | Inventory_id     | Integer           | Inventory ID number       |
|           | Customer_id      | Smallint          | Customer ID number        |
|           | Return_date      | Timestamp         | Timestamp                 |
|           | Staff_id         | Smallint          | Staff ID number           |
| Store     | Last_update      | Timestamp         | Last updated time         |
|           | Store_id         | Integer           | Store id number           |
|           | Manager_Staff_id | Smallint          | Manager staff id number   |
|           | Address_id       | Smallint          | Address ID number         |
|           | Last_update      | Timestamp         | Last update date and time |
| Inventory | Inventory_id     | Integer           | Inventory ID number       |
|           | Film_id          | Smallint          | Film ID number            |
|           | Store_id         | Smallint          | Store ID number           |
|           | Last_update      | Last_update       | Last update date and time |
| Customer  | Customer_id      | serial            | Customer id number        |
|           | Store_id         | Smallint          | Store id number           |
|           | First_name       | Character Varying | First name                |
|           | Last_name        | Character Varying | Last name                 |
|           | Email            | Character varying | Email                     |
|           | Address_id       | Smallint          | Address id number         |
|           | Activebool       | Boolean           | Activebool                |
|           | Create_date      | Date              | Create date and time      |
|           | Last_update      | Timestamp         | Last update date and time |
|           | Active           | Integer           | Active                    |
| Staff     | Staff_id         | Serial            | Staff id number           |
|           | First_name       | Character Varying | First name                |
|           | Last_name        | Character Varying | Last name                 |
|           | Address_id       | Smallint          | Address id number         |
|           | Email            | Character Varying | Email                     |
|           | Store_id         | Smallint          | Store id number           |
|           | Active           | Boolean           | Active                    |
|           | Username         | Character Varying | Staff username            |

|               |                  |                   |                           |
|---------------|------------------|-------------------|---------------------------|
|               | Password         | Character Varying | Password                  |
|               | Last_update      | Timestamp         | Last update date and time |
|               | Picture          | Bytea             | Picture of employee       |
| Film_category | Film_id          | Smallint          | Film id number            |
|               | Category_id      | Smallint          | Category id number        |
|               | Last_update      | Timestamp         | Last update date and time |
| Film_actor    | Actor_id         | Smallint          | Actor id number           |
|               | Film_id          | Smallint          | Film id number            |
|               | Last_update      | Timestamp         | Last update date and time |
| Actor         | Actor_id         | Serial            | Actor id number           |
|               | First_name       | Character Varying | First name                |
|               | Last_name        | Character Varying | Last name                 |
|               | Last_update      | Timestamp         | Last update date and time |
| Film          | Film_id          | Serial            | Film id number            |
|               | Title            | Character Varying | Title of movie            |
|               | Description      | Text              | Description of movie      |
|               | Release_year     | Year              | Release year              |
|               | Language_id      | Smallint          | Language id number        |
|               | Rental_duration  | Smallint          | Rental duration (days)    |
|               | Rental_rate      | Numeric           | Rental rate USD           |
|               | Length           | Smallint          | Length of movie           |
|               | Replacement_cost | Numeric           | Replacement cost USD      |
|               | Rating           | Mpaa_rating       | Rating                    |
|               | Last_update      | Timestamp         | Last update date and time |
|               | Special_features | Text              | Special features          |
|               | Fulltext         | Tsvector          | Fulltext                  |
| Category      | Category_id      | Serial            | Category id number        |
|               | Name             | Character Varying | Name                      |
|               | Last_update      | Timestamp         | Last update date and time |
| Address       | Address_id       | Serial            | Address id number         |
|               | Address          | Character Varying | Primary address           |
|               | Address2         | Character Varying | Secondary address         |
|               | District         | Character Varying | District                  |
|               | City_id          | Smallint          | City id number            |
|               | Postal_code      | Character Varying | Postal code               |
|               | Phone            | Character Varying | Phone number              |
|               | Last_update      | Timestamp         | Last update date and time |
| Language      | Language_id      | Serial            | Language id number        |
|               | Name             | Character         | Name of language          |
|               | Last_update      | Timestamp         | Last update date and time |
| City          | City_id          | Serial            | City id number            |
|               | City             | Character Varying | City name                 |
|               | Country_id       | Smallint          | Country id number         |
|               | Last_update      | Timestamp         | Last update date and time |
| Country       | Country_id       | Serial            | Country id number         |
|               | Country          | Character Varying | Country name              |
|               | Last_update      | Timestamp         | Last update date and time |

**Step 4. Find information:**

Now that your data dictionary and ERD are ready to use, your manager has given you a list of business questions to answer. Use your data dictionary to figure out which tables you'd need to answer the questions below:

- Which actors brought Rockbuster the most revenue?  
Payment, rental, inventory, film
- What language are the majority of movies in the collection?  
Film and language.

**Step 5. Save and upload your file:**

Save your “Answers 3.2” document as a PDF and upload it here for your tutor to review. Make sure to keep a copy for yourself! You’ll be finalizing your data dictionary at the end of this Achievement.