# Wayfair Data Engineer Interview Guide – Experienced 3+

## Round 1: Online Assessment (Hackerrank)

This round was conducted on Hackerrank and focused on coding and SQL skills.

- **Key Takeaways**:
  - Understand SQL concepts thoroughly, including joins, aggregations, and window functions.
  - Practice coding challenges that emphasize logic building and data manipulation.

## Round 2: Technical (Coding and SQL)

### SQL Query: Unique User Sessions

- **Scenario**: Write a query to identify unique user sessions.
- **Table Schema**:
  - user_id
  - start_timestamp
  - end_timestamp

### SQL Query: Transaction and Product Analysis

- **Tables Provided**:
  - Transactions: Contains product_id, user_id, and sale_timestamp.
  - Products: Contains product_id and product_name.

**Tasks and Query Solutions**:

1. **First Transaction**:
   Retrieve the earliest sale_timestamp for each product.

```sql
SELECT
    p.product_id,
    p.product_name,
    MIN(t.sale_timestamp) AS first_transaction
FROM Products p
JOIN Transactions t ON p.product_id = t.product_id
GROUP BY p.product_id, p.product_name;
```

2. **Latest Transaction**:
   Retrieve the most recent sale_timestamp for each product.

```sql
SELECT
    p.product_id,
    p.product_name,
    MAX(t.sale_timestamp) AS latest_transaction
FROM Products p
JOIN Transactions t ON p.product_id = t.product_id
GROUP BY p.product_id, p.product_name;
```

3. **Total Units Sold**:
   Calculate the total number of transactions (units sold) for each product.

```sql
SELECT
    p.product_id,
    p.product_name,
    COUNT(t.sale_timestamp) AS total_units_sold
FROM Products p
JOIN Transactions t ON p.product_id = t.product_id
GROUP BY p.product_id, p.product_name;
```

## Round 3: Design Round

### Core Objective

Design a structure (data model) that allows efficient querying of movies based on multiple search criteria such as:

- Movie title
- Genre
- Actor
- Director

Additionally, the system should:

1. **Support scalability**: Be flexible enough to add new search keys (e.g., studio, language) in the future.
2. **Optimize querying**: Enable efficient searches without significant performance bottlenecks.

**Key Tasks**

1. **Identify the Main Entities**:
    - Movies
    - Genres
    - Actors
    - Directors
2. **Establish Relationships Between Entities**:
    - A movie can have multiple genres, actors, and directors (many-to-many relationships).
    - These relationships will require link tables to map movies with their associated genres, actors, and directors.
3. **Define the Goal of the Data Model**:
    - Design tables that store data logically and allow fast retrieval of information.
    - Handle scalability so the system can accommodate additional search keys or attributes (e.g., studio, country).
4. **Support Efficient Search Operations**:
    - Ensure users can query movies using one or more criteria (e.g., "Find all Sci-Fi movies directed by Christopher Nolan").
    - Include indexing and relationship management for performance optimization.

**Glassdoor Wayfair Review** –

https://www.glassdoor.co.in/Reviews/Wayfair-Reviews-E134525.htm

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https://www.wayfair.com/careers/jobs

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