**Case Study 1: Job Data Analysis**

**You will be working with a table named job\_data with the following columns:**

* **job\_id:**Unique identifier of jobs
* **actor\_id:**Unique identifier of actor
* **event:**The type of event (decision/skip/transfer).
* **language:**The Language of the content
* **time\_spent:**Time spent to review the job in seconds.
* **org:**The Organization of the actor
* **ds:**The date in the format yyyy/mm/dd (stored as text).

**Tasks:**

1. **Jobs Reviewed Over Time:**
   * Objective: Calculate the number of jobs reviewed per hour for each day in November 2020.
   * Your Task: Write an SQL query to calculate the number of jobs reviewed per hour for each day in November 2020.
2. **Throughput Analysis:**
   * Objective: Calculate the 7-day rolling average of throughput (number of events per second).
   * Your Task: Write an SQL query to calculate the 7-day rolling average of throughput. Additionally, explain whether you prefer using the daily metric or the 7-day rolling average for throughput, and why.
3. **Language Share Analysis:**
   * Objective: Calculate the percentage share of each language in the last 30 days.
   * Your Task: Write an SQL query to calculate the percentage share of each language over the last 30 days.
4. **Duplicate Rows Detection:**
   * Objective: Identify duplicate rows in the data.
   * Your Task: Write an SQL query to display duplicate rows from the job\_data table.

**Case Study 2: Investigating Metric Spike**

**You will be working with three tables:**

* **users**: Contains one row per user, with descriptive information about that user’s account.
* **events**: Contains one row per event, where an event is an action that a user has taken (e.g., login, messaging, search).
* **email\_events**: Contains events specific to the sending of emails.

**Tasks:**

1. **Weekly User Engagement:**
   * Objective: Measure the activeness of users on a weekly basis.
   * Your Task: Write an SQL query to calculate the weekly user engagement.
2. **User Growth Analysis:**
   * Objective: Analyze the growth of users over time for a product.
   * Your Task: Write an SQL query to calculate the user growth for the product.
3. **Weekly Retention Analysis:**
   * Objective: Analyze the retention of users on a weekly basis after signing up for a product.
   * Your Task: Write an SQL query to calculate the weekly retention of users based on their sign-up cohort.
4. **Weekly Engagement Per Device:**
   * Objective: Measure the activeness of users on a weekly basis per device.
   * Your Task: Write an SQL query to calculate the weekly engagement per device.
5. **Email Engagement Analysis:**
   * Objective: Analyze how users are engaging with the email service.
   * Your Task: Write an SQL query to calculate the email engagement metrics.

Please note that for each task, you should also provide insights and interpretations of the results obtained from your queries.