Problem Description : SQL Challenge

Consider the following tables and provide SQL queries for the questions that follow.

CREDIT

credit_id	user_id	total_amount_disbursed	disbursement_date
1	1	5000	2022-09-02
2	2	6000	2022-09-02
3	1	1000	2022-10-05
4	3	10000	2022-09-02

PAYMENTS

payment_id	credit_id	amount	type	payment_timestamp
1	1	5000	disbursement	2022-10-01 05:01:12
2	2	100	repayment	2022-10-01 05:05:12
3	1	1000	repayment	2022-10-01 05:31:01
4	2	10	repayment	2022-11-01 03:11:01

Write a query to create:
- a table that will have the total outstanding balance on each day from disbursement day till the last repayment date of the credit for each user-credit combination. Assume that all the credit tenure is for 60 days only.

- Latest repayment date at each day

Required Table Structure

date	user_id	credit_id	total_amount_disbursed	total_outstanding_amount	latest_repayment_date
2022-12-01	1	12	20000	15000	2022-11-01
2022-12-02	1	12	20000	12000	2022-11-01
2022-12-03	1	12	20000	8000	2022-12-02

——————————Problem Solution-—————
```
WITH credit_info AS (
   SELECT
      c.credit_id,
      c.user_id,
      c.total_amount_disbursed,
      c.disbursement_date,
      c.disbursement_date + INTERVAL '60' DAY AS end_date
   FROM
      credit c
),
repayments AS (
   SELECT
      p.credit_id,
      p.payment_timestamp::date AS payment_date,
```

```sql
        SUM(p.amount) OVER (PARTITION BY p.credit_id ORDER BY p.payment_timestamp) AS total_repaid
    FROM
        payments p
    WHERE
        p.type = 'repayment'
),
dates AS (
    SELECT
        credit_id,
        user_id,
        total_amount_disbursed,
        disbursement_date,
        end_date,
        generate_series(disbursement_date::timestamp, end_date::timestamp, INTERVAL '1 day')::date AS date
    FROM
        credit_info
),
combined AS (
    SELECT
        d.date,
        d.user_id,
        d.credit_id,
        d.total_amount_disbursed,
        COALESCE(r.total_repaid, 0) AS total_repaid,
        COALESCE(MAX(r.payment_date) OVER (PARTITION BY d.credit_id ORDER BY d.date), d.disbursement_date) AS latest_repayment_date
    FROM
        dates d
    LEFT JOIN
        repayments r ON d.credit_id = r.credit_id AND d.date >= r.payment_date
)
SELECT
    date,
    user_id,
    credit_id,
    total_amount_disbursed,
    total_amount_disbursed - total_repaid AS total_outstanding_amount,
    latest_repayment_date
FROM
```

```
    combined
ORDER BY
    date, user_id, credit_id;
```

——————— Explanation —————————

1. **credit_info**: Extracts the basic credit information along with the end date (disbursement date + 60 days).
2. **repayments**: Aggregates the repayments for each credit_id up to each payment date.
3. **dates**: Generates a series of dates from the disbursement date to the end date for each credit.
4. **combined**: Combines the generated dates with the repayment information, calculating the total repaid amount up to each date and the latest repayment date.
5. **Final SELECT**: Selects the required fields, calculating the total outstanding amount as the difference between the total amount disbursed and the total amount repaid.