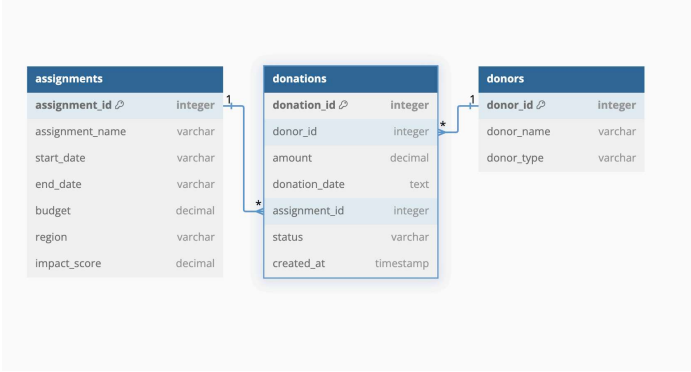
PROJECT: IMPACT ANALYSIS OF GOODTHOUGHT NGO INITIATIVES

GoodThought NGO has been a catalyst for positive change, focusing its efforts on education, healthcare, and sustainable development to make a significant difference in communities worldwide. With this mission, GoodThought has orchestrated an array of assignments aimed at uplifting underprivileged populations and fostering long-term growth.

This project offers a hands-on opportunity to explore how data-driven insights can direct and enhance these humanitarian efforts. In this project, you'll engage with the GoodThought PostgreSQL database, which encapsulates detailed records of assignments, funding, impacts, and donor activities from 2010 to 2023. This comprehensive dataset includes:

- `Assignments`: Details about each project, including its name, duration (start and end dates), budget, geographical region, and the impact score.
- `Donations`: Records of financial contributions, linked to specific donors and assignments, highlighting how financial support is allocated and utilized.
- `Donors`: Information on individuals and organizations that fund GoodThought's projects, including donor types.

Refer to the below ERD diagram for a visual representation of the relationships between these data tables:



You will execute SQL queries to answer two questions, as listed in the instructions. Good luck!

Projects Data DataFrame as `assignment`

```
SELECT *
FROM assignments
LIMIT 5;
```

	assignm...	assignment_...	start_date	end_date	b...	
0	1	Assignment_1	2021-10-17T00:00:00.000	2021-12-04T00:00:00.000	-32322.03	West
1	2	Assignment_2	2020-10-26T00:00:00.000	2020-11-28T00:00:00.000	57278.4	South
2	3	Assignment_3	2021-08-11T00:00:00.000	2022-03-17T00:00:00.000	40414.51	West
3	4	Assignment_4	2021-11-22T00:00:00.000	2022-05-17T00:00:00.000	31732.48	East
4	5	Assignment_5	2020-11-22T00:00:00.000	2021-07-10T00:00:00.000	13548.22	North

Rows: 5

Projects Data DataFrame as `donations`

```
SELECT *
FROM donations
LIMIT 5;
```

index	donation_id	donor_id	amo…	donation_date	assignment_
0	1	2733	271.36	2021-08-21T00:00:00.000	
1	2	2608	251.49	2021-10-15T00:00:00.000	
2	3	1654	528.38	2020-03-03T00:00:00.000	
3	4	3265	730.36	2021-02-06T00:00:00.000	
4	5	4932	285.96	2022-03-05T00:00:00.000	

Rows: 5

Projects Data DataFrame as `donors`

```
SELECT *
FROM donors
LIMIT 5;
```

index	donor_id	donor_name	donor_type
0	1	Donor_1	Individual
1	2	Donor_2	Organization
2	3	Donor_3	Individual
3	4	Donor_4	Organization
4	5	Donor_5	Organization

Rows: 5

Projects Data DataFrame as `h`

```sql
-- highest_donation_assignments

WITH cte AS (
    SELECT
        assignment_id,
        donor_id,
        ROUND(SUM(amount), 2) AS rounded_total_donation_amount
    FROM donations
    GROUP BY
        assignment_id,
        donor_id
)

SELECT
    a.assignment_name,
    a.region,
    ROUND(SUM(cte.rounded_total_donation_amount), 2) AS rounded_total_donation_amount,
    d.donor_type
FROM assignments AS a
INNER JOIN cte
    ON a.assignment_id = cte.assignment_id
INNER JOIN donors AS d
    ON cte.donor_id = d.donor_id
GROUP BY
    a.assignment_name,
    a.region,
    d.donor_type
ORDER BY rounded_total_donation_amount DESC
LIMIT 5;
```

	assignme…		rounded_total_donation_amount	dono…
0	Assignment_3033	East	3840.66	Individual
1	Assignment_300	West	3133.98	Organization
2	Assignment_4114	North	2778.57	Organization
3	Assignment_1765	West	2626.98	Organization
4	Assignment_268	East	2488.69	Individual

Rows: 5

Projects Data DataFrame as `t`

```sql
-- top_regional_impact_assignments
WITH cte1 AS (
    SELECT
        assignment_id,
        COUNT(*) AS num_total_donations
    FROM donations
    GROUP BY assignment_id),

cte2 AS (
    SELECT
        assignment_id,
        ROW_NUMBER() OVER(PARTITION BY region ORDER BY impact_score DESC) AS rank_n
    FROM assignments
    GROUP BY assignment_id
    ORDER BY impact_score DESC
)

SELECT
    a.assignment_name,
    a.region,
    a.impact_score,
    cte1.num_total_donations
FROM assignments AS a
INNER JOIN cte1
    ON a.assignment_id = cte1.assignment_id
INNER JOIN cte2
    ON cte1.assignment_id = cte2.assignment_id
WHERE cte2.rank_n = 1
GROUP BY a.assignment_name, a.region, a.impact_score, cte1.num_total_donations
ORDER BY a.region ASC;
```

	assignme…		impa…	num_total_donat…
0	Assignment_316	East	10	2
1	Assignment_2253	North	9.99	1
2	Assignment_3547	South	10	1
3	Assignment_2794	West	9.99	2

Rows: 4