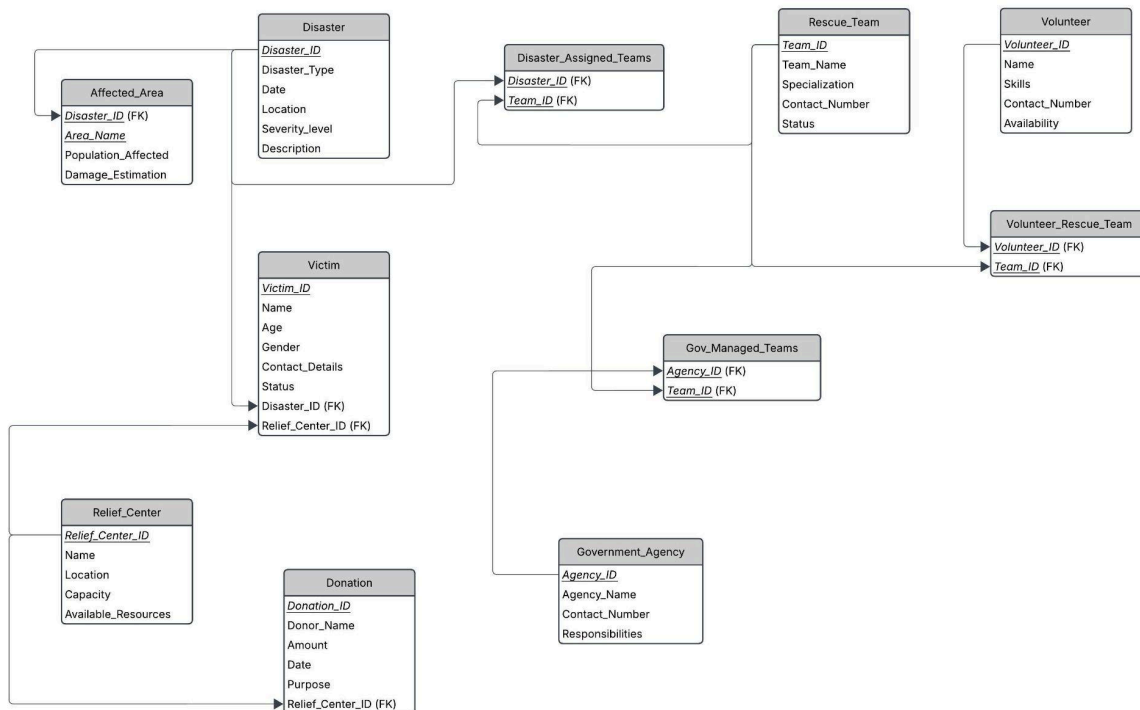# Relational Model

Group Members Details

1. Aditya Rawat (2023049)
2. Akshit Sharma (2023067)
3. Dhimant Kaul (2023196)
4. Hrithik Raj (2023245)

Link

Entity Sets and Their Attributes

1. **Disaster**

   - **Disaster_ID (PK):** Unique identifier for each disaster.
   - **Disaster_Type:** Type of disaster (e.g., earthquake, flood).
   - **Date:** Date when the disaster occurred.
   - **Location:** Location of the disaster.
   - **Severity_Level:** Severity level of the disaster.
   - **Description:** Description of the disaster.

2. **Affected_Area**

- **Disaster_ID (FK):** Foreign key referencing the Disaster entity.
- **Area_Name:** Name of the affected area.
- **Population_Affected:** Number of people affected.
- **Damage_Estimation:** Estimated damage cost.

3. **Rescue_Team**

- **Team_ID (PK):** Unique identifier for each rescue team.
- **Team_Name:** Name of the team.
- **Specialization:** Specialization of the team (e.g., medical, rescue).
- **Contact_Number:** Contact number of the team.
- **Status:** Current status of the team (Active, Standby).

4. **Volunteer**

- **Volunteer_ID (PK):** Unique identifier for each volunteer.
- **Name:** Name of the volunteer.
- **Skills:** Skills possessed by the volunteer.
- **Contact_Number:** Contact number of the volunteer.
- **Availability:** Availability status of the volunteer.

5. **Relief_Center**

- **Relief_Center_ID (PK):** Unique identifier for each relief center.
- **Name:** Name of the relief center.
- **Location:** Location of the relief center.
- **Capacity:** Capacity of the relief center.
- **Available_Resources:** Resources available at the relief center.

6. **Victim**

- **Victim_ID (PK):** Unique identifier for each victim.
- **Name:** Name of the victim.
- **Age:** Age of the victim.
- **Gender:** Gender of the victim (Male, Female, Other).
- **Contact_Details:** Contact details of the victim.
- **Status:** Current status of the victim (Rescued, Missing, Deceased, Safe, Injured).
- **Disaster_ID (FK):** Foreign key referencing the Disaster entity.
- **Relief_Center_ID (FK):** Foreign key referencing the Relief_Center entity.

7. **Donation**

- **Donation_ID (PK):** Unique identifier for each donation.
- **Donor_Name:** Name of the donor.
- **Amount:** Amount donated.
- **Date:** Date of the donation.
- **Purpose:** Purpose of the donation.
- **Relief_Center_ID (FK):** Foreign key referencing the Relief_Center entity.

8. **Government_Agency**

   - **Agency_ID (PK):** Unique identifier for each government agency.
   - **Agency_Name:** Name of the government agency.
   - **Contact_Number:** Contact number of the agency.
   - **Responsibilities:** Responsibilities of the agency.

9. **Disaster_Assigned_Teams**

   - **Disaster_ID (FK):** Foreign key referencing the Disaster entity.
   - **Team_ID (FK):** Foreign key referencing the Rescue_Team entity.

10. **Gov_Managed_Teams**

    - **(FK):** Foreign key referencing the Government_Agency entity.
    - **Team_ID (FK):** Foreign key referencing the Rescue_Team entity.

11. **Volunteer_Rescue_Team**
    - **Volunteer_ID (FK):** Foreign key referencing the Volunteer entity.
    - **Team_ID (FK):** Foreign key referencing the Rescue_Team entity.

Entity Relationship Roles and Constraints

1. **Disaster_Assigned_Teams:** Establishes a many-to-many relationship between Disaster and Rescue_Team, indicating which teams are assigned to which disasters.
2. **Volunteer_Rescue_Team:** Establishes a many-to-many relationship between Volunteer and Rescue_Team, indicating which volunteers are part of which teams.
3. **Gov_Managed_Teams:** Establishes a many-to-many relationship between Government_Agency and Rescue_Team, indicating which teams are managed by which government agencies.
4. **Donation:** Links donations to specific Relief_Center, indicating the purpose and amount of each donation.

Relationships

1. **Disaster and Rescue_Team:**

   - A disaster can be managed by multiple teams, and a team can be assigned to multiple disasters.
   - **Many-to-Many** relationship managed by Disaster_Assigned_Teams.

2. **Volunteer and Rescue_Team:**

   - A volunteer can be part of multiple teams, and a team can have multiple volunteers.

- ○ **Many-to-Many** relationship managed by Volunteer_Rescue_Team.
3. **Donation and Relief_Center:**

    - ○ A donation is made to a specific relief center.
    - ○ **Many-to-One** relationship where multiple donations can be made to a single relief center.
4. **Government_Agency and Rescue_Team:**

    - ○ A government agency can manage multiple teams, and a team can be managed by multiple agencies.
    - ○ **Many-to-Many** relationship managed by Gov_Managed_Teams.

Relationships Summary Table

Relationship	Type	Cardinality
Disaster → Affected_Area	One-to-Many	1:N
Disaster → Disaster_Assigned_Teams → Rescue_Team	Many-to-Many	M:N
Disaster → Victim	One-to-Many	1:N
Rescue_Team → Volunteer_Rescue_Team → Volunteer	Many-to-Many	M:N
Relief_Center → Victim	One-to-Many	1:N
Relief_Center → Donation	One-to-Many	1:N
Government_Agency → Gov_Managed_Teams → Rescue_Team	Many-to-Many	M:N

Constraints Applied

- ● **Primary Keys (PKs):** Uniquely identify each entity.
- ● **Foreign Keys (FKs):** Maintain referential integrity.