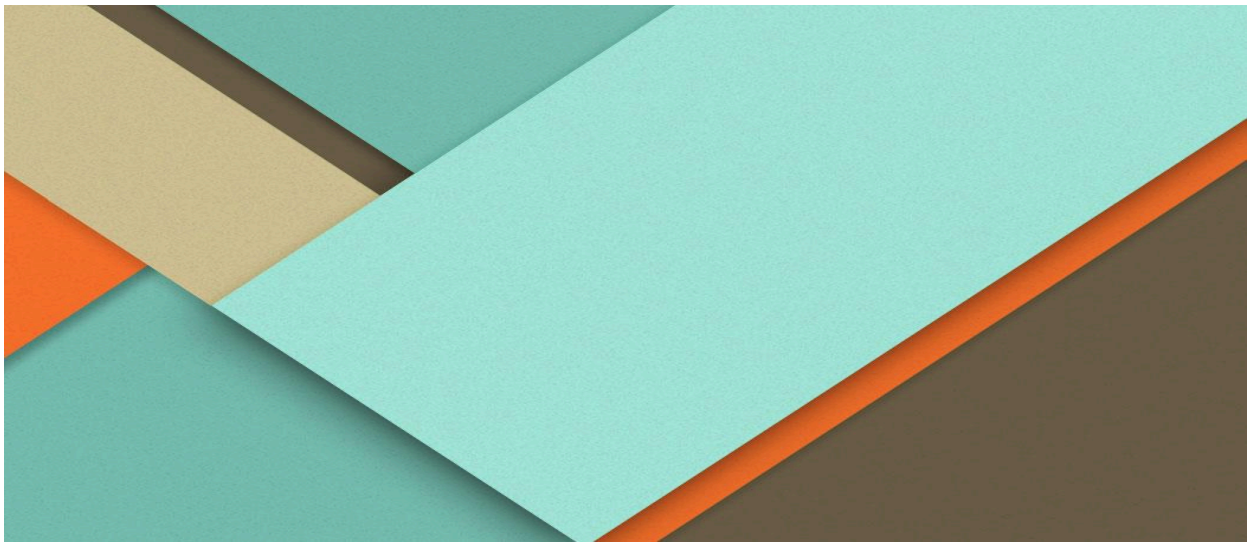

Crowdsourced Disaster Response Coordination System

Institute

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Chapter 1

Software Requirements Specification (SRS)

The Crowdsourced Disaster Response Coordination system:

Definition :

The Crowdsourced Disaster Response Coordination system will be designed to manage and organize vital information during disasters. It will store data on various disaster events, including reports from the public about what's happening on the ground. The database will also keep track of volunteers, their skills, and availability, along with information on how resources like food, medical supplies, and equipment are being allocated. Additionally, it will record details about the different agencies involved in the response efforts, such as government bodies, NGOs, and other organizations.

By gathering all this information in one place, the system will help ensure that resources and volunteers are sent where they are needed the most, making the disaster response more efficient. The system will also support real-time decision-making, allowing authorities to quickly adjust their strategies based on the latest information.

This will improve the overall speed and effectiveness of the response, helping to save lives and reduce the impact of the disaster. With everything coordinated through this system, the response teams will be better equipped to handle emergencies, ensuring that help reaches the people who need it as quickly as possible.

1. Problem Description:

The rising frequency and severity of natural disasters, such as floods, droughts, and cyclones, have highlighted the need for more effective disaster management. Traditional methods often fall short in handling these increasing challenges. To address this, a Crowdsourced Disaster Response Coordination system is proposed.

This system will streamline disaster management by collecting and organizing crucial information, including public reports, volunteer details, and resource distribution. It will maintain a centralized database to track disaster events, volunteer skills and availability, and the allocation of resources like food and medical supplies. The system will also record the involvement of various response agencies, such as government bodies and NGOs.

By consolidating data in real-time, the system will ensure that resources and volunteers are deployed where they are needed most, improving the efficiency of the response. This approach will enable quick adjustments to strategies based on the latest.

The system will address both **natural disasters** and **crowd-based disasters**.

- **Natural disasters** include events such as earthquakes, floods, hurricanes, wildfires, and other phenomena caused by natural processes.
- **Crowd-based disasters** involve emergencies primarily caused by large gatherings or human activities, such as riots, stampedes, or mass evacuations

- **Purpose**

In the face of a disaster, timely and accurate information is crucial for effective emergency response. Traditional methods of gathering information can be slow and limited, but the widespread use of mobile devices has revolutionized the way data is collected and shared during emergencies.

With mobile technology, individuals on the ground can act as valuable sources of information, sharing location-specific updates through various platforms. These updates can include photos, videos, and text reports of damage, resource needs, and hazardous conditions. This crowd-sourced data is essential for emergency management professionals, who can aggregate, analyze, and map the information to gain a comprehensive view of the disaster in real-time.

Crowdsourced disaster management systems enable emergency teams to receive critical information before they are dispatched, allowing them to allocate resources more effectively, plan evacuation routes, identify priority areas for search and rescue, and understand the medical needs of the affected population. By leveraging this decentralized information flow, response teams can respond faster, reduce delays in assistance, and provide more accurate, life-saving interventions.

Moreover, these systems facilitate greater collaboration between government agencies, humanitarian organizations, and the general public. They promote a participatory model of disaster management, where everyone can contribute to a faster, more organized, and efficient response, ultimately improving outcomes for disaster victims.

Intended audience and reading suggestions

1. **Users Seeking Situation Awareness**:
    - These individuals can utilize the system to gather vital information about a specific area before entering it. For instance, if someone plans to travel to a disaster-affected area, they can check the system to gain a clear understanding of the current situation, enabling them to make informed decisions about their safety.

2. **Affected Individuals:**
    - Those already impacted by the disaster can leverage the system to share their firsthand experiences and provide real-time updates about the situation on the ground. By doing so, they can alert other users to potential dangers, helping prevent them from entering the affected area and minimizing risks.

3. **NGO and Government Agencies:**
    - These organizations can harness the system to collect critical information about the disaster, optimize resource allocation, and respond to the situation in a more coordinated and efficient manner.

4. **Volunteers Offering Support:**
    - Individuals eager to help those affected by the disaster can use the system to identify areas of need and provide targeted assistance. By doing so, they can make a meaningful impact and help alleviate the suffering of those in need.

- **Product Scope**

  Crowdsourced disaster management is a powerful platform designed to facilitate informed decision-making and coordinated response efforts during disasters. By leveraging the system, users can visualize disaster-related data on a dynamic map, interact with it in real-time, and extract valuable insights. They can customize the map's layout, calculate key metrics, and identify critical areas of need, ultimately enabling a more effective and targeted response to the disaster. This innovative solution embodies the principles of Collaborative Disaster Response, a cutting-edge approach in the realm of Humanitarian Technology and Crisis Management.

2. Document Requirement Collection:

1. Background Reading

What is Crowdsourcing?

Crowdsourcing is a collaborative approach that brings together a large group of people from diverse backgrounds and locations to solve problems, innovate, and produce. It's an online activity where an individual, institution, non-profit, or company proposes a task to a group of individuals with varying knowledge and skills, who then participate voluntarily. This collaboration benefits both parties, with the organization receiving the crowd's contributions and the community receiving satisfaction, recognition, or compensation.

Key Elements of Crowdsourcing

There are four essential elements of crowdsourcing:

- **An organization with a task**: A company, non-profit, or government agency that needs a specific task completed.
- **A willing community**: A group of individuals with varying skills and expertise who are willing to contribute their time and effort.
- **An online environment**: A website, social media platform, or other online tool that enables collaboration and communication between the organization and the community.
- **Mutual benefit**: Crowdsourcing is a collaborative process that benefits both the organization and the community.

How Crowdsourcing Works:

Crowdsourcing works by leveraging the collective wisdom, skills, and resources of a large group of people to achieve a common goal. The organization proposes a task, and the community responds with their ideas, solutions, or contributions. The organization then selects the best contributions, and the community is rewarded with recognition, compensation, or other benefits.

Advantages of Crowdsourcing:

Crowdsourcing offers several advantages, including:

- **Innovative solutions**: Crowdsourcing can lead to innovative solutions that might not have been possible through traditional approaches.
- **Cost-effective**: Crowdsourcing can be a cost-effective way to complete tasks, as the organization doesn't have to bear the full cost of the project.
- **Increased efficiency**: Crowdsourcing can increase efficiency, as the community can work on the task simultaneously, reducing the time required to complete the project.
- **Improved decision-making**: Crowdsourcing can improve decision-making, as the organization can tap into the collective wisdom of the community.

Challenges and Limitations of Crowdsourcing

While crowdsourcing offers several benefits, it also presents several challenges and limitations, including:

- **Quality control**: Ensuring the quality of the contributions from the community can be a challenge.
- **Coordination and management**: Coordinating and managing the contributions from the community can be a challenge.
- **Intellectual property rights**: Ensuring that intellectual property rights are protected can be a challenge.
- **Security and privacy**: Ensuring the security and privacy of the data and contributions from the community can be a challenge.

By understanding the concept of crowdsourcing, its key elements, benefits, and challenges, organizations can harness the power of crowdsourcing to achieve their goals.

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What is Disaster?

A disaster is an event or series of events that occurs suddenly or over a period of time, causing widespread destruction, loss of life, and disruption to the normal functioning of a community or society. Disasters can be natural or man-made, and they can affect individuals, communities, and entire countries.

According to the International Federation of Red Cross and Red Crescent Societies (IFRC), a disaster is "a sudden, unexpected and non-routine event that causes or threatens to cause death, injury or illness, damage to property, infrastructure, livelihoods, service disruption or environmental degradation."

Types of Disasters

Natural Disasters: These are disasters caused by natural phenomena, such as earthquakes, hurricanes, floods, landslides, volcanic eruptions, and wildfires.

Man-made Disasters: These are disasters caused by human error, negligence, or intentional acts, such as industrial accidents, nuclear accidents, chemical spills, oil spills, transportation accidents, building collapses, and terrorist attacks.

Biological Disasters: These are disasters caused by the outbreak of infectious diseases, such as epidemics, pandemics, and biological attacks.

Environmental Disasters: These are disasters caused by human activities that harm the environment, such as oil spills, chemical spills, nuclear accidents, and climate change-related disasters.

Effect of Disasters

Short-term effects:

- **Mortality and demographic recovery**: Disasters can cause significant loss of life, and the impact of mortality can be long-lasting.
- **Selective mortality**: Disasters can affect different population groups disproportionately, with the poor, marginalized, and vulnerable often being more affected.

- **Blame, scapegoating, and social unrest**: Disasters can lead to blame-shifting, scapegoating, and social unrest, which can have long-term consequences for social cohesion and stability.
- **Land loss and capital destruction**: Disasters can result in the destruction of infrastructure, property, and capital, leading to significant economic losses.
- **Economic crisis**: Disasters can lead to economic crises, including disruption to economic systems, loss of livelihoods, and decline in economic activity.

Long-term structural consequences:

- **Societal collapse**: Disasters can lead to the collapse of societies, especially if they are already vulnerable or weakened.
- **Economic reconstruction**: Disasters can have significant economic impacts, including capital destruction, loss of livelihoods, and disruption to economic systems.
- **Long-term demographic change**: Disasters can lead to long-term demographic changes, such as changes in population growth rates, migration patterns, and age structures.
- **Reconstruction, reform, and social change**: Disasters can lead to opportunities for reconstruction, reform, and social change, including the redistribution of resources and the rebuilding of communities.
- **Redistribution of resources:** Disasters can lead to the redistribution of resources, including the allocation of aid, the rebuilding of infrastructure, and the provision of social services.
- **Psychological trauma**: Disasters can cause psychological trauma, including anxiety, depression, and post-traumatic stress disorder (PTSD).
- **Displacement and migration**: Disasters can lead to displacement and migration, causing social, economic, and cultural disruption.

These are just some of the effects of disasters. The specific effects can vary depending on the type and severity of the disaster, as well as the vulnerability of the affected population.

Role of technology in a diester management system:

Here are 4 ways technology can play a critical role in disaster response, based on the article from the World Economic Forum:

1. Enhancing Situational Awareness: Technology can provide critical information to emergency responders and decision-makers during a disaster. For example, drones equipped with cameras and sensors can quickly survey damage and identify areas of need. Social media and other digital platforms can also provide valuable insights into the situation on the ground.

2. Streamlining Communication: Technology can facilitate communication between emergency responders, affected communities, and other stakeholders. For example, mobile apps can enable people to report their status and request assistance, while messaging platforms can help coordinate response efforts.

3. Optimizing Resource Allocation: Technology can help optimize the allocation of resources during a disaster response. For example, data analytics can be used to identify areas of greatest need and allocate resources accordingly. Additionally, digital platforms can facilitate the donation and distribution of goods and services.

4. Supporting Long-Term Recovery: Technology can also play a critical role in supporting long-term recovery efforts. For example, digital platforms can facilitate the rebuilding of infrastructure and the provision of essential services, while data analytics can help identify areas where investments in disaster risk reduction and management would be most effective.

Crowdsourcing in Disaster Management:

Crowdsourcing involves obtaining information or services from a large group of people, often through online platforms. In the context of disaster management, crowdsourcing can be a valuable tool for collecting and analyzing data, as well as for mobilizing resources and support.

Benefits of Crowdsourcing in Disaster Management:

Real-time Data Collection: Crowdsourcing can provide real-time data on disaster impacts, allowing for more rapid and effective response efforts.

Increased Situational Awareness: Crowdsourced data can provide a more comprehensive understanding of the disaster situation, enabling better decision-making and resource allocation.

Improved Resource Allocation: Crowdsourcing can help identify areas of greatest need, allowing for more targeted and effective resource allocation.

Enhanced Community Engagement: Crowdsourcing can empower affected communities to take an active role in disaster response and recovery efforts.

Cost-Effective: Crowdsourcing can be a cost-effective way to collect and analyze data, as well as to mobilize resources and support.

Examples of Crowdsourcing in Disaster Management:

Social Media: Social media platforms can be used to collect and disseminate information during disasters, as well as to mobilize support and resources.

Mobile Apps: Mobile apps can be used to collect data on disaster impacts, as well as to provide critical information to affected communities.

Volunteer-Based Initiatives: Volunteer-based initiatives, such as the Humanitarian OpenStreetMap Team, can be used to collect and analyze data, as well as to provide support and resources.

Citizen Science: Citizen science initiatives can be used to collect data on disaster impacts, as well as to engage affected communities in disaster response and recovery efforts.

Challenges and Limitations:

Data Quality: Crowdsourced data may be of variable quality, which can impact its usefulness for disaster response and recovery efforts.

Data Integration: Integrating crowdsourced data with existing data systems can be a challenge.

Privacy and Security: Crowdsourcing initiatives must ensure the privacy and security of affected communities and individuals.

Scalability: Crowdsourcing initiatives must be scalable to accommodate large volumes of data and user input.

Overall, crowdsourcing has the potential to revolutionize disaster management by providing real-time data, increasing situational awareness, and mobilizing resources and support. However, it is essential to address the challenges and limitations associated with crowdsourcing to ensure its effective use in disaster management.

REQUIREMENT GATHERED FROM BACKGROUND READING:

Disaster Data Gathering and Risk Analysis

Historical Data Comparison: Tools that analyze current disaster data against past events to identify patterns and trends, improving the response strategy over time. This helps in understanding recurring disaster types, frequency, and common impact areas.

Live Weather and Environmental Tracking: Integration of real-time weather data and environmental factors, such as humidity or wind speed, to assess conditions that may exacerbate the disaster. This allows responders to adapt their plans based on evolving conditions.

Risk Zone Identification and Forecasting: Mapping of high-risk zones using historical data and predictive models to anticipate potential areas of impact. This data-driven approach guides pre-disaster planning, resource allocation, and evacuation planning.

Alerts and Communication System

Urgent Warnings: Provides immediate, real-time updates on current disaster conditions and alerts about new or escalating risks. This allows both responders and communities to stay aware of unfolding events.

Safety Instructions and Response Protocols: Detailed guidelines and recommended safety measures are provided to responders and affected individuals. These instructions include step-by-step actions to help ensure safety and effective response during the disaster.

Resource and Inventory Management

Supply Tracking and Replenishment: Automated tracking of inventory depletion with alerts for restocking critical items.

Donor Management System: Record of recurring and emergency donors, including contact information and resource types.

Resource Request System: Centralized request platform for teams to request additional resources based on situational needs.

Data and Privacy Controls

Data Encryption: Secure data encryption protocols to protect sensitive information on victims and volunteers.

Access Control: Role-based access to restrict data visibility according to user roles (e.g., volunteers, agency personnel).

Data Retention Policies: Guidelines on data retention and disposal to ensure compliance with privacy laws.

Agency, Partner, and Team Collaboration

Task Assignment and Tracking: System to assign tasks to specific agencies or responders and monitor task completion.

Emergency Protocol Integration: Ability to incorporate specific protocols for agencies, such as Red Cross or local government regulations.

Inter-Agency Resource Sharing: Real-time visibility of resources available across agencies for efficient sharing and reallocation.

References

What is crowdsourcing?

- What is Crowdsourcing? Definition, Types, Benefits, Examples and Best Practices (ideascale.com)

What is a disaster?

- https://nidm.gov.in/PDF/Disaster_about.pdf

Effect of disaster

- Effects of Disasters (Chapter 6) - Disasters and History (cambridge.org)

Role of technology in a diester management system

- 4 ways technology can help us respond to disasters | World Economic Forum (weforum.org)

Crowdsourcing in Disaster Management

- The role of crowdsourcing and social media in crisis mapping: a case study of a wildfire reaching Croatian City of Split | Geoenvironmental Disasters | Full Text (springeropen.com)

Case Study

- The role of crowdsourcing and social media in crisis mapping: a case study of a wildfire reaching Croatian City of Split | Geoenvironmental Disasters | Full Text (springeropen.com)

GitHub Repository

- https://github.com/arpith20/Disaster-Management-Using-Crowdsourcing

LinkedIn Resource

- https://www.lnkedin.com/pulse/crowd-sourcing-collaborative-approach-disaster-waswa-msc-

Disaster Relief Apps

- https://play.google.com/store/apps/details?id=disasterAlert.PDC&hl=en

Article

- https://www.sciencedirect.com/science/article/pii/S1364815221001675
- https://zenodo.org/records/10929580
- https://zenodo.org/records/10929580/preview/8_Developing%20a%20community-based%20disaster%20relief%20management%20system.pdf?include_deleted=0

Reference App (Ushahidi)

- https://www.ushahidi.com/

2. Interviews

Interview Plan

System: Crowdsourced Disaster Management System
Project Reference: CDMS/G14/2024/01

Participants:
Kirtan Pithadiya (Interviewer)
Kalyani Dave (Interviewee, Client Representative)
Date: 13/09/2024
Time: 14:00
Duration: 60 minutes

Purpose of Interview:
To identify the primary requirements and functionalities needed for the Crowdsourced Disaster Management System by understanding client needs and existing issues.

Agenda:

- Discuss current challenges with disaster management systems.
- Explore desired features and functionalities for the new system.
- Review existing security concerns and expectations.
- Gather input on preferred system access methods (web, mobile).
- Discuss follow-up actions and timeline for the next steps.

Interview Summary

System: Crowdsourced Disaster Management System
Project Reference: CDMS/G14/2024/01

Participants:
Kirtan Pithadiya (Interviewer)
Kalyani Dave (Interviewee, Client Representative)
Date: 15/09/2024

Purpose of Interview:
Preliminary meeting to identify problems, requirements, and key functionalities for the Crowdsourced Disaster Management System.

Summary of Key Points:

Current Issues:
- Lack of real-time data integration from affected areas.
- Difficulty in coordinating resources and volunteers efficiently.
- Security concerns regarding data integrity and user privacy.

Desired Features:
- Real-time reporting and data visualization.
- Automated alerts for volunteers and emergency responders.
- Secure data handling with encryption and user authentication.

System Accessibility:
- Preference for both web and mobile application access.
- User interface should cater to varying technical expertise levels (basic to intermediate)

Action Items:
- Design a prototype of the user interface for feedback from potential users.
- Ask users to fill in a survey on preferred alert types and frequencies

Security Measures:
- Emphasis on data encryption, access control, and regular security audits.
- Consider user feedback on privacy concerns to ensure compliance with data protection laws.

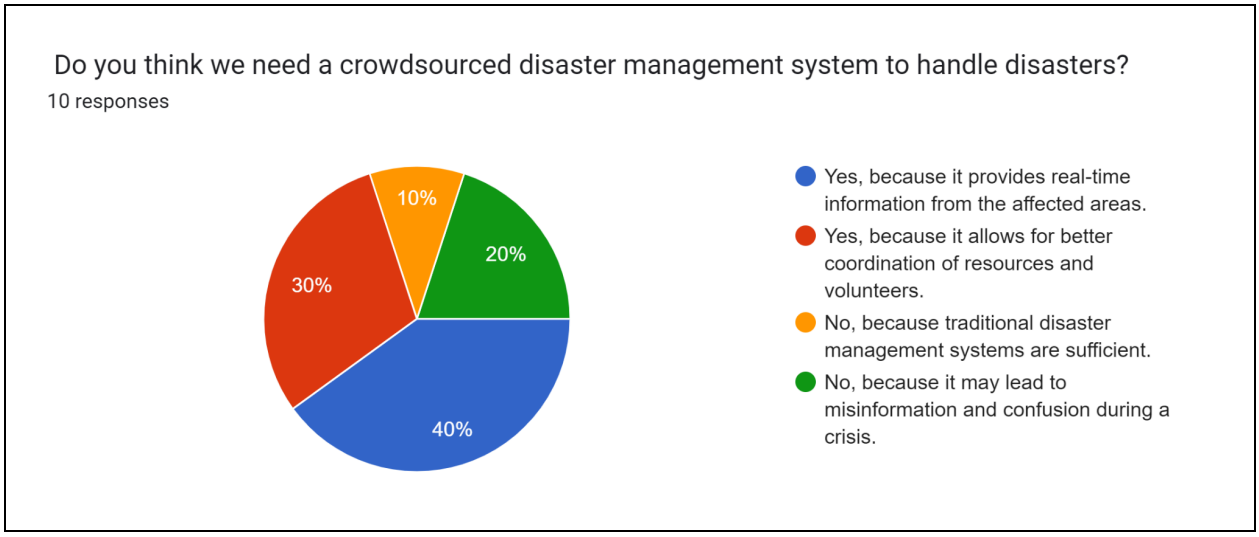
Follow-up:
- Further discussions needed once a prototype is available for user testing.
- Arrange a follow-up meeting with stakeholders to refine the list of functionalities based on initial feedback.

3. Questionnaires/Surveys

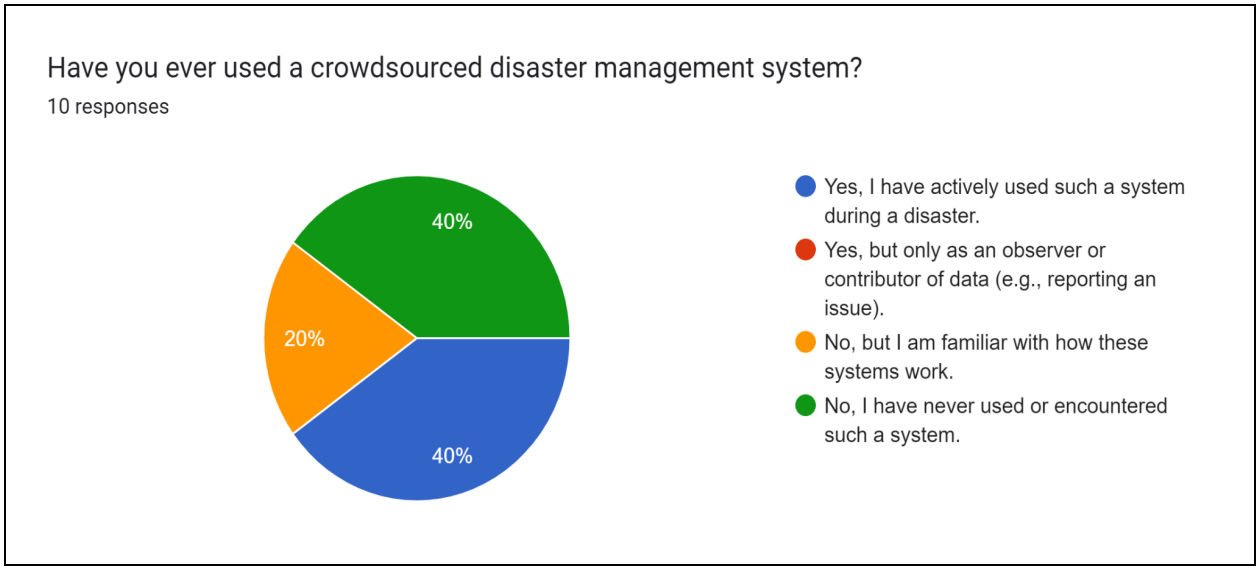
Questionnaires (Client Feedback Form):

Google Form Link : https://forms.gle/KN3oBegr9kD1zR7f9

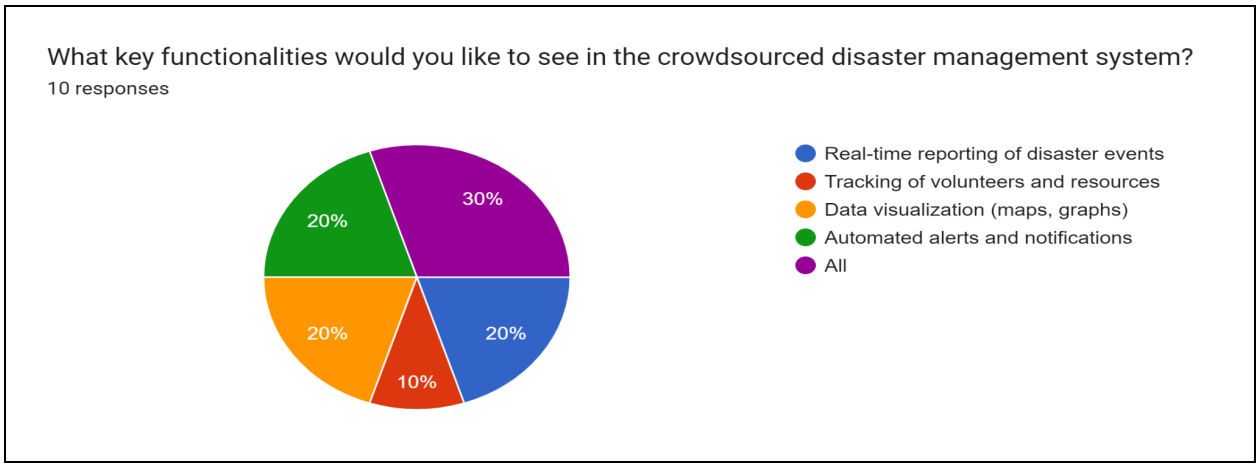
Q - Do you think we need a crowdsourced disaster management system to handle disasters?



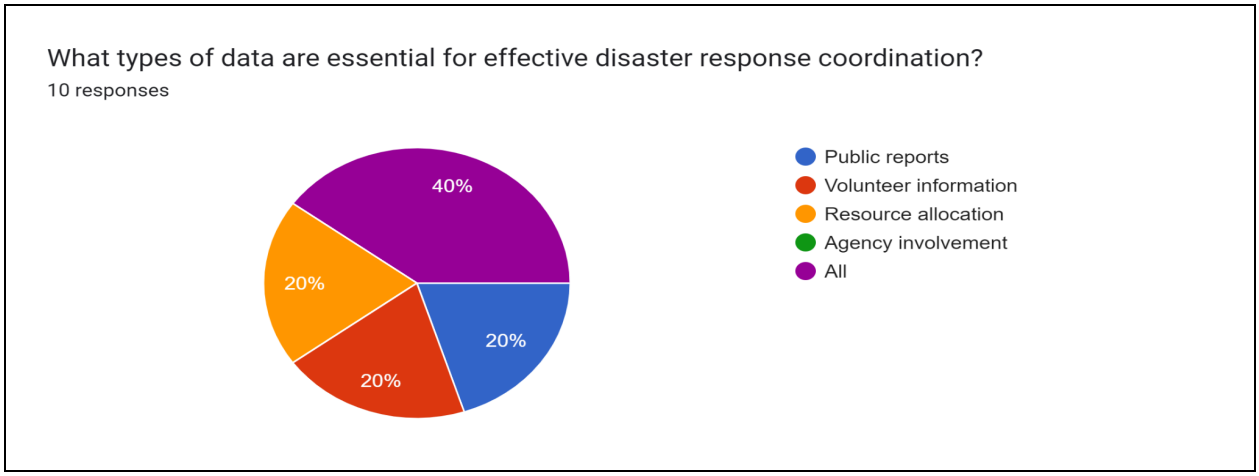
Q - Have you ever used a crowdsourced disaster management system?



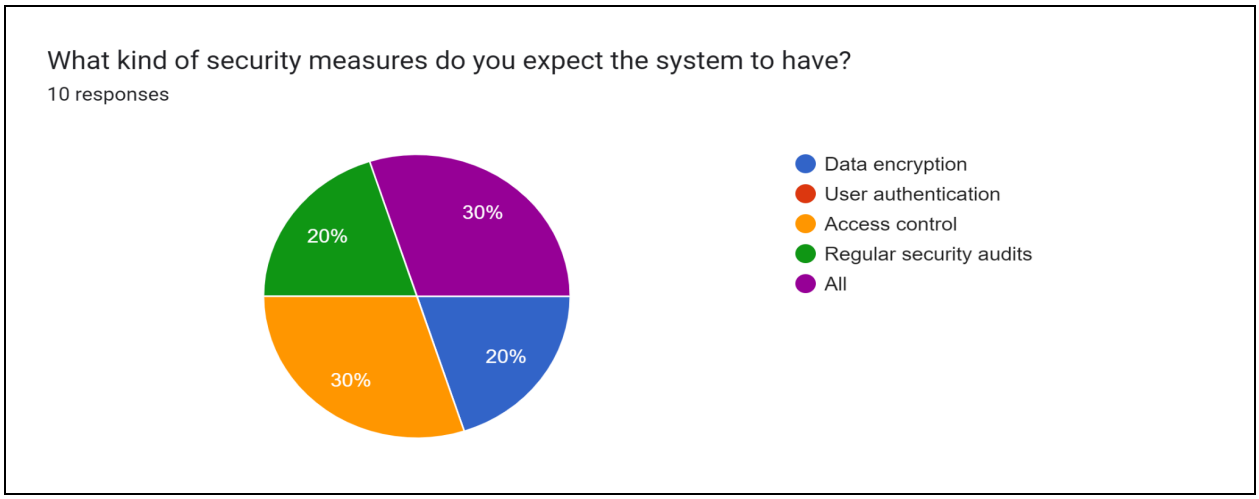
Q - What key functionalities would you like to see in the crowdsourced disaster management system?



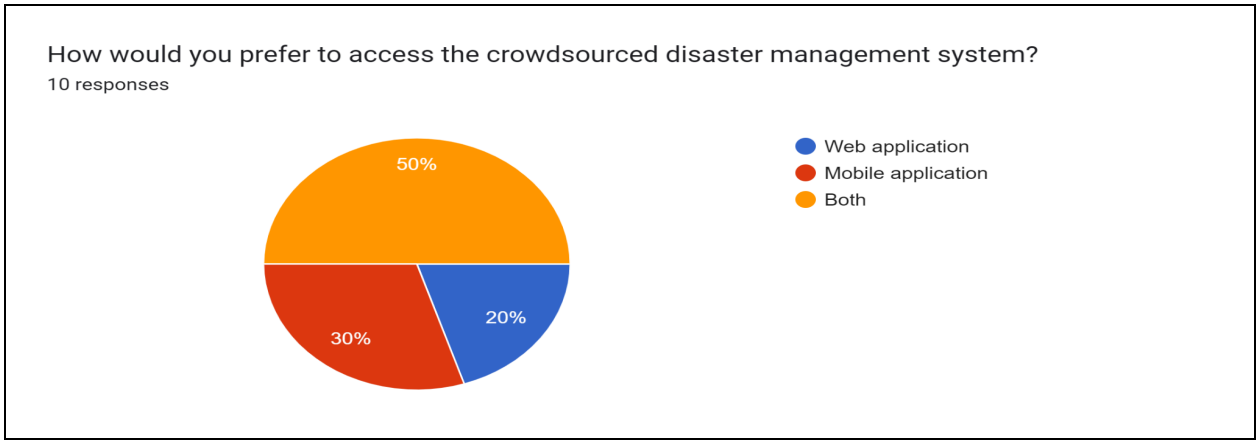
Q - What types of data are essential for effective disaster response coordination?



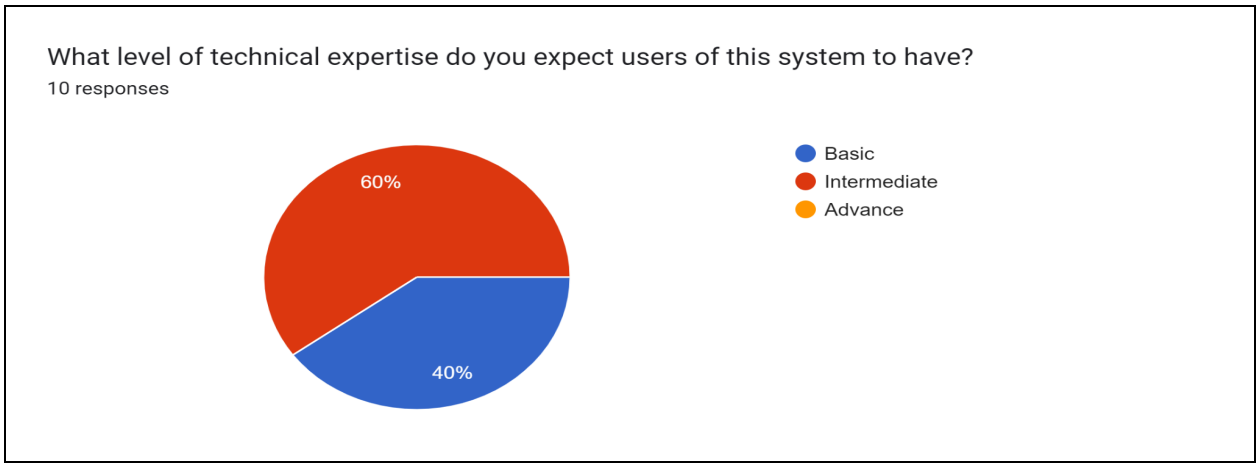
Q - What kind of security measures do you expect the system to have?



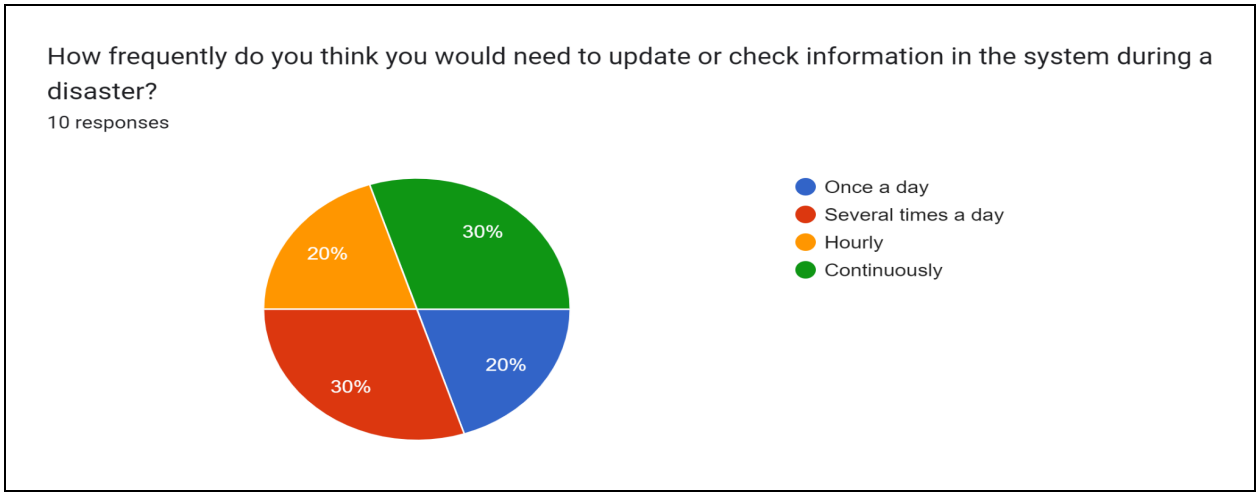
Q - How would you prefer to access the crowdsourced disaster management system?



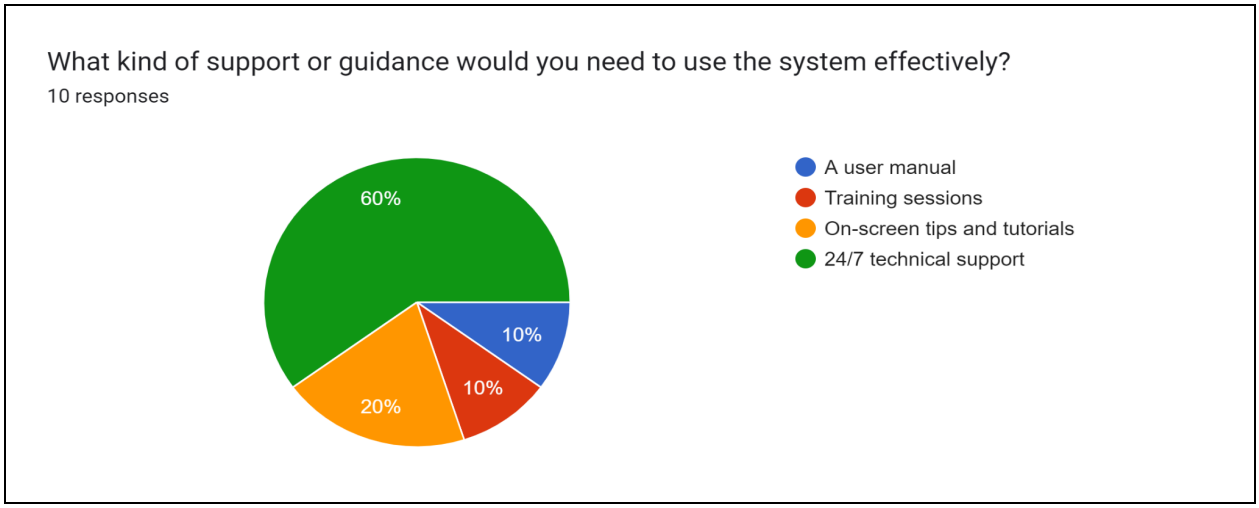
Q - What level of technical expertise do you expect users of this system to have?



Q - How frequently do you think you would need to update or check information in the system during a disaster?



Q - What kind of support or guidance would you need to use the system effectively?



Q - Do you have any suggestions for improving the disaster response process through this system?

- Yes please authenticate the user after allow his or her to enter the data

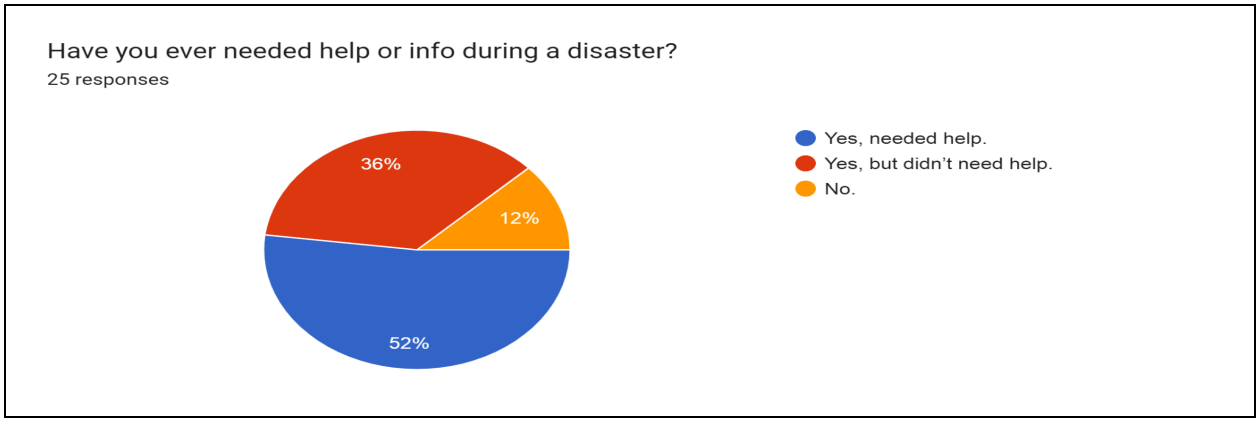
Q - Please provide any additional comments or suggestions that could help improve the development and deployment of the Crowdsourced Disaster Response Coordination system.

- Yes this kind of system will really help us to manage disasters and it will help to save lives
- It must be user-friendly, where every type of user can access it easily.

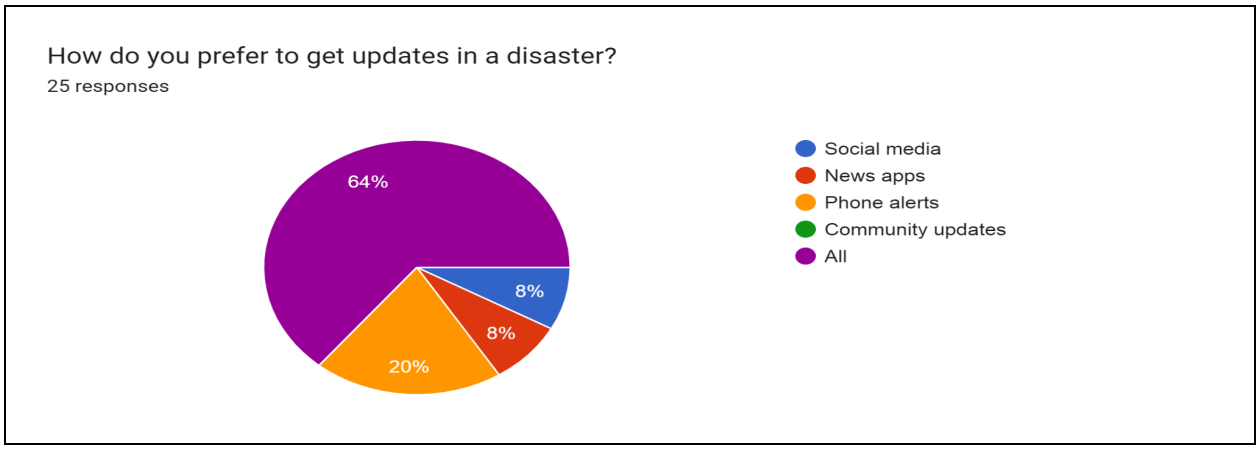
Questionnaires (User Feedback Form):

Google Form Link : https://forms.gle/swUCbd3vuZB9LjQaA

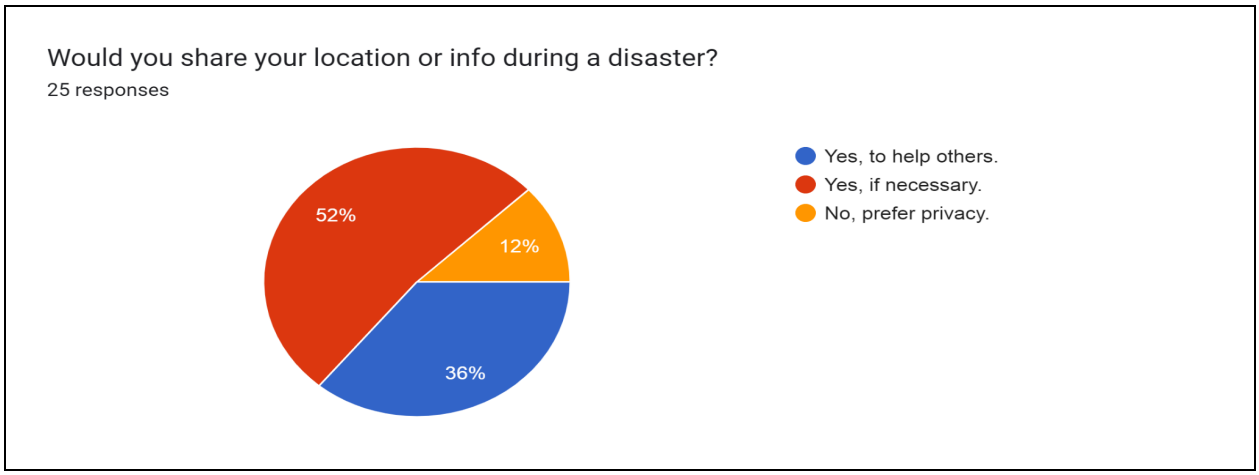
Q - Have you ever needed help or info during a disaster?



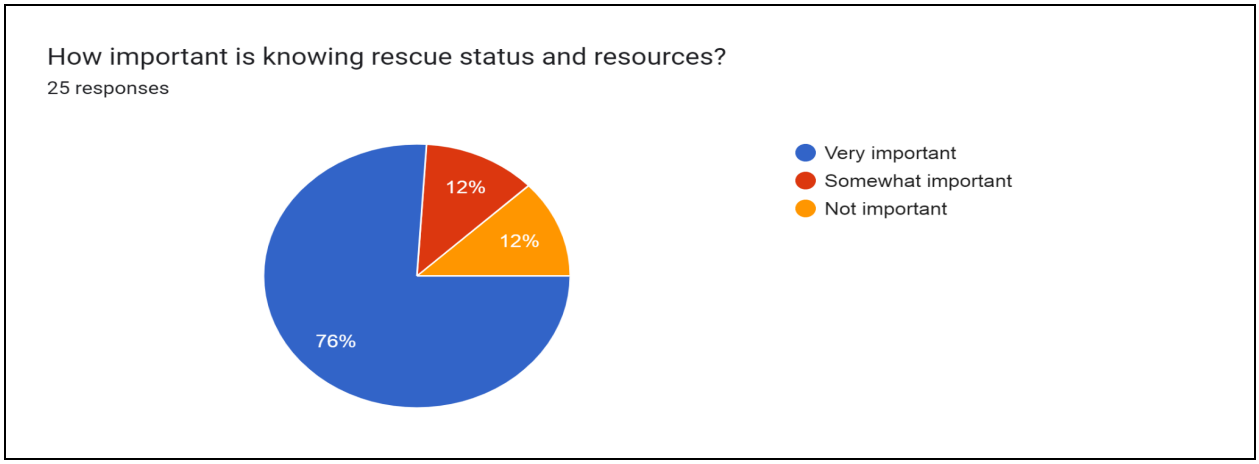
Q - How do you prefer to get updates in a disaster?



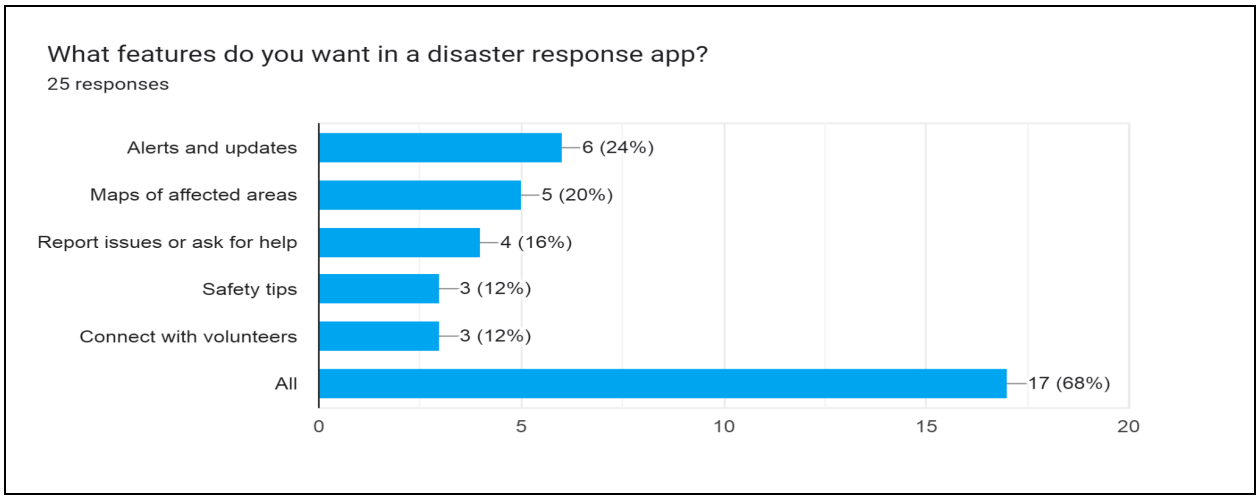
Q - Would you share your location or info during a disaster?



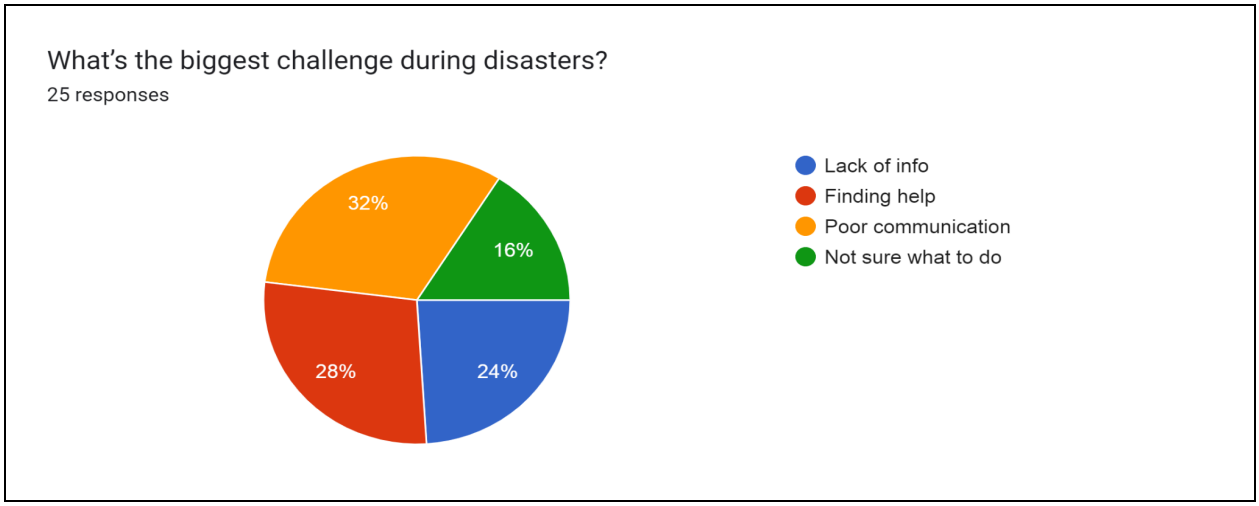
Q - How important is knowing rescue status and resources?



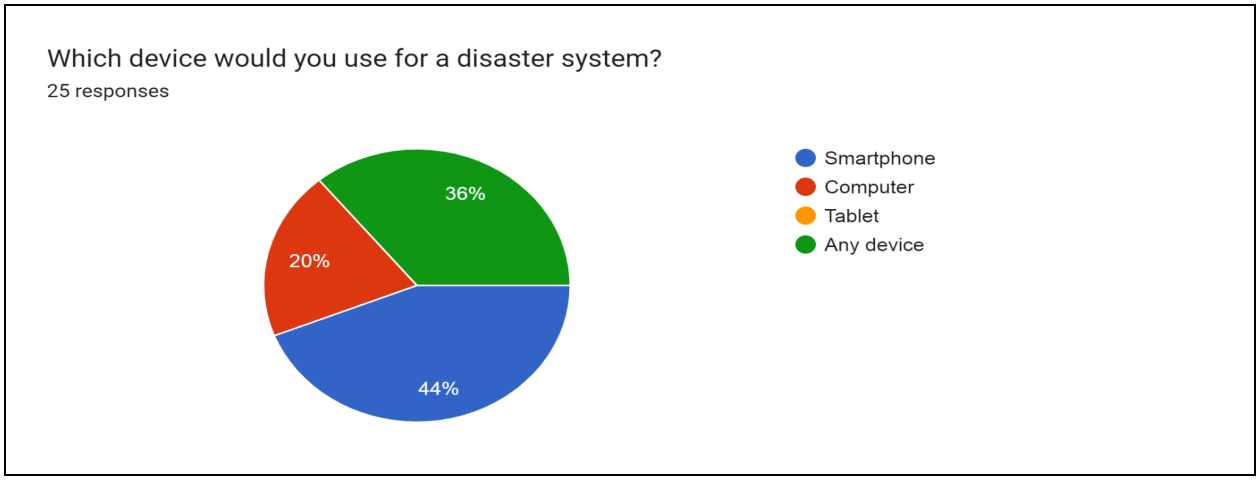
Q - What features do you want in a disaster response app?



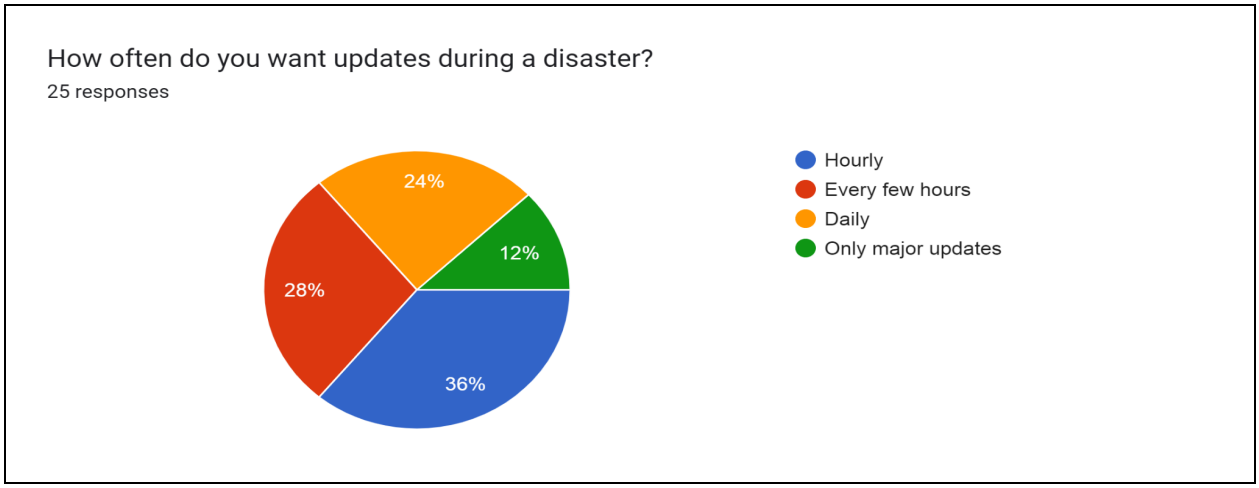
Q - What's the biggest challenge during disasters?



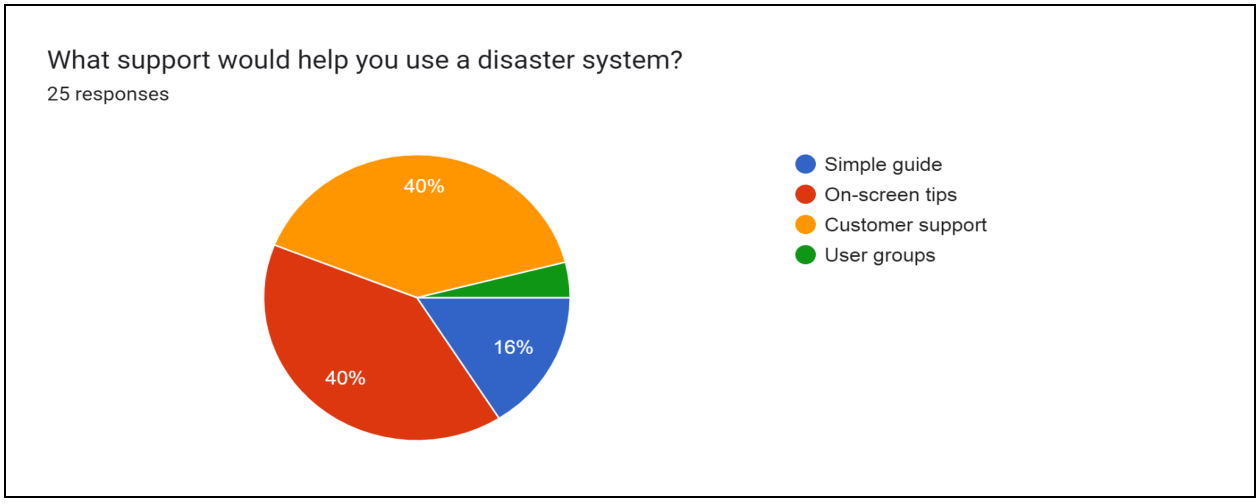
Q - Which device would you use for a disaster system?



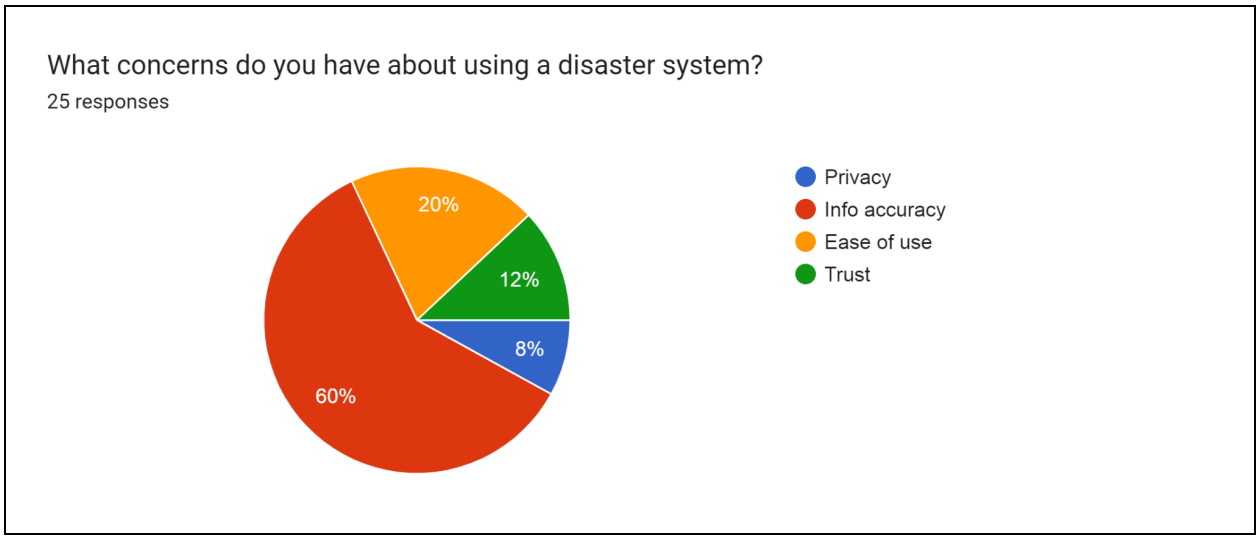
Q - How often do you want updates during a disaster?



Q - What support would help you use a disaster system?



Q - What concerns do you have about using a disaster system?



Q - How can disaster response systems be better and easier to use?

- It should be designed for smartphones which are highly accessible and in use. Also with simple UI and easy to understand informations
- User Interface should be user friendly so that even those who have less knowledge of technology can seek help at such times. Data should be verified to prevent any frauds.
- By providing proper and regular updates
- Disaster response systems can be improved by integrating real-time data analytics and AI for faster decision-making, and enhancing user interfaces with simple, intuitive designs for accessibility across all devices.

Q - Any other suggestions for our Crowdsourced Disaster Response System?

- While designing the system make sure the data and information are accurate and don't mislead the audience.
- Incorporate geolocation-based alerts and updates to optimize resource allocation, and enable offline functionality for users in areas with limited connectivity during disasters.

4. Observation

The Ushahidi Platform

Ushahidi, which means "testimony" in Swahili, is a crowdsourcing platform that was initially developed to track and map reports of violence in Kenya during the 2007-2008 post-election crisis. After the Haiti Earthquake in 2010, the Ushahidi team quickly adapted the platform to respond to the disaster.

How it Worked

The Ushahidi platform allowed people to submit reports via SMS, email, or web form. These reports included information on:

- Damage to infrastructure (e.g., roads, bridges, buildings)
- Needs of affected communities (e.g., food, water, medical supplies)
- Response efforts (e.g., location of aid distribution points, emergency services)

The reports were then mapped and categorized to provide a comprehensive picture of the situation on the ground. The platform used a combination of machine learning algorithms and human moderation to validate and categorize the reports.

Impact

The Ushahidi platform had a significant impact on the response efforts in Haiti. Here are a few examples:

- Improved situational awareness: The platform provided emergency responders, NGOs, and governments with a real-time understanding of the situation on the ground. This helped them to identify areas of need and target their relief efforts more effectively.
- Enhanced coordination: The platform facilitated coordination among different organizations and agencies, reducing duplication of efforts and improving the overall response.
- Increased transparency: The platform provided a transparent and publicly accessible view of the response efforts, which helped to build trust and accountability among stakeholders.

Statistics

The Ushahidi platform was incredibly successful, with:

- Over 40,000 reports submitted in the first few weeks after the earthquake
- Reports coming in from over 1,000 unique locations
- The platform being used by over 100 organizations, including the United Nations, the Red Cross, and the US Department of State

Legacy

The use of crowdsourcing during the Haiti Earthquake in 2010 marked a significant shift in the way that disaster response efforts are coordinated. It demonstrated the power of crowdsourcing in providing critical information and improving response efforts. Since then, crowdsourcing has been used in response to numerous disasters around the world, including hurricanes, wildfires, and floods.

3. Fact-Finding Chart:

Objective	Technique	Subject	Time
Gather system requirements, identify challenges, and discuss security expectations	Interview	Client Representative	60 mins
Discuss preferred access methods (web/mobile), desired features, and system functionalities	Interview	Client Representative	60 mins
Review and refine features, finalize system expectations	Follow-up Meeting	Client Representative	60 mins
Analyze user preferences on system access and functionality	Questionnaire	Survey respondents	30 min
Assess current system performance, including users, alerts, and disaster response times	Chart Analysis	CDMS Reports, Response Time Charts	30 min
Evaluate resource allocation, system load during simulations, and integration of web/mobile usage	Chart Analysis	Resource Distribution, System Load, Web vs Mobile Graphs	30 min
Gather insights on data sharing willingness, preferred system features, and ease of use for different user demographics	Survey and Observation	Survey Respondents, Users	30 min
Analyze feedback on improvements for user interface, accessibility for all user types (technical and non-technical), and system scalability	Observation	Survey Respondents, Client	30 min

4. Requirement List:

Requirements for Crowdsourced Disaster Management System

- **Real-Time Updates:** Users need timely updates regarding disaster status, rescue operations, and available resources.Automatic alerts to users, volunteers, and emergency responders during disasters.
- **User Accessibility:** The system should be accessible via both web and mobile platforms.A user-friendly interface designed for various technical expertise levels (basic to intermediate) to ensure ease of use, especially for non-technical users.
- **Data Sharing and Privacy:** Users are willing to share their location during disasters, but strong security measures are necessary to protect their data.Implement user authentication, data encryption, and regular security audits to ensure data integrity and user privacy.
- **Key Features: Real-Time Data Visualization:** Users should have access to visual representations of data related to the disaster. **Location-Based Services:** The system should provide location-based alerts and updates for efficient resource allocation. **Offline Functionality:** Enable functionality for users in areas with limited connectivity during disasters.
- **Support and Guidance:** Provide support for users to navigate the system effectively, including user guides or tutorials. Integration of real-time data analytics and AI to enhance decision-making processes during disasters.
- **System Performance:** The system should be able to handle a large number of concurrent users during significant disaster events without slowing down. Regular updates and maintenance to ensure optimal performance during high-demand periods.
- **User Feedback Integration:** Continuous collection of user feedback to improve system functionality and interface. Conduct surveys to gather preferences on alert types and frequencies.
- **Security Measures:** Emphasis on secure data handling, including user authentication and data verification to prevent fraud.Address user concerns about privacy to comply with data protection laws.

5. User Privileges:

1. **Admin**:
    - Can create and manage user accounts
    - Can view and edit report information
    - Can allocate resources and coordinate response efforts
    - Can access all system features and data
2. **Emergency Responder**:
    - Can view and edit report information
    - Can receive updates and information on response efforts
    - Can access system features related to response efforts
3. **Volunteer**:
    - Can submit reports via SMS, email, or web form
    - Can view their account information and report history
    - Can receive updates and information on response efforts
4. **Affected Community Member:**
    - Can submit reports via SMS, email, or web form
    - Can view their account information and report history
    - Can receive updates and information on response efforts
5. **NGO/Government Agency**:
    - Can view and edit report information
    - Can receive updates and information on response efforts
    - Can access system features related to response efforts
6. **Team**:
    - Can view and edit team information
    - Can manage team members and their skills
    - Can view and edit task information
    - Can receive updates and information on response efforts
7. **Personnel**:
    - Can view and edit personal information
    - Can manage personnel skills and availability
    - Can view and edit task information
    - Can receive updates and information on response efforts
8. **Agency**:
    - Can view and edit agency information
    - Can manage agency resources and personnel
    - Can view and edit task information
    - Can receive updates and information on response efforts

Chapter 2

Database Design

1. Noun Analysis:

Accepted Noun & Verbs

Candidate Entity Set	Candidate Attribute Set	Candidate Relationship Set
Disaster Channel	Channel ID, Channel Name	Create
Report	Report ID, Date, Content, Location ID	Submit, Track
Location	Location ID, Latitude, Longitude, Accuracy	Track, Define
Volunteer	Volunteer ID, Name, Skill, Availability	Register, Allocate
Volunteer Profile	Profile ID, Skills, Certifications	Track, Assign
Task	Task ID, Type, Status, Priority	Assign
Resource	Resource ID, Type, Quantity, Status	Manage, Allocate
Medical Supply	Supply ID, Type, Quantity	Update, Provide
Shelter	Shelter ID, Location, Capacity	Provide, Track
Agency	Agency ID, Name, Type, Contact Info	Collaborate, Share
Organization	Org ID, Name, Type, Role	Share, Collaborate
Recommendation	Recommendation ID, Type, Date	Analyze, Suggest
Alert	Alert ID, Type, Severity, Date	Send, Create
Resource Request	Request ID, Resource Type, Status	Submit, Fulfill
Historical Data	Data ID, Date, Event	Store, Analyze
Dashboard	Dashboard ID, Data, Status	Display

Donation	Donation ID, Type, Amount	Contribute, Allocate
Contribution Management	Contribution ID, Donor ID, Amount	Track, Allocate
Resource Contribution	Contribution ID, Resource Type	Track, Allocate
User	User ID, Name, Role, Contact Info	Report, Register
Evacuation Route	Route ID, Route Info, Location	Access, Define
Weather Forecast	Forecast ID, Date, Type	Collect, Analyze
Incident History	Incident ID, Date, Description	Log, Access
Notification	Notification ID, Message, Date	Broadcast, Disseminate
Emergency Service	Service ID, Name, Type	Coordinate, Dispatch
Response Team	Team ID, Name, Skills	Dispatch, Manage
Equipment	Equipment ID, Type, Quantity	Allocate, Track
Vehicle	Vehicle ID, Type, Status	Deploy, Track
Logistics	Logistics ID, Type, Status	Plan, Track
Funding	Funding ID, Amount, Source	Allocate, Track
Volunteer Training	Training ID, Type, Schedule	Train, Plan
Emergency Alert	Alert ID, Message, Severity	Broadcast, Send
Disaster Zone	Zone ID, Location, Severity	Define, Track
Relief Operation	Operation ID, Type, Date	Organize, Manage
First Responder	Responder ID, Name, Skills	Register, Dispatch
Damage Report	Report ID, Severity, Date	Assess, Log

Evacuation Plan	Plan ID, Type, Route	Formulate, Access
Crowd Control Measure	Measure ID, Type, Status	Implement, Track
Shelter Capacity	Capacity ID, Max Capacity, Available	Track, Allocate
Food Supply	Supply ID, Type, Quantity	Distribute, Track
Water Supply	Supply ID, Type, Quantity	Transport, Allocate
Emergency Shelter	Shelter ID, Location, Capacity	Establish, Track
Contact Information	Contact ID, Phone, Email	Store, Provide
Emergency Hotline	Hotline ID, Number, Description	Provide, Track
User Account	Account ID, Username, Password	Create, Track
Security Measure	Measure ID, Type, Status	Enforce, Track
Satellite Data	Data ID, Image, Date	Access, Analyze
Roadblock	Roadblock ID, Location, Status	Report, Track
Rescue Operation	Operation ID, Type, Status	Execute, Track

Rejected Nouns and Verbs

Noun	Reason for Rejection
Multimedia Reporting	Attribute
Images	Attribute
Videos	Attribute
Audio Recordings	Attribute
Public	General
Decision Makers	Irrelevant
Messages	Attribute
Safety Guidelines	Association
Insights	Vague
Government Bodies	Duplicate
NGOs	Duplicate
Contact Information	Attribute
Phone	Attribute
Email	Attribute
Permissions	Attribute
Authentication	Attribute
Search	General
Filter	General

Noun	Reason for Rejection
Social Media Integration	Association
Road Conditions	Attribute
Notifications (duplicated)	Duplicate
General Resources	General
Cloud Storage	General

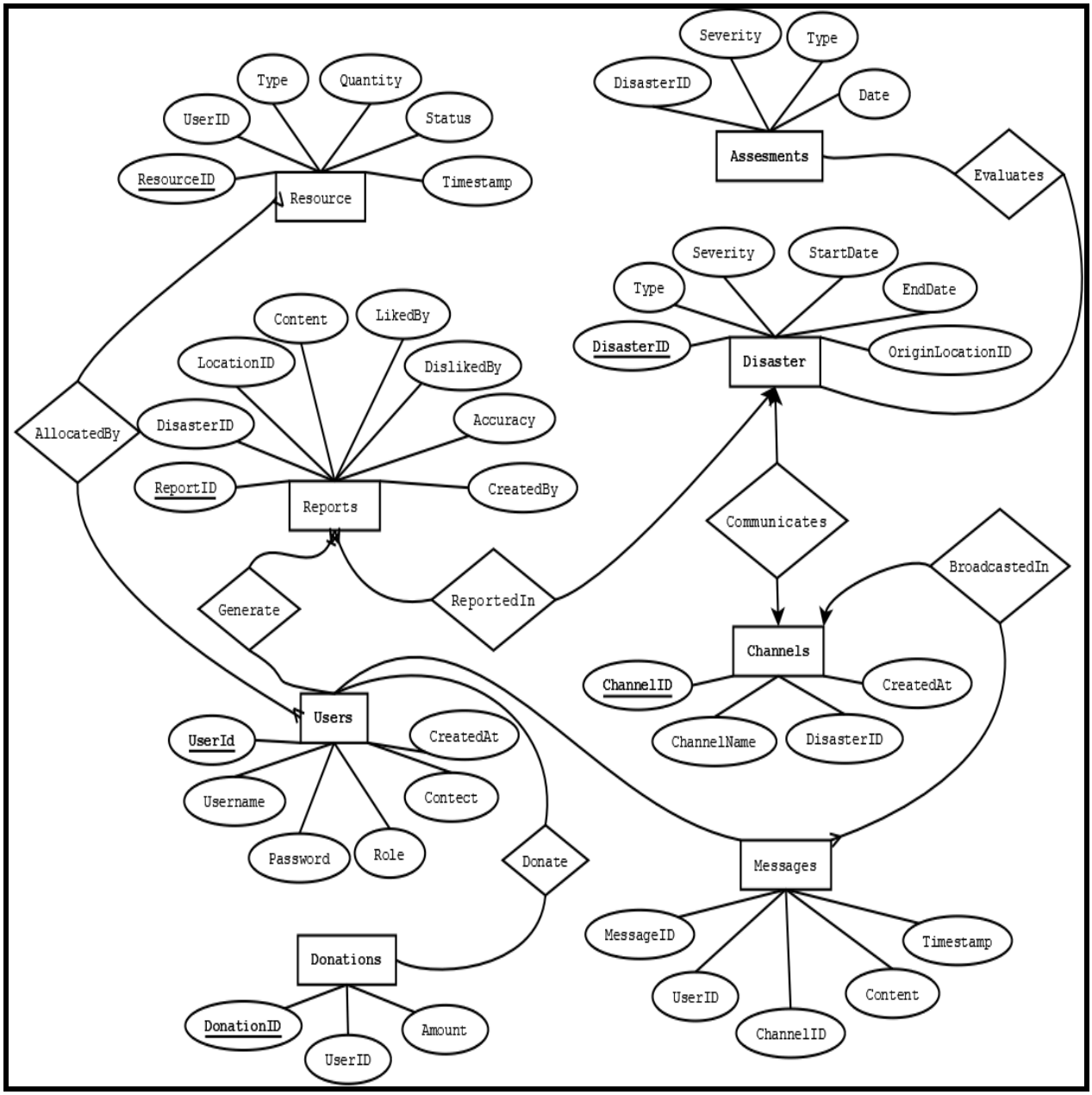
Final Nouns and Verbs

Entity	Attributes	Relationships
Disaster	DisasterID Type Severity	Affects → Location Requires → Resource Initiates → Report Triggers → Operation
Report	ReportID Content LikedBy DislikedBy LocationID DisasterID CreatedAt	Created by → User Linked to → Disaster Filed at → Location
Location	LocationID Latitude Longitude	Hosts → Shelter Linked to → Disaster Associated with → Report Occurs at → Operation
Personnel	PersonnelID Name Role Skills Availability	Assigned to → Task Supports → Operation Handles → Resource
Task	TaskID Type Status Priority Due Date	Performed by → Personnel Requires → Resource Linked to → Disaster
Resource	ResourceID Type (Supplies, Equipment) Quantity Status	Requested by → User Allocated to → Disaster Provided by → Agency Supports → Task
Shelter	ShelterID Location Capacity Availability	Located at → Location Provided by → Agency Hosts → User
Agency	AgencyID Name Type Contact Info	Provides → Resource Manages → Shelter Coordinates → Volunteers
Communication	CommID Type (Alert, Notification) Message Date	Informs → User Linked to → Disaster Includes → Request

Request	RequestID ResourceType Status Date	Sent by → User Handled by → Agency Allocates → Resource
Donaton	DonationID Type Amount Date	Made by → User Managed by → Agency Allocates → Resource
Assessment	AssessmentID Type Severity Date DisasterID	Conducted by → Personnel Linked to → Disaster Evaluates → Damage
Team	TeamID Name Role Skills Availability	Assigned to → Task Supports → Operation Contains → Personnel
Operation	OperationID Type Status Date TaskID	Related to → Disaster Involves → Team Occurs at → Location
User	UserID Name Role Contact Info	Creates → Report Submits → Request Receives → Shelter Makes → Donation
Volunteer	VolunteerID Name Skills Availability	Managed by → Agency Supports → Operation Assigned to → Task

2. Schema and ER Diagram Design:

Initial ER Diagram:



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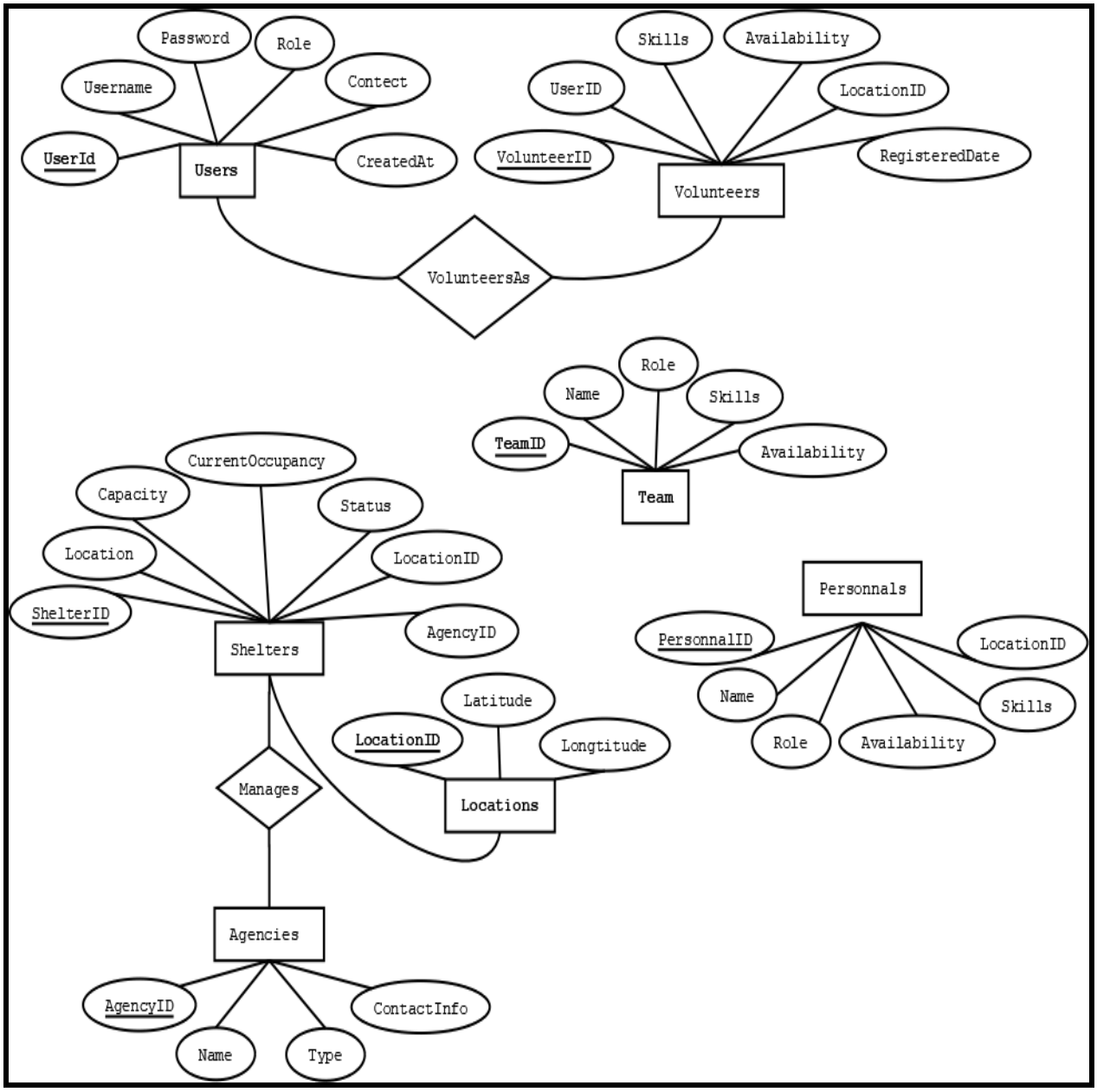


ER_V1_Image_1.2

Initial Schemas:

1. Disasters (**DisasterID**,Type,Severity,StartDate,AffectedRadius,EndDate, LocationID(FK), Description)
2. Channels (**ChannelID**, Name, DisasterID(FK), CreatedAt)
3. Reports(**ReportID**,DisasterID(FK),UserID(FK),LocationID(FK),Date,Content, LikedBy,DislikedBy, Accuracy, Timestamp)
4. Messages (**MessageID**, Content, Media, DisasterID(FK), ChannelID(FK))
5. Users (**UserID**, Username, Password, Role, CreatedAt)
6. Personnels(**PersonnelID**,Name,Position,Skills,LocationID(FK),AvailabilityStatus, TeamID(FK), AgencyID(FK), CreatedAt)
7. Volunteers (**VolunteerID**, UserID(FK), Skills, Availability, LocationID(FK), TeamID(FK), CreatedAt)
8. Agencies (**AgencyID**, Name, Type, ContactInfo, CreatedAt)
9. Teams (**TeamID**, Name, Role, Skills, Availability, CreatedAt,Task)
10. Donations (**DonationID**, UserID(FK), DisasterID(FK), Amount, Timestamp)
11. Assessments (**AssessmentID**, Type, Severity, Date, DisasterID(FK), Timestamp)
12. Shelters (**ShelterID**, LocationID(FK), AgencyID(FK),Capacity,CurrentOccupancy, Status, CreatedAt)
13. Resources (**ResourceID**, Type, Quantity, Status, Timestamp, SourceID, SourceName)
14. Locations (**LocationID**, LocationName, Latitude, Longitude)

3. ER Diagram Improvement:

1. Identify Entity types.

- **Identifying Weak Entity Sets and their Identifiers:**

  Reports: Appears to be a weak entity as it relies on Disaster. The primary identifier for Reports is the ReportSequence, but it depends on the DisasterID from the Disaster entity.

  Tasks: Another potential weak entity. It relies on VolunteerID and DisasterID as part of its identification. The TaskSequence is unique within the context of the disaster and volunteers.

  Messages: Appears to be a weak entity as it relies on Channels. The primary identifier for Messages is the MessageSequence, but it depends on the ChannelID from the Channels entity.

- **Type of relationships using natural associations:**

  Simple Association Links:

  - Users → Generate → Reports.
  - Volunteers → AssignedTo → Tasks.
  - Shelters → ManagedBy → Agencies.
  - Channels → Communicates → Disasters.
  - Users → Donate → Donations.

  Aggregation:

  - Disasters → Aggregate → Reports, Channels, Assessments.
  - Tasks → Aggregate → Volunteers.

  Recursive Relationships:

  - None.

  Hierarchy (ISA):

  - None.

2. Identify Relationship Type.

1. Entity vs. Attribute Analysis

- Disaster: Clearly an entity, as it has multiple relationships with other entities (such as Reports, Channels, and Assessments). It's not just an attribute but a core concept in the model.
- Severity, Type, and StartDate/EndDate (in Disaster): These are attributes of the Disaster entity, as they describe characteristics of the disaster rather than represent separate, independent entities.
- ReportSequence and TaskSequence: These are attributes of their respective weak entities (Reports and Tasks) since they are unique within the scope of their associated entities but do not exist independently.
- Messages: Treated as a weak entity, as it relies on other entities like Channels and Users for its existence. Message content and timestamp are attributes.

2. Entity vs. Relationship Analysis

- Generate (Reports by Users): Since reports are generated by users, the relationship of generating can remain as a simple association link. No need to elevate it to an entity.
- AssignedTo (Volunteers and Tasks): This is best represented as a relationship rather than an entity because the assignment of tasks is a direct association between volunteers and the tasks.
- Communicates (Channels and Disasters): This remains a relationship since it describes how disasters are communicated using various channels. The channels do not exist independently of the disaster, so the relationship is sufficient.

3. Binary vs. Ternary Relationships

- Generate (User → Reports): This is a binary relationship because it involves only two entities: Users and Reports.
- AssignedTo (Volunteers → Tasks): Binary, as it only connects volunteers to tasks.
- Communicates (Channels → Disasters): Another binary relationship between channels and disasters.
- Donates (Users → Donations): Binary as well, linking users to their donations.
- ReportedIn (Reports → Location): Binary relationship between reports and locations.

  There are no ternary relationships. All relationships in the model can be represented using binary relationships.

4. Aggregation vs. Ternary Relationships

- Aggregation of Disasters with Reports, Channels, and Assessments: Since Disaster can be thought of as an aggregation of its reports, channels, and assessments, this should remain an aggregation relationship. It's more appropriate than a ternary relationship because the parts (Reports, Channels, Assessments) contribute to the whole (Disaster) and represent separate components of the disaster event.

5. Identifying Total Participation and Improving ERD

Total Participation: When an entity must participate in a relationship, it shows total participation. For example, in the relationship where Reports are generated by Users, every report must have a corresponding user, so Reports have total participation in this relationship.

- Reports → Generate: The weak entity Reports must participate fully in the Generate relationship with Users, which means that for every report, there must be a corresponding user (Total participation on the Reports side).
- Volunteers → AssignedTo (Tasks): Every task must be assigned to at least one volunteer, meaning total participation from Tasks in the relationship.
- Shelters → ManagedBy (Agencies): Every shelter must be managed by an agency, indicating total participation from the Shelters side.

3. ER Diagram Analysis

The Disaster Response Management System Schema is designed to manage disaster response efforts, including tracking disasters, channels, users, donations, locations, assessments, teams, personnels, agencies, volunteers, resources, shelters, messages, reports, and tasks.

The Disaster table stores information about each disaster, including its type, severity, start and end dates, origin location, and affected radius. The Channels table stores information about each channel, including its name, disaster association, and creation timestamp. The Users table stores information about each user, including their username, password, role, context, and creation timestamp.

The Donations table stores information about each donation, including the user who made the donation and the amount. The Locations table stores information about each location, including its latitude and longitude. The Assessments table stores information about each assessment, including its type, severity, and date.

The **Teams table** stores information about each team, including its name, role, skills, and availability. The Personnels table stores information about each personnel, including their name, role, skills, location, and availability. The Agencies table stores information about each agency, including its name, type, and contact information.

The Volunteers table stores information about each volunteer, including their user association, skills, availability, location, and registration date. The Resources table stores information about each resource, including its type, quantity, status, and timestamp. The Shelters table stores information about each shelter, including its location, agency, capacity, current occupancy, and status.

The Messages table stores information about each message, including its channel, sequence number, user, content, and timestamp. The Reports table stores information about each report, including its disaster association, sequence number, user, location, date, and content. The Tasks table stores information about each task, including its disaster association, volunteer association, sequence number, personnel association, type, status, priority, and due date.

The relationships between tables are as follows: a disaster can have multiple channels, a channel is associated with one disaster, a user can make multiple donations, a donation is made by one user, a location can be associated with multiple disasters, a disaster can have multiple assessments, a team can have multiple personnels, a personnel can be part of one team, an agency can have multiple shelters, a shelter is managed by one agency, a volunteer can be part of one team, a resource can be provided by one user, a message is sent by one user, a report is made by one user, and a task is assigned to one volunteer.

Missing Entity :

We have identified that the "Team" entity was missing from the original ERD, and we have added it to the schema. The "Team" entity has the following attributes:

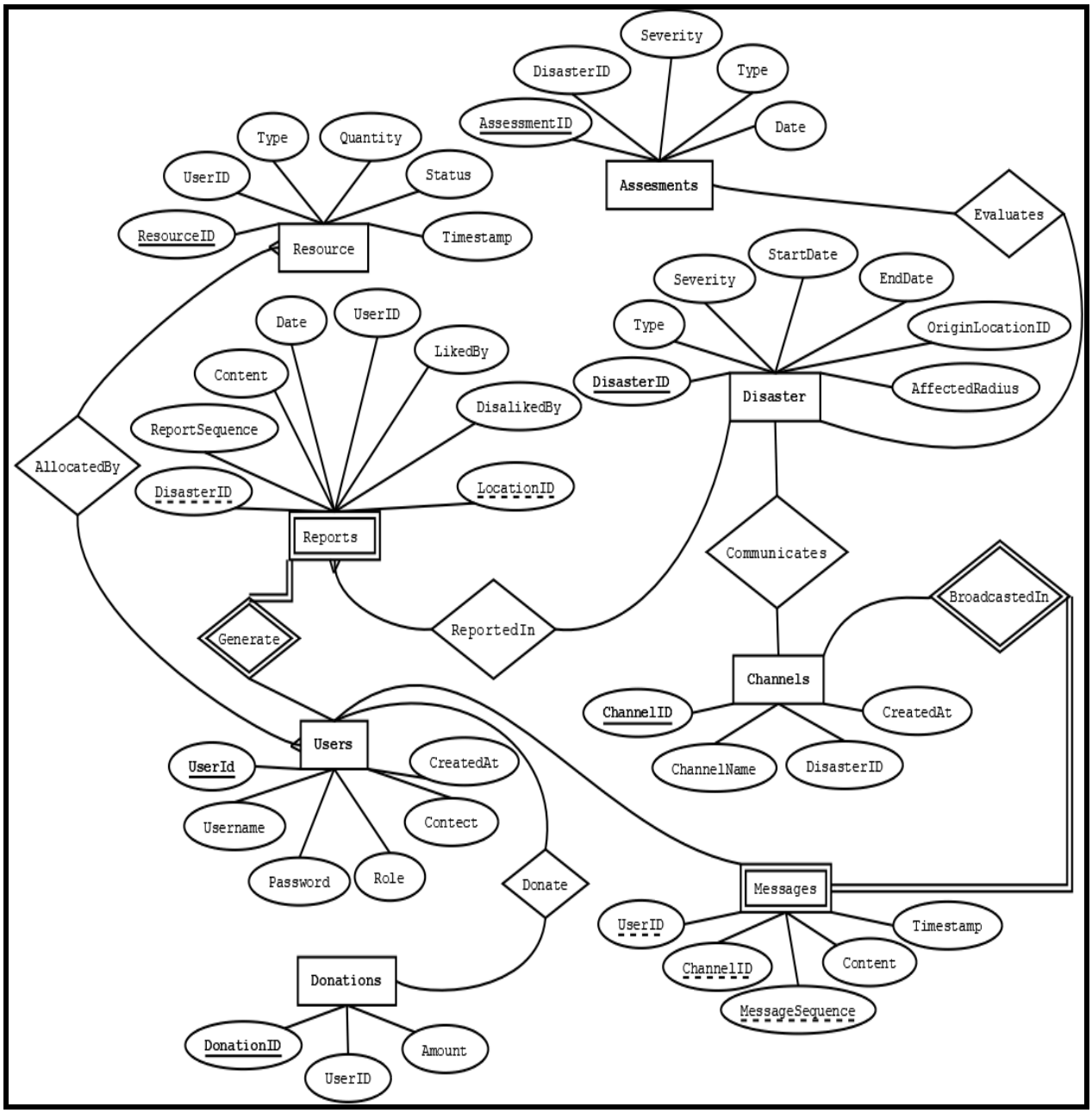
- TeamID (primary key)
- Name
- Role
- Skills
- Availability
- Description: This attribute stores a brief description of the team's purpose and responsibilities.

Additionally, we have added the "Status" and "Timestamp" attributes to the "Resources" table, which were previously missing.

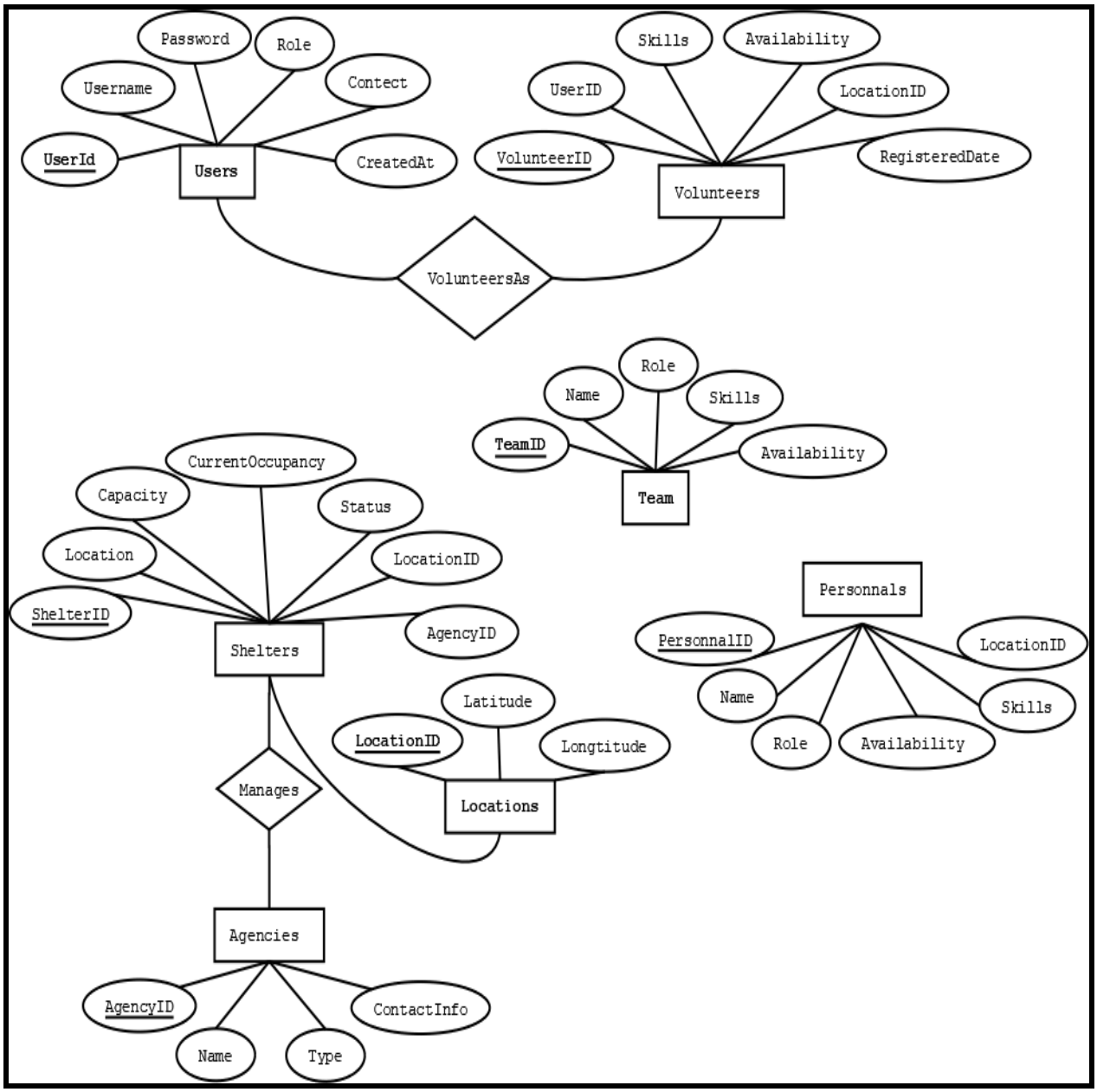
Weak entity :

1. **Tasks Table**: The Tasks table is a weak entity because it relies on the existence of other tables in the schema, specifically the Disaster table and the Volunteer table. A task cannot exist without a disaster and a volunteer, and the attributes of the Tasks table do not provide enough information to define it independently.
2. **Messages Table**: The Messages table is a weak entity because it relies on the existence of other tables in the schema, specifically the Channels table and the Users table. A message cannot exist without a channel and a user, and the attributes of the Messages table do not provide enough information to define it independently.
3. **Reports Table**: The Reports table is a weak entity because it relies on the existence of other tables in the schema, specifically the Disaster table and the Users table. A report cannot exist without a disaster and a user, and the attributes of the Reports table do not provide enough information to define it independently

Refined ER Diagram :



ER_V2_Image_1.1



ER_V2_Image_1.2

4. Mapping ER Model to Relational Model:

1. **Disaster**
   Disaster (DisasterID, Type, Severity, StartDate, EndDate, LocationID, AffectedRadius)
   - Disaster – Channels (One to Many)
   - Disaster – Messages (One to Many)
   - Disaster – Donations (One to Many)
   - Disaster – Assessments (One to Many)
   - Disaster – Reports (One to Many)
   - Disaster – Tasks (One to Many)
   - Disaster – Locations (One to Many)
   - Disaster – Users (Many to Many)
   - Disaster – Volunteers (Many to Many)
   - Disaster – Personnels (Many to Many)
   - Disaster – Agencies (Many to Many)
   - Disaster – Shelters (Many to Many)
   - Disaster – Resources (Many to Many)

2. **Channels**
   Channels (ChannelID, Name, DisasterID, CreatedAt)
   - Channels – Messages (One to Many)
   - Channels – Disaster (Many to One)

3. **Disaster**
   Messages (DisasterID, UserID, ChannelID, Content, Media, Timestamp)
   - Composite Key: (DisasterID, UserID, ChannelID)
   - Messages – Users (Many to One)
   - Messages – Channels (Many to One)
   - Messages – Disaster (Many to One)

4. **Locations**
   Locations (LocationID, Latitude, Longitude)
   - Locations – Disaster (One to Many)
   - Locations – Shelters (One to Many)
   - Locations – Personnels (One to Many)
   - Locations – Reports (One to Many)
   - Locations – Tasks (One to Many)

5. **Users**
   Users (UserID, Username, Password, Role, CreatedAt)
   - Users – Messages (One to Many)
   - Users – Donations (One to Many)
   - Users – Reports (One to Many)

Users – Disaster (Many to Many)
Users – Volunteers (One to Many)

6. **Donations**
   Donations (DonationID, UserID, DisasterID, Amount, Timestamp)
   Donations – Users (Many to One)
   Donations – Disaster (Many to One)

7. **Personnels**
   Personnels (PersonnelID, Name, Role, Skills, LocationID, Availability, TeamID, AgencyID, CreatedAt)
   Personnels – Locations (Many to One)
   Personnels – Disaster (Many to Many)
   Personnels – Agencies (Many to One)
   Personnels – Teams (Many to One)

8. **Volunteers**
   Volunteers (VolunteerID, UserID, Skills, Availability, LocationID, RegistrationDate)
   Volunteers – Users (One to One)
   Volunteers – Disaster (Many to Many)
   Volunteers – Locations (Many to One)

9. **Shelters**
   Shelters (ShelterID, LocationID, AgencyID, Capacity, CurrentOccupancy, Status)
   Shelters – Locations (Many to One)
   Shelters – Disaster (Many to Many)
   Shelters – Agencies (Many to One)

10. **Assessments**
    Assessments (AssessmentID, Type, Severity, Date, DisasterID, Timestamp)
    Assessments – Disaster (Many to One)

11. **Teams**
    Teams (TeamID, Name, Role, Skills, Availability, CreatedAt)
    Teams – Personnels (One to Many)
    Teams – Disaster (Many to Many)

12. **Agencies**
    Agencies (AgencyID, Name, Type, ContactInfo, CreatedAt)
    Agencies – Personnels (One to Many)
    Agencies – Disaster (Many to Many)
    Agencies – Shelters (One to Many)

13. **Resources**
    Resources (ResourceID, Type, Quantity, Status, Timestamp)
        Resources – Disaster (Many to Many)

14. **Report**
    Reports (DisasterID, UserID, LocationID, Date, Content, Likes, Dislikes, LikedBy, DislikedBy, Accuracy, Timestamp)
        Composite Key: (DisasterID, UserID, Date)
        Reports – Disaster (Many to One)
        Reports – Users (Many to One)
        Reports – Locations (Many to One)

Relations with the schema:

1. Disaster (**DisasterID**, Type, Severity, StartDate, EndDate, LocationID, AffectedRadius)
2. Channels (**ChannelID**, Name, DisasterID, CreatedAt)
3. Messages (DisasterID, UserID, ChannelID, Content, Media, Timestamp)
   - Composite key: (**DisasterID, UserID, ChannelID**)
4. Locations (**LocationID**, Latitude, Longitude)
5. Users (**UserID**, Username, Password, Role, CreatedAt)
6. Donations (**DonationID**, UserID, DisasterID, Amount, Timestamp)
7. Personnels (**PersonnelID**, Name, Role, Skills, LocationID, Availability, TeamID, AgencyID, CreatedAt)
8. Volunteers (**VolunteerID**, UserID, Skills, Availability, LocationID, RegistrationDate)
9. Shelters (**ShelterID**, LocationID, AgencyID, Capacity, CurrentOccupancy, Status)
10. Assessments (**AssessmentID**, Type, Severity, Date, DisasterID, Timestemp)
11. Teams (**TeamID**, Name, Role, Skills, Availability, CreatedAt)
12. Agencies (**AgencyID**, Name, Type, ContactInfo, CreatedAt)
13. Resources (**ResourceID**, Type, Quantity, Status, Timestemp)
14. Reports (DisasterID, UserID, LocationID, Date, Content,Likes, Dislikes, LikedBy, DislikedBy, Accuracy, Timestamp)
    - Composite key: (**DisasterID, UserID, Date**)

5. Create DDLScripts:

- **Disaster Table**

```
CREATE TABLE Disaster (
    DisasterID INT PRIMARY KEY,
    Type VARCHAR(255) NOT NULL,
    Severity VARCHAR(50) CHECK (Severity IN ('Low', 'Medium', 'High', 'Critical')),
    StartDate DATE NOT NULL,
    EndDate DATE,
    LocationID INT NOT NULL,
    AffectedRadius FLOAT CHECK (AffectedRadius > 0),
    FOREIGN KEY (LocationID) REFERENCES Locations(LocationID) ON DELETE
CASCADE
);
```

- **Channels Table**

```
CREATE TABLE Channels (
    ChannelID INT PRIMARY KEY,
    Name VARCHAR(255) NOT NULL,
    DisasterID INT NOT NULL,
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (DisasterID) REFERENCES Disaster(DisasterID) ON DELETE
CASCADE
);
```

- **Messages Table**

```
CREATE TABLE Messages (
    DisasterID INT,
    UserID INT,
    ChannelID INT,
    Content TEXT NOT NULL,
    Media VARCHAR(255),
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    PRIMARY KEY (DisasterID, UserID, ChannelID),
    FOREIGN KEY (DisasterID) REFERENCES Disaster(DisasterID) ON DELETE
CASCADE,
    FOREIGN KEY (UserID) REFERENCES Users(UserID) ON DELETE CASCADE,
    FOREIGN KEY (ChannelID) REFERENCES Channels(ChannelID) ON DELETE
CASCADE
);
```

- **Locations Table**

```
CREATE TABLE Locations (
    LocationID INT PRIMARY KEY,
    LocationName VARCHAR(50),
    Latitude FLOAT CHECK (Latitude BETWEEN -90 AND 90),
    Longitude FLOAT CHECK (Longitude BETWEEN -180 AND 180)
);
```

- **Users Table**

```
CREATE TABLE Users (
    UserID INT PRIMARY KEY,
    Username VARCHAR(255) UNIQUE NOT NULL,
    Password VARCHAR(255) NOT NULL,
    Role VARCHAR(50) CHECK (Role IN ('Admin', 'User', 'Volunteer')),
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

- **Donations Table**

```
CREATE TABLE Donations (
    DonationID INT PRIMARY KEY,
    UserID INT NOT NULL,
    DisasterID INT NOT NULL,
    Amount FLOAT CHECK (Amount > 0),
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (UserID) REFERENCES Users(UserID) ON DELETE CASCADE,
    FOREIGN KEY (DisasterID) REFERENCES Disaster(DisasterID) ON DELETE
CASCADE
);
```

- **Personnels Table**

```
CREATE TABLE Personnels (
    PersonnelID INT PRIMARY KEY,
    Name VARCHAR(255) NOT NULL,
    Role VARCHAR(255),
    Skills TEXT,
    LocationID INT,
    Availability VARCHAR(50) CHECK (Availability IN ('Available', 'Unavailable')),
    TeamID INT,
    AgencyID INT,
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (LocationID) REFERENCES Locations(LocationID),
    FOREIGN KEY (TeamID) REFERENCES Teams(TeamID),
    FOREIGN KEY (AgencyID) REFERENCES Agencies(AgencyID)
);
```

- **Volunteers Table**

```
CREATE TABLE Volunteers (
    VolunteerID INT PRIMARY KEY,
    UserID INT NOT NULL,
    Skills TEXT,
    Availability VARCHAR(50) CHECK (Availability IN ('Available', 'Unavailable')),
    LocationID INT,
    RegistrationDate DATE,
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (UserID) REFERENCES Users(UserID) ON DELETE CASCADE,
    FOREIGN KEY (LocationID) REFERENCES Locations(LocationID)
);
```

- **Shelters Table**

```
CREATE TABLE Shelters (
    ShelterID INT PRIMARY KEY,
    LocationID INT,
    AgencyID INT,
    Capacity INT CHECK (Capacity > 0),
    CurrentOccupancy INT CHECK (CurrentOccupancy >= 0),
    Status VARCHAR(50),
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (LocationID) REFERENCES Locations(LocationID),
    FOREIGN KEY (AgencyID) REFERENCES Agencies(AgencyID)
);
```

- **Assessments Table**

```
CREATE TABLE Assessments (
    AssessmentID INT PRIMARY KEY,
    Type VARCHAR(255),
    Severity VARCHAR(50) CHECK (Severity IN ('Low', 'Medium', 'High', 'Critical')),
    Date DATE NOT NULL,
    DisasterID INT,
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (DisasterID) REFERENCES Disaster(DisasterID) ON DELETE
CASCADE
);
```

- **Teams Table**

```
CREATE TABLE Teams (
    TeamID INT PRIMARY KEY,
    Name VARCHAR(255) NOT NULL,
    Role VARCHAR(255),
    Skills TEXT,
```

```
    Availability VARCHAR(50) CHECK (Availability IN ('Active', 'Inactive')),
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

- **Agencies Table**

```
CREATE TABLE Agencies (
    AgencyID INT PRIMARY KEY,
    Name VARCHAR(255) NOT NULL,
    Type VARCHAR(50),
    ContactInfo TEXT,
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

- **Resources Table**

```
CREATE TABLE Resources (
    ResourceID INT PRIMARY KEY,
    Type VARCHAR(255) NOT NULL,
    Quantity INT CHECK (Quantity > 0),
    Status VARCHAR(50),
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    AgencyID INT,
    FOREIGN KEY (AgencyID) REFERENCES Agencies(AgencyID)
);
```

- **Reports Table**

```
CREATE TABLE Reports (
    DisasterID INT,
    UserID INT,
    LocationID INT,
    Date DATE NOT NULL,
    Content TEXT NOT NULL,
    Likes INT DEFAULT 0 CHECK (Likes >= 0),
    Dislikes INT DEFAULT 0 CHECK (Dislikes >= 0),
    LikedBy TEXT,
    DislikedBy TEXT,
    Accuracy FLOAT CHECK (Accuracy BETWEEN 0 AND 1),
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    PRIMARY KEY (DisasterID, UserID, Date),
    FOREIGN KEY (DisasterID) REFERENCES Disaster(DisasterID) ON DELETE
CASCADE,
    FOREIGN KEY (UserID) REFERENCES Users(UserID) ON DELETE CASCADE,
    FOREIGN KEY (LocationID) REFERENCES Locations(LocationID)
);
```

Chapter 3

Normalization of Database

1. Normalization and Schema Refinement:

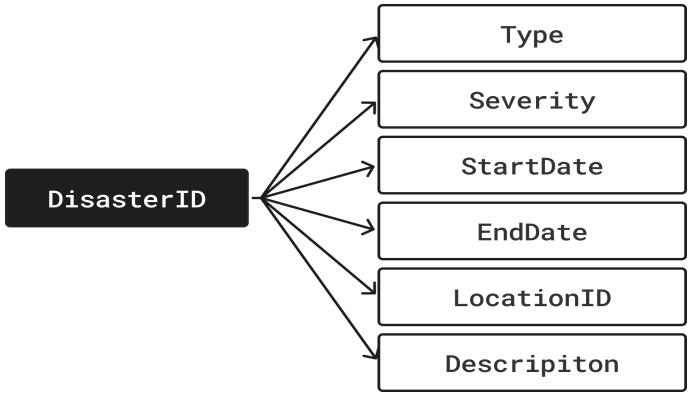
Original Design of Database :

1. Disasters (**DisasterID**,Type,Severity,StartDate,AffectedRadius,EndDate, LocationID(FK), Description)
2. Channels (**ChannelID**, Name, DisasterID(FK), CreatedAt)
3. Reports (ReportID, DisasterID (FK), UserID (FK), LocationID (FK), Date, Content, InteractionID, UserInteractions, Accuracy, Timestamp)
4. Messages (**UserID(FK), ChannelID(FK), Timestamp**, Content, Media, DisasterID(FK), MessageID)
5. Users (**UserID**, Username, Password, Role, CreatedAt)
6. Personnels(**PersonnelID**,Name,Position,Skills,LocationID(FK),AvailabilityStatus, TeamID(FK), AgencyID(FK), CreatedAt)
7. Volunteers (**VolunteerID**, UserID(FK), Skills, Availability, LocationID(FK), TeamID(FK), CreatedAt)
8. Agencies (**AgencyID**, Name, Type, ContactInfo, CreatedAt)
9. Teams (**TeamID**, Name, Role, Skills, Availability, CreatedAt,Task)
10. Donations (**DonationID, UserID(FK), DisasterID(FK),** Amount, Timestamp)
11. Assessments (**AssessmentID**, Type, Severity, Date, DisasterID(FK), Timestamp)
12. Shelters (**ShelterID**, LocationID(FK), AgencyID(FK),Capacity,CurrentOccupancy, Status, CreatedAt)
13. Resources (**ResourceID**, Type, Quantity, Status, Timestamp, SourceID, SourceName)
14. Locations (**LocationID**, LocationName, Latitude, Longitude)

Dependency Analysis

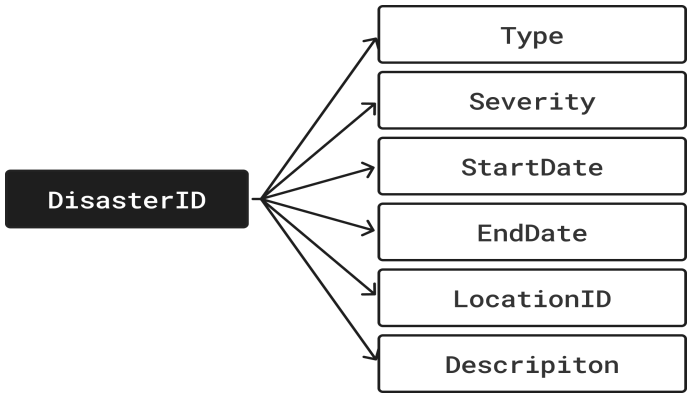
Disasters

- Primary Key Dependency (PKD): DisasterID → Type, Severity, StartDate, EndDate, LocationID, Description
- Foreign Key Dependency (FKD): LocationID → Locations(LocationID)



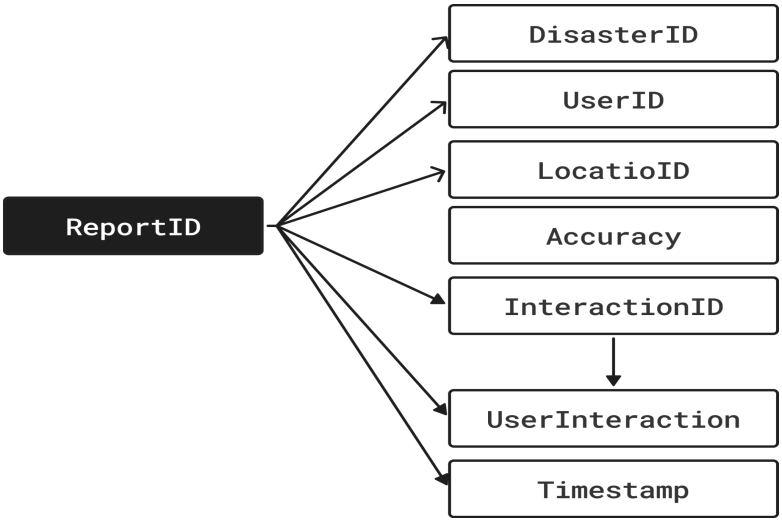
Channels

- Primary Key Dependency (PKD): ChannelID → Name, DisasterID, CreatedAt
- Foreign Key Dependency (FKD): DisasterID → Disasters(DisasterID)



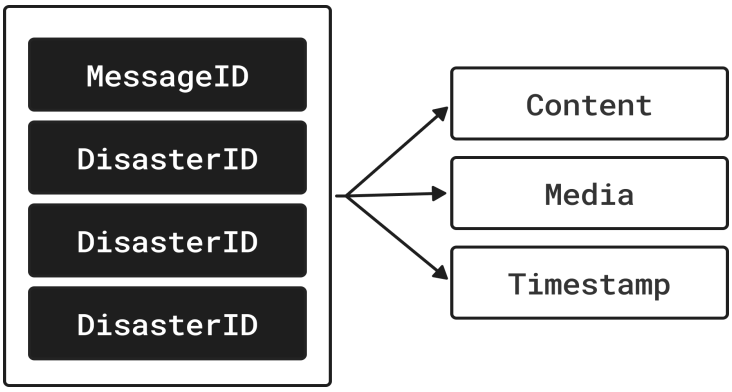
Reports

- Primary Key Dependency (PKD): ReportID → DisasterID, UserID, LocationID, Date, Content, InteractionID, UserInteractions, Accuracy, Timestamp
- Functional Dependency (FD): InteractionID → UserInteractions
    - UserInteractions depends on InteractionID, which is a non-key attribute. To avoid redundancy, create an Interactions table:
        - Interactions (InteractionID, UserInteractions)
    - The Reports table would reference InteractionID as a foreign key.



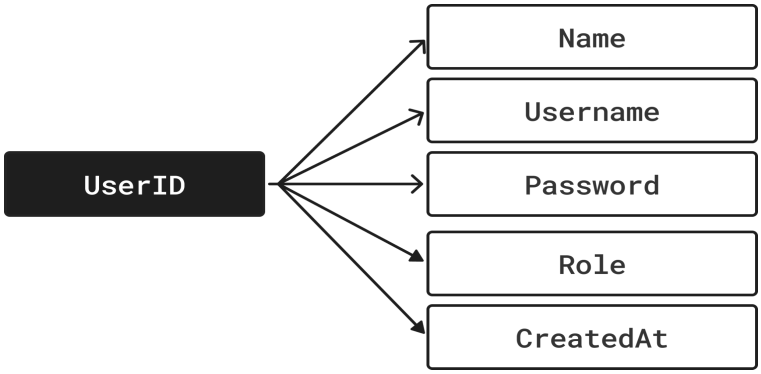
Messages

- Primary Key Dependency (PKD): The composite primary key is (MessageID, DisasterID, UserID, ChannelID), uniquely identifying each message
- Functional Dependency (FD): Content depends on (MessageID, DisasterID, UserID, ChannelID)



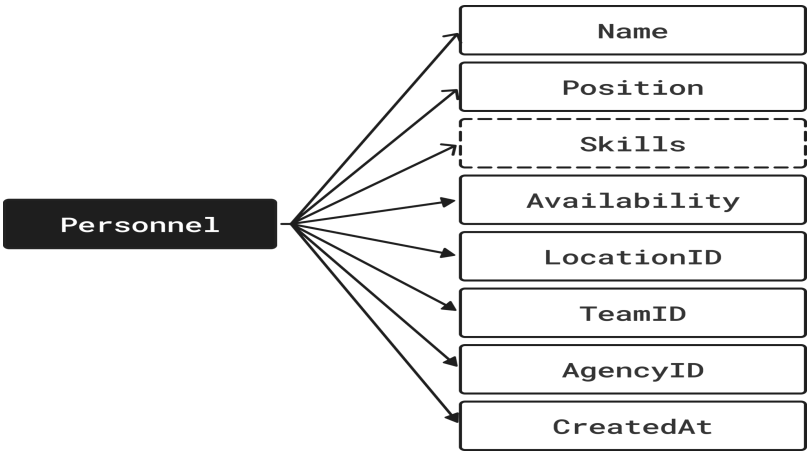
Users

- Primary Key Dependency (PKD): UserID → Username, Password, Role, CreatedAt
- Functional Dependencies (FD):
  - Username → Password
  - Username → Role
  - Username → CreatedAt



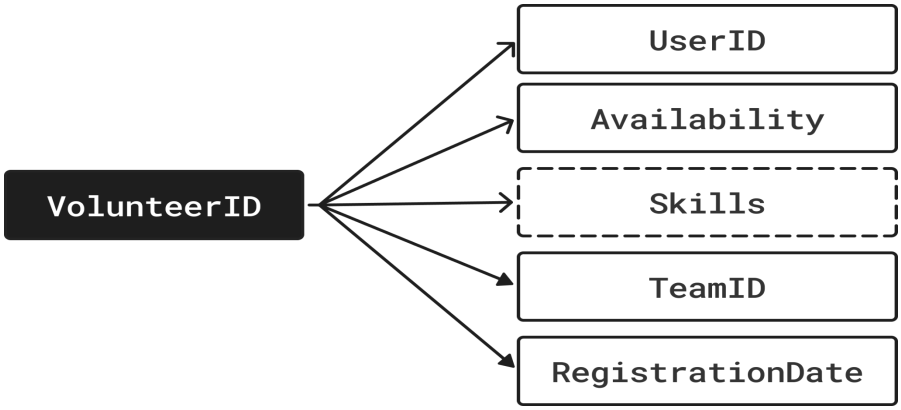
Personnels

- Primary Key Dependency (PKD): PersonnelsID → FullName, Position, SkillID, LocationID, AvailabilityStatus, TeamID, AgencyID, CreatedAt
- Foreign Key Dependency (FKD): SkillID → Skills(SkillID)



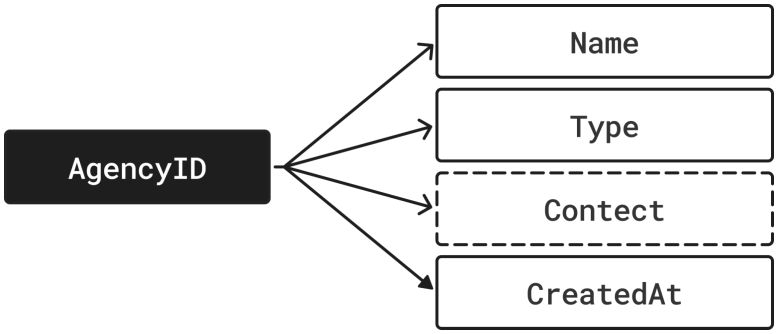
Volunteers

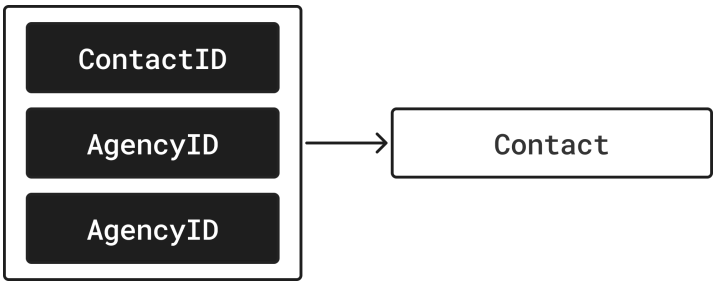
- Primary Key Dependency (PKD): VolunteerID → UserID, SkillID, Availability, LocationID, TeamID, RegistrationDate
- Foreign Key Dependency (FKD): SkillID → Skills(SkillID)



Agencies

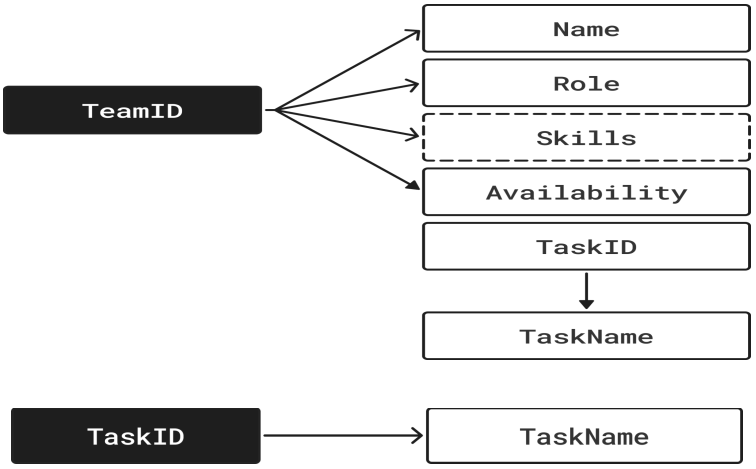
- Primary Key Dependency (PKD): AgencyID → Name, Type, ContactInfo, CreatedAt
- Foreign Key Dependency (FKD): None





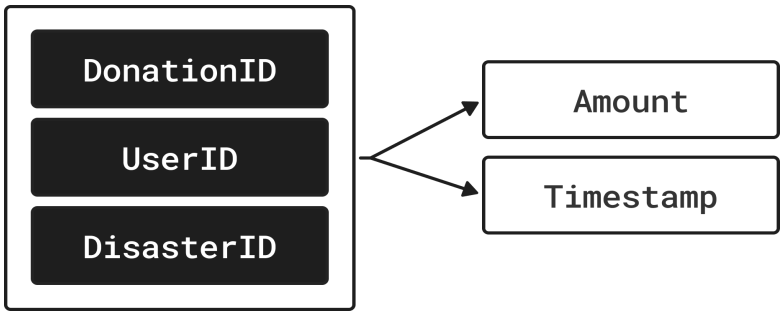
Teams

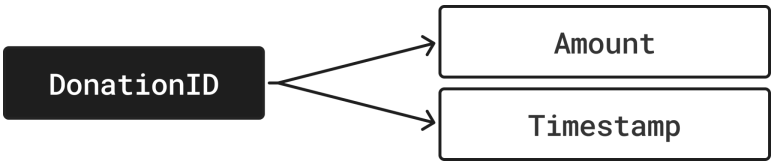
- Primary Key Dependency (PKD): TeamID → Name, Role, Skills, Availability, CreatedAt, TaskID, TaskName
- Functional Dependencies (FD):
  - SkillID → SkillName
  - TaskID → TaskName



Donations

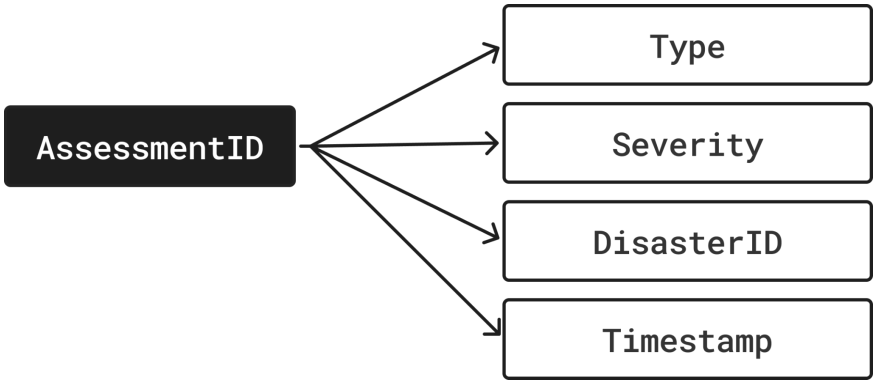
- Primary Key Dependency (PKD): DonationID, UserID, DisasterID → Amount, Timestamp
- Functional Dependency (FD): DonationID → Amount, Timestamp
- Partial Dependency: DonationID → Amount





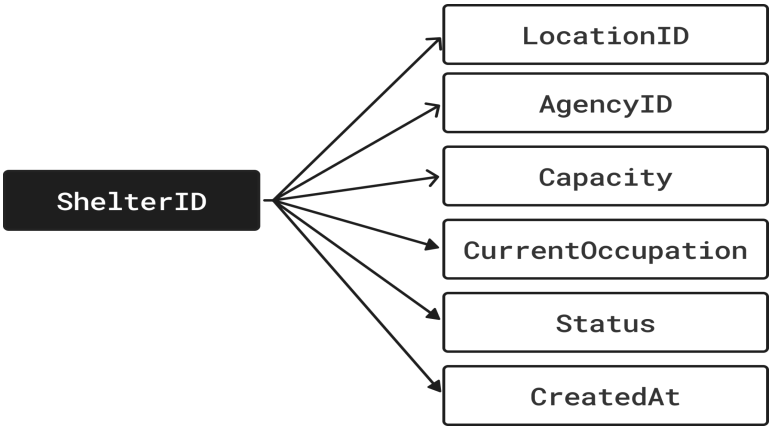
Assessments

- Primary Key Dependency (PKD): AssessmentID → Type, Severity, Date, DisasterID, Timestamp



Shelters

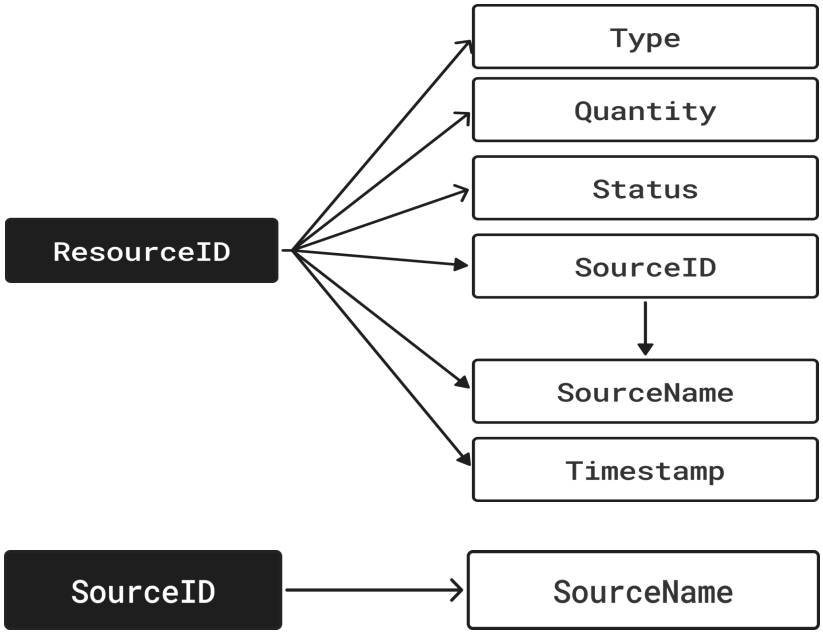
- Primary Key Dependency (PKD): ShelterID → LocationID, AgencyID, Capacity, CurrentOccupancy, Status, CreatedAt
- Foreign Key Dependencies (FKD):
  - LocationID → Locations(LocationID)
  - AgencyID → Agencies(AgencyID)



Resources

- Primary Key Dependency (PKD): ResourceID → Type, Quantity, Status, Timestamp, SourceID, SourceName

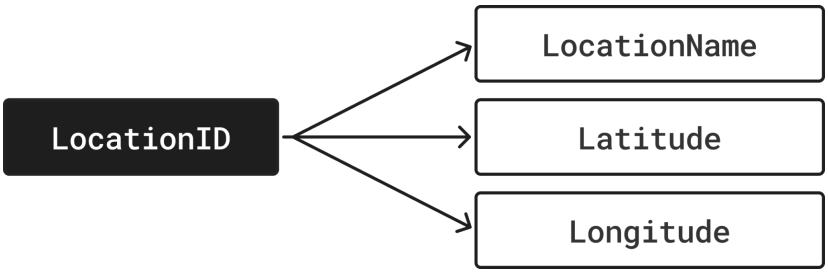
Functional Dependency (FD): SourceID → SourceName



Location :

- **Primary Key Dependency (PKD)**:
  - **LocationID** → LocationName, Latitude, Longitude

Since **LocationName**, **Latitude**, and **Longitude** are fully dependent on **LocationID**, there is no partial dependency, meaning the table is already in 2NF and 3NF.



2. Redundancy and Anomalies Documentation:

Redundancy

Disasters

- In 2NF, with minimized redundancy as all non-key attributes are fully dependent on DisasterID.
- Removal of AffectedRadius prevents repeated values associated with Severity across disasters.

Channels

- Each channel's information is linked to its unique ChannelID, avoiding duplicate entries.
- Updating a channel's name or creation date only needs to be done in one place, maintaining accuracy.

Messages

- Attributes are uniquely tied to the composite key, preventing duplicate message entries.
- Changes to message content or timestamps only require updating a single record, preserving data integrity.

Users

- Attributes are uniquely tied to UserID, avoiding duplication of user information.
- Any changes to Username, Password, Role, or CreatedAt are made in one place, ensuring data consistency.

Donations

- Amount is specific to each DonationID, ensuring each donation has a unique value without repetition.
- Donations Table: Donations (DonationID, Amount, Timestamp)
- DonationAssociations Table: DonationAssociations (DonationID (FK), UserID (FK), DisasterID (FK))

Agencies

- Attributes are uniquely tied to AgencyID, avoiding duplicate agency data.
- Contact is a multivalued attribute as one agency may have multiple contacts.
- Agencies Table: Agencies (AgencyID, Name, Type, ContactID, CreatedAt)

- AgencyContacts Table: AgencyContacts (ContactID (FK), AgencyID (FK), DisasterID (FK))

Teams

- Attributes are tied to TeamID, minimizing redundancy.
- Skills are multivalued, reducing duplication of skill information across records.

Personnels

- Storing SkillID as a reference to Skills reduces redundancy.
- SkillName is only stored once in the Skills table, avoiding duplication in the Personnels table.

Volunteers

- Storing SkillID as a reference to Skills minimizes redundancy by storing SkillName only in the Skills table.

Shelters

- In 2NF with no partial dependencies, as all attributes fully depend on ShelterID.

Resources

- SourceName is dependent on SourceID, creating potential redundancy if the same SourceName appears multiple times.
- Consider moving SourceID and SourceName to a Sources table:
    - Sources Table: Sources (SourceID, SourceName)

Reports

- Redundancy is minimized by moving UserInteractions to a separate Interactions table, ensuring data is not duplicated across records.

Assessments

- Attributes are tied to unique AssessmentID, preventing duplicate assessment entries.
- Changes to attributes like Type, Severity, or Date only need to be updated once.

Locations

- Attributes are uniquely tied to LocationID, preventing duplicate entries for the same location.

Anomalies

Disasters

- Insert Anomaly: None; new disasters can be added without requiring redundant data from other tables.
- Update Anomaly: None; updates to disaster details (e.g., Severity or Description) are limited to the Disasters table, maintaining data consistency.
- Delete Anomaly: Deleting a LocationID in Locations that's referenced in Disasters could lead to orphaned records, which can be managed through cascading or restricted constraints.

Channels

- Insert Anomaly: New channels must have a valid DisasterID from the Disasters table, ensuring each channel is tied to a real disaster.
- Update Anomaly: Updates to a channel's name or date only affect that specific channel and not any other tables.
- Delete Anomaly: Deleting a channel doesn't impact the Disasters table. However, if a disaster is deleted, it may leave channels orphaned, which can be managed with cascading deletes or restrict constraints.

Messages

- Insert Anomaly: New messages require valid DisasterID, UserID, and ChannelID, ensuring messages are linked to existing disasters and users.
- Update Anomaly: Updates to message content or timestamps don't impact other records.
- Delete Anomaly: Deleting a message does not affect other tables. However, if a DisasterID, UserID, or ChannelID is removed, it could leave orphaned records in Messages. Cascading deletes or restrict constraints can manage this.

Users

- Insert Anomaly: New users can be added with just a UserID, ensuring all user entries are unique and complete.
- Update Anomaly: Changes to user details (e.g., Username, Password, Role) are confined to the Users table, ensuring consistency.
- Delete Anomaly: Deleting a user doesn't affect other tables directly, but removing a UserID that's referenced in Messages or Donations may create orphaned records, manageable with cascading deletes or restrict constraints.

Donations

- Insert Anomaly: New donations must include a valid UserID and DisasterID to ensure they are tied to legitimate users and disasters.
- Update Anomaly: Changes to donation details (e.g., Amount, Timestamp) are made within the Donations table without affecting related records.
- Delete Anomaly: Deleting a donation doesn't affect other records, but deleting a DonationID in DonationAssociations may lead to orphaned entries, manageable through cascading deletes or restrict constraints.

Agencies

- Insert Anomaly: New agencies can be added without dependency on other tables.
- Update Anomaly: Changes to an agency's details are made in one place, ensuring consistency.
- Delete Anomaly: Deleting an agency has no effect on other tables as there are no foreign key dependencies for Agencies.

Teams

- Insert Anomaly: New teams can be added independently of other tables.
- Update Anomaly: Updates to team details are made in a single place, ensuring consistency.
- Delete Anomaly: Deleting a team does not affect any other tables directly.

Personnels

- Insert Anomaly: New personnel require valid SkillID references from the Skills table, ensuring they are associated with actual skills.
- Update Anomaly: Skill updates need only be made in the Skills table, maintaining consistent skill information across personnel records.
- Delete Anomaly: Deleting personnel does not impact Skills directly, but deleting a SkillID in Skills could orphan SkillID references in Personnels, manageable with cascading deletes or restrict constraints.

Volunteers

- Insert Anomaly: New volunteers require valid SkillID entries from Skills, ensuring they are linked to an actual skill.
- Update Anomaly: Changes to a skill's name are centralized in the Skills table, preventing inconsistencies in skill names across volunteers.
- Delete Anomaly: Deleting a volunteer does not affect the Skills table, but deleting a skill from Skills could lead to orphaned SkillID references in Volunteers, manageable with cascading or restricted constraints.

Shelters

- Insert Anomaly: New shelters require valid LocationID and AgencyID values, ensuring each shelter is linked to a legitimate location and agency.
- Update Anomaly: Updates to shelter details (e.g., Status or CurrentOccupancy) are made within the Shelters table, ensuring data consistency.
- Delete Anomaly: Deleting a shelter has no impact on other tables directly, but deleting a LocationID or AgencyID could orphan references in Shelters, manageable through cascading or restricted constraints.

Resources

- Insert Anomaly: New resources require a valid SourceID if using a Sources table, ensuring each resource is linked to a legitimate source.
- Update Anomaly: Updates to a source's name only need to occur in the Sources table, ensuring consistency.
- Delete Anomaly: Deleting a resource does not affect other tables directly, but removing a SourceID in Sources could orphan references in Resources, manageable through cascading or restrict constraints.

Reports

- Insert Anomaly: New reports require valid InteractionID references if using Interactions, ensuring they correspond to defined interactions.
- Update Anomaly: Updates to UserInteractions based on an InteractionID need only occur in Interactions, ensuring data consistency.
- Delete Anomaly: Deleting a report does not affect Interactions, but deleting an InteractionID would orphan references in Reports, manageable with cascading or restrict constraints.

Assessments

- Insert Anomaly: New assessments require valid DisasterID references, ensuring they are associated with a disaster.
- Update Anomaly: Updates to assessment details are made in a single place, ensuring consistency.
- Delete Anomaly: Deleting a disaster from Disasters could leave orphaned assessment records. Cascading deletes can ensure associated assessments are removed.

Locations

- Insert Anomaly: New locations can be added independently.
- Update Anomaly: Updates to a location's details are limited to one table, ensuring consistency.
- Delete Anomaly: Deleting a location has no effect on other tables unless LocationID is referenced as a foreign key, where cascading deletes or restrict constraints can prevent orphaned references.

3. Normalization Process:

1st Normal Form :

First Normal Form (1NF) requires that each column in a table contains atomic, indivisible values, and there should be no repeating groups or arrays. Each row must be uniquely identifiable with a primary key, ensuring no duplicate rows. Additionally, all entries in a column must be of the same data type, maintaining consistency.

1. Teams (**TeamID**, Name, Role,SkillID, Skill, Availability, CreatedAt,TaskID,TaskName)
2. Personnel(Personnel**ID**,FullName, Position, SkillID, Skills, LocationID(FK), AvailabilityStatus,TeamID (FK),AgencyID (FK),CreatedAt)
3. Volunteers(**VolunteerID**,UserID(Fk),SkillID,Skills,Availability, LocationID (Fk),TeamID(Fk) RegistrationDate)

In this Teams,Personnels,Volunteers table contain skill and skill is a multivalued attribute so we have to convert it into single valued and multiple rows data.

- Skills (**SkillID**, SkillName)

Reports (**ReportID** , DisasterID (Fk), UserID (fk), LocationID (fk), Date, Content, Likes, Dislikes, UserInteractions, Accuracy, Timestamp)

The **UserInteractions** attribute in the **Reports** table is a multi-valued attribute, meaning it can store multiple types of interactions associated with each report. For instance, a single report may receive multiple likes, dislikes, comments, or shares, leading to the need for a structure that accommodates these varying interaction types. To properly normalize the database, this multi-valued attribute should be separated into its own table, ensuring that each interaction type can be stored as an individual entry linked back to the corresponding report.

Interactions (**InteractionID**, ReportID (FK), InteractionType, InteractionContent, UserID (FK))

Agencies (**AgencyID** , Name, Type, ContactInfo, CreatedAt)

To normalize the Agencies table, the multi-valued attribute ContactInfo should be separated into a new table. The Agencies table will retain attributes like AgencyID, Name, Type, and CreatedAt, while the new AgencyContacts table will contain ContactID, AgencyID (as a foreign key), and ContactInfo. This structure

eliminates redundancy and enhances data integrity by allowing multiple contact methods for each agency without repeating the agency's core details.

- Agencies (**AgencyID** , Name, Type, ContactID, CreatedAt)
- AgencyContacts (**ContactID**,,ContactInfo)

Schema After 1St NF :

1. Disasters(**DisasterID**,Type,SeverityID(fk),StartDate,EndDate,LocationID(FK), AffectedRadius, Description)
2. Channels (**ChannelID** , Name, DisasterID (FK), CreatedAt)
3. Messages(**MessageID , DisasterID (FK), UserID (FK), ChannelID (FK)**, Content, Media,Timestamp)
4. Users (**UserID** , Username, Password, Role, CreatedAt)
5. Donations (**DonationID** , Amount, Timestamp)
6. Agencies (**AgencyID** , Name, Type, ContactID, CreatedAt)
7. AgencyContacts (**ContactID**,AgencyId,ContactInfo)
8. Teams(**TeamID**,Name, Role, SkillID (FK), Availability, CreatedAt,TaskID(FK),TaskName)
9. Skills (**SkillID**, SkillName)
10. Personnel(**PersonnelID**,Name,Position,Skills,LocationID(FK),AvailabilityStatus, TeamID(FK), AgencyID(FK), CreatedAt)
11. Volunteers (**VolunteerID**, UserID (FK), SkillID (FK), Availability, LocationID (FK), TeamID (FK), RegistrationDate)
12. Shelters (**ShelterID**, LocationID (FK), AgencyID (FK), Capacity, CurrentOccupancy, Status, CreatedAt)
13. Assessments (**AssessmentID**, Type, Severity, Date, DisasterID (FK), Timestamp)
14. Resources (**ResourceID** , Type, Quantity, Status, Timestamp, SourceID, SourceName)
15. Reports(**ReportID**,DisasterID (FK), UserID (FK), LocationID (FK), Date, Content, Accuracy, Timestamp)
16. Interactions (**InteractionID**, ReportID (FK), InteractionType, InteractionContent, UserID (FK))
17. Locations (**LocationID** , LocationName, Latitude, Longitude)

2nd Normal Form :

1. **Identify Composite Keys**: Determine if any tables have composite keys.
2. **Eliminate Partial Dependencies**: For any attributes that depend only on part of a composite key, create separate tables.

Analyzing Schema for 2nf :

- Messages(**MessageID,DisasterID (Fk), UserID (Fk), ChannelID (Fk)**, Content, Timestamp)

Messages table depends on the combination of DisasterID, UserID, and ChannelID.Thus, in the Messages table, the Content attribute is functionally dependent on the combination of DisasterID, UserID, and ChannelID.(**No Need to further changes**)

● Donations (**DonationID,UserID (Users), DisasterID (Disasters)**, Amount, Timestamp)

DonationID, **UserID**, and **DisasterID** together form a composite key

since **Amount** is solely dependent on **DonationID**, the table violates the rules of Second Normal Form (2NF).

1. Donations (DonationID, Amount, Timestamp)
2. DonationAssociations (DonationID (FK), UserID (FK), DisasterID (FK))

- Team(**TeamID,** Name, Role, Skills, Availability, CreatedAt, TaskID, TaskName)

The **TaskName** is functionally dependent on **TaskID** rather than on TeamID. This means that the **TaskName** is not directly related to the **TeamID** but to **TaskID**.

1. Tasks (TaskID, TaskName, DisasterID)
2. Teams (**TeamID**, Name, Role, SkillID (FK), Availability, CreatedAt)
3. TaskAssignments (TaskAssignmentID (PK), TeamID (FK), TaskID (FK), AssignmentDate)

- Disasters (**DisasterID**,Type,Severity,StartDate,EndDate,LocationID(FK), Description)

  Type and Severity are attributes of the Disasters table and are fully dependent on the DisasterID, which is the primary key. Severity can vary for different disaster types, but that doesn't make it a partial dependency (since both Severity and Type are fully dependent on DisasterID). Therefore, the Disasters table as you've proposed is already in 2NF, and there is no need to separate Type or Severity into another table.

  Disasters(**DisasterID**,Type,Severity,StartDate,EndDate,LocationID(FK), Description)

Schema After 2nd NF :

1. Disasters(**DisasterID**,Type,Severity,StartDate,EndDate,LocationID(FK), Description)
2. Channels (**ChannelID** , Name, DisasterID (FK), CreatedAt)
3. Messages(**MessageID,DisasterID(FK),UserID (FK), ChannelID (FK)**, Content, Media,Timestamp)
4. Users (**UserID**, Name, Username, Password, Role, CreatedAt)
5. Donations (**DonationID** , Amount, Timestamp)
6. DonationAssociations (**DonationID (FK), UserID (FK), DisasterID (FK)**)
7. Agencies (**AgencyID** , Name, Type, ContactID, CreatedAt)
8. AgencyContacts (**ContactID**,AgencyId,Contact)
9. Teams (**TeamID**, Name, Role, SkillID (FK), Availability, CreatedAt)
10. Tasks (**TaskID**, TaskName, DisasterID(FK))
11. Skills (**SkillID**, SkillName)
12. Personnel(**PersonnelID**, FullName, Position, SkillID (FK), LocationID (FK), AvailabilityStatus, TeamID (FK), AgencyID (FK), CreatedAt)
13. Volunteers (**VolunteerID**, UserID (FK), SkillID (FK), Availability, LocationID (FK), TeamID (FK), RegistrationDate)
14. Shelters (**ShelterID**, LocationID (FK), AgencyID (FK), Capacity, CurrentOccupancy, Status, CreatedAt)
15. Assessments (**AssessmentID**, Type, Severity, Date, DisasterID (FK), Timestamp)
16. Resources (**ResourceID** , Type, Quantity, Status, Timestamp, SourceID)
17. Sources (**SourceID** , SourceName)
18. Reports (**ReportID** , DisasterID (FK), UserID (FK), LocationID (FK), Content, Accuracy, Timestamp)
19. Interactions (**InteractionID**, ReportID (FK), InteractionType, UserID (FK))
20. Locations (**LocationID** , LocationName, Latitude, Longitude)

3rd Normal Form :

1. Identify all functional dependencies in the table.
2. Remove transitive dependencies by creating new tables for the non-key attributes that depend on other non-key attributes.
3. Assign appropriate primary keys to all newly created tables.
4. Ensure that all tables are free from redundancy and anomalies.

After a thorough analysis of the schema, it has been determined that all tables are already in Third Normal Form (3NF). This conclusion is based on the following criteria:

- No Transitive Dependencies: Each table's non-key attributes depend solely on its primary key, with no dependencies on other non-key attributes.

Boyce-Codd Normal Form (BCNF):

Boyce-Codd Normal Form (BCNF) is a higher level of database normalization where, for every non-trivial functional dependency A–>B , the determinant A must be a superkey. This ensures that every functional dependency is fully functionally dependent on a candidate key, eliminating redundancy and anomalies. To convert to BCNF, decompose the tables whenever a non-super key determinant is found.

- Teams (**TeamID**, Name, Role, SkillID (FK), Availability, CreatedAt, TaskID (FK))
- Skills (**SkillID**, SkillName)

The **TeamSkills** table is created to ensure that the database adheres to BCNF rules by resolving the many-to-many relationship between teams and skills. This prevents redundancy and maintains data integrity, as a single team can possess multiple skills without violating the dependency rules. By separating the skills into their own table, we keep the data organized and compliant with BCNF requirements.

SkillID→TeamID

Teams : TeamID, Name, Role, Availability, CreatedAt
TeamSkills : TeamID (FK), SkillID (FK), PRIMARY KEY (TeamID, SkillID)

The **PersonnelSkills** table is created to ensure that the database adheres to BCNF rules by managing the many-to-many relationship between personnel and skills. This prevents redundancy and maintains data integrity, as a single personnel member can have multiple skills without violating dependency rules. By separating the skills into their own table, we keep the data organized and compliant with BCNF requirements.

PersonnelID → SkillID

Personnel: PersonnelID, Name, Position, LocationID (FK), AvailabilityStatus, TeamID (FK), AgencyID (FK), CreatedAt
PersonnelSkills: PersonnelID (FK), SkillID (FK), **PRIMARY KEY** (PersonnelID, SkillID)

The **VolunteerSkills** table is created to ensure that the database adheres to BCNF rules by handling the many-to-many relationship between volunteers and skills. This setup prevents redundancy and maintains data integrity, as a single volunteer can possess multiple skills without dependency issues. By separating skills into this table, the database remains organized and compliant with BCNF requirements.

VolunteerID → SkillID

Volunteers: VolunteerID, UserID (FK), Availability, LocationID (FK), TeamID (FK), CreatedAt
VolunteerSkills: VolunteerID (FK), SkillID (FK), **PRIMARY KEY** (VolunteerID, SkillID)

Final Schema After BCNF :

1. Disasters(**DisasterID**,Name,Type,Severity,StartDate,EndDate,LocationID(FK), Description)
2. Channels (**ChannelID**, Name, DisasterID (FK), CreatedAt)
3. Messages (**MessageID, DisasterID (FK), UserID (FK), ChannelID (FK),** Content, Media,Timestamp)
4. Users (**UserID**, Name, Username, Password, Role, CreatedAt)
5. Donations (**DonationID**, Amount, Timestamp)
6. DonationAssociations (**DonationID (FK), UserID (FK), DisasterID (FK)**)
7. Agencies (**AgencyID**, Name, Type, ContactID, CreatedAt)
8. AgencyContacts (**ContactID,AgencyId(FK),Contact**)
9. Teams (**TeamID**, Name, Role, Availability, CreatedAt)
10. TeamSkills (**TeamID (FK), SkillID (FK)**)
11. Tasks (**TaskID**, TaskName, DisasterID)
12. TaskAssignment(**TaskAssignmentID (PK)**, TeamID (FK), TaskID (FK), AssignmentDate)
13. Skills (**SkillID**, SkillName)
14. Personnel(**PersonnelID**, FullName, Position, LocationID (FK), Availability, TeamID (FK), AgencyID (FK), CreatedAt)
15. PersonnelSkills (**PersonnelID (FK), SkillID (FK)**)
16. Volunteers (**VolunteerID,** UserID (FK), Availability, LocationID (FK), TeamID (FK), RegistrationDate)
17. VolunteerSkills (**VolunteerID (FK), SkillID (FK)**)
18. Shelters (**ShelterID**,LocationID (FK), AgencyID (FK), Capacity, CurrentOccupancy, Status, CreatedAt)
19. Assessments (**AssessmentID**, Type, Severity, DisasterID (FK), Timestamp)
20. Resources (**ResourceID**, Type, Quantity, Status, Timestamp, SourceID(FK))
21. Sources (**SourceID** , SourceName)
22. Reports (**ReportID**, DisasterID (FK), UserID (FK), LocationID (FK), Content, Accuracy, Timestamp)
23. Interactions (**InteractionID**, ReportID (FK), InteractionType, UserID (FK))
24. Locations (**LocationID**, LocationName, Latitude, Longitude)

Chapter 4

Implementation of Database

1. Revised DDL Script:

1. Locations

```
CREATE TABLE Locations (
    LocationID SERIAL PRIMARY KEY,
    LocationName VARCHAR(255) NOT NULL,
    Latitude DECIMAL(9,6),
    Longitude DECIMAL(9,6)
);
```

2. Users

```
CREATE TABLE Users (
    UserID SERIAL PRIMARY KEY,
    Name VARCHAR(255) NOT NULL,
    Username VARCHAR(50) UNIQUE NOT NULL,
    Password VARCHAR(255) NOT NULL,
    Role VARCHAR(50),
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

3. Disasters

```
CREATE TABLE Disasters (
    DisasterID SERIAL PRIMARY KEY,
    Type VARCHAR(255) NOT NULL,
    Severity VARCHAR(50),
    StartDate DATE NOT NULL,
    EndDate DATE,
    LocationID INT REFERENCES Locations(LocationID) ON DELETE CASCADE,
    Description TEXT
);
```

4. Channels

```
CREATE TABLE Channels (
    ChannelID SERIAL PRIMARY KEY,
    Name VARCHAR(255) NOT NULL,
    DisasterID INT REFERENCES Disasters(DisasterID) ON DELETE CASCADE,
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

5. Messages

```
CREATE TABLE Messages (
    MessageID SERIAL PRIMARY KEY,
    DisasterID INT REFERENCES Disasters(DisasterID) ON DELETE CASCADE,
    UserID INT REFERENCES Users(UserID) ON DELETE CASCADE,
    ChannelID INT REFERENCES Channels(ChannelID) ON DELETE CASCADE,
    Content TEXT,
    Media BYTEA,
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

6. Donations

```
CREATE TABLE Donations (
    DonationID SERIAL PRIMARY KEY,
    Amount NUMERIC(10, 2) NOT NULL,
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

7. DonationAssociations

```
CREATE TABLE DonationAssociations (
    DonationID INT REFERENCES Donations(DonationID) ON DELETE CASCADE,
    UserID INT REFERENCES Users(UserID) ON DELETE CASCADE,
    DisasterID INT REFERENCES Disasters(DisasterID) ON DELETE CASCADE,
    PRIMARY KEY (DonationID, UserID, DisasterID)
);
```

8. AgencyContacts

```
CREATE TABLE AgencyContacts (
    ContactID SERIAL PRIMARY KEY,
    Contact NUMERIC(15) NOT NULL,
    AgencyID INT REFERENCES Agencies(AgencyID) ON DELETE CASCADE
);
```

9. Agencies

```
CREATE TABLE Agencies (
    AgencyID SERIAL PRIMARY KEY,
    Name VARCHAR(255) NOT NULL,
    Type VARCHAR(50),
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

10. Tasks

```
CREATE TABLE Tasks (
    TaskID SERIAL PRIMARY KEY,
    TaskName VARCHAR(255) NOT NULL,
    DisasterID INT REFERENCES Disasters(DisasterID) ON DELETE CASCADE
);
```

11. Teams

```
CREATE TABLE Teams (
    TeamID SERIAL PRIMARY KEY,
    Name VARCHAR(255) NOT NULL,
    Role VARCHAR(50),
    Availability VARCHAR(50),
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
);
```

12. TeamAssignments

```
CREATE TABLE TaskAssignments (
    TaskAssignmentID SERIAL PRIMARY KEY,
    TeamID INT REFERENCES Teams(TeamID) ON DELETE CASCADE,
    TaskID INT REFERENCES Tasks(TaskID) ON DELETE CASCADE,
    AssignmentDate TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

13. Skills

```
CREATE TABLE Skills (
    SkillID SERIAL PRIMARY KEY,
    SkillName VARCHAR(255) NOT NULL
);
```

14. TeamSkills

```
CREATE TABLE TeamSkills (
    TeamID INT REFERENCES Teams(TeamID) ON DELETE CASCADE,
    SkillID INT REFERENCES Skills(SkillID) ON DELETE CASCADE,
    PRIMARY KEY (TeamID, SkillID)
);
```

15. Personnel

```
CREATE TABLE Personnel (
    PersonnelID SERIAL PRIMARY KEY,
    FullName VARCHAR(255) NOT NULL,
    Position VARCHAR(50),
    LocationID INT REFERENCES Locations(LocationID) ON DELETE CASCADE,
    Availability VARCHAR(50),
    TeamID INT REFERENCES Teams(TeamID) ON DELETE CASCADE,
    AgencyID INT REFERENCES Agencies(AgencyID) ON DELETE CASCADE,
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

16. PersonnelSkills

```
CREATE TABLE PersonnelSkills (
    PersonnelID INT REFERENCES Personnel(PersonnelID) ON DELETE CASCADE,
    SkillID INT REFERENCES Skills(SkillID) ON DELETE CASCADE,
    PRIMARY KEY (PersonnelID, SkillID)
);
```

17. Volunteers

```
CREATE TABLE Volunteers (
    VolunteerID SERIAL PRIMARY KEY,
    UserID INT REFERENCES Users(UserID) ON DELETE CASCADE,
    Availability VARCHAR(50),
    LocationID INT REFERENCES Locations(LocationID) ON DELETE CASCADE,
    TeamID INT REFERENCES Teams(TeamID) ON DELETE CASCADE,
    RegistrationDate TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

18. VolunteerSkills

```
CREATE TABLE VolunteerSkills (
    VolunteerID INT REFERENCES Volunteers(VolunteerID) ON DELETE CASCADE,
    SkillID INT REFERENCES Skills(SkillID) ON DELETE CASCADE,
    PRIMARY KEY (VolunteerID, SkillID)
);
```

19. Shelters

```
CREATE TABLE Shelters (
    ShelterID SERIAL PRIMARY KEY,
    LocationID INT REFERENCES Locations(LocationID) ON DELETE CASCADE,
    AgencyID INT REFERENCES Agencies(AgencyID) ON DELETE CASCADE,
    Capacity INT,
    CurrentOccupancy INT,
    Status VARCHAR(50),
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

20. Assessments

```
CREATE TABLE Assessments (
    AssessmentID SERIAL PRIMARY KEY,
    Type VARCHAR(50),
    Severity VARCHAR(50),
    DisasterID INT REFERENCES Disasters(DisasterID) ON DELETE CASCADE,
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

21. Sources

```
CREATE TABLE Sources (
    SourceID SERIAL PRIMARY KEY,
    SourceName VARCHAR(255) NOT NULL
);
```

22. Resources

```
CREATE TABLE Resources (
    ResourceID SERIAL PRIMARY KEY,
    Type VARCHAR(255),
    Quantity INT,
    Status VARCHAR(50),
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    SourceID INT REFERENCES Sources(SourceID) ON DELETE CASCADE
);
```

23. Reports

```
CREATE TABLE Reports (
    ReportID SERIAL PRIMARY KEY,
    DisasterID INT REFERENCES Disasters(DisasterID) ON DELETE CASCADE,
    UserID INT REFERENCES Users(UserID) ON DELETE CASCADE,
    LocationID INT REFERENCES Locations(LocationID) ON DELETE CASCADE,
    Content TEXT,
    Accuracy INT,
```

```
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

24. Interactions

```
CREATE TABLE Interactions (
    InteractionID SERIAL PRIMARY KEY,
    ReportID INT REFERENCES Reports(ReportID) ON DELETE CASCADE,
    InteractionType VARCHAR(50),
    UserID INT REFERENCES Users(UserID) ON DELETE CASCADE
);
```

2. Database Population:

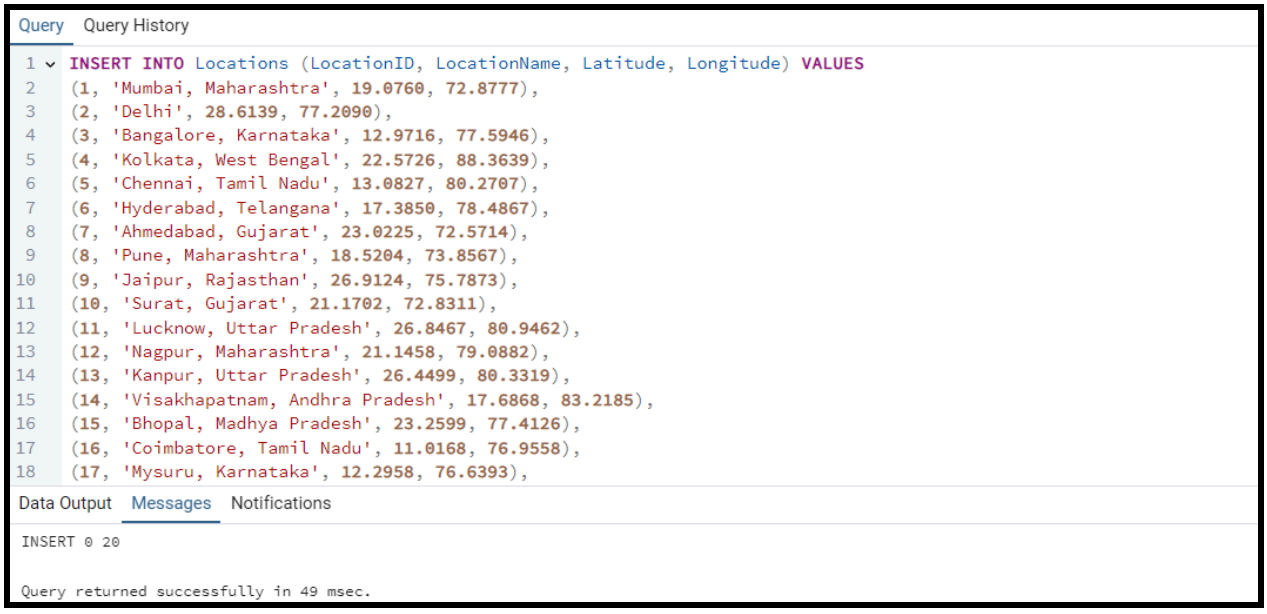
• Locations Table

INSERT INTO Locations (LocationID, LocationName, Latitude, Longitude) VALUES
(1, 'Mumbai, Maharashtra', 19.0760, 72.8777),
(2, 'Delhi', 28.6139, 77.2090),
(3, 'Bangalore, Karnataka', 12.9716, 77.5946),
(4, 'Kolkata, West Bengal', 22.5726, 88.3639),
(5, 'Chennai, Tamil Nadu', 13.0827, 80.2707),
(6, 'Hyderabad, Telangana', 17.3850, 78.4867),
(7, 'Ahmedabad, Gujarat', 23.0225, 72.5714),
(8, 'Pune, Maharashtra', 18.5204, 73.8567),
(9, 'Jaipur, Rajasthan', 26.9124, 75.7873),
(10, 'Surat, Gujarat', 21.1702, 72.8311),
(11, 'Lucknow, Uttar Pradesh', 26.8467, 80.9462),
(12, 'Nagpur, Maharashtra', 21.1458, 79.0882),
(13, 'Kanpur, Uttar Pradesh', 26.4499, 80.3319),
(14, 'Visakhapatnam, Andhra Pradesh', 17.6868, 83.2185),
(15, 'Bhopal, Madhya Pradesh', 23.2599, 77.4126),
(16, 'Coimbatore, Tamil Nadu', 11.0168, 76.9558),
(17, 'Mysuru, Karnataka', 12.2958, 76.6393),
(18, 'Patna, Bihar', 25.5941, 85.1376),
(19, 'Nashik, Maharashtra', 19.9975, 73.7898),
(20, 'Vadodara, Gujarat', 22.3072, 73.1812),
(21, 'Indore, Madhya Pradesh', 22.7196, 75.8577),
(22, 'Chandigarh', 30.7333, 76.7794),
(23, 'Agra, Uttar Pradesh', 27.1767, 78.0081),
(24, 'Meerut, Uttar Pradesh', 28.9845, 77.7050),
(25, 'Ranchi, Jharkhand', 23.3441, 85.3096),
(26, 'Guwahati, Assam', 26.1445, 91.7362),
(27, 'Vijayawada, Andhra Pradesh', 16.5063, 80.6480),
(28, 'Raipur, Chhattisgarh', 21.2514, 81.6296),
(29, 'Tiruchirappalli, Tamil Nadu', 10.7905, 78.7047),
(30, 'Kochi, Kerala', 9.9312, 76.2673),
(31, 'Dehradun, Uttarakhand', 30.3165, 78.0322),
(32, 'Noida, Uttar Pradesh', 28.5355, 77.3910),
(33, 'Gurugram, Haryana', 28.4595, 77.0266),
(34, 'Shivamogga, Karnataka', 13.9319, 75.5776),
(35, 'Dhanbad, Jharkhand', 23.7983, 86.4357),
(36, 'Solapur, Maharashtra', 17.6910, 75.9064),
(37, 'Erode, Tamil Nadu', 11.3401, 77.7172),

(38, 'Muzaffarpur, Bihar', 26.1200, 85.3911),
(39, 'Amritsar, Punjab', 31.5497, 74.3436),
(40, 'Howrah, West Bengal', 22.5893, 88.2633),
(41, 'Thane, Maharashtra', 19.2183, 72.9784),
(42, 'Satna, Madhya Pradesh', 24.5703, 80.8328),
(43, 'Bhubaneswar, Odisha', 20.2961, 85.8189),
(44, 'Belagavi, Karnataka', 15.8497, 74.5029),
(45, 'Udaipur, Rajasthan', 24.5854, 73.7125),
(46, 'Raurkela, Odisha', 22.2587, 84.8324),
(47, 'Aligarh, Uttar Pradesh', 27.8974, 78.0880),
(48, 'Kota, Rajasthan', 25.1827, 75.8648),
(49, 'Alappuzha, Kerala', 9.4981, 76.3403),
(50, 'Shillong, Meghalaya', 25.5788, 91.8933);

INSERT INTO Locations (LocationID, LocationName, Latitude, Longitude) VALUES
(51, 'Tirupati, Andhra Pradesh', 13.6288, 79.4192),
(52, 'Dibrugarh, Assam', 27.4733, 95.0223),
(53, 'Jamshedpur, Jharkhand', 22.8046, 86.2029),
(54, 'Ujjain, Madhya Pradesh', 23.1763, 75.7845),
(55, 'Kochi, Kerala', 9.9312, 76.2673),
(56, 'Ajmer, Rajasthan', 26.4499, 74.6399),
(57, 'Jabalpur, Madhya Pradesh', 23.1815, 79.9864),
(58, 'Shahjahanpur, Uttar Pradesh', 27.8801, 79.9079),
(59, 'Rampur, Uttar Pradesh', 28.8170, 79.0234),
(60, 'Patiala, Punjab', 30.3342, 76.3776),
(61, 'Nanded, Maharashtra', 19.1503, 77.2910),
(62, 'Karnal, Haryana', 29.6825, 76.9903),
(63, 'Bhilai, Chhattisgarh', 21.2077, 81.3657),
(64, 'Amravati, Maharashtra', 20.9374, 77.7783),
(65, 'Srinagar, Jammu & Kashmir', 34.0837, 74.7973),
(66, 'Nagapattinam, Tamil Nadu', 10.7612, 79.8487),
(67, 'Vellore, Tamil Nadu', 12.9167, 79.1325),
(68, 'Mathura, Uttar Pradesh', 27.5002, 77.6710),
(69, 'Chandrapur, Maharashtra', 19.9732, 79.2966),
(70, 'Mangalore, Karnataka', 12.9141, 74.8560),
(71, 'Ludhiana, Punjab', 30.9008, 75.8573),
(72, 'Kollam, Kerala', 8.8864, 76.5923),
(73, 'Raigarh, Chhattisgarh', 22.0702, 82.7150),
(74, 'Bilaspur, Chhattisgarh', 22.0802, 82.1480),
(75, 'Pondicherry', 11.9416, 79.8083),
(76, 'Haldwani, Uttarakhand', 29.2194, 79.5216),
(77, 'Bareilly, Uttar Pradesh', 28.3642, 79.4192),
(78, 'Ghaziabad, Uttar Pradesh', 28.6692, 77.4538),
(79, 'Sonipat, Haryana', 28.9980, 77.0104),

(80, 'Bikaner, Rajasthan', 28.0229, 73.3110),
(81, 'Jodhpur, Rajasthan', 26.2389, 73.0243),
(82, 'Chittoor, Andhra Pradesh', 13.2104, 79.1004),
(83, 'Vapi, Gujarat', 20.3620, 72.9065),
(84, 'Rishikesh, Uttarakhand', 30.0869, 78.2684),
(85, 'Alwar, Rajasthan', 27.5560, 76.6009),
(86, 'Bhubaneshwar, Odisha', 20.2961, 85.8189),
(87, 'Navi Mumbai, Maharashtra', 19.0442, 73.0137),
(88, 'Jammu, Jammu & Kashmir', 32.7266, 74.8570),
(89, 'Haridwar, Uttarakhand', 29.9458, 78.1642),
(90, 'Bikaner, Rajasthan', 28.0229, 73.3110),
(91, 'Belgaum, Karnataka', 15.8497, 74.5029),
(92, 'Moradabad, Uttar Pradesh', 28.8390, 78.7784),
(93, 'Gulbarga, Karnataka', 17.3293, 76.8328),
(94, 'Madhubani, Bihar', 26.3437, 86.1824),
(95, 'Bhagalpur, Bihar', 25.2500, 86.9860),
(96, 'Rohtak, Haryana', 28.8958, 76.6124),
(97, 'Muzaffarnagar, Uttar Pradesh', 29.4671, 77.6737),
(98, 'Gurgaon, Haryana', 28.4595, 77.0266),
(99, 'Sonamukhi, West Bengal', 23.1962, 87.9183),
(100, 'Tirunelveli, Tamil Nadu', 8.7110, 77.7463);



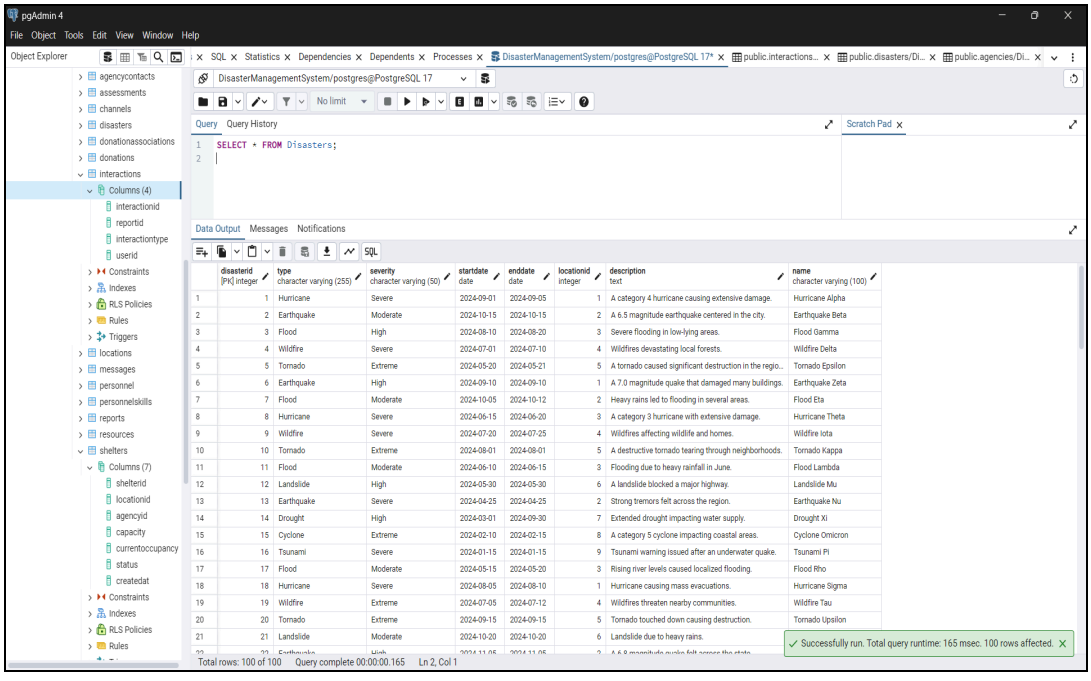
Trigger for Automatic creation of channel after adding a new disaster.

- **Channels**

```
CREATE OR REPLACE FUNCTION create_channel()
RETURNS TRIGGER AS $$
BEGIN
    INSERT INTO Channels (Name, DisasterID, CreatedAt)
    VALUES (NEW.Name, NEW.DisasterID, CURRENT_TIMESTAMP);
    RETURN NEW;
END;
$$ LANGUAGE plpgsql;

CREATE TRIGGER create_channel_after_disaster
AFTER INSERT ON Disasters
FOR EACH ROW
EXECUTE FUNCTION create_channel();
```

- **Disaster Table**



```
CREATE TABLE Disasters (
    DisasterID SERIAL PRIMARY KEY,
    Name VARCHAR(50) NOT NULL,
    Type VARCHAR(255) NOT NULL,
    Severity VARCHAR(50) NOT NULL,
    StartDate DATE NOT NULL,
    EndDate DATE,
    LocationID INT REFERENCES Locations(LocationID) ON DELETE CASCADE,
    Description TEXT
);

INSERT INTO Disasters (DisasterID, Name, Type, Severity, StartDate, EndDate,
LocationID, Description) VALUES
(1, 'Hurricane Alpha', 'Hurricane', 'Severe', '2024-09-01', '2024-09-05', 1, 'A category 4
hurricane causing extensive damage.'),
(2, 'Earthquake Beta', 'Earthquake', 'Moderate', '2024-10-15', '2024-10-15', 2, 'A 6.5
magnitude earthquake centered in the city.'),
(3, 'Flood Gamma', 'Flood', 'High', '2024-08-10', '2024-08-20', 3, 'Severe flooding in
low-lying areas.'),
(4, 'Wildfire Delta', 'Wildfire', 'Severe', '2024-07-01', '2024-07-10', 4, 'Wildfires
devastating local forests.'),
(5, 'Tornado Epsilon', 'Tornado', 'Extreme', '2024-05-20', '2024-05-21', 5, 'A tornado
caused significant destruction in the region.'),
(6, 'Earthquake Zeta', 'Earthquake', 'High', '2024-09-10', '2024-09-10', 1, 'A 7.0
magnitude quake that damaged many buildings.'),
(7, 'Flood Eta', 'Flood', 'Moderate', '2024-10-05', '2024-10-12', 2, 'Heavy rains led to
flooding in several areas.'),
(8, 'Hurricane Theta', 'Hurricane', 'Severe', '2024-06-15', '2024-06-20', 3, 'A category 3
hurricane with extensive damage.'),
(9, 'Wildfire Iota', 'Wildfire', 'Severe', '2024-07-20', '2024-07-25', 4, 'Wildfires affecting
wildlife and homes.'),
(10, 'Tornado Kappa', 'Tornado', 'Extreme', '2024-08-01', '2024-08-01', 5, 'A destructive
tornado tearing through neighborhoods.'),
(11, 'Flood Lambda', 'Flood', 'Moderate', '2024-06-10', '2024-06-15', 3, 'Flooding due to
heavy rainfall in June.'),
(12, 'Landslide Mu', 'Landslide', 'High', '2024-05-30', '2024-05-30', 6, 'A landslide blocked
a major highway.'),
(13, 'Earthquake Nu', 'Earthquake', 'Severe', '2024-04-25', '2024-04-25', 2, 'Strong
tremors felt across the region.'),
(14, 'Drought Xi', 'Drought', 'High', '2024-03-01', '2024-09-30', 7, 'Extended drought
impacting water supply.'),
(15, 'Cyclone Omicron', 'Cyclone', 'Extreme', '2024-02-10', '2024-02-15', 8, 'A category 5
cyclone impacting coastal areas.'),
```

(16, 'Tsunami Pi', 'Tsunami', 'Severe', '2024-01-15', '2024-01-15', 9, 'Tsunami warning issued after an underwater quake.'),
(17, 'Flood Rho', 'Flood', 'Moderate', '2024-05-15', '2024-05-20', 3, 'Rising river levels caused localized flooding.'),
(18, 'Hurricane Sigma', 'Hurricane', 'Severe', '2024-08-05', '2024-08-10', 1, 'Hurricane causing mass evacuations.'),
(19, 'Wildfire Tau', 'Wildfire', 'Extreme', '2024-07-05', '2024-07-12', 4, 'Wildfires threaten nearby communities.'),
(20, 'Tornado Upsilon', 'Tornado', 'Extreme', '2024-09-15', '2024-09-15', 5, 'Tornado touched down causing destruction.'),
(21, 'Landslide Phi', 'Landslide', 'Moderate', '2024-10-20', '2024-10-20', 6, 'Landslide due to heavy rains.'),
(22, 'Earthquake Chi', 'Earthquake', 'High', '2024-11-05', '2024-11-05', 2, 'A 6.8 magnitude quake felt across the state.'),
(23, 'Flood Psi', 'Flood', 'High', '2024-10-01', '2024-10-10', 3, 'Major flooding after unexpected rainstorm.'),
(24, 'Hurricane Omega', 'Hurricane', 'Severe', '2024-08-25', '2024-08-30', 1, 'Hurricane leading to emergency shelter openings.'),
(25, 'Drought Rho', 'Drought', 'High', '2024-06-01', '2024-08-31', 7, 'Severe drought affecting agriculture.'),
(26, 'Wildfire Alpha', 'Wildfire', 'Severe', '2024-07-15', '2024-07-20', 4, 'Wildfire raging in the forest.'),
(27, 'Flood Beta', 'Flood', 'Moderate', '2024-05-10', '2024-05-20', 3, 'Localized flooding in urban areas.'),
(28, 'Earthquake Gamma', 'Earthquake', 'Moderate', '2024-11-01', '2024-11-01', 2, 'Magnitude 5.5 quake felt across the region.'),
(29, 'Tornado Delta', 'Tornado', 'Extreme', '2024-09-30', '2024-09-30', 5, 'Severe tornado touched down causing chaos.'),
(30, 'Hurricane Epsilon', 'Hurricane', 'Severe', '2024-06-20', '2024-06-25', 1, 'Hurricane causing widespread panic.'),
(31, 'Landslide Zeta', 'Landslide', 'High', '2024-10-30', '2024-10-30', 6, 'A landslide impacting homes in the area.'),
(32, 'Flood Eta', 'Flood', 'High', '2024-05-25', '2024-05-30', 3, 'Severe flooding after heavy rainfall.'),
(33, 'Earthquake Theta', 'Earthquake', 'Severe', '2024-09-20', '2024-09-20', 2, 'Major earthquake causing significant damage.'),
(34, 'Drought Iota', 'Drought', 'Moderate', '2024-04-01', '2024-06-30', 7, 'Drought impacting local farmers.'),
(35, 'Cyclone Kappa', 'Cyclone', 'Extreme', '2024-01-01', '2024-01-05', 8, 'Category 4 cyclone approaching coast.'),
(36, 'Tsunami Lambda', 'Tsunami', 'Severe', '2024-03-15', '2024-03-15', 9, 'Tsunami alert issued for coastal areas.'),
(37, 'Wildfire Mu', 'Wildfire', 'Severe', '2024-07-25', '2024-07-30', 4, 'Wildfire threatening residential areas.'),

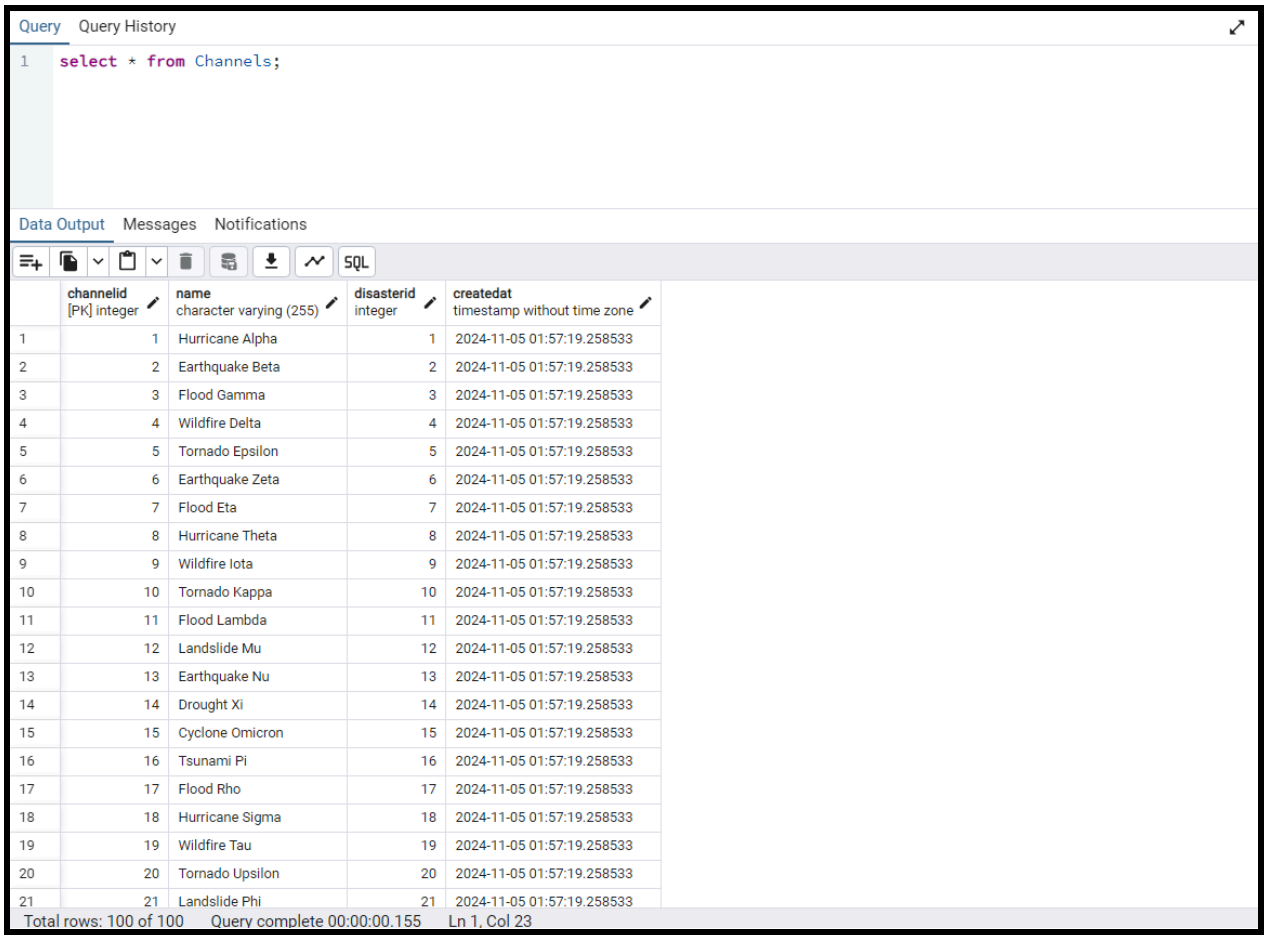
(38, 'Flood Nu', 'Flood', 'Moderate', '2024-10-11', '2024-10-15', 3, 'Flooding due to river overflow.'),
(39, 'Earthquake Xi', 'Earthquake', 'Severe', '2024-02-20', '2024-02-20', 2, 'Major quake affecting the entire region.'),
(40, 'Tornado Omicron', 'Tornado', 'Extreme', '2024-05-01', '2024-05-01', 5, 'Tornado warning issued for several counties.'),
(41, 'Hurricane Pi', 'Hurricane', 'Severe', '2024-08-15', '2024-08-20', 1, 'Hurricane impacting evacuation routes.'),
(42, 'Drought Rho', 'Drought', 'High', '2024-06-15', '2024-09-15', 7, 'Long-term drought affecting water supply.'),
(43, 'Wildfire Sigma', 'Wildfire', 'Severe', '2024-06-05', '2024-06-10', 4, 'Wildfire threatening several towns.'),
(44, 'Flood Tau', 'Flood', 'Moderate', '2024-09-05', '2024-09-10', 3, 'Minor flooding reported in low-lying areas.'),
(45, 'Earthquake Upsilon', 'Earthquake', 'High', '2024-11-10', '2024-11-10', 2, 'Earthquake shaking buildings and infrastructure.'),
(46, 'Tornado Phi', 'Tornado', 'Extreme', '2024-08-30', '2024-08-30', 5, 'A tornado warning is in effect for several states.'),
(47, 'Hurricane Chi', 'Hurricane', 'Severe', '2024-07-10', '2024-07-15', 1, 'A hurricane causing emergency declarations.'),
(48, 'Flood Psi', 'Flood', 'Moderate', '2024-06-25', '2024-06-30', 3, 'Local flooding due to continuous rain.'),
(49, 'Drought Alpha', 'Drought', 'High', '2024-03-20', '2024-05-30', 7, 'Severe drought affecting crops.'),
(50, 'Wildfire Beta', 'Wildfire', 'Severe', '2024-04-10', '2024-04-15', 4, 'Wildfires spreading across the state.'),
(51, 'Earthquake Gamma', 'Earthquake', 'Moderate', '2024-02-15', '2024-02-15', 2, 'An earthquake causing minor damage.'),
(52, 'Tornado Delta', 'Tornado', 'Extreme', '2024-10-15', '2024-10-15', 5, 'A tornado warning has been issued for this area.'),
(53, 'Flood Epsilon', 'Flood', 'Moderate', '2024-11-05', '2024-11-10', 3, 'Flooding in residential areas after heavy rain.'),
(54, 'Drought Zeta', 'Drought', 'High', '2024-05-01', '2024-08-01', 7, 'Significant drought impacting the region.'),
(55, 'Hurricane Eta', 'Hurricane', 'Severe', '2024-08-20', '2024-08-25', 1, 'Hurricane forcing evacuations along the coast.'),
(56, 'Wildfire Theta', 'Wildfire', 'Severe', '2024-07-10', '2024-07-15', 4, 'Wildfires causing evacuations in the area.'),
(57, 'Tornado Iota', 'Tornado', 'Extreme', '2024-06-01', '2024-06-01', 5, 'Tornado touched down causing extensive damage.'),
(58, 'Flood Kappa', 'Flood', 'High', '2024-09-20', '2024-09-25', 3, 'Major flooding after storms in the region.'),
(59, 'Earthquake Lambda', 'Earthquake', 'Moderate', '2024-05-15', '2024-05-15', 2, 'Earthquake felt but no significant damage.'),

(60, 'Tsunami Mu', 'Tsunami', 'Severe', '2024-04-20', '2024-04-20', 9, 'A tsunami warning issued following a strong quake.'),
(61, 'Hurricane Nu', 'Hurricane', 'Severe', '2024-10-01', '2024-10-05', 1, 'Hurricane causing widespread evacuations.'),
(62, 'Wildfire Xi', 'Wildfire', 'Severe', '2024-08-15', '2024-08-20', 4, 'Wildfire threatening residential neighborhoods.'),
(63, 'Flood Omicron', 'Flood', 'Moderate', '2024-06-30', '2024-07-05', 3, 'Flooding reported in low-lying regions.'),
(64, 'Drought Pi', 'Drought', 'High', '2024-03-05', '2024-05-30', 7, 'Drought conditions affecting local farms.'),
(65, 'Earthquake Rho', 'Earthquake', 'Severe', '2024-01-10', '2024-01-10', 2, 'Severe earthquake causing major damage.'),
(66, 'Tornado Sigma', 'Tornado', 'Extreme', '2024-02-01', '2024-02-01', 5, 'Destructive tornado warning issued for the area.'),
(67, 'Flood Tau', 'Flood', 'Moderate', '2024-08-05', '2024-08-10', 3, 'Minor flooding reported after heavy rains.'),
(68, 'Hurricane Upsilon', 'Hurricane', 'Severe', '2024-07-25', '2024-07-30', 1, 'Hurricane approaching the coast.'),
(69, 'Wildfire Phi', 'Wildfire', 'Severe', '2024-09-15', '2024-09-20', 4, 'Wildfires spreading rapidly.'),
(70, 'Earthquake Chi', 'Earthquake', 'High', '2024-10-01', '2024-10-01', 2, 'Severe earthquake shaking entire region.'),
(71, 'Tornado Psi', 'Tornado', 'Extreme', '2024-04-05', '2024-04-05', 5, 'Tornado touching down causing severe damage.'),
(72, 'Flood Alpha', 'Flood', 'Moderate', '2024-08-30', '2024-09-05', 3, 'Flooding after tropical storm hits.'),
(73, 'Drought Beta', 'Drought', 'High', '2024-05-01', '2024-09-01', 7, 'Prolonged drought affecting water resources.'),
(74, 'Hurricane Gamma', 'Hurricane', 'Severe', '2024-07-01', '2024-07-05', 1, 'Hurricane causing severe weather alerts.'),
(75, 'Wildfire Delta', 'Wildfire', 'Severe', '2024-06-20', '2024-06-25', 4, 'Wildfires threatening wildlife.'),
(76, 'Flood Epsilon', 'Flood', 'Moderate', '2024-10-10', '2024-10-15', 3, 'Flooding affecting major highways.'),
(77, 'Earthquake Zeta', 'Earthquake', 'Severe', '2024-01-20', '2024-01-20', 2, 'Strong earthquake felt throughout the region.'),
(78, 'Tornado Eta', 'Tornado', 'Extreme', '2024-11-01', '2024-11-01', 5, 'Tornado warning issued across multiple states.'),
(79, 'Flood Theta', 'Flood', 'High', '2024-09-15', '2024-09-20', 3, 'Flooding causing disruptions in transport.'),
(80, 'Hurricane Iota', 'Hurricane', 'Severe', '2024-10-15', '2024-10-20', 1, 'Hurricane hitting coastal regions.'),
(81, 'Drought Kappa', 'Drought', 'High', '2024-05-15', '2024-09-15', 7, 'Drought conditions leading to water shortages.'),

(82, 'Wildfire Lambda', 'Wildfire', 'Severe', '2024-08-01', '2024-08-05', 4, 'Wildfire spreading rapidly in dry conditions.'),
(83, 'Earthquake Mu', 'Earthquake', 'Moderate', '2024-04-25', '2024-04-25', 2, 'Minor earthquake causing little disruption.'),
(84, 'Tornado Nu', 'Tornado', 'Extreme', '2024-02-10', '2024-02-10', 5, 'A significant tornado warning issued for the area.'),
(85, 'Flood Xi', 'Flood', 'High', '2024-03-15', '2024-03-20', 3, 'Flooding in low areas after heavy rains.'),
(86, 'Hurricane Omicron', 'Hurricane', 'Severe', '2024-09-05', '2024-09-10', 1, 'Hurricane causing emergency evacuations.'),
(87, 'Drought Pi', 'Drought', 'High', '2024-06-15', '2024-09-15', 7, 'Drought affecting food production.'),
(88, 'Wildfire Rho', 'Wildfire', 'Severe', '2024-07-10', '2024-07-15', 4, 'Wildfires damaging forests and wildlife.'),
(89, 'Earthquake Sigma', 'Earthquake', 'Moderate', '2024-11-01', '2024-11-01', 2, 'Minor quake felt with no major impacts.'),
(90, 'Tornado Tau', 'Tornado', 'Extreme', '2024-04-20', '2024-04-20', 5, 'A destructive tornado impacted the city.'),
(91, 'Flood Upsilon', 'Flood', 'High', '2024-02-25', '2024-03-02', 3, 'Flooding reported after heavy rainfall.'),
(92, 'Hurricane Phi', 'Hurricane', 'Severe', '2024-10-10', '2024-10-15', 1, 'Hurricane warning issued for coastal areas.'),
(93, 'Drought Chi', 'Drought', 'High', '2024-05-05', '2024-09-01', 7, 'Drought conditions leading to water restrictions.'),
(94, 'Wildfire Psi', 'Wildfire', 'Severe', '2024-08-10', '2024-08-15', 4, 'Wildfire threatening residential communities.'),
(95, 'Earthquake Alpha', 'Earthquake', 'Severe', '2024-01-05', '2024-01-05', 2, 'A 7.2 magnitude quake causing widespread damage.'),
(96, 'Tornado Beta', 'Tornado', 'Extreme', '2024-06-20', '2024-06-20', 5, 'Severe tornado warning issued for the area.'),
(97, 'Flood Gamma', 'Flood', 'Moderate', '2024-07-05', '2024-07-10', 3, 'Flooding in urban areas following storms.'),
(98, 'Hurricane Delta', 'Hurricane', 'Severe', '2024-09-01', '2024-09-05', 1, 'Hurricane resulting in power outages.'),
(99, 'Drought Epsilon', 'Drought', 'High', '2024-04-15', '2024-08-30', 7, 'Drought severely affecting agriculture.'),
(100, 'Wildfire Zeta', 'Wildfire', 'Severe', '2024-07-15', '2024-07-20', 4, 'Wildfires impacting local wildlife and homes.');

- **Channels**

  All the records are generated automatically because we have created a trigger to create a channel.



Query | Query History

```
1  select * from Channels;
```

Data Output | Messages | Notifications

	channelid [PK] integer	name character varying (255)	disasterid integer	createdat timestamp without time zone
1	1	Hurricane Alpha	1	2024-11-05 01:57:19.258533
2	2	Earthquake Beta	2	2024-11-05 01:57:19.258533
3	3	Flood Gamma	3	2024-11-05 01:57:19.258533
4	4	Wildfire Delta	4	2024-11-05 01:57:19.258533
5	5	Tornado Epsilon	5	2024-11-05 01:57:19.258533
6	6	Earthquake Zeta	6	2024-11-05 01:57:19.258533
7	7	Flood Eta	7	2024-11-05 01:57:19.258533
8	8	Hurricane Theta	8	2024-11-05 01:57:19.258533
9	9	Wildfire Iota	9	2024-11-05 01:57:19.258533
10	10	Tornado Kappa	10	2024-11-05 01:57:19.258533
11	11	Flood Lambda	11	2024-11-05 01:57:19.258533
12	12	Landslide Mu	12	2024-11-05 01:57:19.258533
13	13	Earthquake Nu	13	2024-11-05 01:57:19.258533
14	14	Drought Xi	14	2024-11-05 01:57:19.258533
15	15	Cyclone Omicron	15	2024-11-05 01:57:19.258533
16	16	Tsunami Pi	16	2024-11-05 01:57:19.258533
17	17	Flood Rho	17	2024-11-05 01:57:19.258533
18	18	Hurricane Sigma	18	2024-11-05 01:57:19.258533
19	19	Wildfire Tau	19	2024-11-05 01:57:19.258533
20	20	Tornado Upsilon	20	2024-11-05 01:57:19.258533
21	21	Landslide Phi	21	2024-11-05 01:57:19.258533

Total rows: 100 of 100 Query complete 00:00:00.155 Ln 1, Col 23

- **Users**

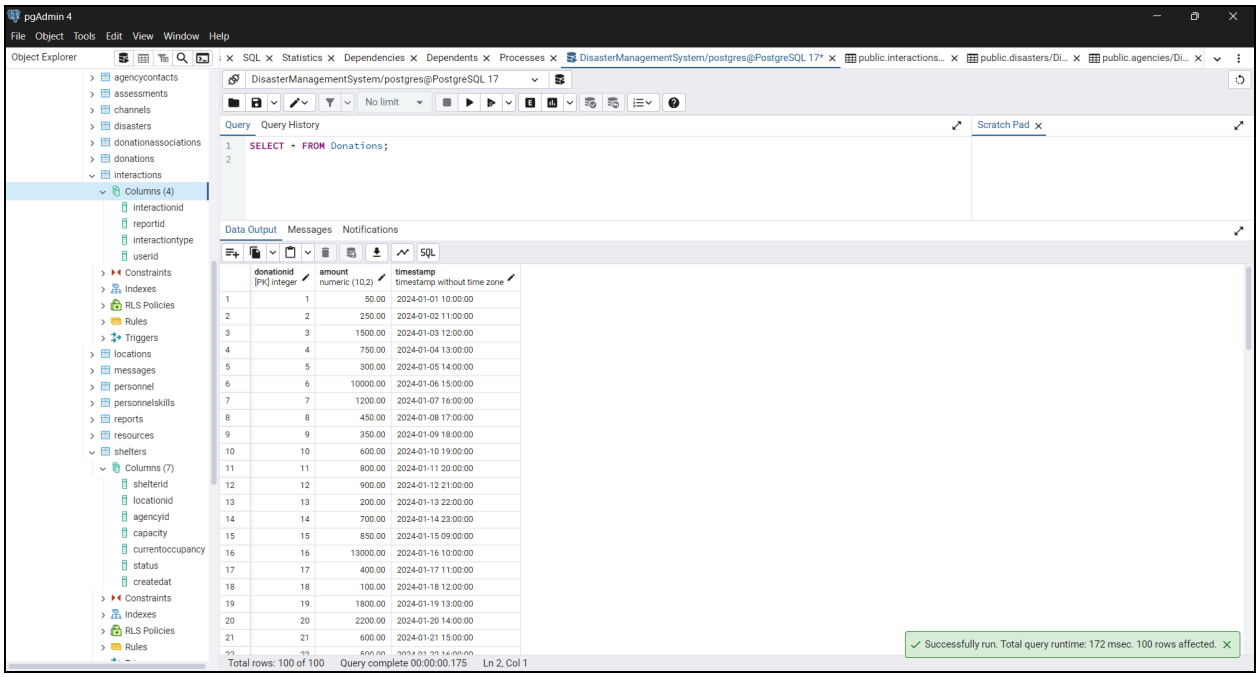
```
CREATE TABLE Users (
    UserID SERIAL PRIMARY KEY,
    Name VARCHAR(255) NOT NULL,
    Username VARCHAR(50) UNIQUE NOT NULL,
    Password VARCHAR(255) NOT NULL,
    Role VARCHAR(50),
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);

INSERT INTO Users (UserID, Name, Username, Password, Role, CreatedAt) VALUES
(1, 'Kalyani Dave', 'kalyani_dave', '202412017', 'superadmin', '2024-01-01'),
(2, 'Pithadiya Kirtan', 'pithadiya_kirtan', '202412073', 'superadmin', '2024-01-01'),
(3, 'Aarav Sharma', 'aarav_sharma', '12345678', 'admin', '2024-01-02'),
(4, 'Vivaan Gupta', 'vivaan_gupta', '12345678', 'user', '2024-01-03'),
(5, 'Aditya Rao', 'aditya_rao', '12345678', 'admin', '2024-01-04'),
(6, 'Vihaan Mehta', 'vihaan_mehta', '12345678', 'user', '2024-01-05'),
(7, 'Arjun Verma', 'arjun_verma', '12345678', 'user', '2024-01-06'),
(8, 'Sai Patel', 'sai_patel', '12345678', 'admin', '2024-01-07'),
(9, 'Reyansh Nair', 'reyansh_nair', '12345678', 'user', '2024-01-08'),
(10, 'Krishna Iyer', 'krishna_iyer', '12345678', 'user', '2024-01-09'),
(11, 'Rohan Desai', 'rohan_desai', '12345678', 'user', '2024-01-10'),
(12, 'Kartik Singh', 'kartik_singh', '12345678', 'admin', '2024-01-11'),
(13, 'Neelam Choudhury', 'neelam_choudhury', '12345678', 'user', '2024-01-12'),
(14, 'Sneha Joshi', 'sneha_joshi', '12345678', 'user', '2024-01-13'),
(15, 'Ananya Bhat', 'ananya_bhat', '12345678', 'user', '2024-01-14'),
(16, 'Priya Kumar', 'priya_kumar', '12345678', 'user', '2024-01-15'),
(17, 'Meera Agarwal', 'meera_agarwal', '12345678', 'user', '2024-01-16'),
(18, 'Riya Shah', 'riya_shah', '12345678', 'user', '2024-01-17'),
(19, 'Tanvi Malhotra', 'tanvi_malhotra', '12345678', 'user', '2024-01-18'),
(20, 'Aditi Patil', 'aditi_patil', '12345678', 'user', '2024-01-19'),
(21, 'Ravi Singh', 'ravi_singh', '12345678', 'admin', '2024-01-20'),
(22, 'Nisha Bansal', 'nisha_bansal', '12345678', 'user', '2024-01-21'),
(23, 'Raghav Gupta', 'raghav_gupta', '12345678', 'user', '2024-01-22'),
(24, 'Deepak Chatterjee', 'deepak_chatterjee', '12345678', 'user', '2024-01-23'),
(25, 'Anjali Kapoor', 'anjali_kapoor', '12345678', 'user', '2024-01-24'),
(26, 'Siddharth Jain', 'siddharth_jain', '12345678', 'user', '2024-01-25'),
(27, 'Vikram Reddy', 'vikram_reddy', '12345678', 'user', '2024-01-26'),
(28, 'Swati Iyer', 'swati_iyer', '12345678', 'user', '2024-01-27'),
(29, 'Ruchi Singh', 'ruchi_singh', '12345678', 'user', '2024-01-28'),
(30, 'Tarun Menon', 'tarun_menon', '12345678', 'user', '2024-01-29'),
(31, 'Lavanya Rao', 'lavanya_rao', '12345678', 'user', '2024-01-30'),
```

(32, 'Nitin Malhotra', 'nitin_malhotra', '12345678', 'user', '2024-01-31'),
(33, 'Megha Thakur', 'megha_thakur', '12345678', 'user', '2024-02-01'),
(34, 'Suresh Bhatia', 'suresh_bhatia', '12345678', 'user', '2024-02-02'),
(35, 'Neha Sharma', 'neha_sharma', '12345678', 'user', '2024-02-03'),
(36, 'Amit Gupta', 'amit_gupta', '12345678', 'user', '2024-02-04'),
(37, 'Sheetal Roy', 'sheetal_roy', '12345678', 'user', '2024-02-05'),
(38, 'Kabir Das', 'kabir_das', '12345678', 'user', '2024-02-06'),
(39, 'Bhavna Choudhary', 'bhavna_choudhary', '12345678', 'user', '2024-02-07'),
(40, 'Vivek Sinha', 'vivek_sinha', '12345678', 'user', '2024-02-08'),
(41, 'Geeta Sharma', 'geeta_sharma', '12345678', 'user', '2024-02-09'),
(42, 'Uday Sethi', 'uday_sethi', '12345678', 'user', '2024-02-10'),
(43, 'Karan Kapoor', 'karan_kapoor', '12345678', 'user', '2024-02-11'),
(44, 'Rani Rao', 'rani_rao', '12345678', 'user', '2024-02-12'),
(45, 'Tanya Joshi', 'tanya_joshi', '12345678', 'user', '2024-02-13'),
(46, 'Niraj Kumar', 'niraj_kumar', '12345678', 'user', '2024-02-14'),
(47, 'Shivangi Jain', 'shivangi_jain', '12345678', 'user', '2024-02-15'),
(48, 'Rajesh Menon', 'rajesh_menon', '12345678', 'user', '2024-02-16'),
(49, 'Hina Patel', 'hina_patel', '12345678', 'user', '2024-02-17'),
(50, 'Parul Verma', 'parul_verma', '12345678', 'user', '2024-02-18'),
(51, 'Shreya Reddy', 'shreya_reddy', '12345678', 'user', '2024-02-19'),
(52, 'Tushar Yadav', 'tushar_yadav', '12345678', 'user', '2024-02-20'),
(53, 'Kavya Bansal', 'kavya_bansal', '12345678', 'user', '2024-02-21'),
(54, 'Suman Soni', 'suman_soni', '12345678', 'user', '2024-02-22'),
(55, 'Yogesh Sharma', 'yogesh_sharma', '12345678', 'user', '2024-02-23'),
(56, 'Aanya Prakash', 'aanya_prakash', '12345678', 'user', '2024-02-24'),
(57, 'Pankaj Desai', 'pankaj_desai', '12345678', 'user', '2024-02-25'),
(58, 'Kiran Verma', 'kiran_verma', '12345678', 'user', '2024-02-26'),
(59, 'Dinesh Gupta', 'dinesh_gupta', '12345678', 'user', '2024-02-27'),
(60, 'Rakesh Iyer', 'rakesh_iyer', '12345678', 'user', '2024-02-28'),
(61, 'Aditi Verma', 'aditi_verma', '12345678', 'user', '2024-03-01'),
(62, 'Naina Bhargav', 'naina_bhargav', '12345678', 'user', '2024-03-02'),
(63, 'Ankur Sharma', 'ankur_sharma', '12345678', 'user', '2024-03-03'),
(64, 'Richa Patel', 'richa_patel', '12345678', 'user', '2024-03-04'),
(65, 'Sanjeev Kaur', 'sanjeev_kaur', '12345678', 'user', '2024-03-05'),
(66, 'Devendra Rathi', 'devendra_rathi', '12345678', 'user', '2024-03-06'),
(67, 'Lakshmi Rao', 'lakshmi_rao', '12345678', 'user', '2024-03-07'),
(68, 'Siddhi Gupta', 'siddhi_gupta', '12345678', 'user', '2024-03-08'),
(69, 'Manoj Saini', 'manoj_saini', '12345678', 'user', '2024-03-09'),
(70, 'Vinay Joshi', 'vinay_joshi', '12345678', 'user', '2024-03-10'),
(71, 'Rashmi Rathi', 'rashmi_rathi', '12345678', 'user', '2024-03-11'),
(72, 'Ashok Thakur', 'ashok_thakur', '12345678', 'user', '2024-03-12'),
(73, 'Nishant Bansal', 'nishant_bansal', '12345678', 'user', '2024-03-13'),
(74, 'Kripa Patel', 'kripa_patel', '12345678', 'user', '2024-03-14'),
(75, 'Chandni Sharma', 'chandni_sharma', '12345678', 'user', '2024-03-15'),

(76, 'Samir Khan', 'samir_khan', '12345678', 'user', '2024-03-16'),
(77, 'Puja Roy', 'puja_roy', '12345678', 'user', '2024-03-17'),
(78, 'Mohit Singh', 'mohit_singh', '12345678', 'user', '2024-03-18'),
(79, 'Divya Joshi', 'divya_joshi', '12345678', 'user', '2024-03-19'),
(80, 'Ritika Kapoor', 'ritika_kapoor', '12345678', 'user', '2024-03-20'),
(81, 'Rajiv Sharma', 'rajiv_sharma', '12345678', 'user', '2024-03-21'),
(82, 'Shalini Agarwal', 'shalini_agarwal', '12345678', 'user', '2024-03-22'),
(83, 'Kunal Khanna', 'kunal_khanna', '12345678', 'user', '2024-03-23'),
(84, 'Prachi Singh', 'prachi_singh', '12345678', 'user', '2024-03-24'),
(85, 'Sahil Mehta', 'sahil_mehta', '12345678', 'user', '2024-03-25'),
(86, 'Anshika Yadav', 'anshika_yadav', '12345678', 'user', '2024-03-26'),
(87, 'Suraj Nair', 'suraj_nair', '12345678', 'user', '2024-03-27'),
(88, 'Tanya Kapoor', 'tanya_kapoor', '12345678', 'user', '2024-03-28'),
(89, 'Naman Kumar', 'naman_kumar', '12345678', 'user', '2024-03-29'),
(90, 'Vidya Sharma', 'vidya_sharma', '12345678', 'user', '2024-03-30'),
(91, 'Rakesh Choudhary', 'rakesh_choudhary', '12345678', 'user', '2024-03-31'),
(92, 'Shruti Yadav', 'shruti_yadav', '12345678', 'user', '2024-04-01'),
(93, 'Karan Sethi', 'karan_sethi', '12345678', 'user', '2024-04-02'),
(94, 'Lata Desai', 'lata_desai', '12345678', 'user', '2024-04-03'),
(95, 'Bipin Reddy', 'bipin_reddy', '12345678', 'user', '2024-04-04'),
(96, 'Neeru Iyer', 'neeru_iyer', '12345678', 'user', '2024-04-05'),
(97, 'Tarun Bansal', 'tarun_bansal', '12345678', 'user', '2024-04-06'),
(98, 'Rupesh Patil', 'rupesh_patil', '12345678', 'user', '2024-04-07'),
(99, 'Payal Sharma', 'payal_sharma', '12345678', 'user', '2024-04-08'),
(100, 'Siddharth Bhat', 'siddharth_bhat', '12345678', 'user', '2024-04-09');

- **Donations**




```
CREATE TABLE Donations (
    DonationID SERIAL PRIMARY KEY,
    Amount NUMERIC(10, 2) NOT NULL,
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);

INSERT INTO Donations (DonationID, Amount, Timestamp) VALUES
(1, 50.00, '2024-01-01 10:00:00'),
(2, 250.00, '2024-01-02 11:00:00'),
(3, 1500.00, '2024-01-03 12:00:00'),
(4, 750.00, '2024-01-04 13:00:00'),
(5, 300.00, '2024-01-05 14:00:00'),
(6, 10000.00, '2024-01-06 15:00:00'),
(7, 1200.00, '2024-01-07 16:00:00'),
(8, 450.00, '2024-01-08 17:00:00'),
(9, 350.00, '2024-01-09 18:00:00'),
(10, 600.00, '2024-01-10 19:00:00'),
(11, 800.00, '2024-01-11 20:00:00'),
(12, 900.00, '2024-01-12 21:00:00'),
(13, 200.00, '2024-01-13 22:00:00'),
(14, 700.00, '2024-01-14 23:00:00'),
(15, 850.00, '2024-01-15 09:00:00'),
(16, 13000.00, '2024-01-16 10:00:00'),
```

(17, 400.00, '2024-01-17 11:00:00'),
(18, 100.00, '2024-01-18 12:00:00'),
(19, 1800.00, '2024-01-19 13:00:00'),
(20, 2200.00, '2024-01-20 14:00:00'),
(21, 600.00, '2024-01-21 15:00:00'),
(22, 500.00, '2024-01-22 16:00:00'),
(23, 750.00, '2024-01-23 17:00:00'),
(24, 300.00, '2024-01-24 18:00:00'),
(25, 1200.00, '2024-01-25 19:00:00'),
(26, 900.00, '2024-01-26 20:00:00'),
(27, 1000.00, '2024-01-27 21:00:00'),
(28, 150.00, '2024-01-28 22:00:00'),
(29, 3000.00, '2024-01-29 23:00:00'),
(30, 1100.00, '2024-01-30 09:00:00'),
(31, 400.00, '2024-01-31 10:00:00'),
(32, 800.00, '2024-02-01 11:00:00'),
(33, 600.00, '2024-02-02 12:00:00'),
(34, 200.00, '2024-02-03 13:00:00'),
(35, 1700.00, '2024-02-04 14:00:00'),
(36, 1500.00, '2024-02-05 15:00:00'),
(37, 100.00, '2024-02-06 16:00:00'),
(38, 900.00, '2024-02-07 17:00:00'),
(39, 400.00, '2024-02-08 18:00:00'),
(40, 300.00, '2024-02-09 19:00:00'),
(41, 500.00, '2024-02-10 20:00:00'),
(42, 800.00, '2024-02-11 21:00:00'),
(43, 600.00, '2024-02-12 22:00:00'),
(44, 1000.00, '2024-02-13 23:00:00'),
(45, 200.00, '2024-02-14 09:00:00'),
(46, 750.00, '2024-02-15 10:00:00'),
(47, 300.00, '2024-02-16 11:00:00'),
(48, 500.00, '2024-02-17 12:00:00'),
(49, 450.00, '2024-02-18 13:00:00'),
(50, 13000.00, '2024-02-19 14:00:00'),
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(52, 1200.00, '2024-02-21 16:00:00'),
(53, 700.00, '2024-02-22 17:00:00'),
(54, 2500.00, '2024-02-23 18:00:00'),
(55, 600.00, '2024-02-24 19:00:00'),
(56, 300.00, '2024-02-25 20:00:00'),
(57, 500.00, '2024-02-26 21:00:00'),
(58, 400.00, '2024-02-27 22:00:00'),
(59, 150.00, '2024-02-28 23:00:00'),
(60, 1200.00, '2024-03-01 09:00:00'),

(61, 100.00, '2024-03-02 10:00:00'),
(62, 200.00, '2024-03-03 11:00:00'),
(63, 300.00, '2024-03-04 12:00:00'),
(64, 400.00, '2024-03-05 13:00:00'),
(65, 500.00, '2024-03-06 14:00:00'),
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(67, 700.00, '2024-03-08 16:00:00'),
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(75, 1500.00, '2024-03-16 09:00:00'),
(76, 1600.00, '2024-03-17 10:00:00'),
(77, 1700.00, '2024-03-18 11:00:00'),
(78, 1800.00, '2024-03-19 12:00:00'),
(79, 1900.00, '2024-03-20 13:00:00'),
(80, 2000.00, '2024-03-21 14:00:00'),
(81, 2100.00, '2024-03-22 15:00:00'),
(82, 2200.00, '2024-03-23 16:00:00'),
(83, 2300.00, '2024-03-24 17:00:00'),
(84, 2400.00, '2024-03-25 18:00:00'),
(85, 2500.00, '2024-03-26 19:00:00'),
(86, 2600.00, '2024-03-27 20:00:00'),
(87, 2700.00, '2024-03-28 21:00:00'),
(88, 2800.00, '2024-03-29 22:00:00'),
(89, 2900.00, '2024-03-30 23:00:00'),
(90, 5000.00, '2024-03-31 09:00:00'),
(91, 5500.00, '2024-04-01 10:00:00'),
(92, 600.00, '2024-04-02 11:00:00'),
(93, 700.00, '2024-04-03 12:00:00'),
(94, 800.00, '2024-04-04 13:00:00'),
(95, 900.00, '2024-04-05 14:00:00'),
(96, 100.00, '2024-04-06 15:00:00'),
(97, 2000.00, '2024-04-07 16:00:00'),
(98, 300.00, '2024-04-08 17:00:00'),
(99, 400.00, '2024-04-09 18:00:00'),
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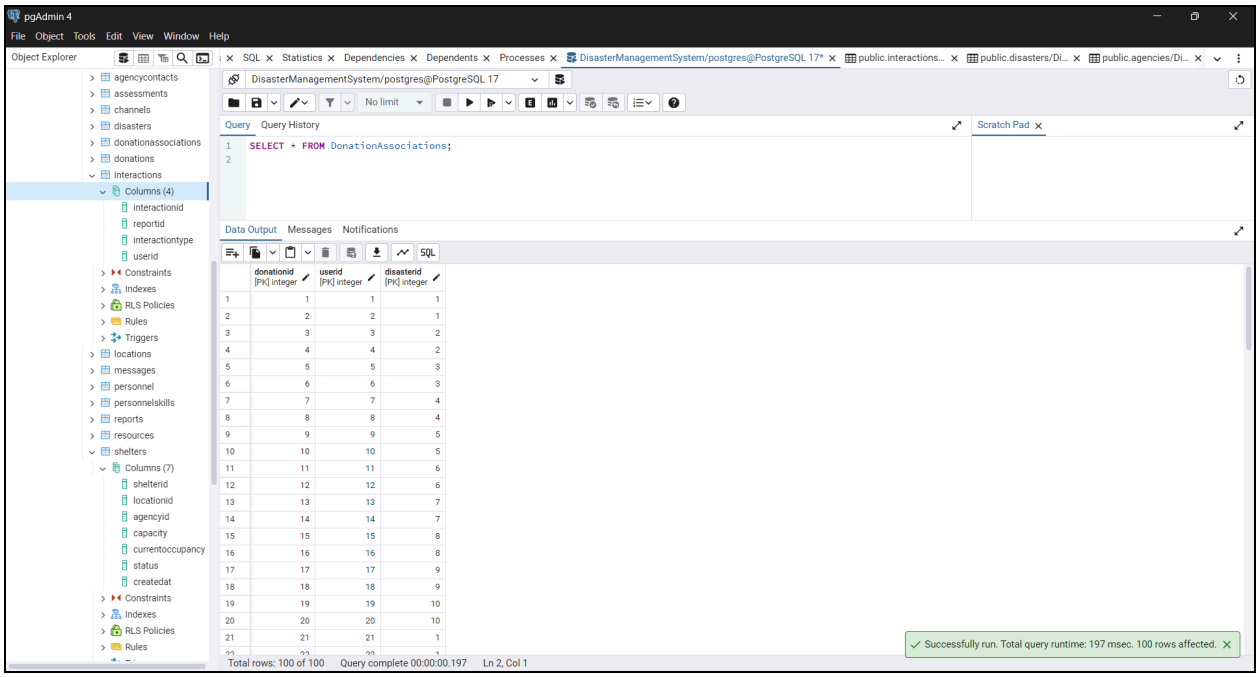
- **DonationAssociations**




```
CREATE TABLE DonationAssociations (
    DonationID INT REFERENCES Donations(DonationID) ON DELETE CASCADE,
    UserID INT REFERENCES Users(UserID) ON DELETE CASCADE,
    DisasterID INT REFERENCES Disasters(DisasterID) ON DELETE CASCADE,
    PRIMARY KEY (DonationID, UserID, DisasterID)
);

INSERT INTO DonationAssociations (DonationID, UserID, DisasterID) VALUES
(1, 1, 1),
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(9, 9, 5),
(10, 10, 5),
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(12, 12, 6),
(13, 13, 7),
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(15, 15, 8),
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(16, 16, 8),
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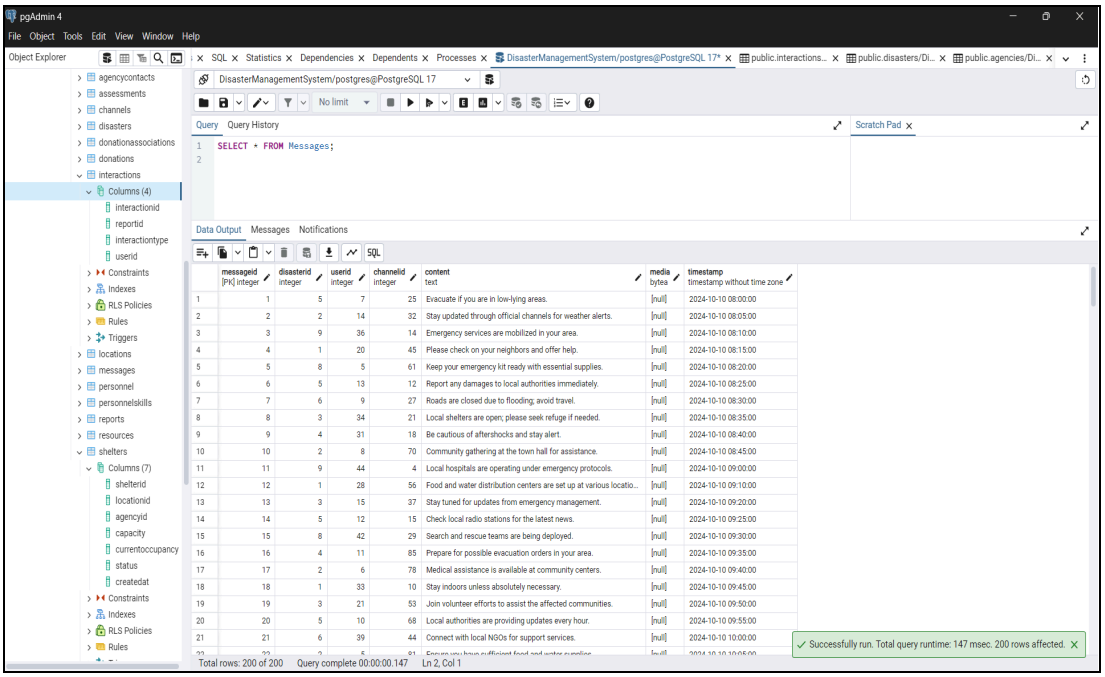
(99, 99, 10),
(100, 100, 10);

- **Messages**




```
CREATE TABLE Messages (
    MessageID SERIAL PRIMARY KEY,
    DisasterID INT REFERENCES Disasters(DisasterID) ON DELETE CASCADE,
    UserID INT REFERENCES Users(UserID) ON DELETE CASCADE,
    ChannelID INT REFERENCES Channels(ChannelID) ON DELETE CASCADE,
    Content TEXT,
    Media BYTEA,
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

INSERT INTO Messages (MessageID, DisasterID, UserID, ChannelID, Content, Media, Timestamp) VALUES
(1, 5, 7, 25, 'Evacuate if you are in low-lying areas.', NULL, '2024-10-10 08:00:00'),
(2, 2, 14, 32, 'Stay updated through official channels for weather alerts.', NULL, '2024-10-10 08:05:00'),
(3, 9, 36, 14, 'Emergency services are mobilized in your area.', NULL, '2024-10-10 08:10:00'),
(4, 1, 20, 45, 'Please check on your neighbors and offer help.', NULL, '2024-10-10 08:15:00'),
(5, 8, 5, 61, 'Keep your emergency kit ready with essential supplies.', NULL, '2024-10-10 08:20:00'),

(6, 5, 13, 12, 'Report any damages to local authorities immediately.', NULL, '2024-10-10 08:25:00'),

(7, 6, 9, 27, 'Roads are closed due to flooding; avoid travel.', NULL, '2024-10-10 08:30:00'),
(8, 3, 34, 21, 'Local shelters are open; please seek refuge if needed.', NULL, '2024-10-10 08:35:00'),
(9, 4, 31, 18, 'Be cautious of aftershocks and stay alert.', NULL, '2024-10-10 08:40:00'),
(10, 2, 8, 70, 'Community gathering at the town hall for assistance.', NULL, '2024-10-10 08:45:00'),

(11, 9, 44, 4, 'Local hospitals are operating under emergency protocols.', NULL, '2024-10-10 09:00:00'),
(12, 1, 28, 56, 'Food and water distribution centers are set up at various locations.', NULL, '2024-10-10 09:10:00'),
(13, 3, 15, 37, 'Stay tuned for updates from emergency management.', NULL, '2024-10-10 09:20:00'),
(14, 5, 12, 15, 'Check local radio stations for the latest news.', NULL, '2024-10-10 09:25:00'),
(15, 8, 42, 29, 'Search and rescue teams are being deployed.', NULL, '2024-10-10 09:30:00'),

(16, 4, 11, 85, 'Prepare for possible evacuation orders in your area.', NULL, '2024-10-10 09:35:00'),
(17, 2, 6, 78, 'Medical assistance is available at community centers.', NULL, '2024-10-10 09:40:00'),
(18, 1, 33, 10, 'Stay indoors unless absolutely necessary.', NULL, '2024-10-10 09:45:00'),
(19, 3, 21, 53, 'Join volunteer efforts to assist the affected communities.', NULL, '2024-10-10 09:50:00'),
(20, 5, 10, 68, 'Local authorities are providing updates every hour.', NULL, '2024-10-10 09:55:00'),

(21, 6, 39, 44, 'Connect with local NGOs for support services.', NULL, '2024-10-10 10:00:00'),
(22, 2, 5, 81, 'Ensure you have sufficient food and water supplies.', NULL, '2024-10-10 10:05:00'),
(23, 8, 27, 39, 'Stay off social media for accurate information.', NULL, '2024-10-10 10:10:00'),
(24, 9, 16, 25, 'Volunteer opportunities are available; please help out.', NULL, '2024-10-10 10:15:00'),
(25, 1, 50, 14, 'Power outages reported; conserve battery usage.', NULL, '2024-10-10 10:20:00'),

(26, 5, 34, 77, 'Community meetings scheduled to discuss recovery plans.', NULL, '2024-10-10 10:30:00'),

(27, 3, 22, 88, 'Pet owners: ensure pets are safe and secure.', NULL, '2024-10-10 10:35:00'),
(28, 4, 45, 59, 'Check on elderly neighbors who may need assistance.', NULL, '2024-10-10 10:40:00'),
(29, 2, 37, 63, 'Supplies are being distributed at the community center.', NULL, '2024-10-10 10:45:00'),
(30, 9, 12, 44, 'Listen to emergency broadcasts for safety updates.', NULL, '2024-10-10 10:50:00'),

(31, 1, 41, 77, 'Follow evacuation routes as directed by authorities.', NULL, '2024-10-10 10:55:00'),
(32, 5, 10, 12, 'Stay informed; misinformation can cause panic.', NULL, '2024-10-10 11:00:00'),
(33, 8, 30, 25, 'Local businesses are offering free resources to those in need.', NULL, '2024-10-10 11:05:00'),
(34, 3, 55, 89, 'Set up a communication plan with your family.', NULL, '2024-10-10 11:10:00'),
(35, 2, 18, 56, 'Coordinate with your neighbors to share resources.', NULL, '2024-10-10 11:15:00'),

(36, 6, 13, 88, 'Community members are gathering to offer help.', NULL, '2024-10-10 11:20:00'),
(37, 4, 34, 71, 'Road access is improving; use caution when traveling.', NULL, '2024-10-10 11:25:00'),
(38, 1, 17, 45, 'Emergency response teams are working around the clock.', NULL, '2024-10-10 11:30:00'),
(39, 3, 40, 22, 'Support local shelters with donations and supplies.', NULL, '2024-10-10 11:35:00'),
(40, 5, 10, 36, 'Stay connected with family through reliable means.', NULL, '2024-10-10 11:40:00'),

(41, 8, 32, 60, 'Information is being updated on official websites.', NULL, '2024-10-10 11:45:00'),
(42, 2, 15, 84, 'Join local cleanup efforts post-disaster.', NULL, '2024-10-10 11:50:00'),
(43, 9, 23, 53, 'Psychological support is available; reach out for help.', NULL, '2024-10-10 11:55:00'),
(44, 1, 38, 49, 'Have a plan in place for future emergencies.', NULL, '2024-10-10 12:00:00'),
(45, 5, 19, 41, 'Thank you to all volunteers working tirelessly.', NULL, '2024-10-10 12:05:00'),

(46, 6, 25, 11, 'Keep emergency numbers saved on your phone.', NULL, '2024-10-10 12:10:00'),

(47, 4, 10, 66, 'Update your family about your safety status.', NULL, '2024-10-10 12:15:00'),
(48, 3, 51, 28, 'Local authorities are distributing health supplies.', NULL, '2024-10-10 12:20:00'),
(49, 2, 7, 39, 'Contribute to local fundraising efforts.', NULL, '2024-10-10 12:25:00'),
(50, 9, 20, 55, 'Attend community meetings to stay informed.', NULL, '2024-10-10 12:30:00'),

(51, 1, 12, 77, 'Flooded areas should be avoided at all costs.', NULL, '2024-10-10 12:35:00'),
(52, 8, 3, 63, 'Share resources available for mental health support.', NULL, '2024-10-10 12:40:00'),
(53, 5, 30, 88, 'Updates will be shared as information becomes available.', NULL, '2024-10-10 12:45:00'),
(54, 4, 34, 20, 'Ensure you have a supply of medications if needed.', NULL, '2024-10-10 12:50:00'),
(55, 2, 46, 54, 'Support local businesses affected by the disaster.', NULL, '2024-10-10 12:55:00'),

(56, 3, 5, 90, 'Residents are urged to check their emergency supplies.', NULL, '2024-10-10 13:00:00'),
(57, 6, 38, 11, 'Schools are being used as temporary shelters.', NULL, '2024-10-10 13:05:00'),
(58, 8, 45, 33, 'Stay calm and help others when you can.', NULL, '2024-10-10 13:10:00'),
(59, 1, 14, 21, 'Document any damages for insurance purposes.', NULL, '2024-10-10 13:15:00'),
(60, 9, 8, 73, 'Thank you to emergency responders for their efforts.', NULL, '2024-10-10 13:20:00'),

(61, 4, 29, 66, 'Local news will provide ongoing updates on recovery.', NULL, '2024-10-10 13:25:00'),
(62, 2, 41, 45, 'Keep away from downed power lines.', NULL, '2024-10-10 13:30:00'),
(63, 5, 7, 80, 'Rising water levels are a concern; stay alert.', NULL, '2024-10-10 13:35:00'),
(64, 8, 53, 23, 'A donation drive is being organized this weekend.', NULL, '2024-10-10 13:40:00'),
(65, 3, 2, 56, 'Check on your pets and livestock for their safety.', NULL, '2024-10-10 13:45:00'),

(66, 1, 34, 77, 'Food banks are open to provide assistance.', NULL, '2024-10-10 13:50:00'),
(67, 2, 10, 32, 'Please maintain a distance from the disaster site.', NULL, '2024-10-10 13:55:00'),

(68, 6, 48, 69, 'Volunteers are needed for cleanup efforts.', NULL, '2024-10-10 14:00:00'),
(69, 4, 39, 54, 'Plan ahead for future emergencies; preparation is key.', NULL, '2024-10-10 14:05:00'),
(70, 9, 3, 30, 'Your safety is the top priority; follow instructions.', NULL, '2024-10-10 14:10:00'),

(71, 5, 26, 83, 'Community support makes a difference in recovery.', NULL, '2024-10-10 14:15:00'),
(72, 3, 42, 12, 'Local businesses are offering discounts to affected families.', NULL, '2024-10-10 14:20:00'),
(73, 1, 19, 66, 'Be patient as recovery efforts continue.', NULL, '2024-10-10 14:25:00'),
(74, 2, 12, 88, 'Assist those who may be struggling to find help.', NULL, '2024-10-10 14:30:00'),
(75, 8, 7, 39, 'Stay informed; accurate information saves lives.', NULL, '2024-10-10 14:35:00'),

(76, 4, 18, 23, 'Local authorities are coordinating with various agencies.', NULL, '2024-10-10 14:40:00'),
(77, 6, 44, 50, 'Emergency kits are available at designated locations.', NULL, '2024-10-10 14:45:00'),
(78, 5, 34, 29, 'Community resilience is vital during crises.', NULL, '2024-10-10 14:50:00'),
(79, 3, 29, 15, 'Stay calm and focused; help will arrive.', NULL, '2024-10-10 14:55:00'),
(80, 1, 4, 68, 'Update your family on your situation when possible.', NULL, '2024-10-10 15:00:00'),

(81, 2, 20, 72, 'Network with neighbors to ensure everyone is safe.', NULL, '2024-10-10 15:05:00'),
(82, 5, 35, 37, 'Be prepared for additional updates as they come.', NULL, '2024-10-10 15:10:00'),
(83, 4, 30, 16, 'Emergency shelters are providing food and safety.', NULL, '2024-10-10 15:15:00'),
(84, 6, 18, 60, 'Regular updates will be shared via this channel.', NULL, '2024-10-10 15:20:00'),
(85, 8, 24, 74, 'Keep your cell phones charged for communication.', NULL, '2024-10-10 15:25:00'),

(86, 9, 19, 78, 'Road crews are working to clear debris.', NULL, '2024-10-10 15:30:00'),
(87, 2, 12, 82, 'Volunteer opportunities are available to assist recovery.', NULL, '2024-10-10 15:35:00'),
(88, 5, 26, 67, 'Local leaders are coordinating aid efforts.', NULL, '2024-10-10 15:40:00'),
(89, 4, 22, 18, 'Stay connected for important safety information.', NULL, '2024-10-10 15:45:00'),

(90, 3, 15, 80, 'Thank you to all volunteers for your hard work.', NULL, '2024-10-10 15:50:00'),

(91, 1, 8, 55, 'Local officials are assessing damage and needs.', NULL, '2024-10-10 15:55:00'),
(92, 6, 33, 24, 'Stay updated with local news for the latest developments.', NULL, '2024-10-10 16:00:00'),
(93, 5, 4, 62, 'Safety is the priority; avoid risky areas.', NULL, '2024-10-10 16:05:00'),
(94, 2, 13, 17, 'Reach out to those who may be isolated.', NULL, '2024-10-10 16:10:00'),
(95, 4, 28, 45, 'Prepare for a potential relief distribution tomorrow.', NULL, '2024-10-10 16:15:00'),

(96, 3, 25, 36, 'Keep in touch with local resources for assistance.', NULL, '2024-10-10 16:20:00'),
(97, 8, 9, 78, 'Document any emergency expenses for potential reimbursement.', NULL, '2024-10-10 16:25:00'),
(98, 1, 14, 67, 'Support local NGOs who are assisting affected families.', NULL, '2024-10-10 16:30:00'),
(99, 6, 27, 82, 'Thank you for your ongoing support and patience.', NULL, '2024-10-10 16:35:00'),
(100, 9, 17, 75, 'Connect with local mental health services if needed.', NULL, '2024-10-10 16:40:00');

INSERT INTO Messages (MessageID, DisasterID, UserID, ChannelID, Content, Media, Timestamp) VALUES
(101, 1, 35, 22, 'Ensure you have a plan for communication.', NULL, '2024-10-10 16:45:00'),
(102, 4, 18, 38, 'Local clinics are offering free check-ups.', NULL, '2024-10-10 16:50:00'),
(103, 6, 44, 9, 'Volunteers are collecting supplies; drop-off locations listed.', NULL, '2024-10-10 16:55:00'),
(104, 5, 29, 56, 'Stay away from damaged buildings.', NULL, '2024-10-10 17:00:00'),
(105, 3, 15, 64, 'Power restoration efforts are ongoing.', NULL, '2024-10-10 17:05:00'),

(106, 2, 10, 47, 'Food delivery services are available for those in need.', NULL, '2024-10-10 17:10:00'),
(107, 8, 25, 31, 'Maintain good hygiene to prevent illness.', NULL, '2024-10-10 17:15:00'),
(108, 9, 41, 19, 'Emergency hotlines are operational for inquiries.', NULL, '2024-10-10 17:20:00'),
(109, 7, 30, 65, 'Meet at the community center for safety briefings.', NULL, '2024-10-10 17:25:00'),
(110, 1, 12, 87, 'Stay informed through official news channels.', NULL, '2024-10-10 17:30:00'),

(111, 3, 33, 42, 'Contact your family to confirm safety.', NULL, '2024-10-10 17:35:00'),
(112, 2, 22, 77, 'Community efforts are underway for debris clearance.', NULL, '2024-10-10 17:40:00'),
(113, 5, 18, 92, 'First responders are working diligently.', NULL, '2024-10-10 17:45:00'),
(114, 8, 14, 61, 'Food assistance available for families affected.', NULL, '2024-10-10 17:50:00'),
(115, 4, 39, 73, 'Mental health support is available at local centers.', NULL, '2024-10-10 17:55:00'),

(116, 6, 8, 53, 'Take care of your mental well-being during this crisis.', NULL, '2024-10-10 18:00:00'),
(117, 9, 27, 41, 'Stay hydrated and healthy; drink clean water.', NULL, '2024-10-10 18:05:00'),
(118, 2, 5, 69, 'Join local recovery efforts; every hand helps.', NULL, '2024-10-10 18:10:00'),
(119, 1, 43, 34, 'Evacuate if you hear sirens; safety first!', NULL, '2024-10-10 18:15:00'),
(120, 3, 36, 17, 'Local shelters have extended their hours.', NULL, '2024-10-10 18:20:00'),

(121, 5, 50, 62, 'Emergency kits available at community centers.', NULL, '2024-10-10 18:25:00'),
(122, 4, 24, 52, 'Fire departments are on standby for emergencies.', NULL, '2024-10-10 18:30:00'),
(123, 8, 15, 55, 'Communication is key; check in with neighbors.', NULL, '2024-10-10 18:35:00'),
(124, 2, 41, 29, 'Ensure pets are safe and secure indoors.', NULL, '2024-10-10 18:40:00'),
(125, 9, 16, 80, 'Roads are being cleared; use caution when traveling.', NULL, '2024-10-10 18:45:00'),

(126, 3, 6, 47, 'Stay tuned for further updates from authorities.', NULL, '2024-10-10 18:50:00'),
(127, 1, 35, 26, 'Help those around you; community support is vital.', NULL, '2024-10-10 18:55:00'),
(128, 4, 12, 73, 'Avoid using personal vehicles unless necessary.', NULL, '2024-10-10 19:00:00'),
(129, 2, 28, 91, 'Local news provides critical updates; stay tuned.', NULL, '2024-10-10 19:05:00'),
(130, 6, 45, 16, 'Support local food banks to help those in need.', NULL, '2024-10-10 19:10:00'),

(131, 5, 18, 84, 'Be patient; recovery efforts take time.', NULL, '2024-10-10 19:15:00'),
(132, 8, 22, 78, 'Report any emergency situations immediately.', NULL, '2024-10-10 19:20:00'),

(133, 3, 31, 61, 'Stay connected through community groups for support.', NULL, '2024-10-10 19:25:00'),
(134, 1, 19, 34, 'Emergency medical services are on standby.', NULL, '2024-10-10 19:30:00'),
(135, 9, 23, 39, 'Assist neighbors in checking on the elderly.', NULL, '2024-10-10 19:35:00'),

(136, 2, 8, 91, 'Local libraries are providing information resources.', NULL, '2024-10-10 19:40:00'),
(137, 4, 27, 62, 'Connect with family and friends regularly.', NULL, '2024-10-10 19:45:00'),
(138, 5, 36, 48, 'Keep emergency numbers easily accessible.', NULL, '2024-10-10 19:50:00'),
(139, 3, 25, 35, 'Local organizations are collecting donations.', NULL, '2024-10-10 19:55:00'),
(140, 1, 14, 53, 'Follow local authorities' instructions carefully.', NULL, '2024-10-10 20:00:00'),

(141, 6, 20, 72, 'Food assistance is being provided in various locations.', NULL, '2024-10-10 20:05:00'),
(142, 2, 13, 80, 'Report power outages to the local power company.', NULL, '2024-10-10 20:10:00'),
(143, 8, 10, 19, 'Stay indoors unless emergency services advise otherwise.', NULL, '2024-10-10 20:15:00'),
(144, 9, 4, 65, 'Community support groups are forming to aid recovery.', NULL, '2024-10-10 20:20:00'),
(145, 5, 28, 66, 'Follow news for real-time updates on the situation.', NULL, '2024-10-10 20:25:00'),

(146, 1, 9, 83, 'Local officials are assessing the situation continuously.', NULL, '2024-10-10 20:30:00'),
(147, 3, 12, 72, 'Stay calm and help each other during this time.', NULL, '2024-10-10 20:35:00'),
(148, 2, 21, 61, 'Emergency shelters are now operational for families.', NULL, '2024-10-10 20:40:00'),
(149, 4, 7, 57, 'Keep your personal belongings safe and secure.', NULL, '2024-10-10 20:45:00'),
(150, 6, 19, 33, 'Support those in need with essential supplies.', NULL, '2024-10-10 20:50:00'),

(151, 5, 11, 94, 'Local farms are providing food assistance.', NULL, '2024-10-10 20:55:00'),
(152, 8, 14, 80, 'Ensure you have adequate medicine and supplies.', NULL, '2024-10-10 21:00:00'),

(153, 3, 28, 72, 'Follow recovery updates through this channel.', NULL, '2024-10-10 21:05:00'),
(154, 1, 37, 18, 'Regular health checks are being offered at shelters.', NULL, '2024-10-10 21:10:00'),
(155, 2, 45, 36, 'Emergency response teams are working tirelessly.', NULL, '2024-10-10 21:15:00'),

(156, 9, 5, 74, 'Keep windows and doors secure from winds.', NULL, '2024-10-10 21:20:00'),
(157, 4, 15, 49, 'Community engagement is essential during recovery.', NULL, '2024-10-10 21:25:00'),
(158, 6, 29, 71, 'Local businesses are collaborating to provide aid.', NULL, '2024-10-10 21:30:00'),
(159, 5, 23, 57, 'Community efforts can help expedite recovery.', NULL, '2024-10-10 21:35:00'),
(160, 1, 20, 63, 'Stay safe and follow local advice closely.', NULL, '2024-10-10 21:40:00'),

(161, 3, 30, 75, 'Emergency funds are available for affected families.', NULL, '2024-10-10 21:45:00'),
(162, 2, 18, 68, 'Ensure to report any emergencies to the authorities.', NULL, '2024-10-10 21:50:00'),
(163, 4, 25, 34, 'Local leaders are committed to community recovery.', NULL, '2024-10-10 21:55:00'),
(164, 5, 12, 45, 'Keep in touch with neighbors for mutual support.', NULL, '2024-10-10 22:00:00'),
(165, 9, 34, 54, 'Local resources are available for emotional support.', NULL, '2024-10-10 22:05:00'),

(166, 1, 19, 63, 'Stay connected with emergency services for updates.', NULL, '2024-10-10 22:10:00'),
(167, 3, 10, 88, 'Community groups are forming to support affected individuals.', NULL, '2024-10-10 22:15:00'),
(168, 6, 7, 26, 'Regularly check on your loved ones for their safety.', NULL, '2024-10-10 22:20:00'),
(169, 5, 31, 39, 'Document all assistance received for future reference.', NULL, '2024-10-10 22:25:00'),
(170, 2, 22, 49, 'Keep a list of important contacts handy.', NULL, '2024-10-10 22:30:00'),

(171, 4, 6, 91, 'Stay away from floodwaters; they may be contaminated.', NULL, '2024-10-10 22:35:00'),
(172, 9, 33, 78, 'Emergency supplies are being distributed; check local resources.', NULL, '2024-10-10 22:40:00'),

(173, 1, 20, 14, 'Assess your home for safety after the event.', NULL, '2024-10-10 22:45:00'),
(174, 3, 13, 29, 'Gather your important documents in case of evacuation.', NULL, '2024-10-10 22:50:00'),
(175, 8, 27, 85, 'Check in on vulnerable community members.', NULL, '2024-10-10 22:55:00'),

(176, 2, 18, 70, 'Emergency contact numbers should be easily accessible.', NULL, '2024-10-10 23:00:00'),
(177, 4, 26, 46, 'Stay aware of local announcements regarding recovery efforts.', NULL, '2024-10-10 23:05:00'),
(178, 5, 36, 88, 'Be a good neighbor; check on those around you.', NULL, '2024-10-10 23:10:00'),
(179, 9, 15, 58, 'Stay safe, and keep your family informed.', NULL, '2024-10-10 23:15:00'),
(180, 1, 4, 73, 'Use resources wisely; help will come.', NULL, '2024-10-10 23:20:00'),

(181, 3, 19, 80, 'Community leaders are working hard for recovery.', NULL, '2024-10-10 23:25:00'),
(182, 2, 21, 43, 'Stay inside during severe weather; safety first.', NULL, '2024-10-10 23:30:00'),
(183, 4, 14, 90, 'Use official channels for updates; avoid rumors.', NULL, '2024-10-10 23:35:00'),
(184, 5, 30, 11, 'Local schools are closing for safety reasons.', NULL, '2024-10-10 23:40:00'),
(185, 9, 10, 76, 'Remember to support local aid organizations.', NULL, '2024-10-10 23:45:00'),

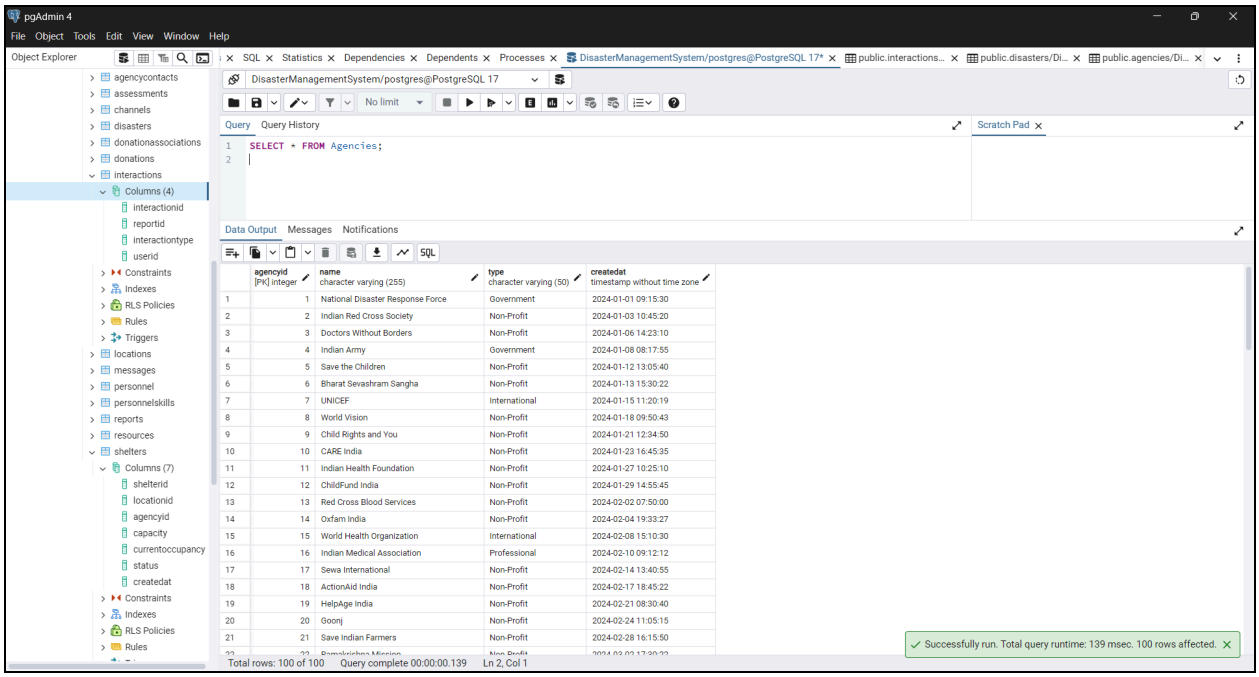
(186, 6, 17, 34, 'Emergency medical help is available at various centers.', NULL, '2024-10-10 23:50:00'),
(187, 1, 26, 68, 'Reach out if you need assistance or support.', NULL, '2024-10-10 23:55:00'),
(188, 3, 25, 54, 'Be cautious of slippery roads and debris.', NULL, '2024-10-11 00:00:00'),
(189, 2, 31, 82, 'Local volunteers are coordinating to assist families.', NULL, '2024-10-11 00:05:00'),
(190, 4, 11, 39, 'Roads are blocked; use alternate routes if necessary.', NULL, '2024-10-11 00:10:00'),

(191, 8, 22, 45, 'Keep your phone charged for emergencies.', NULL, '2024-10-11 00:15:00'),
(192, 5, 34, 56, 'Community resources are available for counseling.', NULL, '2024-10-11 00:20:00'),
(193, 9, 16, 70, 'Help is on the way; stay strong.', NULL, '2024-10-11 00:25:00'),

(194, 1, 14, 91, 'Local authorities are working to restore services.', NULL, '2024-10-11 00:30:00'),
(195, 3, 33, 67, 'Collect any necessary documents for aid applications.', NULL, '2024-10-11 00:35:00'),

(196, 2, 23, 85, 'Support each other in this challenging time.', NULL, '2024-10-11 00:40:00'),
(197, 4, 8, 28, 'Check local news for the latest updates on the disaster.', NULL, '2024-10-11 00:45:00'),
(198, 5, 37, 64, 'Local leaders are advocating for more resources.', NULL, '2024-10-11 00:50:00'),
(199, 9, 20, 59, 'Your safety and health are our top priorities.', NULL, '2024-10-11 00:55:00'),
(200, 1, 7, 72, 'Stay hopeful; recovery is possible with community support.', NULL, '2024-10-11 01:00:00');

- **Agencies**




```
CREATE TABLE Agencies (
    AgencyID SERIAL PRIMARY KEY,
    Name VARCHAR(255) NOT NULL,
    Type VARCHAR(50),
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);

INSERT INTO Agencies (AgencyID, Name, Type) VALUES
(1, 'National Disaster Response Force', 'Government'),
(2, 'Indian Red Cross Society', 'Non-Profit'),
(3, 'Doctors Without Borders', 'Non-Profit'),
(4, 'Indian Army', 'Government'),
(5, 'Save the Children', 'Non-Profit'),
(6, 'Bharat Sevashram Sangha', 'Non-Profit'),
(7, 'UNICEF', 'International'),
(8, 'World Vision', 'Non-Profit'),
(9, 'Child Rights and You', 'Non-Profit'),
(10, 'CARE India', 'Non-Profit'),
(11, 'Indian Health Foundation', 'Non-Profit'),
(12, 'ChildFund India', 'Non-Profit'),
(13, 'Red Cross Blood Services', 'Non-Profit'),
(14, 'Oxfam India', 'Non-Profit'),
(15, 'World Health Organization', 'International'),
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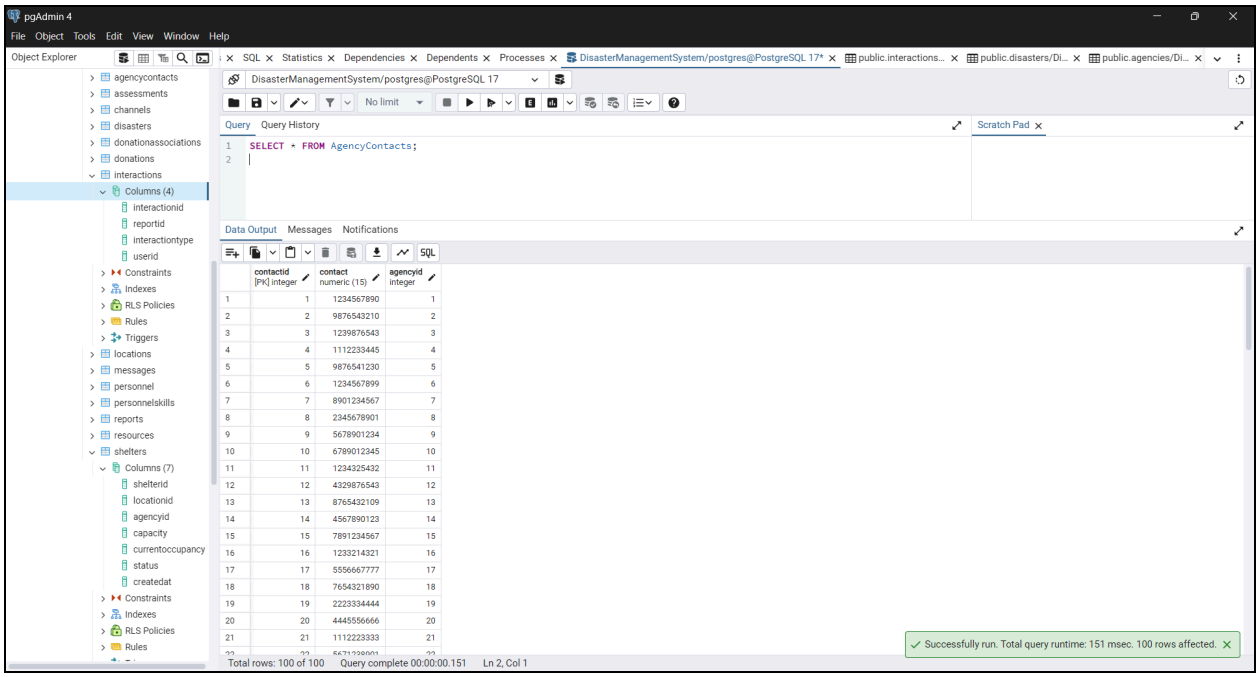
(16, 'Indian Medical Association', 'Professional'),
(17, 'Sewa International', 'Non-Profit'),
(18, 'ActionAid India', 'Non-Profit'),
(19, 'HelpAge India', 'Non-Profit'),
(20, 'Goonj', 'Non-Profit'),
(21, 'Save Indian Farmers', 'Non-Profit'),
(22, 'Ramakrishna Mission', 'Non-Profit'),
(23, 'BAPS Charities', 'Non-Profit'),
(24, 'Rotary Club of India', 'Non-Profit'),
(25, 'Lions Club of India', 'Non-Profit'),
(26, 'Youth for Seva', 'Non-Profit'),
(27, 'National Health Mission', 'Government'),
(28, 'Care India', 'Non-Profit'),
(29, 'Indian Railways Relief', 'Government'),
(30, 'National Rural Health Mission', 'Government'),
(31, 'Water Works India', 'Non-Profit'),
(32, 'Sundaram Foundation', 'Non-Profit'),
(33, 'Reliance Foundation', 'Corporate'),
(34, 'Tata Trusts', 'Corporate'),
(35, 'Azim Premji Foundation', 'Corporate'),
(36, 'Infosys Foundation', 'Corporate'),
(37, 'Vedanta Foundation', 'Corporate'),
(38, 'Tech Mahindra Foundation', 'Corporate'),
(39, 'HCL Foundation', 'Corporate'),
(40, 'Wipro Cares', 'Corporate'),
(41, 'Adani Foundation', 'Corporate'),
(42, 'Jindal Foundation', 'Corporate'),
(43, 'Mahindra Foundation', 'Corporate'),
(44, 'TV Foundation', 'Corporate'),
(45, 'Birla Charities', 'Corporate'),
(46, 'LT Foundation', 'Corporate'),
(47, 'Nirmal Bharat Abhiyan', 'Government'),
(48, 'PRASAD', 'Non-Profit'),
(49, 'GIVE Foundation', 'Non-Profit'),
(50, 'Rural Development Trust', 'Non-Profit'),
(51, 'Greenpeace India', 'Non-Profit'),
(52, 'Vasudha Foundation', 'Non-Profit'),
(53, 'Bharat Scouts and Guides', 'Non-Profit'),
(54, 'Shiksha Foundation', 'Non-Profit'),
(55, 'Chetna Foundation', 'Non-Profit'),
(56, 'Pratham', 'Non-Profit'),
(57, 'Aga Khan Foundation', 'Non-Profit'),
(58, 'Plan India', 'Non-Profit'),
(59, 'Teach for India', 'Non-Profit'),

(60, 'SankalpTaru Foundation', 'Non-Profit'),
(61, 'Mahatma Gandhi Foundation', 'Non-Profit'),
(62, 'Bharatiya Jain Sanghatana', 'Non-Profit'),
(63, 'Naandi Foundation', 'Non-Profit'),
(64, 'Sankalp Foundation', 'Non-Profit'),
(65, 'The Akanksha Foundation', 'Non-Profit'),
(66, 'Sewa Mandir', 'Non-Profit'),
(67, 'Ankuram', 'Non-Profit'),
(68, 'Dr. Reddy's Foundation', 'Corporate'),
(69, 'Bharatiya Vidya Bhavan', 'Non-Profit'),
(70, 'Ambuja Cement Foundation', 'Corporate'),
(71, 'Wipro Foundation', 'Corporate'),
(72, 'Chetna Organic', 'Non-Profit'),
(73, 'Rural Reconstruction Foundation', 'Non-Profit'),
(74, 'Bharat Vikas Parishad', 'Non-Profit'),
(75, 'Swades Foundation', 'Non-Profit'),
(76, 'Abdul Kalam Foundation', 'Non-Profit'),
(77, 'Saarthak Foundation', 'Non-Profit'),
(78, 'Society for Promotion of Youth and Masses', 'Non-Profit'),
(79, 'India Vision Foundation', 'Non-Profit'),
(80, 'Udaan India', 'Non-Profit'),
(81, 'Sustainable Development Goals India', 'Non-Profit'),
(82, 'Kamal Foundation', 'Non-Profit'),
(83, 'Pragati Foundation', 'Non-Profit'),
(84, 'Sustainable India Financial Foundation', 'Non-Profit'),
(85, 'Rural Action Group', 'Non-Profit'),
(86, 'Peace Foundation', 'Non-Profit'),
(87, 'Yogdaan Foundation', 'Non-Profit'),
(88, 'Nayi Disha Foundation', 'Non-Profit'),
(89, 'Grameen Bank', 'Non-Profit'),
(90, 'Good Neighbors India', 'Non-Profit'),
(91, 'Karnataka Child Rights NGO', 'Non-Profit'),
(92, 'Disha Foundation', 'Non-Profit'),
(93, 'Voice of India Foundation', 'Non-Profit'),
(94, 'Hand in Hand India', 'Non-Profit'),
(95, 'Support India Foundation', 'Non-Profit'),
(96, 'Gyan Vihar Foundation', 'Non-Profit'),
(97, 'Indian Heritage Society', 'Non-Profit'),
(98, 'Youth Empowerment Foundation', 'Non-Profit'),
(99, 'Bharat Sanchar Nigam Limited', 'Government'),
(100, 'Indian Overseas Bank', 'Corporate');

- **AgencyContects**




```
CREATE TABLE AgencyContacts (
    ContactID SERIAL PRIMARY KEY,
    Contact NUMERIC(15) NOT NULL,
    AgencyID INT REFERENCES Agencies(AgencyID) ON DELETE CASCADE
);

INSERT INTO AgencyContacts (Contact, AgencyID) VALUES
(1234567890, 1),
(9876543210, 2),
(1239876543, 3),
(1112233445, 4),
(9876541230, 5),
(1234567899, 6),
(8901234567, 7),
(2345678901, 8),
(5678901234, 9),
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(1234325432, 11),
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(5556667777, 17),
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(1122334447, 93),
(9876512346, 94),
(7654321889, 95),
(1112223336, 96),
(1239870987, 97),
(7654322345, 98),
(9876540098, 99),
(5556667778, 100);

- **Skills**

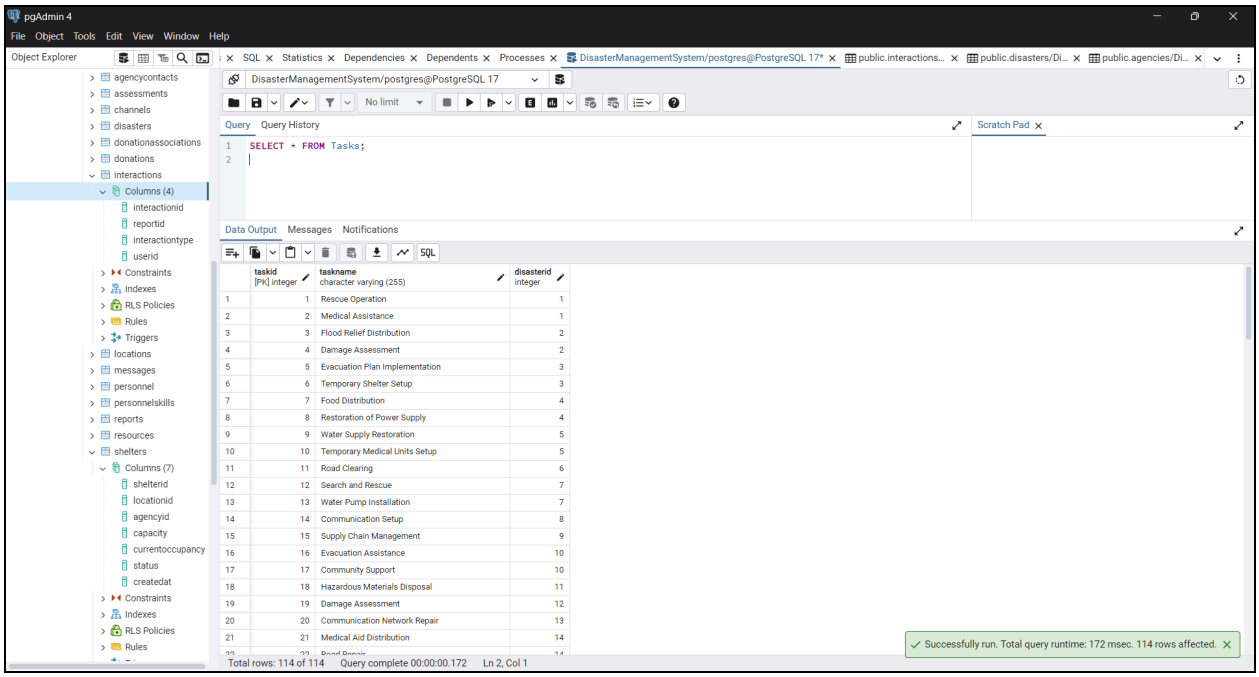
```
CREATE TABLE Skills (
    SkillID SERIAL PRIMARY KEY,
    SkillName VARCHAR(255) NOT NULL
);

INSERT INTO Skills (SkillID, SkillName) VALUES
(1, 'Communication'),
(2, 'Leadership'),
(3, 'Technical Support'),
(4, 'First Aid'),
(5, 'Search and Rescue'),
(6, 'Logistics'),
(7, 'Medical Assistance'),
(8, 'Data Analysis'),
(9, 'Resource Coordination'),
(10, 'Crisis Management'),
(11, 'Psychological Support'),
(12, 'Water Rescue'),
(13, 'Firefighting'),
(14, 'Electrical Repair'),
(15, 'Counseling'),
(16, 'Shelter Management'),
(17, 'Equipment Operation'),
(18, 'Public Relations'),
(19, 'Documentation'),
(20, 'Volunteer Coordination'),
(21, 'Security'),
(22, 'Financial Management'),
(23, 'Construction'),
(24, 'Mapping and GIS'),
(25, 'Heavy Equipment Operation'),
(26, 'Food Distribution'),
(27, 'Sanitation'),
(28, 'Transport Logistics'),
(29, 'Inventory Management'),
(30, 'Emergency Response Planning'),
(31, 'Radio Communication'),
(32, 'Sign Language'),
(33, 'Child Protection'),
(34, 'Language Translation'),
(35, 'Mental Health Support'),
```

(36, 'Animal Rescue'),
(37, 'Incident Command'),
(38, 'Hazardous Materials Handling'),
(39, 'Trauma Counseling'),
(40, 'Evacuation Coordination'),
(41, 'Flood Control'),
(42, 'Waste Management'),
(43, 'Health Monitoring'),
(44, 'Disaster Risk Assessment'),
(45, 'Legal Assistance'),
(46, 'Supply Chain Management'),
(47, 'Remote Sensing'),
(48, 'Database Management'),
(49, 'Drone Operation'),
(50, 'Weather Forecasting'),
(51, 'Media Relations'),
(52, 'Resource Mobilization'),
(53, 'Community Outreach'),
(54, 'Victim Identification'),
(55, 'Telecommunication Repair'),
(56, 'Medical Triage'),
(57, 'Wound Dressing'),
(58, 'Search Dog Handling'),
(59, 'Disaster Recovery'),
(60, 'Patient Transportation'),
(61, 'Cybersecurity'),
(62, 'Resilient Infrastructure Design'),
(63, 'Chemical Spill Cleanup'),
(64, 'Flood Rescue'),
(65, 'Epidemiology'),
(66, 'Structural Inspection'),
(67, 'Digital Mapping'),
(68, 'Crowd Control'),
(69, 'Legal Documentation'),
(70, 'Environmental Monitoring'),
(71, 'Debris Clearance'),
(72, 'Resource Assessment'),
(73, 'Hazardous Waste Disposal'),
(74, 'Supply Management'),
(75, 'Database Analysis'),
(76, 'Data Collection'),
(77, 'Child Welfare Support'),
(78, 'Public Health'),
(79, 'Field Surveying'),

```
(80, 'Cultural Mediation'),
(81, 'Social Work'),
(82, 'Victim Support Services'),
(83, 'Electricity Restoration'),
(84, 'Public Safety Education'),
(85, 'Database Administration'),
(86, 'Energy Resource Management'),
(87, 'Volunteer Recruitment'),
(88, 'Language Interpretation'),
(89, 'Hazmat Suits Handling'),
(90, 'Water Purification'),
(91, 'Disease Prevention'),
(92, 'Structural Repair'),
(93, 'IT Support'),
(94, 'Rapid Response'),
(95, 'Telecom Equipment Setup'),
(96, 'Medical Records Management'),
(97, 'Emergency Sheltering'),
(98, 'Flood Mapping'),
(99, 'Rescue Boat Operation'),
(100, 'Roadblock Setup');
```

- **Tasks**




```
CREATE TABLE Tasks (
    TaskID SERIAL PRIMARY KEY,
    TaskName VARCHAR(255) NOT NULL,
    DisasterID INT REFERENCES Disasters(DisasterID) ON DELETE CASCADE
);

INSERT INTO Tasks (TaskID, TaskName) VALUES
(1, 'Emergency Shelter Setup'),
(2, 'First Aid Provision'),
(3, 'Search and Rescue Operation'),
(4, 'Food and Water Distribution'),
(5, 'Flood Evacuation Coordination'),
(6, 'Medical Assistance and Triage'),
(7, 'Debris Clearance'),
(8, 'Crisis Counseling'),
(9, 'Resource Management and Logistics'),
(10, 'Sanitation and Waste Management'),
(11, 'Child Protection Services'),
(12, 'Animal Rescue'),
(13, 'Evacuation Plan Development'),
(14, 'Volunteer Coordination'),
(15, 'Field Survey and Assessment'),
(16, 'Database Management for Victims'),
```

(17, 'Medical Camp Setup'),
(18, 'Damage Assessment and Reporting'),
(19, 'Public Communication and Alerts'),
(20, 'Transport Logistics Coordination'),
(21, 'Health Monitoring'),
(22, 'Emergency Response Planning'),
(23, 'Resource Distribution Tracking'),
(24, 'Heavy Equipment Operation'),
(25, 'Environmental Risk Monitoring'),
(26, 'Community Outreach'),
(27, 'Injury Treatment Center Management'),
(28, 'Crowd Control'),
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(30, 'Data Collection and Analysis'),
(31, 'Flood Barrier Setup'),
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(33, 'Volunteer Recruitment'),
(34, 'Road Clearing'),
(35, 'Rapid Response Preparation'),
(36, 'Animal Health Monitoring'),
(37, 'Rescue Boat Operation'),
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(39, 'Cybersecurity Setup'),
(40, 'Weather Monitoring and Alerts'),
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(42, 'Temporary Housing Coordination'),
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(45, 'Mental Health Support'),
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(58, 'Food Preparation'),
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(63, 'Database Setup'),
(64, 'Document Control'),
(65, 'Financial Aid Coordination'),
(66, 'Firefighting'),
(67, 'Infrastructure Damage Assessment'),
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(78, 'Database Backup'),
(79, 'Health Record Management'),
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(81, 'Mobile Equipment Management'),
(82, 'Public Address System Setup'),
(83, 'Hazardous Material Containment'),
(84, 'Weather Prediction Analysis'),
(85, 'Victim Transport'),
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(89, 'Sanitation Equipment Setup'),
(90, 'Personal Protective Equipment (PPE) Distribution'),
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(92, 'Animal Transport'),
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(94, 'Temporary Healthcare Facility'),
(95, 'Community Alert System Setup'),
(96, 'Search and Locate'),
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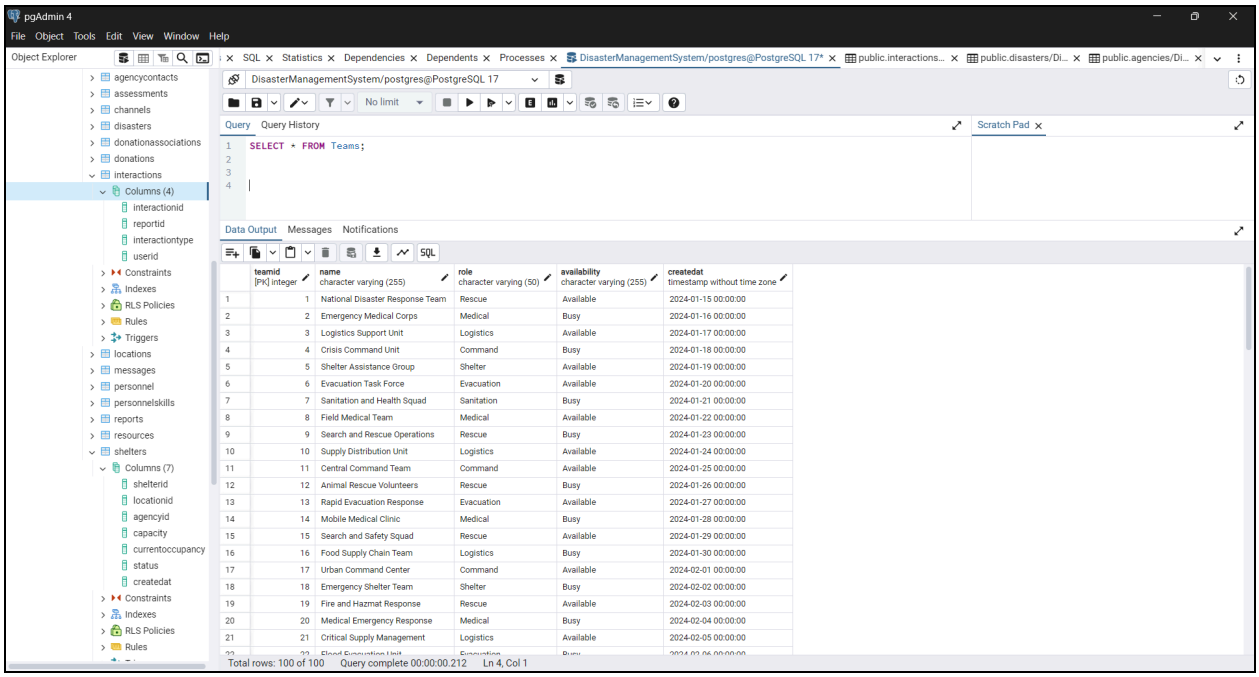
(98, 'Health Awareness Campaign'),
(99, 'Patient Care Support'),
(100, 'Resource Documentation');

- **Teams**

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CREATE TABLE Teams (
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    Name VARCHAR(255) NOT NULL,
    Role VARCHAR(50),
    Availability VARCHAR(50),
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
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INSERT INTO Teams (TeamID, Name, Role, Availability, CreatedAt, TaskID) VALUES
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(3, 'Logistics Support Unit', 'Logistics', 'Available', '2024-01-17', 4),
(4, 'Crisis Command Unit', 'Command', 'Busy', '2024-01-18', 9),
(5, 'Shelter Assistance Group', 'Shelter', 'Available', '2024-01-19', 1),
(6, 'Evacuation Task Force', 'Evacuation', 'Available', '2024-01-20', 5),
(7, 'Sanitation and Health Squad', 'Sanitation', 'Busy', '2024-01-21', 10),
(8, 'Field Medical Team', 'Medical', 'Available', '2024-01-22', 6),
(9, 'Search and Rescue Operations', 'Rescue', 'Busy', '2024-01-23', 3),
(10, 'Supply Distribution Unit', 'Logistics', 'Available', '2024-01-24', 4),
(11, 'Central Command Team', 'Command', 'Available', '2024-01-25', 9),
(12, 'Animal Rescue Volunteers', 'Rescue', 'Busy', '2024-01-26', 12),
(13, 'Rapid Evacuation Response', 'Evacuation', 'Available', '2024-01-27', 13),
(14, 'Mobile Medical Clinic', 'Medical', 'Busy', '2024-01-28', 2),
(15, 'Search and Safety Squad', 'Rescue', 'Available', '2024-01-29', 3),
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(16, 'Food Supply Chain Team', 'Logistics', 'Busy', '2024-01-30', 4),
(17, 'Urban Command Center', 'Command', 'Available', '2024-02-01', 9),
(18, 'Emergency Shelter Team', 'Shelter', 'Busy', '2024-02-02', 1),
(19, 'Fire and Hazmat Response', 'Rescue', 'Available', '2024-02-03', 14),
(20, 'Medical Emergency Response', 'Medical', 'Busy', '2024-02-04', 2),
(21, 'Critical Supply Management', 'Logistics', 'Available', '2024-02-05', 4),
(22, 'Flood Evacuation Unit', 'Evacuation', 'Busy', '2024-02-06', 5),
(23, 'Water and Sanitation Team', 'Sanitation', 'Available', '2024-02-07', 10),
(24, 'Infectious Disease Response', 'Medical', 'Busy', '2024-02-08', 15),
(25, 'International Relief Team', 'Logistics', 'Available', '2024-02-09', 8),
(26, 'Earthquake Search Team', 'Rescue', 'Busy', '2024-02-10', 16),
(27, 'Command Coordination Team', 'Command', 'Available', '2024-02-11', 9),
(28, 'Mobile Rescue Unit', 'Rescue', 'Busy', '2024-02-12', 17),
(29, 'Aid Distribution Group', 'Logistics', 'Available', '2024-02-13', 4),
(30, 'Medical Aid and Support', 'Medical', 'Busy', '2024-02-14', 2),
(31, 'Community Outreach Team', 'Support', 'Available', '2024-02-15', 18),
(32, 'Rapid Response Evacuation', 'Evacuation', 'Busy', '2024-02-16', 13),
(33, 'Rescue Operations Center', 'Rescue', 'Available', '2024-02-17', 3),
(34, 'Mental Health Support Unit', 'Support', 'Busy', '2024-02-18', 19),
(35, 'Remote Logistics Group', 'Logistics', 'Available', '2024-02-19', 4),
(36, 'Hazardous Material Response', 'Rescue', 'Available', '2024-02-20', 20),
(37, 'Shelter Setup Team', 'Shelter', 'Busy', '2024-02-21', 1),
(38, 'Child Protection Unit', 'Support', 'Available', '2024-02-22', 21),
(39, 'First Response Unit', 'Medical', 'Busy', '2024-02-23', 2),
(40, 'Volunteer Coordination Unit', 'Logistics', 'Available', '2024-02-24', 22),
(41, 'Fire and Safety Team', 'Rescue', 'Busy', '2024-02-25', 14),
(42, 'Public Health and Safety', 'Sanitation', 'Available', '2024-02-26', 10),
(43, 'Emergency Triage Team', 'Medical', 'Busy', '2024-02-27', 15),
(44, 'Field Support Operations', 'Support', 'Available', '2024-02-28', 19),
(45, 'Nutrition and Food Safety', 'Support', 'Busy', '2024-02-29', 23),
(46, 'Refugee Aid Group', 'Logistics', 'Available', '2024-03-01', 8),
(47, 'Animal Aid Team', 'Rescue', 'Busy', '2024-03-02', 24),
(48, 'Search and Response Unit', 'Rescue', 'Available', '2024-03-03', 17),
(49, 'Medical and Safety Response', 'Medical', 'Busy', '2024-03-04', 2),
(50, 'Critical Incident Team', 'Command', 'Available', '2024-03-05', 9),
(51, 'Flood Response Unit', 'Rescue', 'Busy', '2024-03-06', 5),
(52, 'Humanitarian Aid Division', 'Support', 'Available', '2024-03-07', 18),
(53, 'Fire Brigade Team', 'Rescue', 'Available', '2024-03-08', 14),
(54, 'Risk Assessment Team', 'Support', 'Busy', '2024-03-09', 25),
(55, 'Civil Relief Corps', 'Logistics', 'Available', '2024-03-10', 22),
(56, 'Rapid Triage and Response', 'Medical', 'Busy', '2024-03-11', 15),
(57, 'Traffic Management Unit', 'Logistics', 'Available', '2024-03-12', 26),
(58, 'Crisis Management Cell', 'Command', 'Busy', '2024-03-13', 9),
(59, 'Disaster Awareness Team', 'Support', 'Available', '2024-03-14', 27),

(60, 'Urban Rescue Group', 'Rescue', 'Busy', '2024-03-15', 3),
(61, 'Public Health Emergency', 'Sanitation', 'Available', '2024-03-16', 10),
(62, 'Evacuation Support Unit', 'Evacuation', 'Busy', '2024-03-17', 13),
(63, 'Community Health Outreach', 'Support', 'Available', '2024-03-18', 28),
(64, 'Rapid Supply Response', 'Logistics', 'Busy', '2024-03-19', 4),
(65, 'Remote Area Response', 'Command', 'Available', '2024-03-20', 9),
(66, 'Medical Outreach Team', 'Medical', 'Busy', '2024-03-21', 15),
(67, 'Security Assistance Group', 'Security', 'Available', '2024-03-22', 29),
(68, 'Volunteer Health Check', 'Medical', 'Busy', '2024-03-23', 2),
(69, 'Shelter Management Unit', 'Shelter', 'Available', '2024-03-24', 1),
(70, 'Rapid Safety Team', 'Rescue', 'Busy', '2024-03-25', 3),
(71, 'Resource Distribution Team', 'Logistics', 'Available', '2024-03-26', 4),
(72, 'Command HQ Response', 'Command', 'Busy', '2024-03-27', 9),
(73, 'Mental Wellness Team', 'Support', 'Available', '2024-03-28', 19),
(74, 'Transport Support Group', 'Logistics', 'Busy', '2024-03-29', 4),
(75, 'Emergency Flood Response', 'Rescue', 'Available', '2024-03-30', 5),
(76, 'Coastal Rescue Team', 'Rescue', 'Busy', '2024-03-31', 14),
(77, 'Sanitation Support Team', 'Sanitation', 'Available', '2024-04-01', 10),
(78, 'Nutrition Aid Team', 'Support', 'Busy', '2024-04-02', 23),
(79, 'Rapid Command Unit', 'Command', 'Available', '2024-04-03', 9),
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(81, 'Shelter Relief Unit', 'Shelter', 'Available', '2024-04-05', 1),
(82, 'First Aid and Triage', 'Medical', 'Busy', '2024-04-06', 2),
(83, 'Field Resupply Team', 'Logistics', 'Available', '2024-04-07', 4),
(84, 'Evacuation Planning Team', 'Evacuation', 'Busy', '2024-04-08', 5),
(85, 'Hazardous Operations', 'Rescue', 'Available', '2024-04-09', 20),
(86, 'Health Crisis Unit', 'Medical', 'Busy', '2024-04-10', 15),
(87, 'Supply Chain Management', 'Logistics', 'Available', '2024-04-11', 4),
(88, 'Humanitarian Logistics', 'Support', 'Busy', '2024-04-12', 8),
(89, 'Triage Support Unit', 'Medical', 'Available', '2024-04-13', 2),
(90, 'Emergency Command Team', 'Command', 'Busy', '2024-04-14', 9),
(91, 'Response Management', 'Support', 'Available', '2024-04-15', 18),
(92, 'Animal Care Response', 'Rescue', 'Busy', '2024-04-16', 24),
(93, 'Safety Coordination', 'Support', 'Available', '2024-04-17', 30),
(94, 'Relief Supply Chain', 'Logistics', 'Busy', '2024-04-18', 8),
(95, 'First Responder Unit', 'Medical', 'Available', '2024-04-19', 2),
(96, 'Shelter Coordination', 'Shelter', 'Busy', '2024-04-20', 1),
(97, 'Regional Rescue Taskforce', 'Rescue', 'Available', '2024-04-21', 3),
(98, 'Public Health Outreach', 'Sanitation', 'Busy', '2024-04-22', 10),
(99, 'Logistics Management', 'Logistics', 'Available', '2024-04-23', 4),
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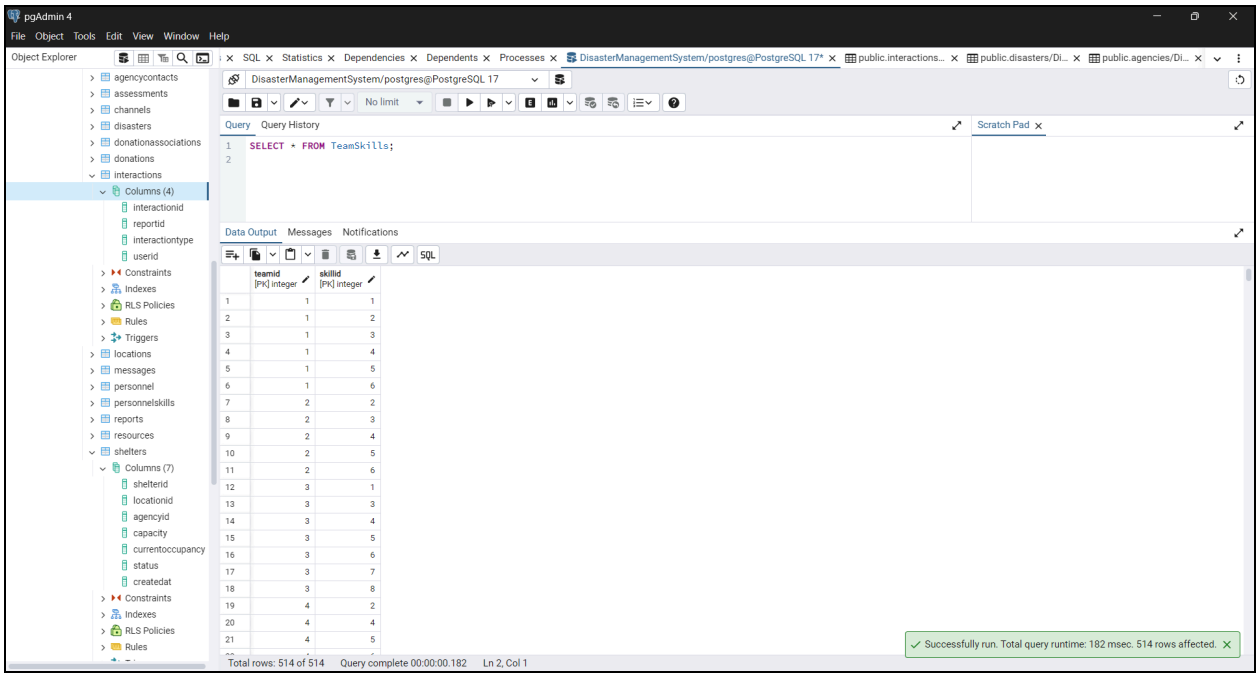
- **TeamSkills**

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CREATE TABLE TeamSkills (
    TeamID INT REFERENCES Teams(TeamID) ON DELETE CASCADE,
    SkillID INT REFERENCES Skills(SkillID) ON DELETE CASCADE,
    PRIMARY KEY (TeamID, SkillID)
);

INSERT INTO TeamSkills (TeamID, SkillID) VALUES
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-- Team 100
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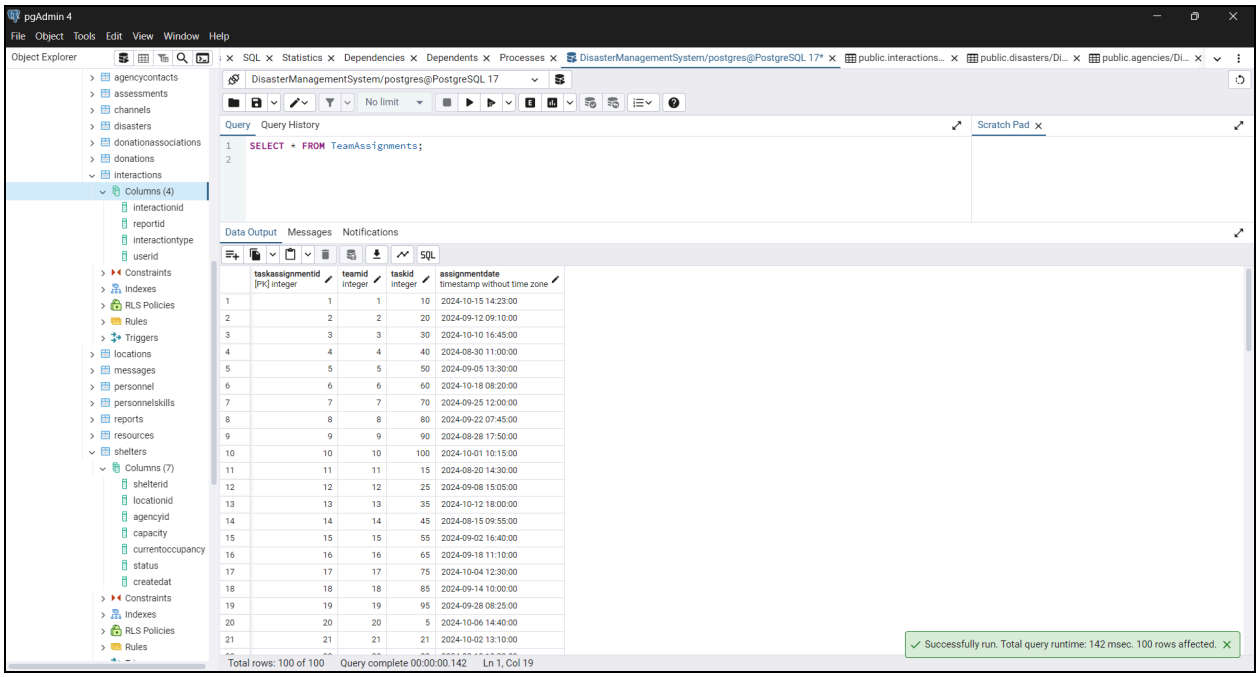
```

- **TeamAssignments**




```
CREATE TABLE TaskAssignments (
    TaskAssignmentID SERIAL PRIMARY KEY,
    TeamID INT REFERENCES Teams(TeamID) ON DELETE CASCADE,
    TaskID INT REFERENCES Tasks(TaskID) ON DELETE CASCADE,
    AssignmentDate TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);

-- Inserting task assignments with random assignment dates
INSERT INTO TeamAssignments (TeamID, TaskID, AssignmentDate)
VALUES
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(3, 30, '2024-10-10 16:45:00'),
(4, 40, '2024-08-30 11:00:00'),
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(18, 85, '2024-09-14 10:00:00'),
(19, 95, '2024-09-28 08:25:00'),
(20, 5, '2024-10-06 14:40:00'),
(21, 21, '2024-10-02 13:10:00'),
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(25, 25, '2024-08-22 18:20:00'),
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(39, 39, '2024-09-20 17:00:00'),
(40, 40, '2024-10-14 10:25:00'),
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(98, 98, '2024-09-03 13:45:00'),
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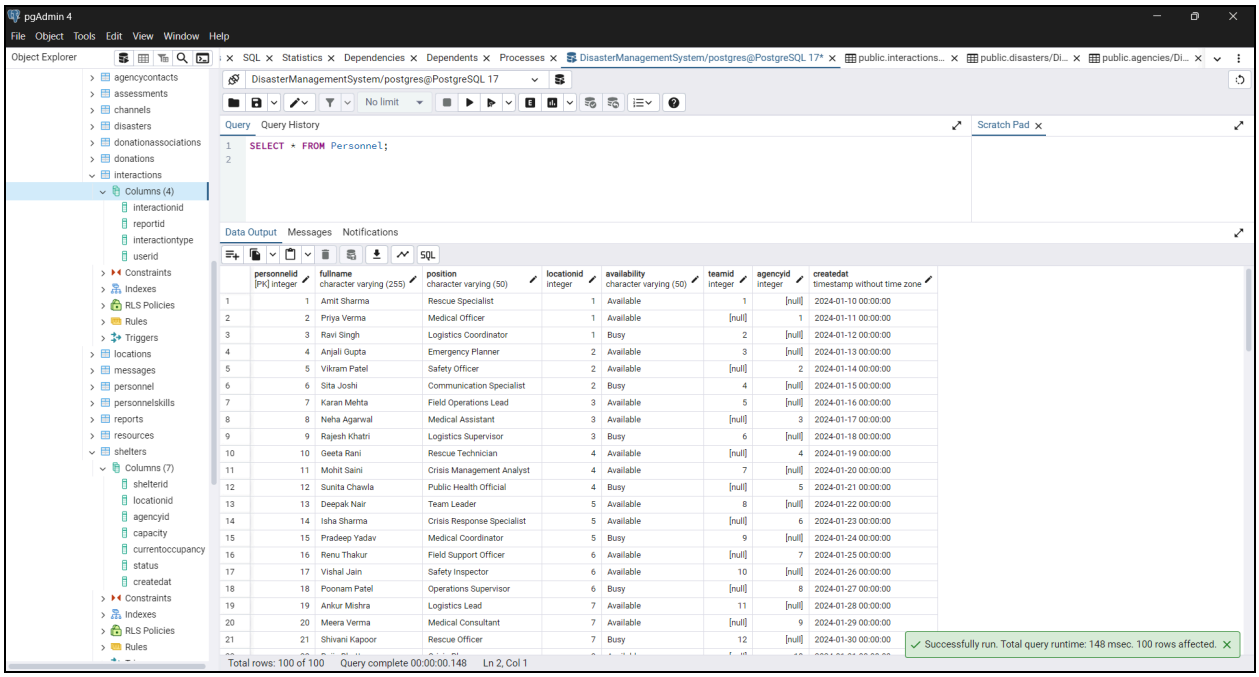
- **Personnels**




```
CREATE TABLE Personnel (
    PersonnelID SERIAL PRIMARY KEY,
    FullName VARCHAR(255) NOT NULL,
    Position VARCHAR(50),
    LocationID INT REFERENCES Locations(LocationID) ON DELETE CASCADE,
    Availability VARCHAR(50),
    TeamID INT REFERENCES Teams(TeamID) ON DELETE CASCADE,
    AgencyID INT REFERENCES Agencies(AgencyID) ON DELETE CASCADE,
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);

INSERT INTO Personnel (PersonnelID, FullName, Position, LocationID, Availability,
TeamID, AgencyID, CreatedAt) VALUES
(1, 'Amit Sharma', 'Rescue Specialist', 1, 'Available', 1, NULL, '2024-01-10'),
(2, 'Priya Verma', 'Medical Officer', 1, 'Available', NULL, 1, '2024-01-11'),
(3, 'Ravi Singh', 'Logistics Coordinator', 1, 'Busy', 2, NULL, '2024-01-12'),
(4, 'Anjali Gupta', 'Emergency Planner', 2, 'Available', 3, NULL, '2024-01-13'),
(5, 'Vikram Patel', 'Safety Officer', 2, 'Available', NULL, 2, '2024-01-14'),
(6, 'Sita Joshi', 'Communication Specialist', 2, 'Busy', 4, NULL, '2024-01-15'),
(7, 'Karan Mehta', 'Field Operations Lead', 3, 'Available', 5, NULL, '2024-01-16'),
(8, 'Neha Agarwal', 'Medical Assistant', 3, 'Available', NULL, 3, '2024-01-17'),
(9, 'Rajesh Khatri', 'Logistics Supervisor', 3, 'Busy', 6, NULL, '2024-01-18'),
(10, 'Geeta Rani', 'Rescue Technician', 4, 'Available', NULL, 4, '2024-01-19'),
(11, 'Mohit Saini', 'Crisis Management Analyst', 4, 'Available', 7, NULL, '2024-01-20'),
```

(12, 'Sunita Chawla', 'Public Health Official', 4, 'Busy', NULL, 5, '2024-01-21'),
(13, 'Deepak Nair', 'Team Leader', 5, 'Available', 8, NULL, '2024-01-22'),
(14, 'Isha Sharma', 'Crisis Response Specialist', 5, 'Available', NULL, 6, '2024-01-23'),
(15, 'Pradeep Yadav', 'Medical Coordinator', 5, 'Busy', 9, NULL, '2024-01-24'),
(16, 'Renu Thakur', 'Field Support Officer', 6, 'Available', NULL, 7, '2024-01-25'),
(17, 'Vishal Jain', 'Safety Inspector', 6, 'Available', 10, NULL, '2024-01-26'),
(18, 'Poonam Patel', 'Operations Supervisor', 6, 'Busy', NULL, 8, '2024-01-27'),
(19, 'Ankur Mishra', 'Logistics Lead', 7, 'Available', 11, NULL, '2024-01-28'),
(20, 'Meera Verma', 'Medical Consultant', 7, 'Available', NULL, 9, '2024-01-29'),
(21, 'Shivani Kapoor', 'Rescue Officer', 7, 'Busy', 12, NULL, '2024-01-30'),
(22, 'Rajiv Bhatt', 'Crisis Planner', 8, 'Available', NULL, 10, '2024-01-31'),
(23, 'Neelam Joshi', 'Rescue Assistant', 8, 'Available', 13, NULL, '2024-02-01'),
(24, 'Tushar Mehta', 'Public Health Officer', 8, 'Busy', NULL, 11, '2024-02-02'),
(25, 'Madhuri Singh', 'Field Operations Coordinator', 9, 'Available', NULL, 12,
'2024-02-03'),
(26, 'Akash Bansal', 'Emergency Response Planner', 9, 'Available', 14, NULL,
'2024-02-04'),
(27, 'Kiran Yadav', 'Medical Support Specialist', 9, 'Busy', NULL, 13, '2024-02-05'),
(28, 'Amit Kaur', 'Logistics Analyst', 10, 'Available', 15, NULL, '2024-02-06'),
(29, 'Ritika Sharma', 'Safety Consultant', 10, 'Available', NULL, 14, '2024-02-07'),
(30, 'Arvind Tiwari', 'Operations Lead', 10, 'Busy', 16, NULL, '2024-02-08'),
(31, 'Harsha Patel', 'Crisis Management Lead', 11, 'Available', NULL, 15, '2024-02-09'),
(32, 'Seema Jain', 'Medical Response Officer', 11, 'Available', 17, NULL, '2024-02-10'),
(33, 'Rajeev Soni', 'Field Technician', 11, 'Busy', NULL, 16, '2024-02-11'),
(34, 'Shweta Agarwal', 'Emergency Specialist', 12, 'Available', 18, NULL, '2024-02-12'),
(35, 'Nitin Chawla', 'Logistics Officer', 12, 'Available', NULL, 17, '2024-02-13'),
(36, 'Sushma Reddy', 'Rescue Assistant', 12, 'Busy', 19, NULL, '2024-02-14'),
(37, 'Prashant Kumar', 'Medical Emergency Officer', 13, 'Available', NULL, 18,
'2024-02-15'),
(38, 'Sunil Mehra', 'Safety Lead', 13, 'Available', 20, NULL, '2024-02-16'),
(39, 'Nisha Rani', 'Field Support Specialist', 13, 'Busy', NULL, 19, '2024-02-17'),
(40, 'Amit Yadav', 'Logistics Specialist', 14, 'Available', 21, NULL, '2024-02-18'),
(41, 'Rohit Sharma', 'Crisis Response Coordinator', 14, 'Available', NULL, 20,
'2024-02-19'),
(42, 'Madhuri Mehta', 'Public Health Expert', 14, 'Busy', 22, NULL, '2024-02-20'),
(43, 'Sandeep Singh', 'Rescue Operations Lead', 15, 'Available', NULL, 21,
'2024-02-21'),
(44, 'Sonali Joshi', 'Medical Officer', 15, 'Available', 23, NULL, '2024-02-22'),
(45, 'Ravindra Khatri', 'Crisis Response Specialist', 15, 'Busy', NULL, 22, '2024-02-23'),
(46, 'Ravi Kumar', 'Logistics Planner', 16, 'Available', 24, NULL, '2024-02-24'),
(47, 'Shalini Jain', 'Emergency Support Lead', 16, 'Available', NULL, 23, '2024-02-25'),
(48, 'Suresh Patel', 'Rescue Analyst', 16, 'Busy', 25, NULL, '2024-02-26'),
(49, 'Vishal Singh', 'Field Operations Specialist', 17, 'Available', NULL, 24, '2024-02-27'),
(50, 'Bina Rani', 'Medical Technician', 17, 'Available', 26, NULL, '2024-02-28'),

(51, 'Sunil Patel', 'Logistics Supervisor', 17, 'Busy', NULL, 25, '2024-03-01'),
(52, 'Priya Sharma', 'Safety Coordinator', 18, 'Available', 27, NULL, '2024-03-02'),
(53, 'Ankush Chawla', 'Crisis Operations Lead', 18, 'Available', NULL, 26, '2024-03-03'),
(54, 'Harish Bansal', 'Medical Lead', 18, 'Busy', 28, NULL, '2024-03-04'),
(55, 'Akhil Verma', 'Logistics Lead', 19, 'Available', NULL, 27, '2024-03-05'),
(56, 'Asha Yadav', 'Emergency Specialist', 19, 'Available', 29, NULL, '2024-03-06'),
(57, 'Kavita Thakur', 'Rescue Technician', 19, 'Busy', NULL, 28, '2024-03-07'),
(58, 'Sanjay Mehta', 'Crisis Management Officer', 20, 'Available', 30, NULL,
'2024-03-08'),
(59, 'Amit Joshi', 'Field Operations Expert', 20, 'Available', NULL, 29, '2024-03-09'),
(60, 'Rekha Kumar', 'Medical Officer', 20, 'Busy', 31, NULL, '2024-03-10'),
(61, 'Isha Patel', 'Logistics Officer', 21, 'Available', NULL, 30, '2024-03-11'),
(62, 'Raghav Mehra', 'Emergency Planner', 21, 'Available', 32, NULL, '2024-03-12'),
(63, 'Geeta Bansal', 'Rescue Lead', 21, 'Busy', NULL, 31, '2024-03-13'),
(64, 'Pooja Soni', 'Medical Technician', 22, 'Available', 33, NULL, '2024-03-14'),
(65, 'Krishan Thakur', 'Crisis Lead', 22, 'Available', NULL, 32, '2024-03-15'),
(66, 'Rita Sharma', 'Logistics Expert', 22, 'Busy', 34, NULL, '2024-03-16'),
(67, 'Kiran Rani', 'Field Support Officer', 23, 'Available', NULL, 33, '2024-03-17'),
(68, 'Vikash Bansal', 'Safety Officer', 23, 'Available', 35, NULL, '2024-03-18'),
(69, 'Sandeep Patel', 'Rescue Expert', 23, 'Busy', NULL, 34, '2024-03-19'),
(70, 'Neha Mehra', 'Crisis Planner', 24, 'Available', 36, NULL, '2024-03-20'),
(71, 'Shivani Patel', 'Medical Support Lead', 24, 'Available', NULL, 35, '2024-03-21'),
(72, 'Niraj Yadav', 'Operations Expert', 24, 'Busy', 37, NULL, '2024-03-22'),
(73, 'Anita Sharma', 'Logistics Coordinator', 25, 'Available', NULL, 36, '2024-03-23'),
(74, 'Tanuja Mehta', 'Emergency Expert', 25, 'Available', 38, NULL, '2024-03-24'),
(75, 'Hina Bansal', 'Rescue Officer', 25, 'Busy', NULL, 37, '2024-03-25'),
(76, 'Ashok Patel', 'Crisis Lead', 26, 'Available', 39, NULL, '2024-03-26'),
(77, 'Seema Mehra', 'Medical Lead', 26, 'Available', NULL, 38, '2024-03-27'),
(78, 'Dinesh Yadav', 'Field Technician', 26, 'Busy', 40, NULL, '2024-03-28'),
(79, 'Manisha Verma', 'Logistics Support', 27, 'Available', NULL, 39, '2024-03-29'),
(80, 'Rani Bansal', 'Safety Lead', 27, 'Available', 41, NULL, '2024-03-30'),
(81, 'Bhuvan Patel', 'Emergency Planner', 27, 'Busy', NULL, 40, '2024-03-31'),
(82, 'Nikhil Agarwal', 'Medical Officer', 28, 'Available', 42, NULL, '2024-04-01'),
(83, 'Neeraj Joshi', 'Rescue Technician', 28, 'Available', NULL, 41, '2024-04-02'),
(84, 'Vikram Kumar', 'Field Specialist', 28, 'Busy', 43, NULL, '2024-04-03'),
(85, 'Pradeep Thakur', 'Crisis Support', 29, 'Available', NULL, 42, '2024-04-04'),
(86, 'Mohan Patel', 'Medical Planner', 29, 'Available', 44, NULL, '2024-04-05'),
(87, 'Rupal Sharma', 'Rescue Specialist', 29, 'Busy', NULL, 43, '2024-04-06'),
(88, 'Ajay Bansal', 'Crisis Technician', 30, 'Available', 45, NULL, '2024-04-07'),
(89, 'Tushar Mehra', 'Safety Expert', 30, 'Available', NULL, 44, '2024-04-08'),
(90, 'Kriti Yadav', 'Logistics Officer', 30, 'Busy', 46, NULL, '2024-04-09'),
(91, 'Pranjal Verma', 'Emergency Coordinator', 31, 'Available', NULL, 45, '2024-04-10'),
(92, 'Varsha Patel', 'Medical Coordinator', 31, 'Available', 47, NULL, '2024-04-11'),
(93, 'Manoj Mehra', 'Field Specialist', 31, 'Busy', NULL, 46, '2024-04-12'),

```
(94, 'Ishita Singh', 'Rescue Operations Lead', 32, 'Available', NULL, 47, '2024-04-13'),
(95, 'Karan Mehta', 'Safety Officer', 32, 'Available', 48, NULL, '2024-04-14'),
(96, 'Ravina Rani', 'Medical Lead', 32, 'Busy', NULL, 48, '2024-04-15'),
(97, 'Kavita Joshi', 'Crisis Management Officer', 33, 'Available', 49, NULL, '2024-04-16'),
(98, 'Vikram Bansal', 'Field Coordinator', 33, 'Available', NULL, 49, '2024-04-17'),
(99, 'Shivani Mehta', 'Emergency Planner', 33, 'Busy', 50, NULL, '2024-04-18'),
(100, 'Rajesh Yadav', 'Logistics Lead', 34, 'Available', NULL, 50, '2024-04-19');
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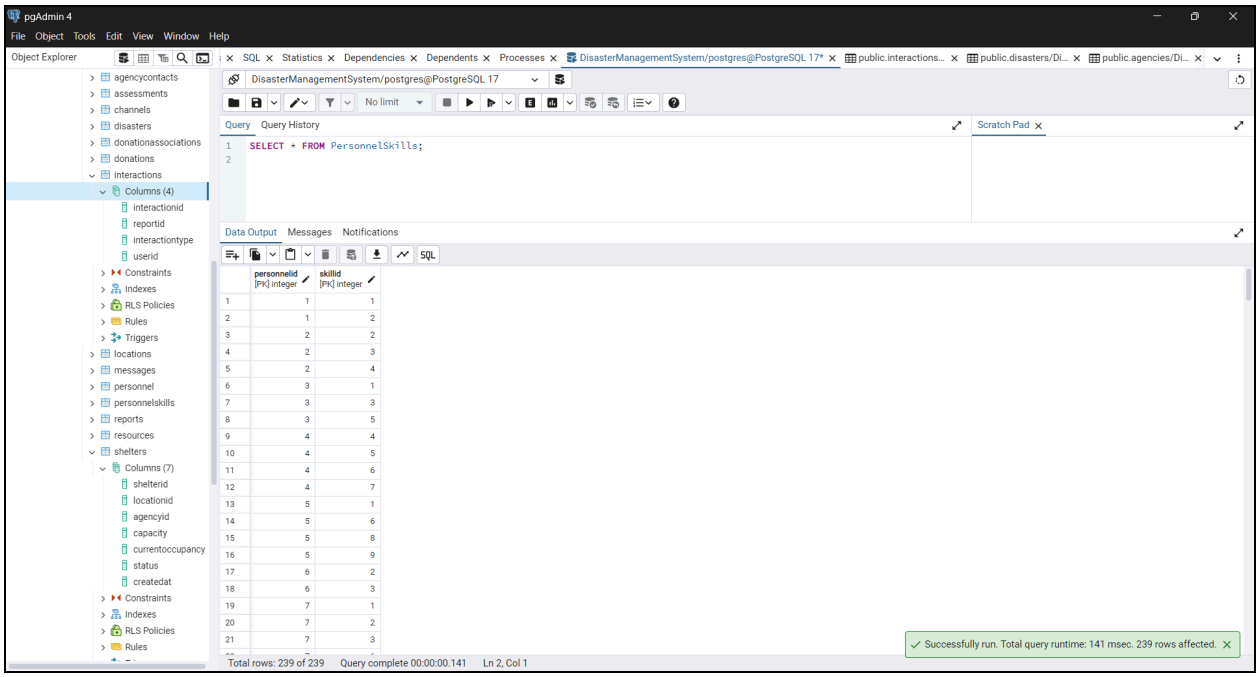
- **PersonnelSkills**




```
CREATE TABLE PersonnelSkills (
    PersonnelID INT REFERENCES Personnel(PersonnelID) ON DELETE CASCADE,
    SkillID INT REFERENCES Skills(SkillID) ON DELETE CASCADE,
    PRIMARY KEY (PersonnelID, SkillID)
);

INSERT INTO PersonnelSkills (PersonnelID, SkillID) VALUES
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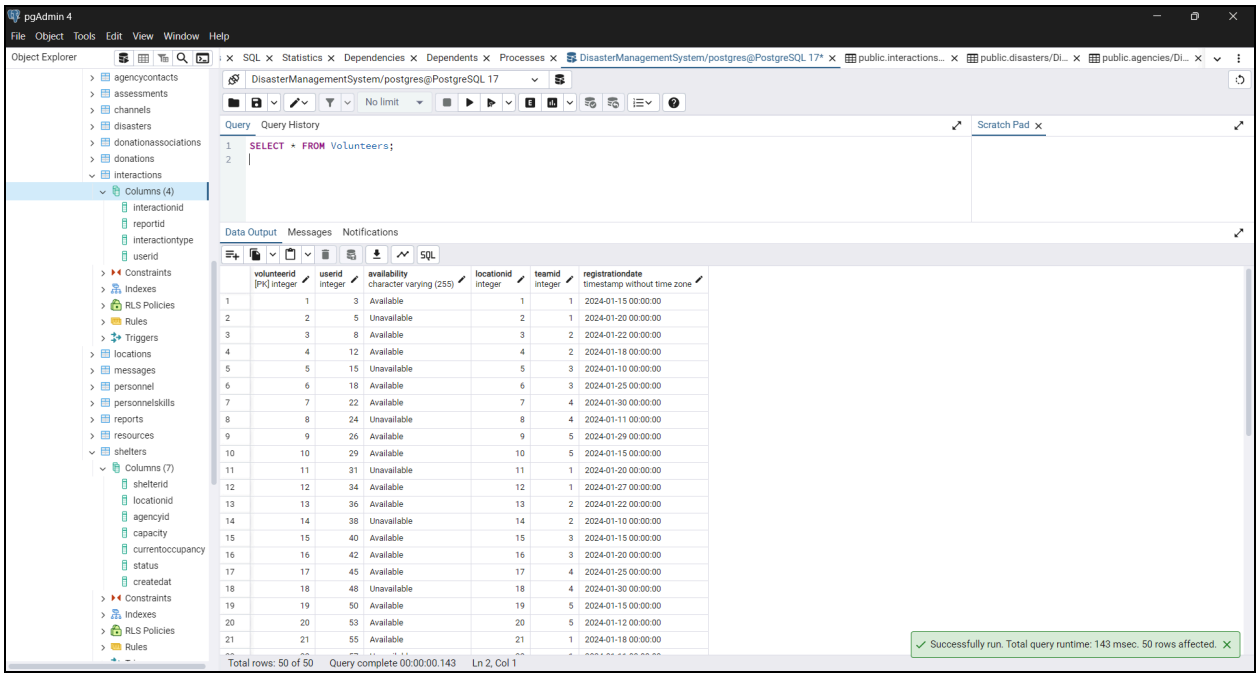
- **Volunteers**




```
CREATE TABLE Volunteers (
    VolunteerID SERIAL PRIMARY KEY,
    UserID INT REFERENCES Users(UserID) ON DELETE CASCADE,
    Availability VARCHAR(50),
    LocationID INT REFERENCES Locations(LocationID) ON DELETE CASCADE,
    TeamID INT REFERENCES Teams(TeamID) ON DELETE CASCADE,
    RegistrationDate TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);
```

```
INSERT INTO Volunteers (VolunteerID, UserID, Availability, LocationID, TeamID,
RegistrationDate) VALUES
(1, 3, 'Available', 1, 1, '2024-01-15'),
(2, 5, 'Unavailable', 2, 1, '2024-01-20'),
(3, 8, 'Available', 3, 2, '2024-01-22'),
(4, 12, 'Available', 4, 2, '2024-01-18'),
(5, 15, 'Unavailable', 5, 3, '2024-01-10'),
(6, 18, 'Available', 6, 3, '2024-01-25'),
(7, 22, 'Available', 7, 4, '2024-01-30'),
(8, 24, 'Unavailable', 8, 4, '2024-01-11'),
(9, 26, 'Available', 9, 5, '2024-01-29'),
(10, 29, 'Available', 10, 5, '2024-01-15'),
(11, 31, 'Unavailable', 11, 1, '2024-01-20'),
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```
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(17, 45, 'Available', 17, 4, '2024-01-25'),
(18, 48, 'Unavailable', 18, 4, '2024-01-30'),
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(20, 53, 'Available', 20, 5, '2024-01-12'),
(21, 55, 'Available', 21, 1, '2024-01-18'),
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(23, 60, 'Available', 23, 2, '2024-01-29'),
(24, 62, 'Available', 24, 2, '2024-01-20'),
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(27, 69, 'Available', 27, 4, '2024-01-30'),
(28, 71, 'Unavailable', 28, 4, '2024-01-10'),
(29, 74, 'Available', 29, 5, '2024-01-29'),
(30, 76, 'Available', 30, 5, '2024-01-18'),
(31, 79, 'Unavailable', 31, 1, '2024-01-15'),
(32, 82, 'Available', 32, 1, '2024-01-20'),
(33, 85, 'Available', 33, 2, '2024-01-22'),
(34, 88, 'Unavailable', 34, 2, '2024-01-18'),
(35, 90, 'Available', 35, 3, '2024-01-10'),
(36, 92, 'Available', 36, 3, '2024-01-25'),
(37, 94, 'Available', 37, 4, '2024-01-30'),
(38, 97, 'Unavailable', 38, 4, '2024-01-11'),
(39, 99, 'Available', 39, 5, '2024-01-29'),
(40, 100, 'Available', 40, 5, '2024-01-15'),
(41, 2, 'Available', 41, 1, '2024-01-18'),
(42, 4, 'Unavailable', 42, 1, '2024-01-11'),
(43, 6, 'Available', 43, 2, '2024-01-29'),
(44, 8, 'Available', 44, 2, '2024-01-20'),
(45, 10, 'Unavailable', 45, 3, '2024-01-25'),
(46, 13, 'Available', 46, 3, '2024-01-22'),
(47, 16, 'Available', 47, 4, '2024-01-30'),
(48, 19, 'Unavailable', 48, 4, '2024-01-10'),
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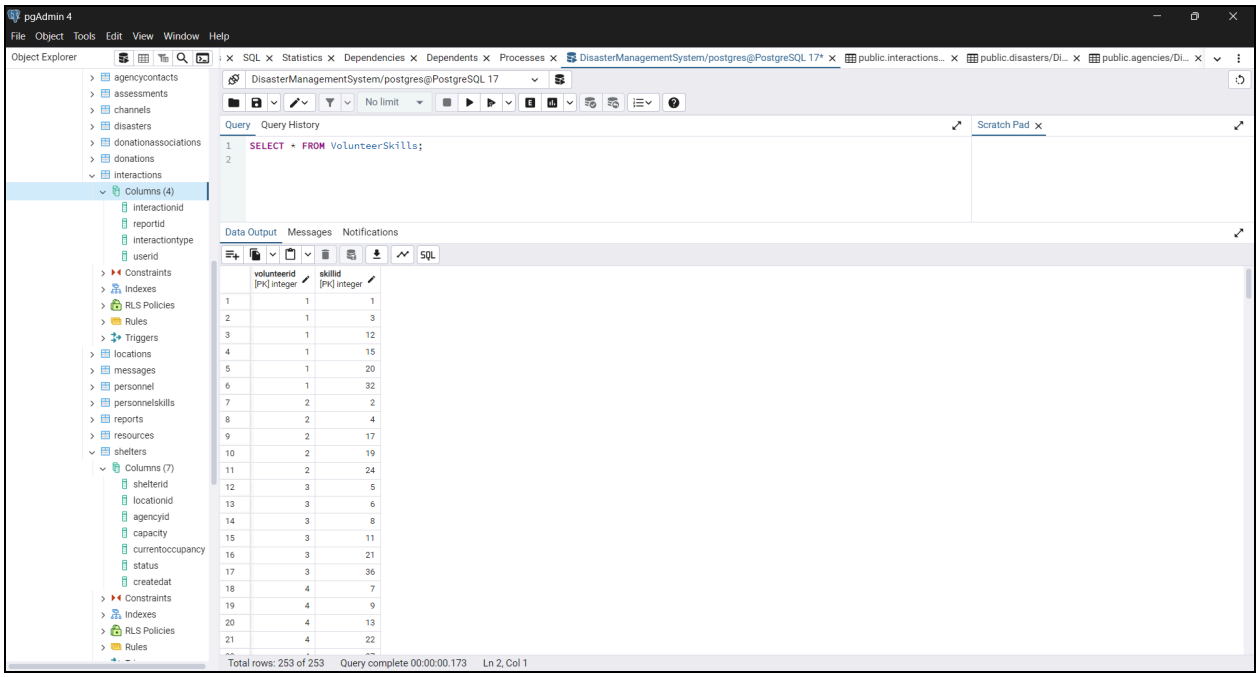
```

- **VolunteerSkills**




```
CREATE TABLE VolunteerSkills (
    VolunteerID INT REFERENCES Volunteers(VolunteerID) ON DELETE CASCADE,
    SkillID INT REFERENCES Skills(SkillID) ON DELETE CASCADE,
    PRIMARY KEY (VolunteerID, SkillID)
);

INSERT INTO VolunteerSkills (VolunteerID, SkillID) VALUES
(1, 1),
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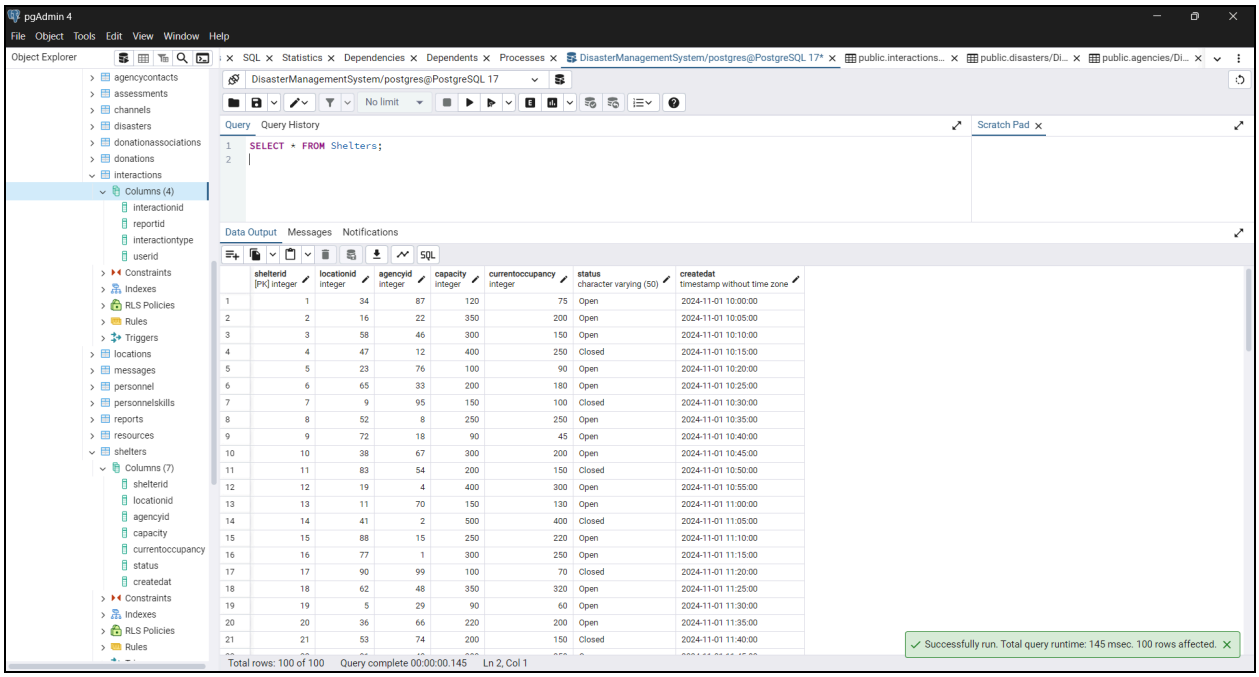
- **Shelter**




```
CREATE TABLE Shelters (
    ShelterID SERIAL PRIMARY KEY,
    LocationID INT REFERENCES Locations(LocationID) ON DELETE CASCADE,
    AgencyID INT REFERENCES Agencies(AgencyID) ON DELETE CASCADE,
    Capacity INT,
    CurrentOccupancy INT,
    Status VARCHAR(50),
    CreatedAt TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);

INSERT INTO Shelters (ShelterID, LocationID, AgencyID, Capacity, CurrentOccupancy,
Status, CreatedAt) VALUES
(1, 34, 87, 120, 75, 'Open', '2024-11-01 10:00:00'),
(2, 16, 22, 350, 200, 'Open', '2024-11-01 10:05:00'),
(3, 58, 46, 300, 150, 'Open', '2024-11-01 10:10:00'),
(4, 47, 12, 400, 250, 'Closed', '2024-11-01 10:15:00'),
(5, 23, 76, 100, 90, 'Open', '2024-11-01 10:20:00'),
(6, 65, 33, 200, 180, 'Open', '2024-11-01 10:25:00'),
(7, 9, 95, 150, 100, 'Closed', '2024-11-01 10:30:00'),
(8, 52, 8, 250, 250, 'Open', '2024-11-01 10:35:00'),
(9, 72, 18, 90, 45, 'Open', '2024-11-01 10:40:00'),
(10, 38, 67, 300, 200, 'Open', '2024-11-01 10:45:00'),
(11, 83, 54, 200, 150, 'Closed', '2024-11-01 10:50:00'),
(12, 19, 4, 400, 300, 'Open', '2024-11-01 10:55:00'),
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(13, 11, 70, 150, 130, 'Open', '2024-11-01 11:00:00'),
(14, 41, 2, 500, 400, 'Closed', '2024-11-01 11:05:00'),
(15, 88, 15, 250, 220, 'Open', '2024-11-01 11:10:00'),
(16, 77, 1, 300, 250, 'Open', '2024-11-01 11:15:00'),
(17, 90, 99, 100, 70, 'Closed', '2024-11-01 11:20:00'),
(18, 62, 48, 350, 320, 'Open', '2024-11-01 11:25:00'),
(19, 5, 29, 90, 60, 'Open', '2024-11-01 11:30:00'),
(20, 36, 66, 220, 200, 'Open', '2024-11-01 11:35:00'),
(21, 53, 74, 200, 150, 'Closed', '2024-11-01 11:40:00'),
(22, 81, 40, 300, 250, 'Open', '2024-11-01 11:45:00'),
(23, 97, 62, 150, 130, 'Open', '2024-11-01 11:50:00'),
(24, 26, 84, 400, 350, 'Closed', '2024-11-01 11:55:00'),
(25, 10, 39, 120, 90, 'Open', '2024-11-01 12:00:00'),
(26, 15, 81, 220, 200, 'Open', '2024-11-01 12:05:00'),
(27, 42, 20, 350, 300, 'Open', '2024-11-01 12:10:00'),
(28, 74, 75, 150, 120, 'Closed', '2024-11-01 12:15:00'),
(29, 60, 38, 500, 450, 'Open', '2024-11-01 12:20:00'),
(30, 84, 59, 300, 200, 'Closed', '2024-11-01 12:25:00'),
(31, 73, 91, 200, 160, 'Open', '2024-11-01 12:30:00'),
(32, 4, 13, 90, 60, 'Open', '2024-11-01 12:35:00'),
(33, 66, 44, 350, 300, 'Open', '2024-11-01 12:40:00'),
(34, 93, 30, 150, 90, 'Closed', '2024-11-01 12:45:00'),
(35, 14, 61, 400, 350, 'Open', '2024-11-01 12:50:00'),
(36, 80, 96, 220, 200, 'Open', '2024-11-01 12:55:00'),
(37, 37, 35, 300, 250, 'Open', '2024-11-01 13:00:00'),
(38, 68, 14, 100, 80, 'Closed', '2024-11-01 13:05:00'),
(39, 18, 79, 350, 330, 'Open', '2024-11-01 13:10:00'),
(40, 69, 17, 90, 50, 'Open', '2024-11-01 13:15:00'),
(41, 27, 88, 200, 180, 'Open', '2024-11-01 13:20:00'),
(42, 8, 3, 150, 120, 'Closed', '2024-11-01 13:25:00'),
(43, 12, 49, 90, 50, 'Open', '2024-11-01 13:30:00'),
(44, 31, 26, 250, 200, 'Closed', '2024-11-01 13:35:00'),
(45, 63, 65, 400, 350, 'Open', '2024-11-01 13:40:00'),
(46, 24, 59, 300, 250, 'Open', '2024-11-01 13:45:00'),
(47, 75, 11, 100, 90, 'Closed', '2024-11-01 13:50:00'),
(48, 17, 73, 200, 150, 'Open', '2024-11-01 13:55:00'),
(49, 25, 78, 350, 300, 'Open', '2024-11-01 14:00:00'),
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(51, 35, 69, 500, 400, 'Open', '2024-11-01 14:10:00'),
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(57, 48, 88, 400, 370, 'Open', '2024-11-01 14:40:00'),
(58, 39, 16, 200, 150, 'Closed', '2024-11-01 14:45:00'),
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(60, 59, 58, 300, 200, 'Open', '2024-11-01 14:55:00'),
(61, 78, 20, 90, 60, 'Open', '2024-11-01 15:00:00'),
(62, 40, 6, 350, 250, 'Open', '2024-11-01 15:05:00'),
(63, 64, 74, 150, 90, 'Closed', '2024-11-01 15:10:00'),
(64, 20, 82, 500, 450, 'Open', '2024-11-01 15:15:00'),
(65, 30, 93, 200, 180, 'Closed', '2024-11-01 15:20:00'),
(66, 91, 14, 300, 220, 'Open', '2024-11-01 15:25:00'),
(67, 57, 83, 120, 80, 'Open', '2024-11-01 15:30:00'),
(68, 82, 53, 350, 300, 'Closed', '2024-11-01 15:35:00'),
(69, 33, 43, 90, 50, 'Open', '2024-11-01 15:40:00'),
(70, 46, 65, 400, 350, 'Open', '2024-11-01 15:45:00'),
(71, 61, 25, 200, 150, 'Closed', '2024-11-01 15:50:00'),
(72, 94, 64, 150, 130, 'Open', '2024-11-01 15:55:00'),
(73, 92, 19, 500, 450, 'Open', '2024-11-01 16:00:00'),
(74, 1, 10, 300, 250, 'Closed', '2024-11-01 16:05:00'),
(75, 2, 61, 220, 200, 'Open', '2024-11-01 16:10:00'),
(76, 15, 59, 90, 60, 'Open', '2024-11-01 16:15:00'),
(77, 8, 86, 400, 350, 'Open', '2024-11-01 16:20:00'),
(78, 6, 7, 100, 50, 'Closed', '2024-11-01 16:25:00'),
(79, 13, 50, 300, 250, 'Open', '2024-11-01 16:30:00'),
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(81, 75, 52, 200, 150, 'Open', '2024-11-01 16:40:00'),
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(83, 44, 8, 200, 150, 'Open', '2024-11-01 16:50:00'),
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(85, 71, 12, 350, 300, 'Open', '2024-11-01 17:00:00'),
(86, 45, 6, 90, 50, 'Open', '2024-11-01 17:05:00'),
(87, 29, 54, 400, 370, 'Open', '2024-11-01 17:10:00'),
(88, 37, 68, 150, 130, 'Closed', '2024-11-01 17:15:00'),
(89, 10, 23, 220, 180, 'Open', '2024-11-01 17:20:00'),
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(91, 41, 26, 100, 80, 'Closed', '2024-11-01 17:30:00'),
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(93, 60, 92, 90, 50, 'Open', '2024-11-01 17:40:00'),
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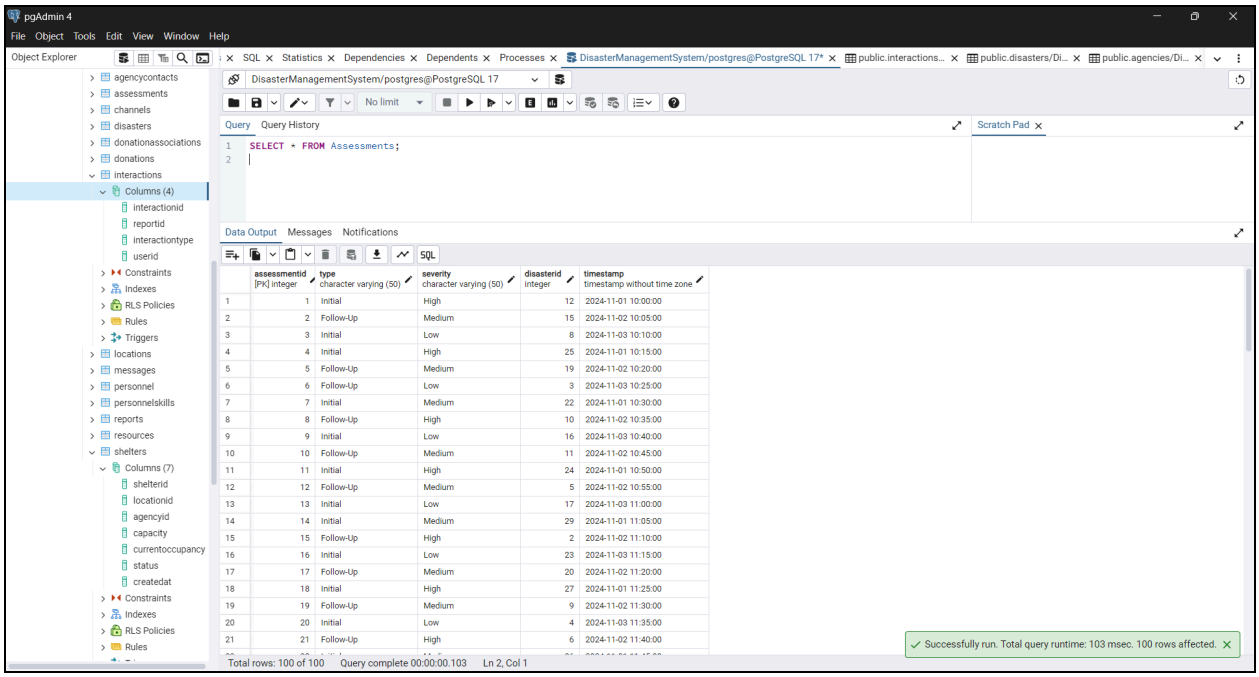
- **Assessments**




```
CREATE TABLE Assessments (
    AssessmentID SERIAL PRIMARY KEY,
    Type VARCHAR(50),
    Severity VARCHAR(50),
    DisasterID INT REFERENCES Disasters(DisasterID) ON DELETE CASCADE,
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);

INSERT INTO Assessments (AssessmentID, Type, Severity, DisasterID, Timestamp)
VALUES
(1, 'Initial', 'High', 12, '2024-11-01 10:00:00'),
(2, 'Follow-Up', 'Medium', 15, '2024-11-02 10:05:00'),
(3, 'Initial', 'Low', 8, '2024-11-03 10:10:00'),
(4, 'Initial', 'High', 25, '2024-11-01 10:15:00'),
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(9, 'Initial', 'Low', 16, '2024-11-03 10:40:00'),
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(11, 'Initial', 'High', 24, '2024-11-01 10:50:00'),
(12, 'Follow-Up', 'Medium', 5, '2024-11-02 10:55:00'),
(13, 'Initial', 'Low', 17, '2024-11-03 11:00:00'),
(14, 'Initial', 'Medium', 29, '2024-11-01 11:05:00'),
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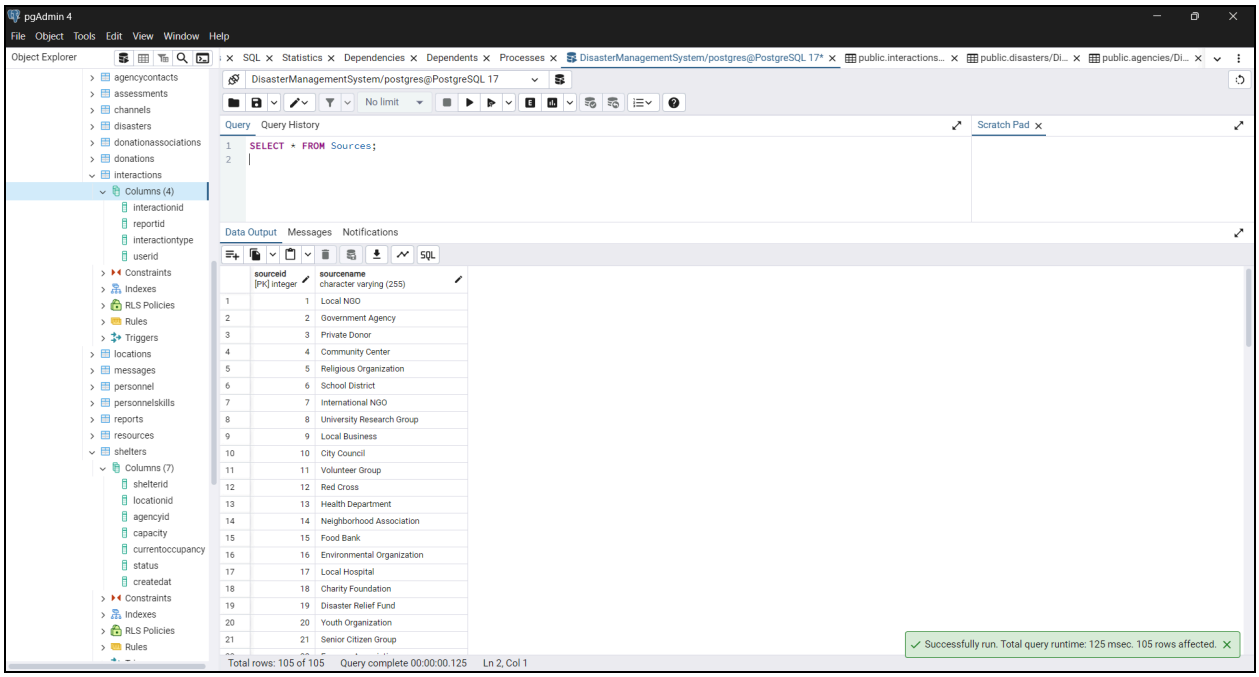
- **Sources**



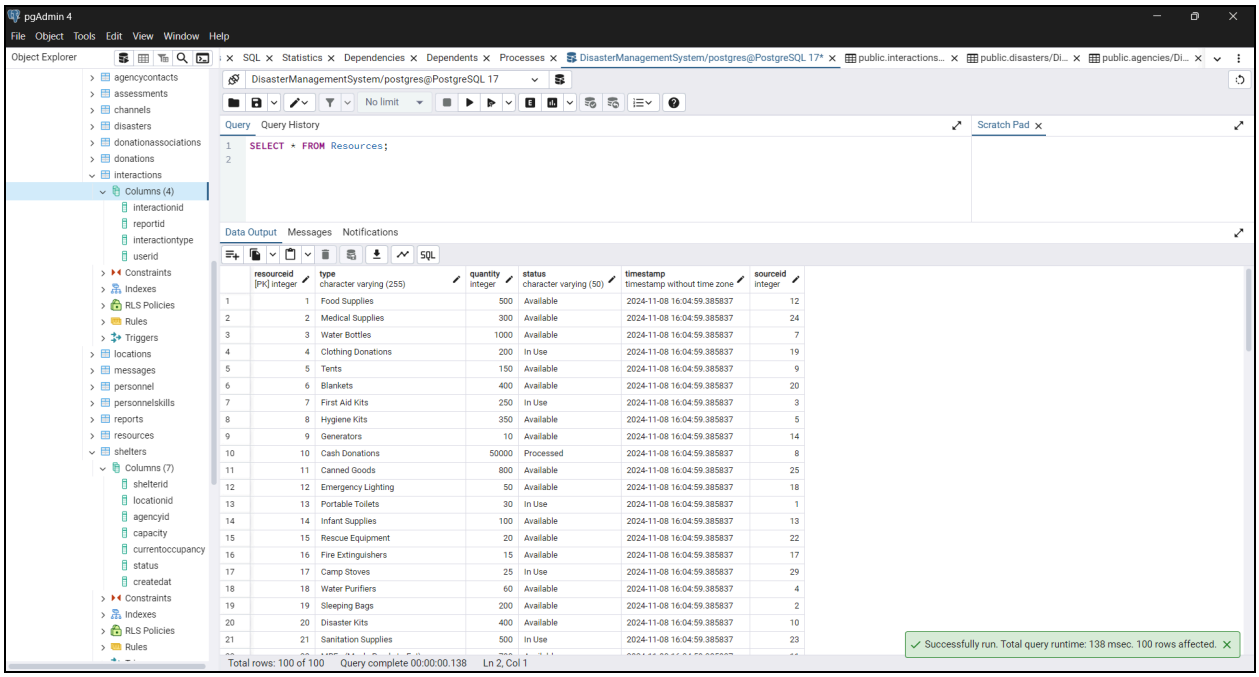

```
CREATE TABLE Sources (
    SourceID SERIAL PRIMARY KEY,
    SourceName VARCHAR(255) NOT NULL
);

INSERT INTO Sources (SourceName) VALUES
('Local NGO'),
('Government Agency'),
('Private Donor'),
('Community Center'),
('Religious Organization'),
('School District'),
('International NGO'),
('University Research Group'),
('Local Business'),
('City Council'),
('Volunteer Group'),
('Red Cross'),
('Health Department'),
('Neighborhood Association'),
('Food Bank'),
('Environmental Organization'),
('Local Hospital'),
('Charity Foundation'),
```

('Disaster Relief Fund'),
('Youth Organization'),
('Senior Citizen Group'),
('Farmers Association'),
('Transportation Service'),
('Public Works Department'),
('Emergency Services'),
('Military Aid'),
('Civic Group'),
('Cultural Organization'),
('Regional Planning Commission'),
('Local Fire Department'),
('Local Police Department'),
('Recreation Department'),
('Community Health Center'),
('Crisis Center'),
('Mental Health Organization'),
('Animal Shelter'),
('Public Utilities Company'),
('Civic Engagement Group'),
('Civic Action Committee'),
('Cultural Heritage Society'),
('Crisis Response Team'),
('Local Sports Club'),
('State Health Services'),
('Urban Development Agency'),
('Disability Rights Organization'),
('Local Chamber of Commerce'),
('Community Development Corporation'),
('Local Media Outlet'),
('Social Services Agency'),
('Neighborhood Watch Program'),
('Homeowners Association'),
('Historical Society'),
('Local Art Council'),
('Public Library'),
('Women Shelter'),
('Children's Advocacy Group'),
('Emergency Management Agency'),
('Faith-Based Group'),
('Local Advocacy Group'),
('Support Group'),
('Parent-Teacher Association'),
('Community Action Agency'),

('Local Coalition'),
('Neighborhood Improvement Group'),
('Community Watch Program'),
('Cultural Exchange Program'),
('Environmental Conservation Group'),
('Veterans Affairs Office'),
('Community Garden Initiative'),
('Interfaith Council'),
('Local Theater Group'),
('Arts Council'),
('Youth Sports League'),
('Local Philanthropist'),
('Civic Orchestra'),
('Local Scout Troop'),
('Local News Station'),
('Community Health Initiative'),
('Public Health Organization'),
('Cultural Festival Committee'),
('Public Housing Authority'),
('Community Credit Union'),
('Senior Center'),
('Local Historical Site'),
('Local Non-Profit'),
('Crisis Counseling Service'),
('Public Defender's Office'),
('Local Outreach Program'),
('Local Improvement Association'),
('Disaster Preparedness Coalition'),
('Social Justice Group'),
('Women's Empowerment Program'),
('Local Trade Union'),
('Cultural Heritage Foundation'),
('Public Interest Research Group'),
('State Volunteer Agency'),
('Community Resilience Coalition'),
('Local Arts Collective'),
('Local Eco-Group'),
('Public Policy Group'),
('Cultural Arts Alliance'),
('Local Mediation Center'),
('Youth Leadership Program'),
('Local Technology Initiative'),
('Community Safety Task Force');

- **Resources**




```
CREATE TABLE Resources (
    ResourceID SERIAL PRIMARY KEY,
    Type VARCHAR(255),
    Quantity INT,
    Status VARCHAR(50),
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    SourceID INT REFERENCES Sources(SourceID) ON DELETE CASCADE
);

-- Inserting 100 records into the Resources table with random SourceID references
INSERT INTO Resources (Type, Quantity, Status, SourceID) VALUES
('Food Supplies', 500, 'Available', 12),
('Medical Supplies', 300, 'Available', 24),
('Water Bottles', 1000, 'Available', 7),
('Clothing Donations', 200, 'In Use', 19),
('Tents', 150, 'Available', 9),
('Blankets', 400, 'Available', 20),
('First Aid Kits', 250, 'In Use', 3),
('Hygiene Kits', 350, 'Available', 5),
('Generators', 10, 'Available', 14),
('Cash Donations', 50000, 'Processed', 8),
('Canned Goods', 800, 'Available', 25),
('Emergency Lighting', 50, 'Available', 18),
('Portable Toilets', 30, 'In Use', 1),
```

('Infant Supplies', 100, 'Available', 13),
('Rescue Equipment', 20, 'Available', 22),
('Fire Extinguishers', 15, 'Available', 17),
('Camp Stoves', 25, 'In Use', 29),
('Water Purifiers', 60, 'Available', 4),
('Sleeping Bags', 200, 'Available', 2),
('Disaster Kits', 400, 'Available', 10),
('Sanitation Supplies', 500, 'In Use', 23),
('MREs (Meals Ready to Eat)', 700, 'Available', 11),
('Battery Packs', 100, 'Available', 27),
('Tarps', 150, 'Available', 6),
('Medical Staff', 30, 'Available', 16),
('Rescue Trained Volunteers', 50, 'In Use', 26),
('Food Delivery Vehicles', 5, 'Available', 15),
('PPE (Personal Protective Equipment)', 500, 'Available', 28),
('Communication Devices', 200, 'In Use', 30),
('Shelter Kits', 100, 'Available', 21),
('Rehydration Salts', 400, 'Available', 31),
('Volunteer Training Materials', 300, 'Available', 33),
('Household Cleaning Supplies', 200, 'In Use', 32),
('Ice Packs', 50, 'Available', 34),
('Portable Generators', 15, 'Available', 35),
('Gasoline Supplies', 100, 'In Use', 36),
('Lumber', 500, 'Available', 37),
('Chairs', 200, 'Available', 38),
('Tables', 150, 'Available', 39),
('Plastic Sheeting', 300, 'Available', 40),
('Tarpaulins', 75, 'Available', 41),
('Bottled Juices', 200, 'In Use', 42),
('Flashlights', 150, 'Available', 43),
('Portable Heaters', 25, 'Available', 44),
('Hand Sanitizers', 250, 'Available', 45),
('Toys for Children', 100, 'In Use', 46),
('Rain Gear', 200, 'Available', 47),
('Cooking Utensils', 150, 'Available', 48),
('Personal Care Items', 300, 'Available', 49),
('Fishing Gear', 100, 'In Use', 50),
('Camp Fire Supplies', 75, 'Available', 51),
('Dry Food Packs', 500, 'Available', 52),
('Medicinal Herbs', 200, 'In Use', 53),
('Bedding', 400, 'Available', 54),
('Portable Shower Units', 10, 'Available', 55),
('Flash Drives', 100, 'Available', 56),
('Cleaning Kits', 150, 'In Use', 57),

('Office Supplies', 300, 'Available', 58),
('Battery Chargers', 50, 'Available', 59),
('Safety Helmets', 100, 'In Use', 60),
('Signal Flares', 25, 'Available', 61),
('Tarps for Ground Cover', 50, 'Available', 62),
('Rescue Boats', 5, 'In Use', 63),
('Portable Sinks', 10, 'Available', 64),
('Navigation Equipment', 25, 'Available', 65),
('Life Jackets', 200, 'Available', 66),
('Portable Fans', 15, 'In Use', 67),
('Emergency Blankets', 300, 'Available', 68),
('Trash Bags', 1000, 'Available', 69),
('Ice Cream Freezers', 2, 'Available', 70),
('Portable Stoves', 20, 'Available', 71),
('Exercise Equipment', 15, 'In Use', 72),
('Kitchen Supplies', 100, 'Available', 73),
('Portable Speakers', 25, 'Available', 74),
('First Responder Gear', 50, 'In Use', 75),
('Medicinal Supplies', 300, 'Available', 76),
('Food Storage Containers', 200, 'Available', 77),
('Event Tents', 10, 'In Use', 78),
('Cots', 150, 'Available', 79),
('Thermal Blankets', 50, 'Available', 80),
('Fuel Containers', 75, 'In Use', 81),
('Hearing Protection Gear', 100, 'Available', 82),
('Respirators', 30, 'Available', 83),
('Drones for Surveying', 5, 'Available', 84),
('Portable Workstations', 10, 'In Use', 85),
('Medical Charts', 100, 'Available', 86),
('Walkie Talkies', 20, 'In Use', 87),
('Emergency Exit Signs', 15, 'Available', 88),
('Disaster Response Manuals', 50, 'Available', 89),
('Folding Tables', 50, 'In Use', 90),
('Plastic Bags', 500, 'Available', 91),
('Survival Kits', 200, 'Available', 92),
('Portable Refrigerators', 5, 'Available', 93),
('Personal Protective Gear', 150, 'In Use', 94),
('Outdoor Equipment', 100, 'Available', 95),
('Spiritual Support Materials', 50, 'Available', 96),
('Portable Toilets', 15, 'Available', 97),
('Emergency Response Kits', 200, 'In Use', 98),
('Support Animal Supplies', 50, 'Available', 99),
('Transportation Vehicles', 10, 'In Use', 100);

- **Trigger to update accuracy**

```
CREATE OR REPLACE FUNCTION update_report_accuracy()
RETURNS TRIGGER AS $$
DECLARE
    totalLikes INT;
    totalDislikes INT;
    newAccuracy INT;
BEGIN
    -- Count the total likes and dislikes for the report
    SELECT
        SUM(CASE WHEN InteractionType = 'Like' THEN 1 ELSE 0 END) INTO totalLikes,
        SUM(CASE WHEN InteractionType = 'Dislike' THEN 1 ELSE 0 END) INTO
totalDislikes
    FROM Interactions
    WHERE ReportID = NEW.ReportID;

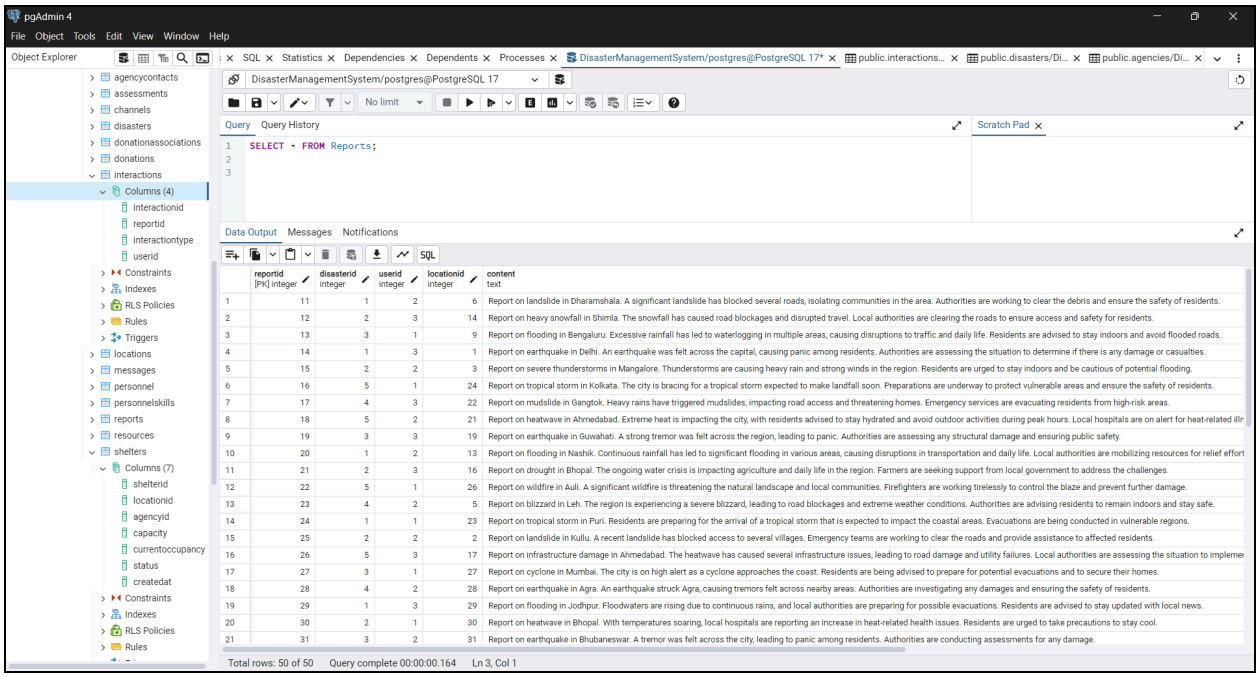
    -- Calculate new accuracy (example calculation)
    IF (totalLikes + totalDislikes) = 0 THEN
        newAccuracy := 0;  -- Prevent division by zero
    ELSE
        newAccuracy := (totalLikes * 100) / (totalLikes + totalDislikes);
    END IF;

    -- Update the accuracy in the Reports table
    UPDATE Reports
    SET Accuracy = newAccuracy
    WHERE ReportID = NEW.ReportID;

    RETURN NEW;
END;
$$ LANGUAGE plpgsql;

-- Create the trigger
CREATE TRIGGER update_accuracy_after_insert
AFTER INSERT ON Interactions
FOR EACH ROW
EXECUTE FUNCTION update_report_accuracy();
```

- **Reports**




```
CREATE TABLE Reports (
    ReportID SERIAL PRIMARY KEY,
    DisasterID INT REFERENCES Disasters(DisasterID) ON DELETE CASCADE,
    UserID INT REFERENCES Users(UserID) ON DELETE CASCADE,
    LocationID INT REFERENCES Locations(LocationID) ON DELETE CASCADE,
    Content TEXT,
    Accuracy INT,
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP
);

INSERT INTO Reports (ReportID, DisasterID, UserID, LocationID, Content, Accuracy,
Timestamp)
VALUES
    (1, 1, 1, 10, 'Report on flood in Jaipur. The recent heavy rains have led to significant
flooding in various parts of the city, affecting thousands of residents. Local authorities are
working tirelessly to provide assistance and mitigate the damage. Emergency services
have been deployed to rescue those stranded.', 50, '2024-11-01 10:00:00'),
    (2, 2, 3, 25, 'Report on earthquake in Bhuj. A powerful earthquake struck Bhuj this
morning, causing panic among the residents. Buildings have been damaged, and
emergency services are on high alert to respond to any casualties.', 50, '2024-11-01
10:15:00'),
    (3, 3, 2, 18, 'Report on tsunami in Visakhapatnam. Following an undersea earthquake,
a tsunami warning has been issued for the coastal areas. Authorities are evacuating
residents from low-lying regions to safer ground.', 50, '2024-11-01 10:30:00'),
```

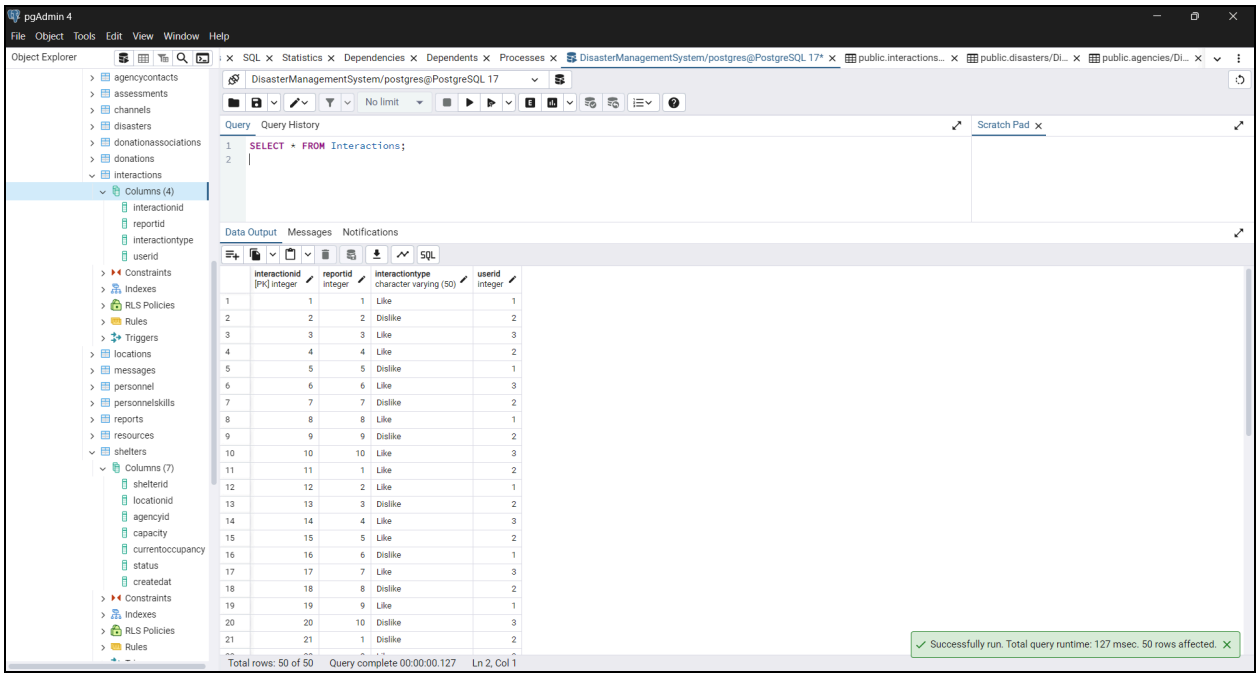
(4, 1, 2, 4, 'Report on heavy rainfall in Kolkata. Continuous rainfall has caused waterlogging in many areas, disrupting daily life. Local government is monitoring the situation and urging citizens to stay safe and avoid flooded streets.', 50, '2024-11-01 10:45:00'),
(5, 5, 3, 8, 'Report on drought in Pune. The prolonged dry spell has resulted in a severe water shortage affecting agriculture and daily life. Farmers are expressing concerns about crop yields and are seeking assistance from local authorities.', 50, '2024-11-01 11:00:00'),
(6, 2, 1, 20, 'Report on landslide in Manali. Recent heavy rainfall triggered a landslide that blocked the main road, cutting off access to several villages. Emergency services are working to clear the debris and ensure the safety of residents.', 50, '2024-11-01 11:15:00'),
(7, 4, 2, 12, 'Report on wildfire in Udaipur. A large wildfire is raging on the outskirts of Udaipur, threatening nearby homes. Firefighters are battling the blaze and evacuating residents from vulnerable areas.', 50, '2024-11-01 11:30:00'),
(8, 3, 1, 15, 'Report on hurricane in Chennai. A hurricane warning has been issued for Chennai as the storm approaches the coast. Residents are advised to prepare for potential evacuations and to stock up on essential supplies.', 50, '2024-11-01 11:45:00'),
(9, 5, 3, 11, 'Report on flooding in Surat. Persistent rain has caused rivers to overflow, leading to severe flooding in low-lying areas. Local authorities are providing relief supplies and monitoring the situation closely.', 50, '2024-11-01 12:00:00'),
(10, 4, 1, 7, 'Report on storm in Thiruvananthapuram. Strong winds and heavy rain are affecting the region, leading to power outages and travel disruptions. Emergency services are on standby to respond to any incidents.', 50, '2024-11-01 12:15:00'),
(11, 1, 2, 6, 'Report on landslide in Dharamshala. A significant landslide has blocked several roads, isolating communities in the area. Authorities are working to clear the debris and ensure the safety of residents.', 50, '2024-11-01 12:30:00'),
(12, 2, 3, 14, 'Report on heavy snowfall in Shimla. The snowfall has caused road blockages and disrupted travel. Local authorities are clearing the roads to ensure access and safety for residents.', 50, '2024-11-01 12:45:00'),
(13, 3, 1, 9, 'Report on flooding in Bengaluru. Excessive rainfall has led to waterlogging in multiple areas, causing disruptions to traffic and daily life. Residents are advised to stay indoors and avoid flooded roads.', 50, '2024-11-01 13:00:00'),
(14, 1, 3, 1, 'Report on earthquake in Delhi. An earthquake was felt across the capital, causing panic among residents. Authorities are assessing the situation to determine if there is any damage or casualties.', 50, '2024-11-01 13:15:00'),
(15, 2, 2, 3, 'Report on severe thunderstorms in Mangalore. Thunderstorms are causing heavy rain and strong winds in the region. Residents are urged to stay indoors and be cautious of potential flooding.', 50, '2024-11-01 13:30:00'),
(16, 5, 1, 24, 'Report on tropical storm in Kolkata. The city is bracing for a tropical storm expected to make landfall soon. Preparations are underway to protect vulnerable areas and ensure the safety of residents.', 50, '2024-11-01 13:45:00'),

(17, 4, 3, 22, 'Report on mudslide in Gangtok. Heavy rains have triggered mudslides, impacting road access and threatening homes. Emergency services are evacuating residents from high-risk areas.', 50, '2024-11-01 14:00:00'),
(18, 5, 2, 21, 'Report on heatwave in Ahmedabad. Extreme heat is impacting the city, with residents advised to stay hydrated and avoid outdoor activities during peak hours. Local hospitals are on alert for heat-related illnesses.', 50, '2024-11-01 14:15:00'),
(19, 3, 3, 19, 'Report on earthquake in Guwahati. A strong tremor was felt across the region, leading to panic. Authorities are assessing any structural damage and ensuring public safety.', 50, '2024-11-01 14:30:00'),
(20, 1, 2, 13, 'Report on flooding in Nashik. Continuous rainfall has led to significant flooding in various areas, causing disruptions in transportation and daily life. Local authorities are mobilizing resources for relief efforts.', 50, '2024-11-01 14:45:00'),
(21, 2, 3, 16, 'Report on drought in Bhopal. The ongoing water crisis is impacting agriculture and daily life in the region. Farmers are seeking support from local government to address the challenges.', 50, '2024-11-01 15:00:00'),
(22, 5, 1, 26, 'Report on wildfire in Auli. A significant wildfire is threatening the natural landscape and local communities. Firefighters are working tirelessly to control the blaze and prevent further damage.', 50, '2024-11-01 15:15:00'),
(23, 4, 2, 5, 'Report on blizzard in Leh. The region is experiencing a severe blizzard, leading to road blockages and extreme weather conditions. Authorities are advising residents to remain indoors and stay safe.', 50, '2024-11-01 15:30:00'),
(24, 1, 1, 23, 'Report on tropical storm in Puri. Residents are preparing for the arrival of a tropical storm that is expected to impact the coastal areas. Evacuations are being conducted in vulnerable regions.', 50, '2024-11-01 15:45:00'),
(25, 2, 2, 2, 'Report on landslide in Kullu. A recent landslide has blocked access to several villages. Emergency teams are working to clear the roads and provide assistance to affected residents.', 50, '2024-11-01 16:00:00'),
(26, 5, 3, 17, 'Report on infrastructure damage in Ahmedabad. The heatwave has caused several infrastructure issues, leading to road damage and utility failures. Local authorities are assessing the situation to implement repairs.', 50, '2024-11-01 16:15:00'),
(27, 3, 1, 27, 'Report on cyclone in Mumbai. The city is on high alert as a cyclone approaches the coast. Residents are being advised to prepare for potential evacuations and to secure their homes.', 50, '2024-11-01 16:30:00'),
(28, 4, 2, 28, 'Report on earthquake in Agra. An earthquake struck Agra, causing tremors felt across nearby areas. Authorities are investigating any damages and ensuring the safety of residents.', 50, '2024-11-01 16:45:00'),
(29, 1, 3, 29, 'Report on flooding in Jodhpur. Floodwaters are rising due to continuous rains, and local authorities are preparing for possible evacuations. Residents are advised to stay updated with local news.', 50, '2024-11-01 17:00:00'),
(30, 2, 1, 30, 'Report on heatwave in Bhopal. With temperatures soaring, local hospitals are reporting an increase in heat-related health issues. Residents are urged to take precautions to stay cool.', 50, '2024-11-01 17:15:00'),

(31, 3, 2, 31, 'Report on earthquake in Bhubaneswar. A tremor was felt across the city, leading to panic among residents. Authorities are conducting assessments for any damage.', 50, '2024-11-01 17:30:00'),
(32, 4, 3, 32, 'Report on flooding in Vadodara. Excessive rain has caused severe flooding in low-lying areas. Local authorities are working to provide relief and rescue efforts.', 50, '2024-11-01 17:45:00'),
(33, 5, 1, 33, 'Report on wildfire in Uttarakhand. A wildfire has broken out in the national park, threatening wildlife and natural habitats. Firefighters are working to contain the flames.', 50, '2024-11-01 18:00:00'),
(34, 1, 2, 34, 'Report on drought in Maharashtra. The ongoing drought is severely impacting agriculture, with farmers seeking government aid. Water conservation efforts are being implemented.', 50, '2024-11-01 18:15:00'),
(35, 2, 3, 35, 'Report on heavy rain in Indore. Continuous rain has caused waterlogging in several areas, disrupting daily activities. Residents are advised to stay indoors if possible.', 50, '2024-11-01 18:30:00'),
(36, 3, 1, 36, 'Report on earthquake in Nagpur. A mild tremor was felt across the city, with reports of some structural damage. Authorities are assessing the situation.', 50, '2024-11-01 18:45:00'),
(37, 4, 2, 37, 'Report on severe storms in Patna. High winds and heavy rain are causing disruptions in the city. Residents are being advised to take precautions and secure their homes.', 50, '2024-11-01 19:00:00'),
(38, 5, 3, 38, 'Report on flooding in Agra. Rising waters have caused significant flooding, leading to evacuations in low-lying areas. Emergency services are on alert.', 50, '2024-11-01 19:15:00'),
(39, 1, 1, 39, 'Report on landslide in Nainital. Heavy rains have triggered landslides in hilly areas, blocking roads and isolating communities. Authorities are working on rescue operations.', 50, '2024-11-01 19:30:00'),
(40, 2, 2, 40, 'Report on cyclone approaching Goa. The coastal region is bracing for a cyclone, with residents urged to prepare for possible evacuations and secure their properties.', 50, '2024-11-01 19:45:00'),
(41, 3, 3, 41, 'Report on wildfire in Himachal Pradesh. A significant wildfire is threatening natural habitats and nearby villages. Firefighters are working diligently to control the blaze.', 50, '2024-11-01 20:00:00'),
(42, 4, 1, 42, 'Report on heavy snowfall in Kashmir. Snowfall is affecting daily life, causing road closures and power outages. Residents are advised to stay indoors and keep warm.', 50, '2024-11-01 20:15:00'),
(43, 5, 2, 43, 'Report on tropical storm in Andaman Islands. Residents are preparing for the impending storm, with evacuation plans in place for vulnerable communities.', 50, '2024-11-01 20:30:00'),
(44, 1, 3, 44, 'Report on earthquake in Sikkim. A tremor was felt across the region, with residents reporting minor damage. Authorities are on high alert.', 50, '2024-11-01 20:45:00'),

(45, 2, 1, 45, 'Report on flood threat in Punjab. Rising river levels are causing concerns about potential flooding, and local authorities are on standby for emergency responses.', 50, '2024-11-01 21:00:00'),
(46, 3, 2, 46, 'Report on severe weather in Jharkhand. Heavy rains and winds are affecting the region, leading to power outages and disrupted transportation. Residents are urged to stay safe.', 50, '2024-11-01 21:15:00'),
(47, 4, 3, 47, 'Report on drought in Rajasthan. The lack of rainfall is significantly affecting agriculture, with farmers seeking assistance. Water conservation measures are being implemented.', 50, '2024-11-01 21:30:00'),
(48, 5, 1, 48, 'Report on landslide in Arunachal Pradesh. Heavy rains have caused landslides in hilly areas, impacting travel and safety. Rescue operations are underway.', 50, '2024-11-01 21:45:00'),
(49, 1, 2, 49, 'Report on flooding in Kerala. Continuous rain has led to waterlogging in multiple areas, affecting daily life. Local authorities are working to provide aid to those affected.', 50, '2024-11-01 22:00:00'),
(50, 2, 3, 50, 'Report on earthquake in Cochin. Residents felt a tremor, causing concern and fear. Authorities are assessing for any damages or injuries.', 50, '2024-11-01 22:15:00');

- **UserInteractions**




```
CREATE TABLE Interactions (
    InteractionID SERIAL PRIMARY KEY,
    ReportID INT REFERENCES Reports(ReportID) ON DELETE CASCADE,
    InteractionType VARCHAR(50),
    UserID INT REFERENCES Users(UserID) ON DELETE CASCADE
);

INSERT INTO Interactions (InteractionID, ReportID, InteractionType, UserID)
VALUES
    (1, 1, 'Like', 1),
    (2, 2, 'Dislike', 2),
    (3, 3, 'Like', 3),
    (4, 4, 'Like', 2),
    (5, 5, 'Dislike', 1),
    (6, 6, 'Like', 3),
    (7, 7, 'Dislike', 2),
    (8, 8, 'Like', 1),
    (9, 9, 'Dislike', 2),
    (10, 10, 'Like', 3),
    (11, 1, 'Like', 2),
    (12, 2, 'Like', 1),
    (13, 3, 'Dislike', 2),
    (14, 4, 'Like', 3),
    (15, 5, 'Like', 2),
```

```
(16, 6, 'Dislike', 1),
(17, 7, 'Like', 3),
(18, 8, 'Dislike', 2),
(19, 9, 'Like', 1),
(20, 10, 'Dislike', 3),
(21, 1, 'Dislike', 2),
(22, 2, 'Like', 3),
(23, 3, 'Like', 1),
(24, 4, 'Dislike', 3),
(25, 5, 'Like', 2),
(26, 6, 'Dislike', 1),
(27, 7, 'Like', 3),
(28, 8, 'Dislike', 2),
(29, 9, 'Like', 1),
(30, 10, 'Dislike', 3),
(31, 1, 'Like', 2),
(32, 2, 'Dislike', 3),
(33, 3, 'Like', 1),
(34, 4, 'Dislike', 2),
(35, 5, 'Like', 3),
(36, 6, 'Dislike', 1),
(37, 7, 'Like', 2),
(38, 8, 'Dislike', 3),
(39, 9, 'Like', 1),
(40, 10, 'Dislike', 2),
(41, 1, 'Like', 3),
(42, 2, 'Dislike', 1),
(43, 3, 'Like', 2),
(44, 4, 'Dislike', 3),
(45, 5, 'Like', 1),
(46, 6, 'Dislike', 2),
(47, 7, 'Like', 3),
(48, 8, 'Dislike', 1),
(49, 9, 'Like', 2),
(50, 10, 'Dislike', 3);
```

3. SQL Queries:

Simple Queries

1. Retrieve all locations:
   ```
   SELECT * FROM Locations;
   ```

	locationid [PK] integer	locationname character varying (255)	latitude numeric (9,6)	longitude numeric (9,6)
1	1	Mumbai, Maharashtra	19.076000	72.877700
2	2	Delhi	28.613900	77.209000
3	3	Bangalore, Karnataka	12.971600	77.594600
4	4	Kolkata, West Bengal	22.572600	88.363900
5	5	Chennai, Tamil Nadu	13.082700	80.270700
6	6	Hyderabad, Telangana	17.385000	78.486700
7	7	Ahmedabad, Gujarat	23.022500	72.571400
8	8	Pune, Maharashtra	18.520400	73.856700
9	9	Jaipur, Rajasthan	26.912400	75.787300
10	10	Surat, Gujarat	21.170200	72.831100
11	11	Lucknow, Uttar Pradesh	26.846700	80.946200
12	12	Nagpur, Maharashtra	21.145800	79.088200
13	13	Kanpur, Uttar Pradesh	26.449900	80.331900
14	14	Visakhapatnam, Andhra Pradesh	17.686800	83.218500
15	15	Bhopal, Madhya Pradesh	23.259900	77.412600
16	16	Coimbatore, Tamil Nadu	11.016800	76.955800
17	17	Mysuru, Karnataka	12.295800	76.639300
18	18	Patna, Bihar	25.594100	85.137600
19	19	Nashik, Maharashtra	19.997500	73.789800
20	20	Vadodara, Gujarat	22.307200	73.181200
21	21	Indore, Madhya Pradesh	22.719600	75.857700
22	22	Chandigarh	30.733300	76.779400

Total rows: 100 of 100 Query complete 00:00:00.162 Ln 2, Col 1

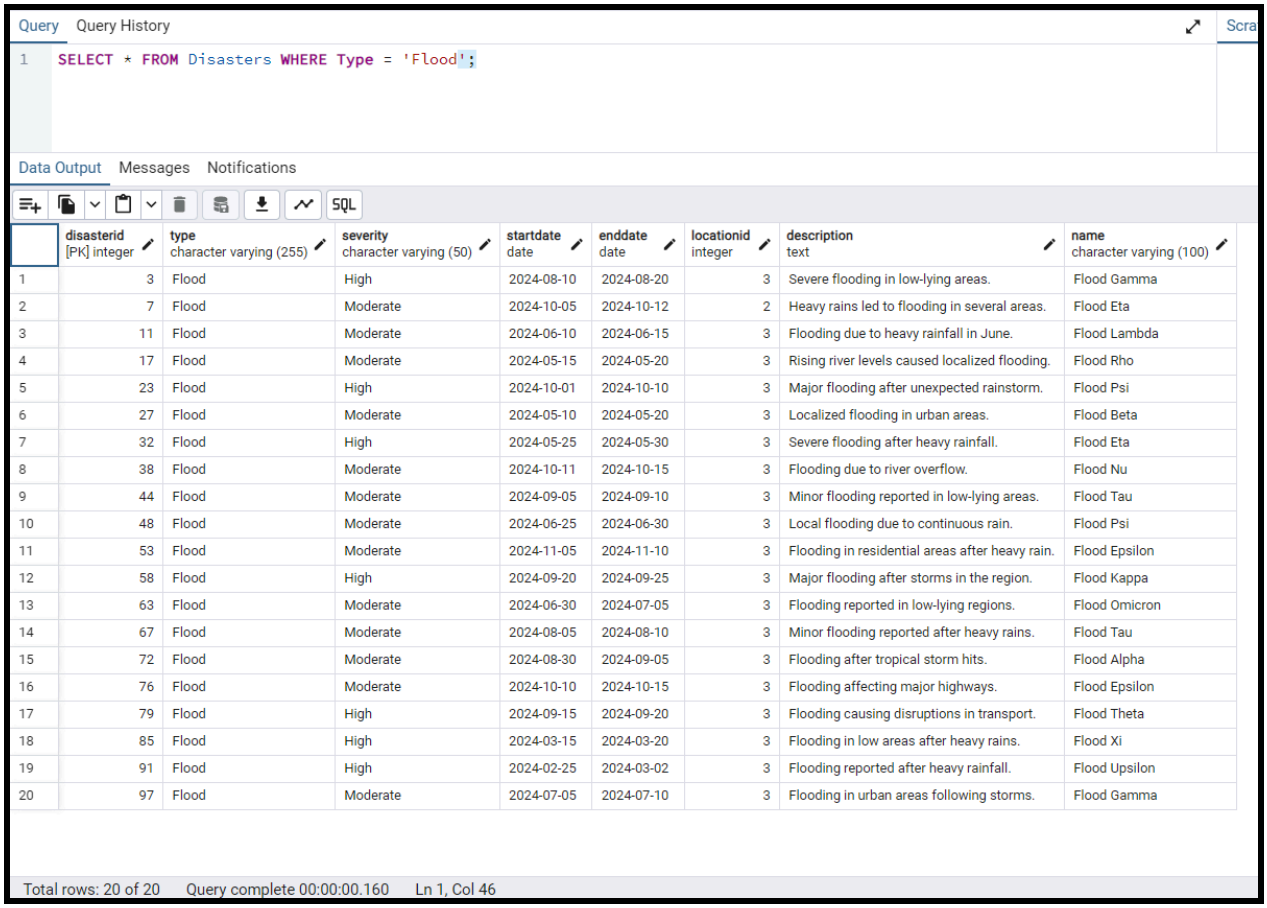
2. Get a list of all users with their roles:

```
SELECT Name, Role FROM Users;
```

3	Aarav Sharma	admin
4	Vivaan Gupta	user
5	Aditya Rao	admin
6	Vihaan Mehta	user
7	Arjun Verma	user
8	Sai Patel	admin
9	Reyansh Nair	user
10	Krishna Iyer	user
11	Rohan Desai	user
12	Kartik Singh	admin
13	Neelam Choudhury	user
14	Sneha Joshi	user
15	Ananya Bhat	user
16	Priya Kumar	user
17	Meera Agarwal	user
18	Riya Shah	user
19	Tanvi Malhotra	user
20	Aditi Patil	user
21	Ravi Singh	admin
22	Nisha Bansal	user
23	Raghav Gupta	user

Total rows: 100 of 100 Query complete 00:00:00.158 Ln 2, Col 1

3. Find all disasters of type "flood":
   ```
   SELECT * FROM Disasters WHERE Type = 'flood';
   ```



Query | Query History

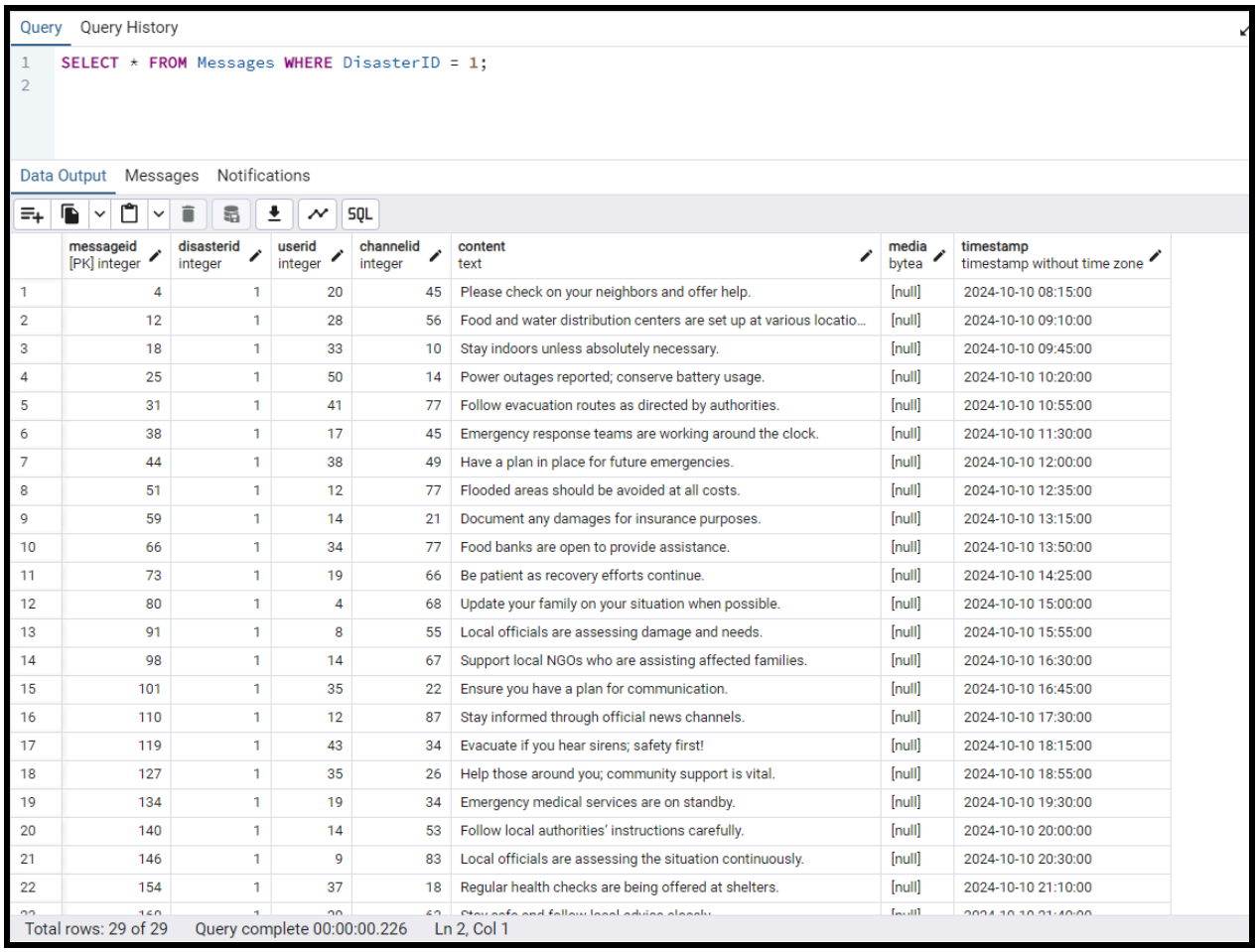
```
1  SELECT * FROM Disasters WHERE Type = 'Flood';
```

Data Output | Messages | Notifications

	disasterid [PK] integer	type character varying (255)	severity character varying (50)	startdate date	enddate date	locationid integer	description text	name character varying (100)
1	3	Flood	High	2024-08-10	2024-08-20	3	Severe flooding in low-lying areas.	Flood Gamma
2	7	Flood	Moderate	2024-10-05	2024-10-12	2	Heavy rains led to flooding in several areas.	Flood Eta
3	11	Flood	Moderate	2024-06-10	2024-06-15	3	Flooding due to heavy rainfall in June.	Flood Lambda
4	17	Flood	Moderate	2024-05-15	2024-05-20	3	Rising river levels caused localized flooding.	Flood Rho
5	23	Flood	High	2024-10-01	2024-10-10	3	Major flooding after unexpected rainstorm.	Flood Psi
6	27	Flood	Moderate	2024-05-10	2024-05-20	3	Localized flooding in urban areas.	Flood Beta
7	32	Flood	High	2024-05-25	2024-05-30	3	Severe flooding after heavy rainfall.	Flood Eta
8	38	Flood	Moderate	2024-10-11	2024-10-15	3	Flooding due to river overflow.	Flood Nu
9	44	Flood	Moderate	2024-09-05	2024-09-10	3	Minor flooding reported in low-lying areas.	Flood Tau
10	48	Flood	Moderate	2024-06-25	2024-06-30	3	Local flooding due to continuous rain.	Flood Psi
11	53	Flood	Moderate	2024-11-05	2024-11-10	3	Flooding in residential areas after heavy rain.	Flood Epsilon
12	58	Flood	High	2024-09-20	2024-09-25	3	Major flooding after storms in the region.	Flood Kappa
13	63	Flood	Moderate	2024-06-30	2024-07-05	3	Flooding reported in low-lying regions.	Flood Omicron
14	67	Flood	Moderate	2024-08-05	2024-08-10	3	Minor flooding reported after heavy rains.	Flood Tau
15	72	Flood	Moderate	2024-08-30	2024-09-05	3	Flooding after tropical storm hits.	Flood Alpha
16	76	Flood	Moderate	2024-10-10	2024-10-15	3	Flooding affecting major highways.	Flood Epsilon
17	79	Flood	High	2024-09-15	2024-09-20	3	Flooding causing disruptions in transport.	Flood Theta
18	85	Flood	High	2024-03-15	2024-03-20	3	Flooding in low areas after heavy rains.	Flood Xi
19	91	Flood	High	2024-02-25	2024-03-02	3	Flooding reported after heavy rainfall.	Flood Upsilon
20	97	Flood	Moderate	2024-07-05	2024-07-10	3	Flooding in urban areas following storms.	Flood Gamma

Total rows: 20 of 20 Query complete 00:00:00.160 Ln 1, Col 46

4. Show all messages for a specific disaster:
   `SELECT * FROM Messages WHERE DisasterID = 1;`



Query | Query History

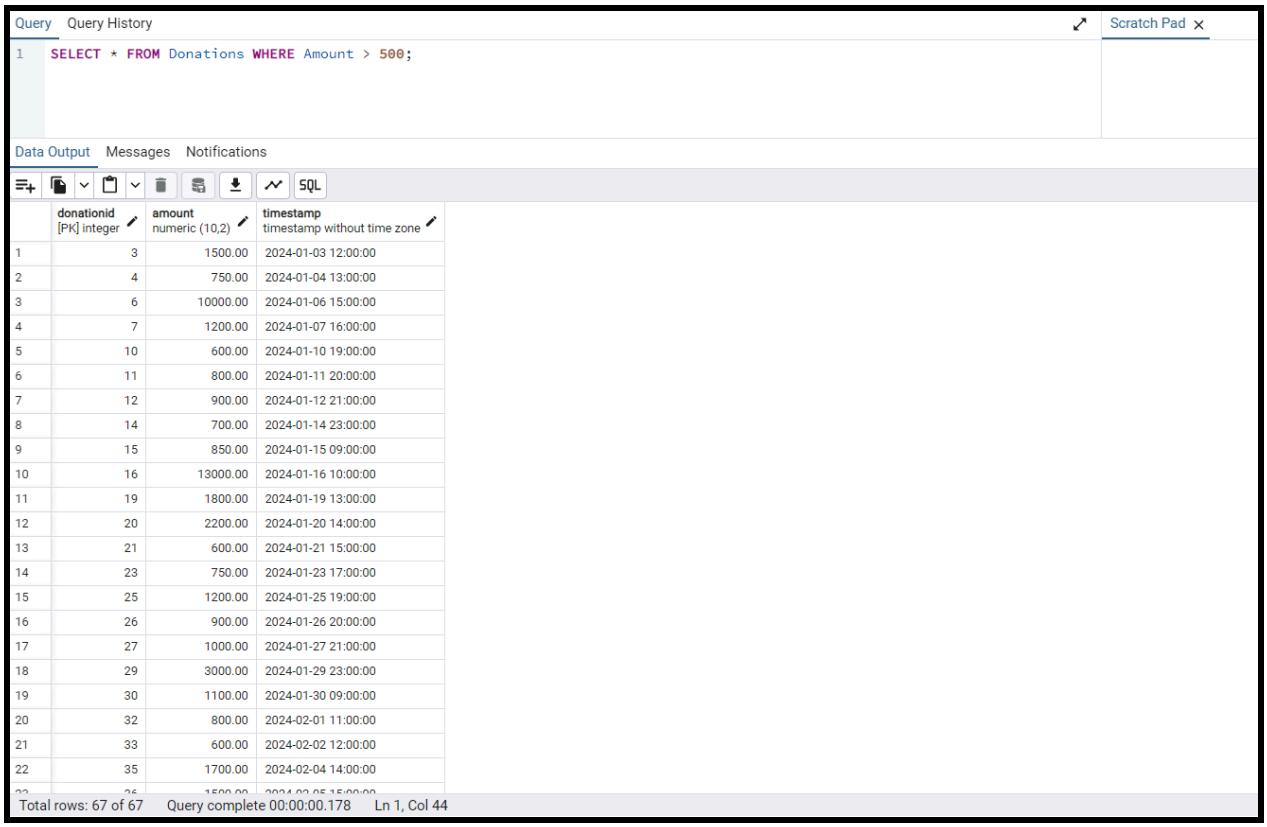
```
1  SELECT * FROM Messages WHERE DisasterID = 1;
2
```

Data Output | Messages | Notifications

	messageid [PK] integer	disasterid integer	userid integer	channelid integer	content text	media bytea	timestamp timestamp without time zone
1	4	1	20	45	Please check on your neighbors and offer help.	[null]	2024-10-10 08:15:00
2	12	1	28	56	Food and water distribution centers are set up at various locatio...	[null]	2024-10-10 09:10:00
3	18	1	33	10	Stay indoors unless absolutely necessary.	[null]	2024-10-10 09:45:00
4	25	1	50	14	Power outages reported; conserve battery usage.	[null]	2024-10-10 10:20:00
5	31	1	41	77	Follow evacuation routes as directed by authorities.	[null]	2024-10-10 10:55:00
6	38	1	17	45	Emergency response teams are working around the clock.	[null]	2024-10-10 11:30:00
7	44	1	38	49	Have a plan in place for future emergencies.	[null]	2024-10-10 12:00:00
8	51	1	12	77	Flooded areas should be avoided at all costs.	[null]	2024-10-10 12:35:00
9	59	1	14	21	Document any damages for insurance purposes.	[null]	2024-10-10 13:15:00
10	66	1	34	77	Food banks are open to provide assistance.	[null]	2024-10-10 13:50:00
11	73	1	19	66	Be patient as recovery efforts continue.	[null]	2024-10-10 14:25:00
12	80	1	4	68	Update your family on your situation when possible.	[null]	2024-10-10 15:00:00
13	91	1	8	55	Local officials are assessing damage and needs.	[null]	2024-10-10 15:55:00
14	98	1	14	67	Support local NGOs who are assisting affected families.	[null]	2024-10-10 16:30:00
15	101	1	35	22	Ensure you have a plan for communication.	[null]	2024-10-10 16:45:00
16	110	1	12	87	Stay informed through official news channels.	[null]	2024-10-10 17:30:00
17	119	1	43	34	Evacuate if you hear sirens; safety first!	[null]	2024-10-10 18:15:00
18	127	1	35	26	Help those around you; community support is vital.	[null]	2024-10-10 18:55:00
19	134	1	19	34	Emergency medical services are on standby.	[null]	2024-10-10 19:30:00
20	140	1	14	53	Follow local authorities' instructions carefully.	[null]	2024-10-10 20:00:00
21	146	1	9	83	Local officials are assessing the situation continuously.	[null]	2024-10-10 20:30:00
22	154	1	37	18	Regular health checks are being offered at shelters.	[null]	2024-10-10 21:10:00

Total rows: 29 of 29 Query complete 00:00:00.226 Ln 2, Col 1

5. Get all donations with amounts greater than $500:
   `SELECT * FROM Donations WHERE Amount > 500;`



Query | Query History | Scratch Pad

```
1  SELECT * FROM Donations WHERE Amount > 500;
```

Data Output | Messages | Notifications

	donationid [PK] integer	amount numeric (10,2)	timestamp timestamp without time zone
1	3	1500.00	2024-01-03 12:00:00
2	4	750.00	2024-01-04 13:00:00
3	6	10000.00	2024-01-06 15:00:00
4	7	1200.00	2024-01-07 16:00:00
5	10	600.00	2024-01-10 19:00:00
6	11	800.00	2024-01-11 20:00:00
7	12	900.00	2024-01-12 21:00:00
8	14	700.00	2024-01-14 23:00:00
9	15	850.00	2024-01-15 09:00:00
10	16	13000.00	2024-01-16 10:00:00
11	19	1800.00	2024-01-19 13:00:00
12	20	2200.00	2024-01-20 14:00:00
13	21	600.00	2024-01-21 15:00:00
14	23	750.00	2024-01-23 17:00:00
15	25	1200.00	2024-01-25 19:00:00
16	26	900.00	2024-01-26 20:00:00
17	27	1000.00	2024-01-27 21:00:00
18	29	3000.00	2024-01-29 23:00:00
19	30	1100.00	2024-01-30 09:00:00
20	32	800.00	2024-02-01 11:00:00
21	33	600.00	2024-02-02 12:00:00
22	35	1700.00	2024-02-04 14:00:00

Total rows: 67 of 67 Query complete 00:00:00.178 Ln 1, Col 44

6. Retrieve all teams with a specific role, like "search and rescue":
   `SELECT * FROM Teams WHERE Role = 'search and rescue';`

Query Query History

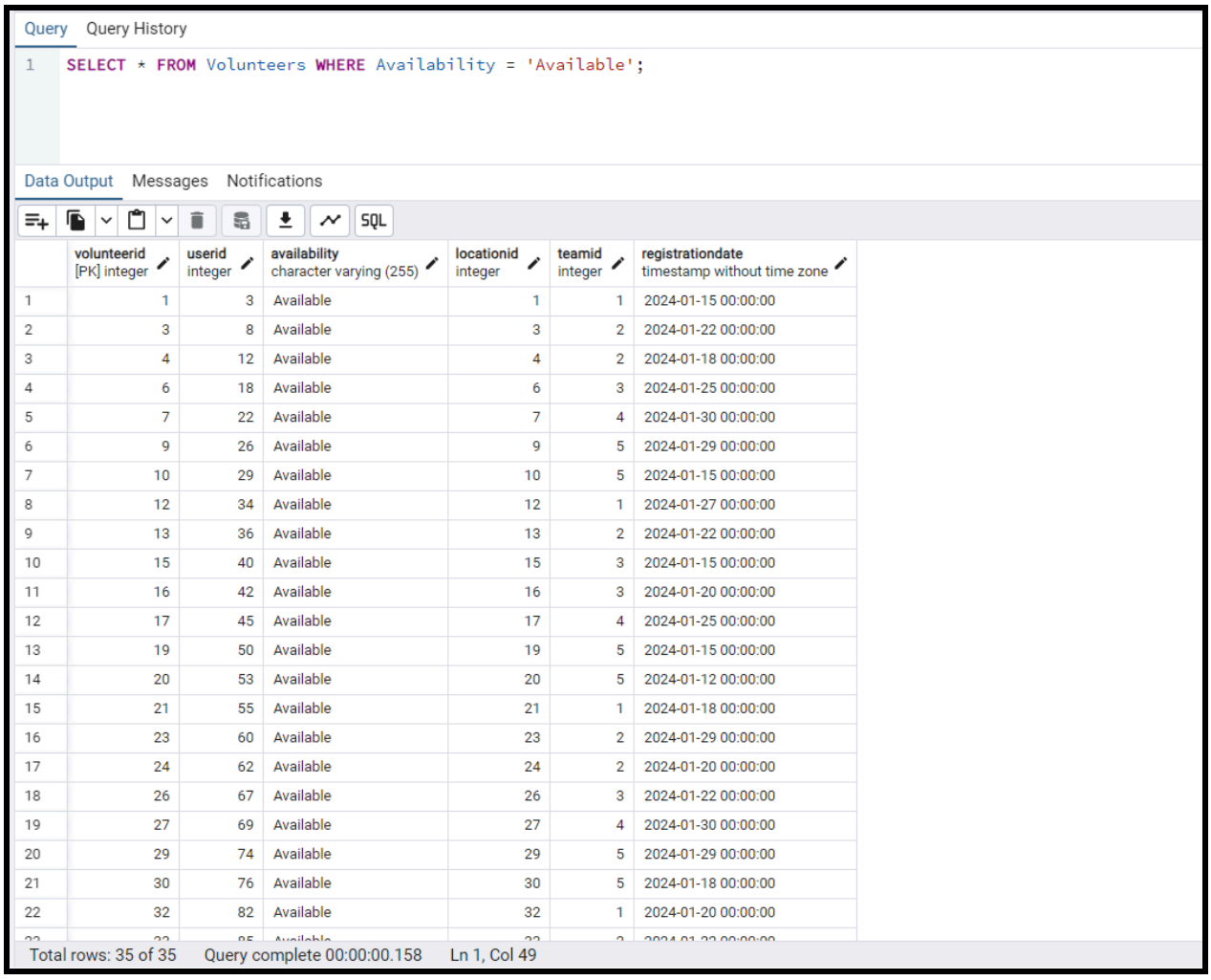
```
1  SELECT * FROM Teams WHERE Role = 'Rescue';
```

Data Output Messages Notifications

	teamid [PK] integer	name character varying (255)	role character varying (50)	availability character varying (255)	createdat timestamp without time zone
1	1	National Disaster Response Team	Rescue	Available	2024-01-15 00:00:00
2	9	Search and Rescue Operations	Rescue	Busy	2024-01-23 00:00:00
3	12	Animal Rescue Volunteers	Rescue	Busy	2024-01-26 00:00:00
4	15	Search and Safety Squad	Rescue	Available	2024-01-29 00:00:00
5	19	Fire and Hazmat Response	Rescue	Available	2024-02-03 00:00:00
6	26	Earthquake Search Team	Rescue	Busy	2024-02-10 00:00:00
7	28	Mobile Rescue Unit	Rescue	Busy	2024-02-12 00:00:00
8	33	Rescue Operations Center	Rescue	Available	2024-02-17 00:00:00
9	36	Hazardous Material Response	Rescue	Available	2024-02-20 00:00:00
10	41	Fire and Safety Team	Rescue	Busy	2024-02-25 00:00:00
11	47	Animal Aid Team	Rescue	Busy	2024-03-02 00:00:00
12	48	Search and Response Unit	Rescue	Available	2024-03-03 00:00:00
13	51	Flood Response Unit	Rescue	Busy	2024-03-06 00:00:00
14	53	Fire Brigade Team	Rescue	Available	2024-03-08 00:00:00
15	60	Urban Rescue Group	Rescue	Busy	2024-03-15 00:00:00
16	70	Rapid Safety Team	Rescue	Busy	2024-03-25 00:00:00
17	75	Emergency Flood Response	Rescue	Available	2024-03-30 00:00:00
18	76	Coastal Rescue Team	Rescue	Busy	2024-03-31 00:00:00
19	85	Hazardous Operations	Rescue	Available	2024-04-09 00:00:00
20	88	Urban Disaster Response	Rescue	Busy	2024-04-12 00:00:00
21	90	Special Rescue Taskforce	Rescue	Busy	2024-04-14 00:00:00
22	97	Search and Rescue Operations	Rescue	Available	2024-04-21 00:00:00

Total rows: 22 of 22 Query complete 00:00:00.154 Ln 1, Col 41

7. List all volunteers who are available:
   ```
   SELECT * FROM Volunteers WHERE Availability = 'available';
   ```



Query | Query History

```
1  SELECT * FROM Volunteers WHERE Availability = 'Available';
```

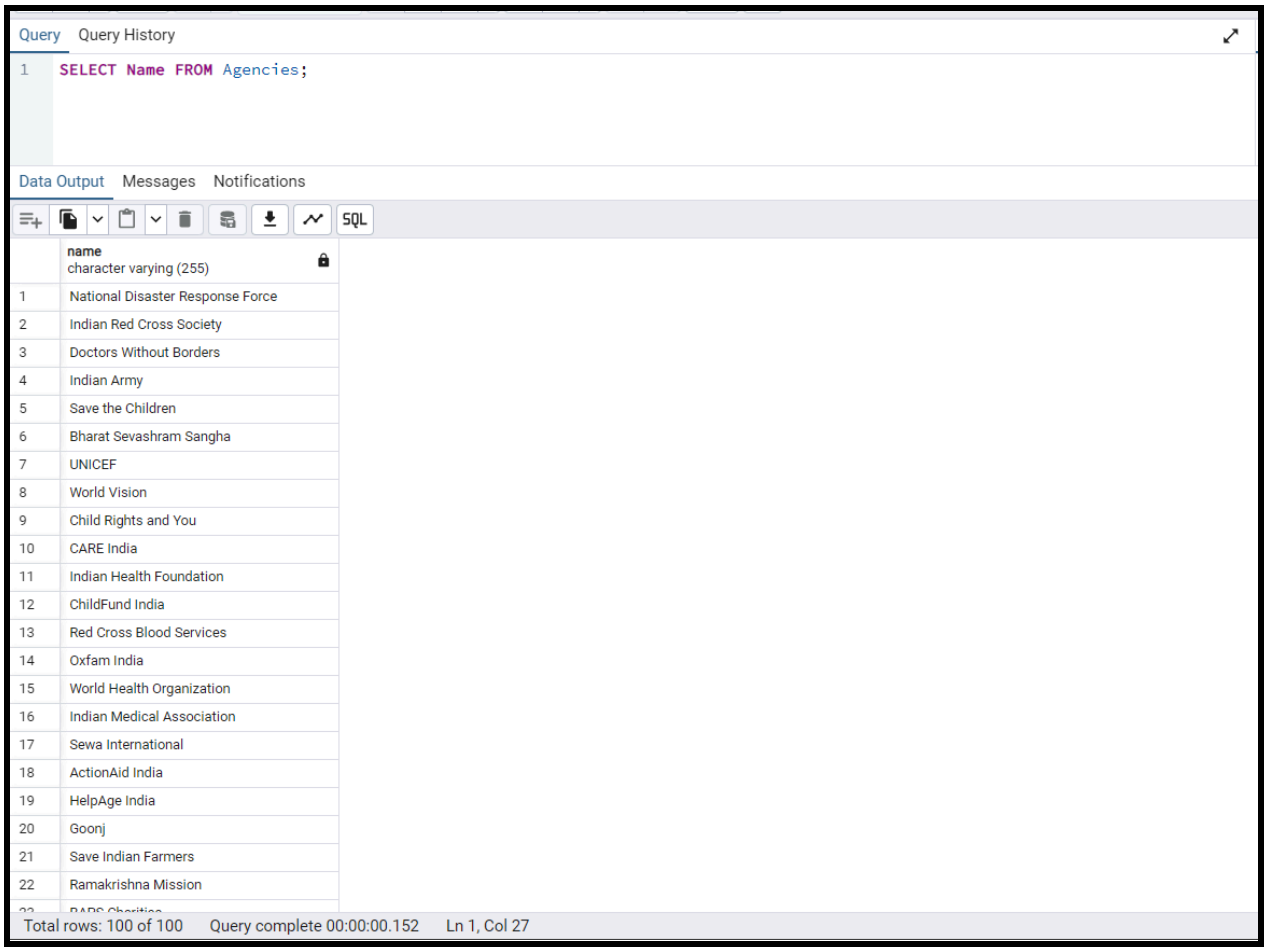
Data Output | Messages | Notifications

SQL

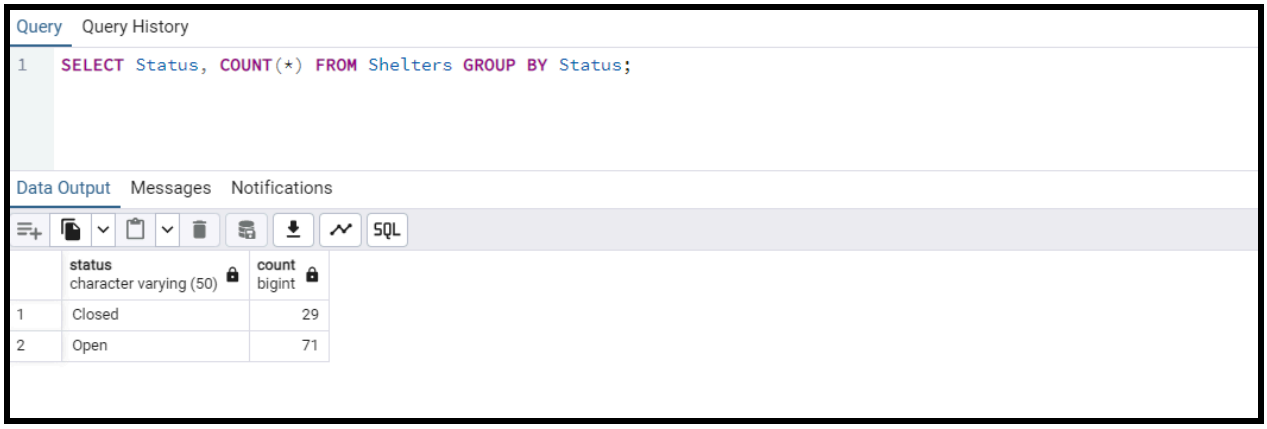
	volunteerid [PK] integer	userid integer	availability character varying (255)	locationid integer	teamid integer	registrationdate timestamp without time zone
1	1	3	Available	1	1	2024-01-15 00:00:00
2	3	8	Available	3	2	2024-01-22 00:00:00
3	4	12	Available	4	2	2024-01-18 00:00:00
4	6	18	Available	6	3	2024-01-25 00:00:00
5	7	22	Available	7	4	2024-01-30 00:00:00
6	9	26	Available	9	5	2024-01-29 00:00:00
7	10	29	Available	10	5	2024-01-15 00:00:00
8	12	34	Available	12	1	2024-01-27 00:00:00
9	13	36	Available	13	2	2024-01-22 00:00:00
10	15	40	Available	15	3	2024-01-15 00:00:00
11	16	42	Available	16	3	2024-01-20 00:00:00
12	17	45	Available	17	4	2024-01-25 00:00:00
13	19	50	Available	19	5	2024-01-15 00:00:00
14	20	53	Available	20	5	2024-01-12 00:00:00
15	21	55	Available	21	1	2024-01-18 00:00:00
16	23	60	Available	23	2	2024-01-29 00:00:00
17	24	62	Available	24	2	2024-01-20 00:00:00
18	26	67	Available	26	3	2024-01-22 00:00:00
19	27	69	Available	27	4	2024-01-30 00:00:00
20	29	74	Available	29	5	2024-01-29 00:00:00
21	30	76	Available	30	5	2024-01-18 00:00:00
22	32	82	Available	32	1	2024-01-20 00:00:00

Total rows: 35 of 35 Query complete 00:00:00.158 Ln 1, Col 49

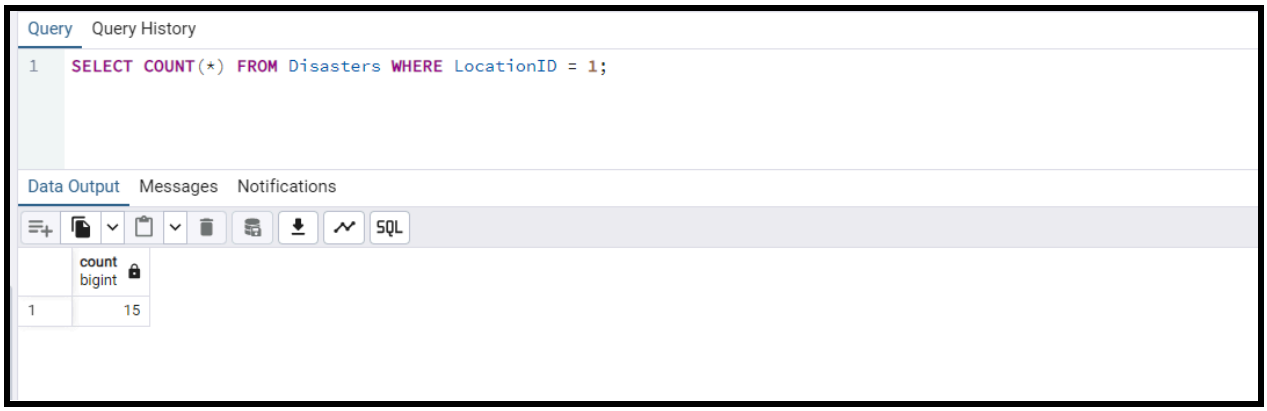
8. Find all agency names:
   ```
   SELECT Name FROM Agencies;
   ```



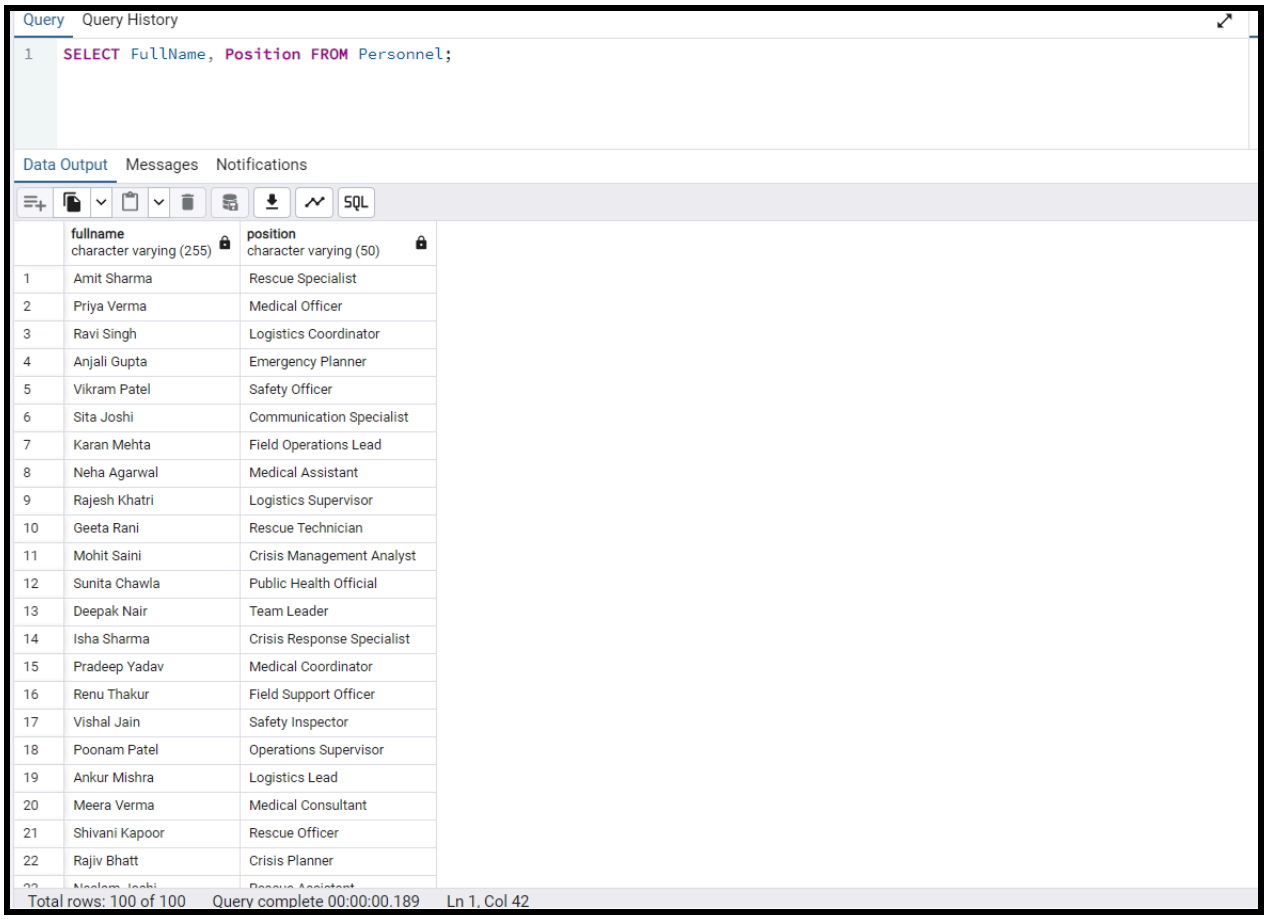
9. Get a count of all shelters by their status:
   `SELECT Status, COUNT(*) FROM Shelters GROUP BY Status;`



10. Show the total number of disasters in a specific location:
    `SELECT COUNT(*) FROM Disasters WHERE LocationID = 2;`



11. List all personnel with their position:
    ```
    SELECT FullName, Position FROM Personnel;
    ```



Query | Query History

```
1  SELECT FullName, Position FROM Personnel;
```

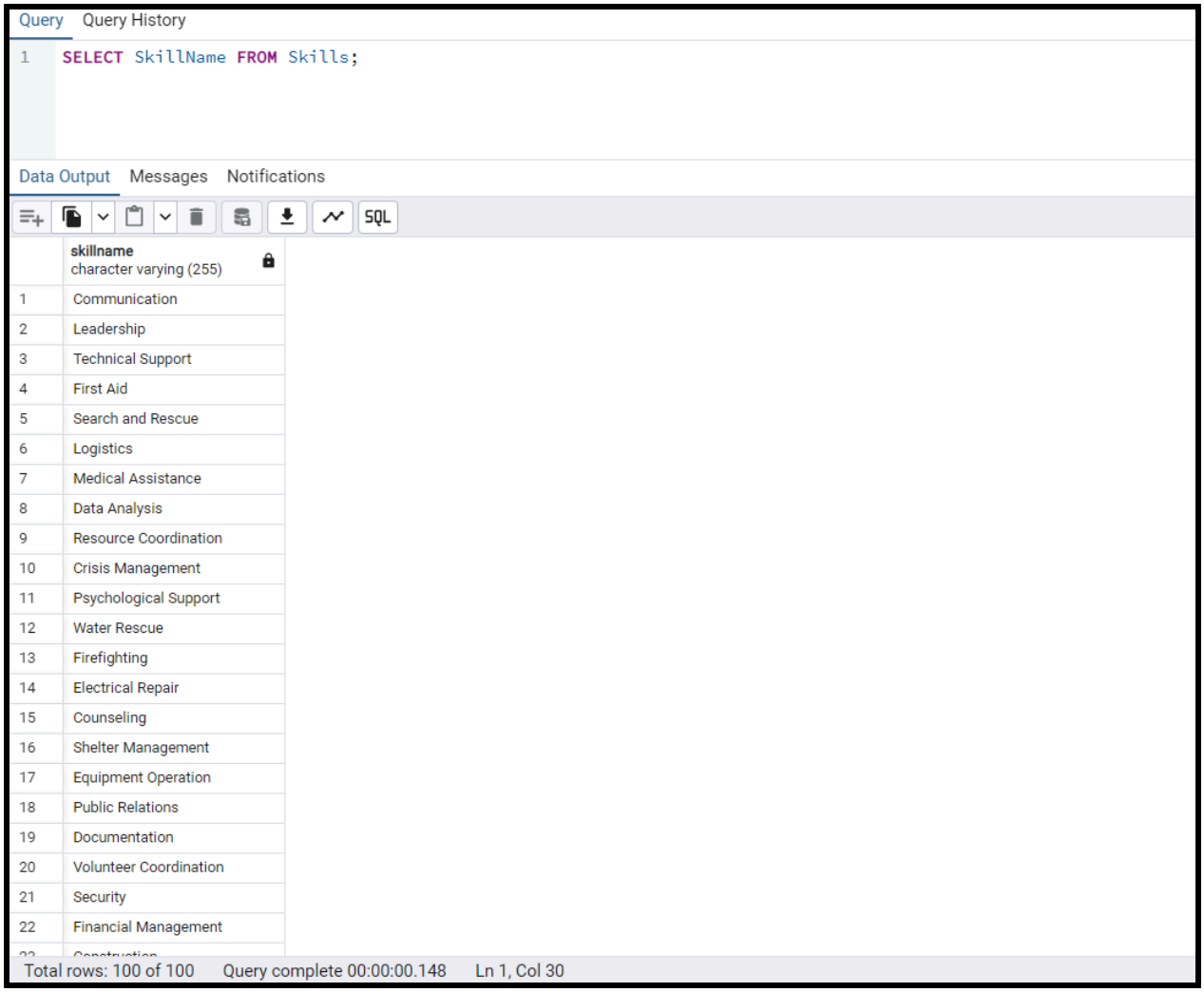
Data Output | Messages | Notifications

	fullname character varying (255)	position character varying (50)
1	Amit Sharma	Rescue Specialist
2	Priya Verma	Medical Officer
3	Ravi Singh	Logistics Coordinator
4	Anjali Gupta	Emergency Planner
5	Vikram Patel	Safety Officer
6	Sita Joshi	Communication Specialist
7	Karan Mehta	Field Operations Lead
8	Neha Agarwal	Medical Assistant
9	Rajesh Khatri	Logistics Supervisor
10	Geeta Rani	Rescue Technician
11	Mohit Saini	Crisis Management Analyst
12	Sunita Chawla	Public Health Official
13	Deepak Nair	Team Leader
14	Isha Sharma	Crisis Response Specialist
15	Pradeep Yadav	Medical Coordinator
16	Renu Thakur	Field Support Officer
17	Vishal Jain	Safety Inspector
18	Poonam Patel	Operations Supervisor
19	Ankur Mishra	Logistics Lead
20	Meera Verma	Medical Consultant
21	Shivani Kapoor	Rescue Officer
22	Rajiv Bhatt	Crisis Planner

Total rows: 100 of 100 Query complete 00:00:00.189 Ln 1, Col 42

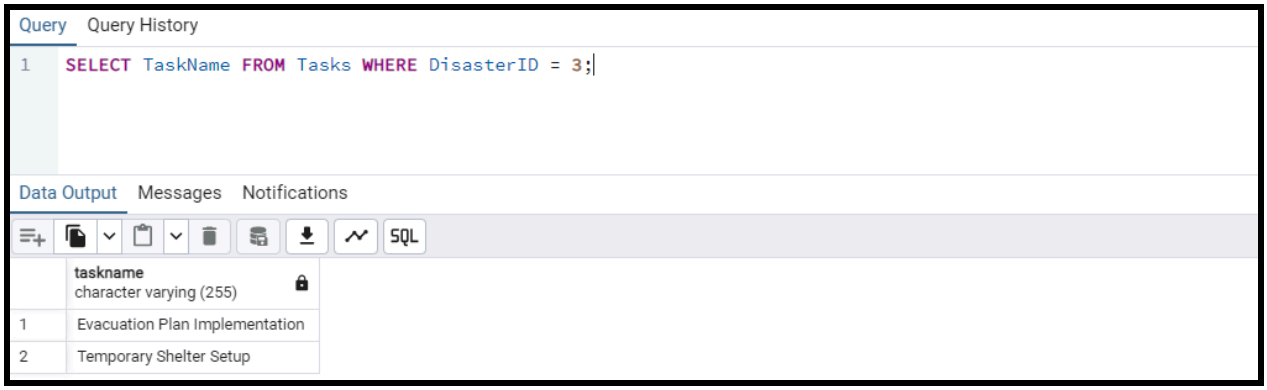
12. Get the names of all skills:

```
SELECT SkillName FROM Skills;
```



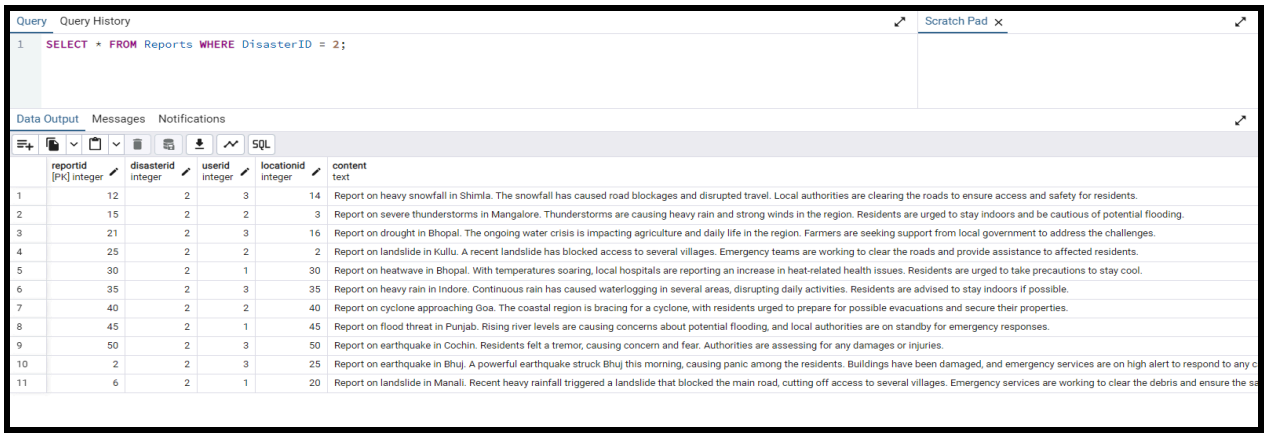
13. List all tasks related to a specific disaster:

```
SELECT TaskName FROM Tasks WHERE DisasterID = 3;
```

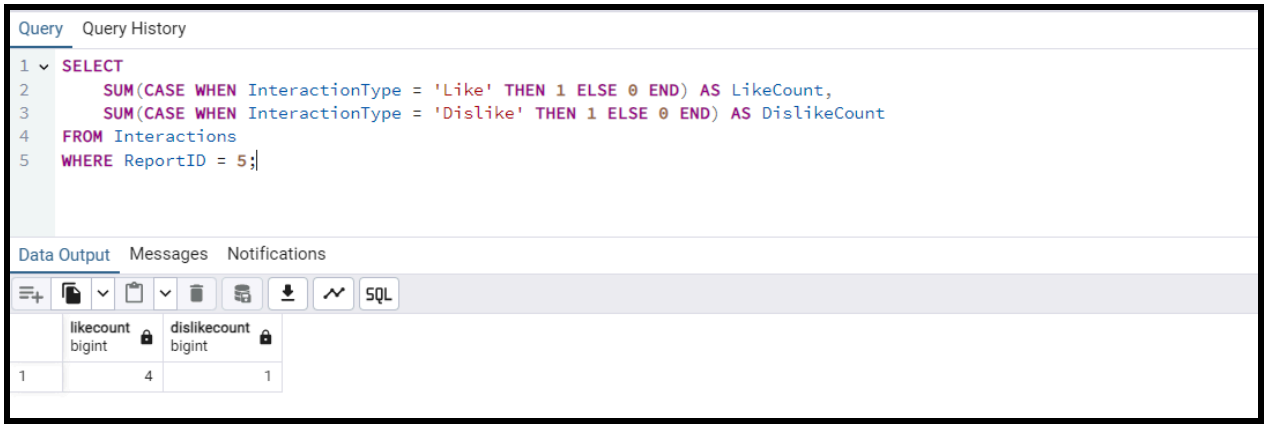


14. Show all donation associations for a specific user:
    ```
    SELECT * FROM DonationAssociations WHERE UserID = 4;
    ```

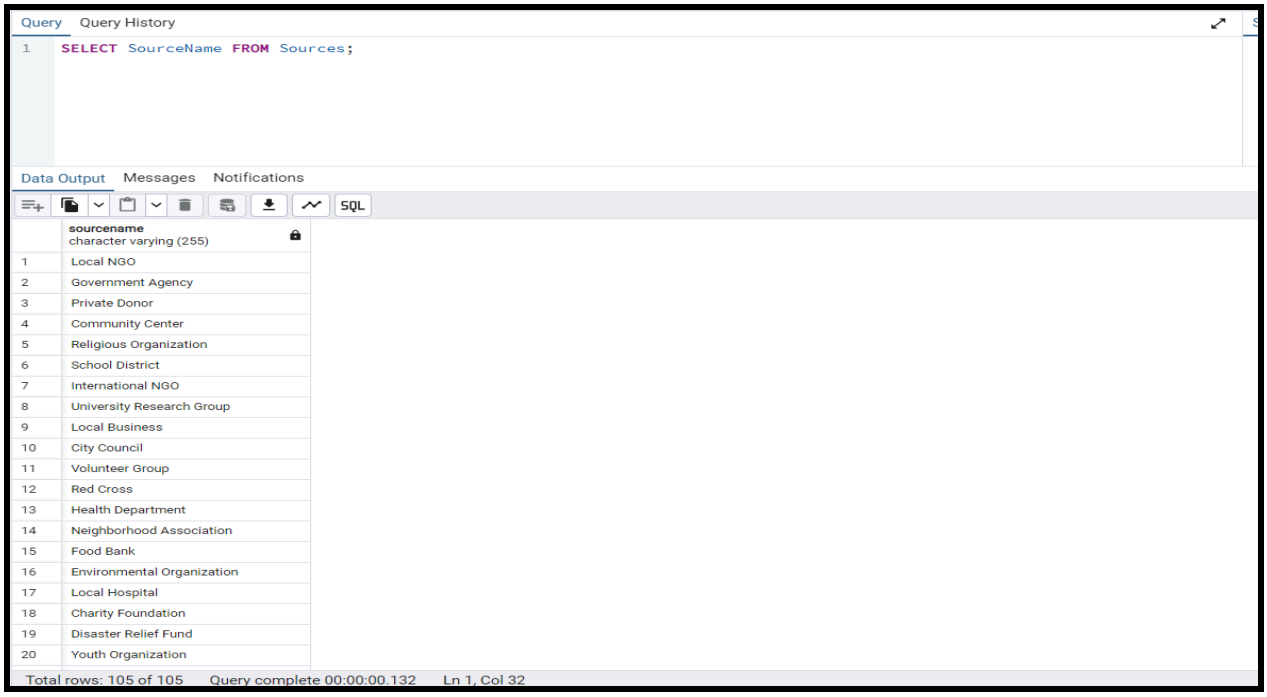
15. Get all reports for a specific disaster:
    ```
    SELECT * FROM Reports WHERE DisasterID = 2;
    ```



16. Find all interaction types for a specific report:
    SELECT SUM(CASE WHEN InteractionType = 'Like' THEN 1 ELSE 0 END) AS LikeCount,
    SUM(CASE WHEN InteractionType = 'Dislike' THEN 1 ELSE 0 END) AS DislikeCount
    FROM Interactions WHERE ReportID = 5;

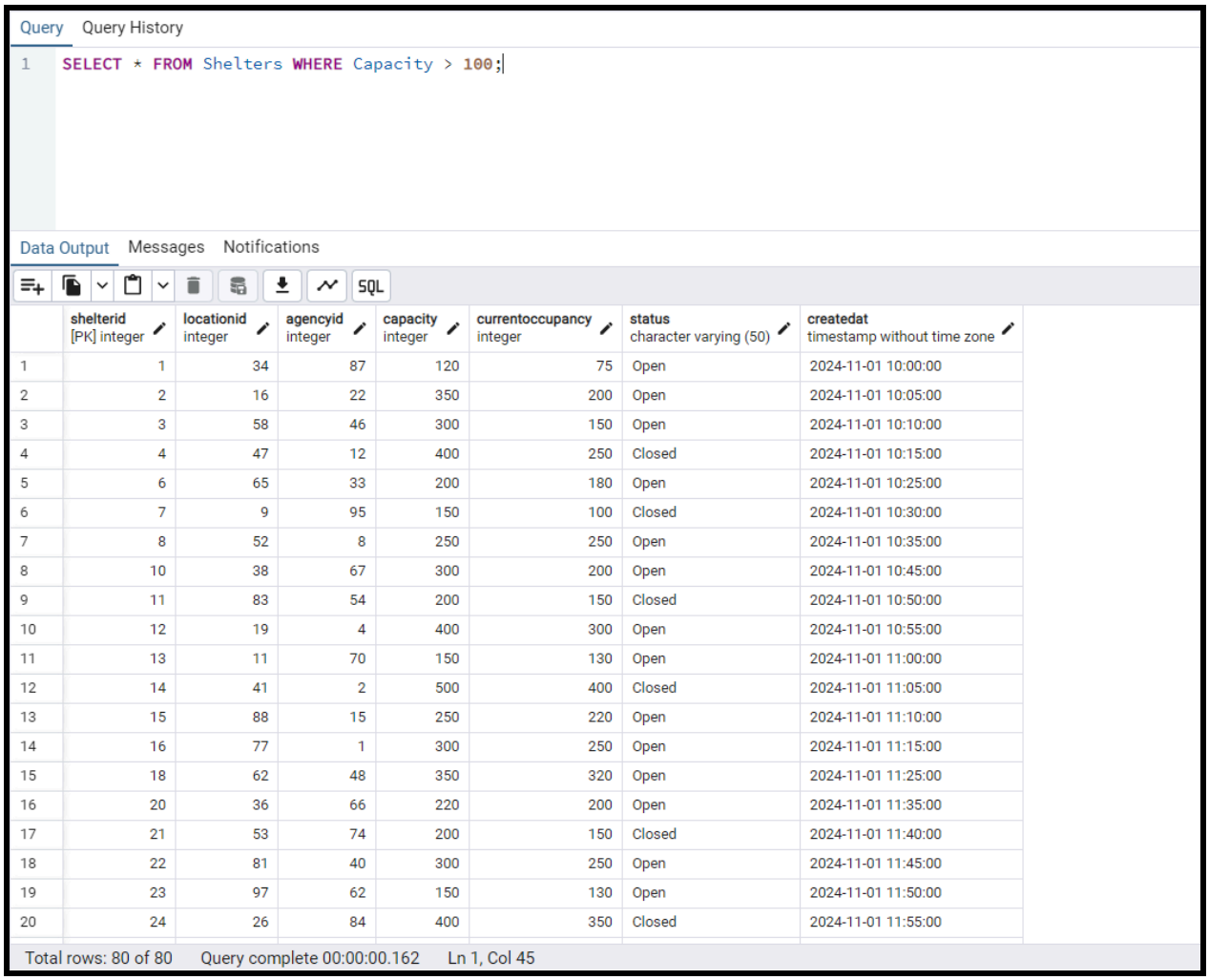


17. Get the names of all sources for resources:
    ```
    SELECT SourceName FROM Sources;
    ```



18. Show all shelters with a capacity greater than 100:

```
SELECT * FROM Shelters WHERE Capacity > 100;
```



Query | Query History

```
1  SELECT * FROM Shelters WHERE Capacity > 100;
```

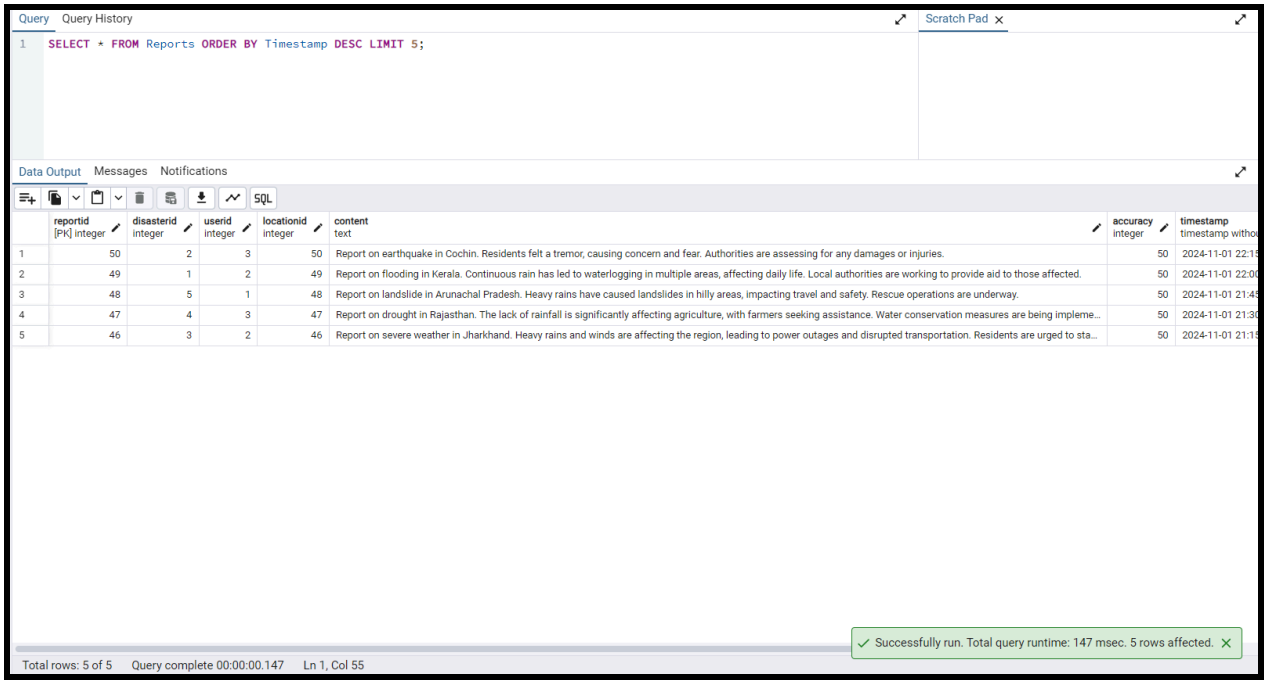
Data Output | Messages | Notifications

	shelterid [PK] integer	locationid integer	agencyid integer	capacity integer	currentoccupancy integer	status character varying (50)	createdat timestamp without time zone
1	1	34	87	120	75	Open	2024-11-01 10:00:00
2	2	16	22	350	200	Open	2024-11-01 10:05:00
3	3	58	46	300	150	Open	2024-11-01 10:10:00
4	4	47	12	400	250	Closed	2024-11-01 10:15:00
5	6	65	33	200	180	Open	2024-11-01 10:25:00
6	7	9	95	150	100	Closed	2024-11-01 10:30:00
7	8	52	8	250	250	Open	2024-11-01 10:35:00
8	10	38	67	300	200	Open	2024-11-01 10:45:00
9	11	83	54	200	150	Closed	2024-11-01 10:50:00
10	12	19	4	400	300	Open	2024-11-01 10:55:00
11	13	11	70	150	130	Open	2024-11-01 11:00:00
12	14	41	2	500	400	Closed	2024-11-01 11:05:00
13	15	88	15	250	220	Open	2024-11-01 11:10:00
14	16	77	1	300	250	Open	2024-11-01 11:15:00
15	18	62	48	350	320	Open	2024-11-01 11:25:00
16	20	36	66	220	200	Open	2024-11-01 11:35:00
17	21	53	74	200	150	Closed	2024-11-01 11:40:00
18	22	81	40	300	250	Open	2024-11-01 11:45:00
19	23	97	62	150	130	Open	2024-11-01 11:50:00
20	24	26	84	400	350	Closed	2024-11-01 11:55:00

Total rows: 80 of 80 Query complete 00:00:00.162 Ln 1, Col 45

19. List all personnel associated with a specific agency:
```
SELECT FullName FROM Personnel WHERE AgencyID = 1;
```

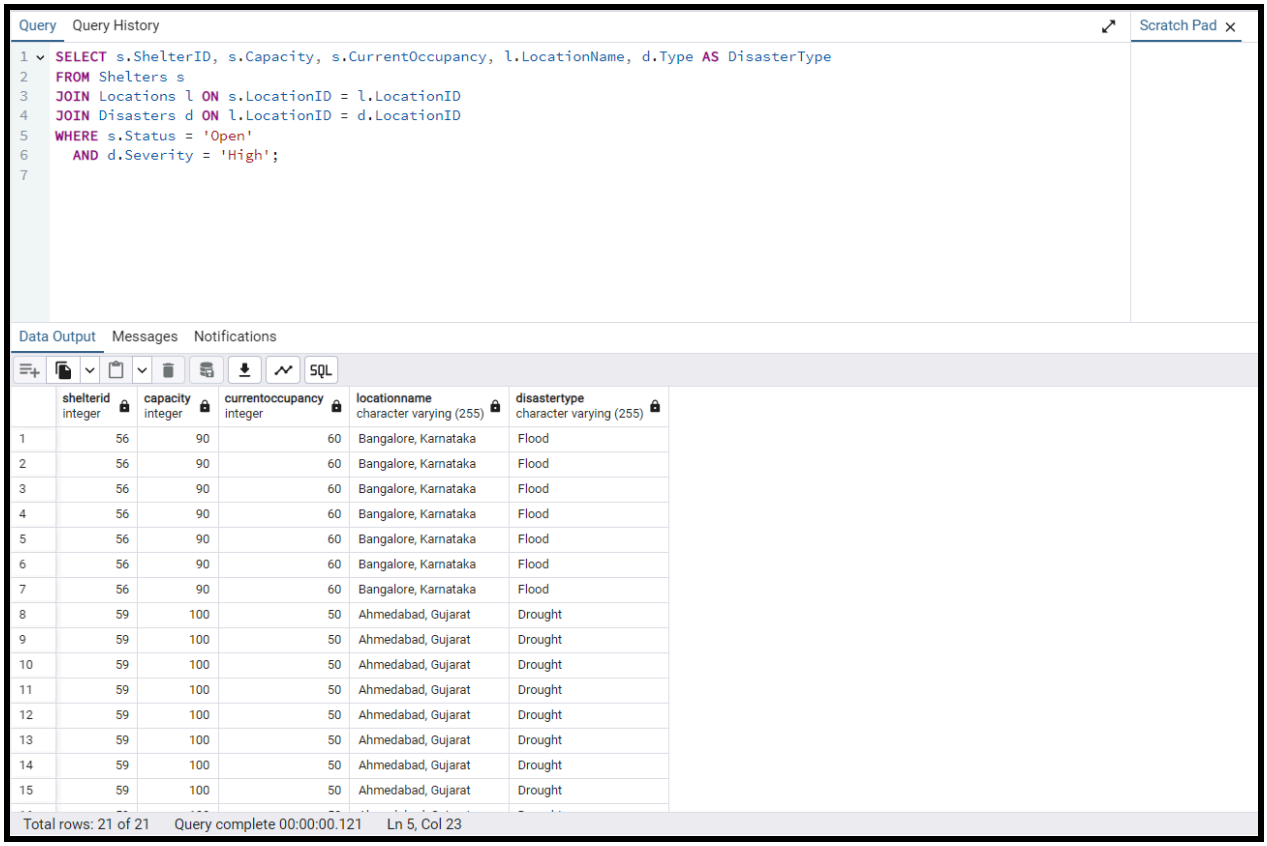
20. Find the top 5 most recent reports:
```
SELECT * FROM Reports ORDER BY Timestamp DESC LIMIT 5;
```



Complex Queries

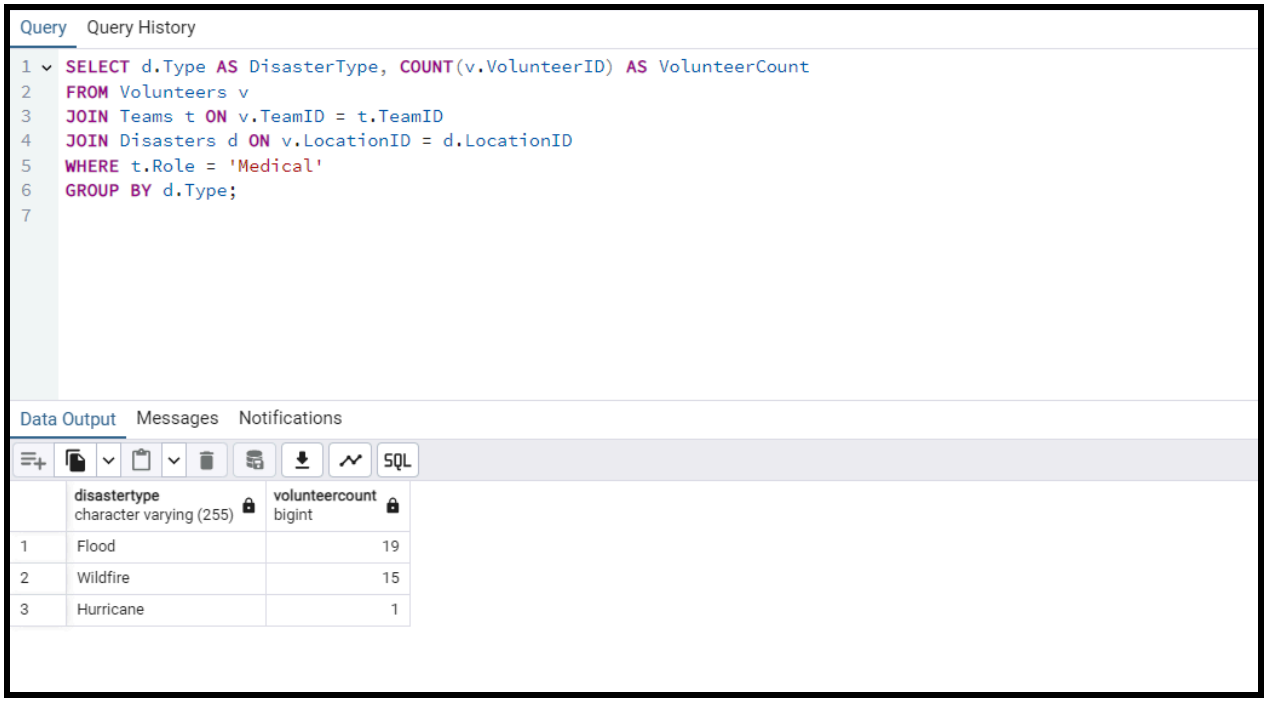
21. List all active shelters (status = 'Open') in locations affected by disasters with severity "High," along with their current occupancy and capacity:

```
SELECT s.ShelterID, s.Capacity, s.CurrentOccupancy, l.LocationName,
d.Type AS DisasterType FROM Shelters s JOIN Locations l ON s.LocationID
= l.LocationID JOIN Disasters d ON l.LocationID = d.LocationID WHERE
s.Status = 'Open' AND d.Severity = 'High';
```



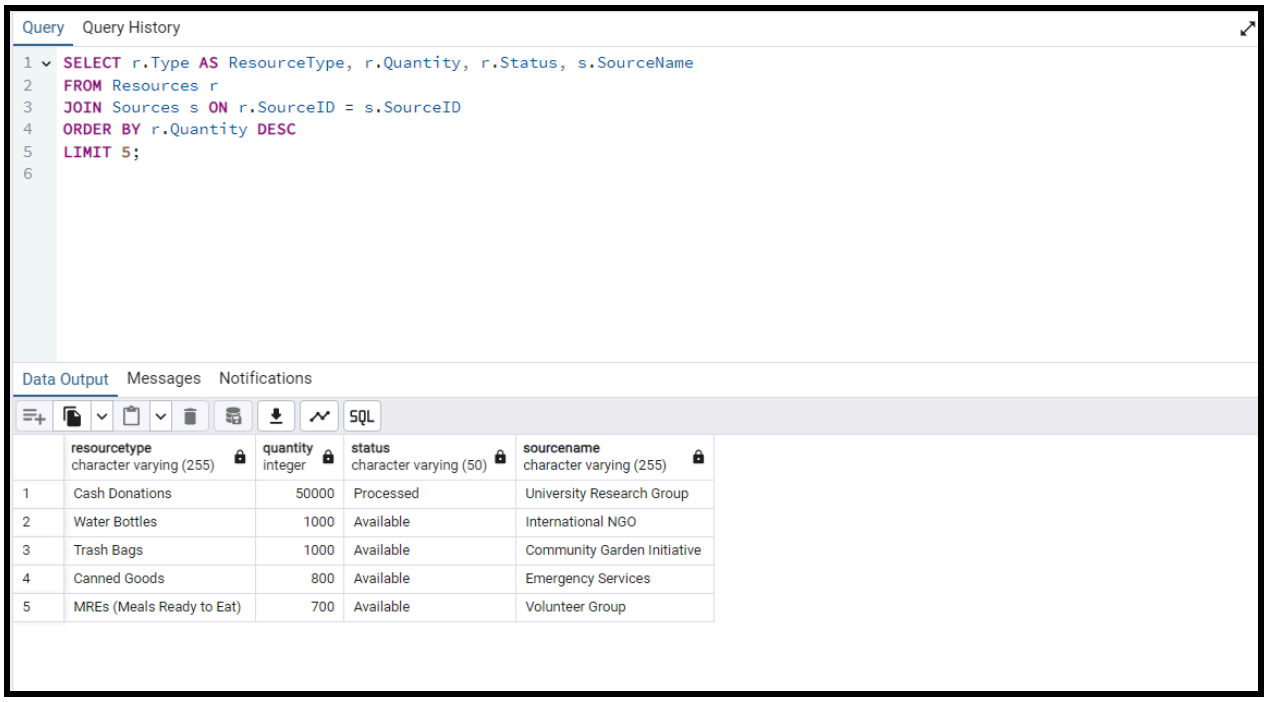
22. Get the count of volunteers by each disaster they are registered to respond to, where the volunteers' team role is "medical":

```
SELECT d.Type AS DisasterType, COUNT(v.VolunteerID) AS VolunteerCount
FROM Volunteers v JOIN Teams t ON v.TeamID = t.TeamID JOIN Disasters d
ON v.LocationID = d.LocationID WHERE t.Role = 'medical' GROUP BY d.Type;
```



23. Retrieve the top 5 resources with the highest quantities, along with their sources and current statuses:

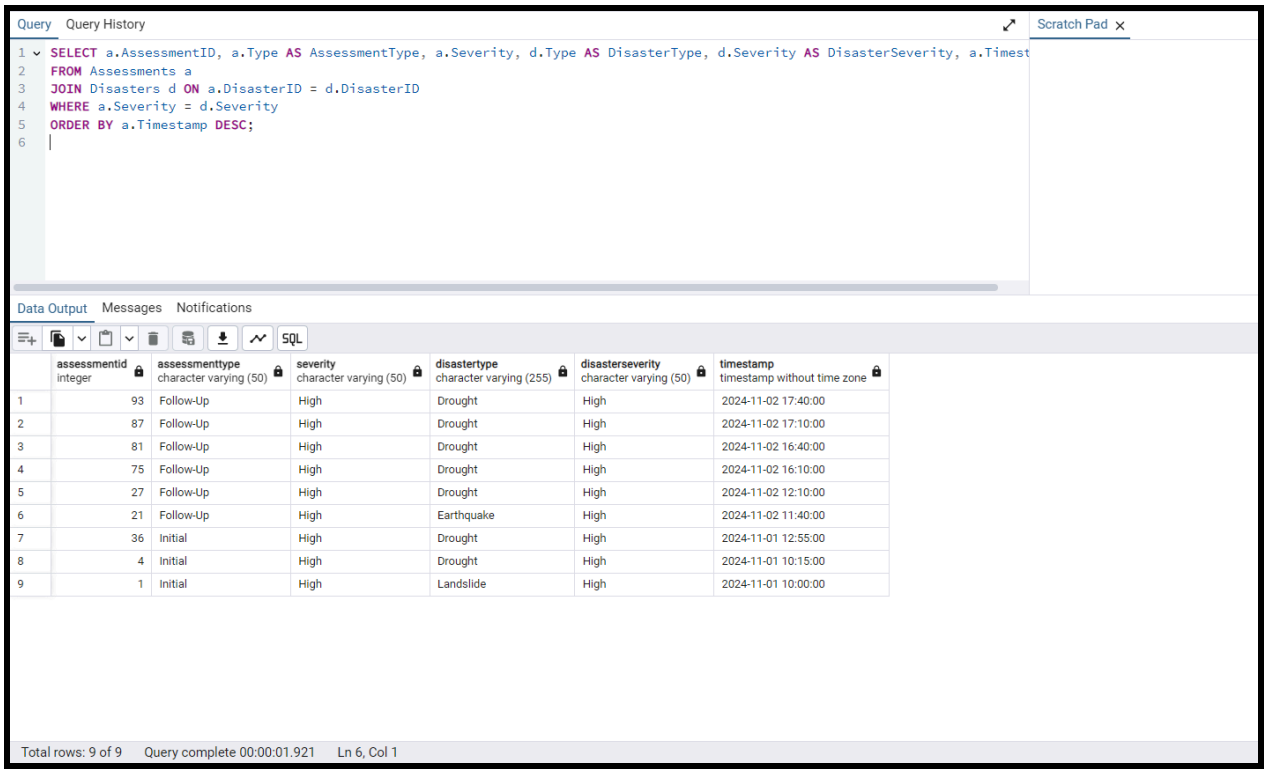
```
SELECT r.Type AS ResourceType, r.Quantity, r.Status, s.SourceName FROM
Resources r JOIN Sources s ON r.SourceID = s.SourceID ORDER BY
r.Quantity DESC LIMIT 5;
```



	resourcetype character varying (255)	quantity integer	status character varying (50)	sourcename character varying (255)
1	Cash Donations	50000	Processed	University Research Group
2	Water Bottles	1000	Available	International NGO
3	Trash Bags	1000	Available	Community Garden Initiative
4	Canned Goods	800	Available	Emergency Services
5	MREs (Meals Ready to Eat)	700	Available	Volunteer Group

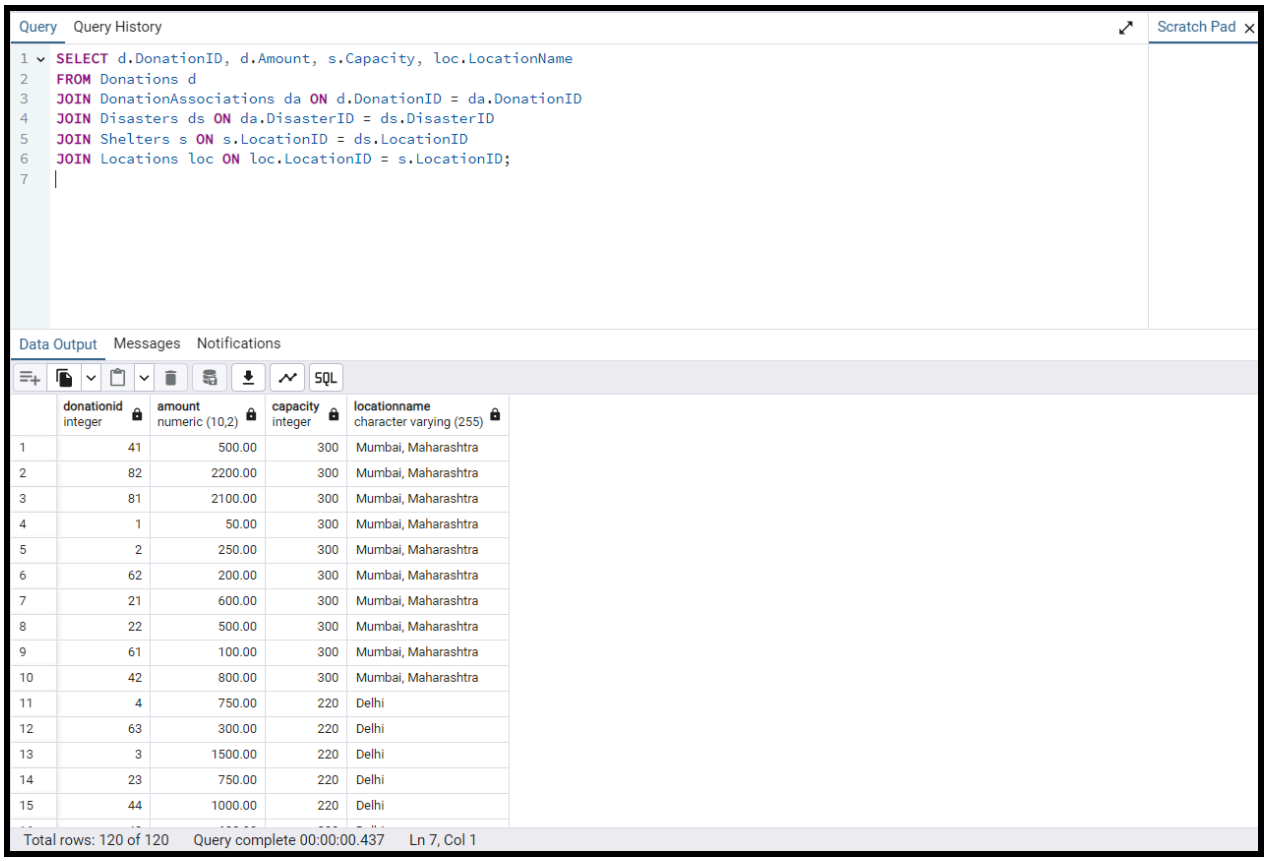
24. Display a list of disaster assessments where the assessment severity matches the disaster severity, ordered by the latest assessment timestamp:

```
SELECT a.AssessmentID, a.Type AS AssessmentType, a.Severity, d.Type AS
DisasterType, d.Severity AS DisasterSeverity, a.Timestamp FROM
Assessments a JOIN Disasters d ON a.DisasterID = d.DisasterID WHERE
a.Severity = d.Severity ORDER BY a.Timestamp DESC;
```



25. Find all donations made to disasters that had a related shelter set up within the same location, showing the donation amount and shelter capacity:

```
SELECT d.DonationID, d.Amount, s.Capacity, loc.LocationName FROM
Donations d JOIN DonationAssociations da ON d.DonationID = da.DonationID
JOIN Disasters ds ON da.DisasterID = ds.DisasterID JOIN Shelters s ON
s.LocationID = ds.LocationID JOIN Locations loc ON loc.LocationID =
s.LocationID;
```



Query | Query History | Scratch Pad

```
SELECT d.DonationID, d.Amount, s.Capacity, loc.LocationName
FROM Donations d
JOIN DonationAssociations da ON d.DonationID = da.DonationID
JOIN Disasters ds ON da.DisasterID = ds.DisasterID
JOIN Shelters s ON s.LocationID = ds.LocationID
JOIN Locations loc ON loc.LocationID = s.LocationID;
```

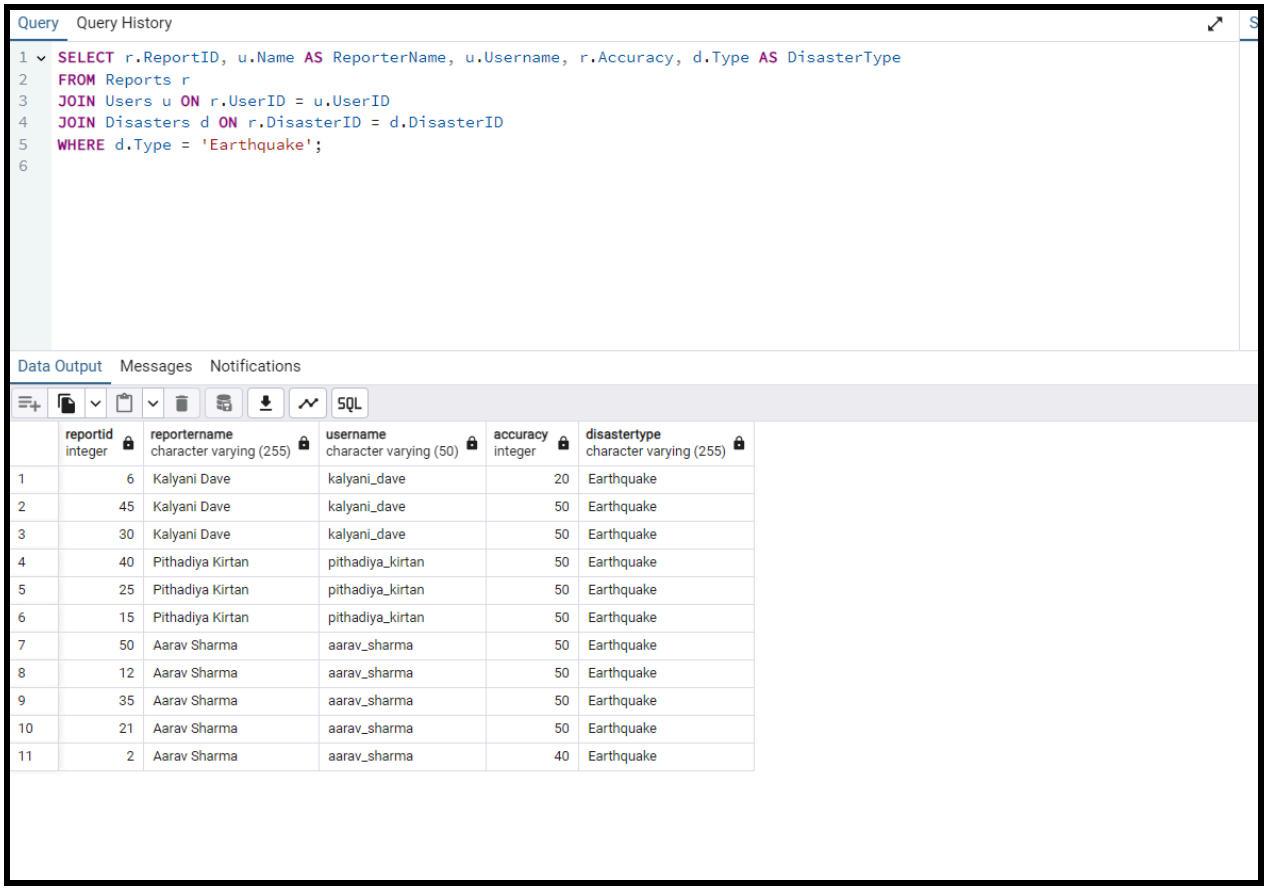
Data Output | Messages | Notifications

	donationid integer	amount numeric (10,2)	capacity integer	locationname character varying (255)
1	41	500.00	300	Mumbai, Maharashtra
2	82	2200.00	300	Mumbai, Maharashtra
3	81	2100.00	300	Mumbai, Maharashtra
4	1	50.00	300	Mumbai, Maharashtra
5	2	250.00	300	Mumbai, Maharashtra
6	62	200.00	300	Mumbai, Maharashtra
7	21	600.00	300	Mumbai, Maharashtra
8	22	500.00	300	Mumbai, Maharashtra
9	61	100.00	300	Mumbai, Maharashtra
10	42	800.00	300	Mumbai, Maharashtra
11	4	750.00	220	Delhi
12	63	300.00	220	Delhi
13	3	1500.00	220	Delhi
14	23	750.00	220	Delhi
15	44	1000.00	220	Delhi

Total rows: 120 of 120 Query complete 00:00:00.437 Ln 7, Col 1

26. List all reports for a specific disaster, including user details and report accuracy if the disaster is categorized as "critical":

```
SELECT r.ReportID, u.Name AS ReporterName, u.Username, r.Accuracy,
d.Type AS DisasterType FROM Reports r JOIN Users u ON r.UserID =
u.UserID JOIN Disasters d ON r.DisasterID = d.DisasterID WHERE d.Type =
'critical';
```



Query | Query History

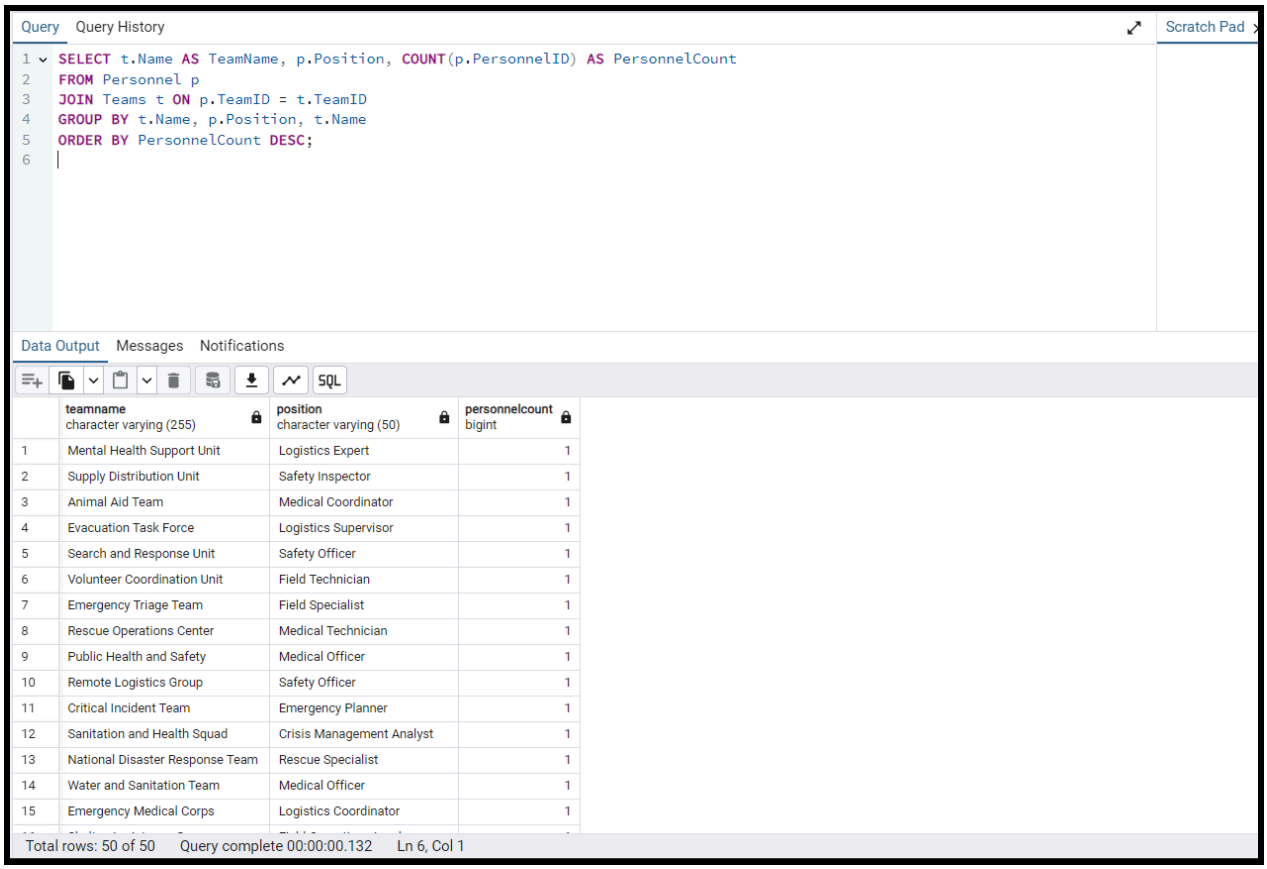
```
1  SELECT r.ReportID, u.Name AS ReporterName, u.Username, r.Accuracy, d.Type AS DisasterType
2  FROM Reports r
3  JOIN Users u ON r.UserID = u.UserID
4  JOIN Disasters d ON r.DisasterID = d.DisasterID
5  WHERE d.Type = 'Earthquake';
6
```

Data Output | Messages | Notifications

	reportid integer	reportername character varying (255)	username character varying (50)	accuracy integer	disastertype character varying (255)
1	6	Kalyani Dave	kalyani_dave	20	Earthquake
2	45	Kalyani Dave	kalyani_dave	50	Earthquake
3	30	Kalyani Dave	kalyani_dave	50	Earthquake
4	40	Pithadiya Kirtan	pithadiya_kirtan	50	Earthquake
5	25	Pithadiya Kirtan	pithadiya_kirtan	50	Earthquake
6	15	Pithadiya Kirtan	pithadiya_kirtan	50	Earthquake
7	50	Aarav Sharma	aarav_sharma	50	Earthquake
8	12	Aarav Sharma	aarav_sharma	50	Earthquake
9	35	Aarav Sharma	aarav_sharma	50	Earthquake
10	21	Aarav Sharma	aarav_sharma	50	Earthquake
11	2	Aarav Sharma	aarav_sharma	40	Earthquake

27. Get a count of all personnel assigned to each team, broken down by their position::

```
SELECT t.Name AS TeamName, p.Position, COUNT(p.PersonnelID) AS
PersonnelCount FROM Personnel p JOIN Teams t ON p.TeamID = t.TeamID
GROUP BY t.Name, p.Position, t.Name ORDER BY PersonnelCount DESC;
```



Query | Query History | Scratch Pad

```
SELECT t.Name AS TeamName, p.Position, COUNT(p.PersonnelID) AS PersonnelCount
FROM Personnel p
JOIN Teams t ON p.TeamID = t.TeamID
GROUP BY t.Name, p.Position, t.Name
ORDER BY PersonnelCount DESC;
```

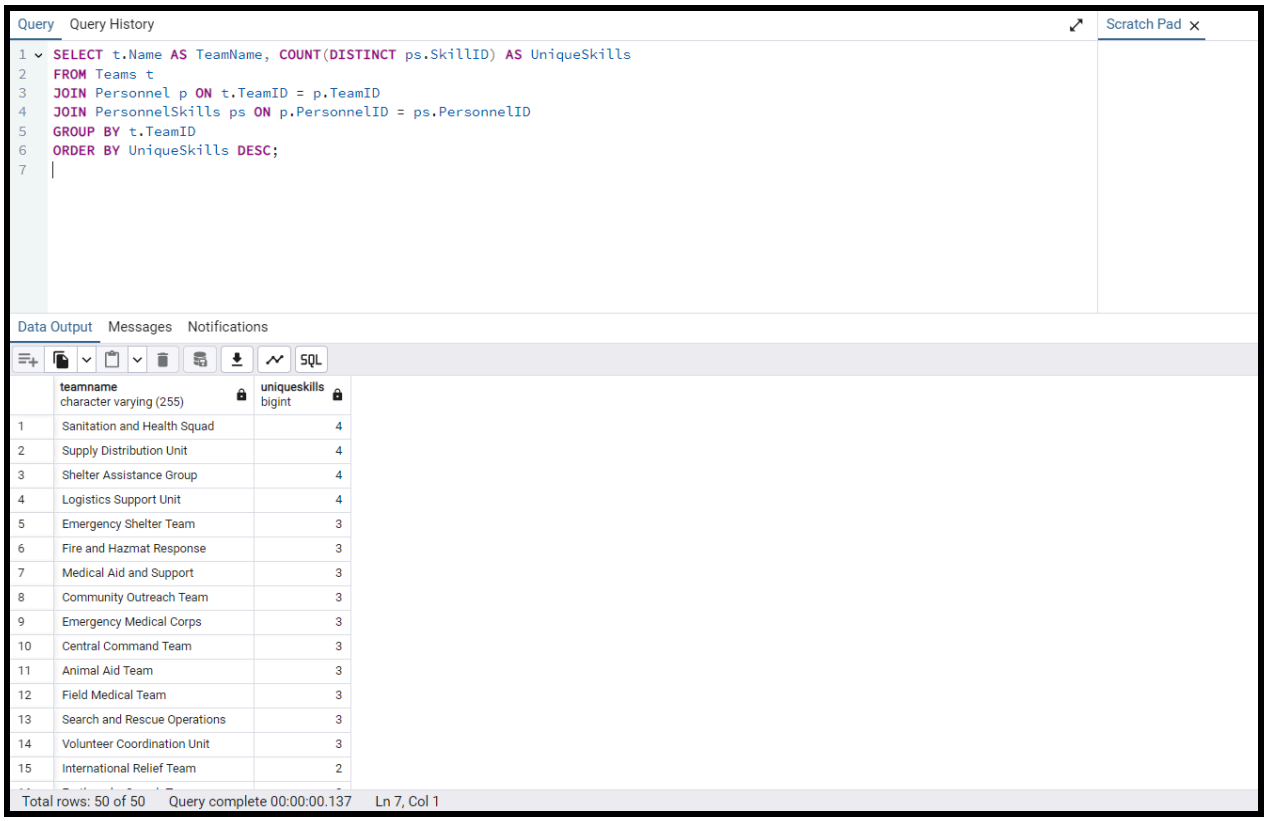
Data Output | Messages | Notifications

	teamname character varying (255)	position character varying (50)	personnelcount bigint
1	Mental Health Support Unit	Logistics Expert	1
2	Supply Distribution Unit	Safety Inspector	1
3	Animal Aid Team	Medical Coordinator	1
4	Evacuation Task Force	Logistics Supervisor	1
5	Search and Response Unit	Safety Officer	1
6	Volunteer Coordination Unit	Field Technician	1
7	Emergency Triage Team	Field Specialist	1
8	Rescue Operations Center	Medical Technician	1
9	Public Health and Safety	Medical Officer	1
10	Remote Logistics Group	Safety Officer	1
11	Critical Incident Team	Emergency Planner	1
12	Sanitation and Health Squad	Crisis Management Analyst	1
13	National Disaster Response Team	Rescue Specialist	1
14	Water and Sanitation Team	Medical Officer	1
15	Emergency Medical Corps	Logistics Coordinator	1

Total rows: 50 of 50 Query complete 00:00:00.132 Ln 6, Col 1

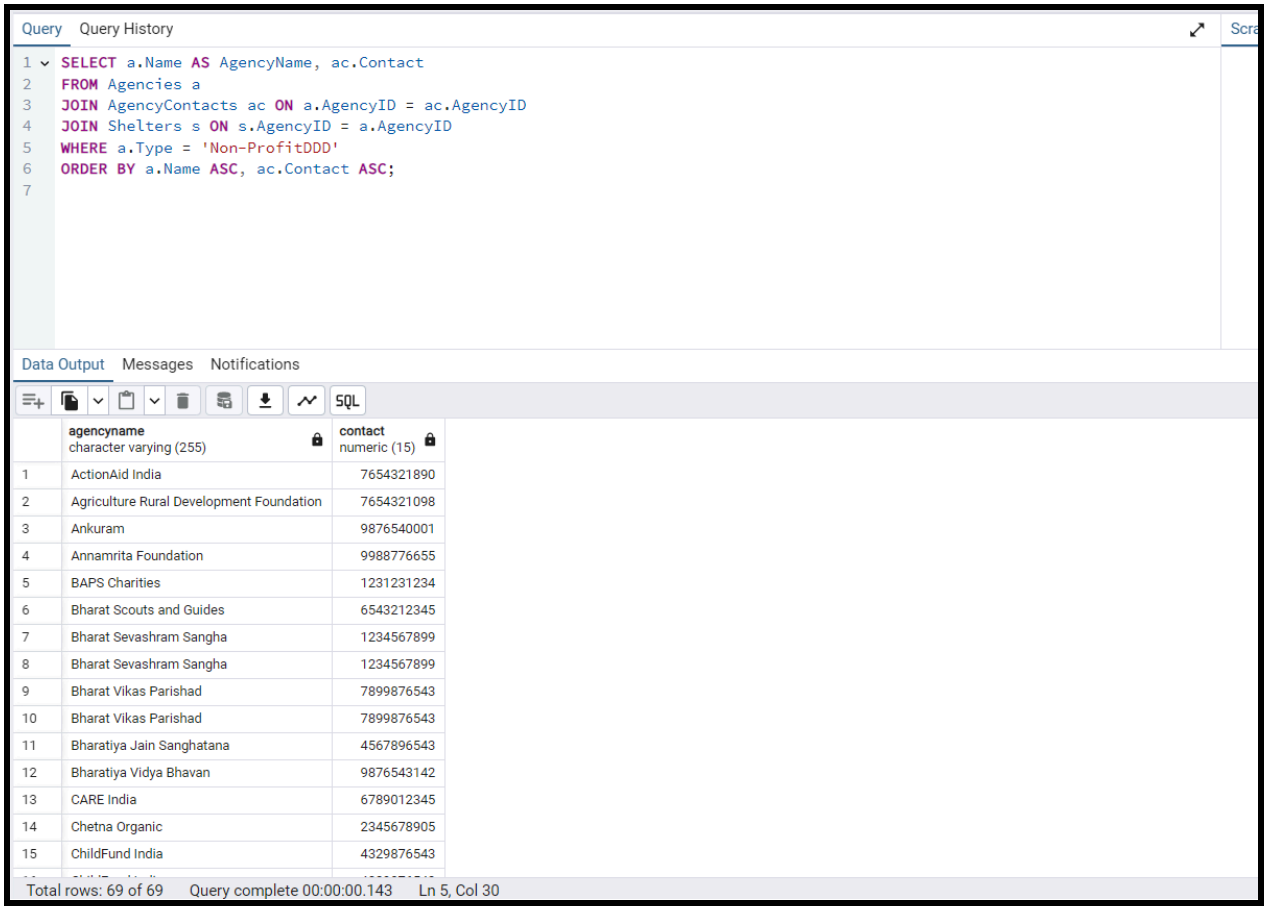
28. Retrieve all teams that have personnel assigned and list each team with the number of unique skills possessed by their members:

```
SELECT t.Name AS TeamName, COUNT(DISTINCT ps.SkillID) AS UniqueSkills
FROM Teams t JOIN Personnel p ON t.TeamID = p.TeamID JOIN
PersonnelSkills ps ON p.PersonnelID = ps.PersonnelID GROUP BY t.TeamID
ORDER BY UniqueSkills DESC;
```



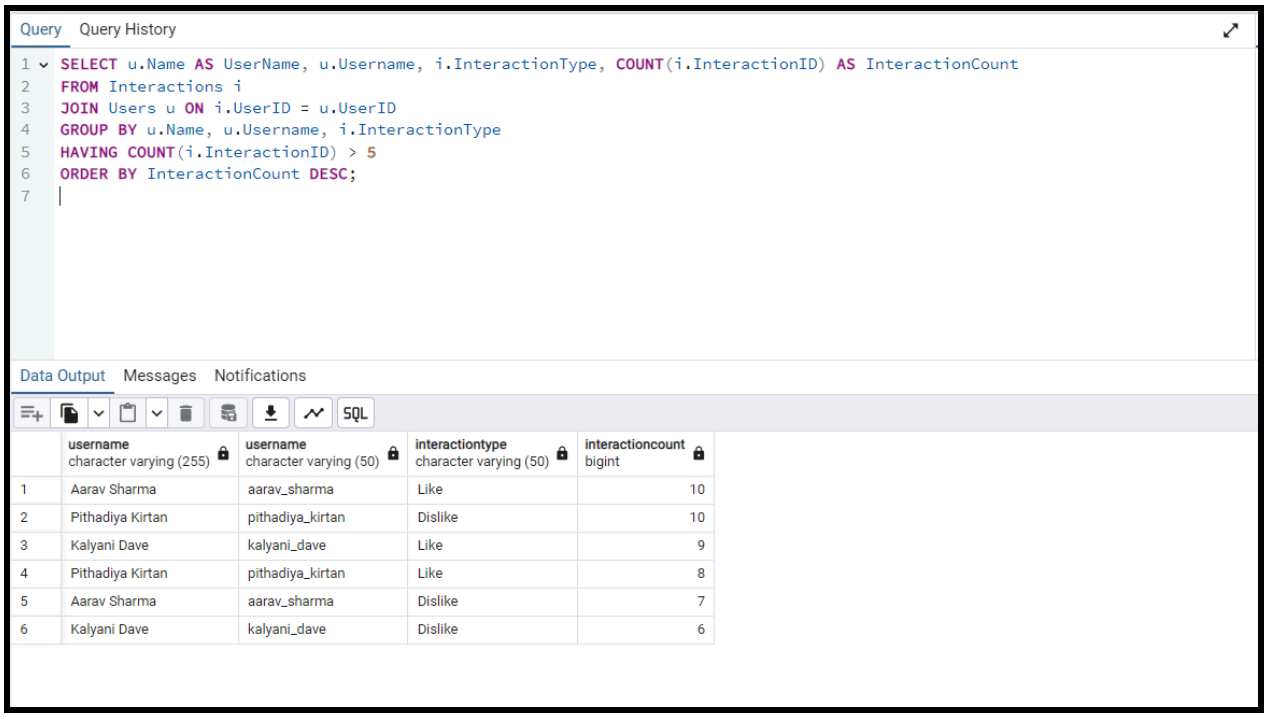
29. List all agency's contact information for agencies managing "relief" type shelters, showing agency names and contacts in ascending order:

```
SELECT a.Name AS AgencyName, ac.Contact FROM Agencies a JOIN
AgencyContacts ac ON a.AgencyID = ac.AgencyID JOIN Shelters s ON
s.AgencyID = a.AgencyID WHERE a.Type = 'Relief' ORDER BY a.Name ASC,
ac.Contact ASC;
```



30. Generate a summary of disaster-related interactions by interaction type and user, focusing on users with over 5 interactions, ordered by interaction count:

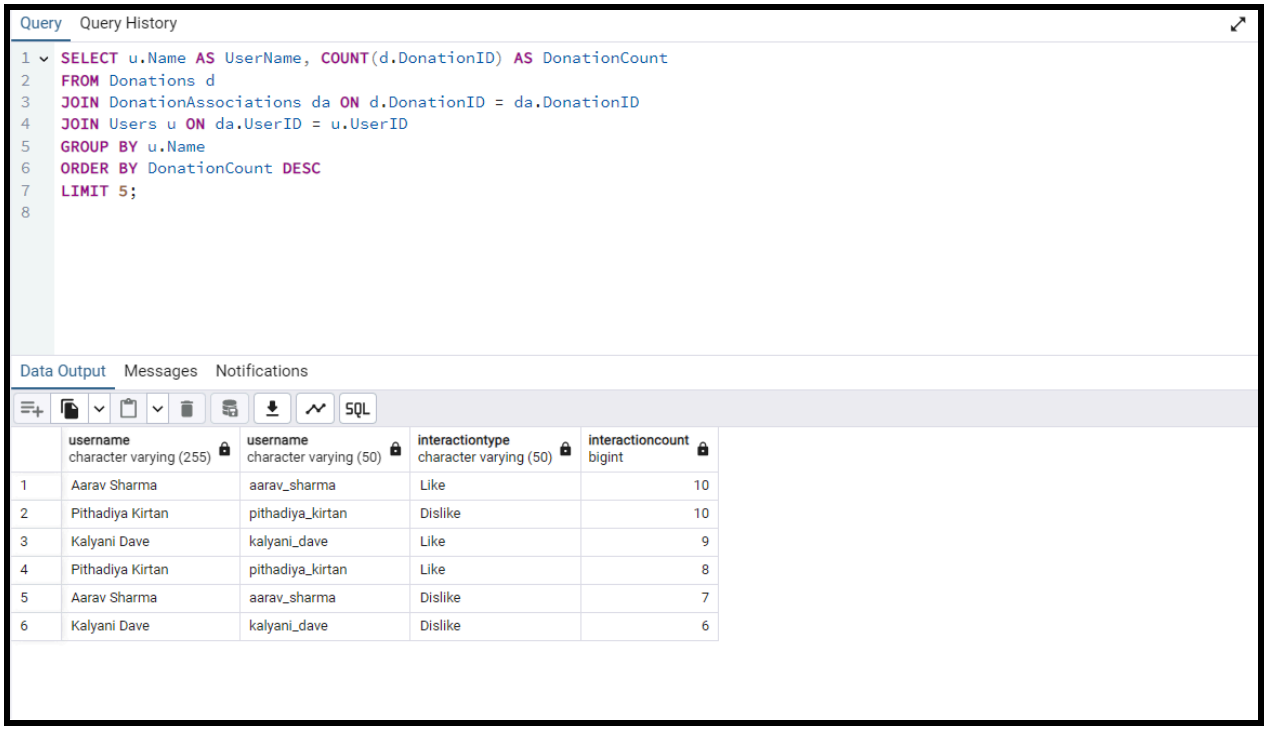
```
SELECT u.Name AS UserName, u.Username, i.InteractionType,
COUNT(i.InteractionID) AS InteractionCount FROM Interactions i JOIN
Users u ON i.UserID = u.UserID GROUP BY u.Name, u.Username,
i.InteractionType HAVING COUNT(i.InteractionID) > 5 ORDER BY
InteractionCount DESC;
```



	username character varying (255)	username character varying (50)	interactiontype character varying (50)	interactioncount bigint
1	Aarav Sharma	aarav_sharma	Like	10
2	Pithadiya Kirtan	pithadiya_kirtan	Dislike	10
3	Kalyani Dave	kalyani_dave	Like	9
4	Pithadiya Kirtan	pithadiya_kirtan	Like	8
5	Aarav Sharma	aarav_sharma	Dislike	7
6	Kalyani Dave	kalyani_dave	Dislike	6

31. Find the top 5 users who have made the most donations:

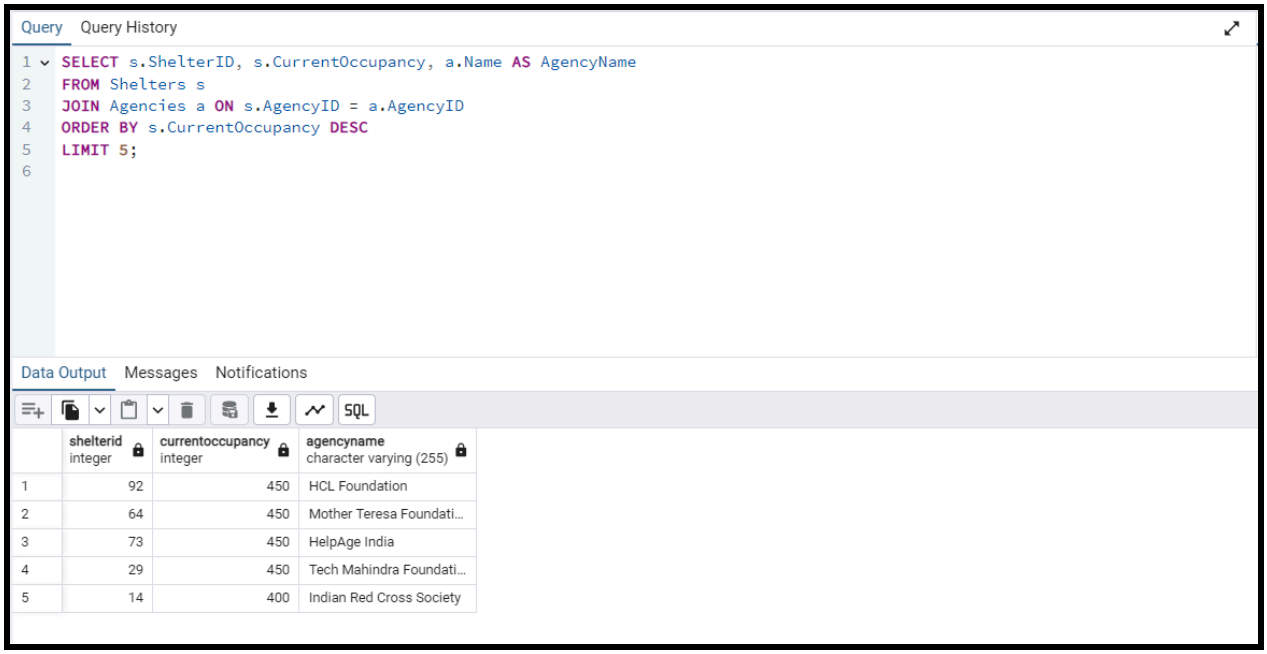
```
SELECT u.Name AS UserName, COUNT(d.DonationID) AS DonationCount FROM
Donations d JOIN DonationAssociations da ON d.DonationID = da.DonationID
JOIN Users u ON da.UserID = u.UserID GROUP BY u.Name ORDER BY
DonationCount DESC LIMIT 5;
```



	username character varying (255)	username character varying (50)	interactiontype character varying (50)	interactioncount bigint
1	Aarav Sharma	aarav_sharma	Like	10
2	Pithadiya Kirtan	pithadiya_kirtan	Dislike	10
3	Kalyani Dave	kalyani_dave	Like	9
4	Pithadiya Kirtan	pithadiya_kirtan	Like	8
5	Aarav Sharma	aarav_sharma	Dislike	7
6	Kalyani Dave	kalyani_dave	Dislike	6

32. Get the list of shelters with the highest current occupancy and show the agency managing them:

```
SELECT s.ShelterID, s.CurrentOccupancy, a.Name AS AgencyName FROM
Shelters s JOIN Agencies a ON s.AgencyID = a.AgencyID ORDER BY
s.CurrentOccupancy DESC LIMIT 5;
```



	shelterid integer	currentoccupancy integer	agencyname character varying (255)
1	92	450	HCL Foundation
2	64	450	Mother Teresa Foundati...
3	73	450	HelpAge India
4	29	450	Tech Mahindra Foundati...
5	14	400	Indian Red Cross Society

33. Retrieve the total number of personnel and volunteers available in each location:

```
SELECT loc.LocationName, (SELECT COUNT(*) FROM Personnel p WHERE
p.LocationID = loc.LocationID) AS PersonnelCount, (SELECT COUNT(*) FROM
Volunteers v WHERE v.LocationID = loc.LocationID) AS VolunteerCount FROM
Locations loc;
```

Query | Query History

```
1  SELECT loc.LocationName,
2         (SELECT COUNT(*) FROM Personnel p WHERE p.LocationID = loc.LocationID) AS PersonnelCount,
3         (SELECT COUNT(*) FROM Volunteers v WHERE v.LocationID = loc.LocationID) AS VolunteerCount
4  FROM Locations loc;
5
```

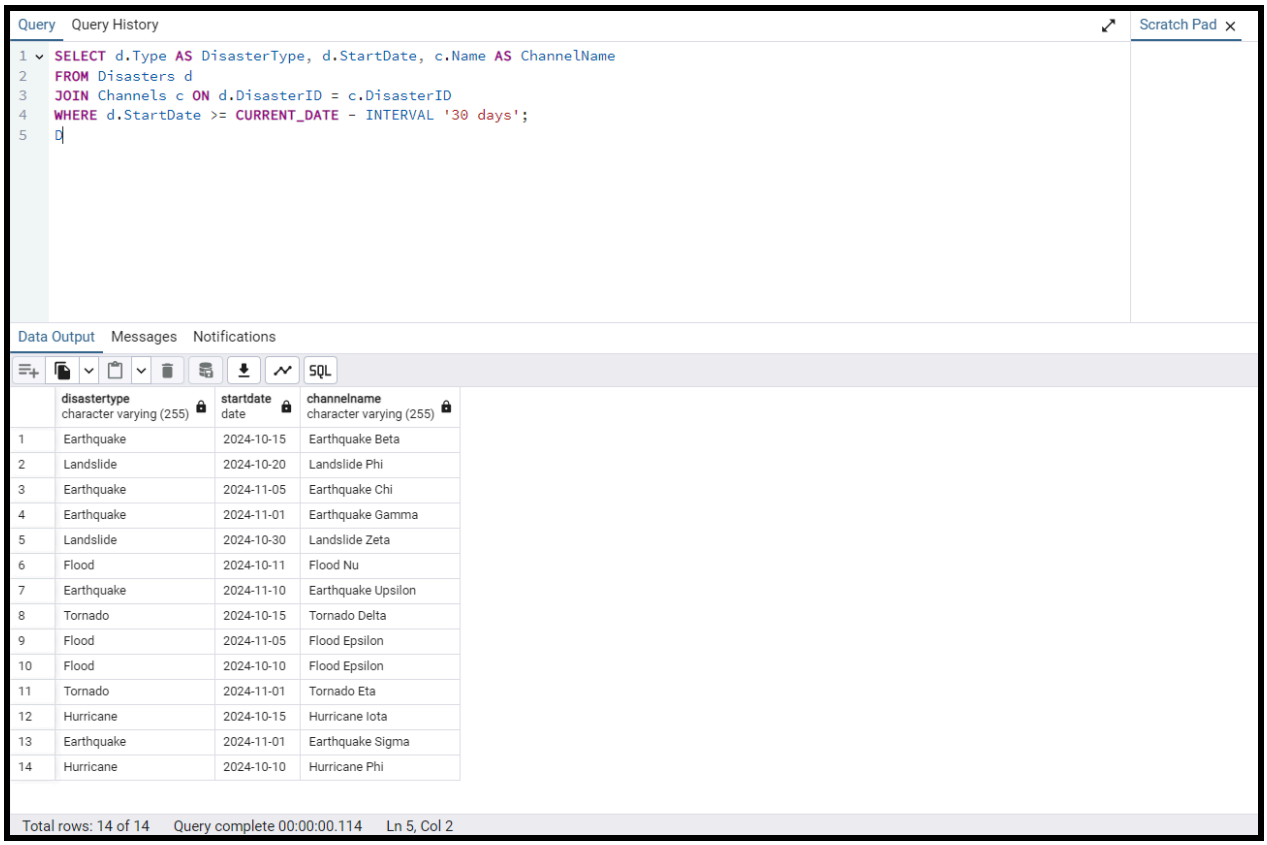
Data Output | Messages | Notifications

	locationname character varying (255)	personnelcount bigint	volunteercount bigint
1	Mumbai, Maharashtra	3	1
2	Delhi	3	1
3	Bangalore, Karnataka	3	1
4	Kolkata, West Bengal	3	1
5	Chennai, Tamil Nadu	3	1
6	Hyderabad, Telangana	3	1
7	Ahmedabad, Gujarat	3	1
8	Pune, Maharashtra	3	1
9	Jaipur, Rajasthan	3	1
10	Surat, Gujarat	3	1
11	Lucknow, Uttar Pradesh	3	1
12	Nagpur, Maharashtra	3	1
13	Kanpur, Uttar Pradesh	3	1
14	Visakhapatnam, Andhra Pradesh	3	1
15	Bhopal, Madhya Pradesh	3	1

Total rows: 100 of 100 Query complete 00:00:00.155 Ln 5, Col 1

34. List disasters occurring in the last 30 days and the channels created for them:

```
SELECT d.Type AS DisasterType, d.StartDate, c.Name AS ChannelName FROM
Disasters d JOIN Channels c ON d.DisasterID = c.DisasterID WHERE
d.StartDate >= CURRENT_DATE - INTERVAL '30 days';
```



Query | Query History | Scratch Pad

```
SELECT d.Type AS DisasterType, d.StartDate, c.Name AS ChannelName
FROM Disasters d
JOIN Channels c ON d.DisasterID = c.DisasterID
WHERE d.StartDate >= CURRENT_DATE - INTERVAL '30 days';
D
```

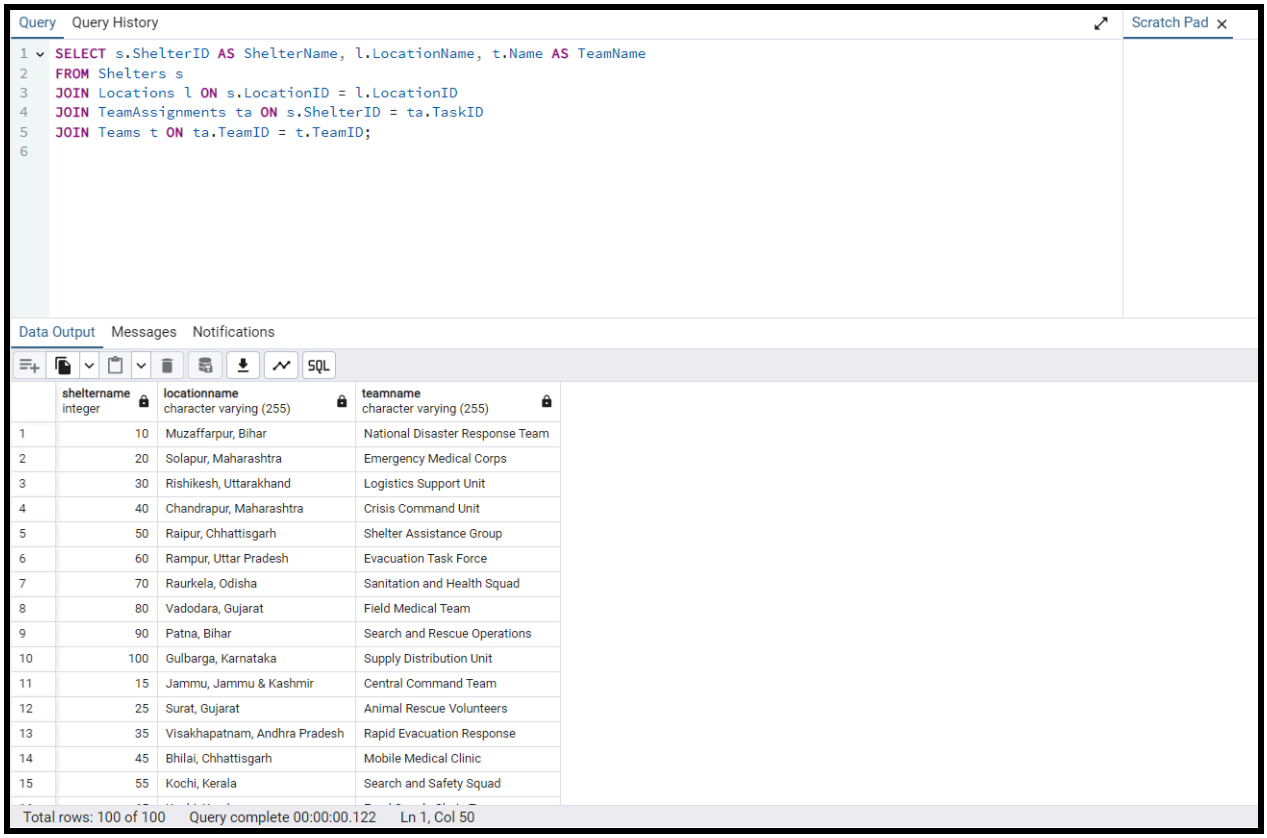
Data Output | Messages | Notifications

	disastertype character varying (255)	startdate date	channelname character varying (255)
1	Earthquake	2024-10-15	Earthquake Beta
2	Landslide	2024-10-20	Landslide Phi
3	Earthquake	2024-11-05	Earthquake Chi
4	Earthquake	2024-11-01	Earthquake Gamma
5	Landslide	2024-10-30	Landslide Zeta
6	Flood	2024-10-11	Flood Nu
7	Earthquake	2024-11-10	Earthquake Upsilon
8	Tornado	2024-10-15	Tornado Delta
9	Flood	2024-11-05	Flood Epsilon
10	Flood	2024-10-10	Flood Epsilon
11	Tornado	2024-11-01	Tornado Eta
12	Hurricane	2024-10-15	Hurricane Iota
13	Earthquake	2024-11-01	Earthquake Sigma
14	Hurricane	2024-10-10	Hurricane Phi

Total rows: 14 of 14 Query complete 00:00:00.114 Ln 5, Col 2

35. Show all shelters with their names and addresses, along with the list of teams assigned to each shelter:

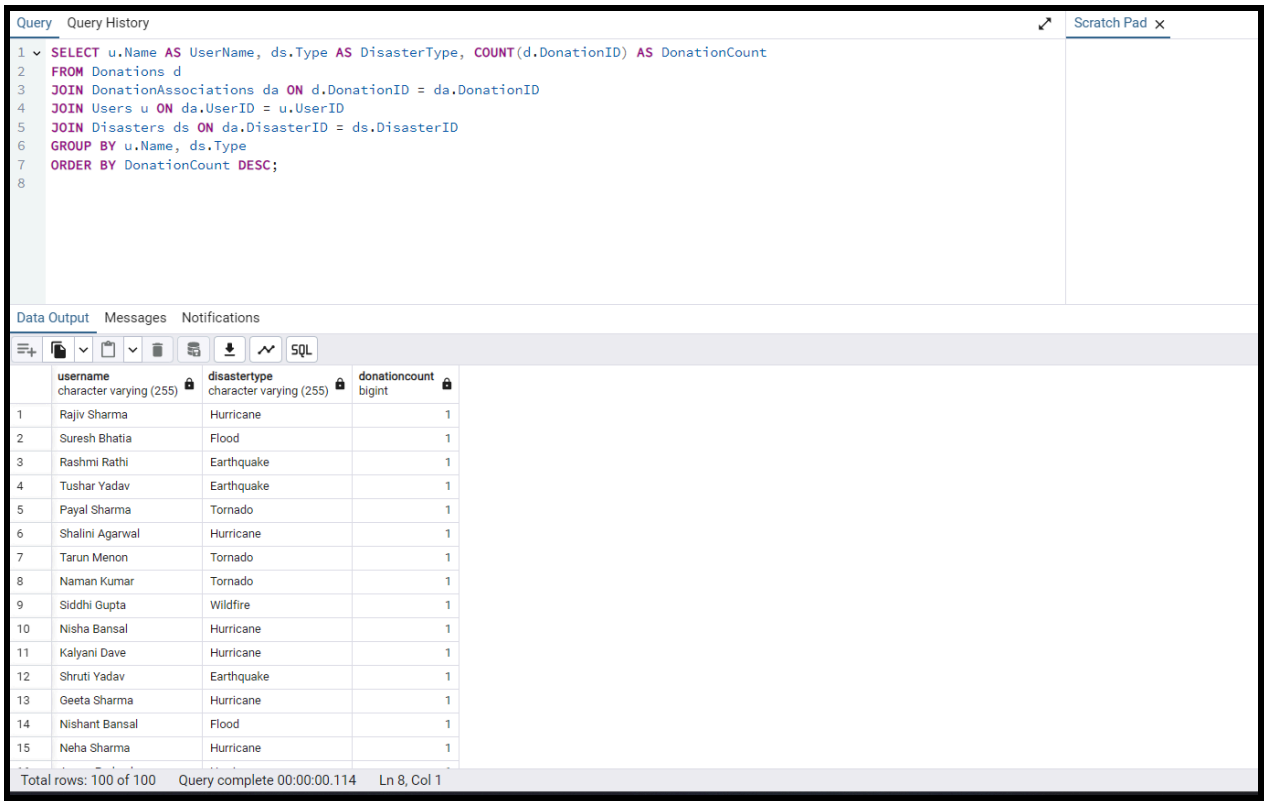
```
SELECT s.ShelterID AS ShelterName, l.LocationName, t.Name AS TeamName
FROM Shelters s JOIN Locations l ON s.LocationID = l.LocationID JOIN
TeamAssignments ta ON s.ShelterID = ta.TaskID JOIN Teams t ON ta.TeamID
= t.TeamID;
```



	shelternameinteger	locationnamecharacter varying (255)	teamnamecharacter varying (255)
1	10	Muzaffarpur, Bihar	National Disaster Response Team
2	20	Solapur, Maharashtra	Emergency Medical Corps
3	30	Rishikesh, Uttarakhand	Logistics Support Unit
4	40	Chandrapur, Maharashtra	Crisis Command Unit
5	50	Raipur, Chhattisgarh	Shelter Assistance Group
6	60	Rampur, Uttar Pradesh	Evacuation Task Force
7	70	Raurkela, Odisha	Sanitation and Health Squad
8	80	Vadodara, Gujarat	Field Medical Team
9	90	Patna, Bihar	Search and Rescue Operations
10	100	Gulbarga, Karnataka	Supply Distribution Unit
11	15	Jammu, Jammu & Kashmir	Central Command Team
12	25	Surat, Gujarat	Animal Rescue Volunteers
13	35	Visakhapatnam, Andhra Pradesh	Rapid Evacuation Response
14	45	Bhilai, Chhattisgarh	Mobile Medical Clinic
15	55	Kochi, Kerala	Search and Safety Squad

36. Get a list of users who have made donations to multiple disasters, showing the number of donations for each disaster:

```
SELECT u.Name AS UserName, d.Type AS DisasterType, COUNT(d.DonationID)
AS DonationCount FROM Donations d JOIN DonationAssociations da ON
d.DonationID = da.DonationID JOIN Users u ON da.UserID = u.UserID JOIN
Disasters d ON da.DisasterID = d.DisasterID GROUP BY u.Name, d.Type
ORDER BY DonationCount DESC;
```



Query | Query History | Scratch Pad

```
SELECT u.Name AS UserName, ds.Type AS DisasterType, COUNT(d.DonationID) AS DonationCount
FROM Donations d
JOIN DonationAssociations da ON d.DonationID = da.DonationID
JOIN Users u ON da.UserID = u.UserID
JOIN Disasters ds ON da.DisasterID = ds.DisasterID
GROUP BY u.Name, ds.Type
ORDER BY DonationCount DESC;
```

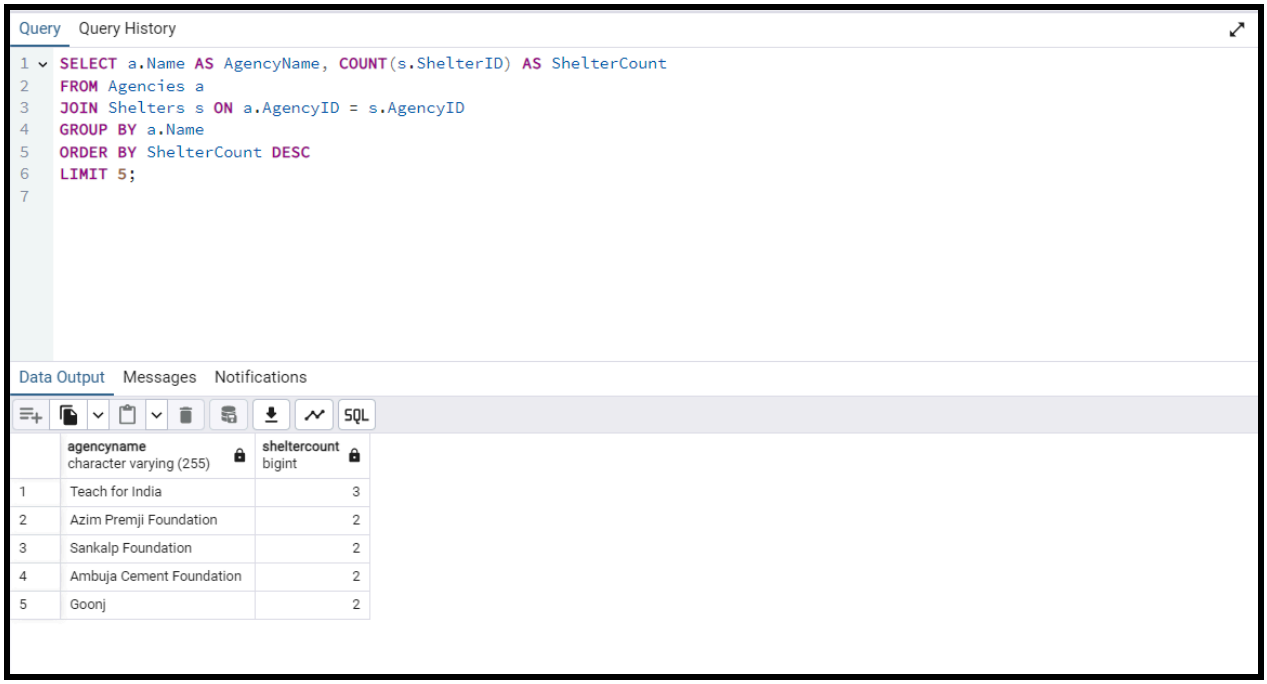
Data Output | Messages | Notifications

	username character varying (255)	disastertype character varying (255)	donationcount bigint
1	Rajiv Sharma	Hurricane	1
2	Suresh Bhatia	Flood	1
3	Rashmi Rathi	Earthquake	1
4	Tushar Yadav	Earthquake	1
5	Payal Sharma	Tornado	1
6	Shalini Agarwal	Hurricane	1
7	Tarun Menon	Tornado	1
8	Naman Kumar	Tornado	1
9	Siddhi Gupta	Wildfire	1
10	Nisha Bansal	Hurricane	1
11	Kalyani Dave	Hurricane	1
12	Shruti Yadav	Earthquake	1
13	Geeta Sharma	Hurricane	1
14	Nishant Bansal	Flood	1
15	Neha Sharma	Hurricane	1

Total rows: 100 of 100 Query complete 00:00:00.114 Ln 8, Col 1

37. Agencies by Number of Shelters Managed:

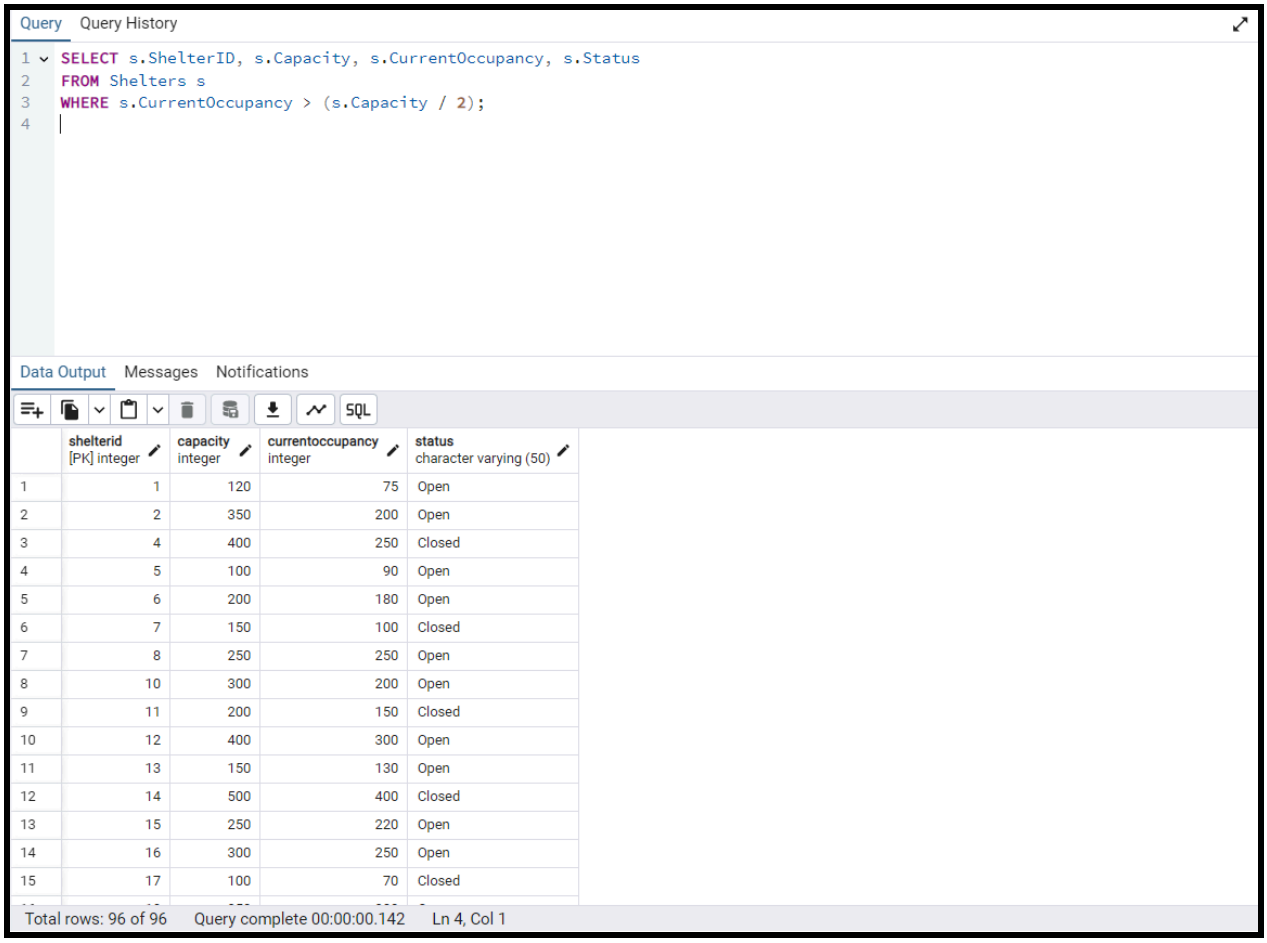
SELECT a.Name AS AgencyName, COUNT(s.ShelterID) AS ShelterCount FROM Agencies a JOIN Shelters s ON a.AgencyID = s.AgencyID GROUP BY a.Name ORDER BY ShelterCount DESC LIMIT 5;



	agencyname character varying (255)	sheltercount bigint
1	Teach for India	3
2	Azim Premji Foundation	2
3	Sankalp Foundation	2
4	Ambuja Cement Foundation	2
5	Goonj	2

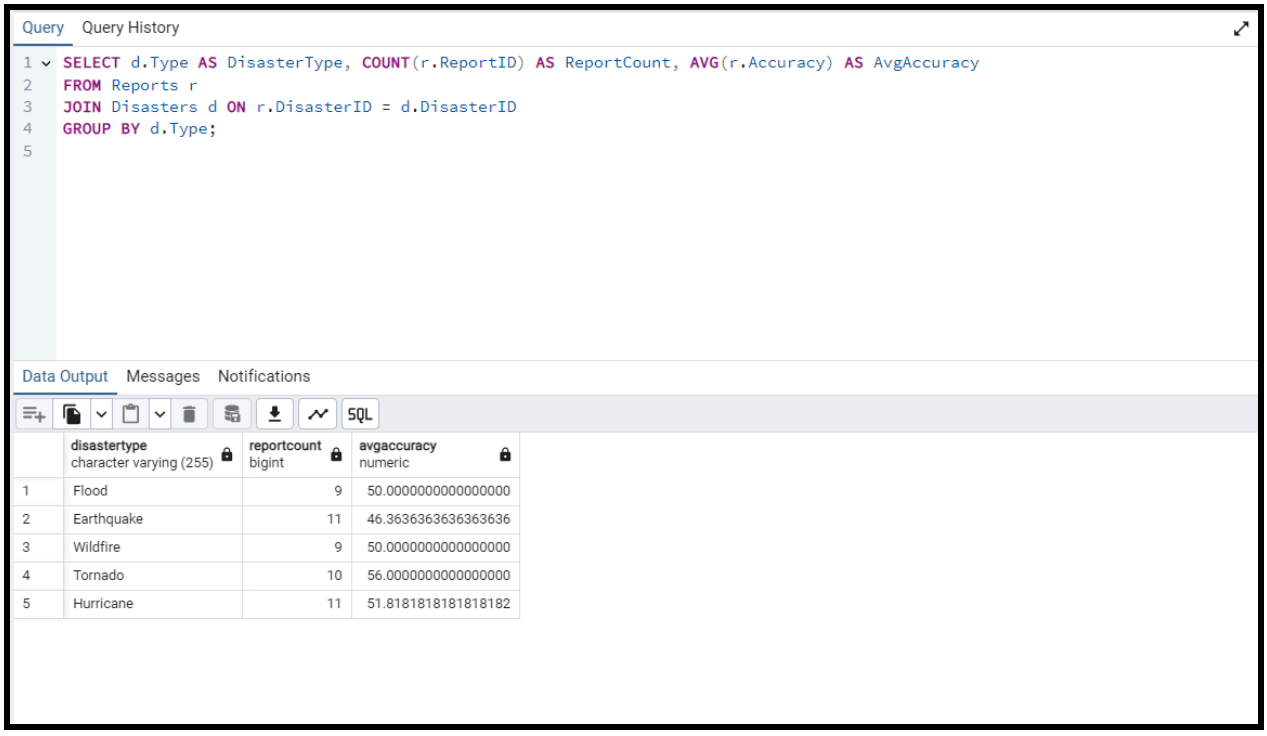
38. Retrieve a list of shelters with over 50% capacity and their current statuses:

```
SELECT s.ShelterID, s.Capacity, s.CurrentOccupancy, s.Status FROM
Shelters s WHERE s.CurrentOccupancy > (s.Capacity / 2);
```



39. Show the total number of reports by disaster type and their average accuracy:

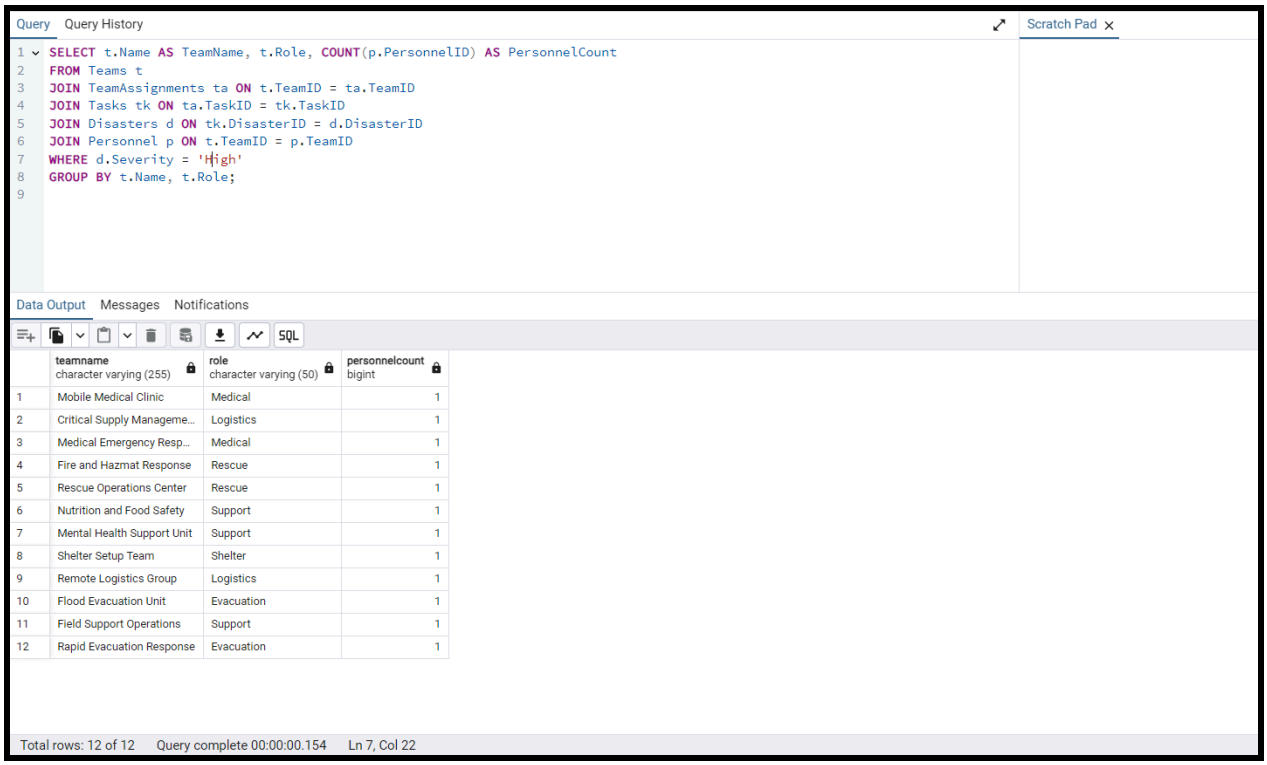
```
SELECT d.Type AS DisasterType, COUNT(r.ReportID) AS ReportCount,
AVG(r.Accuracy) AS AvgAccuracy FROM Reports r JOIN Disasters d ON
r.DisasterID = d.DisasterID GROUP BY d.Type;
```



	disastertype character varying (255)	reportcount bigint	avgaccuracy numeric
1	Flood	9	50.0000000000000000
2	Earthquake	11	46.3636363636363636
3	Wildfire	9	50.0000000000000000
4	Tornado	10	56.0000000000000000
5	Hurricane	11	51.8181818181818182

40. Find all teams involved in disasters where the disaster's severity is 'high,' showing their roles and the number of personnel assigned:

```
SELECT t.Name AS TeamName, t.Role, COUNT(p.PersonnelID) AS PersonnelCount FROM
Teams t JOIN TeamAssignments ta ON t.TeamID = ta.TeamID JOIN Personnel p ON
ta.PersonnelID = p.PersonnelID JOIN Disasters d ON t.DisasterID = d.DisasterID
WHERE d.Severity = 'high' GROUP BY t.Name, t.Role;
```



Chapter 5

Interface Implementation

1. Setup JDBC and Basic GUI:

1. Overview

Java Database Connectivity (JDBC) enables Java applications to interact with databases. This guide covers setting up JDBC with MySQL and creating a basic GUI using Java Swing.

2. Prerequisites

- **Java Development Kit (JDK)** installed (version 8+)
- **MySQL Database** installed and running
- **MySQL JDBC Driver** (mysql-connector-java.jar) downloaded

3. Setting Up JDBC

Step 1: Add JDBC Driver to Classpath

- Download mysql-connector-java.jar from MySQL Downloads.
- Add the JAR to your project's classpath in your IDE or include it in the lib directory.

Step 2: Establish Database Connection

```
import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.SQLException;


public class DatabaseConnector {

    private static final String URL = "jdbc:mysql://localhost:3306/your_database";

    private static final String USER = "your_username";
```

```
    private static final String PASSWORD = "your_password";

    public Connection getConnection() {
        try {
            return DriverManager.getConnection(URL, USER, PASSWORD);
        } catch (SQLException e) {
            e.printStackTrace();
            return null;
        }
    }
}
```

4. **Creating a Basic GUI with Swing**

Step 1: Import Swing Packages

```
import javax.swing.*;
import java.awt.event.*;
import java.sql.*;
```

Step 2: Design the GUI

```
public class DatabaseGUIApp extends JFrame {
    private JButton fetchButton;
    private JTextArea displayArea;

    public DatabaseGUIApp() {
        setTitle("JDBC Basic GUI");
```

```
        setSize(400, 300);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setLayout(new BorderLayout());

        fetchButton = new JButton("Fetch Data");
        displayArea = new JTextArea();
        displayArea.setEditable(false);

        add(fetchButton, BorderLayout.NORTH);
        add(new JScrollPane(displayArea), BorderLayout.CENTER);

        fetchButton.addActionListener(e -> fetchData());
    }

    private void fetchData() {
        DatabaseConnector connector = new DatabaseConnector();
        try (Connection conn = connector.getConnection();
             Statement stmt = conn.createStatement();
             ResultSet rs = stmt.executeQuery("SELECT * FROM your_table")) {

            displayArea.setText("");
            while (rs.next()) {
                displayArea.append("ID: " + rs.getInt("id") + ", Name: " + rs.getString("name")
+ "\n");
            }
```

```
            } catch (SQLException ex) {
                displayArea.setText("Error fetching data.");
                ex.printStackTrace();
            }
        }

        public static void main(String[] args) {
            SwingUtilities.invokeLater(() -> {
                new DatabaseGUIApp().setVisible(true);
            });
        }
    }
```

5. **Running the Application**
    - **Compile** the Java files ensuring mysql-connector-java.jar is in the classpath.
    - **Run** the DatabaseGUIApp class.
    - **Interact** with the GUI by clicking "Fetch Data" to display database records.

6. **Key Points**
    - **JDBC Connection**: Managed via DriverManager to connect to MySQL.
    - **Swing Components**: JButton for actions and JTextArea for displaying data.
    - **Event Handling**: ActionListener on the button to trigger data fetching.
    - **Resource Management**: Utilizes try-with-resources to ensure connections are closed.

2. CRUD Operation in GUI:

Explanation:

DatabaseManager.java Explanation
This Java code defines the DatabaseManager class, which handles the connection and interaction with a PostgreSQL database to manage location data. Here's a breakdown of the different sections:

Class Declaration:
public class DatabaseManager {
The class DatabaseManager is used to encapsulate database operations. It contains methods to insert, update, delete, and retrieve location data.

Constants for Database Connection:
private static final String URL = "jdbc:postgresql://localhost:5432/DM2";
private static final String USER = "postgres";
private static final String PASSWORD = "admin";
These constants define the connection parameters for the PostgreSQL database. You would need to replace the values with the correct database connection details for your environment.

connect() Method:
```
public Connection connect() throws SQLException {
    return DriverManager.getConnection(URL, USER, PASSWORD);
}
```

This method establishes a connection to the database using the provided URL, username, and password. It returns a Connection object, which will be used to interact with the database.

insertLocation() Method:
```
public void insertLocation(String locationName, double latitude, double longitude) {
    String insertSQL = "INSERT INTO locations (LocationName, Latitude, Longitude)
VALUES (?, ?, ?)";
    try (Connection connection = connect(); PreparedStatement pstmt =
connection.prepareStatement(insertSQL)) {
        pstmt.setString(1, locationName);
        pstmt.setDouble(2, latitude);
        pstmt.setDouble(3, longitude);
        pstmt.executeUpdate();
```

```
    } catch (SQLException e) {
        e.printStackTrace();
    }
}
```

This method inserts a new location into the locations table.
The SQL query is written with placeholders (?) for values, which are filled using PreparedStatement.
The executeUpdate() method is used to execute the SQL query and insert the new location data into the database.

readLocations() Method:

```
public ResultSet readLocations() {
    String selectSQL = "SELECT * FROM locations";
    try {
        Connection connection = connect();
        PreparedStatement pstmt = connection.prepareStatement(selectSQL);
        return pstmt.executeQuery();
    } catch (SQLException e) {
        e.printStackTrace();
    }
    return null;
}
```

This method reads all the data from the locations table.
The SQL SELECT * FROM locations retrieves all rows from the table.
The executeQuery() method returns a ResultSet object that contains the query result, which can be used to iterate through the rows.

updateLocation() Method:

```
public void updateLocation(int locationId, String locationName, double latitude, double longitude) {
    String updateSQL = "UPDATE locations SET LocationName = ?, Latitude = ?, Longitude = ? WHERE LocationID = ?";
    try (Connection connection = connect(); PreparedStatement pstmt = connection.prepareStatement(updateSQL)) {
        pstmt.setString(1, locationName);
        pstmt.setDouble(2, latitude);
        pstmt.setDouble(3, longitude);
        pstmt.setInt(4, locationId);
        pstmt.executeUpdate();
    } catch (SQLException e) {
        e.printStackTrace();
    }
}
```

deleteLocation() Method:

```
public void deleteLocation(int locationId) {
    String deleteSQL = "DELETE FROM locations WHERE LocationID = ?";
    try (Connection connection = connect(); PreparedStatement pstmt =
connection.prepareStatement(deleteSQL)) {
        pstmt.setInt(1, locationId);
        pstmt.executeUpdate();
    } catch (SQLException e) {
        e.printStackTrace();
    }
}
```

This method deletes a location from the locations table by LocationID.
The SQL DELETE statement deletes the row where the LocationID matches the specified value.

LocationGUI.java Explanation

This Java code defines a LocationGUI class that provides a graphical user interface (GUI) for managing location data using JDBC and the DatabaseManager class. Here's a breakdown of the key components:

Class Declaration:

```
public class LocationGUI extends JFrame {
```

The class LocationGUI extends JFrame to create a windowed application with buttons, text fields, and a table for interacting with the database.

Instance Variables:

```
private JTextField locationIdField, locationNameField, latitudeField, longitudeField;
private JButton addButton, updateButton, deleteButton, loadButton;
private JTable locationTable;
private DefaultTableModel tableModel;
private DatabaseManager dbManager;
```

These variables represent the components of the GUI, including text fields for input, buttons for actions, and a table for displaying the data.

Constructor:

```
public LocationGUI() {
    dbManager = new DatabaseManager();
    setTitle("Location Management");
    setLayout(new BorderLayout(10, 10));
}
```

The constructor initializes the GUI components and sets the layout.
It also creates an instance of the DatabaseManager class to interact with the database.

Input Panel:
JPanel inputPanel = new JPanel(new GridLayout(4, 2, 5, 5));
inputPanel.setBorder(new TitledBorder("Location Details"));

This panel is used to collect location details from the user.
The GridLayout arranges the labels and text fields in a grid format.

Button Panel:
JPanel buttonPanel = new JPanel();
addButton = createStyledButton("Add", new Color(60, 179, 113));
updateButton = createStyledButton("Update", new Color(30, 144, 255));
deleteButton = createStyledButton("Delete", new Color(220, 20, 60));
loadButton = createStyledButton("Load", new Color(255, 165, 0));

This panel contains four buttons for performing different actions: Add, Update, Delete, and Load.
The createStyledButton method is used to customize the appearance of each button.

Table Panel:
tableModel = new DefaultTableModel(new String[]{"Location ID", "Location Name", "Latitude", "Longitude"}, 0);
locationTable = new JTable(tableModel);
JScrollPane scrollPane = new JScrollPane(locationTable);
scrollPane.setBorder(new TitledBorder("Locations Table"));

The JTable is used to display the location data.
A DefaultTableModel is used to manage the table's data.

Button Action Listeners:
addButton.addActionListener(e -> addLocation());
updateButton.addActionListener(e -> updateLocation());
deleteButton.addActionListener(e -> deleteLocation());
loadButton.addActionListener(e -> loadLocations());

- Add: Inserts a new location into the database.
- Update: Updates an existing location.
- Delete: Deletes a location.
- Load: Loads all locations into the table.

Methods for Database Operations:

- **addLocation():** Calls the insertLocation method of the DatabaseManager class to add a new location.
- **updateLocation():** Calls the updateLocation method of the DatabaseManager class to update an existing location.
- **deleteLocation():** Calls the deleteLocation method of the DatabaseManager class to remove a location.
- **loadLocations():** Loads all the locations from the database and populates the table.

Main Method:

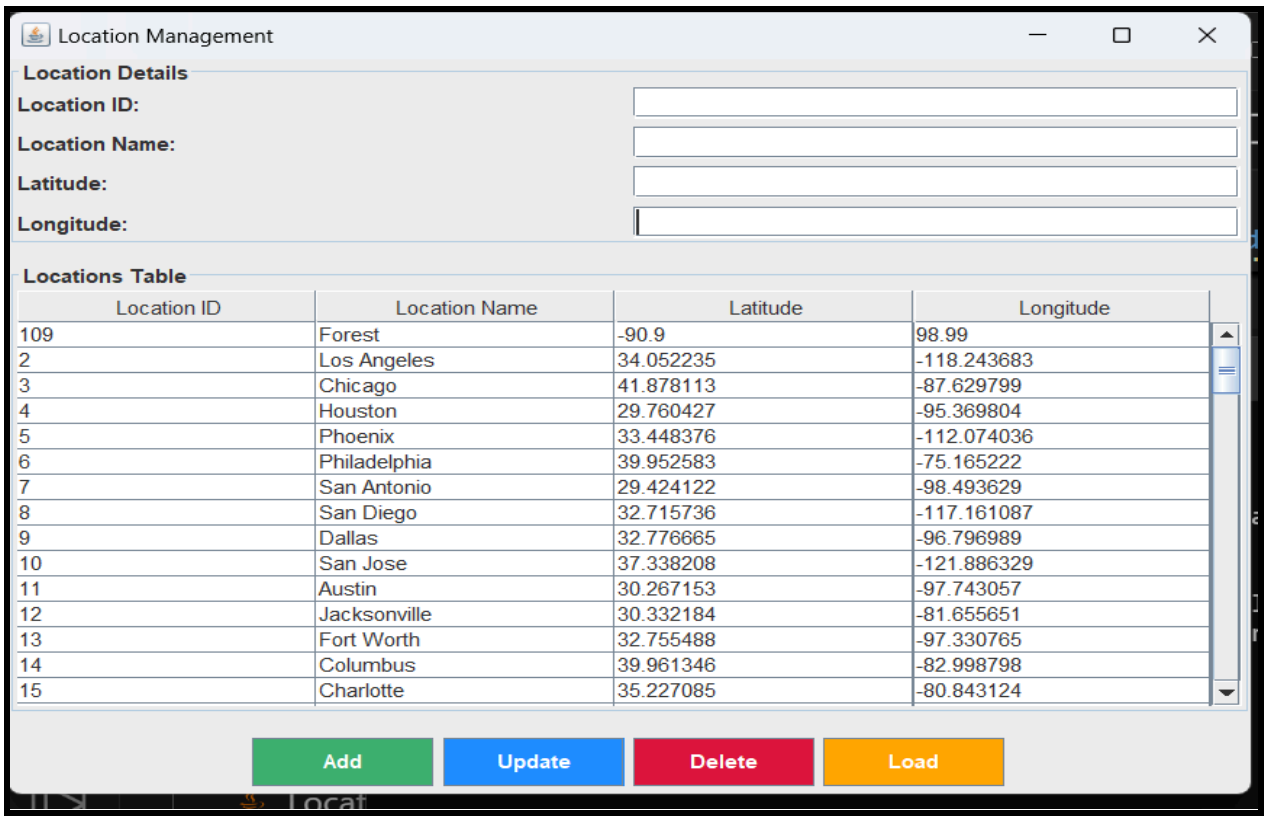
```
public static void main(String[] args) {
    SwingUtilities.invokeLater(LocationGUI::new);
}
```

The main method launches the LocationGUI application on the Event Dispatch Thread using SwingUtilities.invokeLater.

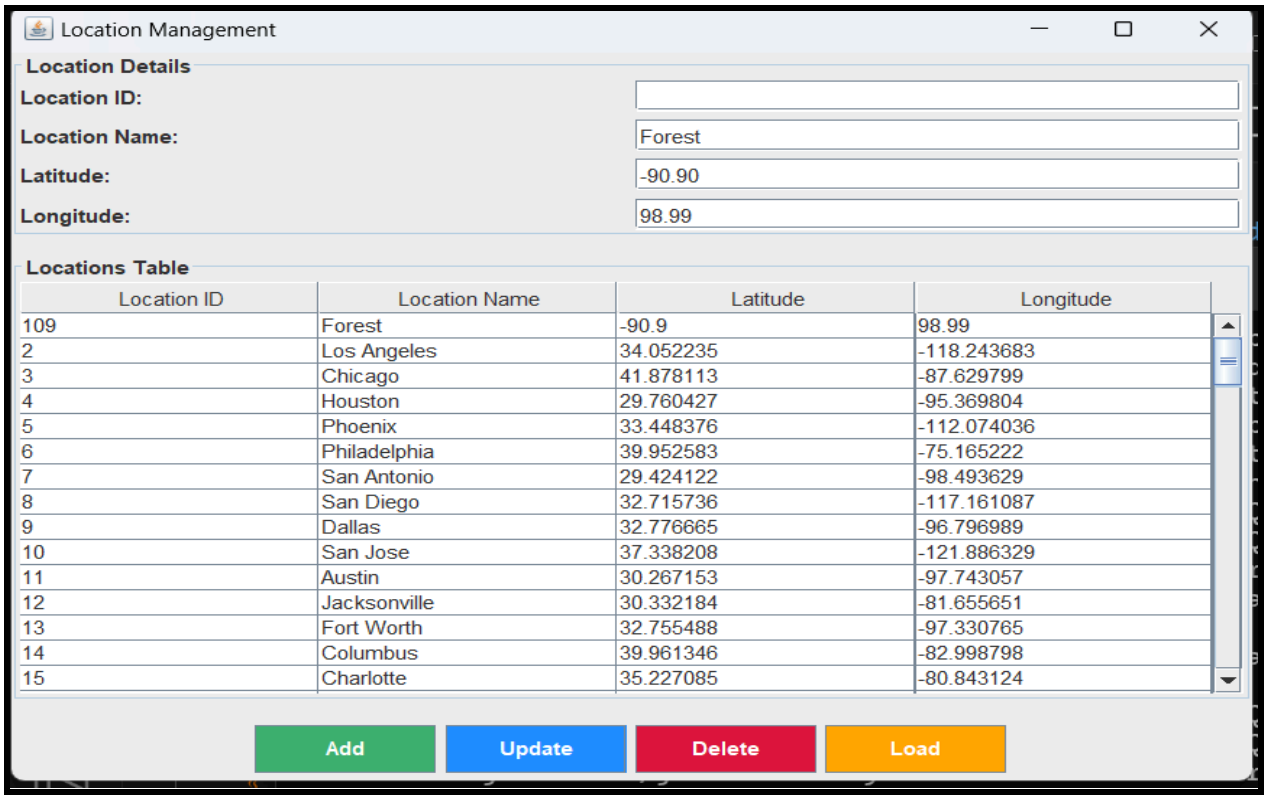
Demonstration

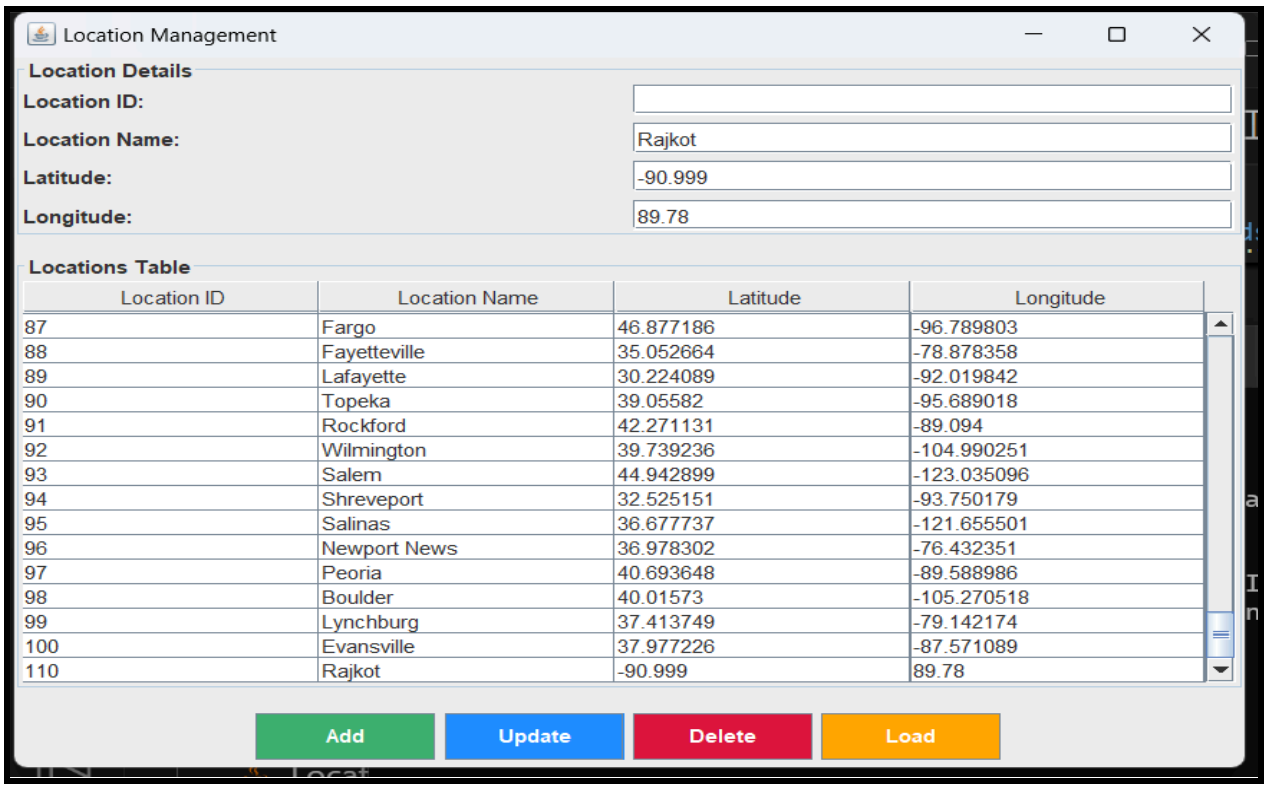
Location

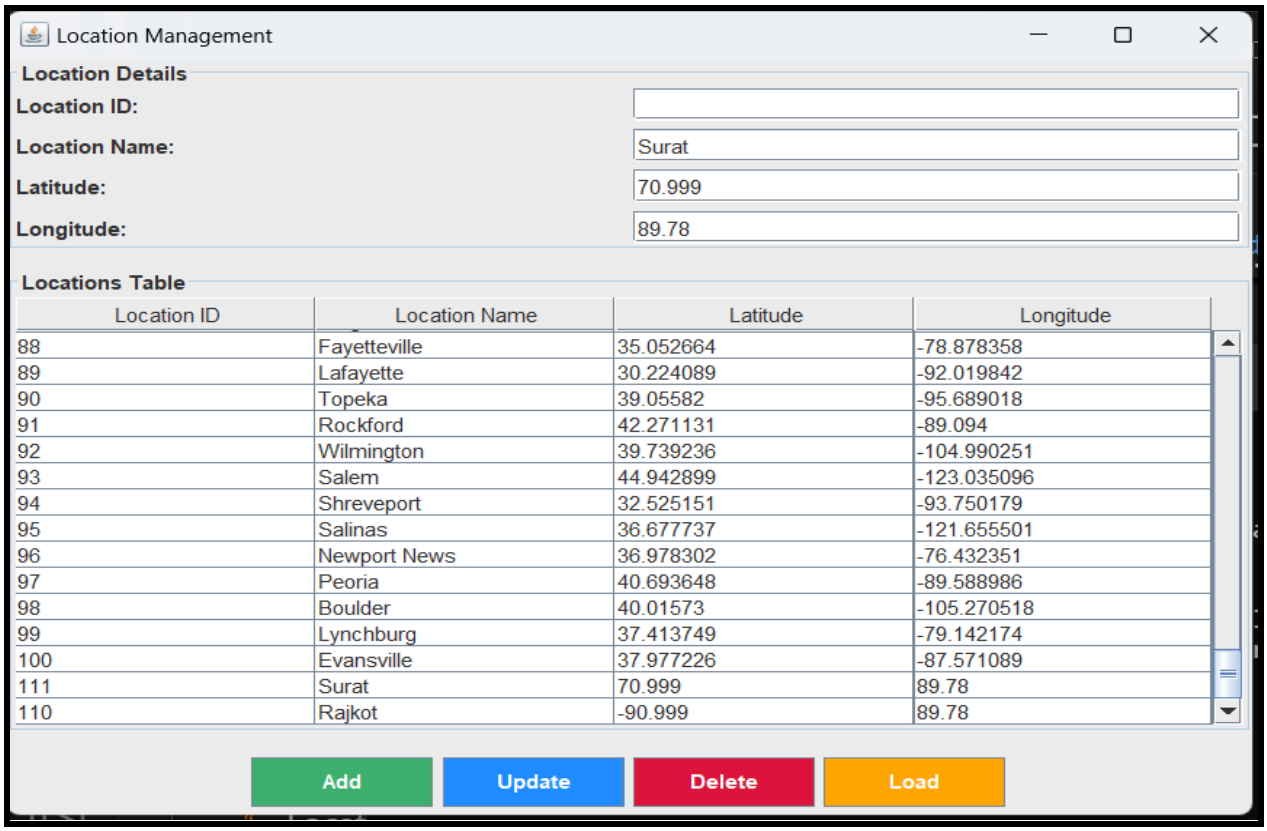
Display :

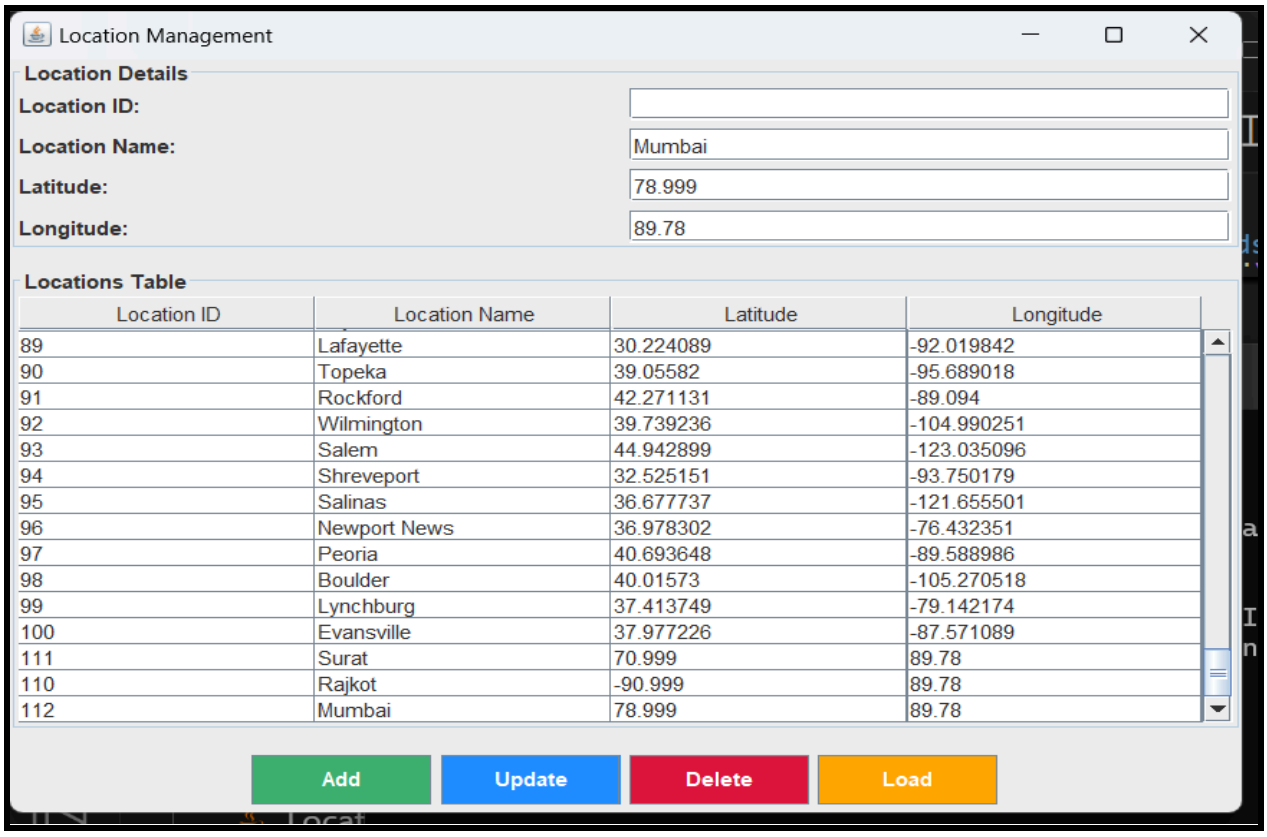


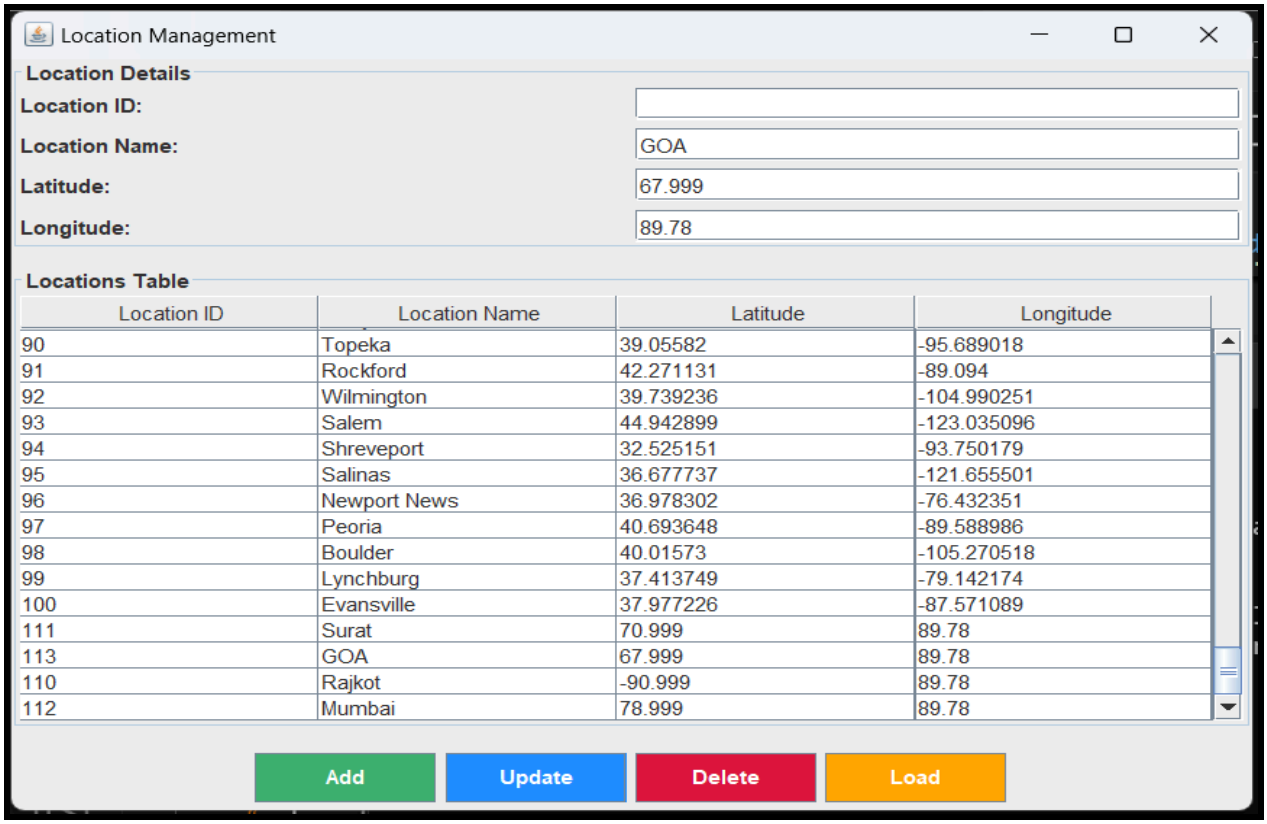
Insert :


Location Management
Location Details
Location ID:
Location Name:
Forest
Latitude:
-90.90
Longitude:
98.99
Locations Table
Location ID | Location Name | Latitude | Longitude
109 | Forest | -90.9 | 98.99
2 | Los Angeles | 34.052235 | -118.243683
3 | Chicago | 41.878113 | -87.629799
4 | Houston | 29.760427 | -95.369804
5 | Phoenix | 33.448376 | -112.074036
6 | Philadelphia | 39.952583 | -75.165222
7 | San Antonio | 29.424122 | -98.493629
8 | San Diego | 32.715736 | -117.161087
9 | Dallas | 32.776665 | -96.796989
10 | San Jose | 37.338208 | -121.886329
11 | Austin | 30.267153 | -97.743057
12 | Jacksonville | 30.332184 | -81.655651
13 | Fort Worth | 32.755488 | -97.330765
14 | Columbus | 39.961346 | -82.998798
15 | Charlotte | 35.227085 | -80.843124
Add
Update
Delete
Load

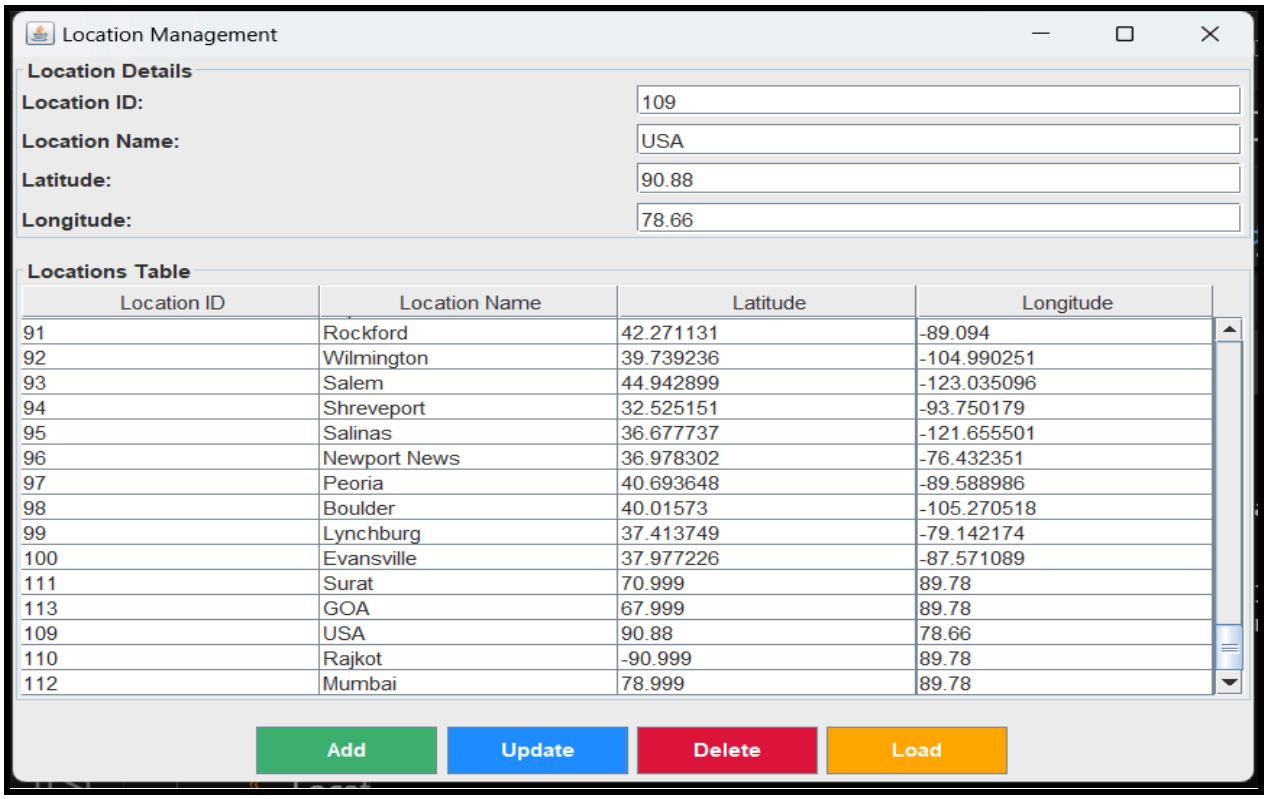

Location Management
Location Details
Location ID:
Location Name:
Rajkot
Latitude:
-90.999
Longitude:
89.78
Locations Table
Location ID | Location Name | Latitude | Longitude
87 | Fargo | 46.877186 | -96.789803
88 | Fayetteville | 35.052664 | -78.878358
89 | Lafayette | 30.224089 | -92.019842
90 | Topeka | 39.05582 | -95.689018
91 | Rockford | 42.271131 | -89.094
92 | Wilmington | 39.739236 | -104.990251
93 | Salem | 44.942899 | -123.035096
94 | Shreveport | 32.525151 | -93.750179
95 | Salinas | 36.677737 | -121.655501
96 | Newport News | 36.978302 | -76.432351
97 | Peoria | 40.693648 | -89.588986
98 | Boulder | 40.01573 | -105.270518
99 | Lynchburg | 37.413749 | -79.142174
100 | Evansville | 37.977226 | -87.571089
110 | Rajkot | -90.999 | 89.78
Add
Update
Delete
Load

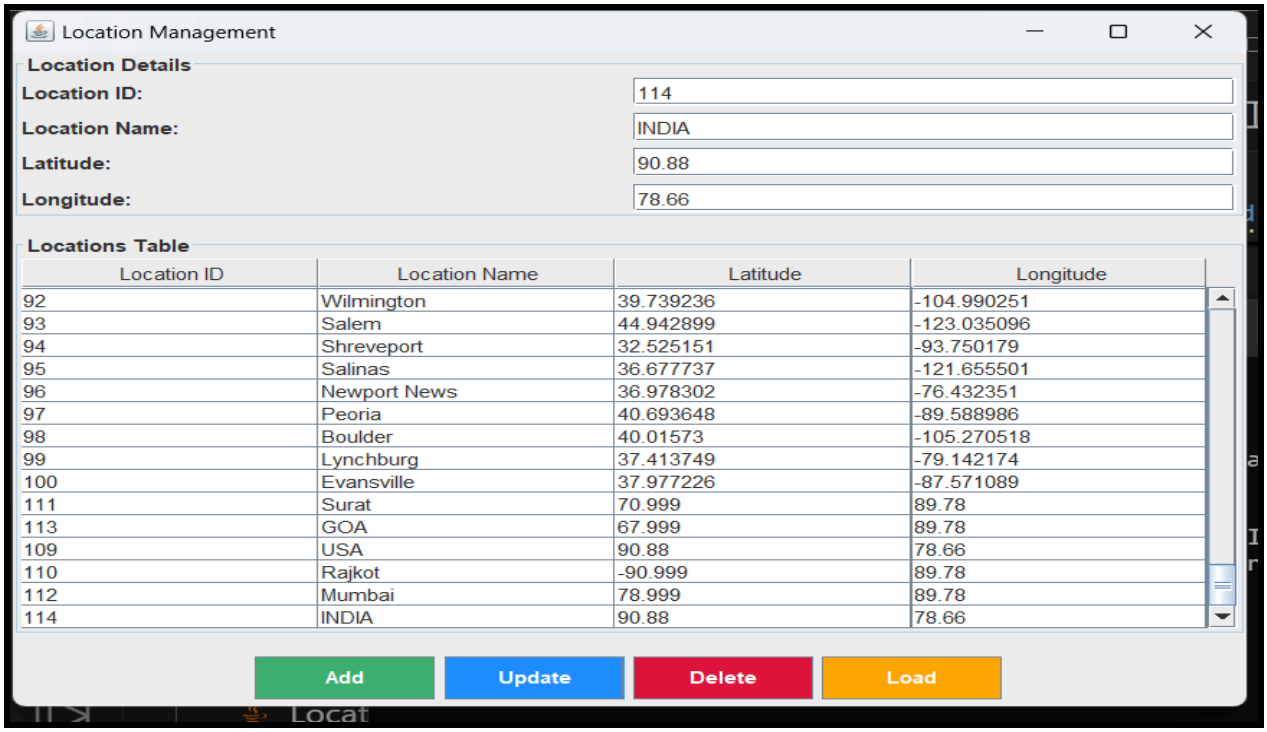

Location Management
Location Details
Location ID:
Location Name:
Surat
Latitude:
70.999
Longitude:
89.78
Locations Table
Location ID
Location Name
Latitude
Longitude
88 Fayetteville 35.052664 -78.878358
89 Lafayette 30.224089 -92.019842
90 Topeka 39.05582 -95.689018
91 Rockford 42.271131 -89.094
92 Wilmington 39.739236 -104.990251
93 Salem 44.942899 -123.035096
94 Shreveport 32.525151 -93.750179
95 Salinas 36.677737 -121.655501
96 Newport News 36.978302 -76.432351
97 Peoria 40.693648 -89.588986
98 Boulder 40.01573 -105.270518
99 Lynchburg 37.413749 -79.142174
100 Evansville 37.977226 -87.571089
111 Surat 70.999 89.78
110 Rajkot -90.999 89.78
Add
Update
Delete
Load

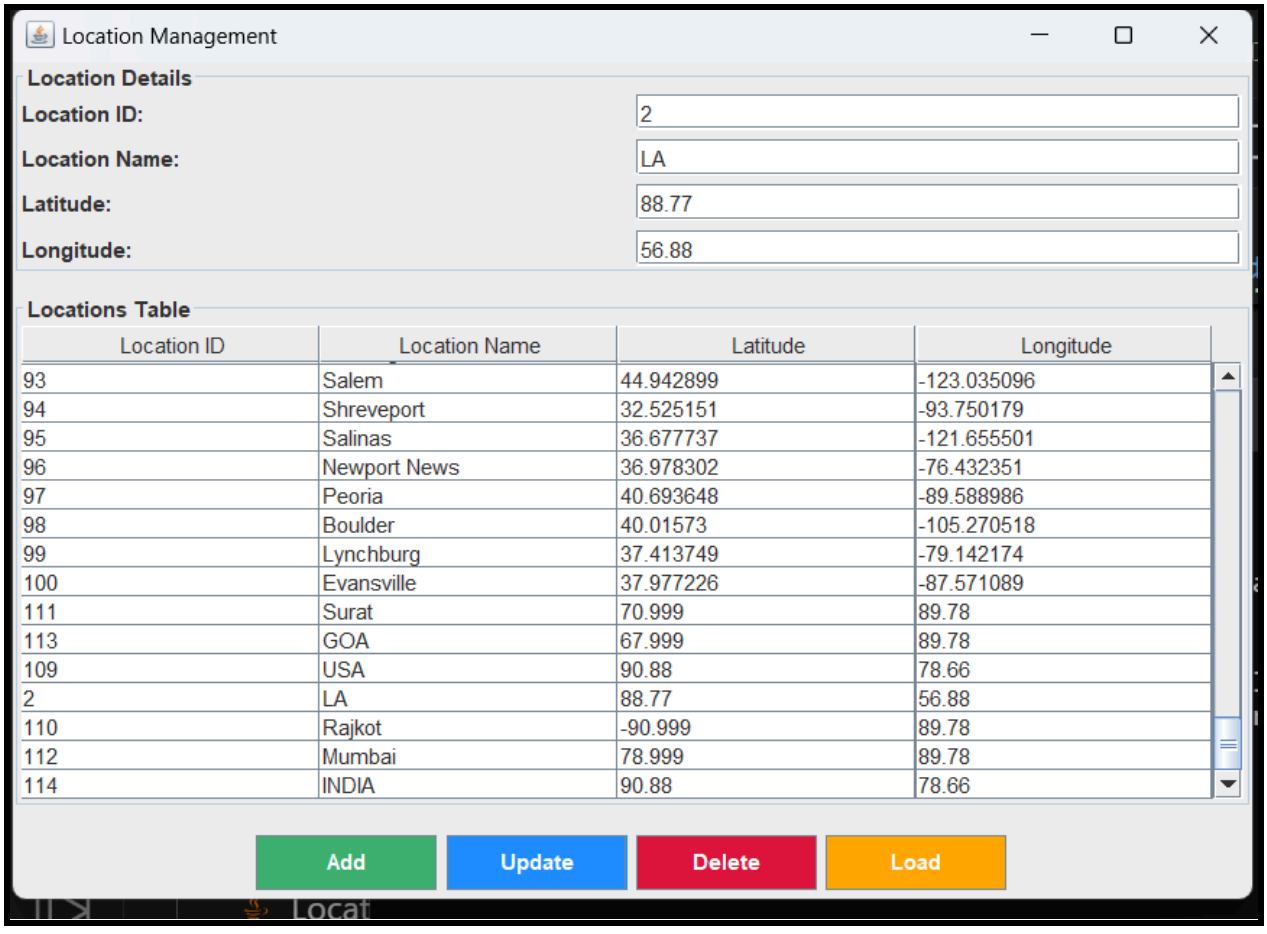

Location Management
Location Details
Location ID:
Location Name:
Mumbai
Latitude:
78.999
Longitude:
89.78
Locations Table
Location ID
Location Name
Latitude
Longitude
89 Lafayette 30.224089 -92.019842
90 Topeka 39.05582 -95.689018
91 Rockford 42.271131 -89.094
92 Wilmington 39.739236 -104.990251
93 Salem 44.942899 -123.035096
94 Shreveport 32.525151 -93.750179
95 Salinas 36.677737 -121.655501
96 Newport News 36.978302 -76.432351
97 Peoria 40.693648 -89.588986
98 Boulder 40.01573 -105.270518
99 Lynchburg 37.413749 -79.142174
100 Evansville 37.977226 -87.571089
111 Surat 70.999 89.78
110 Rajkot -90.999 89.78
112 Mumbai 78.999 89.78
Add
Update
Delete
Load

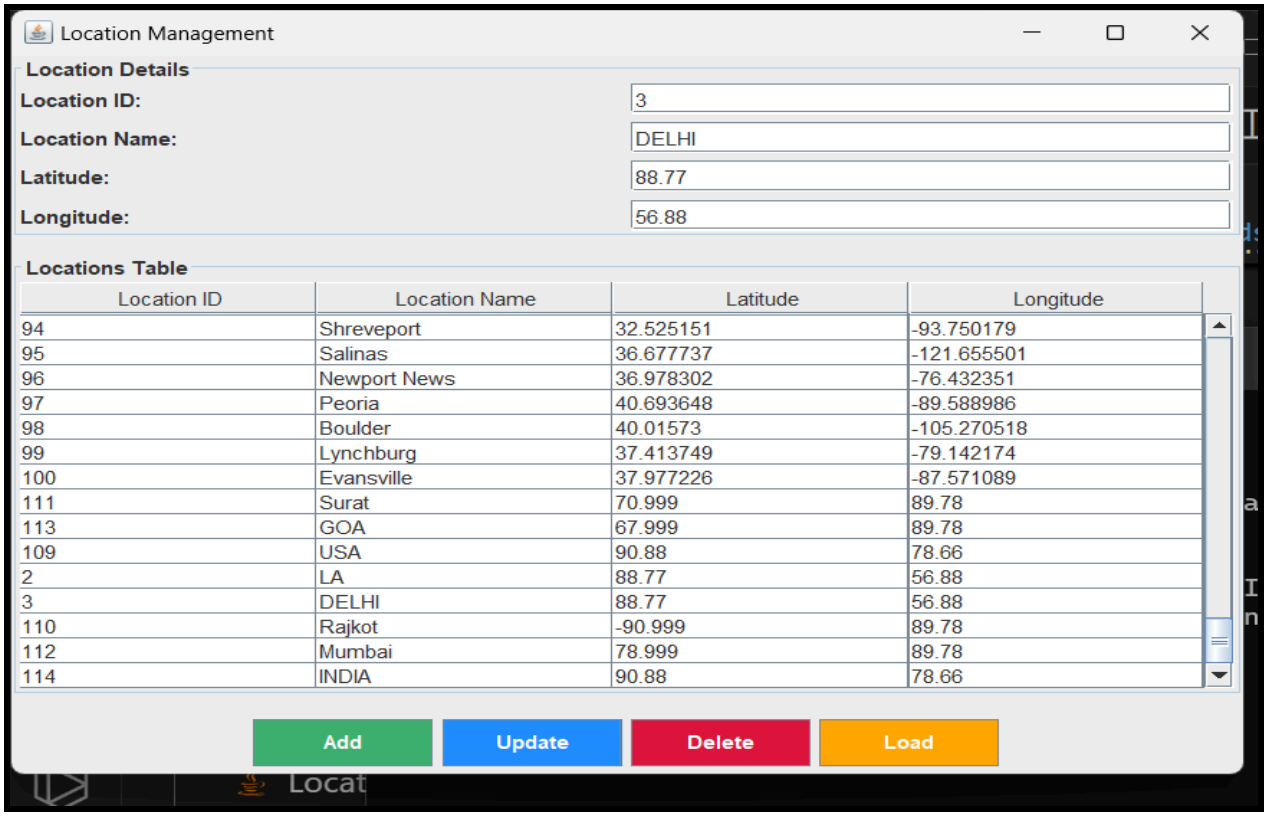

Location Management
Location Details
Location ID:
Location Name:
GOA
Latitude:
67.999
Longitude:
89.78
Locations Table
Location ID | Location Name | Latitude | Longitude
90 | Topeka | 39.05582 | -95.689018
91 | Rockford | 42.271131 | -89.094
92 | Wilmington | 39.739236 | -104.990251
93 | Salem | 44.942899 | -123.035096
94 | Shreveport | 32.525151 | -93.750179
95 | Salinas | 36.677737 | -121.655501
96 | Newport News | 36.978302 | -76.432351
97 | Peoria | 40.693648 | -89.588986
98 | Boulder | 40.01573 | -105.270518
99 | Lynchburg | 37.413749 | -79.142174
100 | Evansville | 37.977226 | -87.571089
111 | Surat | 70.999 | 89.78
113 | GOA | 67.999 | 89.78
110 | Rajkot | -90.999 | 89.78
112 | Mumbai | 78.999 | 89.78
Add
Update
Delete
Load

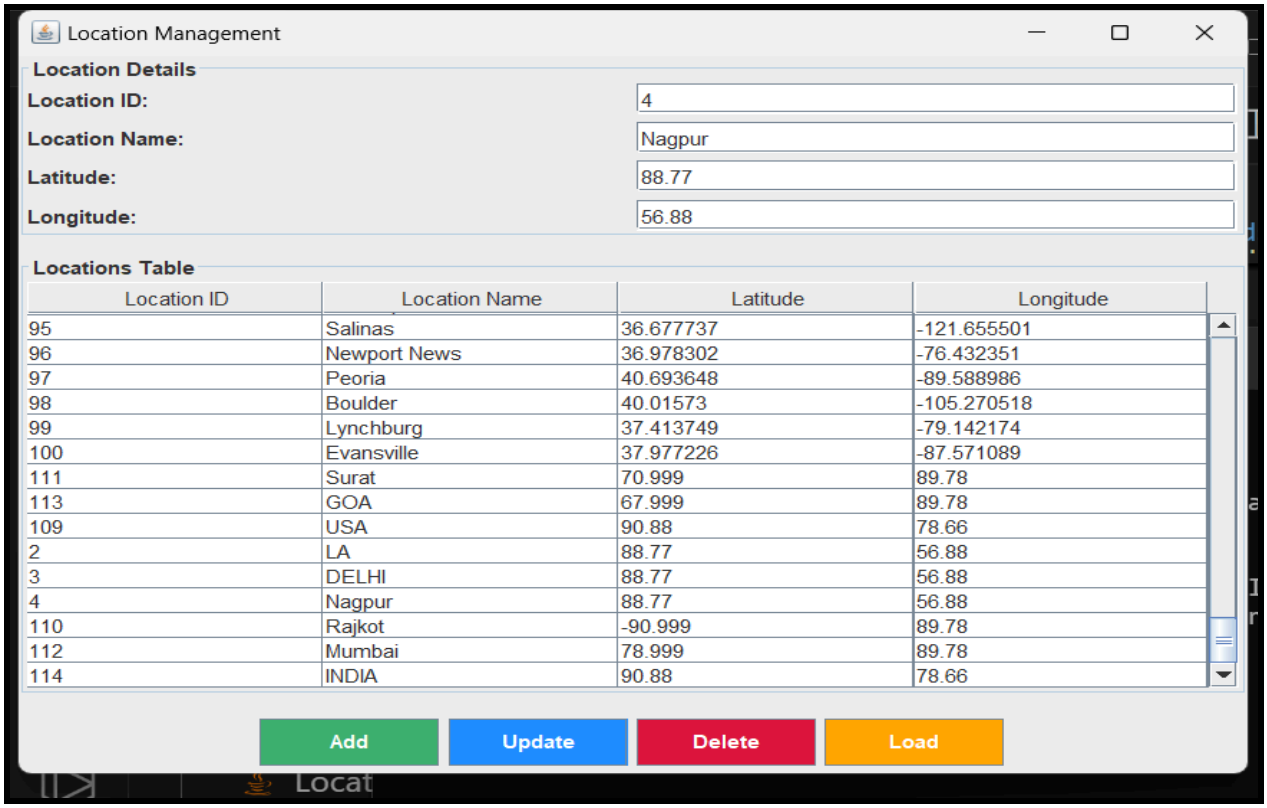
Update :


Location Management
Location Details
Location ID:
109
Location Name:
USA
Latitude:
90.88
Longitude:
78.66
Locations Table
Location ID | Location Name | Latitude | Longitude
91 | Rockford | 42.271131 | -89.094
92 | Wilmington | 39.739236 | -104.990251
93 | Salem | 44.942899 | -123.035096
94 | Shreveport | 32.525151 | -93.750179
95 | Salinas | 36.677737 | -121.655501
96 | Newport News | 36.978302 | -76.432351
97 | Peoria | 40.693648 | -89.588986
98 | Boulder | 40.01573 | -105.270518
99 | Lynchburg | 37.413749 | -79.142174
100 | Evansville | 37.977226 | -87.571089
111 | Surat | 70.999 | 89.78
113 | GOA | 67.999 | 89.78
109 | USA | 90.88 | 78.66
110 | Rajkot | -90.999 | 89.78
112 | Mumbai | 78.999 | 89.78
Add
Update
Delete
Load

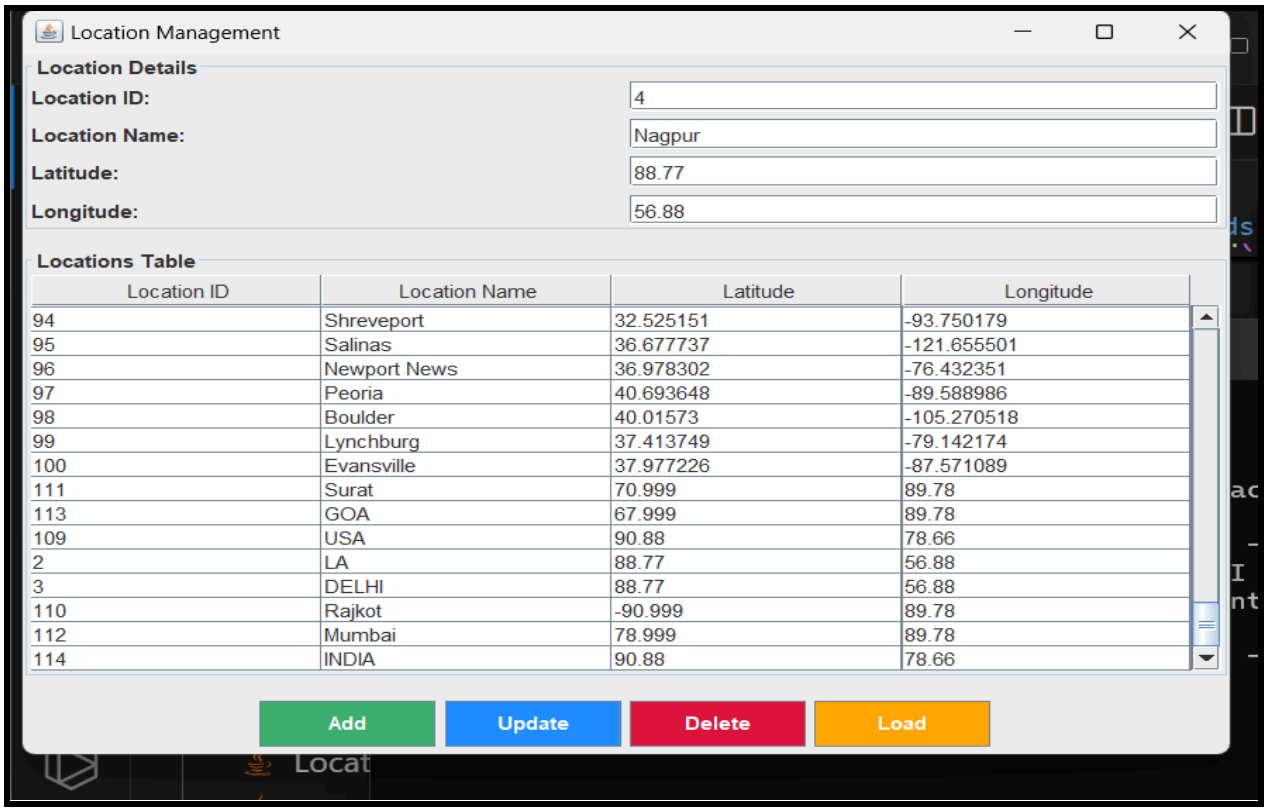

Location Management
Location Details
Location ID: 114
Location Name: INDIA
Latitude: 90.88
Longitude: 78.66
Locations Table
Location ID | Location Name | Latitude | Longitude
92 | Wilmington | 39.739236 | -104.990251
93 | Salem | 44.942899 | -123.035096
94 | Shreveport | 32.525151 | -93.750179
95 | Salinas | 36.677737 | -121.655501
96 | Newport News | 36.978302 | -76.432351
97 | Peoria | 40.693648 | -89.588986
98 | Boulder | 40.01573 | -105.270518
99 | Lynchburg | 37.413749 | -79.142174
100 | Evansville | 37.977226 | -87.571089
111 | Surat | 70.999 | 89.78
113 | GOA | 67.999 | 89.78
109 | USA | 90.88 | 78.66
110 | Rajkot | -90.999 | 89.78
112 | Mumbai | 78.999 | 89.78
114 | INDIA | 90.88 | 78.66
Add
Update
Delete
Load

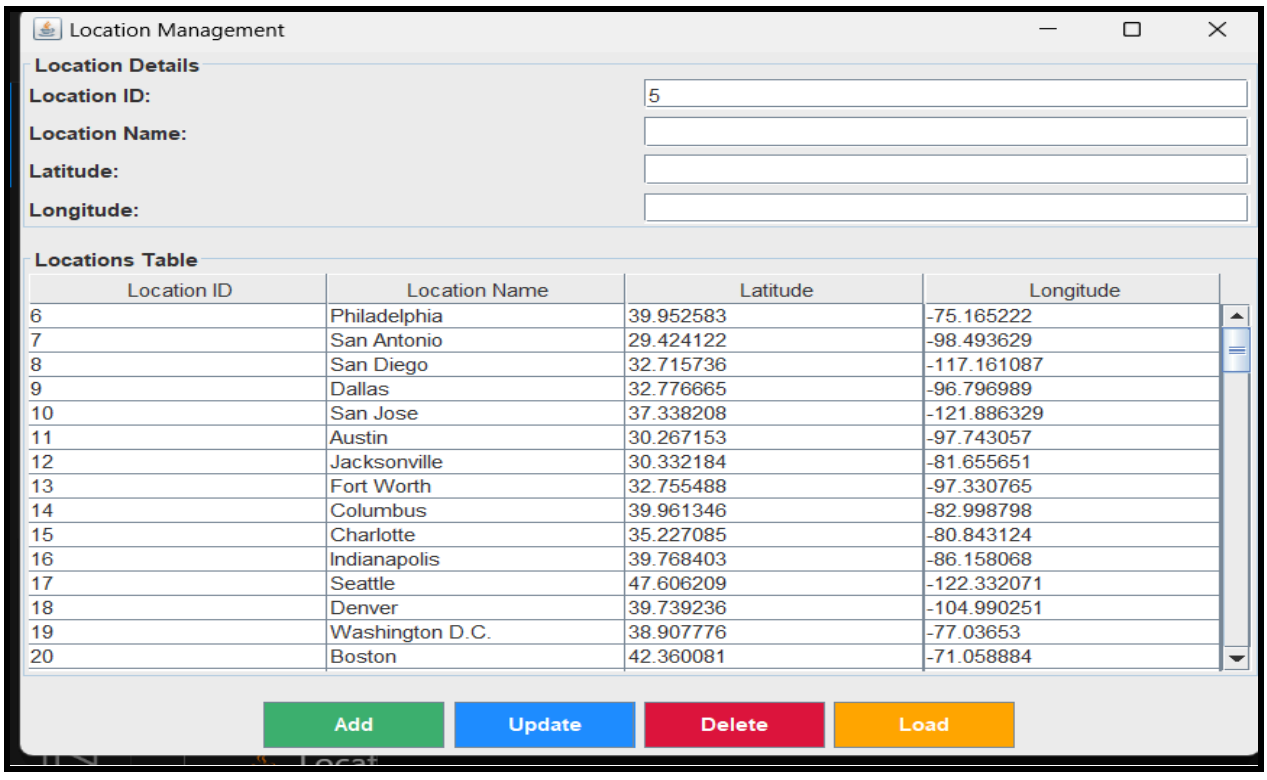

Location Management
Location Details
Location ID: 2
Location Name: LA
Latitude: 88.77
Longitude: 56.88
Locations Table
Location ID | Location Name | Latitude | Longitude
93 | Salem | 44.942899 | -123.035096
94 | Shreveport | 32.525151 | -93.750179
95 | Salinas | 36.677737 | -121.655501
96 | Newport News | 36.978302 | -76.432351
97 | Peoria | 40.693648 | -89.588986
98 | Boulder | 40.01573 | -105.270518
99 | Lynchburg | 37.413749 | -79.142174
100 | Evansville | 37.977226 | -87.571089
111 | Surat | 70.999 | 89.78
113 | GOA | 67.999 | 89.78
109 | USA | 90.88 | 78.66
2 | LA | 88.77 | 56.88
110 | Rajkot | -90.999 | 89.78
112 | Mumbai | 78.999 | 89.78
114 | INDIA | 90.88 | 78.66
Add
Update
Delete
Load

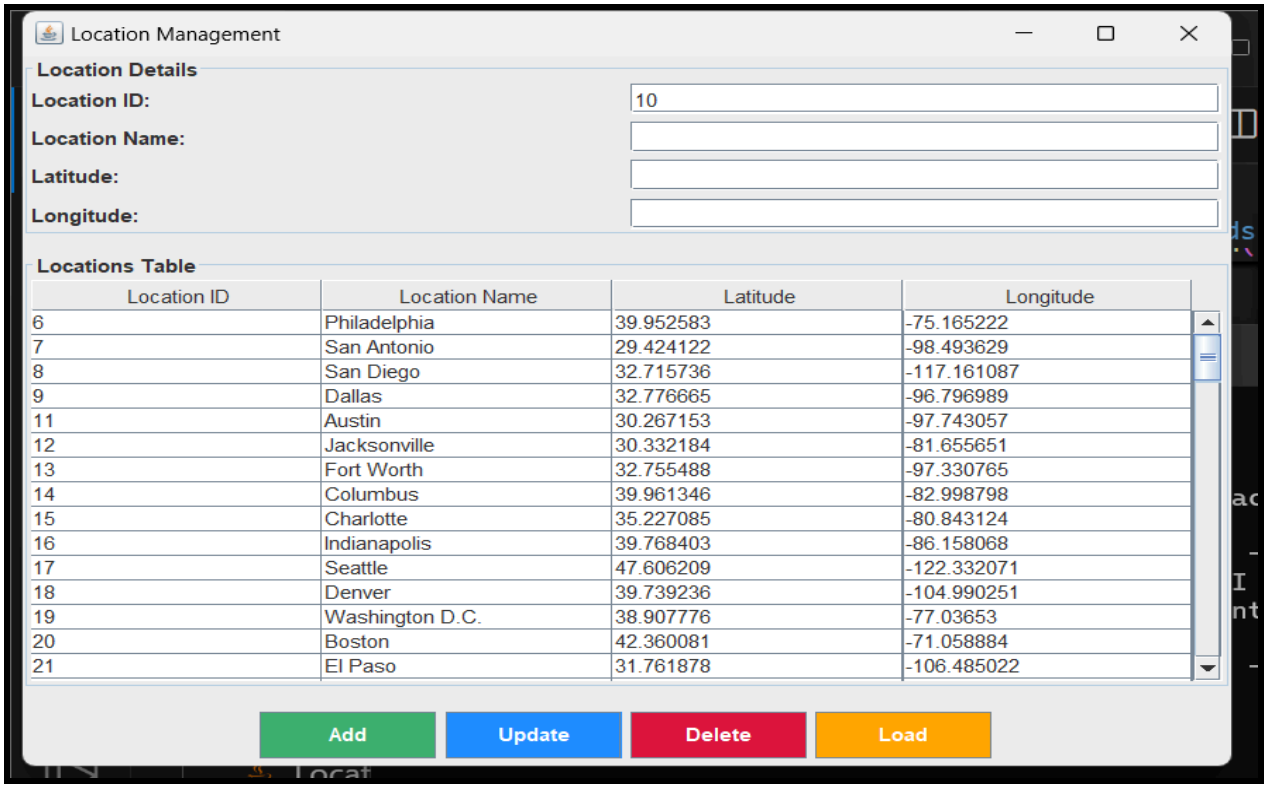

Location Management
Location Details
Location ID: 3
Location Name: DELHI
Latitude: 88.77
Longitude: 56.88
Locations Table
Location ID | Location Name | Latitude | Longitude
94 | Shreveport | 32.525151 | -93.750179
95 | Salinas | 36.677737 | -121.655501
96 | Newport News | 36.978302 | -76.432351
97 | Peoria | 40.693648 | -89.588986
98 | Boulder | 40.01573 | -105.270518
99 | Lynchburg | 37.413749 | -79.142174
100 | Evansville | 37.977226 | -87.571089
111 | Surat | 70.999 | 89.78
113 | GOA | 67.999 | 89.78
109 | USA | 90.88 | 78.66
2 | LA | 88.77 | 56.88
3 | DELHI | 88.77 | 56.88
110 | Rajkot | -90.999 | 89.78
112 | Mumbai | 78.999 | 89.78
114 | INDIA | 90.88 | 78.66
Add
Update
Delete
Load

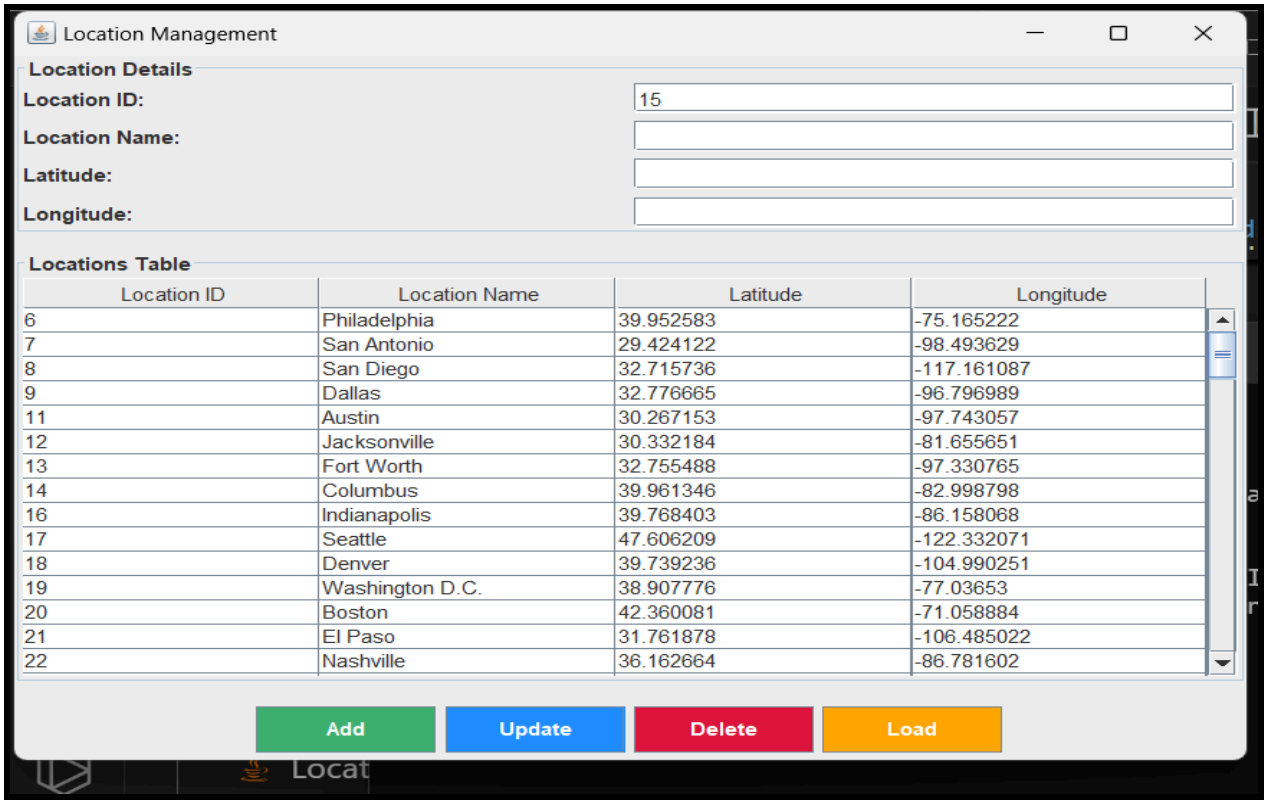

Location Management
Location Details
Location ID: 4
Location Name: Nagpur
Latitude: 88.77
Longitude: 56.88
Locations Table
Location ID | Location Name | Latitude | Longitude
95 | Salinas | 36.677737 | -121.655501
96 | Newport News | 36.978302 | -76.432351
97 | Peoria | 40.693648 | -89.588986
98 | Boulder | 40.01573 | -105.270518
99 | Lynchburg | 37.413749 | -79.142174
100 | Evansville | 37.977226 | -87.571089
111 | Surat | 70.999 | 89.78
113 | GOA | 67.999 | 89.78
109 | USA | 90.88 | 78.66
2 | LA | 88.77 | 56.88
3 | DELHI | 88.77 | 56.88
4 | Nagpur | 88.77 | 56.88
110 | Rajkot | -90.999 | 89.78
112 | Mumbai | 78.999 | 89.78
114 | INDIA | 90.88 | 78.66
Add
Update
Delete
Load

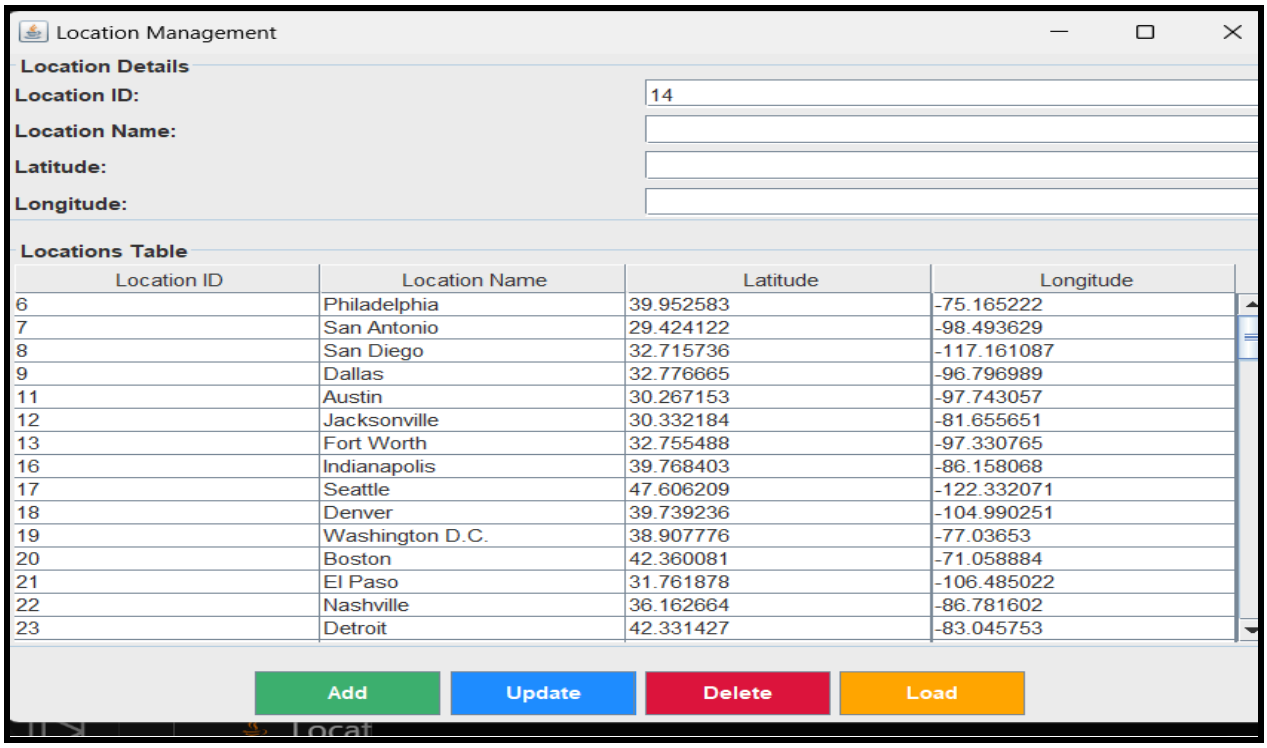
Delete:


Location Management
Location Details
Location ID: 4
Location Name: Nagpur
Latitude: 88.77
Longitude: 56.88
Locations Table
Location ID | Location Name | Latitude | Longitude
94 | Shreveport | 32.525151 | -93.750179
95 | Salinas | 36.677737 | -121.655501
96 | Newport News | 36.978302 | -76.432351
97 | Peoria | 40.693648 | -89.588986
98 | Boulder | 40.01573 | -105.270518
99 | Lynchburg | 37.413749 | -79.142174
100 | Evansville | 37.977226 | -87.571089
111 | Surat | 70.999 | 89.78
113 | GOA | 67.999 | 89.78
109 | USA | 90.88 | 78.66
2 | LA | 88.77 | 56.88
3 | DELHI | 88.77 | 56.88
110 | Rajkot | -90.999 | 89.78
112 | Mumbai | 78.999 | 89.78
114 | INDIA | 90.88 | 78.66
Add
Update
Delete
Load


Location Management
Location Details
Location ID: 5
Location Name:
Latitude:
Longitude:
Locations Table
Location ID | Location Name | Latitude | Longitude
6 | Philadelphia | 39.952583 | -75.165222
7 | San Antonio | 29.424122 | -98.493629
8 | San Diego | 32.715736 | -117.161087
9 | Dallas | 32.776665 | -96.796989
10 | San Jose | 37.338208 | -121.886329
11 | Austin | 30.267153 | -97.743057
12 | Jacksonville | 30.332184 | -81.655651
13 | Fort Worth | 32.755488 | -97.330765
14 | Columbus | 39.961346 | -82.998798
15 | Charlotte | 35.227085 | -80.843124
16 | Indianapolis | 39.768403 | -86.158068
17 | Seattle | 47.606209 | -122.332071
18 | Denver | 39.739236 | -104.990251
19 | Washington D.C. | 38.907776 | -77.03653
20 | Boston | 42.360081 | -71.058884
Add
Update
Delete
Load

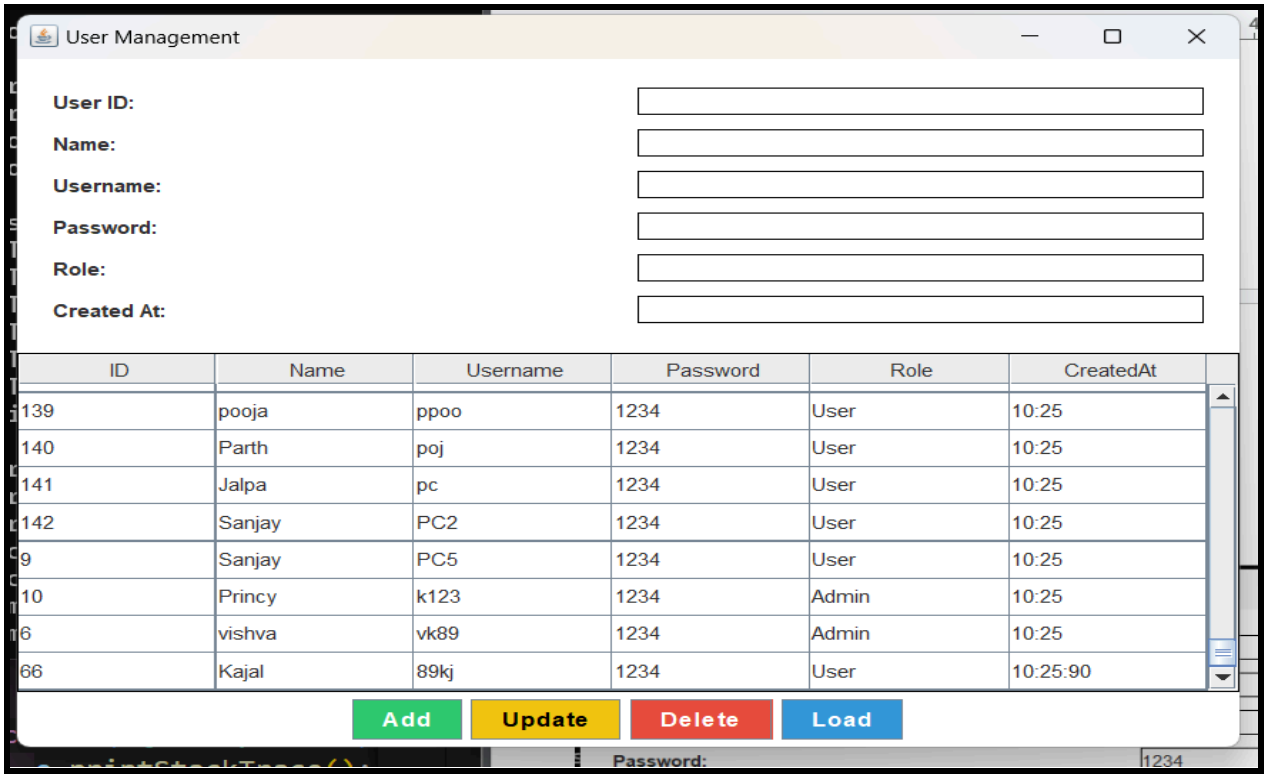

Location Management
Location Details
Location ID:
10
Location Name:
Latitude:
Longitude:
Locations Table
Location ID | Location Name | Latitude | Longitude
6 | Philadelphia | 39.952583 | -75.165222
7 | San Antonio | 29.424122 | -98.493629
8 | San Diego | 32.715736 | -117.161087
9 | Dallas | 32.776665 | -96.796989
11 | Austin | 30.267153 | -97.743057
12 | Jacksonville | 30.332184 | -81.655651
13 | Fort Worth | 32.755488 | -97.330765
14 | Columbus | 39.961346 | -82.998798
15 | Charlotte | 35.227085 | -80.843124
16 | Indianapolis | 39.768403 | -86.158068
17 | Seattle | 47.606209 | -122.332071
18 | Denver | 39.739236 | -104.990251
19 | Washington D.C. | 38.907776 | -77.03653
20 | Boston | 42.360081 | -71.058884
21 | El Paso | 31.761878 | -106.485022
Add
Update
Delete
Load


Location Management
Location Details
Location ID:
15
Location Name:
Latitude:
Longitude:
Locations Table
Location ID | Location Name | Latitude | Longitude
6 | Philadelphia | 39.952583 | -75.165222
7 | San Antonio | 29.424122 | -98.493629
8 | San Diego | 32.715736 | -117.161087
9 | Dallas | 32.776665 | -96.796989
11 | Austin | 30.267153 | -97.743057
12 | Jacksonville | 30.332184 | -81.655651
13 | Fort Worth | 32.755488 | -97.330765
14 | Columbus | 39.961346 | -82.998798
16 | Indianapolis | 39.768403 | -86.158068
17 | Seattle | 47.606209 | -122.332071
18 | Denver | 39.739236 | -104.990251
19 | Washington D.C. | 38.907776 | -77.03653
20 | Boston | 42.360081 | -71.058884
21 | El Paso | 31.761878 | -106.485022
22 | Nashville | 36.162664 | -86.781602
Add
Update
Delete
Load

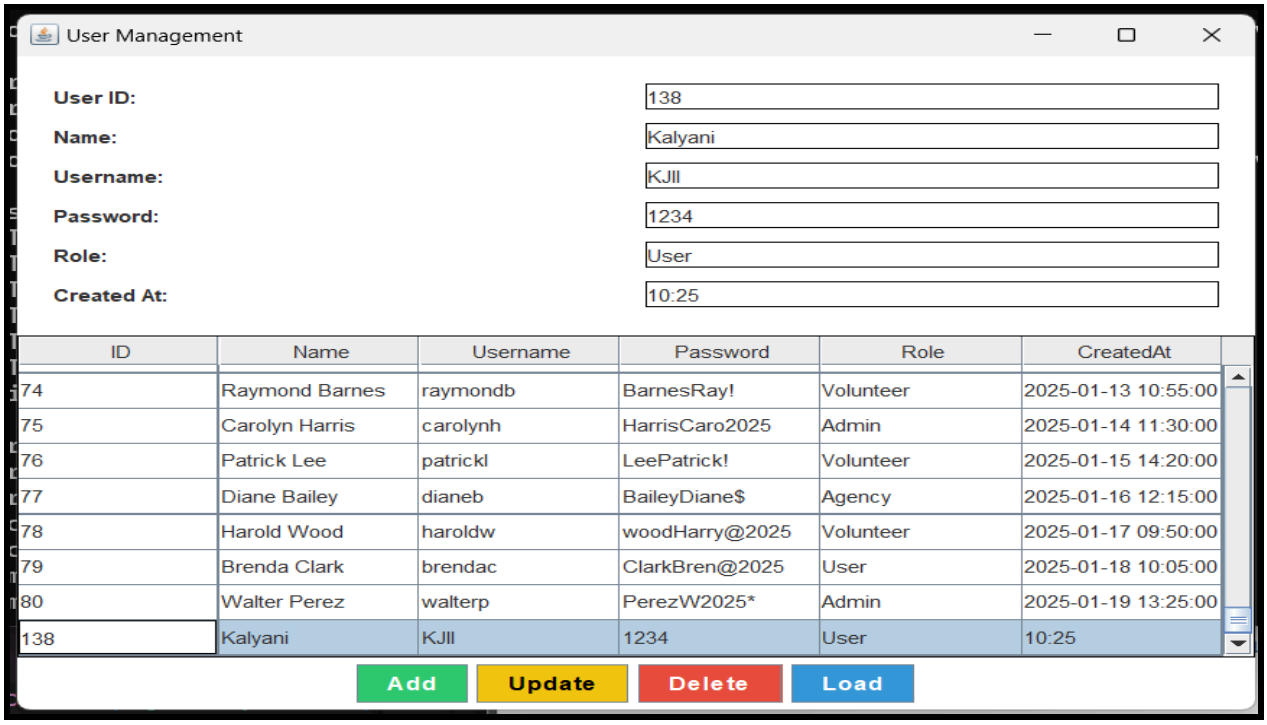

Location Management
Location Details
Location ID:
14
Location Name:
Latitude:
Longitude:
Locations Table
Location ID
Location Name
Latitude
Longitude
6 Philadelphia 39.952583 -75.165222
7 San Antonio 29.424122 -98.493629
8 San Diego 32.715736 -117.161087
9 Dallas 32.776665 -96.796989
11 Austin 30.267153 -97.743057
12 Jacksonville 30.332184 -81.655651
13 Fort Worth 32.755488 -97.330765
16 Indianapolis 39.768403 -86.158068
17 Seattle 47.606209 -122.332071
18 Denver 39.739236 -104.990251
19 Washington D.C. 38.907776 -77.03653
20 Boston 42.360081 -71.058884
21 El Paso 31.761878 -106.485022
22 Nashville 36.162664 -86.781602
23 Detroit 42.331427 -83.045753
Add
Update
Delete
Load

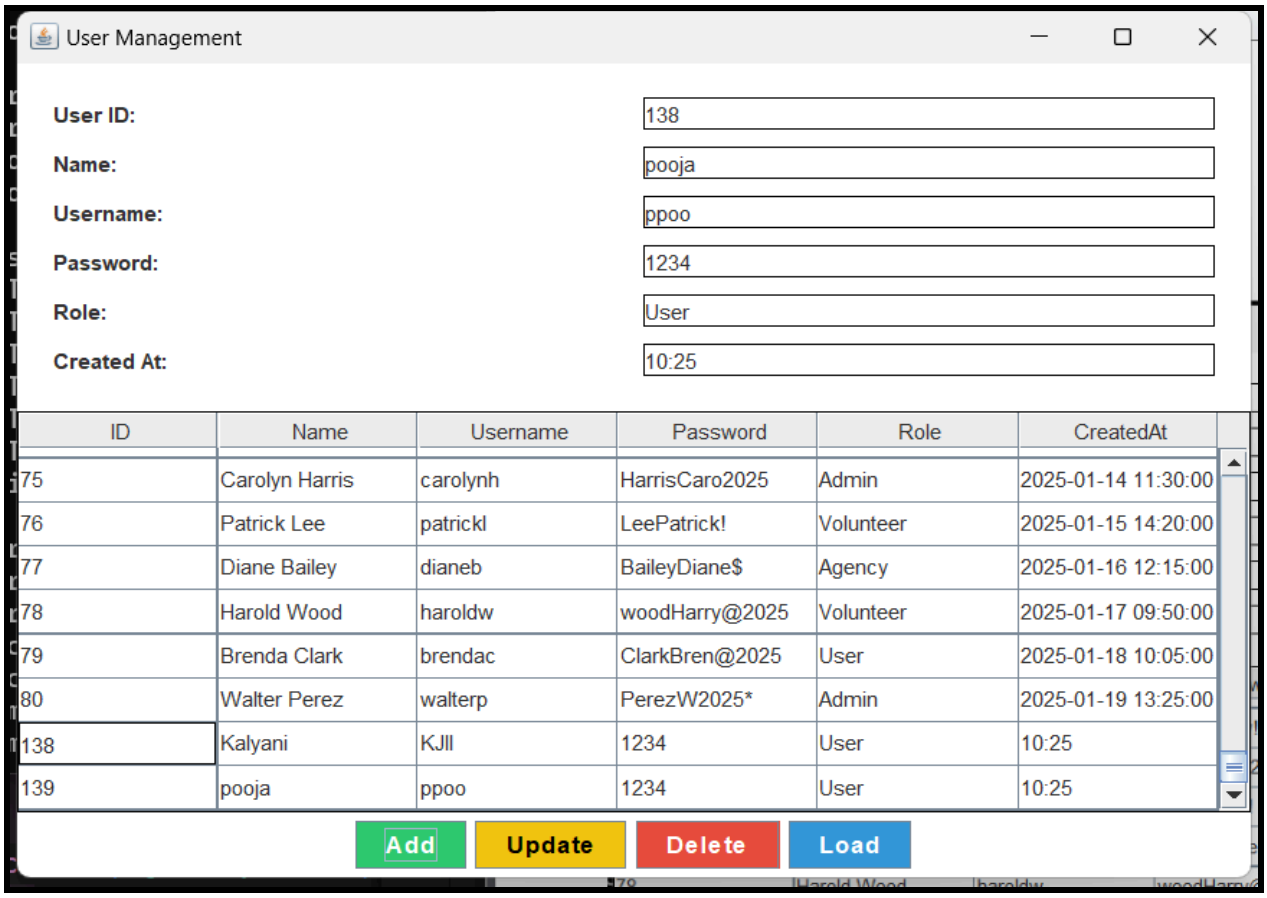
Users

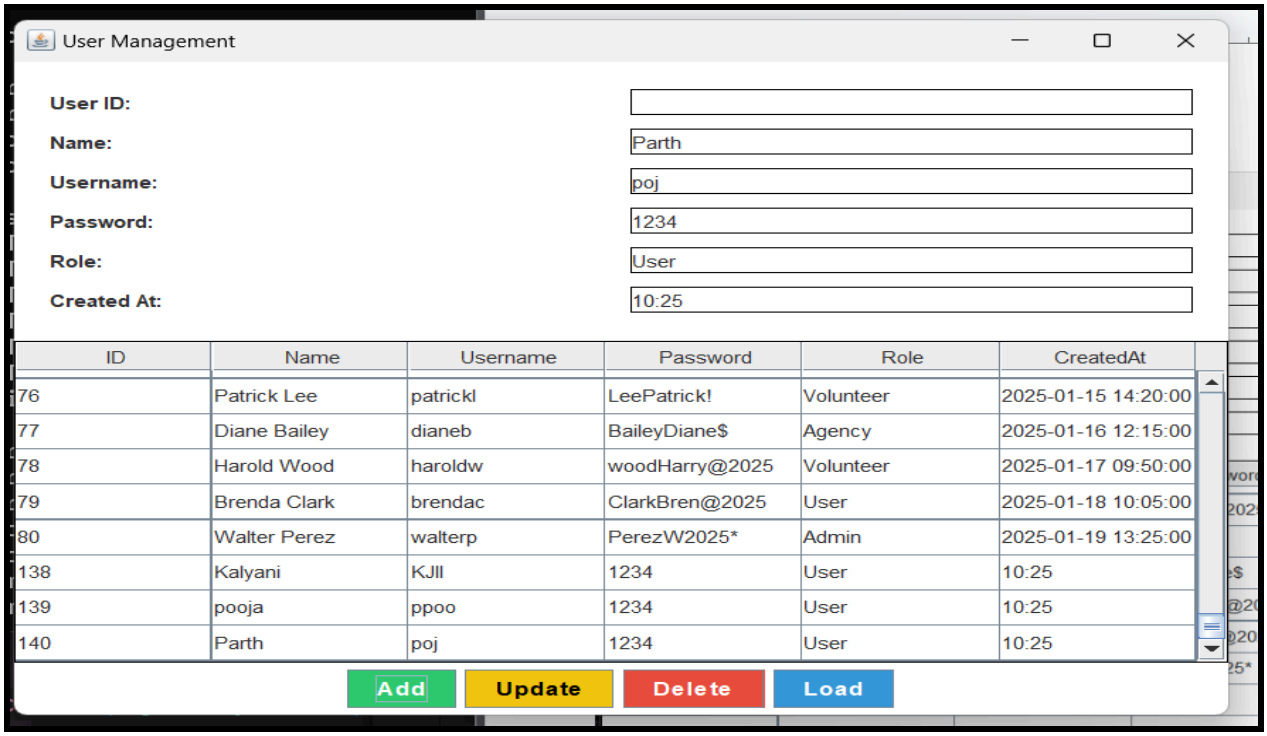
Display :

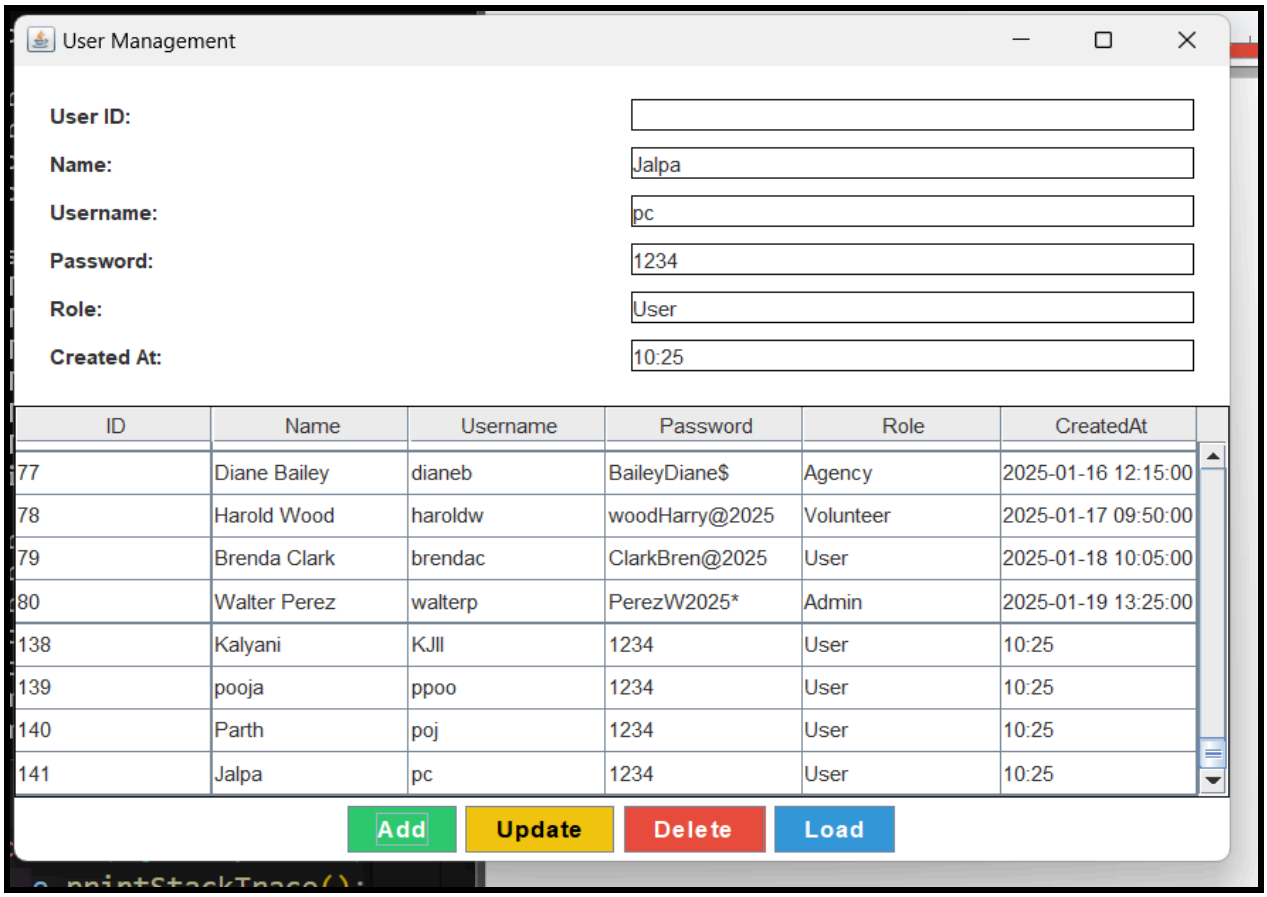

User Management
User ID:
Name:
Username:
Password:
Role:
Created At:
ID
Name
Username
Password
Role
CreatedAt
139 pooja ppoo 1234 User 10:25
140 Parth poj 1234 User 10:25
141 Jalpa pc 1234 User 10:25
142 Sanjay PC2 1234 User 10:25
9 Sanjay PC5 1234 User 10:25
10 Princy k123 1234 Admin 10:25
6 vishva vk89 1234 Admin 10:25
66 Kajal 89kj 1234 User 10:25:90
Add
Update
Delete
Load
Password:
1234

Insert


User Management
User ID:
138
Name:
Kalyani
Username:
KJll
Password:
1234
Role:
User
Created At:
10:25
ID
Name
Username
Password
Role
CreatedAt
74
Raymond Barnes
raymondb
BarnesRay!
Volunteer
2025-01-13 10:55:00
75
Carolyn Harris
carolynh
HarrisCaro2025
Admin
2025-01-14 11:30:00
76
Patrick Lee
patrickl
LeePatrick!
Volunteer
2025-01-15 14:20:00
77
Diane Bailey
dianeb
BaileyDiane$
Agency
2025-01-16 12:15:00
78
Harold Wood
haroldw
woodHarry@2025
Volunteer
2025-01-17 09:50:00
79
Brenda Clark
brendac
ClarkBren@2025
User
2025-01-18 10:05:00
80
Walter Perez
walterp
PerezW2025*
Admin
2025-01-19 13:25:00
138
Kalyani
KJll
1234
User
10:25
Add
Update
Delete
Load


User Management
User ID:
138
Name:
pooja
Username:
ppoo
Password:
1234
Role:
User
Created At:
10:25
ID
Name
Username
Password
Role
CreatedAt
75
Carolyn Harris
carolynh
HarrisCaro2025
Admin
2025-01-14 11:30:00
76
Patrick Lee
patrickl
LeePatrick!
Volunteer
2025-01-15 14:20:00
77
Diane Bailey
dianeb
BaileyDiane$
Agency
2025-01-16 12:15:00
78
Harold Wood
haroldw
woodHarry@2025
Volunteer
2025-01-17 09:50:00
79
Brenda Clark
brendac
ClarkBren@2025
User
2025-01-18 10:05:00
80
Walter Perez
walterp
PerezW2025*
Admin
2025-01-19 13:25:00
138
Kalyani
KJll
1234
User
10:25
139
pooja
ppoo
1234
User
10:25
Add
Update
Delete
Load


User Management
User ID:
Name:
Parth
Username:
poj
Password:
1234
Role:
User
Created At:
10:25
ID | Name | Username | Password | Role | CreatedAt
76 | Patrick Lee | patrickl | LeePatrick! | Volunteer | 2025-01-15 14:20:00
77 | Diane Bailey | dianeb | BaileyDiane$ | Agency | 2025-01-16 12:15:00
78 | Harold Wood | haroldw | woodHarry@2025 | Volunteer | 2025-01-17 09:50:00
79 | Brenda Clark | brendac | ClarkBren@2025 | User | 2025-01-18 10:05:00
80 | Walter Perez | walterp | PerezW2025* | Admin | 2025-01-19 13:25:00
138 | Kalyani | KJll | 1234 | User | 10:25
139 | pooja | ppoo | 1234 | User | 10:25
140 | Parth | poj | 1234 | User | 10:25
Add
Update
Delete
Load


User Management
User ID:
Name:
Jalpa
Username:
pc
Password:
1234
Role:
User
Created At:
10:25
ID | Name | Username | Password | Role | CreatedAt
77 | Diane Bailey | dianeb | BaileyDiane$ | Agency | 2025-01-16 12:15:00
78 | Harold Wood | haroldw | woodHarry@2025 | Volunteer | 2025-01-17 09:50:00
79 | Brenda Clark | brendac | ClarkBren@2025 | User | 2025-01-18 10:05:00
80 | Walter Perez | walterp | PerezW2025* | Admin | 2025-01-19 13:25:00
138 | Kalyani | KJll | 1234 | User | 10:25
139 | pooja | ppoo | 1234 | User | 10:25
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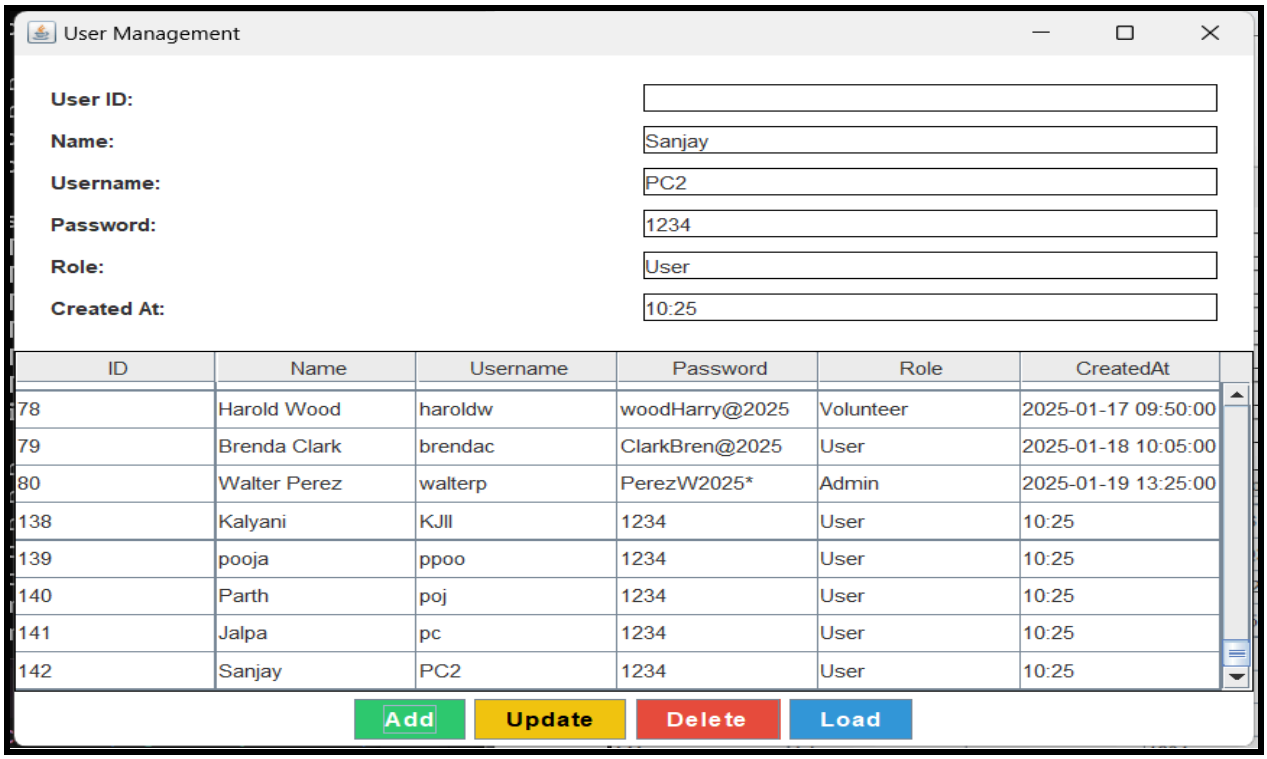
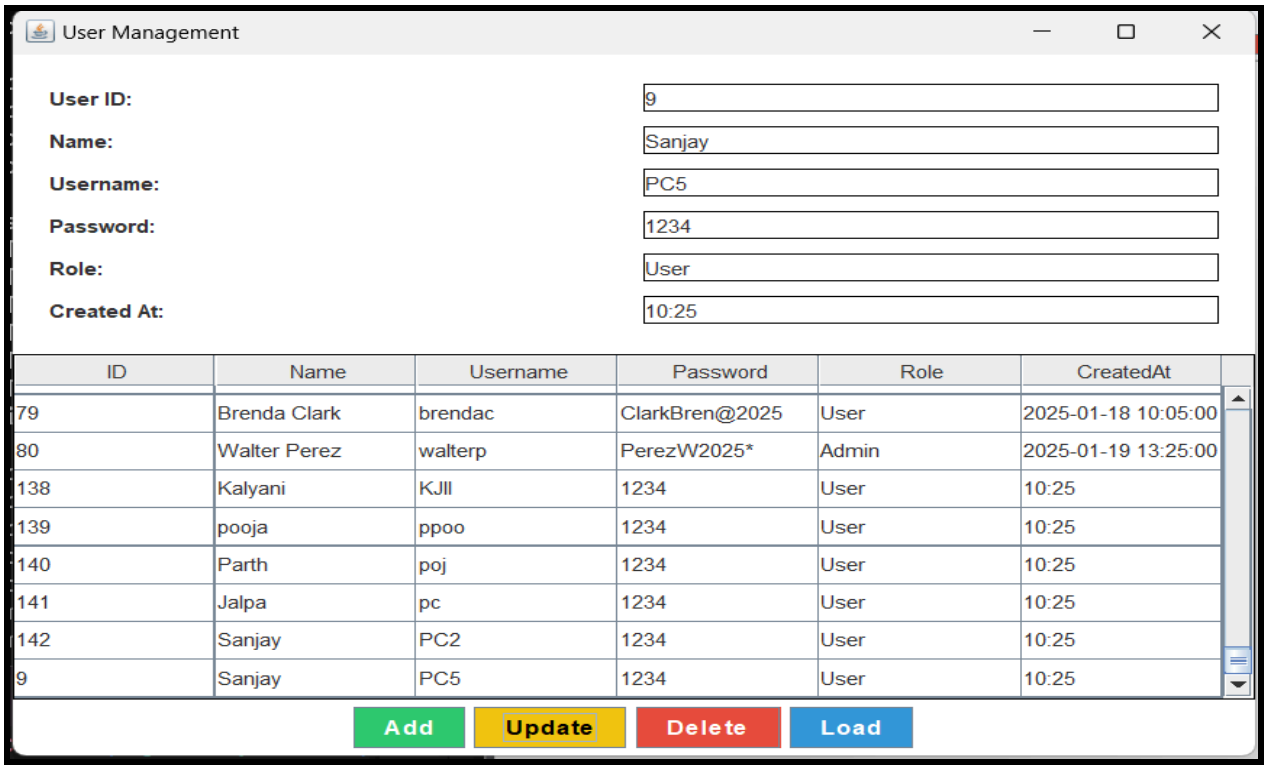
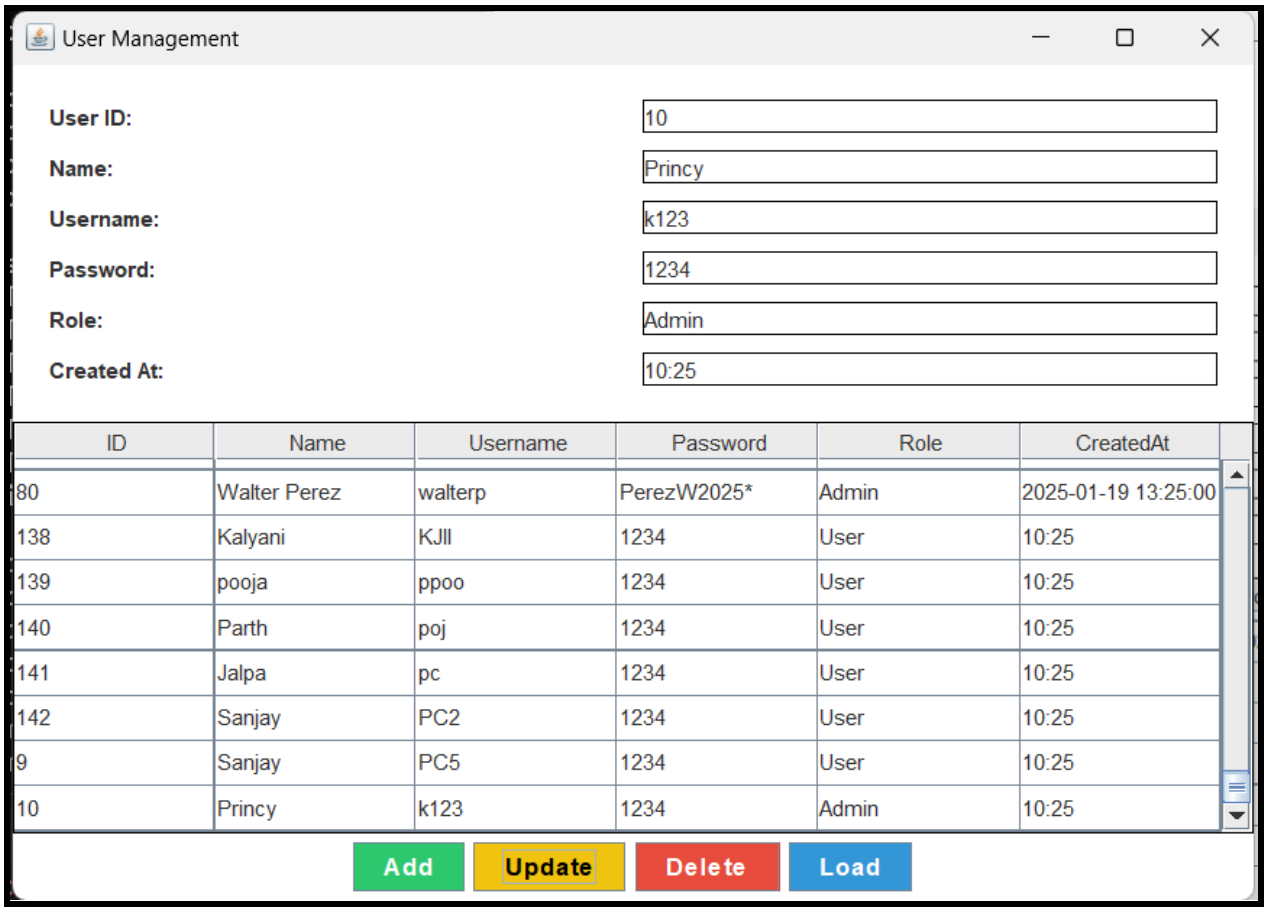
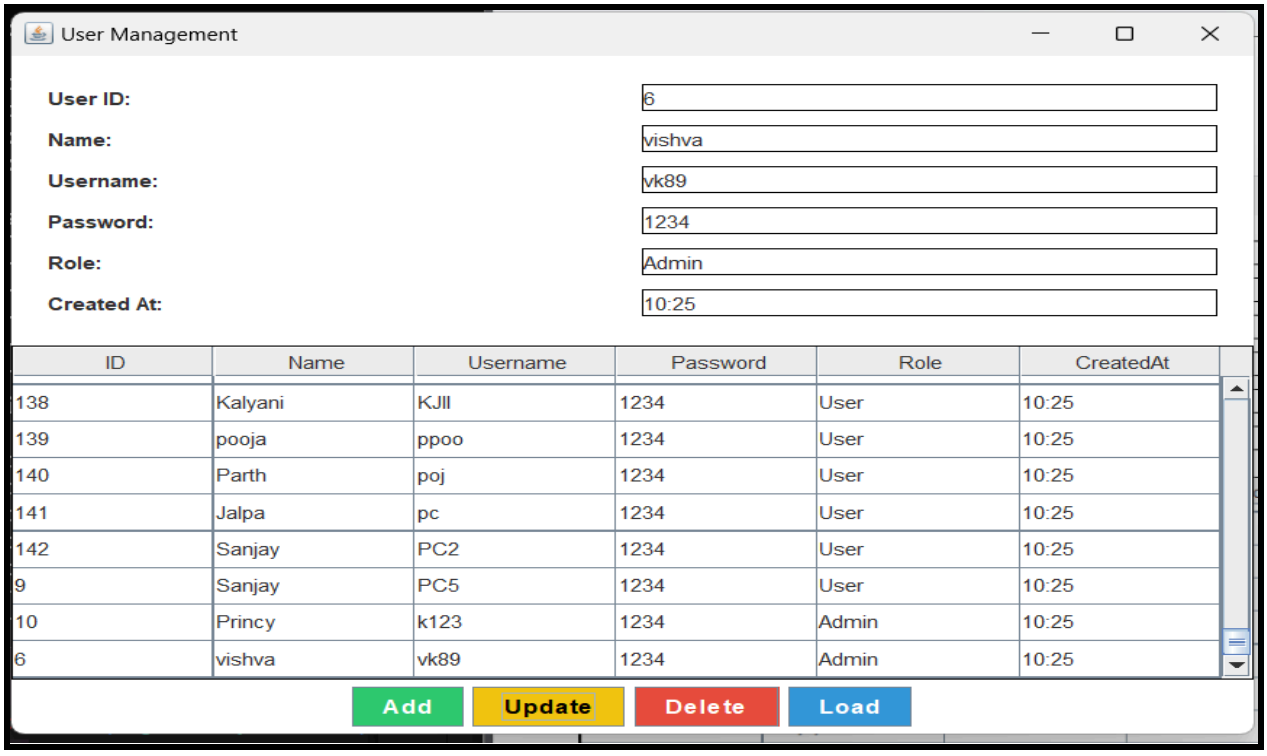
Add
Update
Delete
Load

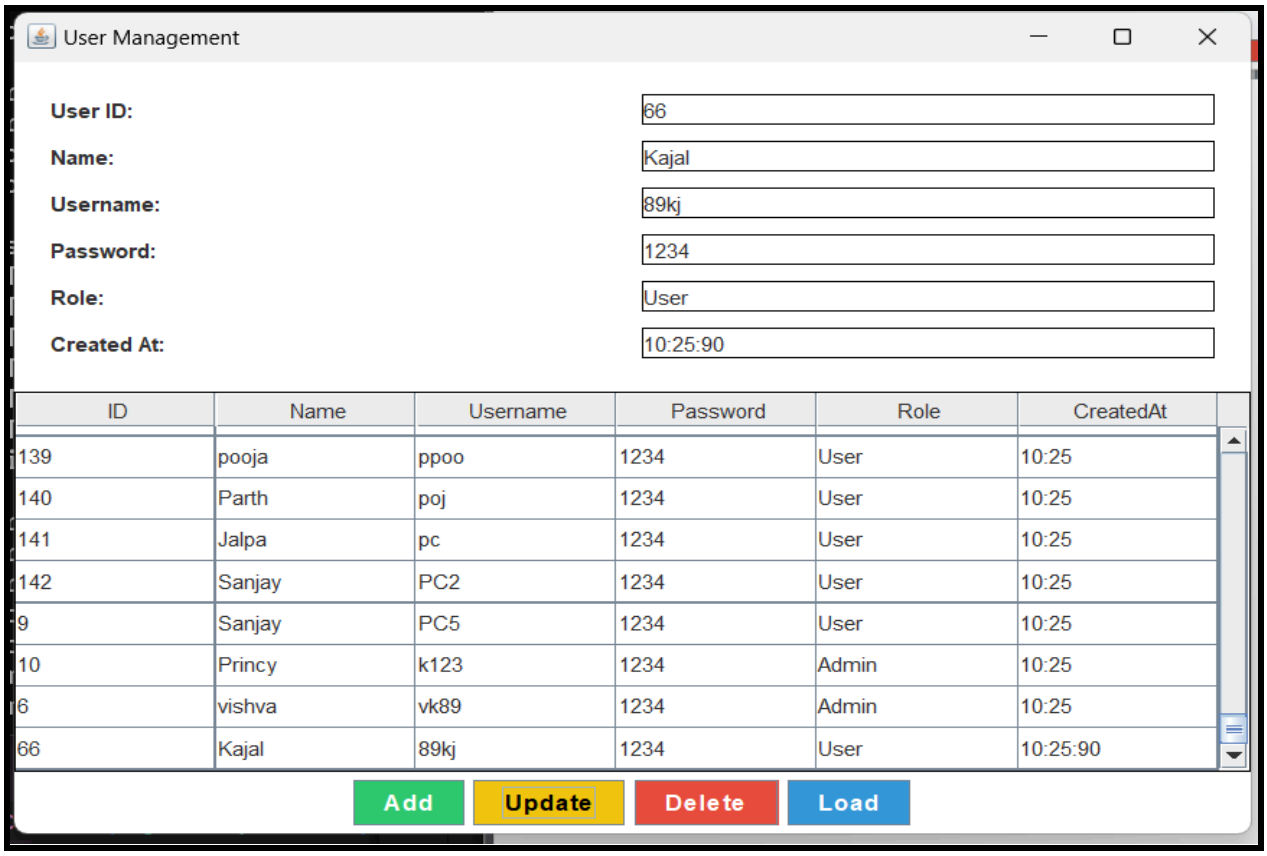

User Management
User ID:
Name:
Sanjay
Username:
PC2
Password:
1234
Role:
User
Created At:
10:25
ID Name Username Password Role CreatedAt
78 Harold Wood haroldw woodHarry@2025 Volunteer 2025-01-17 09:50:00
79 Brenda Clark brendac ClarkBren@2025 User 2025-01-18 10:05:00
80 Walter Perez walterp PerezW2025* Admin 2025-01-19 13:25:00
138 Kalyani KJll 1234 User 10:25
139 pooja ppoo 1234 User 10:25
140 Parth poj 1234 User 10:25
141 Jalpa pc 1234 User 10:25
142 Sanjay PC2 1234 User 10:25
Add
Update
Delete
Load

Update :


User Management
User ID:
9
Name:
Sanjay
Username:
PC5
Password:
1234
Role:
User
Created At:
10:25
ID Name Username Password Role CreatedAt
79 Brenda Clark brendac ClarkBren@2025 User 2025-01-18 10:05:00
80 Walter Perez walterp PerezW2025* Admin 2025-01-19 13:25:00
138 Kalyani KJll 1234 User 10:25
139 pooja ppoo 1234 User 10:25
140 Parth poj 1234 User 10:25
141 Jalpa pc 1234 User 10:25
142 Sanjay PC2 1234 User 10:25
9 Sanjay PC5 1234 User 10:25
Add
Update
Delete
Load


User Management
User ID:
10
Name:
Princy
Username:
k123
Password:
1234
Role:
Admin
Created At:
10:25
ID
Name
Username
Password
Role
CreatedAt
80
Walter Perez
walterp
PerezW2025*
Admin
2025-01-19 13:25:00
138
Kalyani
KJll
1234
User
10:25
139
pooja
ppoo
1234
User
10:25
140
Parth
poj
1234
User
10:25
141
Jalpa
pc
1234
User
10:25
142
Sanjay
PC2
1234
User
10:25
9
Sanjay
PC5
1234
User
10:25
10
Princy
k123
1234
Admin
10:25
Add
Update
Delete
Load


User Management
User ID:
6
Name:
vishva
Username:
vk89
Password:
1234
Role:
Admin
Created At:
10:25
ID
Name
Username
Password
Role
CreatedAt
138
Kalyani
KJll
1234
User
10:25
139
pooja
ppoo
1234
User
10:25
140
Parth
poj
1234
User
10:25
141
Jalpa
pc
1234
User
10:25
142
Sanjay
PC2
1234
User
10:25
9
Sanjay
PC5
1234
User
10:25
10
Princy
k123
1234
Admin
10:25
6
vishva
vk89
1234
Admin
10:25
Add
Update
Delete
Load


User Management
User ID:
66
Name:
Kajal
Username:
89kj
Password:
1234
Role:
User
Created At:
10:25:90
ID
Name
Username
Password
Role
CreatedAt
139
pooja
ppoo
1234
User
10:25
140
Parth
poj
1234
User
10:25
141
Jalpa
pc
1234
User
10:25
142
Sanjay
PC2
1234
User
10:25
9
Sanjay
PC5
1234
User
10:25
10
Princy
k123
1234
Admin
10:25
6
vishva
vk89
1234
Admin
10:25
66
Kajal
89kj
1234
User
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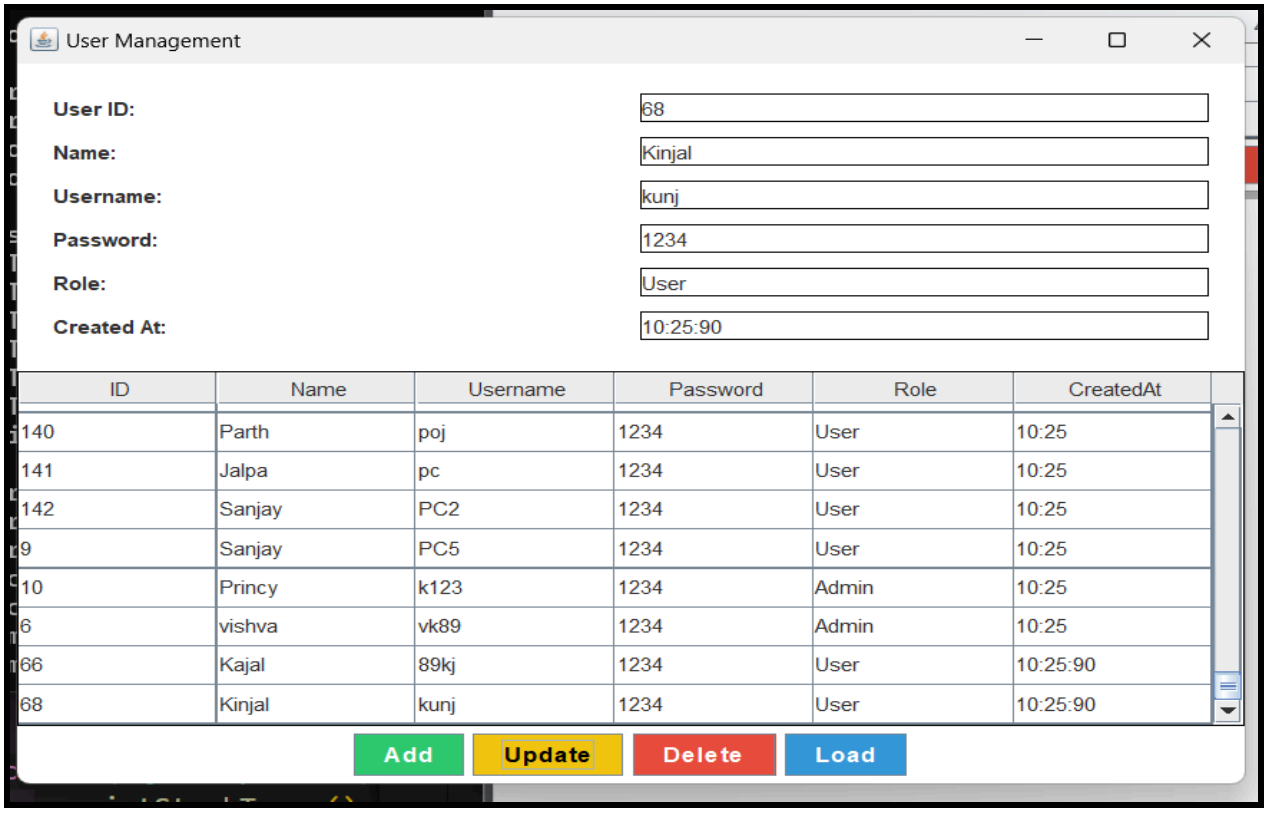
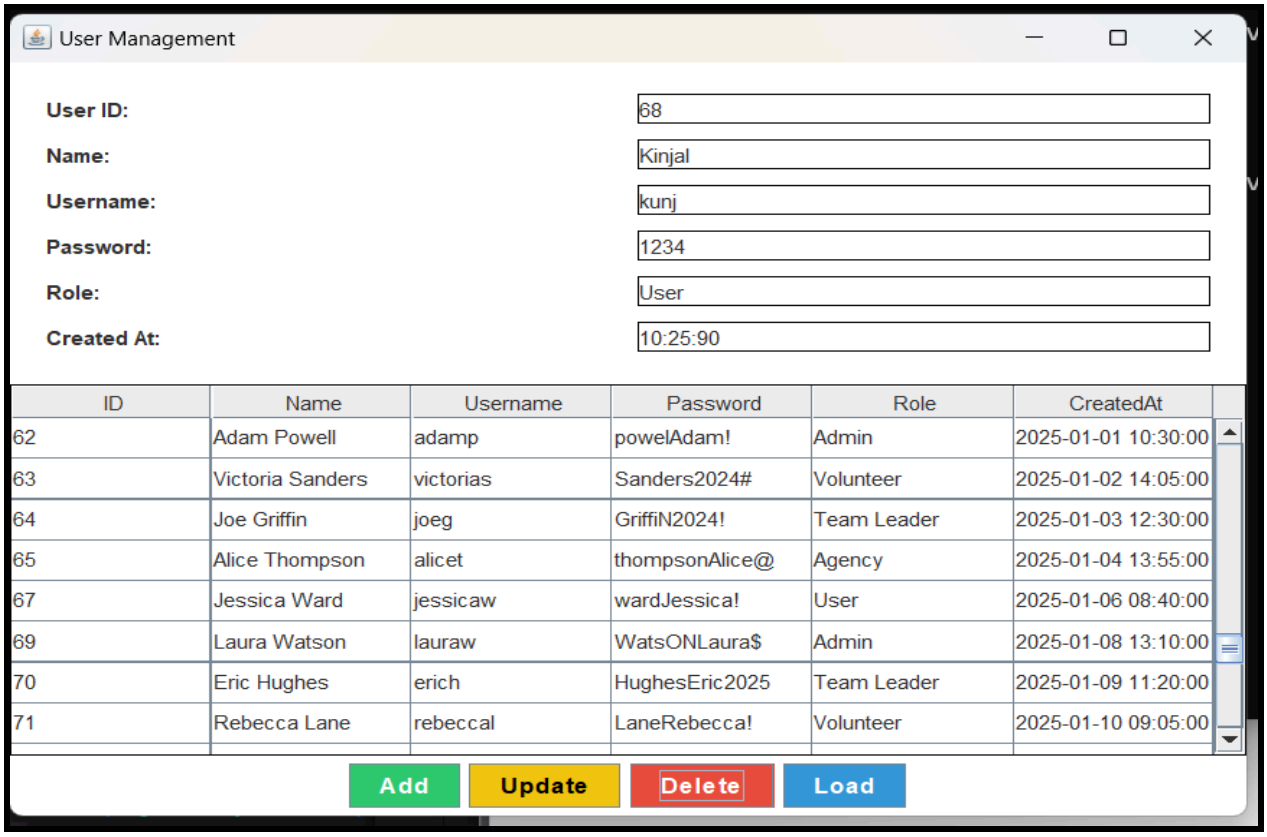
Add
Update
Delete
Load


User Management
User ID:
68
Name:
Kinjal
Username:
kunj
Password:
1234
Role:
User
Created At:
10:25:90
ID
Name
Username
Password
Role
CreatedAt
140
Parth
poj
1234
User
10:25
141
Jalpa
pc
1234
User
10:25
142
Sanjay
PC2
1234
User
10:25
9
Sanjay
PC5
1234
User
10:25
10
Princy
k123
1234
Admin
10:25
6
vishva
vk89
1234
Admin
10:25
66
Kajal
89kj
1234
User
10:25:90
68
Kinjal
kunj
1234
User
10:25:90
Add
Update
Delete
Load

Delete :


User Management
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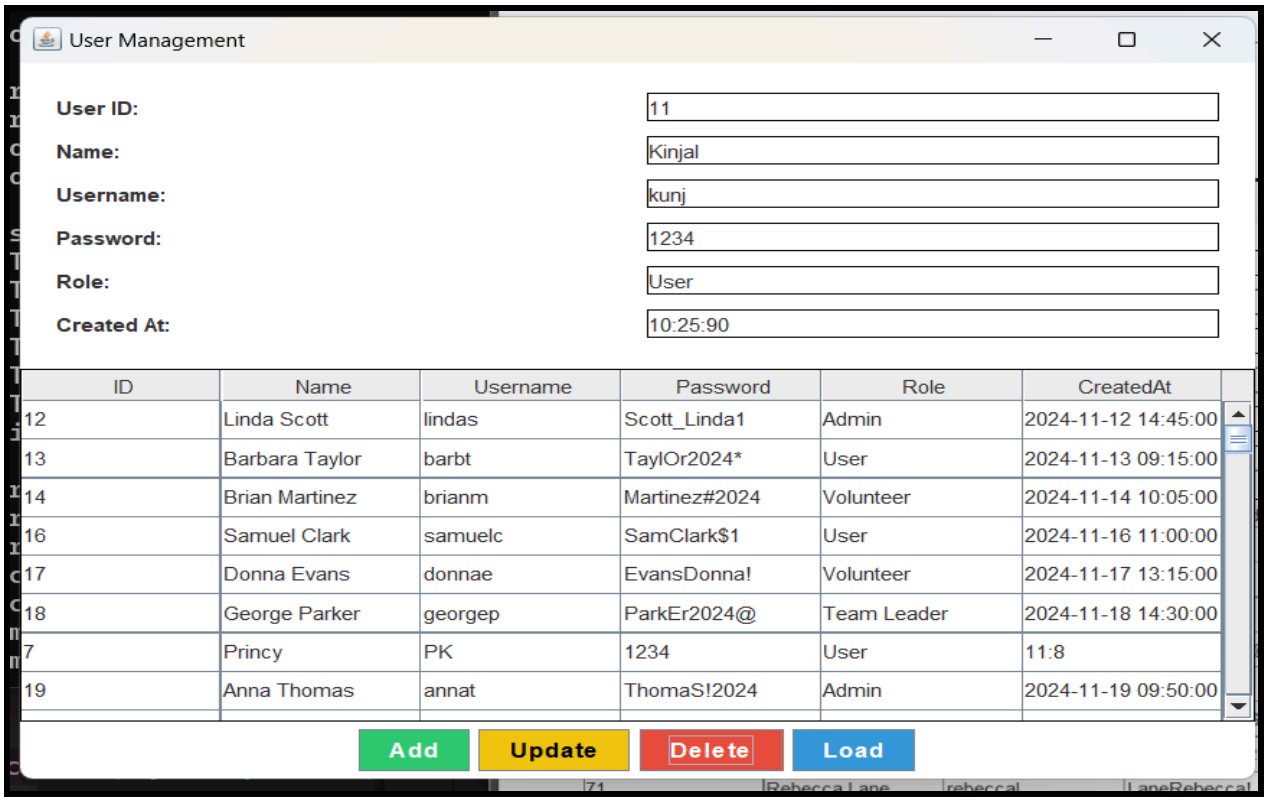
68
Name:
Kinjal
Username:
kunj
Password:
1234
Role:
User
Created At:
10:25:90
ID
Name
Username
Password
Role
CreatedAt
62
Adam Powell
adamp
powelAdam!
Admin
2025-01-01 10:30:00
63
Victoria Sanders
victorias
Sanders2024#
Volunteer
2025-01-02 14:05:00
64
Joe Griffin
joeg
GriffiN2024!
Team Leader
2025-01-03 12:30:00
65
Alice Thompson
alicet
thompsonAlice@
Agency
2025-01-04 13:55:00
67
Jessica Ward
jessicaw
wardJessica!
User
2025-01-06 08:40:00
69
Laura Watson
lauraw
WatsONLaura$
Admin
2025-01-08 13:10:00
70
Eric Hughes
erich
HughesEric2025
Team Leader
2025-01-09 11:20:00
71
Rebecca Lane
rebeccal
LaneRebecca!
Volunteer
2025-01-10 09:05:00
Add
Update
Delete
Load


User Management
User ID:
11
Name:
Kinjal
Username:
kunj
Password:
1234
Role:
User
Created At:
10:25:90
ID
Name
Username
Password
Role
CreatedAt
12
Linda Scott
lindas
Scott_Linda1
Admin
2024-11-12 14:45:00
13
Barbara Taylor
barbt
TaylOr2024*
User
2024-11-13 09:15:00
14
Brian Martinez
brianm
Martinez#2024
Volunteer
2024-11-14 10:05:00
16
Samuel Clark
samuelc
SamClark$1
User
2024-11-16 11:00:00
17
Donna Evans
donnae
EvansDonna!
Volunteer
2024-11-17 13:15:00
18
George Parker
georgep
ParkEr2024@
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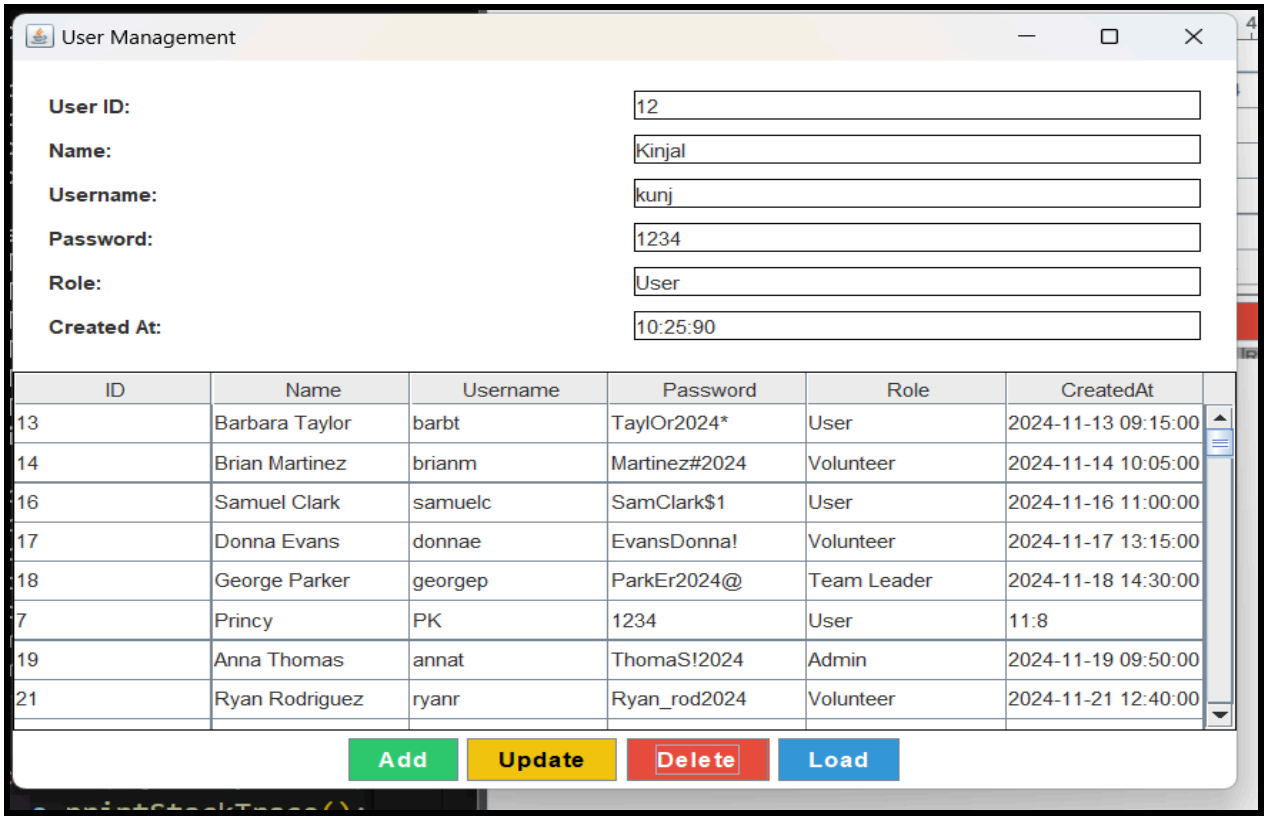
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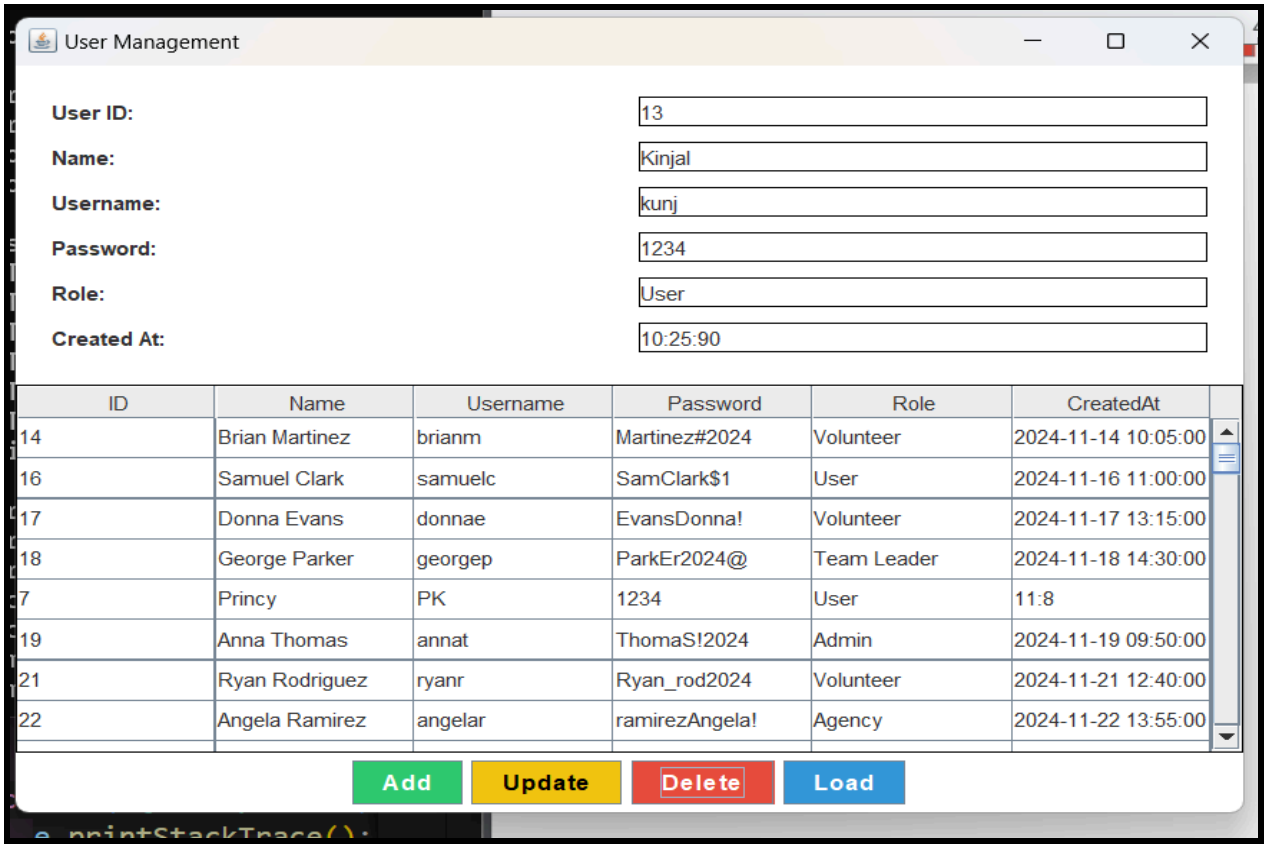
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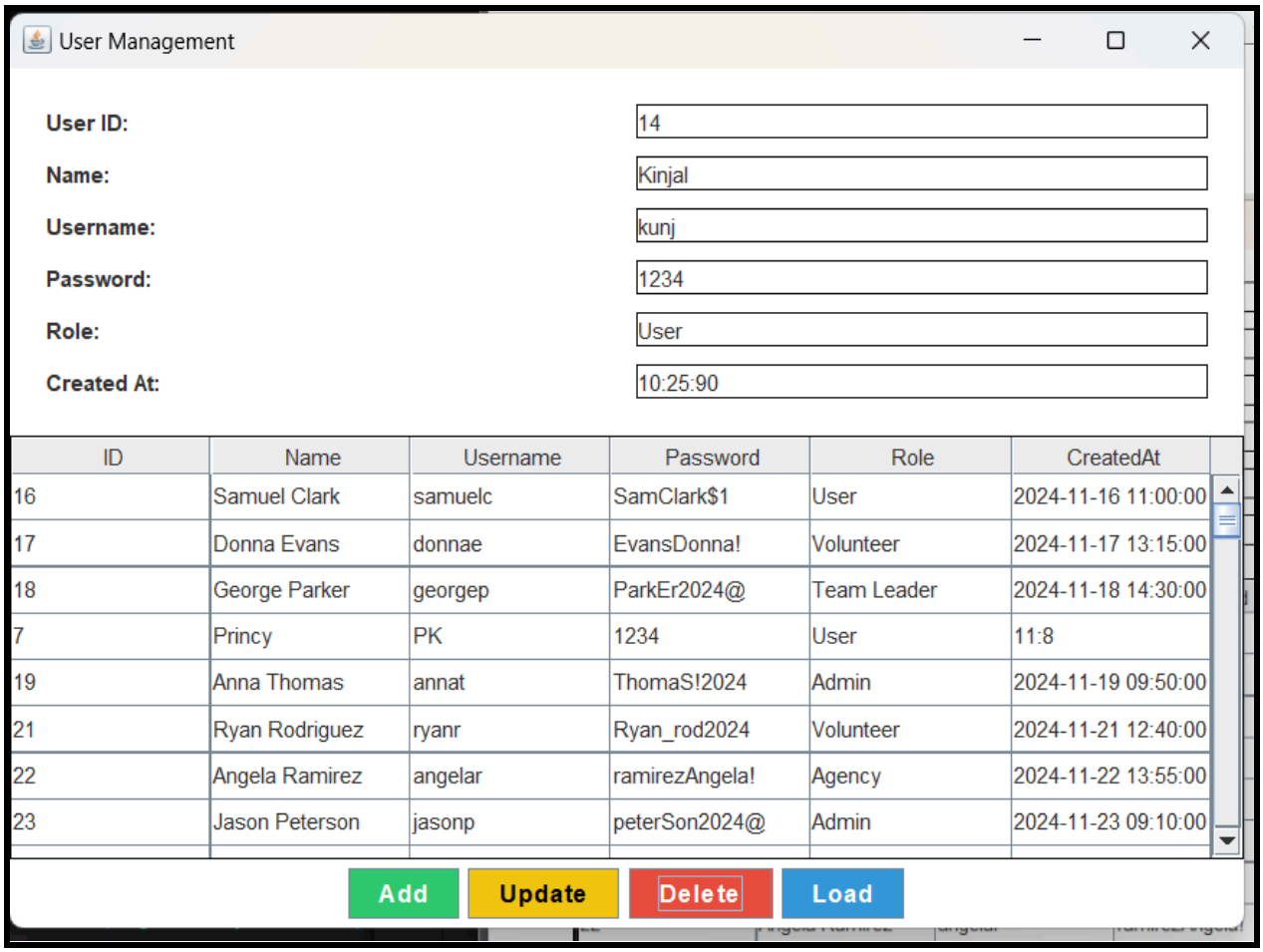
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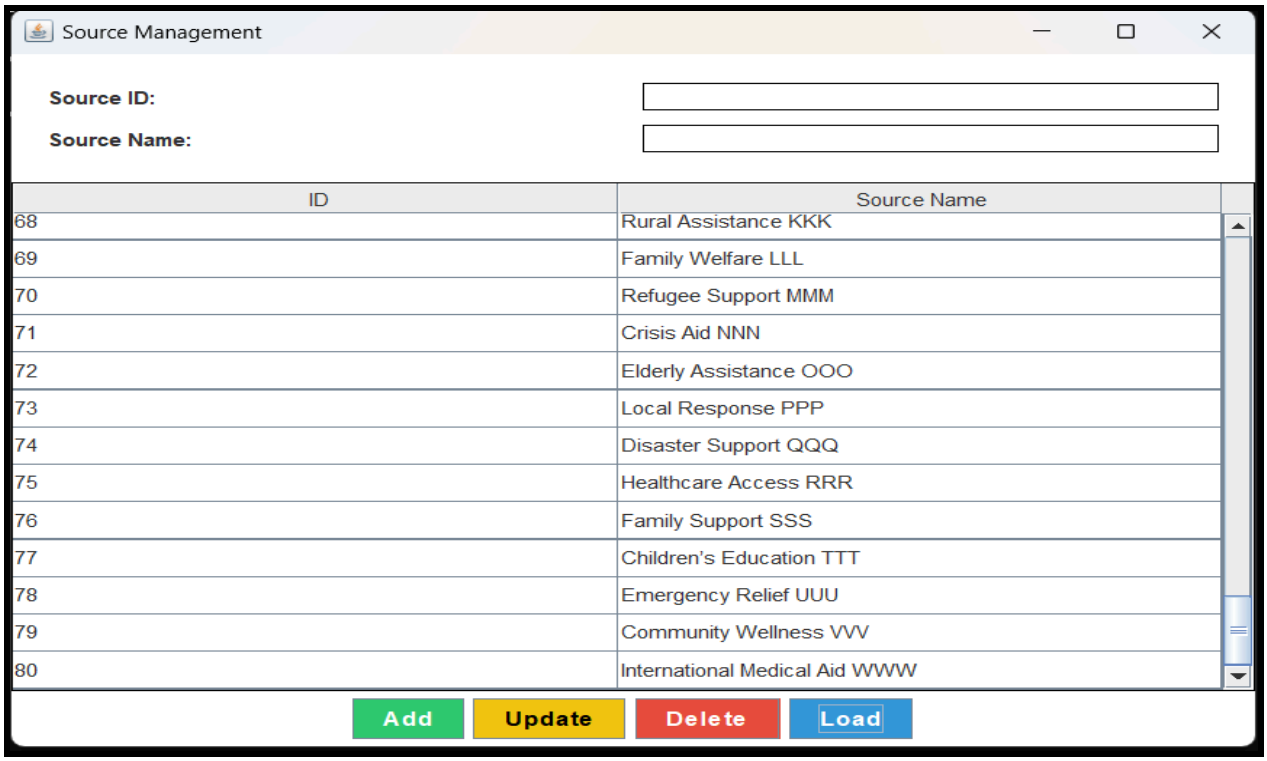

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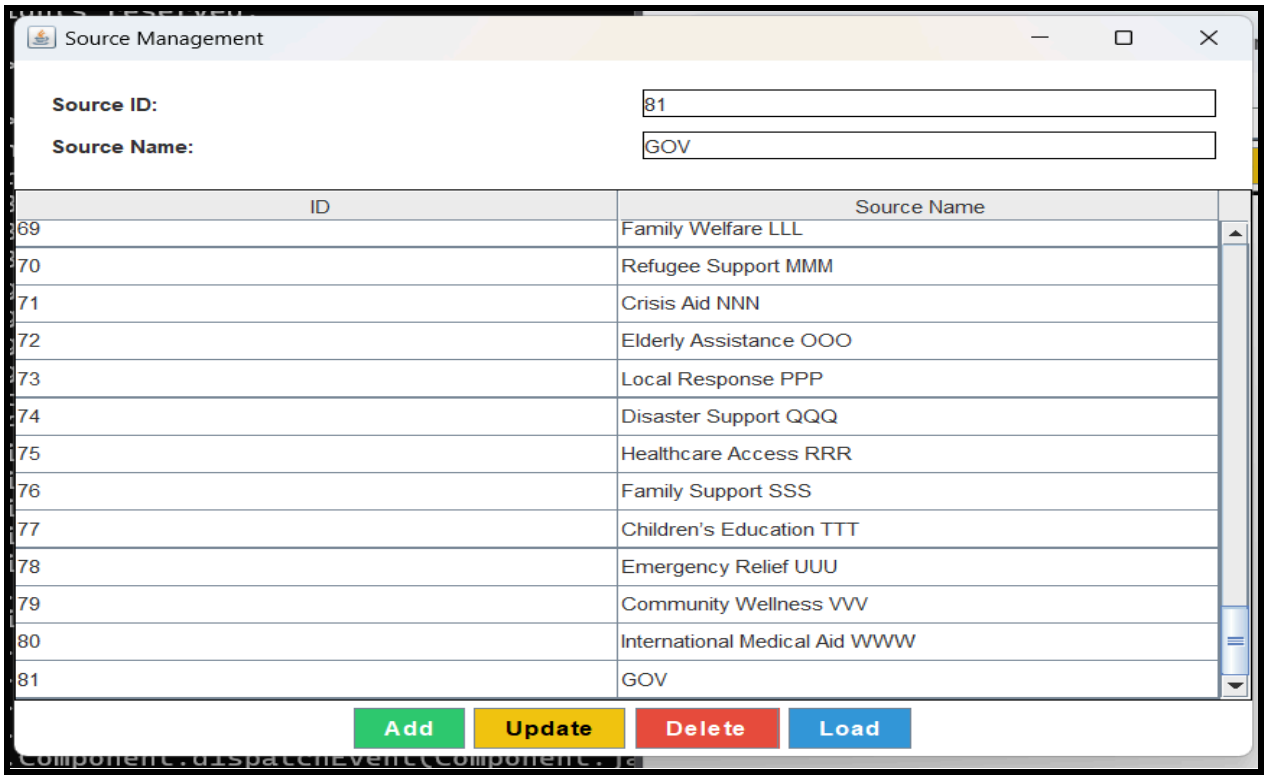
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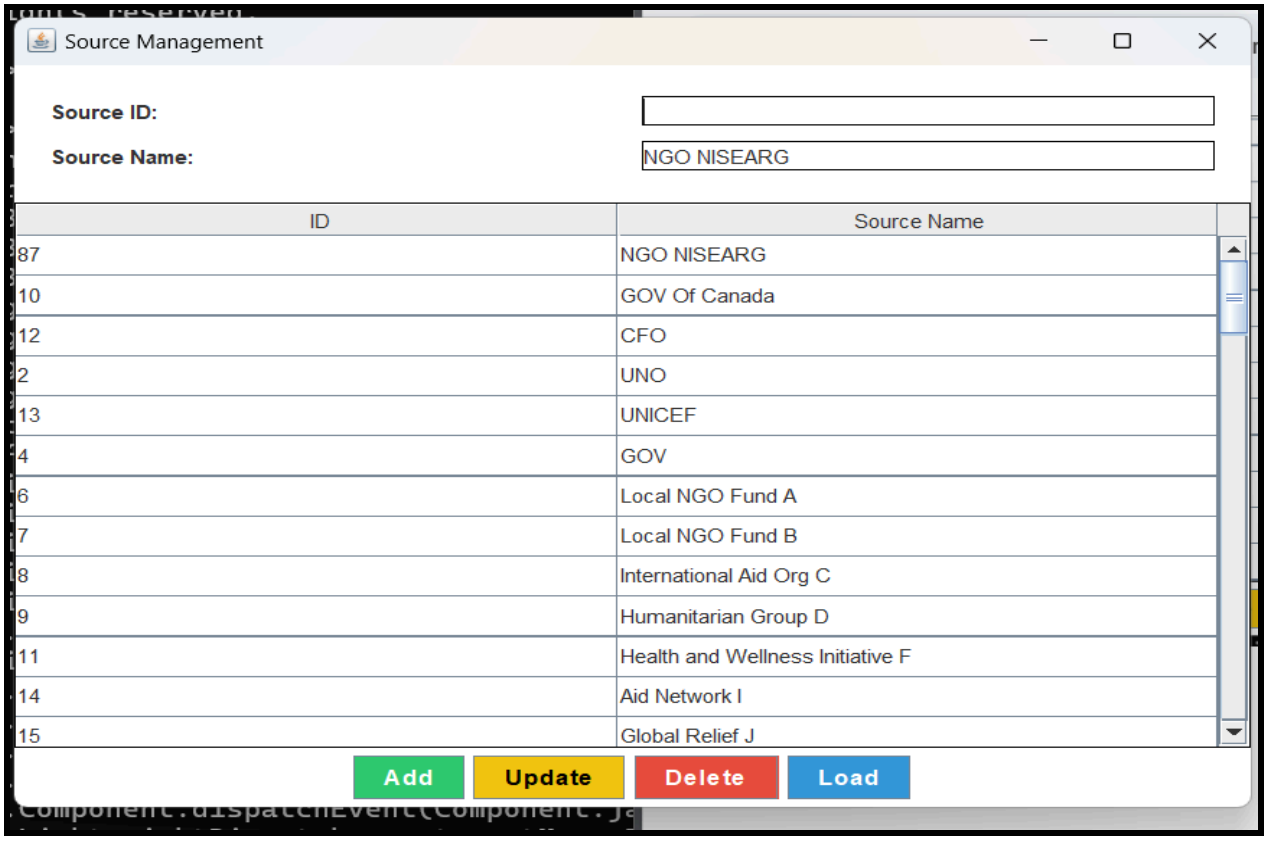
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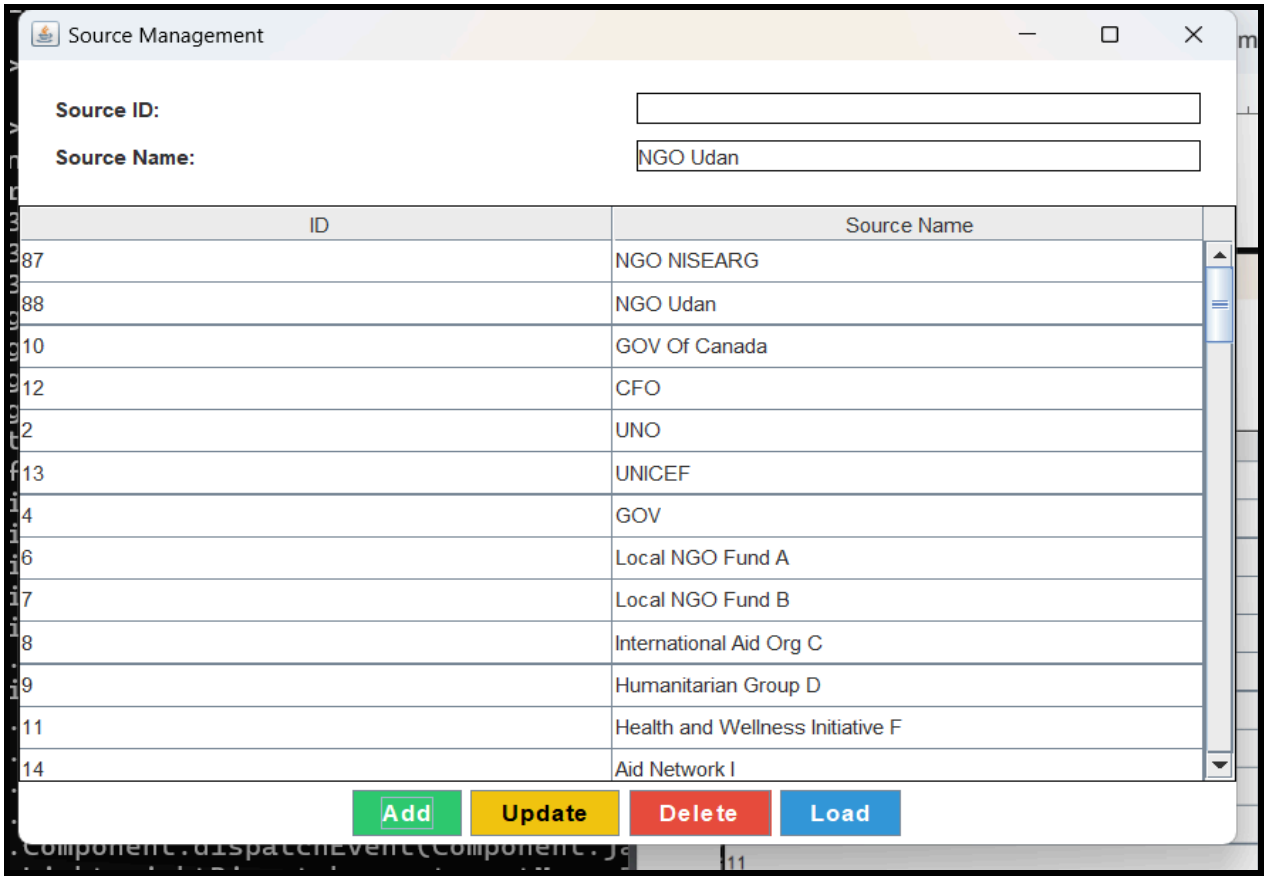
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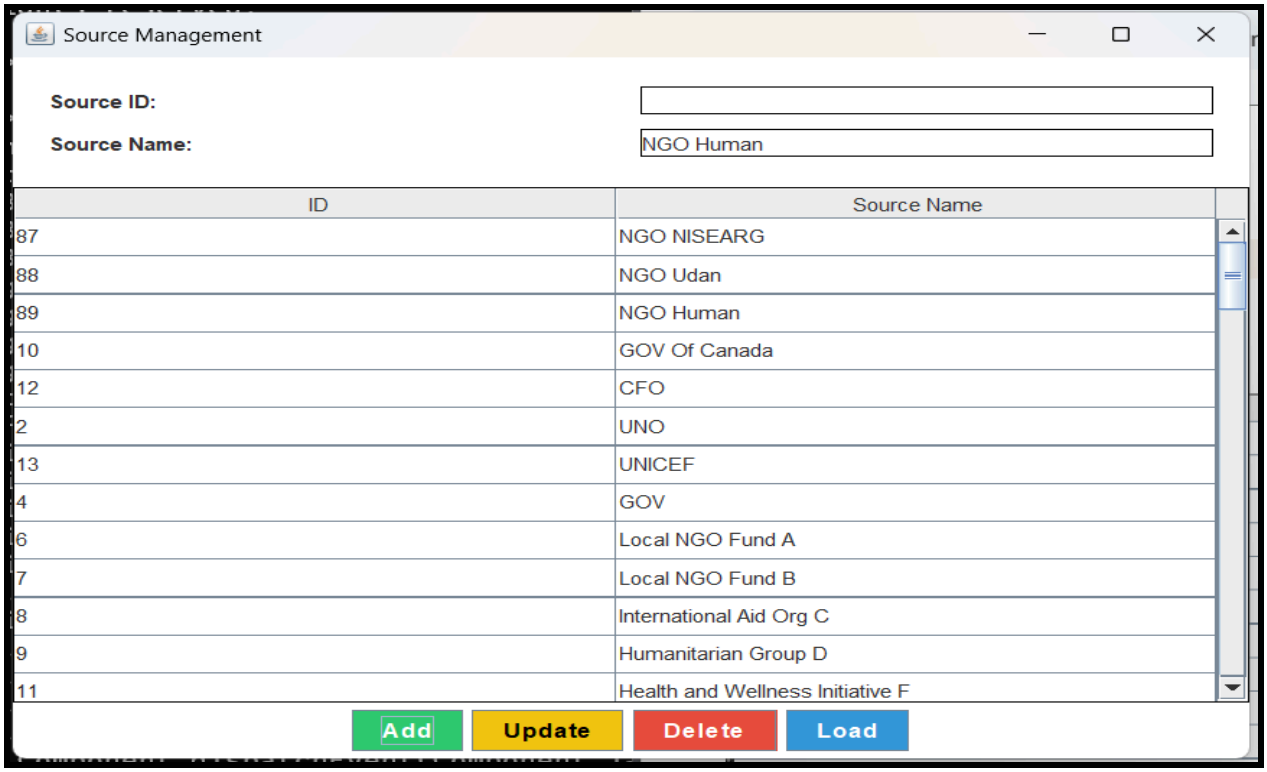
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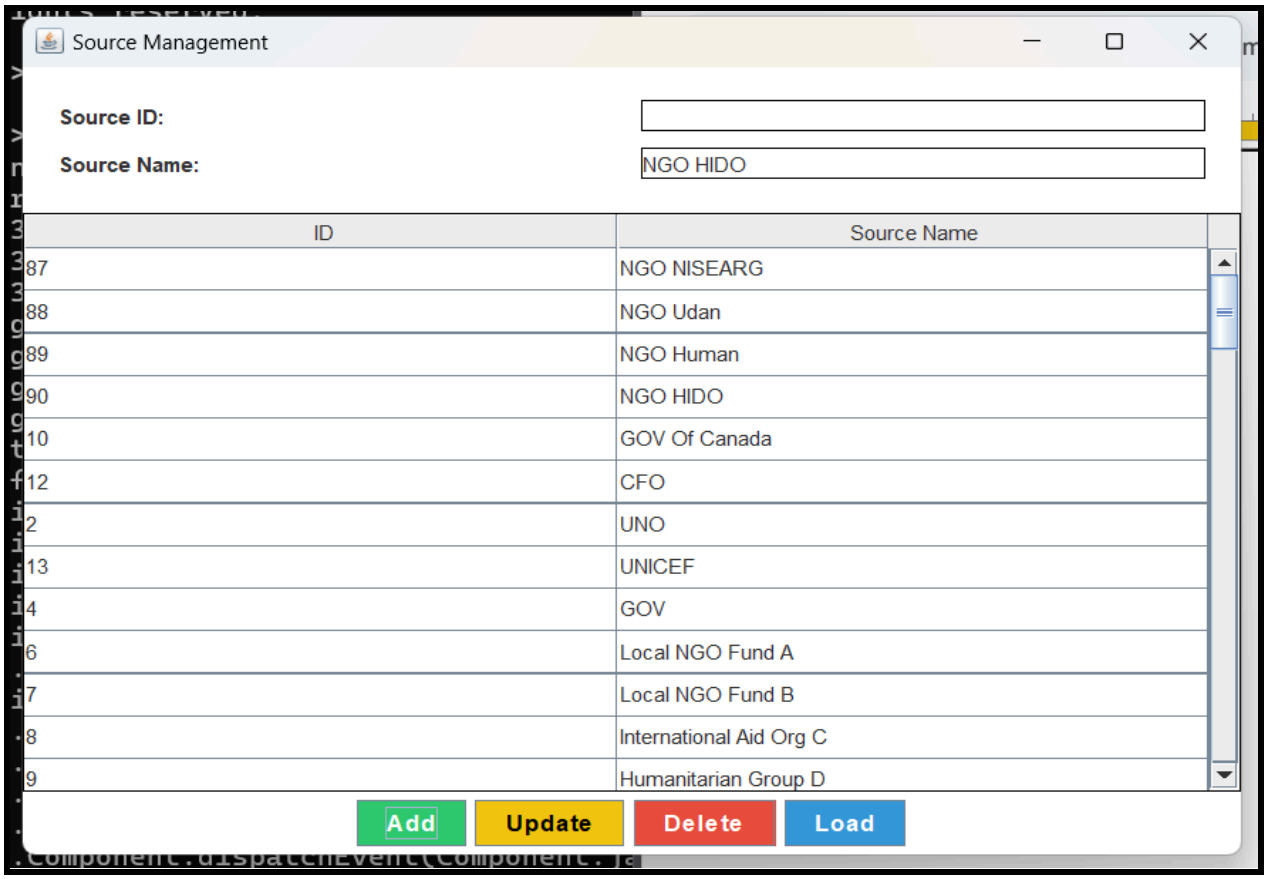
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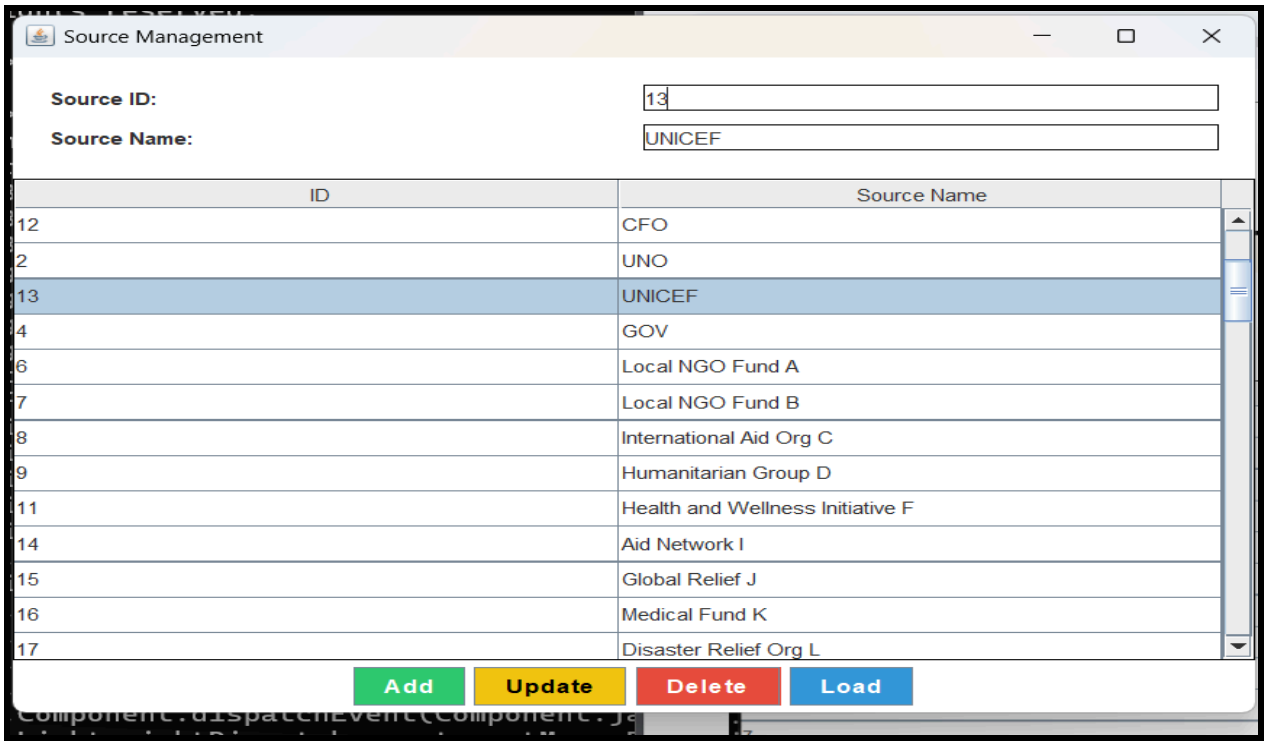
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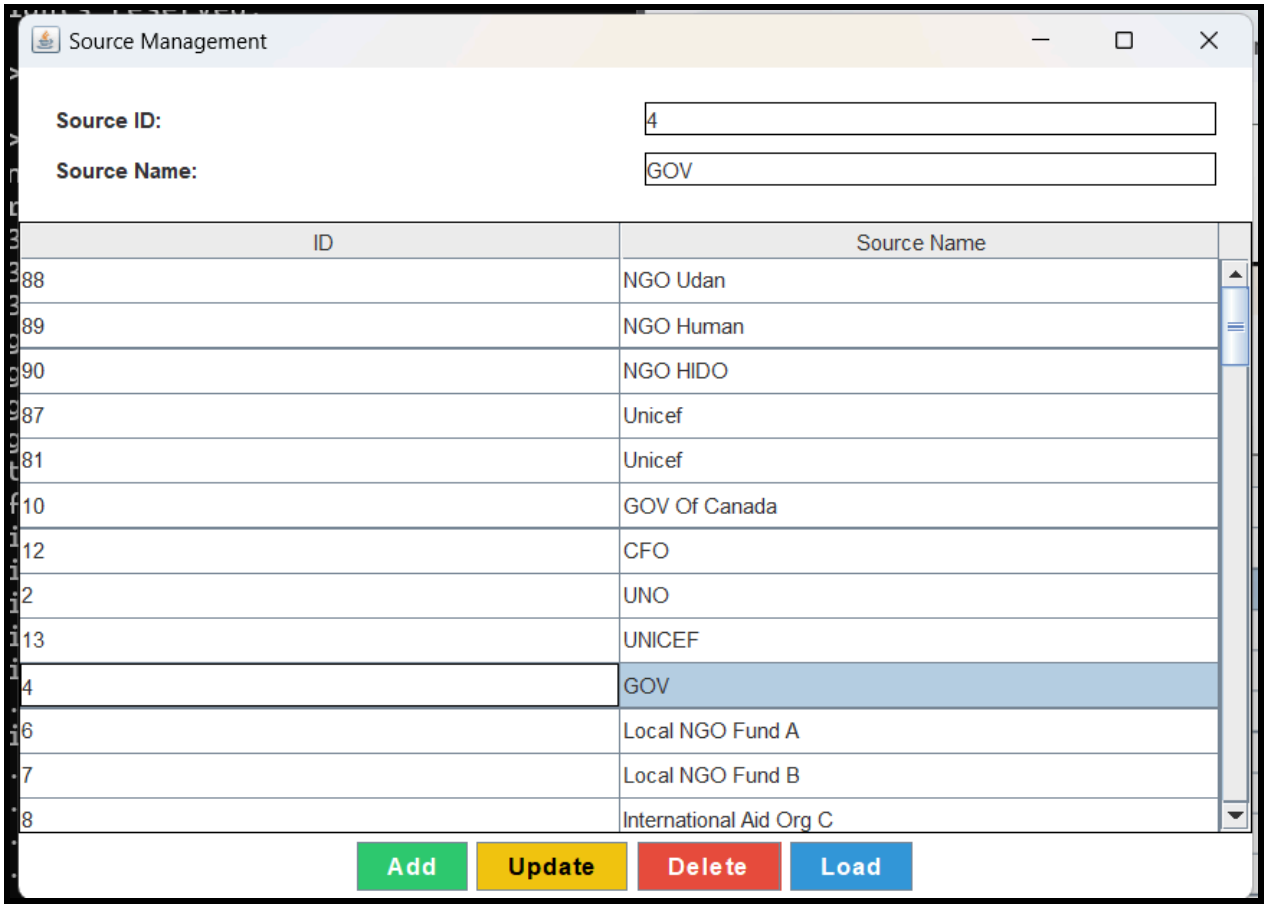
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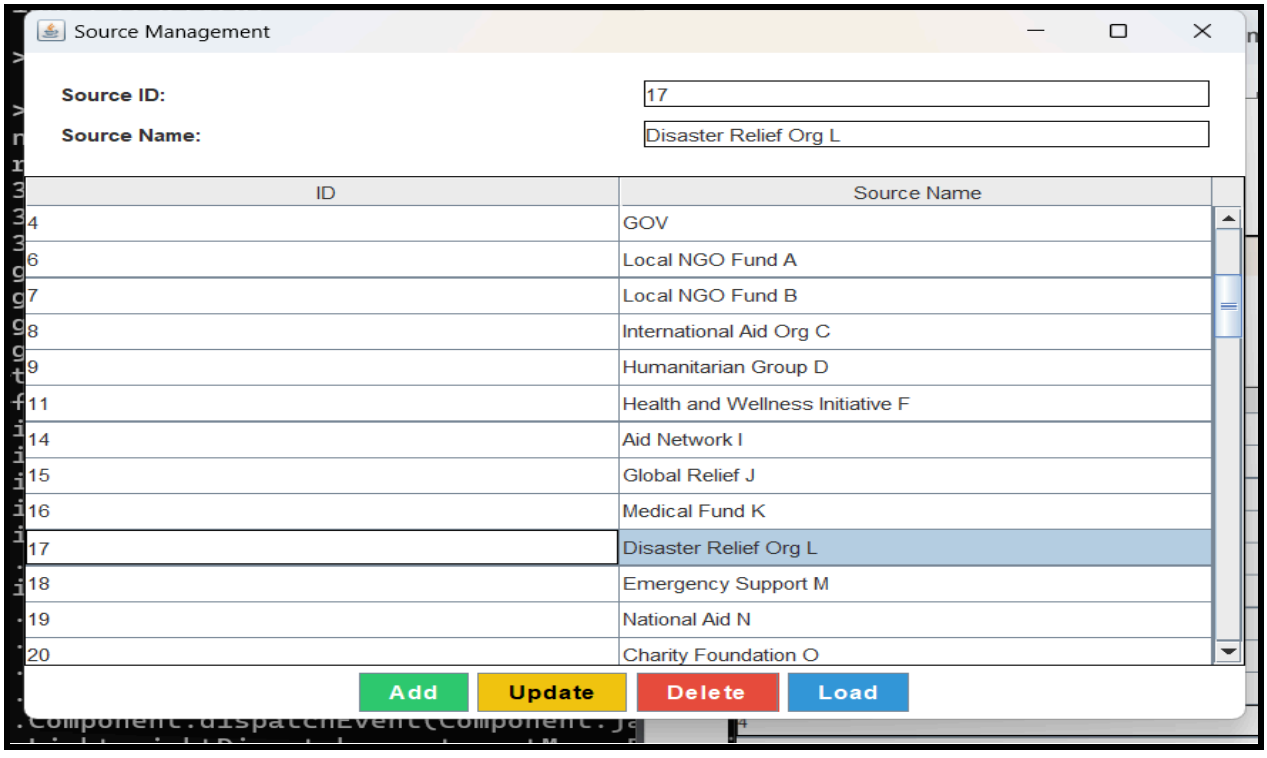
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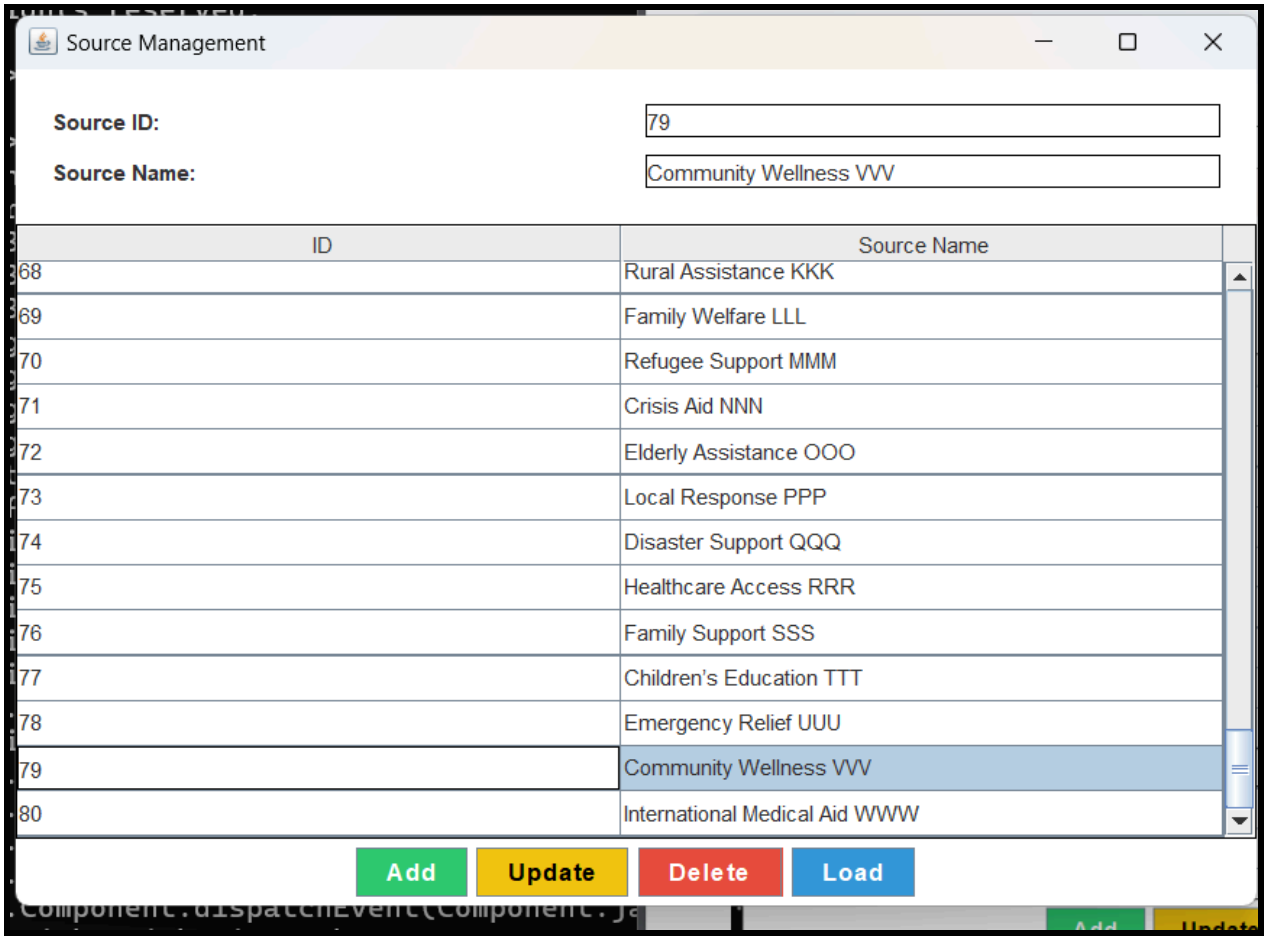
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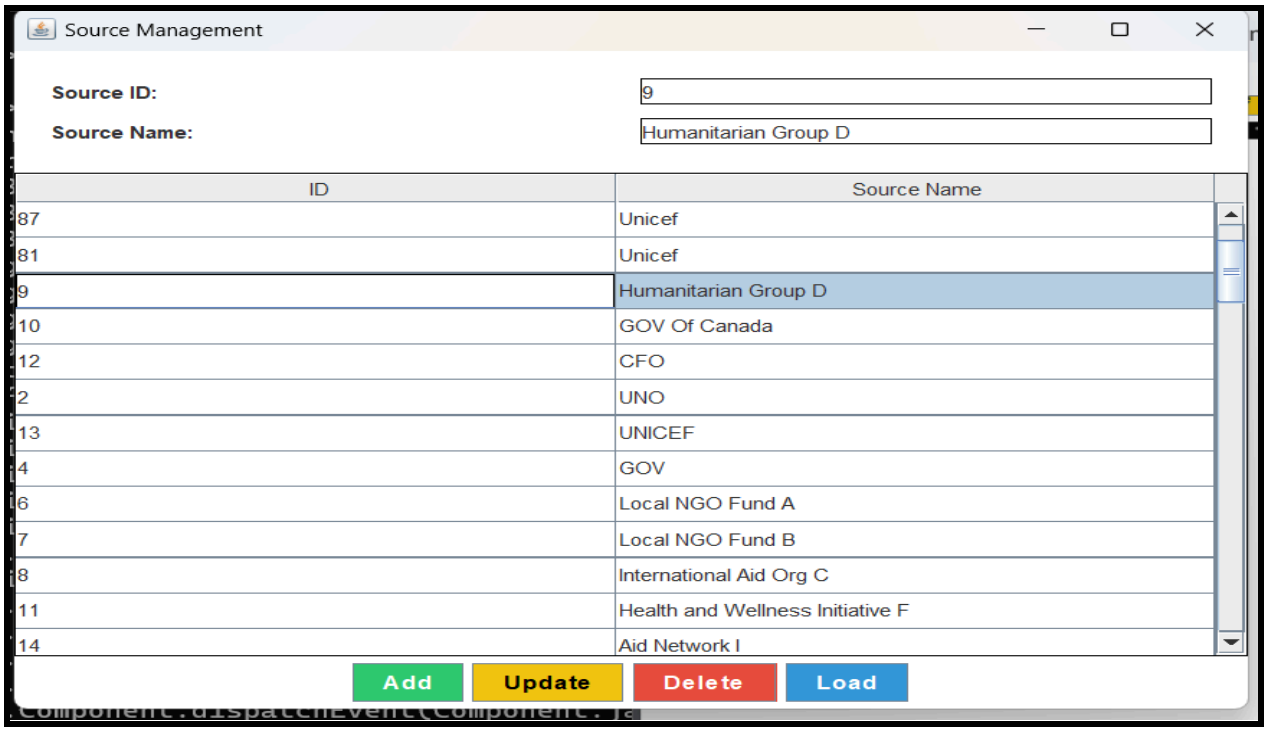
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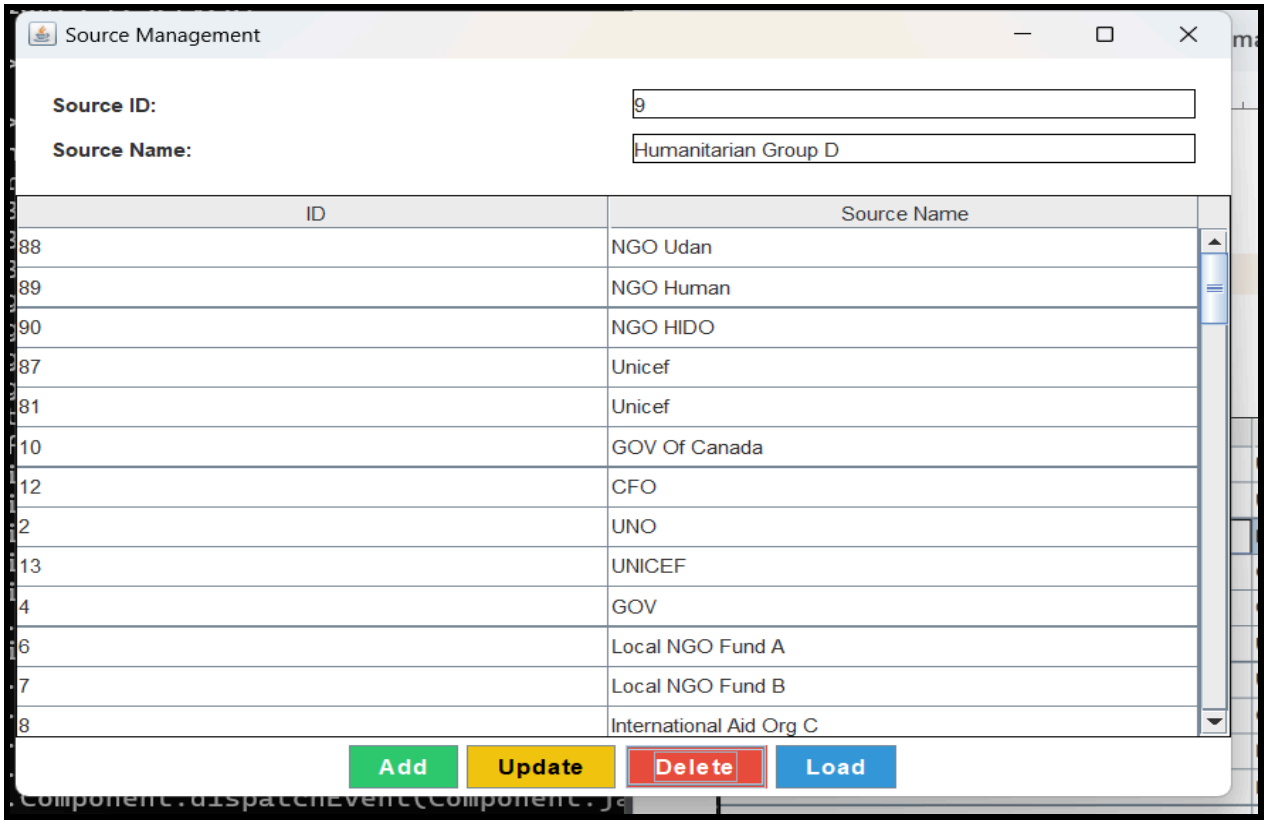
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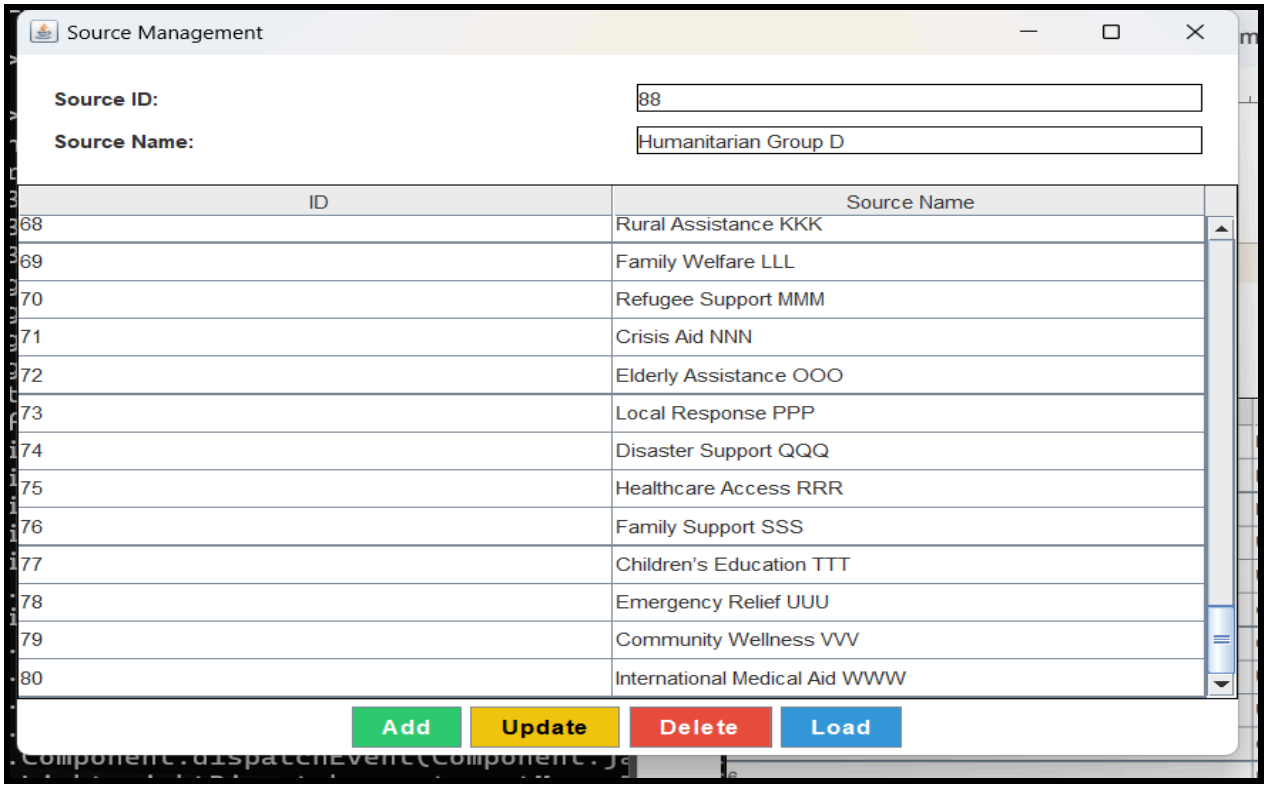
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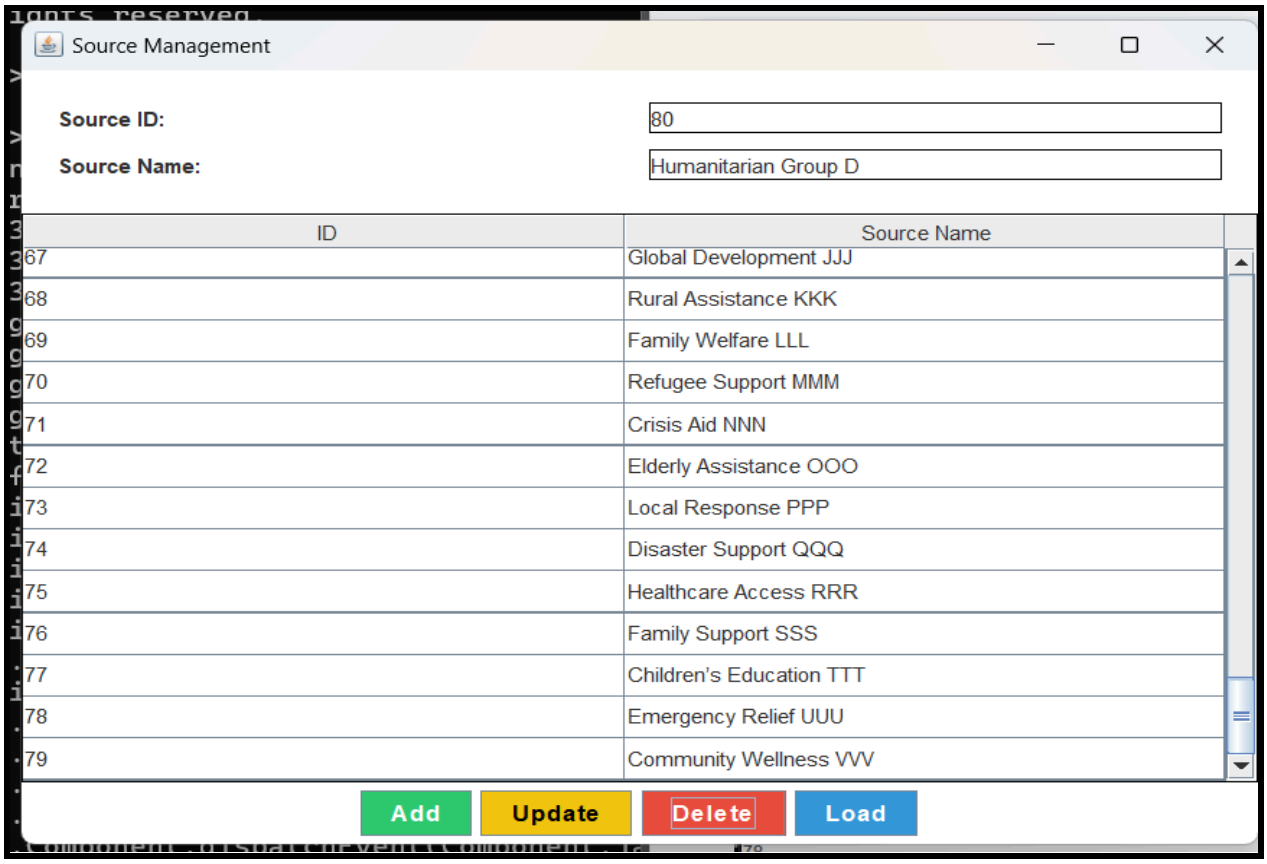
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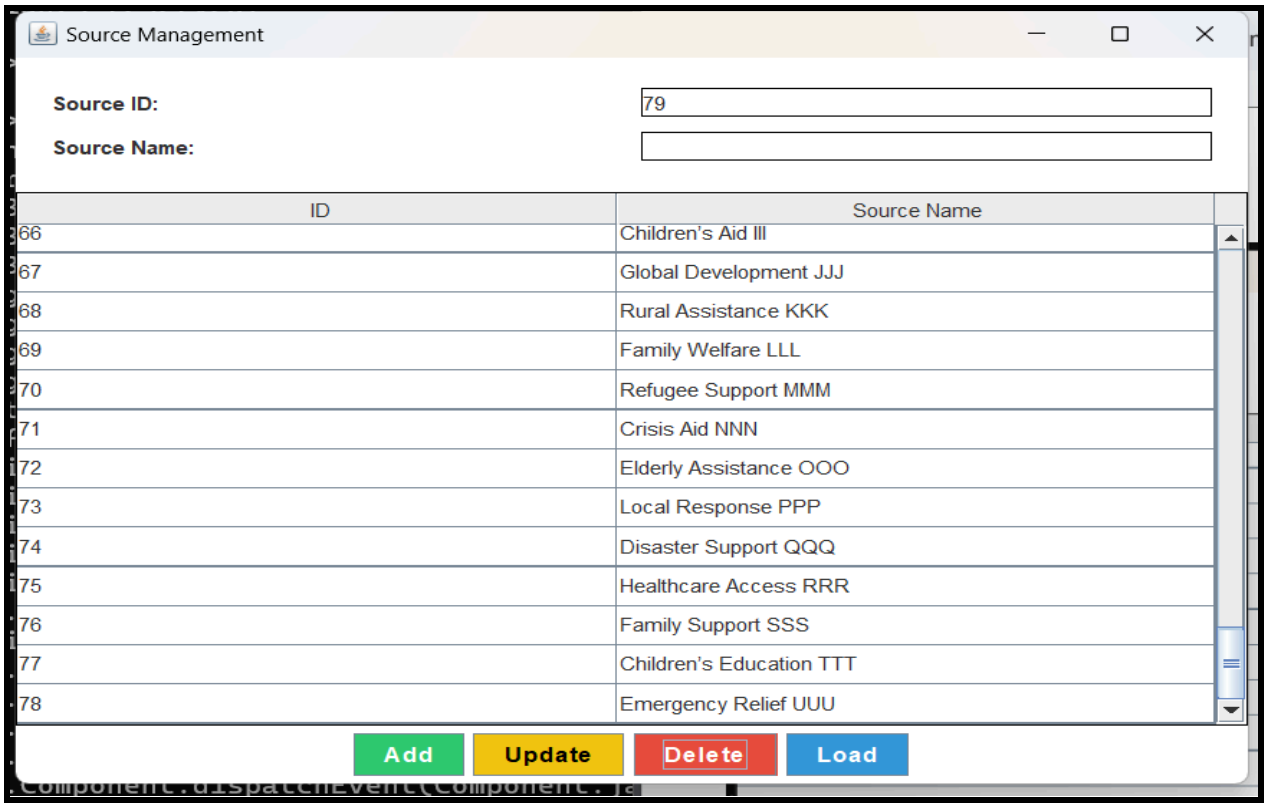
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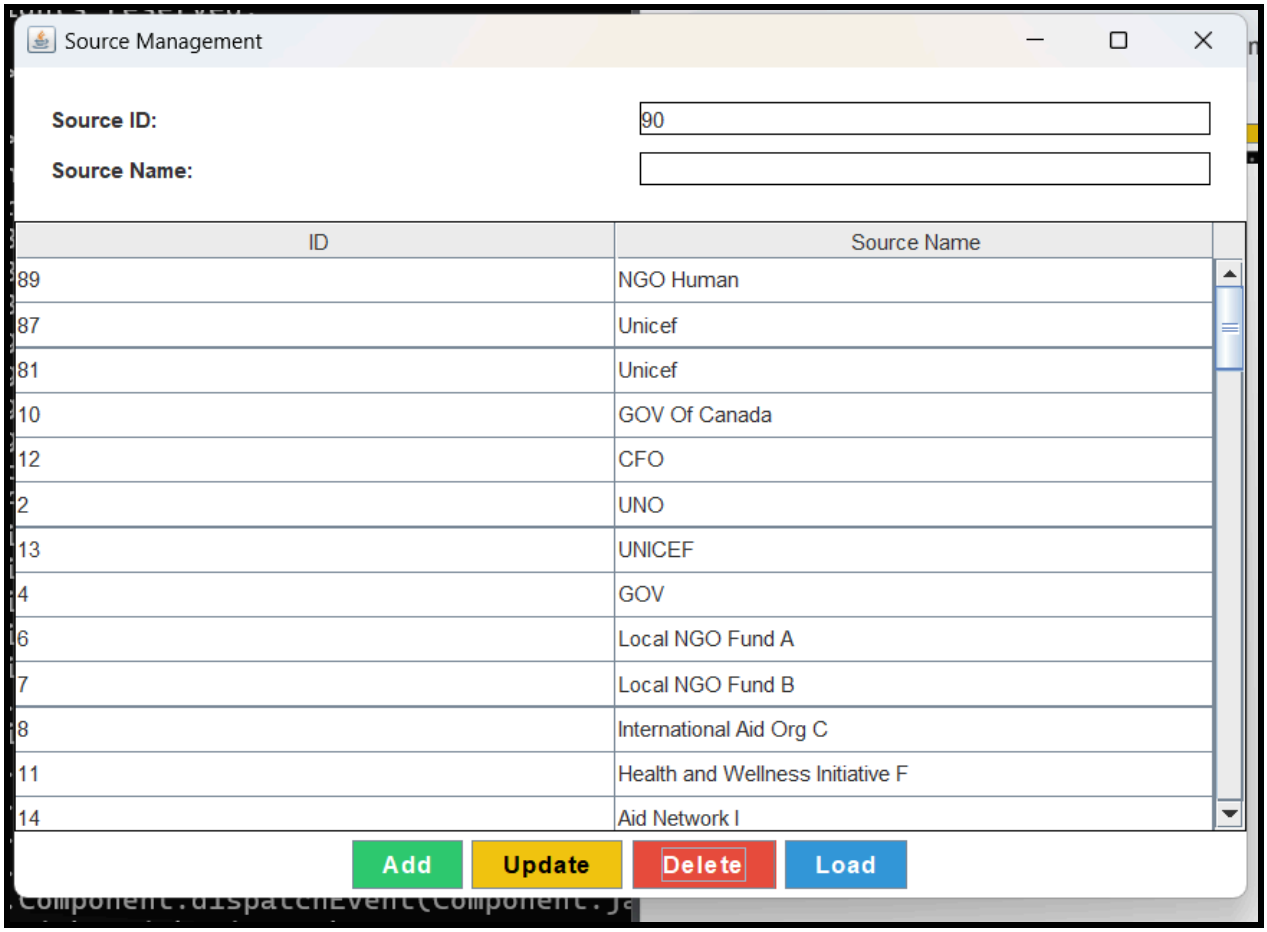
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Aid Network I
Add
Update
Delete
Load

Chapter 6

Technical Issues and Solutions

Technical Issues and Solution:

Designing a disaster management system presents unique challenges, especially when dealing with complex relationships and ensuring data consistency, accuracy, and accessibility. Below are key challenges encountered and solutions implemented to ensure data integrity, optimize performance, and provide a dynamic user experience.

- ## Technical Issues

Issue 1: Complex Entity Relationships and Foreign Keys

- **Description**: Creating relationships between multiple entities such as Personnel, Volunteers, Teams, Agencies, and Skills was challenging. Ensuring correct foreign key linkages while avoiding redundancy was crucial.
- **Impact**: Improper relationships could cause referential integrity issues, resulting in broken links and data inconsistency.
- **Why it was a challenge**: Handling numerous foreign key constraints while keeping the schema in Third Normal Form (3NF) was complex.

Issue 2: Managing Many-to-Many Relationships

- **Description**: Establishing many-to-many relationships, such as between Volunteers and Skills, required creating junction tables (VolunteerSkills and PersonnelSkills) to link multiple skills efficiently.
- **Impact**: Incorrect implementation could lead to inconsistent data, making it difficult to track skills.
- **Why it was a challenge**: Designing efficient queries and ensuring data integrity for interconnected entities was complicated.

Issue 3: Handling Weak Entities Without a Primary Key

- **Description**: The Messages table, designed as a weak entity, lacked a natural primary key. Managing composite keys and foreign key relationships with Channels and Users was necessary.
- **Impact**: Without proper identification, managing messages related to specific disasters could be disorganized.
- **Why it was a challenge**: The absence of a primary key made enforcing referential integrity difficult.

Issue 4: Accurate Management of Report Interactions

- **Description**: Evaluating the accuracy of Reports based on user interactions ('Like' or 'Dislike') required efficient tracking and dynamic accuracy updates.
- **Impact**: Incorrect handling could lead to inaccurate report ratings, affecting decision-making.

- **Why it was a challenge**: Implementing this required recalculating the accuracy field efficiently without degrading performance.

Issue 5: Populating Location Data with Geographic Coordinates

- **Description**: Managing the Locations table to include accurate latitude and longitude for Indian cities during data entry was crucial.
- **Impact**: Inaccurate data could mislead disaster response and resource deployment.
- **Why it was a challenge**: Ensuring accuracy required meticulous validation during data entry.

Solution

Solution 1: Handling Complex Entity Relationships

- **Approach**: Used Entity-Relationship Diagrams (ERD) to map relationships and ensure correct foreign key usage.
- **Steps**: Defined foreign key constraints with ON DELETE CASCADE and ON UPDATE CASCADE.
- **Tools Used**: PostgreSQL with the EXPLAIN command for query optimization.

Solution 2: Managing Many-to-Many Relationships with Junction Tables

- **Approach**: Created VolunteerSkills and PersonnelSkills tables for many-to-many relationships with unique constraints.
- **Steps**: Linked Volunteers and Personnel with the Skills table using foreign keys.
- **Alternative Considered**: Initially considered separate skills tables for each entity but opted for a unified approach to avoid redundancy.

Solution 3: Handling Weak Entities with Composite Keys

- **Approach**: Utilized composite keys (e.g., combining ChannelID and UserID) for the Messages table.
- **Steps**: Added foreign key constraints and cascading updates to maintain integrity.

Solution 4: Implementing Efficient Report Interactions

- **Approach**: Updated the Interactions table to store only 'Like' or 'Dislike' types.
- **Steps**: Created triggers to recalculate accuracy scores for reports.
- **Tools Used**: PostgreSQL functions for automated updates.

Solution 5: Validating Location Data

- **Approach**: Verified latitude and longitude entries for geographic accuracy.
- **Steps**: Used validation scripts to check coordinates before importing data.
- **Tools Used**: Python scripts for automated data validation.