RESQNOW: A REAL-TIME DISASTER ALERT AND EMERGENCY RESPONSE SYSTEM.

1. Introduction:

ResQNow is a fully serverless, web-based platform designed to help people in disaster-prone or conflict-affected areas send SOS alerts and get help faster. Whether someone is stuck during a flood, landslide, earthquake, or even in a war zone, ResQNow gives them a way to ask for help using their live GPS location. It connects **citizens, volunteers**, and **NGOs** in real-time to enable faster, smarter disaster response — all without relying on traditional infrastructure.

This project was built with compassion, keeping in mind people in vulnerable regions like **Palestine**, where government systems may fail or access is limited. ResQNow is my attempt to combine cloud technology and humanity to save lives when every second counts.

2. Aim:

- Allow victims to send **emergency SOS alerts** quickly using location and urgency level
- Notify **NGOs and volunteers** in real-time so help reaches faster
- Provide an **admin dashboard** with data insights to help make better decisions
- Show SOS locations on a **live map** so responders can locate victims instantly
- Build a secure, scalable, and cloud-based system that works even during extreme situations

3. AWS Services which were used in ResQNow:

These cloud services helped me build ResQNow without maintaining any physical servers. Each one plays a specific role in making the system **real-time**, **secure**, and **scalable**.

1. Amazon Cognito – User Authentication

- Used to handle **user signup and login** securely.
- It manages usernames, passwords, and tokens, and handles things like password resets and user sessions.
- This means I didn't need to write my own login system or store sensitive credentials.

Example: When a new user signs up or logs in to ResQNow, Cognito verifies them before they can use the platform.

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2. AWS Lambda – Backend Without Servers

- Lambda is used to run the backend code (like when a user sends an SOS or signs up).
- The best part? **No need to manage servers** — the code only runs when needed (event-driven), saving cost and time.
- I used Lambda for tasks like saving data to the database, generating presigned URLs, and handling form submissions.

Think of it like "functions in the cloud" that respond to API calls.

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3. API Gateway – The Entry Point for APIs

- Acts as a **gatekeeper** between the frontend and the backend (Lambda).
- When the frontend wants to send or get data, it goes through API Gateway first.
- It ensures proper routing, handles errors, and also takes care of CORS (cross-origin permissions).

It helps securely expose your Lambda functions over the internet.

4. DynamoDB – Fast NoSQL Database

- DynamoDB stores all dynamic data like:
    - User profiles
    - SOS alerts
    - Volunteer responses
    - Alert statuses (e.g., Resolved, Active)
- It's fast, serverless, and scales automatically — perfect for real-time, high-volume applications.

Unlike SQL databases, DynamoDB stores data as flexible "items" in a table — great for speed and simplicity.

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5. Amazon S3 – Hosting the Website

- I used S3 to **host my React + Vite website**. It acts like a web server for static files like index.html, CSS, JS, etc.
- Once I build the frontend using npm run build, the dist/ folder is uploaded to S3.
- S3 is fast, reliable, and great for hosting static websites.

Think of it as putting your website into a special online folder and making it public.

6. CloudFront – Speed + HTTPS

- CloudFront is a **Content Delivery Network (CDN)** that delivers the website fast to users globally.
- I also used it to connect a **custom domain** (resqnow.org) and enable **HTTPS** (SSL certificate from ACM).
- CloudFront caches content closer to users and adds security layers.

It's like giving your S3-hosted website turbo speed + a secure green lock on the browser.

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7. Amazon AppSync – Real-time GraphQL

- AppSync connects the **admin dashboard** to DynamoDB using **GraphQL**.
- It lets the admin fetch filtered, real-time data like:
    - Number of active SOS alerts
    - Alerts by location or urgency
    - Volunteer response times

It simplifies backend logic for dashboards and supports **real-time updates**.

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8. IAM (Identity & Access Management) – Roles & Permissions

- IAM controls **who can access what** inside the AWS environment.
- I used IAM roles to securely allow:
    - Lambda functions to access DynamoDB
    - S3 buckets to connect with CloudFront
    - Cognito to read/write user data

It's like giving each service its own ID card and limiting what it can do.

3. Frontend & Other Technologies Used

In addition to AWS, I also used modern frontend and third-party tools:

a. React + Vite + Tailwind CSS:

- **React**: JavaScript library used to build dynamic, component-based UI.
- **Vite**: Fast build tool that bundles the app for production.
- **Tailwind CSS**: Utility-first CSS framework for styling — helps build clean, responsive UIs quickly.

Together, they gave me speed, flexibility, and beautiful design with minimal effort.

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b. Mapbox (Third-party Service):

- I used **Mapbox** to display live **SOS alert locations on a map**.
- It's highly customizable and mobile-friendly — perfect for visualizing GPS coordinates in real-time.

This helps volunteers and NGOs immediately see where help is needed most.

4. Project Steps:

1. **User logs in / signs up**
   → Authenticated securely using **AWS Cognito**
2. **User sends an SOS alert**
   → Alert contains **live GPS location**, urgency, and contact info
   → A confirmation **SMS is sent via AWS SNS** (e.g., "Help is on the way")
3. **SOS alert is saved in DynamoDB**
   → Automatically accessible to **NGO**, **Volunteer**, and **Admin dashboards**
4. **NGO Dashboard**
   → NGO can:
   - View live alerts
   - **Assign volunteers**
   - **Change alert status** (Pending / Resolved)
5. **Volunteer Dashboard**
   → Volunteers can:
   - View alerts
   - Join a mission

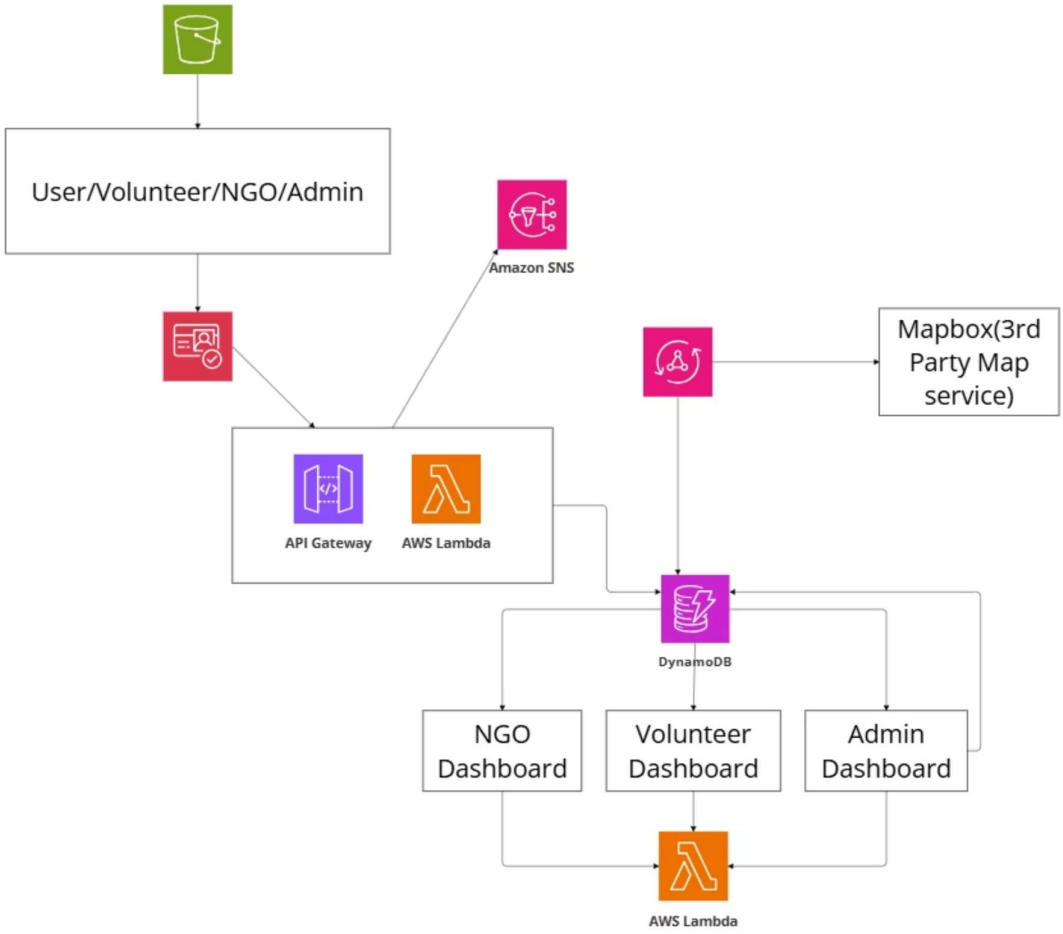
- Report back to NGO on the **status** of the incident
- View the **location on Mapbox map**

6. **Admin Dashboard**

→ Admin can:

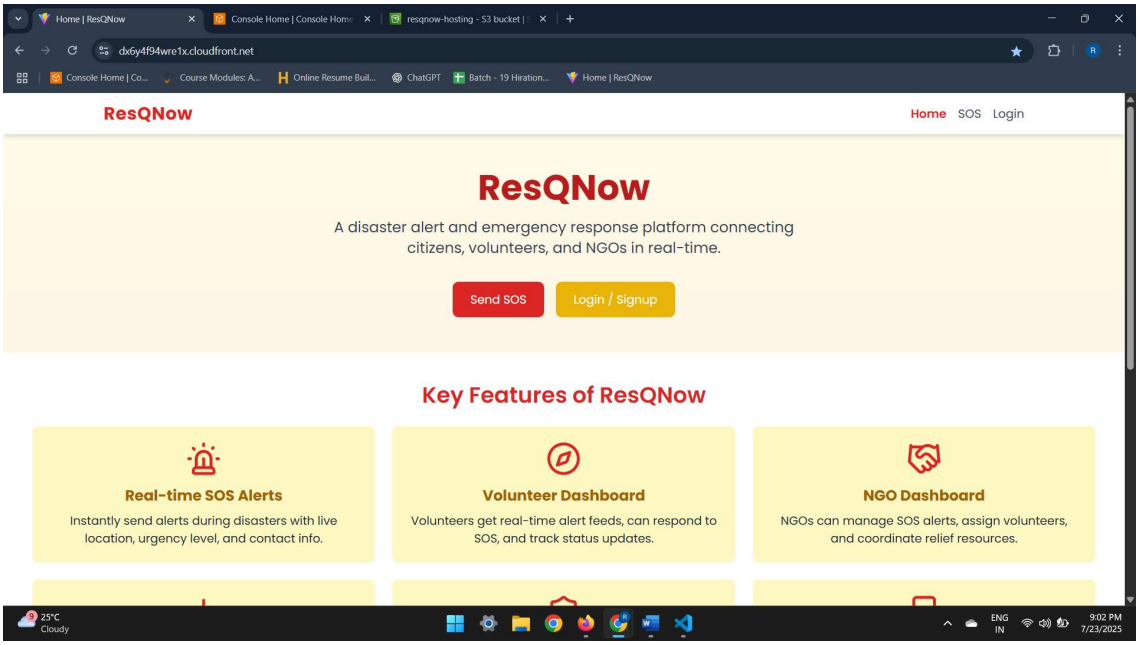
- View real-time **graphs and analytics** (powered by **AWS AppSync + GraphQL**)
- See all **users, NGOs, volunteers**
- Monitor all **SOS alerts**
- Visualize total alerts on a **live map (Mapbox)**

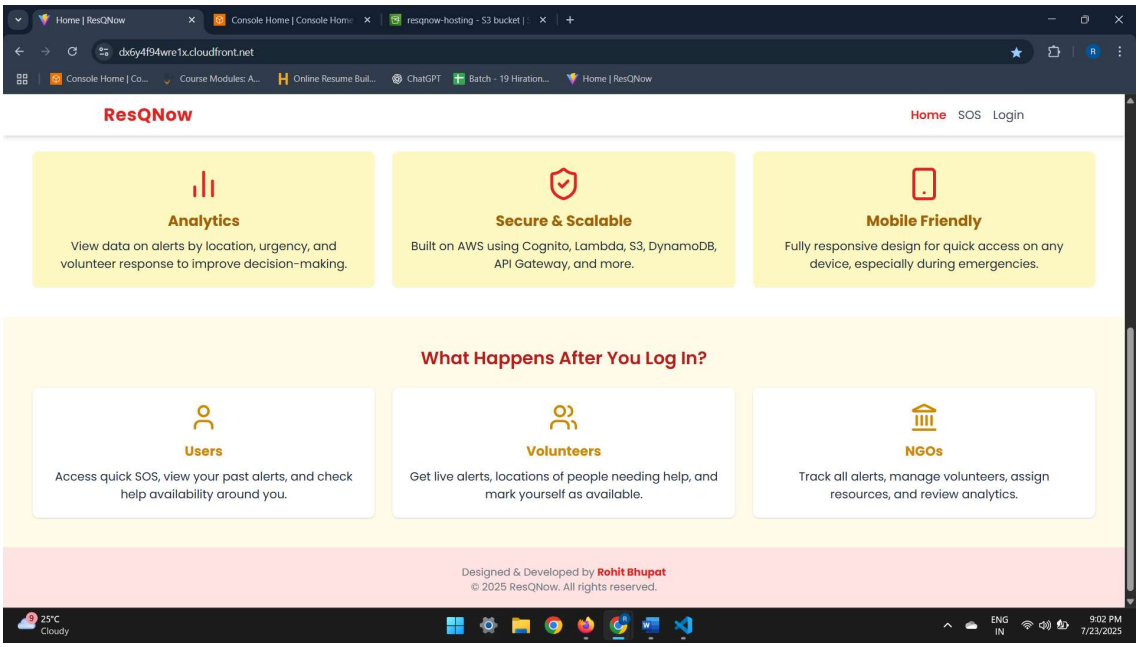
5. Architecture:



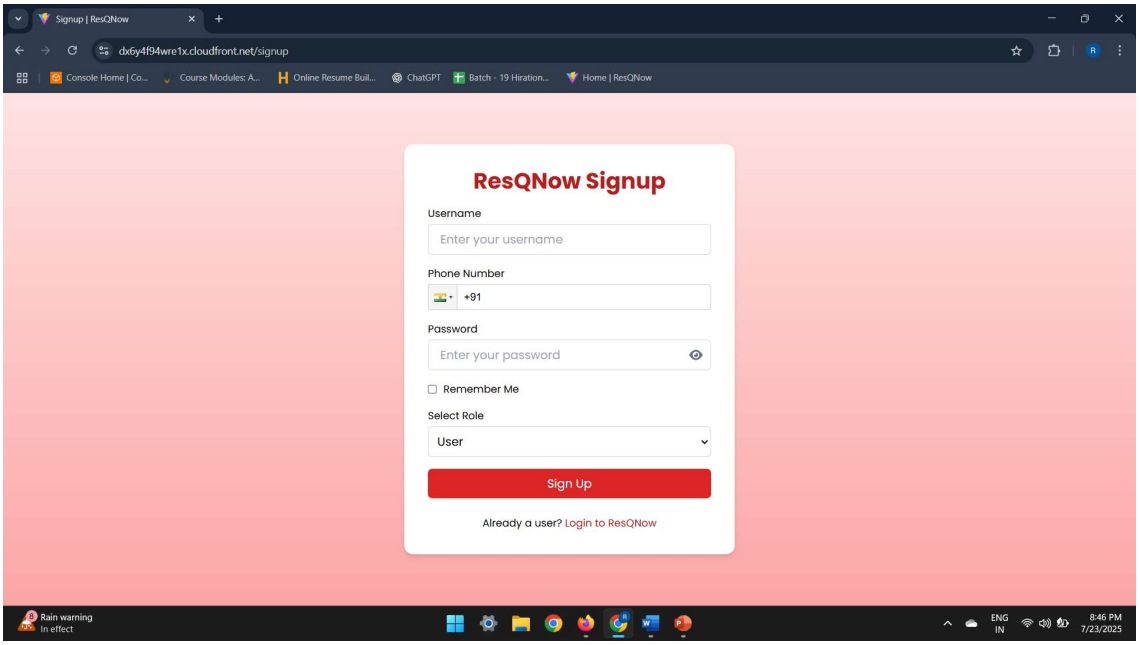
6. Screenshots:

Home Page:

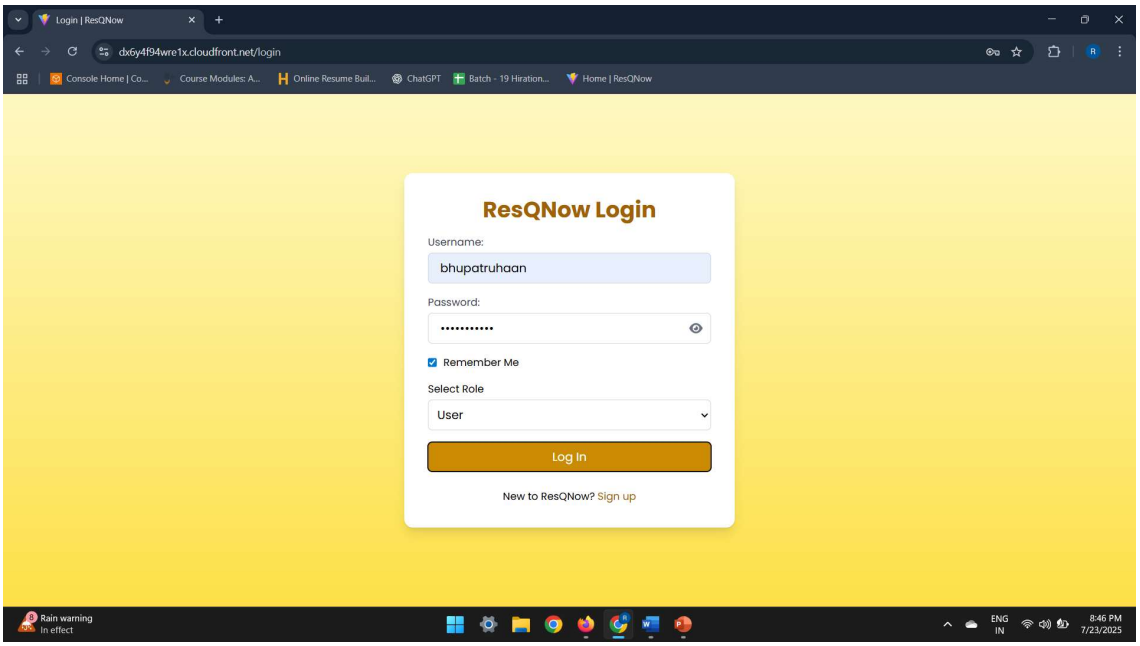




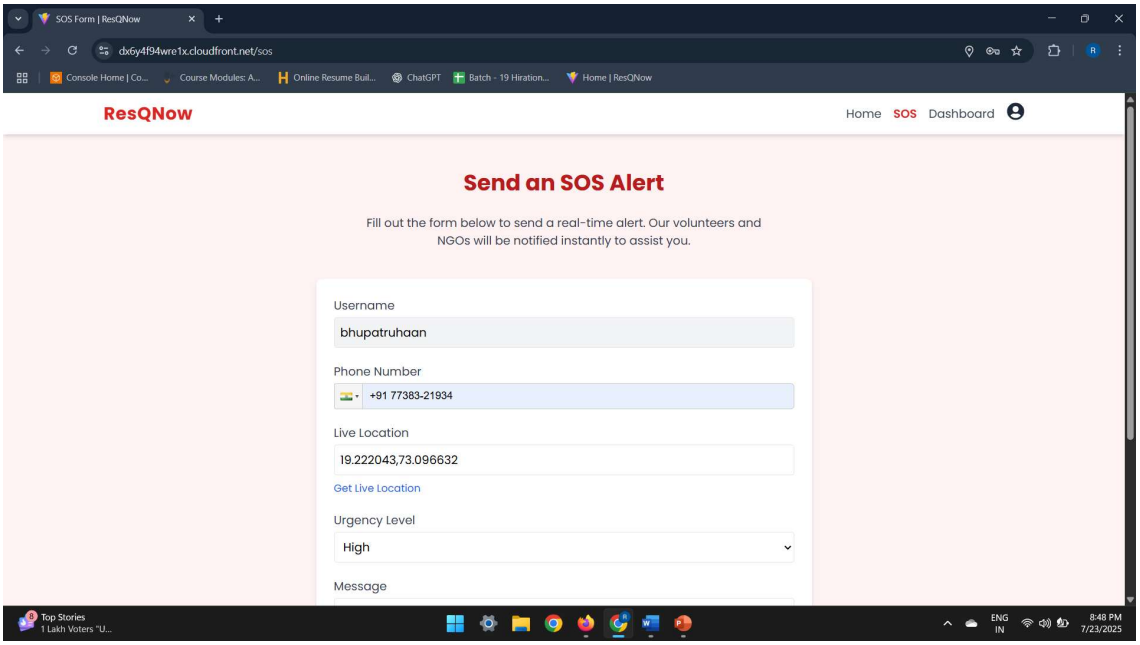
Signup Page:

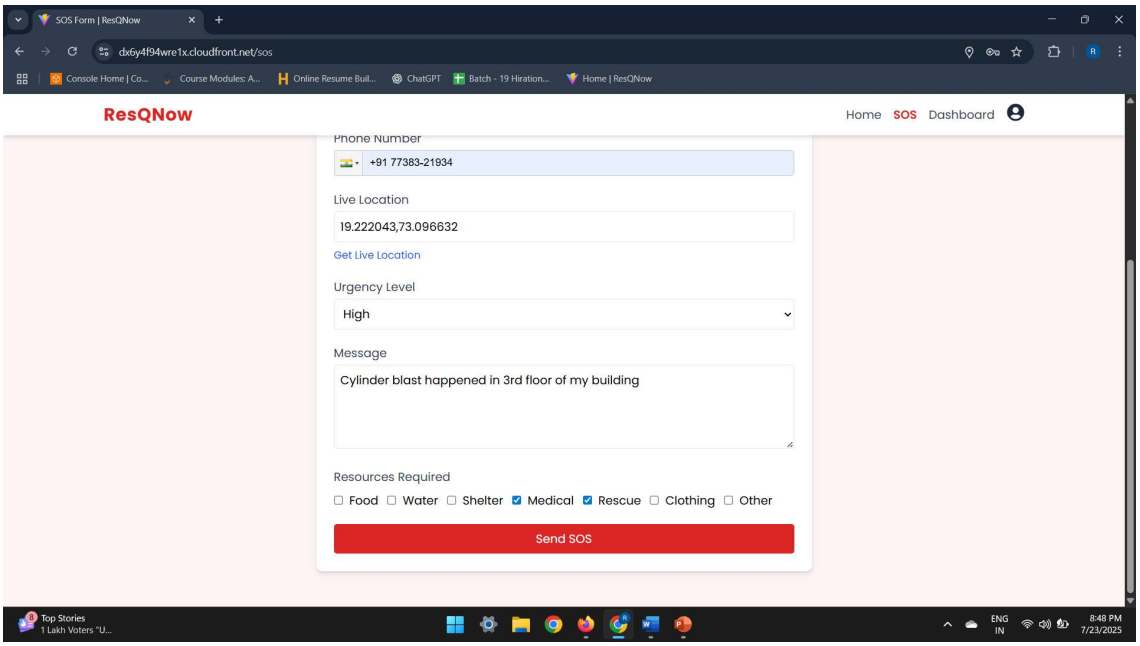


Login Page: User/Ngo/Volunteer/Admin can login from here

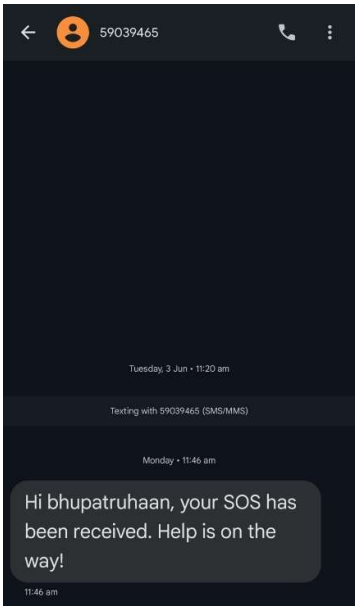


SOS Alert form:

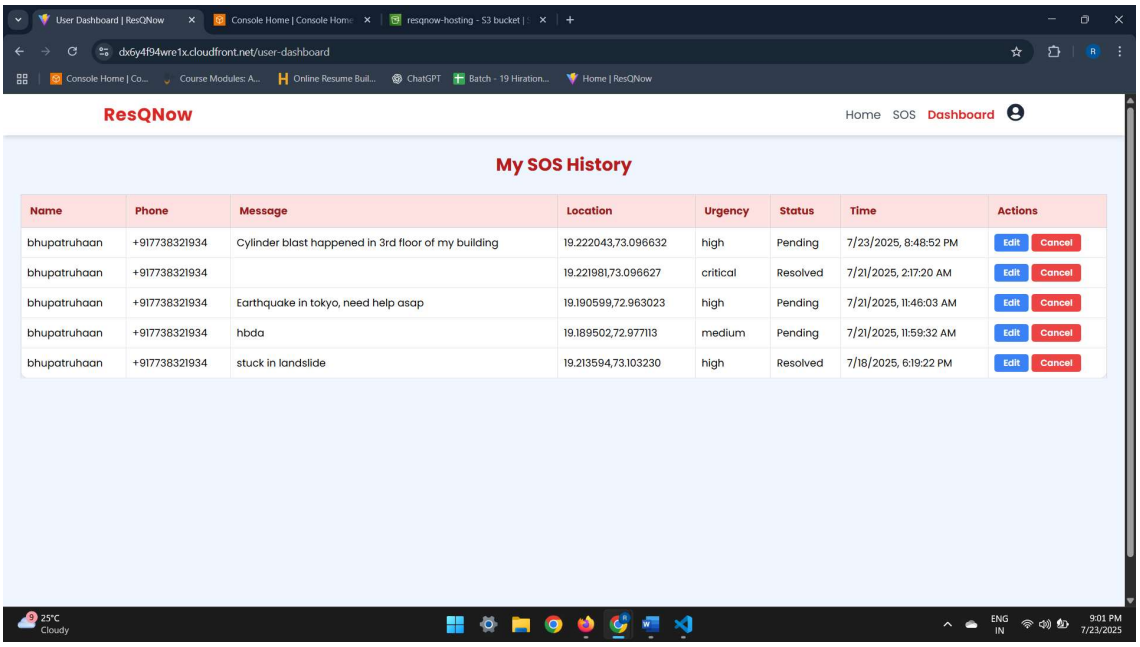




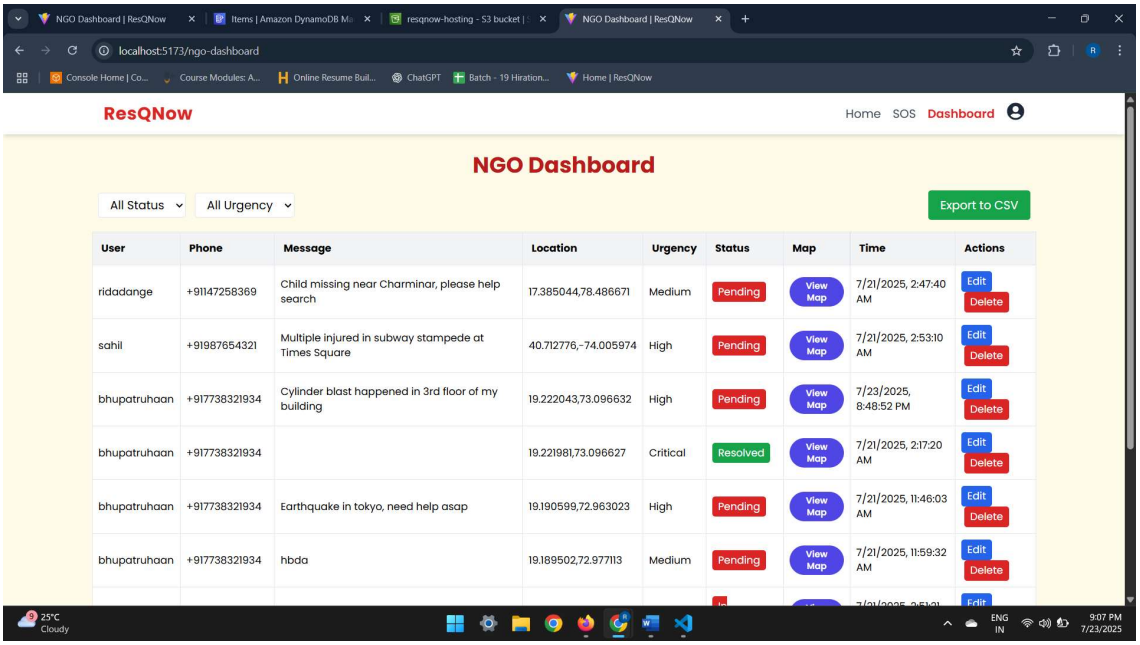
SOS alert sent sms from Amazon SNS.



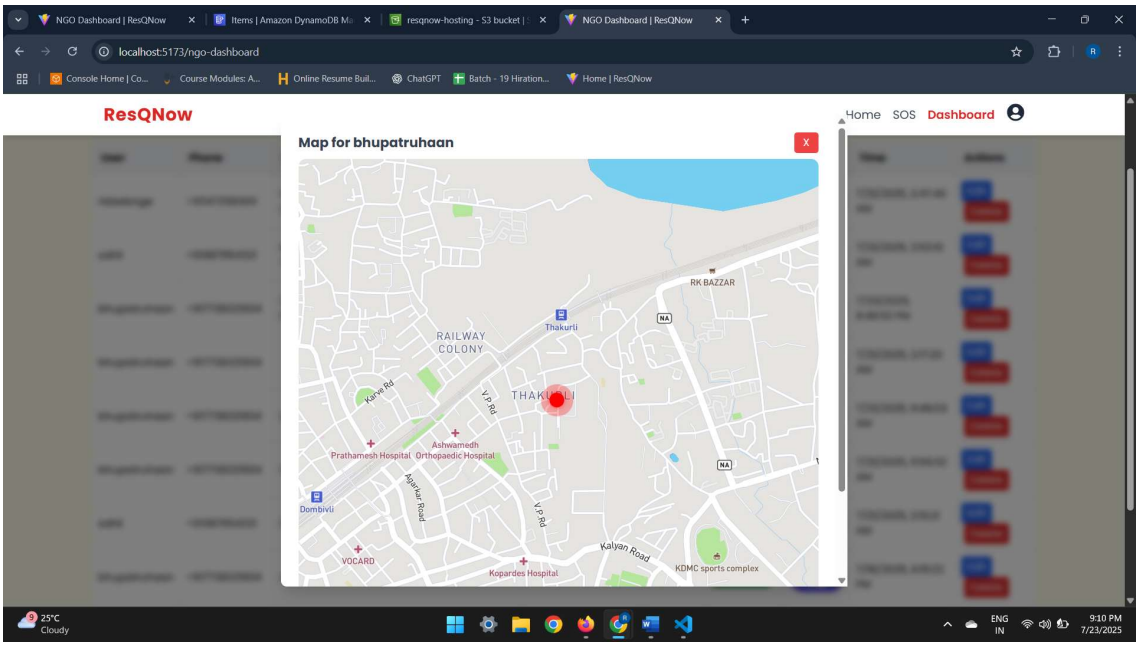
SOS History of User:



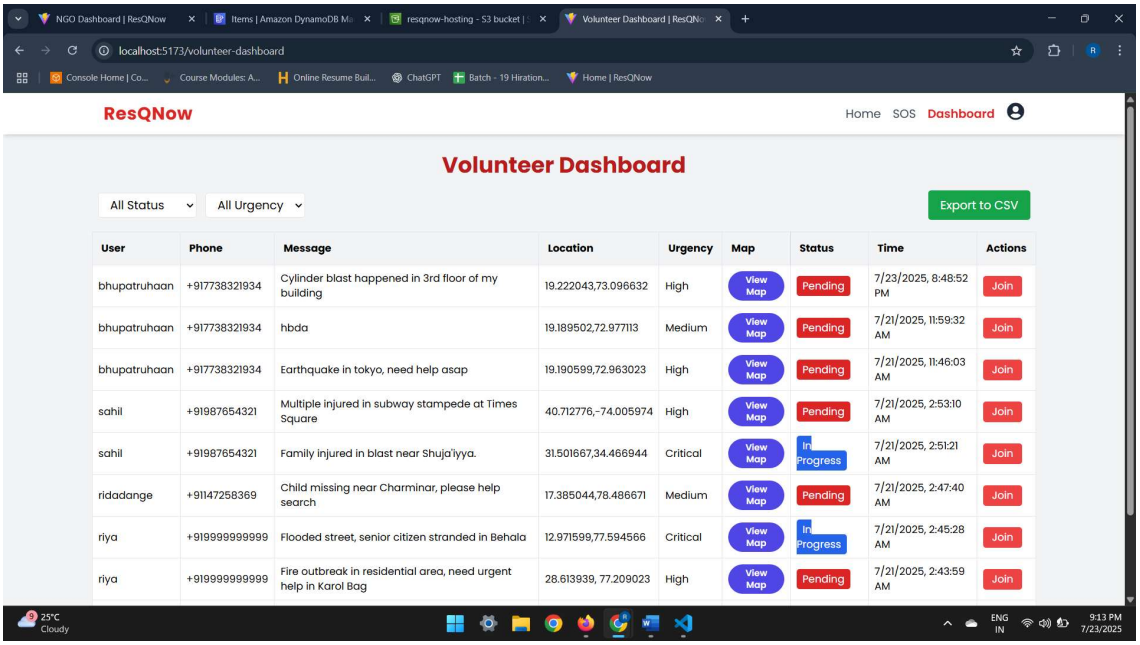
NGO Dashboard:



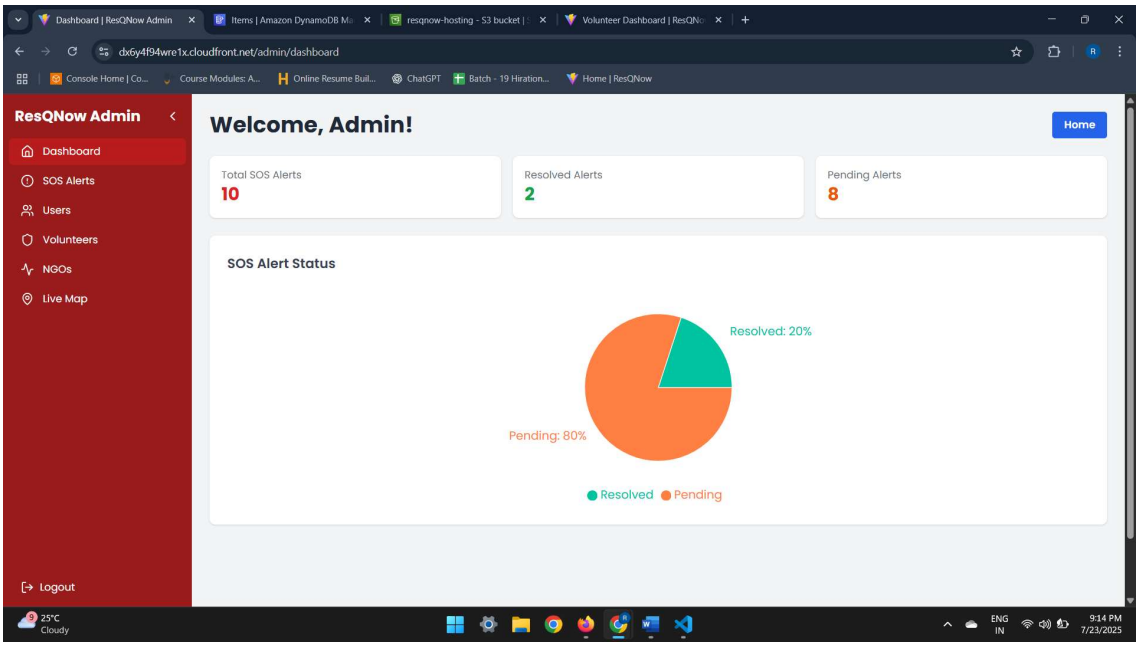
View Map of sos from NGO Dashboard:

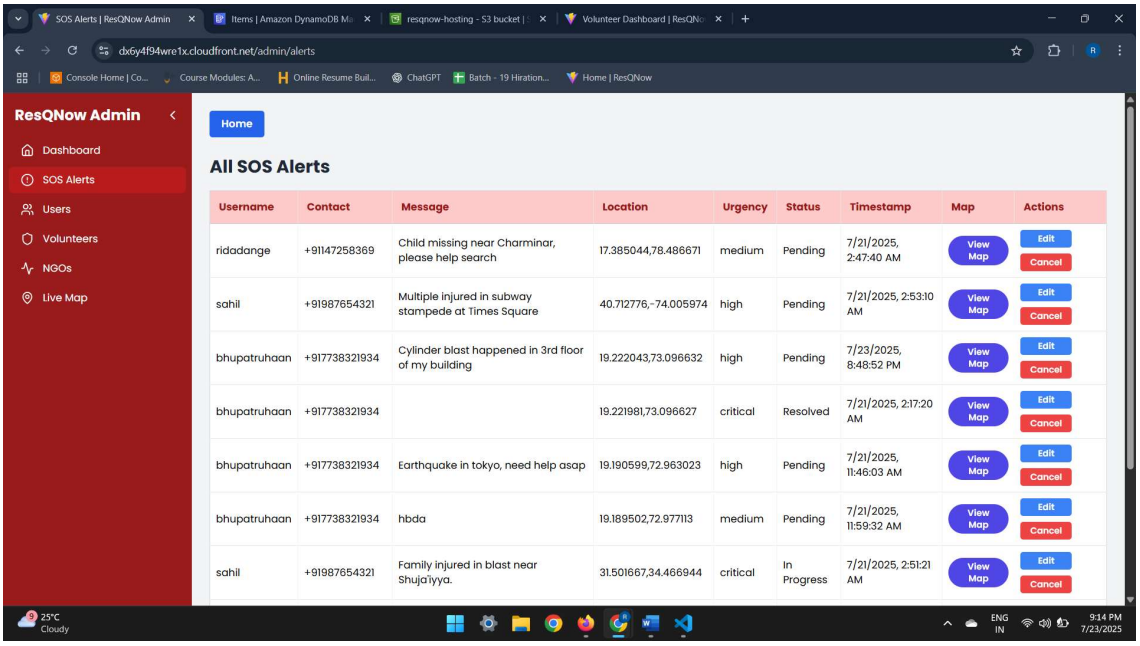


Volunteer Dashboard:



Admin Dashboard:

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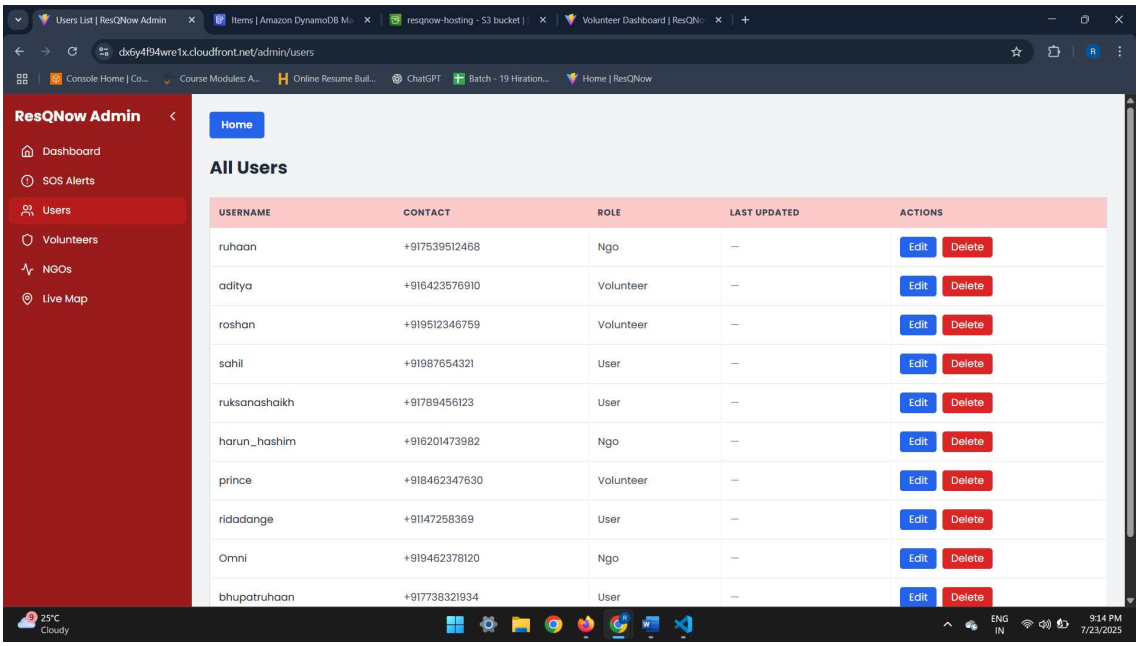
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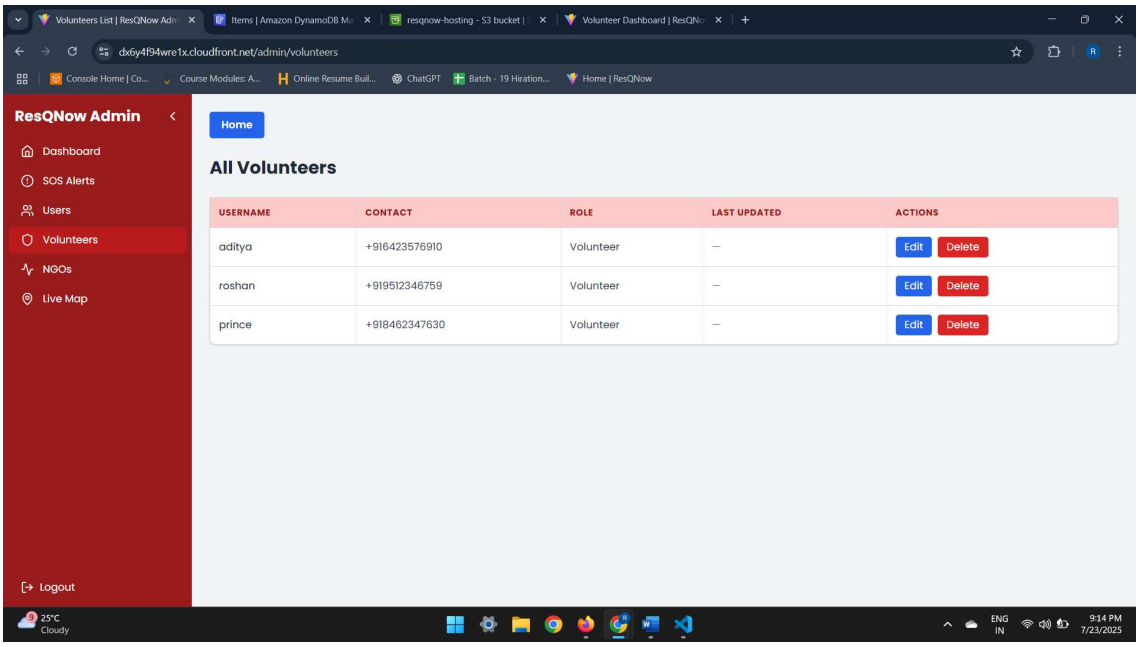
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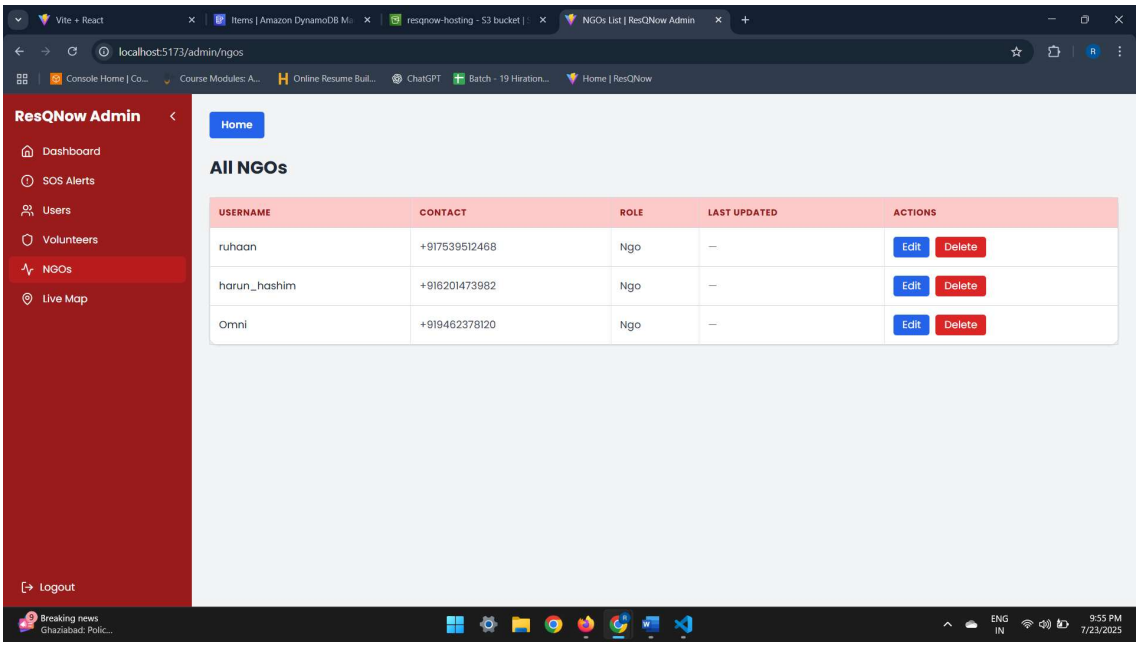
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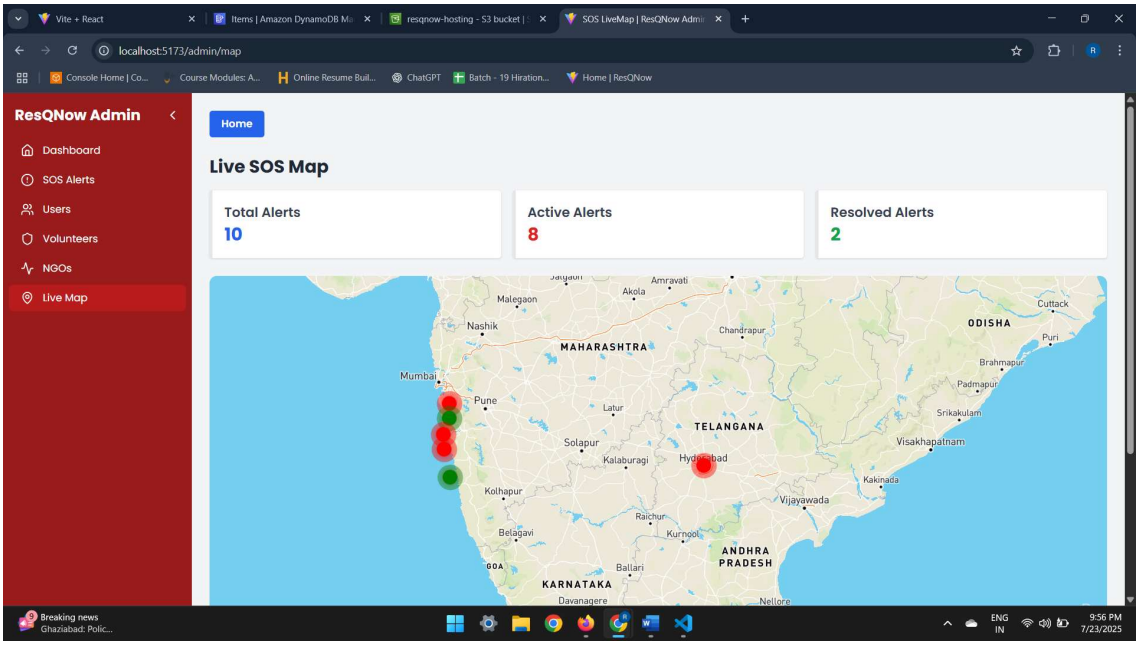
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