

Connected in Crisis

Disaster Relief System with QR Code
Integrated Wristbands and Secure
Web Portal

Project Overview

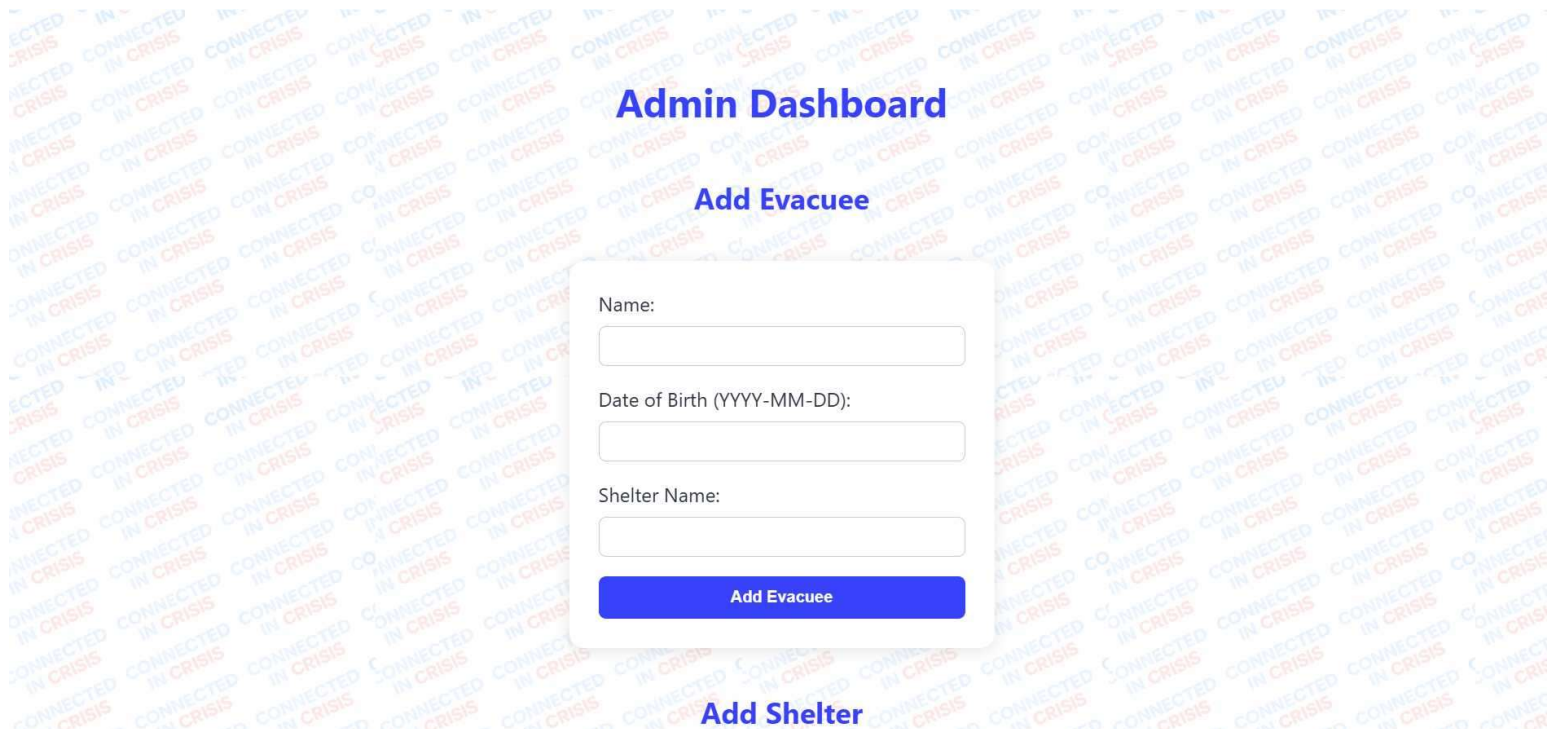
Connected in Crisis is a disaster-response system designed to help families locate loved ones during emergencies. It integrates a web-based evacuee lookup portal with QR-enabled wristbands, allowing shelter staff to assign, update, and manage evacuee records. By scanning a wristband, authorized users can securely access or modify an evacuee's information, while loved ones can perform lookups through a secure public interface. The system is lightweight, cost-effective, and designed to function reliably in real-world disaster scenarios without the need for complex hardware or cloud infrastructure.

Problem Statement

During natural disasters, families are often separated, and evacuees can become unaccounted for due to disrupted communication and disorganized tracking. Our system addresses this challenge by providing a secure, accessible platform where shelter staff can manage evacuee information and loved ones can quickly locate missing individuals through QR-enabled wristbands and a centralized web portal.

Web App: Add Evacuee

- Admins can add evacuees using name, date of birth, and assigned shelter. This data syncs to the database and is accessible through the QR or info-based search portal.



The image shows a screenshot of a web application interface. At the top, the text 'Admin Dashboard' is displayed in blue. Below it, the text 'Add Evacuee' is also in blue. The main part of the interface is a white form with three input fields: 'Name:', 'Date of Birth (YYYY-MM-DD):', and 'Shelter Name:'. Each field has a corresponding text input box. Below the 'Shelter Name' field is a blue button with the text 'Add Evacuee' in white. At the bottom of the form, the text 'Add Shelter' is visible in blue. The background of the entire page is a repeating pattern of the text 'CONNECTED IN CRISIS' in blue and red.

Admin Dashboard

Add Evacuee

Name:

Date of Birth (YYYY-MM-DD):

Shelter Name:

Add Evacuee

Add Shelter

Admin: Add Shelter

- Shelters are registered into the system via a simple admin form. Each is linked to evacuee records.



The image shows a screenshot of a web application interface for adding a shelter. The background is a repeating pattern of the text 'CONNECTED IN CRISIS' in blue and red. In the center, there is a white rectangular form with a blue title 'Add Shelter'. The form contains two text input fields: 'Shelter Name:' and 'Address:'. Below these fields is a blue button with the text 'Add Shelter'.

Add Shelter

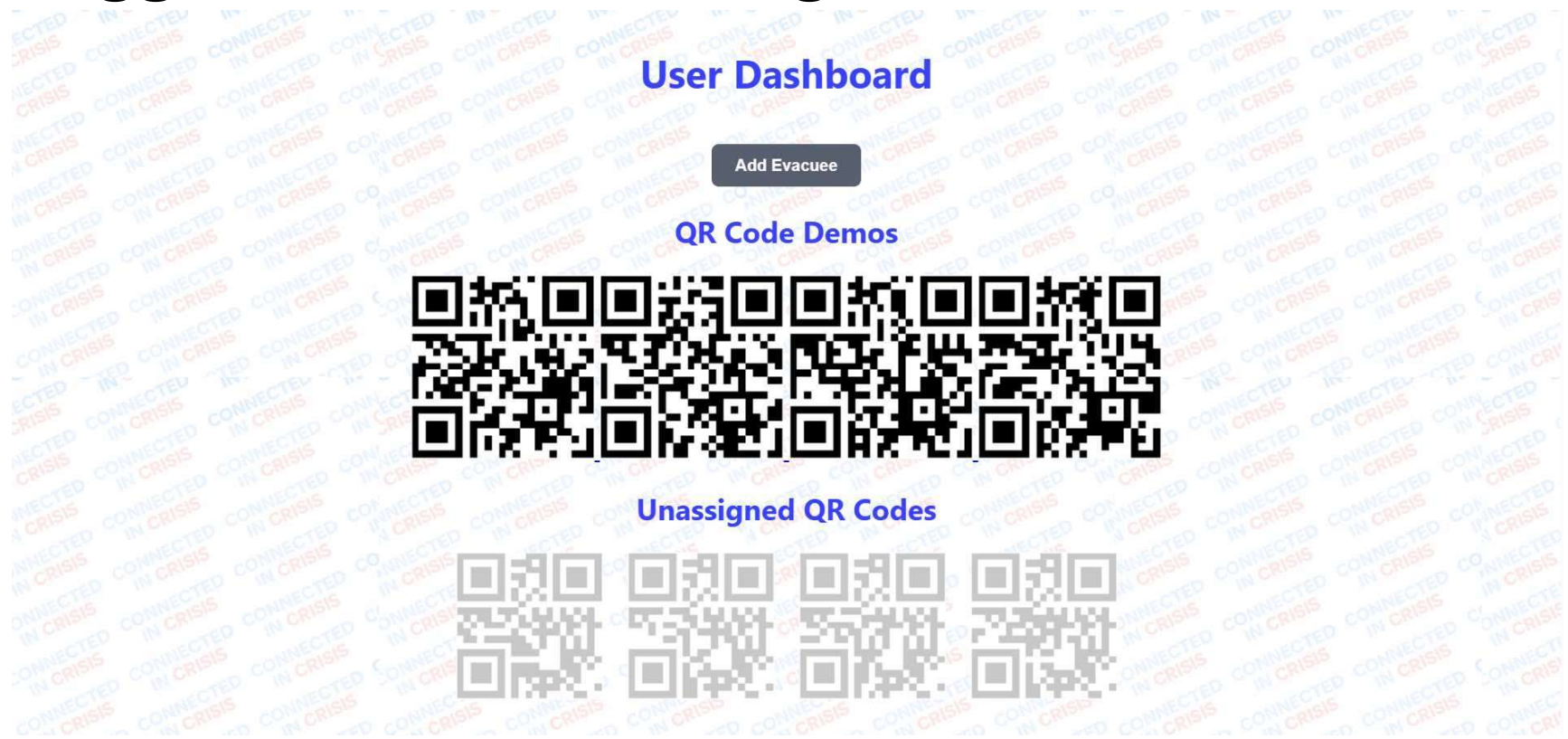
Shelter Name:

Address:

Add Shelter

User Dashboard with QR Codes

- Demo dashboard displaying both assigned and unassigned QR codes. Unassigned codes trigger a secure binding form.



QR Code Assignment

- Each evacuee is assigned a QR code printed on a wristband. QR scanning links to a secure page with shelter location details.

Assign QR Code

Name:

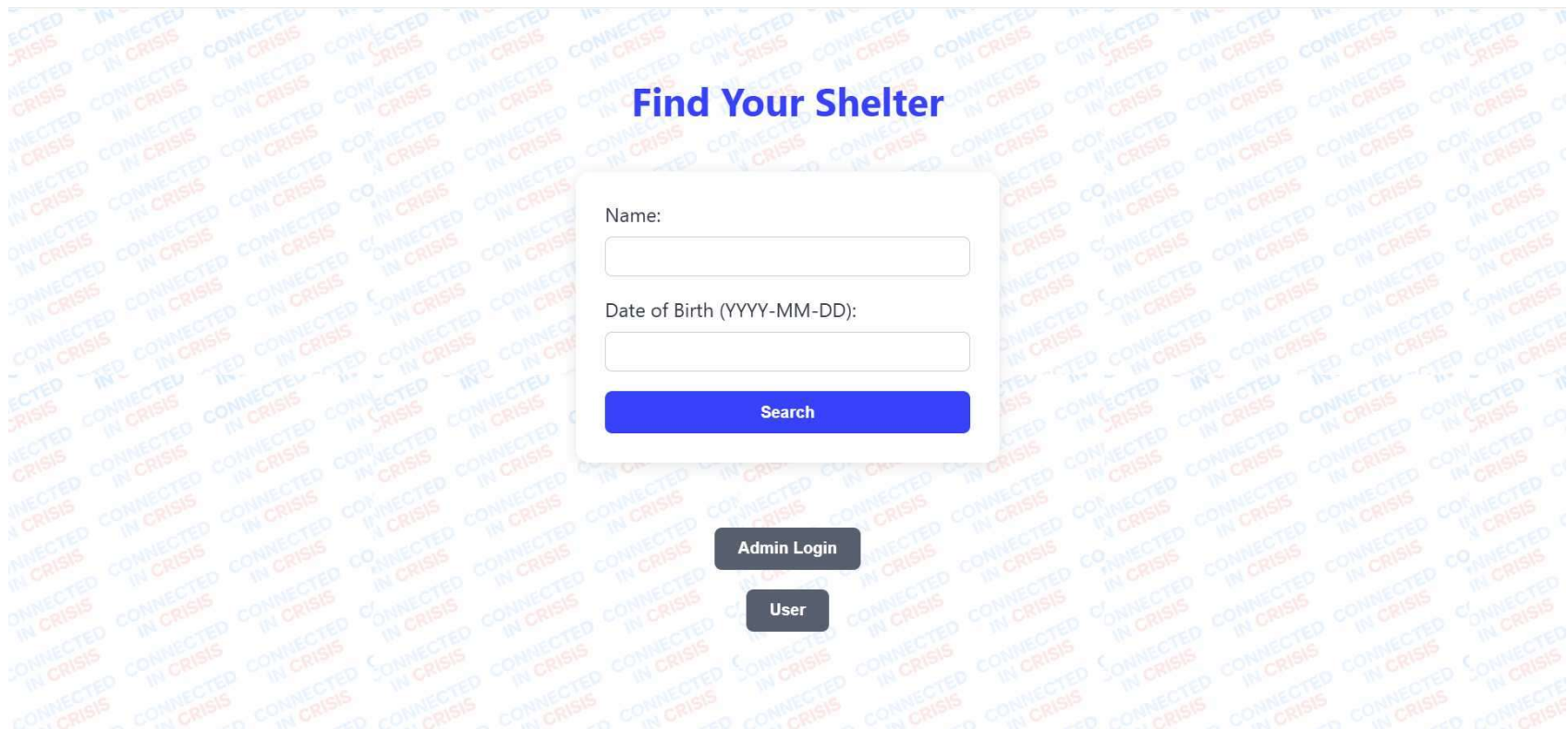
Date of Birth (YYYY-MM-DD):

Shelter:

Assign

Public Lookup

- The public portal allows loved ones to locate evacuees using name and DOB. Optional PIN protects private records.

The image shows a web form titled "Find Your Shelter" in blue text. The form is set against a background with a repeating pattern of the words "CONNECTED IN CRISIS" in blue and red. The form itself is a white box with a light gray border. It contains two input fields: "Name:" and "Date of Birth (YYYY-MM-DD):". Below these fields is a blue button with the text "Search" in white. At the bottom of the form, there are two dark gray buttons: "Admin Login" and "User".

Find Your Shelter

Name:

Date of Birth (YYYY-MM-DD):

Search

Admin Login

User

Delete Evacuee

- Admins can securely remove evacuees from the system, requiring full identity confirmation to protect data integrity.

Delete Evacuee

Evacuee Name:

Date of Birth (YYYY-MM-DD):

Confirm Name:

Confirm DOB:

Delete Evacuee

Wristband System

Each wristband is a durable, waterproof silicone band designed for use in emergency and disaster environments. Affixed to the band is a printed QR code, generated using a unique, randomly generated identifier or token. This QR code links directly to a specific route on the Connected in Crisis web application, allowing secure access to the evacuee's assigned record.

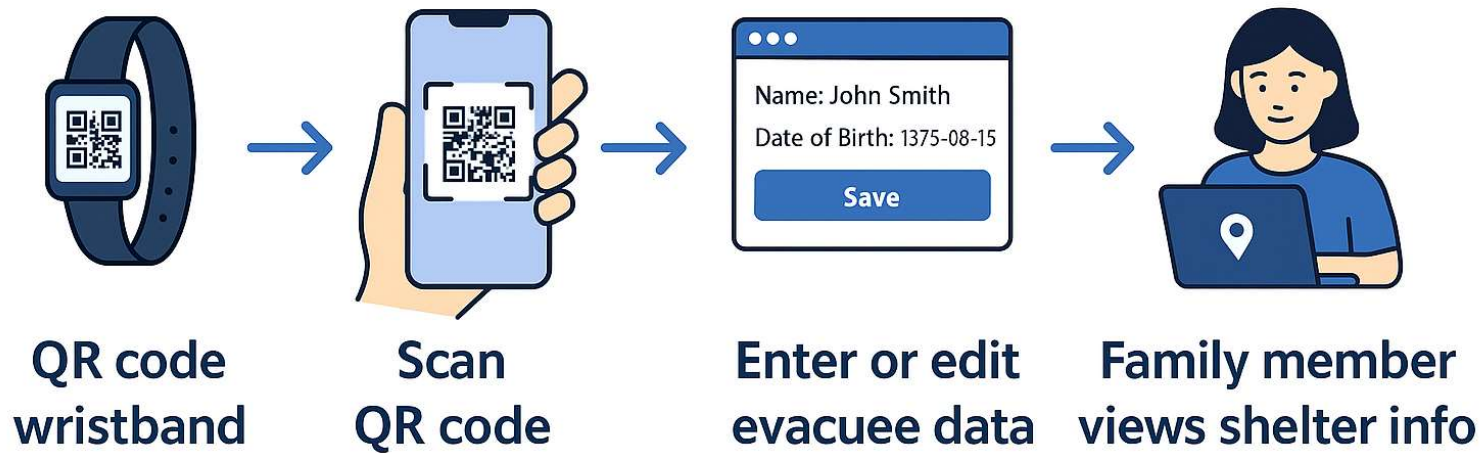
The QR code can be printed on a laminated sticker or embedded into a laser-etched tag that is attached to the band. These wristbands are low-cost, easy to mass-produce, and require no power, Bluetooth, or network connectivity. Their sole function is to provide fast, scannable access to evacuee information using any device with a camera and internet browser.

This approach eliminates the need for electronics or batteries, making the wristbands highly reliable in rough conditions while still enabling digital record access and updates.

Cybersecurity Measures

- User input sanitation and validation
- Parameterized SQL queries to prevent injection
- PIN-based data access
- Encrypted data transmission between devices and cloud
- Role-based access control for admins
- Logging all admin/user login activity to admin.log

Web App/Wristband Visual



Project Statement

Originally, our system was designed to use Bluetooth Low Energy beacons and a cloud-based infrastructure via AWS to track evacuees in real-time. Wristbands would communicate with local beacons, which would then relay data to the cloud for centralized access and analytics. While powerful, this model introduced challenges: it relied heavily on hardware deployment, consistent internet access, and added technical complexity, all of which can be difficult to maintain during a disaster.

We've since shifted to a more direct and reliable approach. Now, each wristband includes a QR code that links directly to our secure web application, currently hosted via GitHub, where evacuee information can be entered, updated, or retrieved. This system removes the need for beacon infrastructure or cloud syncing, reduces cost and complexity, and remains fully accessible from any device with internet access. It also keeps the door open for local hosting in field environments, making it more practical and resilient in real-world disaster scenarios.