

Knight Foundation School of Computing and Information Sciences

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CONNECTED IN CRISIS

Students: Christian Arauz., Benjamin Shields, Carlos Soler, Maxine Verdier, Carlos Zeron
Instructor/Faculty: Masoud Sadjadi, Florida International University

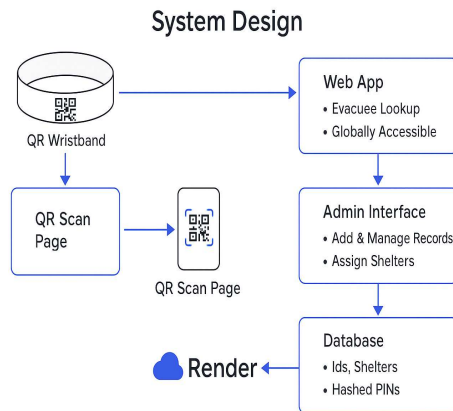
PROBLEM

During disaster evacuations, families often become separated, making it a logistical challenge to track evacuees. There is a lack of real-time, scalable technology to both monitor individuals and provide emotional reassurance through communication

SYSTEM DESIGN

The system includes:

- QR wristbands with unique ID tokens
- A globally accessible web app hosted on Render
- Admin interface for shelter staff to add, update, and manage records
- Secure database with hashed PINs and role-based access
- QR scan page for assigning or viewing evacuee info instantly
- Accessible from any internet-connected device



CURRENT SYSTEM

Current systems rely heavily on paper forms, verbal reports, or unlinked digital platforms. Communication is often limited to phone calls or manual lists, which are unreliable during large-scale emergencies. Our solution replaces these methods with QR-enabled wristbands linked to a secure web app, giving families fast, direct access to loved ones' shelter status

REQUIREMENTS

- Durable QR code wristbands
- Web app with evacuee lookup
- Admin portal for shelter staff
- User login and role-based access
- End-to-end data encryption
- Input sanitation and parameterized queries
- Responsive interface for mobile/desktop

SYSTEM FUNCTION



SUMMARY

- Developed a secure evacuee tracking system using scannable QR code wristbands linked to a globally accessible web platform.
- Created a web application that allows loved ones to check an evacuee's shelter status by entering their name and date of birth.
- Built an admin dashboard to enable shelter staff to add, update, and remove evacuee records and assign QR codes to wristbands.
- Implemented hashed PIN protection, input sanitation, and parameterized queries to protect against injection and unauthorized access.
- Focused on simplicity, accessibility, and offline deployment potential to support disaster response operations with minimal infrastructure.
- Designed the system to replace outdated paper-based methods and improve coordination between evacuees, shelter teams, and families.

IMPLEMENTATION

The website serves as a gateway for managing and tracking people during emergency situations. The main purpose is to identify and assist evacuees affected by a disaster through a secure, globally accessible platform. Core features include evacuee lookup, an admin portal, user login, and QR code integration. Families can stay connected by searching for an evacuee's full name and date of birth, which returns the shelter location if the person has been registered. The admin portal allows shelter staff to add new evacuees, assign shelter locations, or remove evacuees once they are safely reunited. Each evacuee receives a wristband containing a QR code linked to their record. When scanned, the QR code opens a secure page on the web application where authorized users can view or update the evacuee's information. All data is encrypted and stored securely, and the system is designed to function with minimal infrastructure, making it practical for rapid deployment in disaster-response scenarios.

REFERENCES

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