

REPORT

DIGITAL HEALTH CARD SYSTEM

Abstract

The **Digital Health Card System** is a web-based application that allows users to generate a unique health card embedded with a QR code. When scanned, the QR code displays the patient's stored medical information such as name, age, blood group, address, contact, and gender. The project is developed using **Python Flask**, with **PostgreSQL** as the backend and **QR code technology** for unique identification and access to patient details.

Objective

- To **digitize health records** and make them accessible via QR codes.
 - To ensure **fast retrieval of patient data** for emergency and clinical use.
 - To develop a **user-friendly interface** to enter and display health data.
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Tools and Technologies Used

Component	Description
Backend	Python (Flask Web Framework)
Frontend	HTML, CSS (via Flask templates)
Database	PostgreSQL
QR Generation	qrcode Python library
Hosting	Render (or localhost for testing)
Version Control	Git & GitHub

Features

- User-friendly **form-based interface** to submit health details.
 - **Dynamic QR code generation** for each person's health card.
 - Data is securely **stored in PostgreSQL**.
 - **Real-time retrieval** of health records via QR scanning.
 - Works on both **desktop and mobile** browsers.
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System Architecture

User → Flask Form → PostgreSQL DB → QR Generation → Output Display



QR Code



Scan → /display/<card_id> → Fetch from DB → Show Details

Folder Structure

DIGITALHEALTHCARD/

```
├── app.py          # Main Flask application
├── templates/      # HTML Templates
│   ├── index.html  # Data entry form
│   ├── qr.html     # QR code output
│   └── display.html # Display data by card_id
├── static/
│   └── qr_codes/    # Saved QR images
├── requirements.txt # Python dependencies
└── Procfile         # Render deployment configuration
```

CREATE TABLE cards (

```
card_id TEXT PRIMARY KEY,
name TEXT,
dob TEXT,
gender TEXT,
phone TEXT,
address TEXT,
blood_group TEXT,
disabilities TEXT,
allergies TEXT,
```

```
conditions TEXT,  
vaccinations TEXT,  
issue_date TEXT,  
doctor TEXT,  
access_code TEXT,  
emergency_name1 TEXT,  
emergency_phone1 TEXT,  
relation1 TEXT,  
emergency_name2 TEXT,  
emergency_phone2 TEXT,  
relation2 TEXT,  
photo TEXT,  
doc1 TEXT,  
doc2 TEXT,  
doc3 TEXT  
);
```

How It Works

Step 1: Fill Health Details

The user enters details like Name, Age, Blood Group, Address, Mobile Number, and Gender on the homepage (/ route).

Step 2: Generate Card

Upon submission, a unique card_id is generated, data is stored in PostgreSQL, and a **QR code** is created containing the URL:

`http://yourdomain/display/<card_id>`

Step 3: View Card

User is redirected to the QR code display. Scanning this QR code opens the corresponding card and fetches data from the database.

Security Considerations

- Unique card_id prevents data overlap.
- PostgreSQL ensures structured and reliable data storage.
- QR codes do not contain data directly, but reference a secure endpoint.

✅ Result

- Successfully implemented a working **digital health card** system.
- Each user gets a unique QR code that, when scanned, displays **only their information**.
- System tested on both desktop and mobile, and works reliably on local and Render deployment.

🧠 Challenges Faced

Challenge	Solution Implemented
Static display of old user data	Refactored app.py to fetch dynamic card_id
Localhost-only access via QR	Deployed using Render for public access
QR image overwrite issue	Saved each QR with card_id as filename

🌐 Deployment (Render)

- Pushed code to GitHub: [GitHub Repo](#)
- Deployed backend on **Render** using:
 - Procfile
 - requirements.txt
 - Python version set to 3.10+
- Exposed public endpoint to scan QR codes from any device

📊 Future Improvements

- Add **authentication** for healthcare providers
 - Include **medical history, prescriptions, or allergies**
 - Create **admin dashboard** for hospitals to manage patients
 - Enable **PDF export** of health card
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❏ Conclusion

The Digital Health Card project provides a reliable, efficient, and quick-access platform for storing and retrieving essential health information using QR codes. It bridges the gap between healthcare and technology, especially useful in emergencies or field situations.
