Biometric-Based Emergency Patient Record Retrieval System

# 1. Project Overview

This project is designed to retrieve emergency patient records using biometric fingerprint authentication. It simulates fingerprint scanning and retrieves corresponding patient data stored in an Oracle database. The system consists of a Flask-based Python backend and a simple HTML/JavaScript frontend.

# 2. Tools & Technologies Used

- Oracle Database (SQL\*Plus)  
- Python 3.10+  
- Flask Framework  
- cx\_Oracle library  
- HTML, CSS, JavaScript  
- Windows OS and VS Code

# 3. Project Folder Structure

biometric\_patient\_system/  
├── backend/  
│ ├── app.py  
│ ├── db\_config.py  
│ ├── biometric.py  
│ └── sample\_fingerprint.bin  
├── frontend/  
│ ├── index.html  
│ ├── style.css  
│ └── script.js  
├── database/  
│ └── setup\_oracle.sql  
└── README.md

# 4. Backend Description

The backend is built using Flask. It provides an endpoint '/scan' which simulates fingerprint scanning by reading a binary file and querying the Oracle database for a matching fingerprint template. If a match is found, patient data is returned as JSON.

# 5. Frontend Description

The frontend consists of an HTML page with a button that triggers the fingerprint scan request via JavaScript. The results are displayed dynamically in the browser. Styling is done using basic CSS.

# 6. Oracle SQL Database Schema

CREATE TABLE patients (  
 id NUMBER GENERATED BY DEFAULT AS IDENTITY PRIMARY KEY,  
 name VARCHAR2(100),  
 age NUMBER,  
 gender VARCHAR2(10),  
 medical\_history CLOB,  
 fingerprint\_template BLOB  
);  
  
CREATE TABLE access\_log (  
 id NUMBER GENERATED BY DEFAULT AS IDENTITY PRIMARY KEY,  
 user\_role VARCHAR2(50),  
 access\_time TIMESTAMP DEFAULT CURRENT\_TIMESTAMP,  
 action VARCHAR2(100)  
);

# 7. How to Run and Test the System

1. Run the SQL script using SQL\*Plus to create tables.  
2. Insert a patient record with a matching fingerprint file.  
3. Start the backend server using 'python app.py'.  
4. Open index.html in the browser and click 'Scan Now'.  
5. The patient record will be displayed if the fingerprint matches.

# 8. Expected Output

On a successful scan, the browser will display the matched patient record in a formatted manner:  
Name, Age, Gender, and Medical History.