NFC Healthcare Functional Document

Introduction

The NFC Healthcare System is a desktop-based application designed to aid healthcare professionals in managing patient data efficiently using NFC tags, OCR scanning for prescriptions, and automated PDF report generation. It is a single-application solution built using Python and integrated with email functionality.

Product Goal

To provide a user-friendly application that enables the healthcare staff to manage, view, and transmit patient information by leveraging NFC tag scanning, OCR processing, and email/PDF export for seamless operations.

Demography (Users, Location)

Primary users include doctors, medical practitioners, and administrative staff operating in small to mid-sized clinics or hospitals. The intended use is on local machines within Indian healthcare environments, particularly in institutions like SRM Global Hospital.

Business Processes

1. Scan patient UID using an NFC reader.
2. Retrieve patient details from a local SQLite database.
3. Scan prescription via OCR and auto-populate records.
4. Save updated data to the database.
5. Export patient report as a PDF.
6. Email the PDF report to the concerned party.
7. Maintain logs of all sent emails for traceability.

Features

- NFC UID Polling and Real-Time Patient Data Loading
- OCR Prescription Scanning using Tesseract
- Patient Record Management with SQLite
- PDF Report Generation with Branding
- Integrated Email Dispatch with SMTP
- Preview Function for Generated PDF

- GUI built with Tkinter and Themed Styling

Feature #1 - NFC Integration

The system continuously polls for UID data from a connected NFC reader. Upon detection, it fetches and populates the patient form with existing details or prompts for new data entry.

User Story

As a healthcare professional, I want to scan a patient's NFC card so that their medical information can be quickly retrieved and updated, enabling efficient and paperless treatment workflows.

Authorization Matrix

Currently, the system operates on a trusted local machine model. All actions such as save, view, export, and email are open to the user. Future enhancements may include role-based access controls.

Assumptions

- The application runs on Windows/Linux systems with NFC reader support.
- Python environment with required libraries is pre-installed.
- SMTP credentials are valid and functional for email services.
- Doctors have basic computer literacy to operate the GUI.