

24/7 Tele H Healthcare System

Complete Application Flowchart

System Architecture Overview

- Frontend: React.js with TypeScript, Tailwind CSS, Progressive Web App (PWA)
- Backend: Node.js with Express.js, JWT Authentication, Real-time WebSocket
- Database: PostgreSQL with Drizzle ORM, Neon Database (Serverless)
- Device Integration: HC03 Bluetooth Medical Devices
- Deployment: Replit with Autoscale, Cross-platform Mobile Support

1. USER AUTHENTICATION FLOW

```
START ! Login Page (admin@24x7teleh.com / patient.demo@example.com)
!“
Credential Validation ! JWT Token Generation
!“
Role-Based Routing ! Admin Dashboard OR Patient Dashboard
!“
Session Management ! Auto-refresh tokens, Secure logout
```

2. ADMIN DASHBOARD FLOW

```
Admin Login ! Dashboard Statistics Loading
%%% Patient Management Module
%   %%% View All Patients (10 total, 3 active)
%   %%% Search & Filter (by name, hospital, status)
%   %%% View Patient Details (demographic + vital signs)
%   %%% Edit Patient Information (name, contact, hospital)
%   %%% Create New Patient Account
%%% Analytics & Reports
%   %%% Weekly Reports (export as text)
%   %%% Vital Signs Trends (heart rate, BP, temperature)
%   %%% Compliance Monitoring (92% average)
%   %%% Critical Alerts (17 active alerts)
%%% Device Management
%   %%% HC03 Device Status (2 connected)
%   %%% Battery Monitoring
%   %%% Data Synchronization
```

```
%%% System Monitoring
%%% Real-time Notifications
%%% Email Alert System
%%% Performance Metrics
```

3. PATIENT DASHBOARD FLOW

```
Patient Login! Personal Health Dashboard
%%% Vital Signs Monitoring
%   %%% Real-time Data Display (HR: 68-145, BP: 115/75-190/100)
%   %%% Historical Trends (7-day, 30-day charts)
%   %%% Critical Alerts (automated notifications)
%   %%% Health Score Calculation (85/100 average)
%%% HC03 Device Integration
%   %%% Bluetooth Connection Status
%   %%% ECG Data Collection
%   %%% Blood Oxygen Monitoring
%   %%% Blood Pressure Readings
%   %%% Temperature Monitoring
%%% Health Management
%   %%% Medication Reminders
%   %%% Checkup Scheduling
%   %%% Health History Timeline
%   %%% Emergency Contacts
%%% Reports & Communication
%   %%% Personal Health Reports
%   %%% Doctor Communication
%   %%% Appointment Management
```

4. DATA FLOW & PROCESSING

```
HC03 Device ! Bluetooth ! Patient Mobile App
!“
Data Validation ! Format Conversion ! Database Storage
!“
Real-time Analysis ! Critical Value Detection
!“
Alert Generation ! Email Notifications ! Doctor Dashboard
!“
Historical Storage ! Trend Analysis ! Health Reports
```

Database Tables:

- users (patient demographics, 10 active patients)
- vital_signs (real-time health data)
- hc03_devices (device management)
- alerts (critical notifications, 17 active)
- checkup_logs (appointment history)
- reminder_settings (medication schedules)

5. CRITICAL ALERT SYSTEM

```
Vital Signs Input ! Critical Value Detection
%% % Heart Rate > 100 or < 60 BPM
%% % Blood Pressure > 140/90 or < 90/60
%% % Temperature > 38°C or < 36°C
%% % Oxygen Level < 90%
%% % Blood Glucose > 180 or < 70 mg/dL
!“
Alert Classification ! Severity Level (Low/Medium/High/Critical)
!“
Notification Dispatch ! Email to Healthcare Provider
!“
Admin Dashboard Update ! Real-time Alert Counter
!“
Patient Notification ! Mobile App Alert
!“
Follow-up Tracking ! Resolution Status
```

6. TECHNICAL IMPLEMENTATION DETAILS

- Authentication: JWT tokens with bcrypt password hashing
- API Endpoints: RESTful design with Express.js routing
- Database: PostgreSQL with Drizzle ORM, automated migrations
- Real-time: WebSocket connections for live data updates
- Security: Role-based access control, secure session management

7. DEPLOYMENT & DISTRIBUTION

Development Environment ! Replit with Node.js 20 !“
Build Process ! Vite (Frontend) + esbuild (Backend) !“
Database Setup ! PostgreSQL migration via Drizzle !“
Production Deployment ! Autoscale with Load Balancing !“
PWA Distribution ! Self-hosted package (/pwa-package/) !“
Mobile Installation ! Cross-platform (Android/iOS) without app store !“
Monitoring ! Real-time health checks and performance metrics

8. KEY FEATURES SUMMARY

- ' Complete patient registration with UAE phone validation
- ' Abu Dhabi hospitals database integration
- ' Real-time vital signs monitoring (HR, BP, temp, oxygen)
- ' HC03 Bluetooth device connectivity
- ' Critical health alerts with email notifications
- ' Professional admin dashboard with analytics
- ' Patient management with search and filtering
- ' Weekly health reports (text format export)
- ' Progressive Web App with offline capabilities
- ' Role-based access control (Admin/Patient)
- ' Secure authentication with JWT tokens
- ' Responsive mobile-first design
- ' Comprehensive health history tracking
- ' Automated medication reminders
- ' Professional 24/7 Tele H branding