

# 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
```