# README – Web Interface for Life Expectancy Prediction & Health Chatbot

This folder contains the complete frontend and backend integration for predicting life expectancy and delivering personalized health recommendations via a chatbot interface.

## 🌐 Frontend (HTML + JavaScript)

• A user-friendly form is used to collect the following inputs from users:  
 - Age, Gender, Country  
 - Exercise hours, Diet type, BMI  
 - Medical history, Work stress, Smoking, Alcohol  
 - Sleep duration, Social life score  
  
• Features:  
 ✓ All fields are mandatory – the form will not submit without full input  
 ✓ Input constraints – e.g., invalid heart rate or temperature values trigger alerts  
 ✓ Pop-up error messages guide users in correcting their inputs

## 🚀 Backend (FastAPI)

• Responsibilities:  
 - Receives and processes form data  
 - Uses a trained XGBoost model to predict life expectancy  
 - Calls an LLM (Mistral 7B) to generate initial personalized health advice  
  
• Returns to frontend:  
 ✓ Predicted life expectancy value  
 ✓ First chatbot response with tailored suggestions

## 🖥 Two-Pane Output (Vertical Layout)

• Top Pane → Displays the predicted life expectancy  
• Bottom Pane → Displays the interactive chatbot interface which includes:  
 ✓ The initial recommendation  
 ✓ An ongoing conversation area for user queries

## 🧠 Chatbot with RAG & Memory (LLM Integration)

• Powered by LangChain + Mistral 7B LLM  
• Features:  
 - ConversationalRetrievalChain with Pinecone for RAG (Retrieval-Augmented Generation)  
 - Memory: Uses ConversationBufferMemory to retain full chat history  
 - Prompt injection ensures responses consider user-specific context

## 💬 Live Interaction Experience

• Users can send queries via the chatbox and receive informative, context-aware replies.  
• The system mimics a virtual health assistant, capable of:  
 ✓ Recalling previous user messages  
 ✓ Pulling information from the vector database  
 ✓ Delivering personalized lifestyle and health guidance

## 📂 Folder Contents

• images/ – Contains UI assets and visuals  
• final\_year\_project\_model.pkl – Trained XGBoost model for life expectancy prediction  
• form\_page.html – Frontend form interface  
• prediction\_chat.html – Output interface with prediction and chatbot  
• script\_for\_form\_page.js – Logic for form handling and submission  
• script\_for\_prediction\_chat\_page.js – Logic for chatbot interaction and display  
• style\_for\_form\_page.css – Styling for form interface  
• style\_for\_prediction\_chat\_page.css – Styling for chatbot page