Software Design Specification Document

Wellness Score

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Table of Contents

1 Introduction

1.1 System Overview

This project aims to help Insurance companies to predict Wellness of the client. Wellness Score is a risk score that can predict the health of individuals. Insurance and wellness providers can empower their clients to know their risks, enable clients to improve their lifestyles and track their own progress, and use the insights gained from the wellness score to provide personalized suggestions and rewards.

Users will receive a simple score ranging from 1 to 10, with 1 indicating low wellness levels and elevated risk, and 10 indicating high wellness levels and minimal risk.

1.2 Definitions, Acronyms, and Abbreviations

Mentioned below are the abbreviations used in this software design specification:

○ SDS – Software Design Specification

○ MS – Microsoft

○ DOT – Data Object Technologies

○ NET – Network Enabled Technologies

○ API – Application Programming Interface

○ ER – Entity Relationship

○ URL – Uniform Resource Locator

○ UI – User Interface

○ XML – Extensible Markup Language

○ AJAX – Asynchronous JavaScript and XML

○ JSON – JavaScript Object Notation

○ HTML – Hyper Text Markup Language

○ JS – Java Script

○ CSS – Cascading Style Sheets

○ GUI – Graphical User Interface

○ HTTP – Hyper Text Transfer Protocol

○ MVC – Model View Controller

2 Design Considerations

2.1 Assumptions

The client should have a web browser (like Google Chrome) installed in their environment. Insurance seeker must be at least 1 year old and must be below 60 years. There are three subscriptions available namely Classic, Elite and Supreme.

2.2 Constraints

The web application can be further integrated into Insurance companies' portals.

2.3 System Environments

Software:

A Web Browser.

Hardware:

A Desktop or Laptop compatible with Windows / Mac / Linux Operating System with a stable Internet connection.

2.4 Design Methodology

- *Frontend UI (User Interface)*

  From possibilities such as Web Applications, Chrome extensions, Application GUIs (Graphical User Interface), and Desktop applications for the frontend, the Web Application was selected since it improved the user experience and added functionality to the project.

- *Database*
  In today's world, there is abundant open-source database software available. MS (Microsoft) SQL Server is a new and emerging technology that is perfect for this scenario.

- *Web API and Backend*
  ASP.NET core Web API will be used to create web APIs (Application Programming Interfaces) that return data to the front end. ASP.NET Web API is a robust framework for developing HTTP-enabled service APIs that expose services and data. It may be accessed by a wide range of clients, including browsers, mobile devices, desktop computers, and tablets.

3 Architectural (High-level) Design

3.1 Overview

There are three major components in our system architecture. They are,

- *Frontend UI (User Interface)*

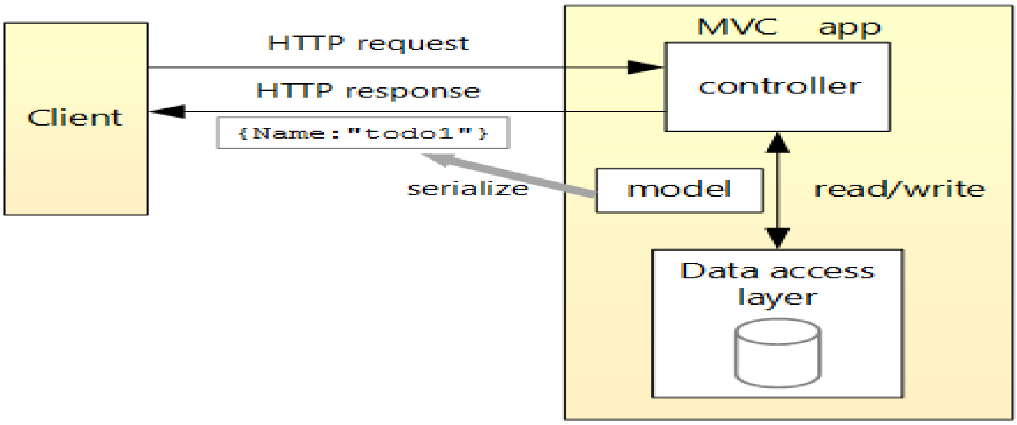
  A basic website / web portal is created using the .NET framework. It is created using HTML, CSS (Cascading Style Sheets) & JavaScript. It will act as a user interface for this web application. Its main functionality will be to retrieve the respective values entered by the user of the current active tab and to show the results after processing the data.

- *Database*

  Database is required to store and manage the data, for this purpose, MS SQL server 2019 is used. One of the primary purposes of Microsoft SQL Server is ensuring the security of databases, especially with a Microsoft SQL Server database administration service. Unlike other database management software, the installation and configuration of Microsoft SQL Server are easier. With Microsoft SQL Server, you do not have to have another data storage from the same database if you are using a different device. Microsoft SQL Server eliminates the risk of losing data by having features for data recovery and restoration.

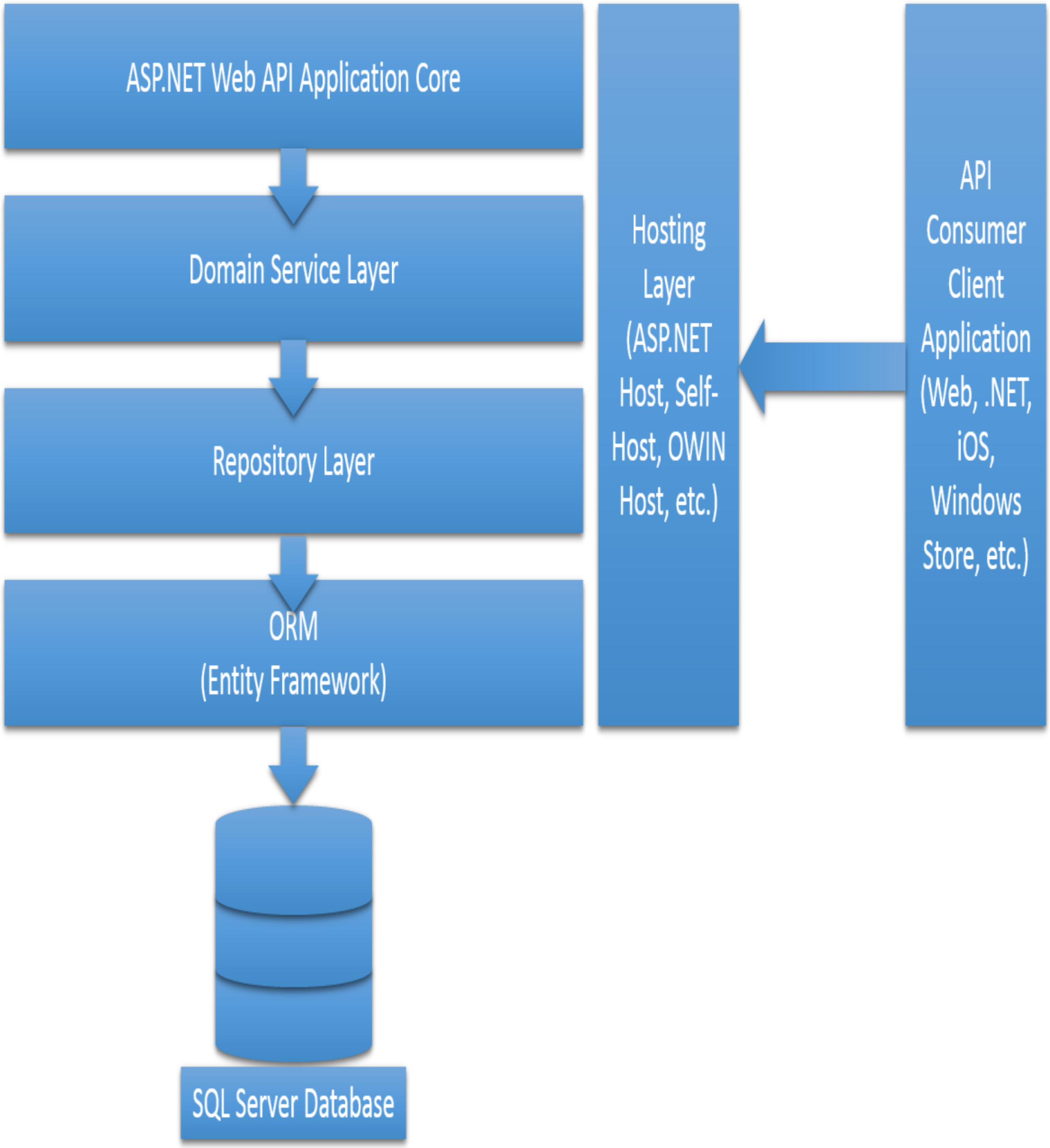
- *Web API as Backend*

  The **ASP.NET Web API** is a great framework provided by Microsoft for building HTTP (Hyper Text Transfer Protocol) services that can be consumed by a broad range of clients including browsers, mobiles, iPhones, and tablets, etc. Moreover, ASP.NET Web API is an open-source and ideal platform for building REST-full services over the .NET Framework.



3.2 Conceptual (or Logical) View

The following diagram, which shows how the architecture functions at a prominent level, could be used to represent the logical view. Entity framework transfers data to the ASP.NET Web API Application layer after interacting with the SQL Server Database.


ASP.NET Web API Application Core
Domain Service Layer
Repository Layer
ORM
(Entity Framework)
SQL Server Database
Hosting Layer (ASP.NET Host, Self-Host, OWIN Host, etc.)
API Consumer Client Application (Web, .NET, iOS, Windows Store, etc.)

4 Low Level Design

4.1 Frontend UI (User Interface)

4.1.1 User Interface (HTML, CSS)

This is the interface which the user will see and interact with. It will be used to start the process and then show the result at the end.

4.1.2 Background and Content Scripts (JavaScript)

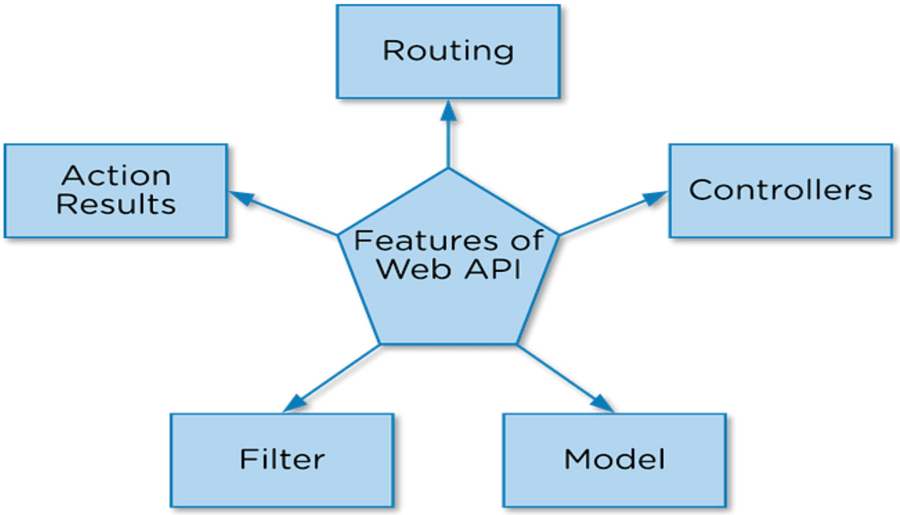
The UI design of the Wellness Score Web App prioritizes simplicity and ease of use for both Customers and Admins. The homepage features a clean and modern design, with clear buttons for Customers and Admins to access their respective sections of the app. The Customer sign-up form is straightforward and easy to navigate, with all necessary fields clearly labeled and organized in a logical manner. The diagnosis form is also clear and intuitive, with all health parameters prominently displayed and easy to input. For Admins, the app includes a dashboard with a clear overview of all Customers and their associated Wellness Scores. The ability to edit and manipulate diagnosis information is also clearly labeled and easy to access. Overall, the UI design of the Wellness Score Web App gives importance to functionality and efficiency, while still maintaining a visually appealing and user-friendly interface.

4.2 Backend

4.2.1 Features of C# Web API (Application Programming Interface)

There are five features of C# Web API, they are:

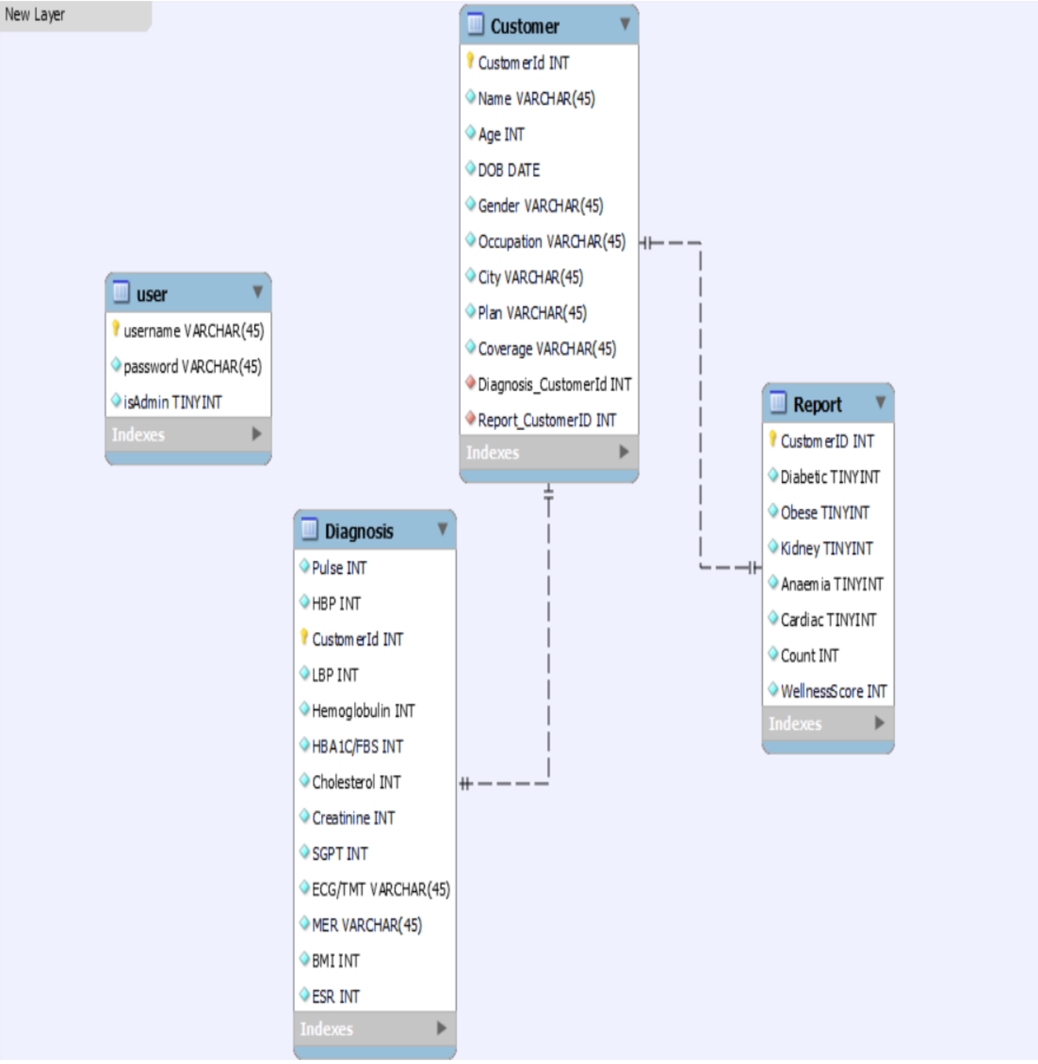
1. Routing: It helps in routing through different APIs.
2. Controller: It gives functional capabilities to the web application.
3. Model: It gives structural capabilities to the web application.
4. Filter: It gives filters to web applications.
5. Action Result: It can keep the action logos user, such as data retrieval.



4.3 Database

MSSQL database is used as we need for querying or fetching data from multiple tables at the same time. This database stores data given by the user from the front end of the application. This means that over time as the database grows the number of records will increase. Thus, increasing the accuracy of the wellness score of the customer.

4.3.1 Database Design



5 User Interface Design

5.1 Application Control

A simple web application with multiple pages (views) inter-connected and programmed in C#.NET MVC and basic HTML, CSS, and JavaScript (as of now). The user must enter the following values to get the desired output which is the wellness score: name, age, height, weight, date of birth, gender, city, occupation, plan, coverage, pulse, bp, hemoglobulin, cholesterol, creatinine, etc. The BMI (Body Mass Index) can be calculated in the backend and shown on the front end to the user as BMI = weight / (height * height).

The future scope of this project is that it can be broadly transformed into predicting the health risks of the users using some of the machine learning algorithms and big data. In this project, a wellness score is generated which could be further used to generate a report where the users can get to see their predicted health issues by using the machine learning models and artificial intelligence. For example, a profoundly serious disease like Cancer can be predicted.

5.2 UI (User Interface)

A snapshot of the web application is to be added. The page would consist of a wellness score rating of the user after receiving the above-described inputs from the user. After the wellness score is calculated in the backend within a range of 1-10, the output is shown as legends consisting of three colors namely red, yellow, and green. One legend out of the three would be displayed as a result, green stating that the user is healthy, yellow indicating that the user needs to undergo some minor treatments and red being an alert that the user is in a critical health risk. The below figure can be referred.

Legends	Wellness Score
🟩	>=7
🟥	<=4
🟨	>=5 and <=6