PERSONALIZED HEALTH AND WELLNESS ASSISTANT

SEQUENCE DIAGRAM, COLLABORATION DIAGRAM & STATE TRANSITION DIAGRAM

Course Title – Software Engineering

Slot – G2 + TG2

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Introduction –

The ‘Personalized Health and Wellness Assistant’ will serve as a new generation mobile application that will include artificial intelligence and machine learning components to suggest a recommended health and wellness plan based on data inputted by the user. This is a new concept which will include a chatbot and will assist the users with medication and prescription guidance; therefore, the usage of the app will be enhanced while appropriate health support will be provided. The most important one is to educate and give specific recommendations concerning the state of one’s health and help to make the right decision.

To accomplish the mentioned above proposed objective of a well-structured and efficient manner of development, Software Development Life Cycle, namely the Incremental Model has been chosen. This way the application is develop in phases including this feedback of users and can be improved gradually by incorporating more features. Thus, when realizing the project in stages, it is also possible to ensure that each of the elements is functional and the final outcome is a usable application that will meet the needs of end-users. It also shows the concrete description of Incremental Model in the framework of the ‘Personalized Health and Wellness Assistant’, as well as naming all the activities of each phase and their outcomes.

Sequence Diagram –

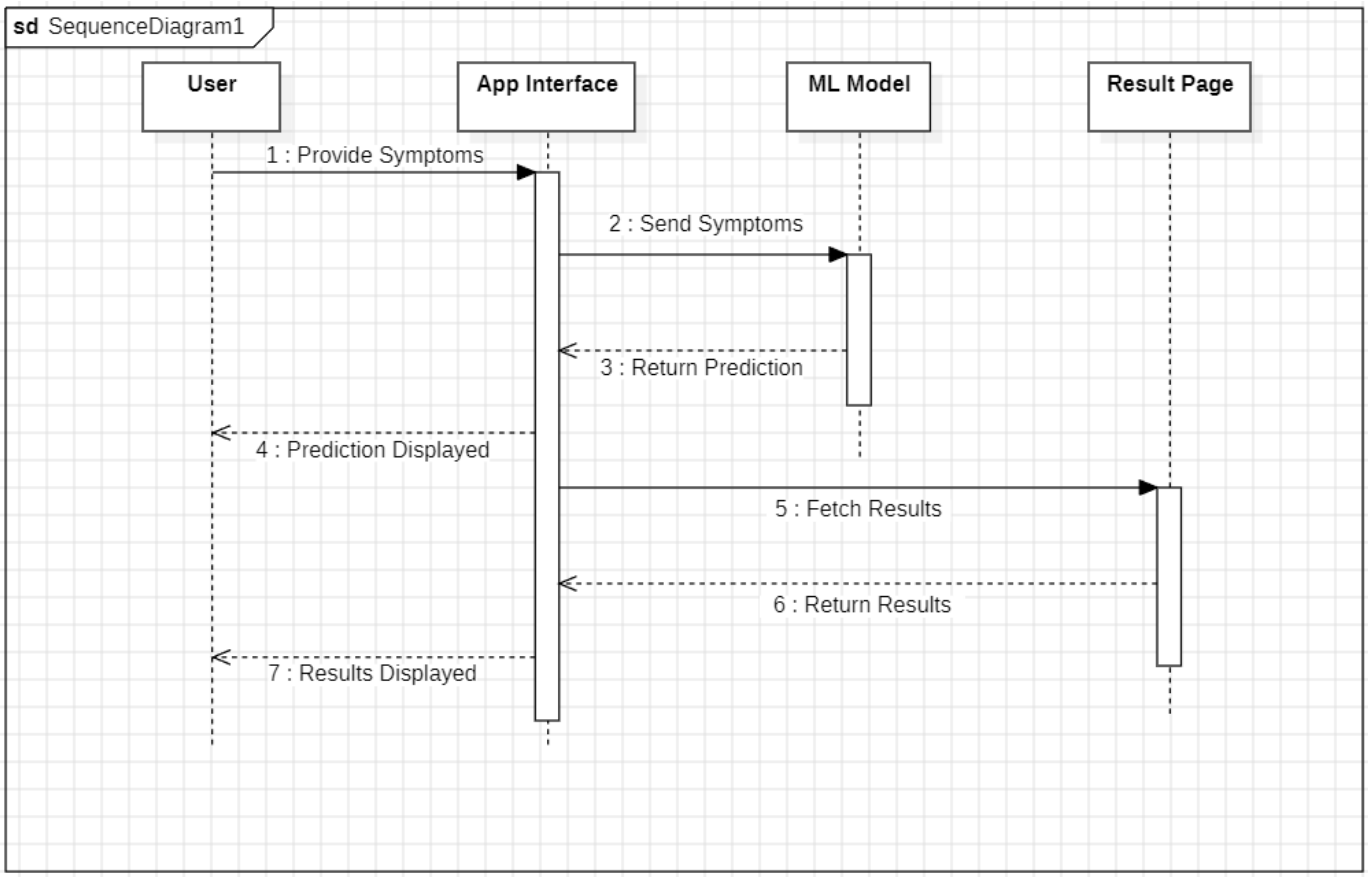
A sequence diagram represents the flow of interactions between different components of the system in a time-sequential order. For the "Personalized Health and Wellness Assistant" project, the sequence diagram illustrates how the user interacts with the system to input their health data and symptoms, and how the system processes this information. It shows the user selecting symptoms, which are sent to the machine learning model for disease prediction. The model processes the input and returns the predicted disease, which is then displayed to the user. The diagram highlights the sequence of method calls, messages, and responses exchanged between components like the user interface, the machine learning model, and the backend services (e.g., Firebase), ensuring a smooth and accurate data flow for predictions and health tips. This diagram visually demonstrates how each component collaborates to provide the user with personalized health results in real-time.

Steps –

Lifelines –

- User
- App Interface
- ML Model
- Result Page

Final Sequence Diagram –



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Personal Health Assistant

Collaboration Diagram –

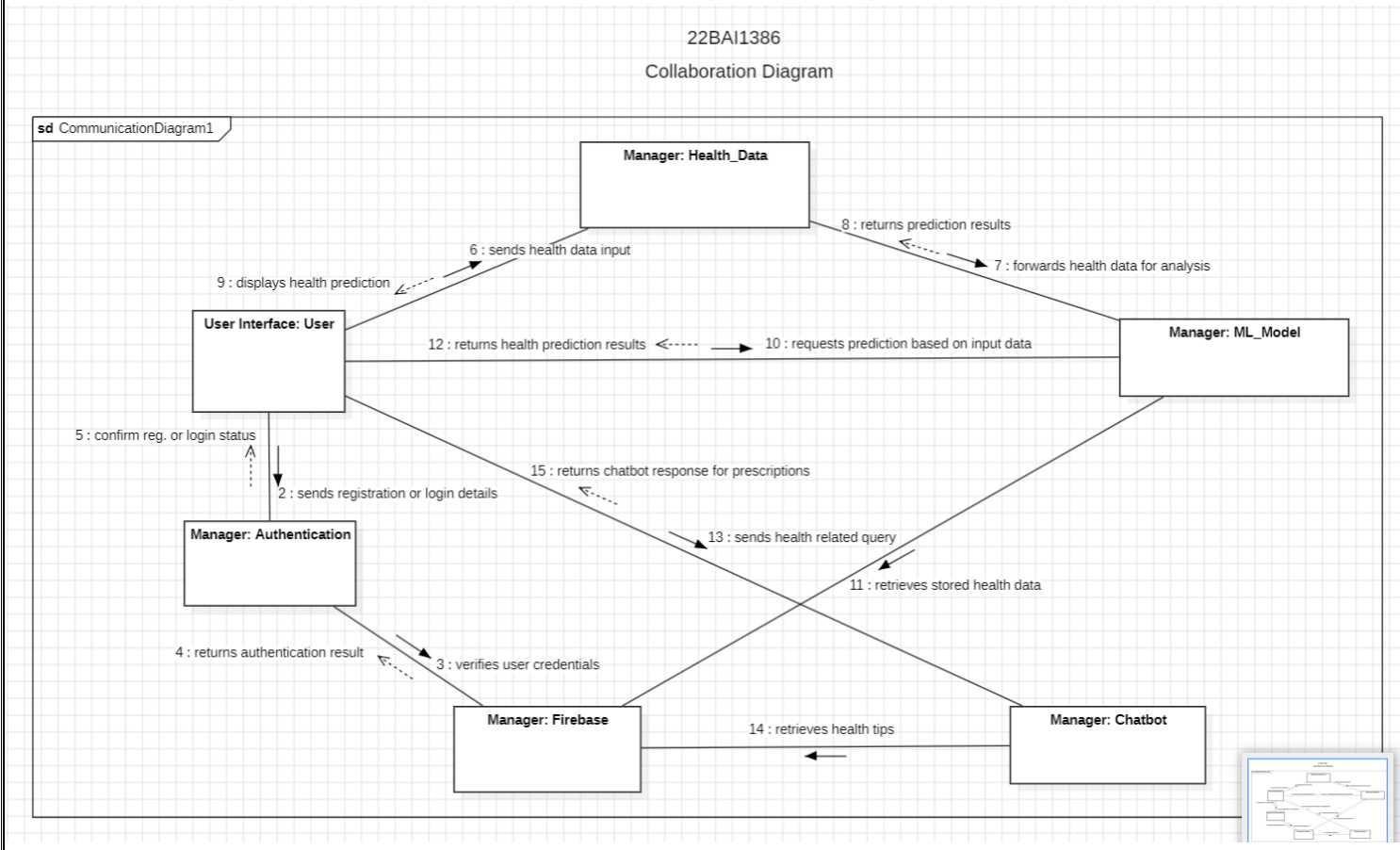
A collaboration diagram, also known as a communication diagram, shows the interactions between objects and components in a system to achieve a specific outcome. In the "Personalized Health and Wellness Assistant" project, the collaboration diagram demonstrates how various components, such as the user, the user interface, the machine learning model, the Firebase backend, and the health prediction system, work together to provide personalized health results. It depicts the relationships and message exchanges between objects, like the user selecting symptoms and inputting health data, the system retrieving that information, and the machine learning model processing it to generate predictions. This diagram emphasizes the structural relationships between components and how they collaborate to deliver accurate health insights, guiding users through their health journey.

Steps –

Lifelines –

- User Interface: User
- Manager: Authentication
- Manager: Health Data
- Manager: ML Model
- Manager: Chatbot
- Manager: Firebase

Final Collaboration Diagram –



State Transition Diagram –

A state transition diagram illustrates the different states an object or system can be in, as well as how it transitions from one state to another based on various events or conditions. In the "Personalized Health and Wellness Assistant" project, the state transition diagram represents the different stages the system undergoes as users interact with it. For example, the system might start in an "Idle" state, then transition to a "Collecting User Data" state when the user begins entering health information. After the data is submitted, the system moves to the "Processing Data" state, where the machine learning model predicts the health outcomes based on the user's input. Once the prediction is complete, the system shifts to the "Displaying Results" state, where the health advice and prediction are presented to the user. This diagram helps visualize how the system responds to user inputs and events, ensuring seamless transitions and accurate results.

Steps –

States –

- Initial State
- User Registration State
- Login State
- Input Symptom State
- ML Model Processing State
- Display Results States
- Chatbot Interaction State

Final State Transition Diagram –