DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Detailed Level Design Document

On

BMI CALCULATOR

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Submitted By

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1 Document Overview

1.1 Purpose

The purpose of this document is to specify the detailed-level design for the BMI Calculator. This document will act as a map for the implementation of the system. It also provides descriptions for the major components of the BMI Calculator website. UML diagrams are used to ensure that the design is capable of carrying out the functional requirements of the system.

1.2 Audience

This detailed-level design is intended to be used by users who are curious to check their BMI value and their respective health status. This document will also be used to communicate the detailed-level design .

1.3 Detailed-Design Process

Once the high-level design has been completed, we developed a detailed-level design. First a general UML module diagram for the server-side system was generated. Then the team discussed what design patterns could be used to enhance the general design. A more thorough version of the design was generated including the chosen design patterns. Then the team went through each class in the design and decided upon major functions and attributes. Finally, the team used sequence diagrams to verify that the design is capable of satisfying each use case, as specified in the Software Requirements Specification. The process of generating sequence diagrams led to discovery of design flaws and modifications to the design were made as needed.

2 Detailed-Level Design

2.1 UML Diagrams

2.1.1 Use-case diagram

The following use-case diagram will describe the high-level functions and scope of a system. This diagram will also identify the interactions between the BMI Calculator website and its users. As the diagram depicts, the user first opens the website, enters the name, enters the height in meters and enters the weight in kilograms. One the user enters this information, the database stores and verifies. After verification, the BMI is calculated and the BMI value and the health status is finally displayed.

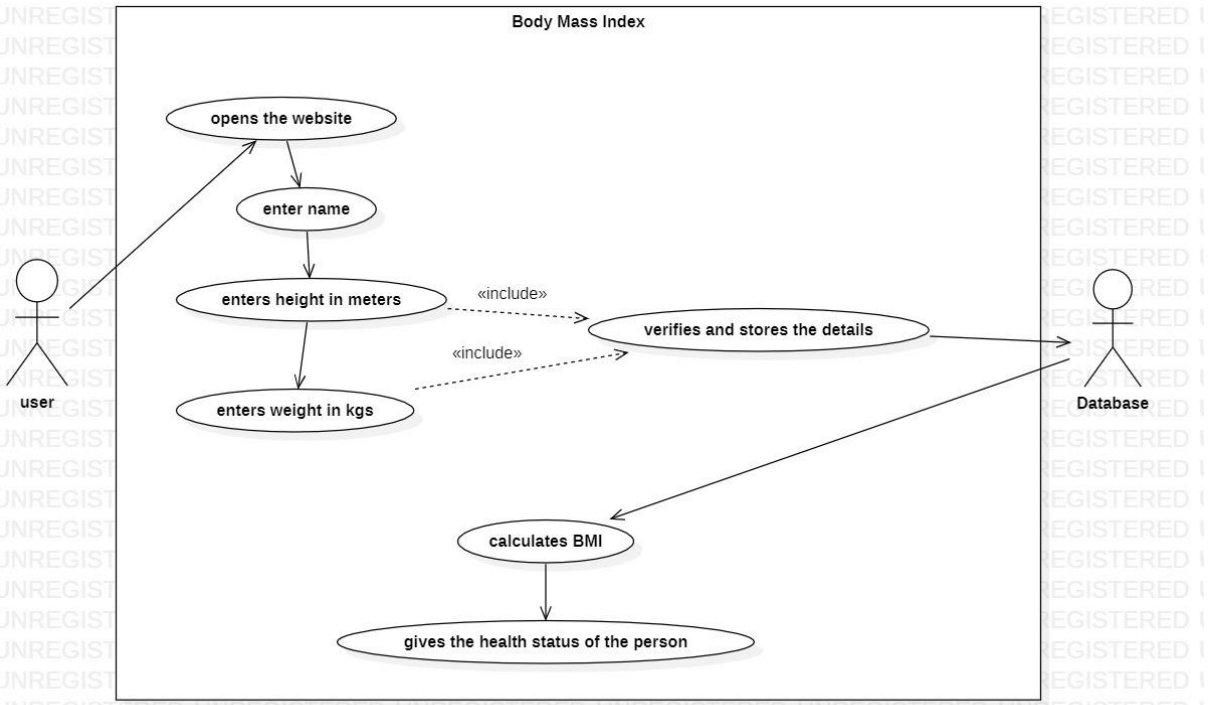

Fig.1 Use-case diagram for BMI Calculator

2.1.2 Sequence Diagram

The following sequence diagram will describe the start to end process of how users will interact with the website to calculate their BMI value. It also shows the role of the database on storing the data entered by the users.

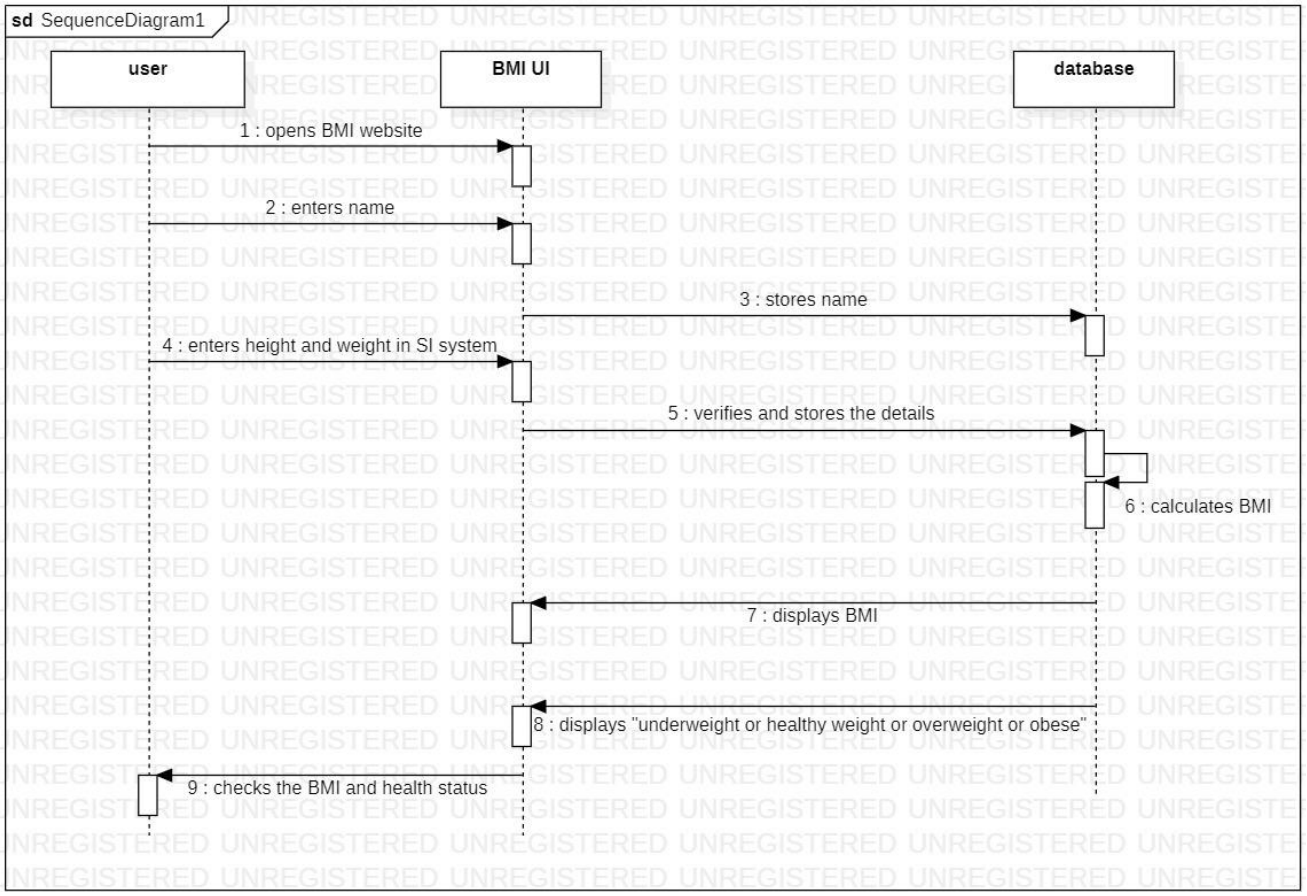

Fig.2 Sequence diagram for BMI Calculator

2.1.3 Class Diagram

The class diagram is the main building block of object-oriented modeling. It is used for general conceptual modeling of the structure of the application, and for detailed modeling, translating the models into programming code. For this bmi calculator website, the following class diagram will help to implement the code.

In the BMI Calculator application, there are four classes: User, Database, Display and BMI Calculation.

- The attributes under the “User class” will be name, height and weight. As soon as the user opens the website, these are the details which the user needs to fill in before calculating their BMI.
- The attributes under the “Database Class” will be storage and verification. The database stores and verifies the data entered by the user to proceed with the process.
- The attributes under the “Display Class” will be to display the BMI value and the health status. Once the user enters the height and weight, the website calculates and displays the BMI Value and also displays if the user is underweight, normal, overweight, obese or extremely obese.
- The attributes under the “BMI Calculation” will be weight, height and calculate BMI. In order to calculate BMI, weight and height of the user are required.

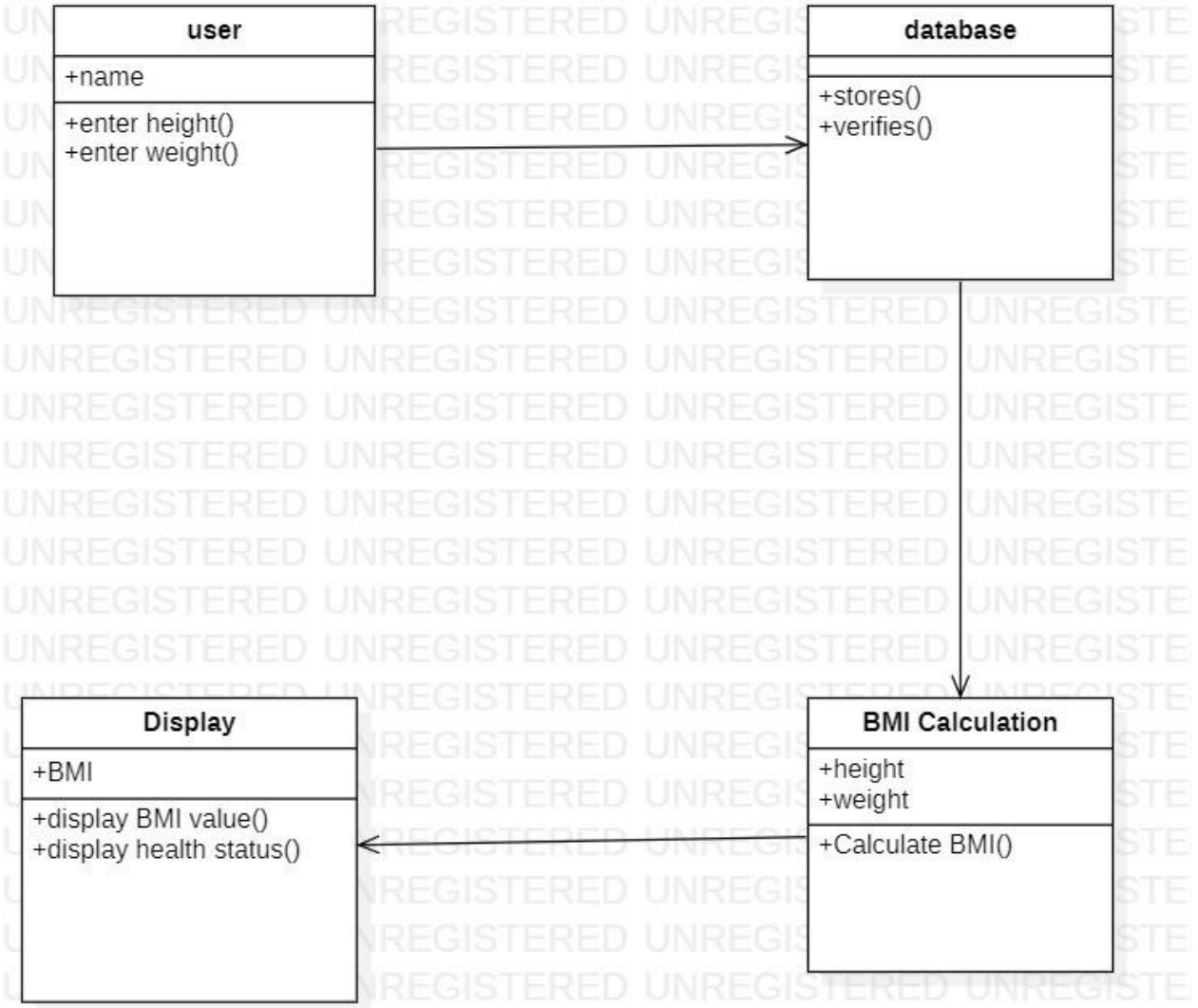

Fig.3 Class diagram for BMI Calculator

2.1.4 Component Diagram

This component diagram will help you to understand the BMI Calculator structure. It depicts how all the components are wired together for this application to work successfully.

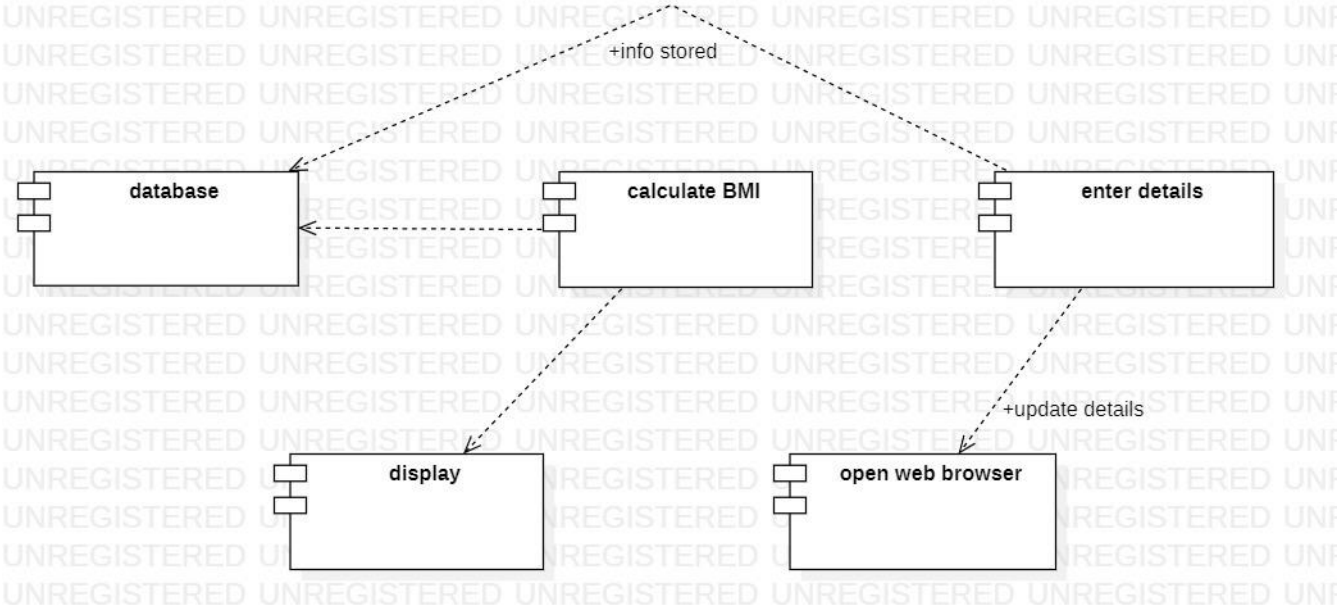

Fig.4 Component Diagram for BMI Calculator