Software Design Document for Pillar

Prepared by the Pillar Team

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CSC 532: Software Engineering

Contents

1 Introduction

1.1 Purpose

The main purpose of the Software Design Document (SDD) is to provide design details on the Pillar project and their implementation.

1.2 Scope

The scope of the Pillar project is to build an easy to use Dashboard to control IoT devices within a home and provide a versitile database to track user interactions with IoT devices. The project encompases creating a user interface that removes the need for any technical maintence or technical understand of the IoT devices, enables the user to passive interact with the IoT devices(triggers), and the design of a database structure that can be used in the long term with many entries. The Pillar project will also integrate with the Smart Fridge project.

2 Design Overview

2.1 System Features

2.1.1 Control Devices The Dashboard enables users to alter any connected devices current state and set preferences.

2.1.2 Track Device History Anytime a device state or attribute is altered, the action will automatically log the new state/attribute, a timestamp, the user, and other information that can be used for analysis at another time.

2.1.3 Group Devices by Location Pillar will provide the user for a way to identify each device by it's location(Room) and functionality(device type). This will also be built into to the database for future analysis.

2.1.4 Add Device Pillar provides information for adding devices that can be controlled via the dashboard. The current scope requires manual labor by the user, but future scope hopes to automate this task.

2.1.5 Remove Device Pillar provides information for removing devices that can be controlled via the dashboard. The current scope requires manual labor by the user, but future scope hopes to automate this task.

2.1.6 Display Devices The Dashboard enables the user to check the state of any device in realtime and provide a complete list of connected devices.

2.1.7 Access Device History The device history must be accessible and navigable with long term goals in mind that have yet to be determined. This includes analysis, system optimization, and possible intelligent agents.

State.png

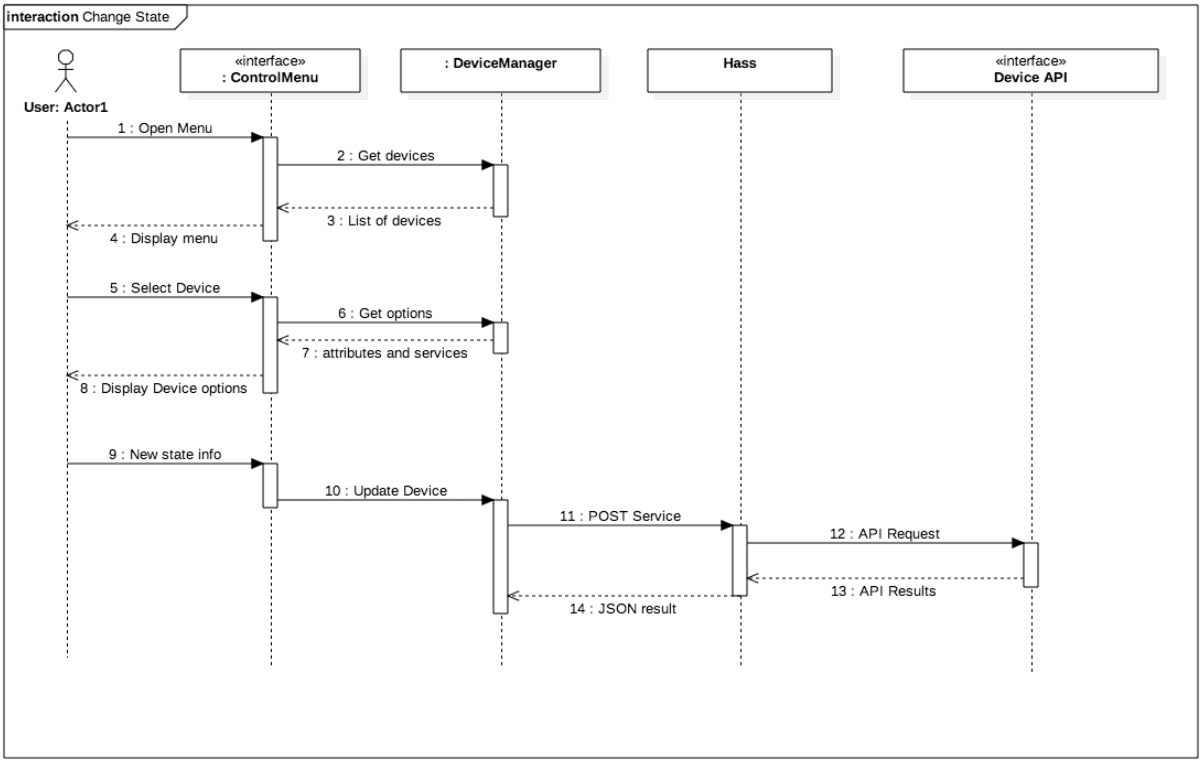

Figure 2.1.1.1: Sequence Diagram: Control Devices

Device State and Store in Database.png

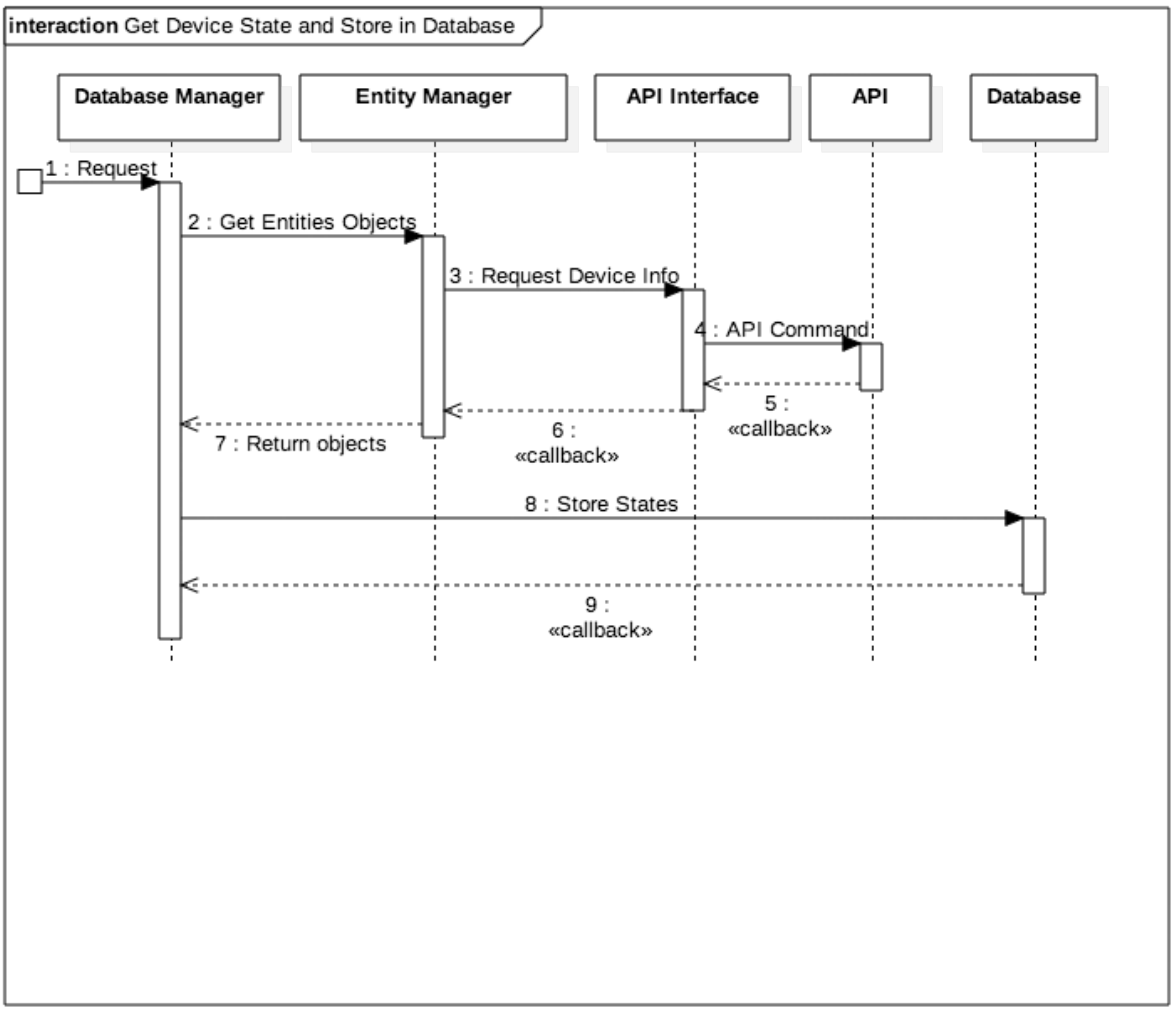

Figure 2.1.2.1: Sequence Diagram: Track Device History

Devices.png

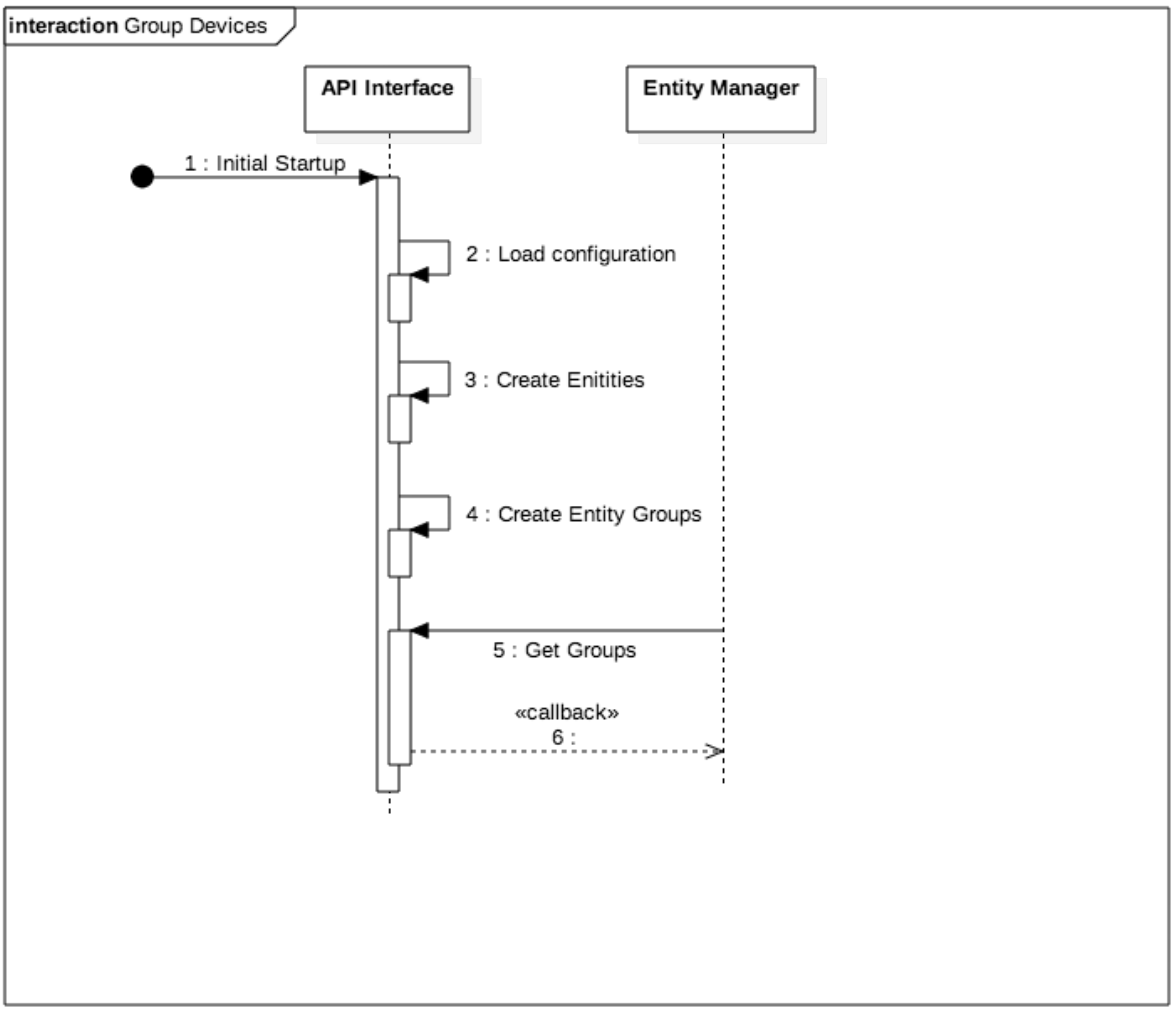

Figure 2.1.3.1: Sequence Diagram: Group Devices

Device.png

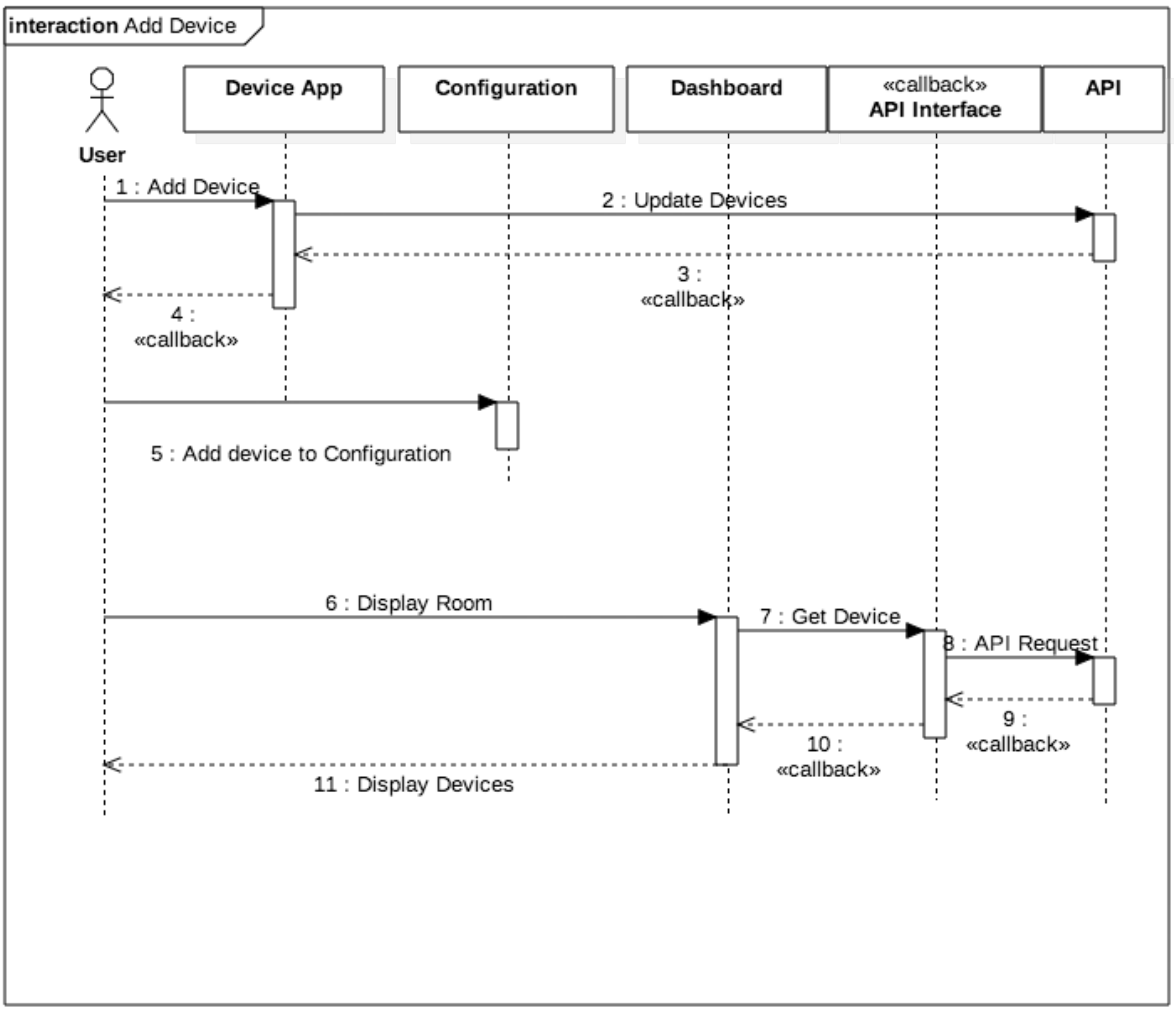

Figure 2.1.4.1: Sequence Diagram: Add Device

Device.png

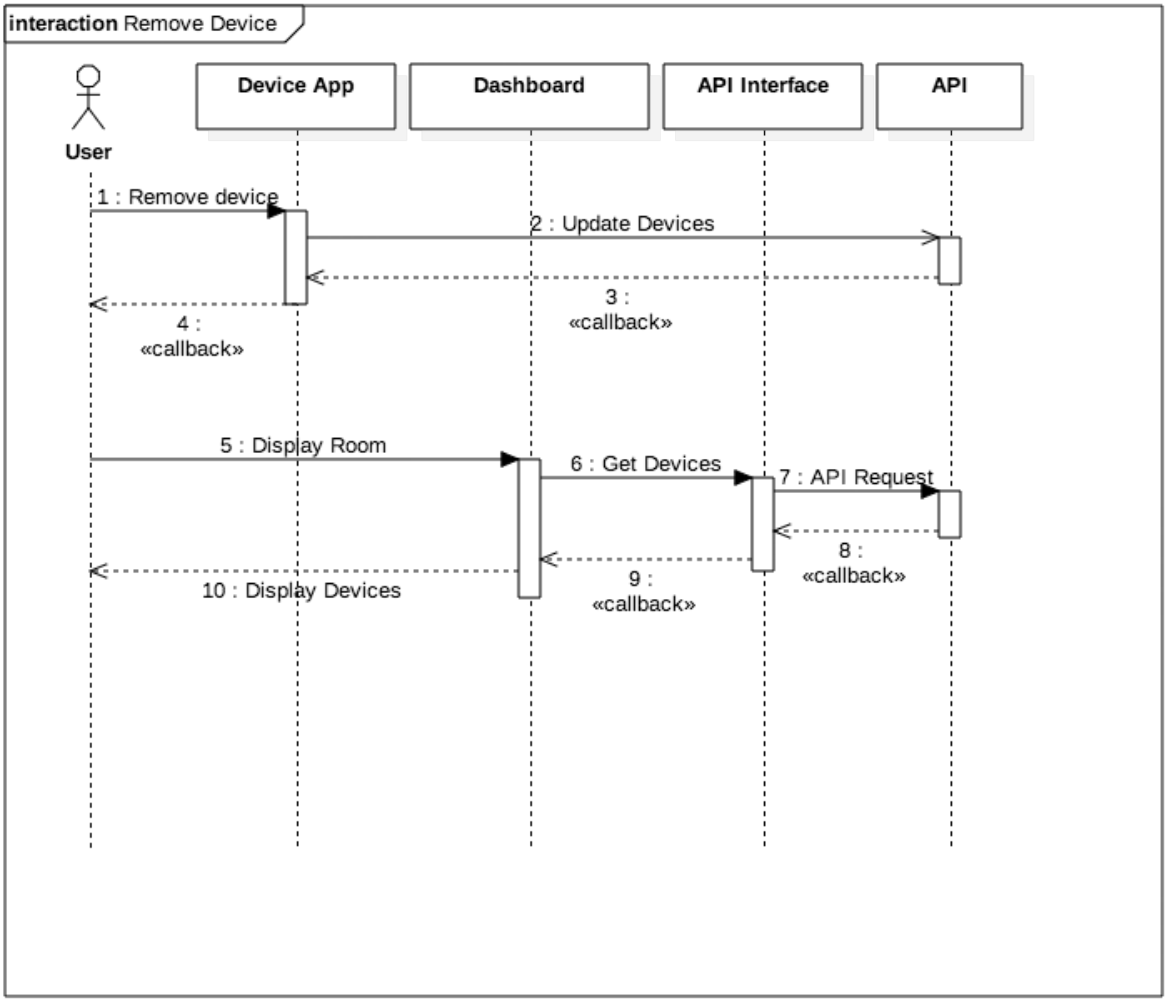

Figure 2.1.5.1: Sequence Diagram: Remove Device

Devices.png

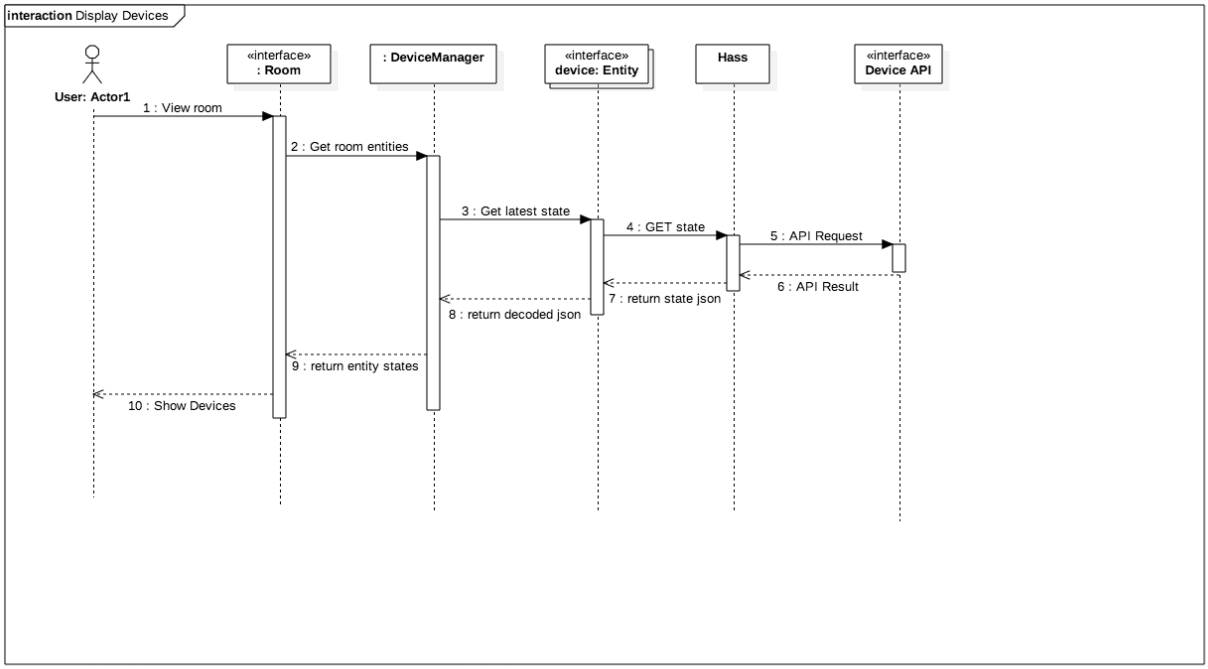

Figure 2.1.6.1: Sequence Diagram: Display Devices

Device History.png

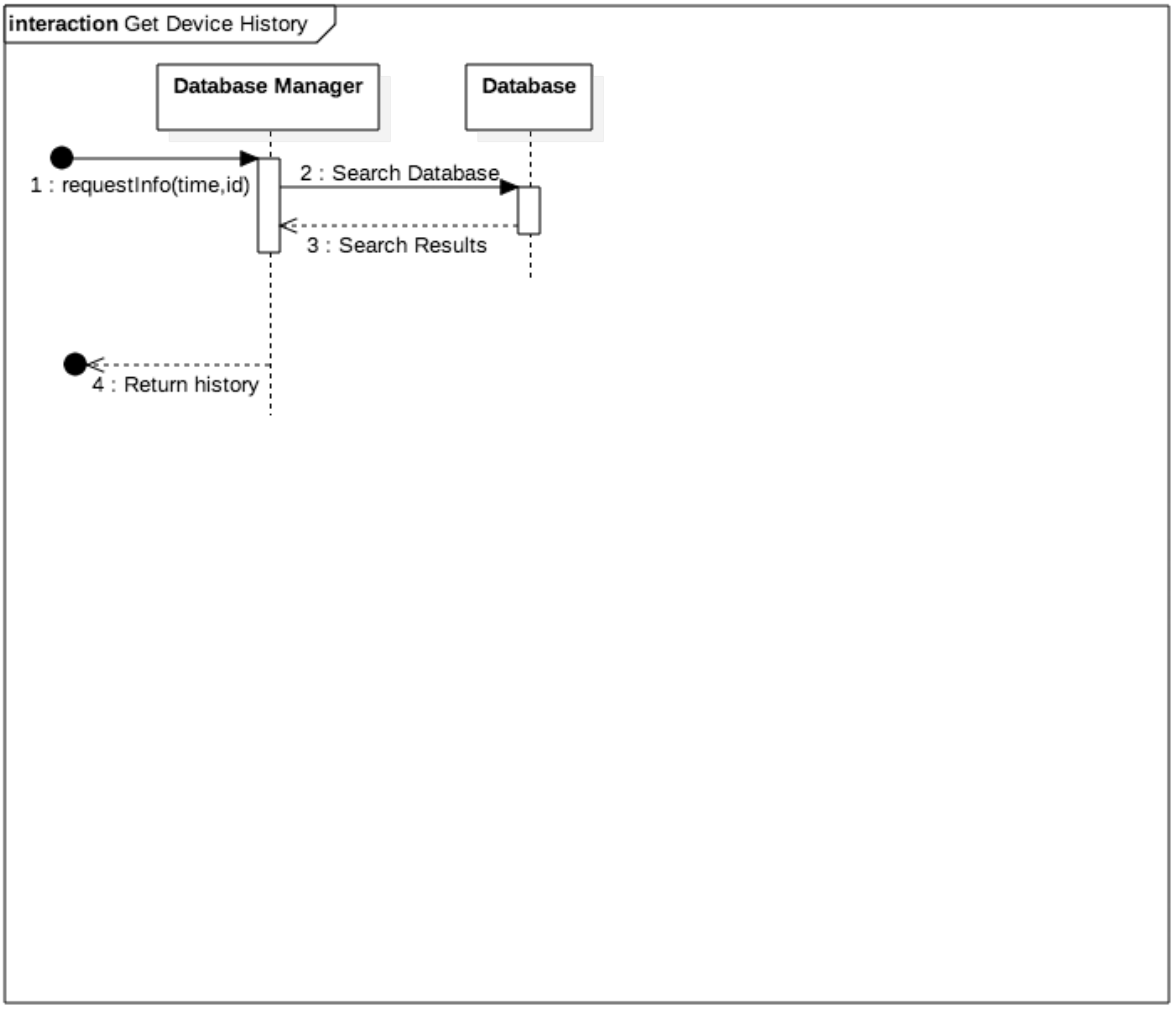

Figure 2.1.7.1: Sequence Diagram: Device History

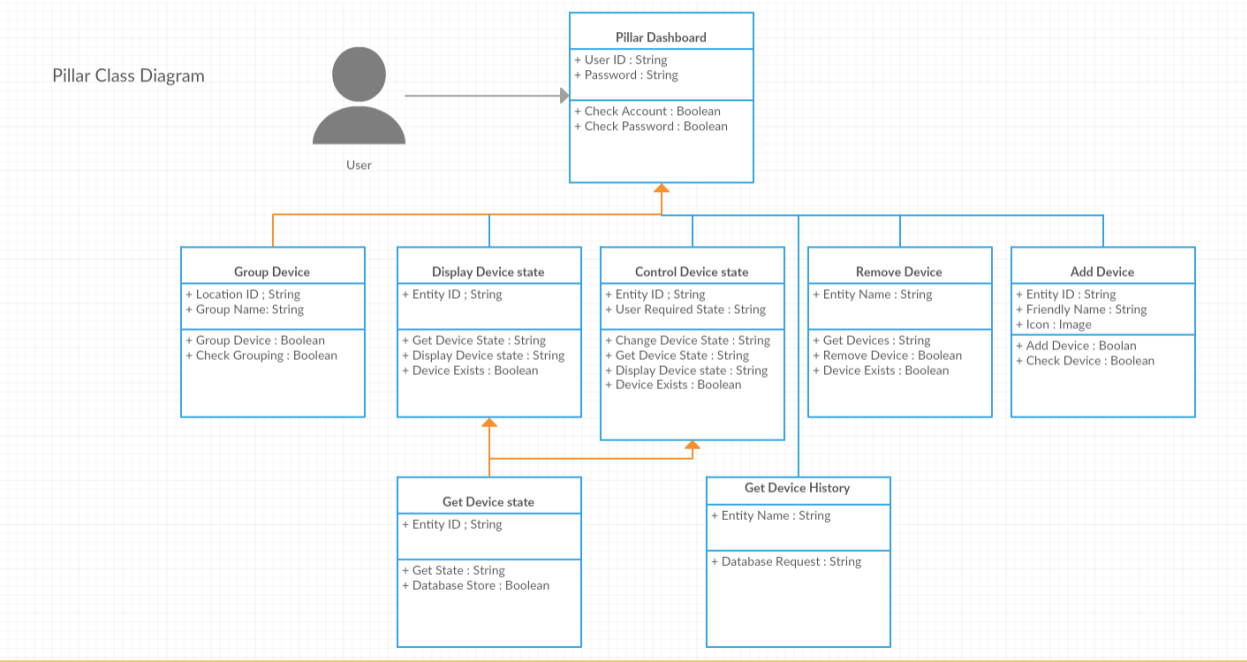

Figure 2.1.7.2: Class Diagram: Pillar Class Diagram

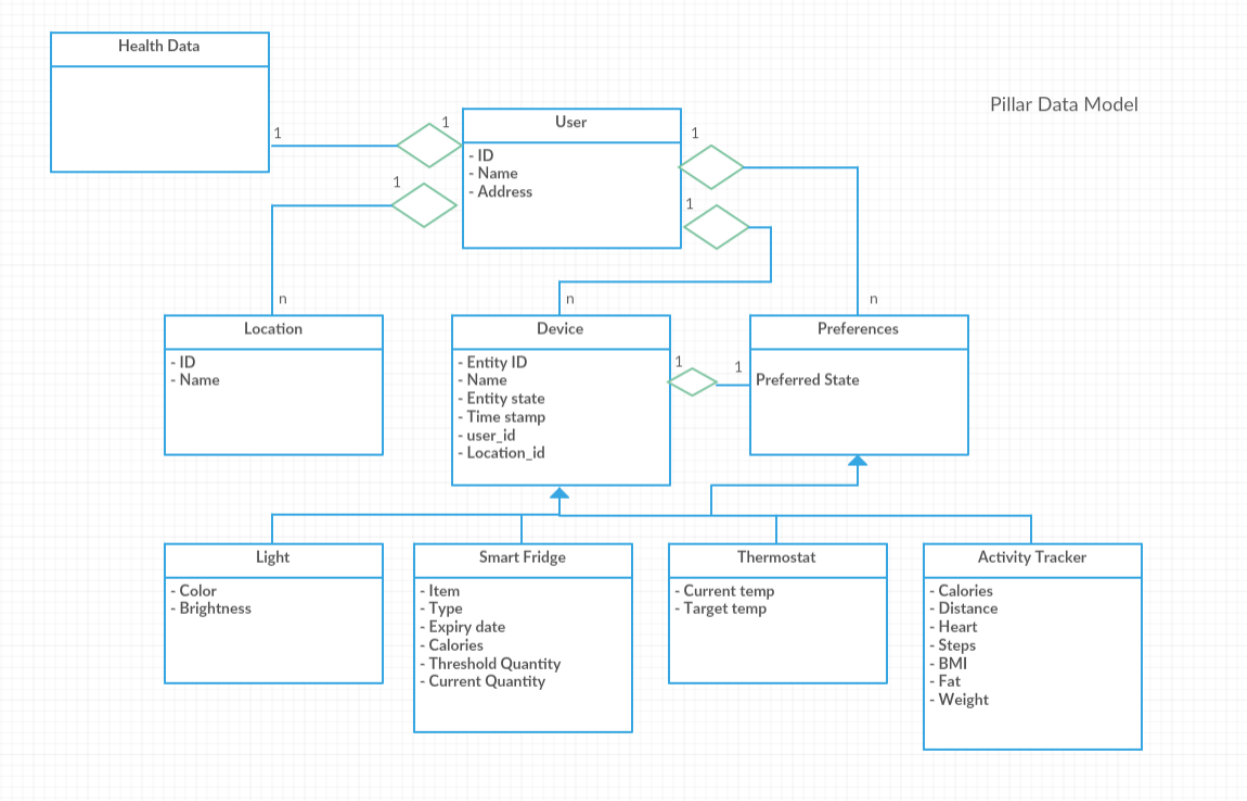

Figure 2.1.7.3: Class Diagram: Data Model

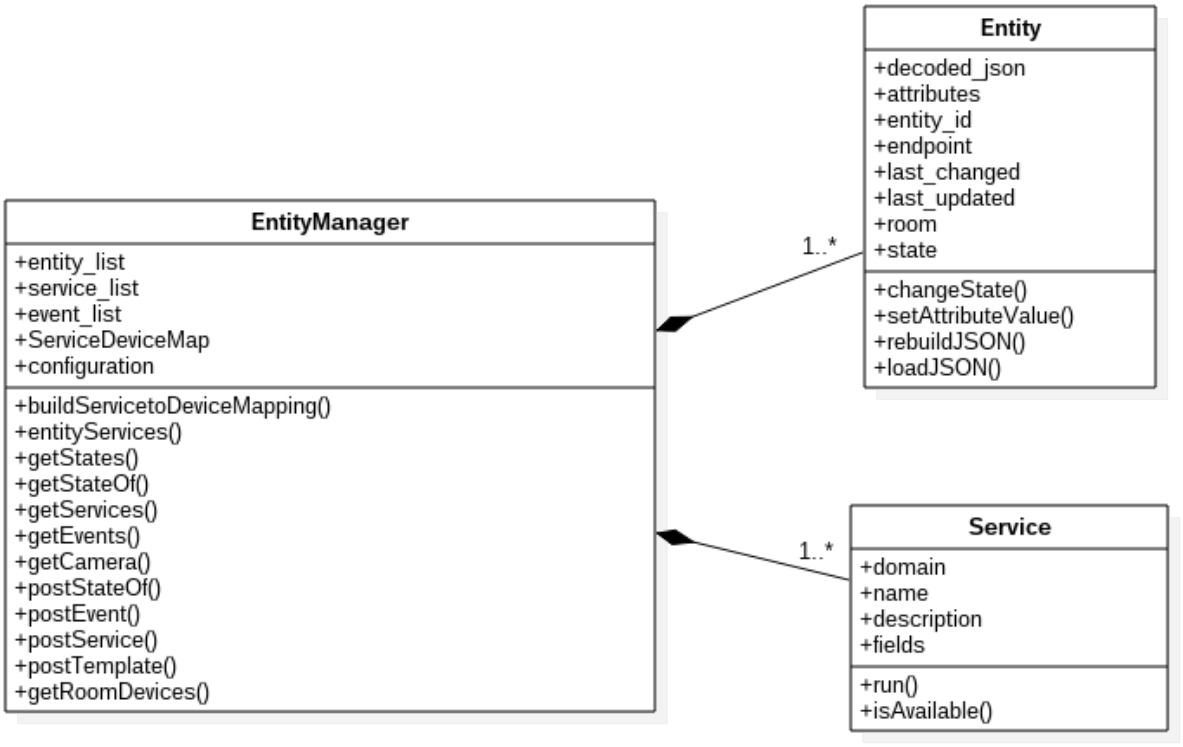

Figure 2.1.7.4: Class Diagram: Entity Manager