Lab 1 – Thought Locker

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# LAB 1 – THOUGHT LOCKER

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1 Introduction

Introducing Thought Locker, an application designed to help individuals with mild to moderate dementia maintain their independence. With one in ten Americans aged 70 and older affected by some form of dementia, and with 50.4% of cases being mild and 30.3% moderate, the need for a solution to help these individuals is more pressing than ever ("Fact sheet," n.d.; "Half," n.d.).

As the number of individuals diagnosed with dementia continues to increase, it is essential to provide a solution that allows individuals to maintain their independence for as long as possible. With Thought Locker, individuals with mild to moderate dementia can receive the support they need, while still maintaining some level of independence. This reduces the stress on caregivers and family members who would otherwise be required to provide constant attention and care.

Thought Locker provides various features to assist individuals with mild to moderate dementia in their daily living activities. It offers reminders, item location assistance, and contact assistance, allowing dementia sufferers to manage their daily tasks effectively. Thought Locker provides analytics that can be shared with caregivers, enabling them to monitor the individual's progress and provide appropriate support as needed. This monitoring feature can help detect changes in mood, and provide insights into the individual's mental state.

In summary, Thought Locker is an application that provides the necessary support for individuals with mild to moderate dementia to maintain their independence and peace of mind to their family members and caregivers. With a steadily increasing number of individuals diagnosed with dementia, the need for a solution such as Thought Locker has never been greater.
2 Product Description

Thought Locker is a highly customizable solution designed to help individuals with daily living activities. With features such as a calendar, item finders, sensors, notifications, and patient monitoring, it provides the necessary support for individuals to maintain their independence while still receiving appropriate assistance. Compatibility with smartphones, tablets, and other devices on Android and iOS operating systems makes Thought Locker accessible to a wider audience.

2.1 Key Product Features and Capabilities

Thought Locker is designed to help individuals with daily living activities. It is compatible with smartphones, tablets, and other devices on Android and iOS operating systems. Users will need to sign up for an account using their email address for authentication. Thought Locker includes a calendar feature that allows users to schedule reminders and customize settings for reminders and notifications. Users will also have access to item finders, enabling them to locate commonly misplaced items. Thought Locker can utilize sensors to track item location, and caregivers will have access to motion sensors to detect activity in the home.

Thought Locker also provides daily reminders and notifications, ensuring that users do not miss important activities or appointments. Additionally, family members or caregivers can monitor patient activities through the patient monitoring feature, which provides peace of mind for both the caregiver and patient. Thought Locker is highly customizable, allowing family members or caregivers to customize the app for each patient's unique needs. Patients can also control some settings to maintain a sense of independence.

2.2 Major Components (Hardware/Software)
The major components of Thought Locker include hardware components, consisting of a mobile device with internet access, an application server, and a database server, and software components, consisting of programming language, testing framework, repository, APIs, version control, issue tracking, continuous integration, and containerization.

Figure 1

*Thought Locker Major Functional Component Diagram*

Thought Locker will require a mobile device (either Android or Apple) with internet access to operate. An application server will be needed to host Thought Locker. A database server will be needed to store and manage user data. The backend server for Thought Locker will be hosted on AWS, providing secure and reliable access to the application server and database server. Thought Locker will use PostgreSQL and MongoDB as its databases, allowing for efficient storage and retrieval of user data. Thought Locker will be developed using the JavaScript language, specifically the React and Node.js frameworks. Thought Locker will be tested using the Jest testing framework to ensure a bug-free and reliable application. Thought
Thought Locker will utilize React-native APIs for Contacts and BLE manager functionality, enabling integration with other applications and services. It will also use the Google Maps Geolocation API for location-based services. Thought Locker’s code will be version-controlled using GitHub, allowing for easy tracking of changes and updates. It’s issues and bugs will be tracked using GitHub's issue tracking functionality, ensuring quick identification and resolution of any issues. Also, it will be continuously integrated using GitHub's continuous integration functionality, ensuring that the application is always up-to-date and bug-free. Thought Locker will be containerized using Docker, enabling efficient deployment and scalability of the application.

3 Identification of Case Study

Thought Locker is a versatile application designed to help individuals with mild to moderate dementia and their caregivers/family members to manage the challenges of the disease. It offers a range of features that cater to different needs, and its prototype will showcase these features in real-life situations. Thought Locker is an easy-to-use and cost-effective method to locate misplaced items, remind patients of medication and appointments, provide patients with the ability to contact a caregiver when needed, and offer a way for caregivers to monitor patient habits using analytics. In addition to these primary user groups, other stakeholders that could benefit from Thought Locker include medical facilities, insurance companies, and Alzheimer's research groups based on the anonymized data collected.

The prototype of Thought Locker will demonstrate several user cases, with six users (three mild, three moderate) being mocked up to showcase its functionality. Thought Locker will
showcase its ability to help patients locate misplaced items, schedule reminders, and contact caregivers. Caregivers and family members will have the ability to monitor patients, provide assistance, and analyze trends in patient behavior using analytics to chart dementia progression.
4  Product Prototype Description

- [ TO BE DETERMINED ]

4.1 Prototype Architecture (Hardware/Software)

- [ TO BE DETERMINED ]

4.2 Prototype Features and Capabilities

- [ TO BE DETERMINED ]

4.3 Prototype Development Challenges

- [ TO BE DETERMINED ]
5 Glossary

[ TO BE DETERMINED ]
6 References


