**Dental Clinic Services System**

Traceability Record

By

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Mrs. Yun Rim Park

**Test Plan**

**Revision Table**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Document Name** | **Detail** | **Status** | **Date** | **Viewable** | **Reviewer& Responsible** |
| DCSS - Traceability Record  - ver 0.1 | Add all document | Draft | 07/02/2014 | Adviser | Kanokwan&Worapun |
| DCSS - Traceability Record  - ver 0.2 | Add Bi-directional metrics System | Draft | 07/17/2014 | Adviser | Kanokwan&Worapun |
| DCSS - Traceability Record  - ver 0.3 | Add Unit test case | Draft | 07/30/2014 | Adviser | Kanokwan&Worapun |

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# Chapter One: Introduction

## 1. Introduction

### 1.1 Objectives

Dental clinic service system consists of a web application and a mobile application which supports iOS7. The system supports English language for people who are patients, officers, or dentists of dental clinics. Furthermore, it offers some features for visitors who would like to gain information about the clinic. This system will reduce officers’ work and help patients save their time. Patients can find information about the dental clinic and personal information using the mobile application as well as the web application. For the visitor who wants to have a dental treatment from the clinic, he/she can make an appointment with a dentist through the application, and the dentist can use the system for checking patients’ appointment schedule. Dental clinic services system integrates the services that are provided by most dental clinics into the web application and the mobile application. By combining all the services into one, the system provides more convenience to dental clinic users as well as staff.

### 1.2 Purpose

The purpose of the traceability record document is to show relation of the project. The traceability is linked between user requirements to system requirement specification, use case, activity diagram, sequence diagram and user interface design.

### 1.3 Project Scope

The objective of this software design is to specify the requirements that the system should fulfill, which are as follows:

* Dental clinic services system provides an application that is accessible via web browser on a computer and also on a mobile phone.
* Dental clinic services system on mobile phone support iOS.
* Dental clinic services system supports English language only.
* Dental clinic services system provides features for dental clinics’ registered user whose are patients, officers and dentists.
* Dental clinic services system assists managing appointments of patients and dentists using the web application and the mobile application.
* Dental clinic services system provides a user authentication for each patient and dentist through dental clinic officers

# Chapter Two: Bi-directional metrics System

## 2. Bi-directional metrics System

### 2.1 Bi-directional metrics System: Requirement Specifications and User Requirement Specification

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| No. | System requirement specification | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 1 | SRS-01 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | SRS-02 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | SRS-03 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | SRS-04 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | SRS-05 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | SRS-06 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | SRS-07 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | SRS-08 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | SRS-09 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | System requirement specification | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 10 | SRS-10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | SRS-11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | SRS-12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13 | SRS-13 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | SRS-14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | SRS-15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | SRS-16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | SRS-17 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | SRS-18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | SRS-19 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | SRS-20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 | SRS-21 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 | SRS-22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| No. | System requirement specification | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 23 | SRS-23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 | SRS-24 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25 | SRS-25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 26 | SRS-26 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 27 | SRS-27 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 28 | SRS-28 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 29 | SRS-29 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 30 | SRS-30 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 31 | SRS-31 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 32 | SRS-32 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 33 | SRS-33 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 34 | SRS-34 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 35 | SRS-35 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| No. | System requirement specification | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 36 | SRS-36 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37 | SRS-37 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 38 | SRS-38 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 39 | SRS-39 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 40 | SRS-40 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 41 | SRS-41 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 42 | SRS-42 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 43 | SRS-43 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 44 | SRS-44 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 45 | SRS-45 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 46 | SRS-46 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 47 | SRS-47 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 48 | SRS-48 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| No. | System requirement specification | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 49 | SRS-49 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 50 | SRS-50 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 51 | SRS-51 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 52 | SRS-52 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 53 | SRS-53 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 54 | SRS-54 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 55 | SRS-55 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 56 | SRS-56 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 57 | SRS-56 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 58 | SRS-57 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 59 | SRS-59 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.2 Bi-directional metrics: Use Case and User Requirement Specification

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| No. | Use Case | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 1 | UC-01 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | UC-02 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | UC-03 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | UC-04 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | UC-05 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | UC-06 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | UC-07 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | UC-08 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | UC-09 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | UC-10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | UC-11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | UC-12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| No. | Use Case | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 13 | UC-13 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | UC-14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | UC-15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | UC-16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | UC-17 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | UC-18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | UC-19 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | UC-20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 | UC-21 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 | UC-22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23 | UC-23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 | UC-24 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25 | UC-25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.3 Bi-directional metrics: Activity Diagram and User Requirement Specification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| No. | Activity Diagram | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 1 | AD-01 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | AD-02 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | AD-03 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | AD-04 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | AD-05 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | AD-06 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | AD-07 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | AD-08 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | AD-09 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | AD-10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | AD-11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | AD-12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | Activity Diagram | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 13 | AD-13 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | AD-14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | AD-15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | AD-16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | AD-17 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | AD-18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | AD-19 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | AD-20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 | AD-21 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.4 Bi-directional metrics: Sequence Diagram and User Requirement Specification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. | Activity Diagram | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 1 | SD-01 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | SD-02 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | SD-03 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | SD-04 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | SD-05 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | SD-06 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | SD-07 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | SD-08 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | SD-09 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | SD-10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | SD-11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | SD-12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | Activity Diagram | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 13 | SD-13 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | SD-14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | SD-15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | SD-16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | SD-17 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | SD-18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | SD-19 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | SD-20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 | SD-21 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 | SD-22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23 | SD-23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 | SD-24 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.5 Bi-directional metrics: User Interface Design and User Requirement Specification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. | User Interface Design | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 1 | UI-01 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | UI-02 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | UI-03 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | UI-04 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | UI-05 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | UI-06 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | UI-07 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | UI-08 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | UI-09 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | UI-10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | UI-11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | UI-12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | User Interface Design | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 13 | UI-13 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | UI-14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | UI-15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | UI-16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | UI-17 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | UI-18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | UI-19 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | UI-20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.6 Bi-directional metrics: System Test Case and User Requirement Specification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. | System Test Case | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 1 | STC-01 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | STC-02 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | STC 03 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | STC -04 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | STC -05 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | STC -06 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | STC -07 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | STC -08 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | STC -09 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | STC -10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | STC 11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | STC -12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | System requirement specification | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 13 | STC -13 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | STC -14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | STC -15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | STC -16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | STC -17 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | STC-18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | STC-19 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | STC-20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 | STC-21 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 | STC-22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23 | STC-23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 | STC-24 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 25 | STC-25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | System requirement specification | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 26 | STC-26 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 27 | STC-27 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 28 | STC-28 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 29 | STC-29 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 30 | STC-30 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 31 | STC-31 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

### 2.7 Bi-directional metrics:Unit Test Case and User Requirement Specification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No. | System Test Case | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 1 | UTC-01 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | UTC-02 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | UTC 03 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | UTC -04 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | UTC -05 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | UTC -06 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | UTC -07 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | UTC -08 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | UTC -09 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | UTC -10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | UTC 11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | UTC -12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No. | System requirement specification | URS-01 | URS-02 | URS-03 | URS-04 | URS-05 | URS-06 | URS-07 | URS-08 | URS-09 | URS-10 | URS-11 | URS-12 | URS-13 | URS-14 | URS-15 | URS-16 | URS-17 | URS-18 | URS-19 | URS-20 | URS-21 | URS-22 | URS-23 | URS-24 | URS-25 |
| 13 | UTC -13 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | UTC -14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 | UTC -15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 | UTC -16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 | UTC -17 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 | UTC-18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19 | UTC-19 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | UTC-20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 21 | UTC-21 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 22 | UTC-22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 23 | UTC-23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 | UTC-24 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

# Chapter Three: Traceability record

## 3. Traceability record

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** |
| URS-01 | SRS-01  SRS-02  SRS-03 | AD-01 | UC-01 | SD-19 | STC-01 | UI-19 | UTC-24 |
| URS-02 | SRS-05 | AD-02 | UC-02 | SD-20 | STC-02 | UI-20 |  |
| URS-03 | SRS-01  SRS-02  SRS-06 | AD-03 | UC-03 | SD-04 | STC-03 | UI-14 | UTC-02 |
| URS-04 | SRS-01  SRS-07  SRS-08 | AD-04 | UC-04 | SD-04 | STC-04 | UI-15 | UTC-04 |
| URS-05 | SRS-04 | AD-05 | UC-05 | SD-22 | STC-05 | UI-03 |  |
| URS-06 | SRS-01  SRS-09  SRS-10 | AD-06 | UC-06 | SD-05 | STC-06 | UI-12 | UTC-14 |
| URS-07 | SRS-01  SRS-11  SRS-38  SRS-39  SRS-51 | AD-07 | UC-07 | SD-24 | STC-07 | UI-14 | UTC-18 |
|  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** |
| URS-08 | SRS-01  SRS-12  SRS-46  SRS-47  SRS-52 | AD-08 | UC-08 | SD-23 | STC-08 | UI-15 | UTC-19 |
| URS-09 | SRS-04 | AD-09 | UC-09 | SD-03 | STC-09  STC-28  STC-31 | UI-03 |  |
| URS-10 | SRS-01  SRS-10  SRS-13  SRS-14  SRS-15  SRS-59 | AD-10 | UC-10 | SD-10 | STC-10 | UI-13 | UTC-15 |
| URS-11 | SRS-01  SRS-09  SRS-10  SRS-15  SRS-16  SRS-17  SRS-57  SRS-58  SRS-59 | AD-11 | UC-11 | SD-11 | STC-11 | UI-12 | UTC-16 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** |
| URS-12 | SRS-01  SRS-09  SRS-19  SRS-15  SRS-18 | AD-12 | UC-12 | SD-12 | STC-12 | UI-12 | UTC-17 |
| URS-13 | SRS-01  SRS-09  SRS-10  SRS-19  SRS-20  SRS-21  SRS-59 | AD-13 | UC-13 | SD-17 | STC-13 | UI-05 |  |
| URS-14 | SRS-01  SRS-23  SRS-24  SRS-26  SRS-27  SRS-28  SRS-29  SRS-30 |  | UC-14 | SD-18 | STC-14 | UI-18 | UTC-23 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** |
| URS-15 | SRS-01  SRS-22  SRS-23  SRS-24  SRS-25  SRS-26  SRS-48  SRS-49  SRS-50  SRS-53  SRS-54  SRS-55  SRS-59 |  | UC-15 | SD-01 | STC-15  STC-18  STC-19 | UI-02 | UTC-01  UTC-02  UTC-03 |
| URS-16 | SRS-01  SRS-30  SRS-31 |  | UC-16 | SD-21 | STC-16 | UI-17 |  |
| URS-17 | SRS-01  SRS-25  SRS-31  SRS-59 |  | UC-17 | SD-02 | STC-17  STC-19  STC-30 |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** |
| URS-18 | SRS-01  SRS-32  SRS-33  SRS-34  SRS-38  SRS-39  SRS-59 | AD-14 | UC-18 | SD-06 | STC-10 | UI-06 | UTC-08 |
| URS-19 | SRS-01  SRS-34  SRS-35  SRS-36  SRS-38  SRS-39  SRS-59 | AD-15 | UC-19 | SD-13 | STC-21 | UI-07  UI-08 | UTC-09 |
| URS-20 | SRS-01  SRS-34  SRS-37  SRS-38  SRS-39 | AD-16 | UC-20 | SD-15 | STC-22 | UI-08 | UTC-10 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **URS** | **SRS** | **AD** | **UC** | **SD** | **STC** | **UI** | **UTC** |
| URS-21 | SRS-01  SRS-40  SRS-41  SRS-42  SRS-46  SRS-47  SRS-59 | AD-17 | UC-21 | SD-07 | STC-23 | UI-09 | UTC-11 |
| URS-22 | SRS-01  SRS-42  SRS-43  SRS-44  SRS-46  SRS-47 | AD-18 | UC-22 | SD-14 | STC-24 | UI-10  UI-11 | UTC-12 |
| URS-23 | SRS-01  SRS-42  SRS-45  SRS-46  SRS-47 | AD-19 | UC-23 | SD-16 | STC-25 | UI-11 | UTC-13 |
| URS-24 | SRS-01  SRS-38  SRS-39 | AD-20 | UC-24 | SD-08 | STC-26 | UI-08 | UTC-06 |
| URS-25 | SRS-01  SRS-46  SRS-47 | AD-21 | UC-25 | SD-09 | STC-27 | UI-11 | UTC-07 |

# Chapter Four: Appendix

## 4. Appendix

### 4.1 User Requirement Specification

#### Feature 1: Schedule management

1. URS-01: Patient can view own appointment in mobile application
2. URS-02: Patient can view all appointments from Google calendar in mobile application
3. URS-03: Patient can view own appointment in website
4. URS-04: Dentist can view own appointment in website
5. URS-05: Visitor can view all appointments from Google calendar in website
6. URS-06: Officer can view all appointments as a list in website
7. URS-07: Officer can view patients’ appointment as a list in website
8. URS-08: Officer can view dentists’ appointment as a list in website
9. URS-09: Registered User can view all appointments from Google calendar in website

#### Feature 2: Appointment management

URS-10: Officer can create a new appointment

URS-11: Officer can edit the appointment

URS-12: Officer can delete the appointment

URS-13: Officer can save the appointment to Google calendar

#### Feature 3: User registration and authentication

URS-14: Patient can login to the mobile application

URS-15: Registered User can login to the website

URS-16: Patient can logout from the mobile application

URS-17: Registered User can logout from the website

URS-18: Officer can create an account for new patient

URS-19: Officer can edit patients’ information

URS-20: Officer can delete patients’ account

URS-21: Officer can create an account for new dentist

URS-22: Officer can edit dentists’ information

URS-23: Officer can delete dentists’ account

URS-24: Officer can view all patients’ account as a list

USR-25: Officer can view all dentists’ account as a list

### 4.2 Use Case

1. UC-01: Display patients’ own appointment in mobile application
2. UC-02: Display all appointments from Google calendar in mobile application
3. UC-03: Display patients’ own appointment (in website)
4. UC-04: Display dentists’ own appointment (in website)
5. UC-05: Display all appointments from Google calendar
6. UC-06: Display all appointments as list in website
7. UC-07: Display patients’ appointment list for officer
8. UC-08: Display dentists’ appointment for officer
9. UC-09: Display all appointments from Google calendar
10. UC-10: Create new appointment
11. UC-11: Edit appointment
12. UC-12: Delete appointment
13. UC-13: Save the appointment to Google calendar
14. UC-14: Login (in mobile application)
15. UC-15: Login (in website)
16. UC-16: Logout (in mobile application)
17. UC-17: Logout (in website)
18. UC-18: Create new account for patient
19. UC-19: Edit patients’ information
20. UC-20: Delete patients’ account
21. UC-21: Create new account for dentist
22. UC-22: Edit dentists’ information
23. UC-23: Delete dentist s’ account
24. UC-24: Display patients’ list
25. UC-25: Display dentists’ list

**4**.3 System Requirement Specification

1. **SRS-01:** System shall connect with the database
2. **SRS-02:** System shall retrieve patients’ appointment data including appointmentID, patientID, dentistID, appointment date, start time, end time, dental treatment, and description from database
3. **SRS-03:** System shall provide patients’ appointment data from the database in appointment page in mobile application
4. **SRS-04:** System shall provide appointment calendar from Google calendar in appointment calendar page in the website
5. **SRS-05:** System shall provide appointment calendar form Google calendar in calendar page in mobile application
6. **SRS-06:** System shall provide patients’ appointment data from the database in patient appointment page in the website
7. **SRS-07:** System shall retrieve dentists’ appointment data including appointmentID, patientID, dentistID, appointment date, start time, end time, dental treatment, and description from database
8. **SRS-08:** System shall provide dentists’ appointment data from the database in dentist appointment page in the website
9. **SRS-09:** System shall retrieve all appointments’ data including appointmentID, patientID, dentistID, appointment date, start time, end time, dental treatment, and description from database
10. **SRS-10:** System shall provide all appointments’ data as a list from the database in all appointment page
11. **SRS-11:** System shall provide patients’ appointment data from the database in patient appointment page (for officer) in the website

**SRS-12:** System shall provide dentists’ appointment data from the database in dentist appointment page (for officer) in the website

**SRS-13:** System shall provide create appointment page in the website

**SRS-14:** System shall add appointments’ data including patientID, dentistID, appointment date, start time, end time, dental treatment, and description into the database

**SRS-15:** System shall update appointment table in the database

**SRS-16:** System shall provide appointments’ edit page in the website

**SRS-17:** System shall edit appointments’ data in appointment table in the database

**SRS-18:** System shall delete appointments’ data in appointment table in the database

**SRS-19:** System shall redirect to Google calendar page

**SRS-20:** System shall provide appointments’ data from the database in Google calendar form in Google website

**SRS-21:** System shall save appointments’ data into the Google calendar

**SRS-22:** System shall provide patient login page in the website

**SRS-23:** System shall validate patientID and password from input form matching with the data in patient table in the database

**SRS-24:** System shall redirect to patient login page if login fail

**SRS-25:** System shall redirect to index page in the website

**SRS-26:** System shall store session after login success

**SRS-27:** System shall provide patient login page in mobile application

**SRS-28:** System shall display error message if there are empty fields “Please input patientID and password” in mobile application

**SRS-29:** System shall display error message if login fail “You’re login fail” in mobile application

**SRS-30:** System shall redirect to index page in mobile application

**SRS-31:** System shall destroy session

**SRS-32:** System shall provide create patient account page in the website

**SRS-33:** System shall add patients’ data including patientID, password, first name, last name, age, gender, address, tel., email, and treatment into the database

**SRS-34:** System shall update patient table in the database

**SRS-35:** System shall provide patients’ edit page in the website

**SRS-36:** System shall edit patients’ information in patient table in the database

**SRS-37:** System shall delete patients’ account in patient table in the database

**SRS-38:** System shall retrieve patients’ data including patientID, password, first name, last name, age, gender, address, tel., email, and treatment from the database

**SRS-39:** System shall provide patients’ data as a list in the patient list page

**SRS-40:** System shall provide create dentist account page in the website

**SRS-41:** System shall add dentists’ data including dentistID, password, first name, last name, address, email, and tel. into the database

**SRS-42:** System shall update dentist table in the database

**SRS-43:** System shall provide dentists’ edit page in the website

**SRS-44:** System shall edit dentists’ information in dentist table in the database

**SRS-45:** System shall delete dentists’ account in dentist table in the database

**SRS-46:** System shall retrieve dentists’ data including dentistID, password, first name, last name, email, and tel. from the database

**SRS-47:** System shall provide dentists’ data as a list in the dentist list page

**SRS-48:** System shall display alert message “Invalid patientID or password”

**SRS-49:** System shall display alert message “Invalid officerID or password”

**SRS-50:** System shall display alert message “Invalid dentistID or password”

1. **SRS-51:** System shall retrieve all patients’ appointment data including appointmentID, patientID, dentistID, appointment date, start time, end time, dental treatment, and description from database
2. **SRS-52:** System shall retrieve all dentists’ appointment data including appointmentID, patientID, dentistID, appointment date, start time, end time, dental treatment, and description from database

**SRS-53:** System shall redirect to dentist login page if login fail

**SRS-54:** System shall redirect to officer login page if login fail

**SRS-55:** System shall validate dentistID and password from input form matching with the data in dentist table in the database

**SRS-56:** System shall validate officerID and password from input form matching with the data in officer table in the database

**SRS-57:** System shall retrieve appointments’ data including including appointmentID, patientID, dentistID, appointment date, start time, end time, dental treatment, and description from database

**SRS-58**: System shall provide appointments’ data in appointment edit page

**SRS-59:** System shall show error message “Please fill out this field” for any field that requires being not empty

### 4.4 Activity Diagram

1. AD-01: Display patients’ own appointment (in mobile application)
2. AD-02: Display all appointment from Google calendar (in mobile application)
3. AD-03: Display patients’ own appointment (in website)
4. AD-04: Display dentists’ own appointment (in website)
5. AD-05: Display all appointment from Google calendar (in website)
6. AD-06: Display all appointments as a list
7. AD-07: Display patients’ appointments list for officer
8. AD-08: Display dentists’ appointment for officer
9. AD-09: Display all appointment from Google calendar (in website)
10. AD-10: Create new appointment
11. AD-11: Edit appointment
12. AD-12: Delete appointments
13. AD-13: Save appointment to Google calendar
14. AD-14: Create new account for patient
15. AD-15: Edit patients’ information
16. AD-16: Delete patients’ account
17. AD-17: Create new account for dentist
18. AD-18: Edit dentists’ information
19. AD-19: Delete dentists’ account
20. AD-20: Display dentists’ list
21. AD-21: Display dentists’ list

### 4.5 Sequence Diagram

1. SD-11: Edit an appointment
2. SD-10: Make an appointment
3. SD-09: View all dentist as a list
4. SD-08: View all patients as a list
5. SD-07: Create dentist account
6. SD-06: Create patient account
7. SD-05: View all appointment in dental clinic
8. SD-04: View his/her own appointment
9. SD-03: View dental clinic calendar
10. SD-02: Logout
11. SD-01: Login
12. SD-12: Delete an appointment
13. SD-13: Edit patients’ account
14. SD-14: Edit dentists’ account
15. SD-15: Delete patients’ account
16. SD-16: Delete dentists’ account
17. SD-17: Save appointment to Google Calendar
18. SD-18: Login to the mobile application
19. SD-19: View his/her own appointment
20. SD-20: View appointment in Google calendar
21. SD-21: Logout from mobile application
22. SD-23: Officer view dentists’ appointment
23. SD-24: Officer view patients’ appointment

### 4.7 User Interface Design

1. UI-01: Shows the index page of website
2. UI-02: Shows the login page of the website. The area number 1 is the field of input userID and patientID. In officer login page will show as OfficerID, in patient login page will show as PatientID, and in dentist login page will show as DentistID
3. UI-03: Shows the schedule of dental clinic from google calendar. The area number 1 will shows the name of patient.
4. UI-04: Shows the officer index page after officer login. Officer can make appointment google calendar, view schedule, and manage account.
5. UI-05: Shows page of google calendar to add the appointment to dental clinic calendar.
6. UI-06: Shows the patient registration page.
7. UI-07: Shows the edit patients’ details page.
8. UI-08: Shows patient list.
9. UI-09: Create dentists’ account.
10. UI-10: Dentist edit information page
11. UI-11: Dentist list page[
12. UI-12: Show appointment list
13. UI-13: Create appointment page
14. UI-14: Show patients’ own appointment
15. UI-15: Show dentists’ own appointment
16. UI-16: Mobile application index page
17. UI-17: Mobile application menu
18. UI-18: Login page for patient
19. UI-19: Display patients’ appointment
20. UI-20: Dental clinic calendar

### 4.6 System Test Case

1. **STC-01:** Patient can view own appointment in mobile application
2. **STC-02:** Patient can view all appointments from Google calendar in mobile application
3. **STC-03:** Patient can view own appointment in website
4. **STC-04:** Dentist can view own appointment in website
5. **STC-05:** Visitor can view all appointment from Google calendar in website
6. **STC-06:** Officer can view all appointments as a list in website
7. **STC-07:** Officer can view patients’ appointment as a list in website
8. **STC-08:** Officer can view dentists’ appointment as a list in website
9. **STC-09:** Patient can view all appointments from Google calendar in the website
10. **STC-10:** Officer can create new appointment
11. **STC-11:** Officer can edit the appointment
12. **STC-12:** Officer can delete the appointment
13. **STC-13:** Officer can save the appointment to Google
14. **STC-14:** Patient can login to the mobile application
15. **STC-15:** Patient can login to the website
16. **STC-16:** Patient can logout from the mobile application
17. **STC-17:** Patient can logout from the website
18. **STC-18:** Officer can login into the websites
19. **STC-19:** Officer can logout from website
20. **STC-20:** Officer can create an account for new patient
21. **STC-21:** Officer can edit patients’ information
22. **STC-22:** Officer can delete patients’ account
23. **STC-23:** Officer can create dentist account
24. **STC-24:** Officer can edit dentists’ information
25. **STC-25:** Officer can delete dentists’ account
26. **STC-26:** Officer can view all patients’ account as a list
27. **STC-27:** Officer can view all dentists’ account as a list
28. **STC-28:** Officer can view all appointments from Google calendar in website
29. **STC-29:** Dentist login to the website
30. **STC-30:** Dentist logout from the website
31. **STC-31:** Dentist can view all appointments from Google calendar in website

### 4.7 Unit Test Case

1. **UTC-01:** testp\_login()
2. **UTC-02:** testp\_ownCalendar()
3. **UTC-03:** testd\_login()
4. **UTC-04:** testd\_ownCalendar()
5. **UTC-05:** testo\_login()
6. **UTC-06:** testget\_p\_db()
7. **UTC-07:** testget\_db()
8. **UTC-08:** testp\_register()
9. **UTC-09:** testp\_edit()
10. **UTC-10:** testp\_delete()
11. **UTC-11:** testd\_register()
12. **UTC-12:** testd\_edit()
13. **UTC-13:** testd\_delete()
14. **UTC-14:** testview\_appointment()
15. **UTC-15:** testmake\_appointment()
16. **UTC-16:** testapp\_edit()
17. **UTC-17:** testapp\_delete()
18. **UTC-18:** testPatientCalendar()
19. **UTC-19:** testDentistCalendar()
20. **UTC-20:** testMobileLogin()
21. **UTC-21:** testOwnAppointmentMobile()