**Dental Clinic Services System**

Progress 3

Test Plan

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**Test Plan**

**Revision Table**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Document Name** | **Detail** | **Status** | **Date** | **Viewable** | **Reviewer& Responsible** |
| DCSS - Test plan - ver 0.1 | Add all document | Draft |  | Adviser | Kanokwan&Worapun |
| DCSS - Test plan - ver 0.2 | Edit all document | Draft |  | Adviser | Kanokwan&Worapun |
| DCSS - Test plan - ver 0.3 | Correct numbering and add more Test cases | Draft |  | Adviser | Kanokwan&Worapun |
| DCSS - Test plan - ver 0.4 | Correct numbering and add more Test cases | Draft |  | Adviser | Kanokwan&Worapun |
| DCSS - Test plan - ver 0.5 | Double check | Draft |  | Adviser | Kanokwan&Worapun |
| DCSS - Test plan - ver 1.0 | Double check | Release |  | Adviser | Kanokwan&Worapun |
| DCSS - Test plan - ver 1.1 | Correct all document | Release |  | 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, and the dentist can use the system for checking their 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.

This Test Plan has described in more detail of each test plan and each function that needs to test. The document includes Test Plan, Test Procedures, Unit Test, and System Test.

### 1.2 Purpose

The purpose of the Test Plan of Dental clinic services system is to establish a plan that will be used to detect and fix any bugs or other defects that may occur in the web application or the mobile application. The test plan is created to guarantee that all the defects are found before the system is released so that the software is faultless. The unit testing is to cover all of the implemented methods of Dental clinic services system and the system testing verifies all the user requirements.

## 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.
* Dental clinic services system provide features for generate QR code to patients from both web application and mobile application
* Dental clinic services system provide features for managing the queue of dental clinic
* Dental clinic services system assists following up treatment between dentist and patient
* Dental clinic services system provide the feature for promoting the clinic also managing those promotion and information
* Dental clinic services system help visitor and patient to predict the cost of dental care

## 1.4 User Classes and Characteristics

* The system divides users into three groups. Information and characteristics of each group are listed below.
* **Visitor**

This group of user no needs to register to the system to use the services on the website or to use their mobile phone. Visitor is able to:

* Visitor can view dental clinic information and promotion
* Visitor can select dental treatment to estimate the cost
* **Patient**

This group of user needs to be registered to the system at the dental clinic. They will get patientID and password from the clinic to use the services on the website or to use their mobile phone. Patients use their patientID to login. Patients are able to:

* Patient can view their QR code.
* Patient can view follow up question.
* Patient can answer to follow up question.
* Patient can view dental clinic information and promotion.
* Patient can select dental treatment to estimate the cost.
* **Officer**

This group of users has the highest privilege in the system. They are given access to management functions for maintaining the system. Officers are able to:

* Officer can add patient to a queue and reset queue.
* Officer can add information and promotion into the website.
* Officer can edit information and promotion from the website.
* Officer can delete information and promotion from the website.
* Officer can add dental treatment and cost into the website.
* Officer can edit dental treatment and cost from the website.
* Officer can delete dental treatment and cost from the website.
* Officer can view all dental treatment.

**Dentist**

This group of user needs to be registered to the system at the dental clinic. They will register their account at the clinic. Dentist uses their dentistID and password to login to the system to use the services. Dentists are able to:

* Dentist can view their follow up question.
* Dentist can post question to follow up their patient

### 1.5 Definition and Acronyms

**Definitions**

Feature Transformation of input parameters to output parameters based on a specified algorithm. It describes the functionality of a produce in the language of the product. Used for requirements analysis, design, coding, testing or maintenance. [IEEE90]

Design The period of time in the software life cycle during which the designs for architecture, software component, interfaces and data are created, documented, and verified to satisfy requirements. [IEEE90]

IEEE Institute for Electrical and Electronics Engineers. Biggest global interest group for engineers of different branches and for computer scientists. [IEEE90]

Requirement (1) A condition or capability needed by a user to solve a problem or achieve an objective. (2) A condition or capability that must be met or processed by system or system component to satisfy a contract, standard, specification, or other formally imposed document. (3) A documented representation of a condition or capability as in definition (1) or (2). [IEEE90]

Specification Precise description of an activity or work product which serves as basis or input for further activities or work product. A specification can comprise requirements to a product and how they will be solved. Different parts of a specification (e.g. what is to be done, how it will be done) must not be mixed. [IEEE90]

White box testing Testing process that focus on internal structure. The tester should know the code inside the program and test it through the code and determines the appropriate outputs.

Black box testing Process, device or system that focus on input, output and transfer characteristics without knowledge about it internal structure.

Unit Testing A level of the software testing process where individual units/components of a software/system are tested. The purpose is to validate that each unit of the performs as designed.

System testing A level of the software testing process where a complete, integrated system/software is tested. The purpose of this test is to evaluate the system's compliance with the specified requirements.

### 1.6 Acronyms and Definitions Acronyms

**Acronyms**

|  |  |
| --- | --- |
| **Acronyms** | **Stands for** |
| Registered User | Patient, Dentist, and Officer |
| Non-registered User | Visitor |
| PM | Project Management |
| PMP | Project Management Plan |
| URS | User Requirement Specification |
| SRS | Software Requirement Specification |
| VSE | Very Small Entity |
| QR code | Quick Response Code |
| UC | Use Case |
| AD | Activity Diagram |
| UI | User Interface |
| UTC | Unit Test Case |
| STC | System Test Case |
| CD | Class Diagram |
| SD | Sequence Diagram |

# Chapter Two: Test Plan and Test Procedure

## 2. Test Plan and Test Procedure

### 2.1 Test Objectives

The objectives of testing Dental clinic services system of the web application and the mobile application project are as follows:

1. All bugs or defects are detected.
2. Those bugs or defects are fixed.
3. The system meets user's requirements.
4. All functionalities and features must are provided.

### 2.2 Scope

Dental clinic services system will be tested using white-box testing and black-box testing techniques, which are unit testing and system testing respectively. And the test results will be documented in the Test Record.

### 2.3 Test Duration

|  |  |
| --- | --- |
| **Progress** | **Date and Duration** |
| **Progress 1 report** | Perform date: 1st July 2014 – 3rd July 2014 (Unit test, System test) Duration: 3 days |
| **Progress 2 report** | Perform date: 28th August 2014 – 2nd September 2014 (Unit test, System test) Duration: 5 days |
| **Final Progress report** | Perform date: 14th November 2014 – 17th November 2014 (Unit test, System test) Duration: 4 days |

### 2.4 Test Responsibility

|  |  |
| --- | --- |
| **Item** | **Responsibility** |
| Unit test of web application | Kanokwan & Worapun |
| Unit test of iOS mobile application | Kanokwan & Worapun |
| Record unit test of web application | Kanokwan & Worapun |
| Record unit test of iOS mobile application | Kanokwan & Worapun |
| System test of web application | Kanokwan & Worapun |
| System test of iOS mobile application | Kanokwan & Worapun |
| Record system test of web application | Kanokwan & Worapun |
| Record system test of iOS mobile application | Kanokwan & Worapun |

### 2.5 Test Strategy

Dental clinic services system testing will be performed in the following steps:

1. Design test cases for each feature.
2. Prepare test data for each feature.
3. Determine expected results.
4. Perform testing on individual feature.
5. Record the result of the testing.
6. Store all test files in the project repository.

### 2.6 Result of Testing

In the Test Record, the test result will be separated into two parts, which are:

1. Actual output: The actual outputs that are produced by each test case.

2. Pass/Fail criteria:

2.1 Pass: the actual result of the test is same as the expected result.

2.2 Fail: the actual result of the test is not same as the expected result.

### 2.7 Test Environment

**2.7.1 Hardware**

* **Computer**
* **Dell Inspiron N4110**

**Processor:** Intel(R) Core(TM) i3-2310M CPU@ 2.10GHz, 2.10 GHz

**Memory:** 6.00 GB

**Operating system:** Window 7 Ultimate

* **Sony VAIO SVE14118FHB**

**Processor:** Intel(R) Core(TM) i7-3612QM CPU@ 2.10GHz, 2.10 GHz

**Memory:** 8.00 GB

**Operating system:** Windows 7 Home Premium

* **MacBook Pro**

**Processor:** 2.5 GHz Intel Core i5

**Memory:** 4 GB 1600 MHz DDR38.00 GB

**Operating system:** W OS X 10.9.2 (13C1021)

* **iPhone**
* **iPhone 5s**

**Processor:** Dual core, 1300 MHz

**Memory:** 32 GB internal storage, 1 GB RAM DDR3

**Operating** System: iOS7

**2.7.2 Software**

* Google Chrome Version 19.0 or later
* HTML version 5
* PHP editor Version 5
* Xcode version 5.1.1
* Codeigniter framework version 2.1.4
* Phonegap version 3.0
* Ios operating system version ios7
* Adobe Dreamweaver CS6
* Ciqrcode for qr code generator

# 

# Chapter Three: Unit Testing

## 3. Unit Testing of Web Application

**Class:** Patient\_manage

**Class:** Officer\_manage

### Unit Test Case 46 (UTC-46): testo\_check\_time()

**Description:**

Test the function of check the appointment time before add patient to a queue: public function check\_time()

**Test Data: Refer to Appendix at the end of this Test Plan for test data**

|  |  |  |
| --- | --- | --- |
| **Parameter name** | **Parameter type** | **Value** |
| $in\_pid1 | Varchar | P001 |
| $in\_pid2 | Varchar | P002 |
| $in\_pid3 | Varchar | P003 |
| $in\_pid4 | Varchar | P004 |
| $expResult1 | Array | “Not today” |
| $expResult2 | Array | “No appointment” |
| $expResult3 | Array | “You missed” |
| $expResult4 | Array | 10:00:00 |

**Test Case:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Description** | **Input** | **Remark** | **Expected** |
| **infoID** |
| **1** | Test to check the appointment time with correct day and before appointment time | $in\_pid1 | $expResult4 is already in database | $expResult4 |
| **2** | Test to check the appointment time with wrong day | $in\_pid2 | $expResult1 is already in database | $expResult1 |
| **3** | Test to check the appointment time with no appointment | $in\_pid3 | $expResult2 is already in database | $expResult2 |
| **4** | Test to check the appointment time with correct day but at late appointment time | $in\_pid4 | $expResult3 is already in database | $expResult3 |

### Unit Test Case 47 (UTC-47): testo\_add\_queue()

**Description:**

Test the function of add a paitent to a queue: public function add\_queue($pid,$q)

**Test Data: Refer to Appendix at the end of this Test Plan for test data**

|  |  |  |
| --- | --- | --- |
| **Parameter name** | **Parameter type** | **Value** |
| $in\_pid1 | Varchar | P001 |
| $in\_pid2 | Varchar | P002 |
| $expResult | Boolean | true |

**Test Case:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Description** | **Input** | **Remark** | **Expected** |
| **infoID** |
| **1** | Test to add a patient to an empty queue with pid(patientID) | $in\_pid1 | - | $expResult |
| **2** | Test to add a patient to a not empty queue with pid(patientID) | $in\_pid2 | - | $expResult |

### Unit Test Case 48 (UTC-48): testo\_reset\_queue()

**Description:**

Test the function of reset a queue to be empty: public function reset\_queue()

**Test Data: Refer to Appendix at the end of this Test Plan for test data**

|  |  |  |
| --- | --- | --- |
| **Parameter name** | **Parameter type** | **Value** |
| $expResult | Boolean | true |

**Test Case:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Description** | **Input** | **Remark** | **Expected** |
| **1** | Test to reset a queue to be empty | - | - | $expResult |

## Unit Testing of Mobile Application

**Class:** PatientMobile\_manage

### Unit Test Case 49 (UTC-49): testpMobile\_getAllTreatment()

**Description:**

Test the function of get all data of table treatment from database: public function getAllTreatment()

**Test Data: Refer to Appendix at the end of this Test Plan for test data**

|  |  |  |
| --- | --- | --- |
| **Parameter name** | **Parameter type** | **Value** |
| $expResult | Array[0] | [tid]=>1, [tName]=>Full mouth checkup, [cost]=>0 |
| Array[1] | [tid]=>2, [tName]=>Composite filling, [cost]=>1000 |
| Array[2] | [tid]=>3, [tName]=>Fluoride application, [cost]=>400 |
| Array[3] | [tid]=>4, [tName]=>Consultation, [cost]=>0 |

**Test Case:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Description** | **Input** | **Remark** | **Expected** |
| **1** | Test gat all dental treatment from database | - | $expResult is already in database | $expResult |

# Chapter Four: System Testing

## 4. System testing

### System Test Case 32(STC-32): Patient can view their QR code from mobile application

**Description:**

Test the patient can view their QR code in mobile application

**Test script:**

1. Patient login to the mobile application by using patientID and password
2. Patient select QR code function in the mobile application

**Data needs:** Patient Account

**Test Cases:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Description** | **Input** | | **Expected** |
| **patientID** | **password** |
| 1 | Test display QR code with patientID | P001 | 1234 | System shall display the patient detail including the QR code of patientID “P001” |
| 2 | Test display QR code with patientID but incorrect password | P001 | xxxx | System shall not display the patient detail including the QR code of patientID “P001” |
| 3 | Test display QR code without login | - | - | System shall not display the patient QR code |

### System Test Case 33(STC-33): Patient can view their QR code from website

**Description:**

Test the patient can view their QR code from website

**Test script:**

1. Patient login to the website by using patientID and password
2. Patient select QR code function in the mobile application

**Data needs:** Patient Account

**Test Cases:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Description** | **Input** | | **Expected** |
| **patientID** | **password** |
| 1 | Test display QR code with patientID | P001 | 1234 | System shall display the patient detail including the QR code of patientID “P001” |
| 2 | Test display QR code with patientID but incorrect password | P001 | xxxx | System shall not display the patient detail including the QR code of patientID “P001” |
| 3 | Test display QR code without login | - | - | System shall not display the patient QR code |

### System Test Case 34(STC-34): Officer can add patient to a queue

**Description:**

Test the officer can add patient to a queue

**Test script:**

1. Officer login to the website by using officerID and password
2. Officer selects add queue menu

**Data needs:** Officer Account, Patient Account

**Test Cases:**

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Description** | **Input** | **Expected** |
| **patientID** |
| 1 | Test add patient to a queue by using patientID | P001 | System shall add P001 in the available time after checking appointment date and time |
| 2 | Test add patient to a queue by using patientID in unavailable time | P001 | System shall not add P001 in the available time after checking appointment date and time |

### System Test Case 35(STC-35): Reset queue

**Description:**

Test the officer can reset a queue every end of the day to clear the queue for the next day

**Test script:**

1. Officer login to the website by using officerID and password
2. Officer select the reset queue button in the add queue page

**Data needs:** Officer Account, Patient Account, queue

**Test Cases:**

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Description** | **Input** | **Expected** |
| **path** |
| 1 | Test reset queue | Select reset queue button | System shall reset the list of patient queue to be empty |

### System Test Case 00(STC-00): Using the QR code to identify him/herself

**Description:**

Test the officer patient can use the QR code to identify him/herself

**Test script:**

1. Patient login to the website by using patientID and password
2. Patient select the QR code menu

**Data needs:** Patient Account, queue, appointment account

**Test Cases:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Description** | **Input** | | **Expected** |
| **patientID** | **password** |
| 1 | Test display QR code with patientID and redirect to the own patient personal information page | P001 | 1234 | System shall display the patient detail including the QR code of patientID “P001” and redirect to the own patient personal information page |
| 2 | Test display QR code with patientID but incorrect password and redirect to the own patient personal information page | P001 | xxxx | System shall not display the patient detail including the QR code of patientID “P001”and not redirect to the own patient personal information page |
| 3 | Test display QR code without login | - | - | System shall not display the patient QR code |