­­ ­MINISTRY OF EDUCATION AND TRAINING

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**FPT UNIVERSITY**

Capstone Project Document

**Call-Center on Mobile for Clinics**

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| --- | --- |
| **Group 1** | |
| **Group members** | Nguyễn Thế Phương – SE62087  Phan Thành Thuận - SE62063 Nguyễn Lương Tuấn Kiệt - SE61696  Nguyễn Cao Duy - SE61032 |
| **Supervisor** | Kiều Trọng Khánh |
| **Ext. Supervisor** | N/A |
| **Capstone Project code** |  |

-Ho Chi Minh City, ***18/05/2018*-**

# Table of Contents

Contents

[MINISTRY OF EDUCATION AND TRAINING 1](#_Toc514595184)

[Table of Contents 2](#_Toc514595185)

[List of Tables 4](#_Toc514595186)

[List of Figures 4](#_Toc514595187)

[Definitions, Acronyms, and Abbreviations 4](#_Toc514595188)

[A. Introduction 5](#_Toc514595189)

[1. Project Information 5](#_Toc514595190)

[2. Introduction 5](#_Toc514595191)

[3. Current Situation 5](#_Toc514595192)

[4. Problem Definition 5](#_Toc514595193)

[5. Proposed Solution 5](#_Toc514595194)

[5.1 Feature functions 5](#_Toc514595195)

[5.2 Values and Challenges 6](#_Toc514595196)

[6. Functional Requirements 6](#_Toc514595197)

[7. Role and Responsibility 7](#_Toc514595198)

[B. Report No.2 Software Project Management Plan 7](#_Toc514595199)

[1. Problem Definition 7](#_Toc514595200)

[1.1 Name of this Capstone Project 7](#_Toc514595201)

[1.2 Problem Abstract 7](#_Toc514595202)

[1.3 Project Overview 8](#_Toc514595203)

[1.3.1 Current Situation 8](#_Toc514595204)

[1.3.2 The Proposed System 8](#_Toc514595205)

[1.3.2.1 Website 9](#_Toc514595206)

[1.3.2.2 Mobile Application 9](#_Toc514595207)

[1.3.2.3 Scheduler 10](#_Toc514595208)

[1.3.3 Boundaries of the System 10](#_Toc514595209)

[1.3.4 Future Plans 10](#_Toc514595210)

[1.3.5 Development Environment 11](#_Toc514595211)

[1.3.5.1 Hardware requirements 11](#_Toc514595212)

[1.3.5.2 Software requirements 11](#_Toc514595213)

[2. Project organization 12](#_Toc514595214)

[2.1 Software Process Model 12](#_Toc514595215)

[2.2 Roles and responsibilities 12](#_Toc514595216)

[2.3 Tools and Techniques 14](#_Toc514595217)

[3. Project Management Plan 14](#_Toc514595218)

[3.1 Product Backlog 14](#_Toc514595219)

[3.2 Sprint Backlog 15](#_Toc514595220)

[3.2.1 Sprint 1 (08.01.2018 – 21.01.2018): Project initiation 15](#_Toc514595221)

[3.2.1.1: Goal 15](#_Toc514595222)

[1.1 Project Information 15](#_Toc514595223)

[1.2 Current Situation 15](#_Toc514595224)

[1.3 Problem Definition 15](#_Toc514595225)

[1.4 Proposed Solution 15](#_Toc514595226)

[1.5 Role and Responsibility 15](#_Toc514595227)

[1.6 Functional Requirements 15](#_Toc514595228)

[2.1 Create Product Backlog 15](#_Toc514595229)

[3.1 Problem Definition 15](#_Toc514595230)

[3.2 Project Organization 15](#_Toc514595231)

[3.3 Project management plan 15](#_Toc514595232)

[3.4 Coding Convention 15](#_Toc514595233)

[3.2.1.2: Development 15](#_Toc514595234)

[3.3 All Meeting Minutes 15](#_Toc514595235)

[4. Coding Convention 15](#_Toc514595236)

[C. Report No. 3 Software Requirement Specification 16](#_Toc514595237)

[1. User Requirement Specification 16](#_Toc514595238)

# List of Tables

# List of Figures

Definitions, Acronyms, and Abbreviations

|  |  |
| --- | --- |
| **Name** | **Definition** |
| PO | Product owner |

A. Introduction

## 1. Project Information

* Project name: **Call-Center on Mobile for Clinic**
* Project Code: **CallClinic**
* Product Type: **Mobile Application**
* Start Date: **May 18th, 2018**
* End Date: **August 31th, 2018**

## 2. Introduction

Due to the growing trend and demand for customer service, the hiring of staff to assist the patients are quite expensive for the clinic. To solve the problem, we introduced the Call-Center on Mobile for Clinic. According to research and analysis, this will minimize the cost of customer service, so we recommend this solution to clinics.

We build automated response systems, to solve the cost problem of clinics. The system allows the clinic to adjust the appointment time, automatically answering some basic issues, saving the cost of hiring staff. In addition, we also collect feedback from patients and improvements based on feedback.

## 3. Current Situation

Currently, the appointment of private clinics must be done manually. If the number of patients is low, appointments made through phone calls are made directly to the doctor or clinic staff.

During peak days, when the clinic has many patients, the situation becomes worse, the current solution of these clinics is to load numbers in order, patients will wait until the turn. The current solution, however, solves the problem that patients will be examined in the order, but if the number of patients is too large, patients with the following numbers will have to wait, which is very time-consuming. Some patients will not even pick up the number or leave because they know they have to wait for too long, they would rather go to another clinic.

This leads to a significant reduction in the revenues of the clinic. Not to mention that in those peak days, the quality of the examination will decrease because the examination time will be less.

## 4. Problem Definition

**There is a wide range of disadvantages of the current situation:**

* Patients have difficulty to book appointments and choose a Doctor.
* Small Clinics do not have funds to hire Call-Center to provide patient care service and schedule appointment service.
* Clinics are managing patient information, schedule appointment manually, that way makes them time-consuming and inconvenient.
* Clinics need a staff for wait a call from patients.

## 5. Proposed Solution

### 5.1 Feature functions

Our solution is to set up an automated appointment scheduling system for private clinics.

The system automatically records and schedules the appointment. Appointments will automatically schedule base on doctor's hours and patient's free time. The end result is that the doctor will only need follow those schedule, and the patient will receive the correct date and time without the need to pick up or wait for the appointment. Clinics free times will be optimized and no more overload.

### 5.2 Values and Challenges

**Values:**

* Save time, money for both patients and doctor
* Improve clinic experience

**Challenges:**

* Device must be Android version 5.0 or higher
* There’re some strong competitors such as:laysokhambenh.vn

## 6. Functional Requirements

Functional requirements of the system are listed as below:

* **Patient component**
* Be notification
* Record calling
* Send data to service
* **Doctor component**
* View list appointment
* Register profile
* **Service component**
* Merge list appointment
* Auto receive customer’s call
* Send list patient to doctor
* Notification for patient and doctor

## 7. Role and Responsibility

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Full Name** | **Role** | **Position** | **Contact** |
| 1 | Kiều Trọng Khánh | Project Manager | Supervisor | khanhkt@fpt.edu.vn |
| 2 | Nguyễn Thế Phương | Developer | Leader | Phuongntse62087@fpt.edu.vn |
| 3 | Phan Thành thuận | Developer | Member | Thuanptse62063@fpt.edu.vn |
| 4 | Nguyễn Cao Duy | Developer | Member | duyncse61032@fpt.edu.vn |
| 5 | Nguyễn Lương Tuấn Kiệt | Developer | Member | kietnltse61696@fpt.edu.vn |

Table 1 Roles and Responsibilities

B. Software Project Management Plan

## 1. Problem Definition

### 1.1 Name of this Capstone Project

* **Official name:**  Call-Center on Mobile for Clinic
* **Vietnamese name:** Hệ thống nhân cuôc gọi tại phòng mạch tư nhân
* **Abbreviation:** CallClinic

### 1.2 Problem Abstract

Currently, Clinic in Vietnam Nam are overloaded due to patients come to the clinic and wait a quite long time. In addition, hiring staff to assist the patients, operator staff will increases the cost of the clinic. Because there is always a need for support staff and operator staff all day and night. So, we developed an autoresponder system when patients call to the clinic.

### 1.3 Project Overview

1.3.1 Current Situation

1.3.2 The Proposed System

1.3.2.3 Scheduler

We develop a scheduler in web server application with following features:

1.3.3 Boundaries of the System

1.3.4 Future Plans

1.3.5 Development Environment

1.3.5.1 Hardware requirements

**For server**

|  |  |  |
| --- | --- | --- |
| **Hardware** | **Minimum Requirements** | **Recommended** |
| Internet Connection | Cable, Wi-Fi (7 Mbps) | Cable, Wi-Fi (20 Mbps) |
| Computer Processor | Intel® Core ® i7 2.4GHz | Intel® Core ® i7 2.4GHz |
| Computer Memory | 8GB RAM | 12GB or more |

Table 2:

Table 2: Hardware Requirement for Server

**For smartphone**

|  |  |  |
| --- | --- | --- |
| **Hardware** | **Minimum Requirements** | **Recommended** |
| Internet Connection | Wi-Fi (7 Mbps) | Wi-Fi (14 Mbps) |
| Operating System | Android 5 | Android 7 |
| Memory | 2Gb | 3Gb or more |

Table 3: Hardware Requirement for Client

1.3.5.2 Software requirements

|  |  |  |
| --- | --- | --- |
| **Software** | **Name / Version** | **Description** |
| Environment | Java EE 7  Java android | Specification for developing web application  Specification for developing mobile application |
| Modeling tool | Star UML | Used to design diagram |
| IDE | Eclipse Neon.3 Release (4.6.3)  Android Studio 3.1.2  MySQL Workbench 6.3.9 | Programming tools |
| DBMS | MySQL 5.6.30 | Used to create & manage the database for system |
| Source control | GitKraken Pro (3.5.1) | Used for source control |
| Web browser | Chrome 42 or later | Testing browser |
| Mobile OS | Android 7 or later | Testing mobile application |

Table 4: Software requirements

## 2. Project organization

### 2.1 Software Process Model

This project is developed using Scrum model – part of an agile framework for Software development project. Our team choose Scrum model because of the following reasons:

* Our team only has 4 members, and tasks are assigned vertically, do all steps from design, coding, testing and implementation. Scrum is the most suitable model for small and medium project.
* In the project there are many new technologies that need to be learned. With the Scrum model, the team can learn and develop in parallel to meet deadline.
* Product owner can change requirement or extend scope. The team will adapt to change better.



Figure 1 Scrum framework

Reference: <https://www.scrum.org/resources/what-is-scrum>

### 2.2 Roles and responsibilities

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Full name** | **Role in group** | **Responsibilities** |
| 1 | Kiều Trọng Khánh | Project Owner | ·         Specify scope and user requirement  ·         Give out technique and business analysis support  ·          Control the development process |
| 2 | Nguyễn Thế Phương | Scrum master | ·         Create Sprint Backlog and Product  Backlog  ·         Make sure the Scrum teams understand and follow the process.  ·         Help the team master scrum artifacts such as: Sprint Backlog, Product Backlog, ...  ·         Writing report  ·         Always be present to answer questions and give advice when product owner or scrum member needs. |
| 3 | Nguyễn Thế Phương  Phan Thành Thuận  Nguyễn Cao Duy  Nguyễn Lương Tuấn Kiệt | Scrum team members | ·         Clarifying requirements  ·         Prepare documents  ·         Designing database  ·         GUI Design  ·         Coding  ·         Testing |

Table 5: Roles and Responsibilities Details

### 2.3 Tools and Techniques

|  |  |
| --- | --- |
| **Tool/Technique** | **Name and version** |
| Font-end |  |
| Back-end | Node JS |
| IDE | Android Studio 3.1.2, VSCode |
| Database | MySQL |
| Modelling Tool | Star UML |

Table 6: Tools

Table 6: Technique

## 3. Project Management Plan

### 3.1 Product Backlog

|  |  |  |  |
| --- | --- | --- | --- |
| **Story ID** | **Story** | **Task ID** | **Task** |
| 1 | Product Owner (PO) wants to have introduction document | 1.1 | Project Information |
|  |  | 1.2 | Introduction |
|  |  | 1.3 | Current Situation |
|  |  | 1.4 | Problem Definition |
|  |  | 1.5 | Proposed Solution |
|  |  | 1.6 | Role and Responsibility |
|  |  | 1.7 | Functional Requirements |
| 2 | Scrum master wants to have Product Backlog | 2.1 | Create Product Backlog |
| 3 | PO wants to have project management plan | 3.1 | Problem Definition |
|  |  | 3.2 | Project Organization |
|  |  | 3.3 | Project management plan |
|  |  | 3.4 | Coding Convention |

Table 8: Sprint Backlog

### 3.2 Sprint Backlog

3.2.1 Sprint 1 (18.05.2018 – 25.05.2018): Project initiation

3.2.1.1: Goal

- Sprint 1 must complete the following tasks:

1.1 Project Information

1.2 Introduction

1.3 Current Situation

1.4 Problem Definition

1.5 Proposed Solution

1.6 Role and Responsibility

1.7 Functional Requirements

2.1 Create Product Backlog

3.1 Problem Definition

3.2 Project Organization

3.3 Project management plan

3.4 Coding Convention

3.2.1.2: Development

|  |  |  |  |
| --- | --- | --- | --- |
| **Task ID** | **Task** | **Responsible** | **Review** |
| 1.1 | Project Information | PhuongNT | DuyNC |
| 1.2 | Introduction | DuyNC | ThuanPT, KietNLT |
| 1.3 | Current Situation | KietNLT | ThuanPT |
| 1.4 | Problem Definition | DuyNC | KietNLT |
| 1.5 | Proposed Solution | KietNLT | PhuongNT, KietNLT |
| 1.6 | Role and Responsibility | DuyNC | ThuanPT |
| 1.7 | Functional Requirements | ThuanPT | PhuongNT |
| 2.1 | Create Product Backlog | PhuongNT | DuyNC, ThuanPT |
| 3.1 | Problem Definition | PhuongNT | KietNLT |
| 3.2 | Project Organization | ThuanPT | KietNLT |
| 3.3 | Project management plan | PhuongNT | DuyNC, ThuanPT |
| 3.4 | Coding Convention | ThuanPT | PhuongNT |

### 3.3 All Meeting Minutes

All meeting minutes are saved at:

## 4. Coding Convention

* **Naming convention:**

- Variable and method names are in mixed case, with first letter of each internal word capitalized except first word.

* **Method names should be verbs.**

- Class names should be nouns, in mixed case with first letter of each internal word capitalized. - Constant names should be all uppercase with words separated by underscore.

* **Comment:**

- Using /\* \*/ for block comments.

- Using // for line comments.

Using Java coding convention  from: <http://www.oracle.com/technetwork/java/codeconvtoc-136057.html>

# C. Report No. 3 Software Requirement Specification

## 1. User Requirement Specification