|  |  |
| --- | --- |
|  | **MINISTRY OF EDUCATION AND TRAINING** |

**FPT UNIVERSITY**

|  |
| --- |
| **Capstone Project Document** |
| **Remindful Refrigerator Application** |

|  |  |
| --- | --- |
| **Group 2** | |
| **Group members** | **Nguyễn Hoàng Giang – SE61275**  **Trương Thanh Lâm – SE61257**  **Nguyễn Lê Hoàng Thiện – SE61277**  **Phan Hoàng Giáp – SE61347** |
| **Supervisor** | **Kiều Trọng Khánh** |
| **Ext. Supervisor** | **N/A** |
| **Capstone Project Code** | **RRA** |

Ho Chi Minh City, January 04, 2016

Table of Contents

[Table of Contents 3](#_Toc440396681)

[List of Tables 5](#_Toc440396682)

[List of Figures 6](#_Toc440396683)

[Definitions, Acronyms and Abbreviations 7](#_Toc440396684)

[A. REPORT NO. 1: Introduction 8](#_Toc440396685)

[1. Project Information 8](#_Toc440396686)

[2. Introduction 8](#_Toc440396687)

[3. Current Situation 8](#_Toc440396688)

[4. Problem Definition 8](#_Toc440396689)

[5. Proposed Solution 9](#_Toc440396690)

[5.1. Feature functions 9](#_Toc440396691)

[5.2. Advantages 9](#_Toc440396692)

[5.3. Disadvantages 9](#_Toc440396693)

[6. Functional Requirements 9](#_Toc440396694)

[7. Roles and Responsibilities 10](#_Toc440396695)

[B. REPORT NO. 2: Software Project Management Plan 11](#_Toc440396696)

[1. Problem Definition 11](#_Toc440396697)

[1.1. Name of this Capstone Project 11](#_Toc440396698)

[1.2. Problem Abstract 11](#_Toc440396699)

[1.3. Project Overview 11](#_Toc440396700)

[1.3.1. Current Situation 11](#_Toc440396701)

[1.3.2. The Proposed System 11](#_Toc440396702)

[1.3.2.1. Website 11](#_Toc440396703)

[1.3.2.2. Mobile Application 11](#_Toc440396704)

[1.3.3. Boundaries of the System 11](#_Toc440396705)

[1.3.4. Future Plan 11](#_Toc440396706)

[1.3.5. Development Environment 11](#_Toc440396707)

[1.3.5.1. Hardware requirements 11](#_Toc440396708)

[1.3.5.2. Software requirements 11](#_Toc440396709)

[2. Project organization 11](#_Toc440396710)

[2.1. Software Process Model 11](#_Toc440396711)

[2.2. Roles and Responsibilities 11](#_Toc440396712)

[2.3. Tools and Techniques 11](#_Toc440396713)

[3. Project Management Plan 11](#_Toc440396714)

[3.1. Software Development Life Cycle 11](#_Toc440396715)

[3.2. Phase Details 11](#_Toc440396716)

[3.3. All Meeting Minutes 11](#_Toc440396717)

[4. Coding Convention 11](#_Toc440396718)

List of Tables

[Table 1 - Roles and Responsibility 10](#_Toc440457813)

[Table 2 - Hardware Requirements for Server 11](#_Toc440457814)

[Table 3 - Hardware Requirements for Mobile 11](#_Toc440457815)

[Table 4 - Roles and Responsibilities Details 13](#_Toc440457816)

[Table 5 - Tools and Techniques 13](#_Toc440457817)

[Table 6 - Software Development Life Cycle 14](#_Toc440457818)

[Table 7 - Phase 1: Requirement gathering and analysis 15](#_Toc440457819)

[Table 8 - Phase 2: System design 15](#_Toc440457820)

[Table 9 - Phase 3: Implementation 15](#_Toc440457821)

[Table 10 - Phase 4: Testing 15](#_Toc440457822)

[Table 11 - Phase 5: Deployment of System 15](#_Toc440457823)

[Table 12 - Phase 6: Maintenance 16](#_Toc440457824)

List of Figures

[Figure 1 - Waterfall model 12](#_Toc440457825)

Definitions, Acronyms and Abbreviations

|  |  |
| --- | --- |
| Name | Definition |
| RRA | Remindful Refrigerator Application |
| BA | Business Analysis |
| DEV | Developer |
| SRS | Software Requirements Specification |

1. REPORT NO. 1: Introduction
   1. Project Information

* Project name: Remindful Refrigerator Application
* Project code: RRA
* Product type: mobile application + web
* Start date: 04/01/2016
* End date:
  1. Introduction

In this document, we introduce a solution for tracking food in refrigerator. Almost every family has a refrigerator with a lot of food inside. But they cannot remember everything, especially petty things such as expiry date of food. Based on our analysis and our own experiences, we think of a solution for every people to manage their food easier.

Remindful Refrigerator Application (RRA) is built to solve current problem. RRA is convenient to manage information of all food in fridge, checking which food is expiring and notify to the user so that they can use it earlier instead of throwing it away. We also suggest some dishes which can be made with what the user have in their fridge.

This document also describes our working process in four months, includes our perspective in the system, component design, detailed core workflows. We hope our solution will help resolve the problems that everyone can face to.

* 1. Current Situation

About user’s behavior: Many people prefer to buy a lot of food by once and store them in their fridges for saving time. This behavior causes them to get confused about which food/ingredients they are having, their expiry date and how to cook with them.

Current solutions in the market: Samsung introduced a smart refrigerator product, which uses Android to store inside food’s information. However, those features are attached into Samsung’s own product, which means user have to buy a whole new fridge if they want to use the management function. Besides, its interface is inconvenient for users, as the inputting keyboard is huge and slowing down typing. One more problem is users will have difficulties interact with the product from distance, as they cannot bring their fridge along with them.

* 1. Problem Definition

There are disadvantages of current situation:

* With a lot of food in the fridge, people sometimes do not remember or care about the expiration but keep using those food. Using expired food may affect to people heath, and even if they do not use them, it also be a waste.
* People may be confused with a lot of food and ingredients. They do not know what or how to cook with those food.
  1. Proposed Solution

According to the growth of smart phone, we proposed a solution is to build a mobile application called “Remindful Refrigerator Application” (or shortly RRA). RRA includes a mobile app and an admin panel with following functions:

* + 1. Feature functions

RRA provides these following core functions:

* Add food: user can add food information to database.
* Search dishes: according to food that user have in fridge, they can manually search for appropriate dishes when they need.
* Make notification: with expiring food, system will send notification to user.
* Suggest dishes: with expiring food, system will give some dishes that user can make with that food.
  + 1. Advantages

User can easily keep track on their food. They can know which food should be used first and how to use it, too.

* + 1. Disadvantages
  1. Functional Requirements

Functional requirements are listed as below:

* Mobile app:
* New account/Login
* Add new food
* Get notification
* Get suggestion
* Search dishes
* Add dishes to favorite list
* Admin panel:
* Input new resources website
* View report
* Scheduler:
* Send notification
* Make suggestion
* Parse recipes
* Create report
  1. Roles and Responsibilities

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Full name | Role | Position | Contact |
| 1 | Kiều Trọng Khánh | Project manager | Supervisor | khanhkt@fpt.edu.vn |
| 2 | Nguyễn Hoàng Giang | Developer | Leader | giangnhse61275@fpt.edu.vn |
| 3 | Trương Thanh Lâm | Developer | Member | lamttse61257@fpt.edu.vn |
| 4 | Nguyễn Lê Hoàng Thiện | Developer | Member | thiennlhse61277@fpt.edu.vn |
| 5 | Phan Hoàng Giáp | Developer | Member | giapphse61347@fpt.edu.vn |

Table - Roles and Responsibility

1. REPORT NO. 2: Software Project Management Plan
   1. Problem Definition
      1. Name of this Capstone Project

* Official name: Remindful Refrigerator Application
* Vietnamese name: Tủ lạnh tiện lợi
* Abbreviation: RRA
  + 1. Problem Abstract
    2. Project Overview
       1. Current Situation
       2. The Proposed System
          1. Website
          2. Mobile Application
       3. Boundaries of the System
       4. Future Plan
       5. Development Environment
          1. Hardware requirements
* For Server

|  |  |  |
| --- | --- | --- |
| **Windows** | **Minimum** | **Recommended** |
| Internet Connection | Cable, Wi-Fi (4 Mbps) | Cable, Wi-Fi (8 Mbps) |
| Operating System | Winder Server 2008 | Winder Server 2008 |
| Computer Processor | Intel® Xeon® 1.4GHz | Intel® Xeon® Quad Core (12M Cache, 2.50 Ghz) |
| Computer Memory | 1GB RAM | 2GB or more |

Table - Hardware Requirements for Server

* For Mobile

|  |  |  |
| --- | --- | --- |
| **Windows** | **Minimum** | **Recommended** |
| Internet Connection | Wi-Fi or 3G (4 Mbps) | Wi-Fi or 3G (8 Mbps) |
| Operating System | Android 4.2.2 | Android 4.4.2 |
| Computer Processor | Cortex-A7 Dual-Core 1.3GHz | Cortex-A7 Dual-Core 1.3GHz |
| Computer Memory | 1GB RAM | 2GB or more |

Table - Hardware Requirements for Mobile

* + - * 1. Software requirements
  1. Project Organization
     1. Software Process Model



Figure - Waterfall model

Reference: SOFTWARE ENGINEERING 9th Edition, by Ian Sommerville.

* + 1. Roles and Responsibilities

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Full name** | **Role in Group** | **Responsibilities** |
| **1** | Kiều Trọng Khánh | Project manager | * Specify user requirements * Control the development process * Give out technique and business analysis support |
| **2** | Nguyễn Hoàng Giang | Team leader, BA, DEV, Tester | * Managing process * Designing database * Clarifying requirements * Prepare documents * GUI design * Create test plan * Coding * Testing |
| **3** | Trương Thanh Lâm | Team member, BA, DEV, Tester | * Clarifying requirements * Prepare documents * GUI Design * Designing database * Coding * Create test plan * Testing |
| **4** | Nguyễn Lê Hoàng Thiện | Team member, BA, DEV, Tester | * Clarifying requirements * Prepare documents * GUI Design * Designing database * Coding * Create test plan * Testing |
| **5** | Phan Hoàng Giáp | Team member, BA, DEV, Tester | * Clarifying requirements * Prepare documents * GUI Design * Designing database * Coding * Create test plan * Testing |

Table - Roles and Responsibilities Details

* + 1. Tools and Techniques

|  |  |
| --- | --- |
| **Tool/Technique** | **Name/Version** |
| Front-end | HTML, CSS5, JavaScript, jQuery, Boostrap |
| Back-end | JavaEE, Servlet, JSP |
| Database Management System | Microsoft SQL Server 2008 R2 Express |
| Mobile | Android Studio 2.0 Preview 4 |
| Web Server | Apache Tomcat 7.0.42 |

Table - Tools and Techniques

* 1. Project Management Plan
     1. Software Development Life Cycle

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Phase** | **Description** | **Deliverables** | **Resources needed** | **Dependencies and Constrains** | **Risks** |
| Requirement Analysis | - Collect requirements.  - Identify and clarify requirements. | - Introduction of system.  - Project task plan.  - Prototypes  - Software requirements specification. | 20 man-days | N/A | - Missing requirements.  - Unclear scope of project.  - Lack of member share of understand. |
| Design | - Architecture design for the system.  - Details design using top-down break-down.  - Choose architecture style. | - Software design document.  - Base code structure.  - Technology notes. | 20 man-days | Depend on “Requirement Analysis” | - Lack of experience.  - Not fulfil requirements. |
| Implementation | - Code GUI  - Code core functions and other related features.  - Unit test and debug. | - Web application.  - Mobile application on Android. | 30 man-days | Depend on “Software design document” | - Mistake while implementing. |
| Testing | - Integration testing.  - System testing.  - Fix bugs. | - Test document. | 10 man-days |  | - Lack of experience.  - Lack of test case. |
| Deployment | - Deploy on web server and mobile. | - Installation guide.  - User manual. | 10 man-days |  | - Lack of experience. |
| Maintenance | Maintain and update the system. | N/A | N/A | N/A | N/A |

Table - Software Development Life Cycle

* + 1. Phase Details
       1. Phase 1: Requirement gathering and analysis

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
| 1. Collect requirements | Find which systems currently provide similar service, their strength and weakness. | GiangNH, LamTT, ThienNLH, GiapPH |
| 2. Identify and clarify main functions | Define which main function system should provide. | GiangNH, LamTT, ThienNLH, GiapPH |
| 3. Create system | Complete the introduction of system. | GiangNH, LamTT |
| 4. Create SRS document | Write SRS document. | GiangNH, LamTT, ThienNLH, GiapNH |
| 5. Design prototypes | Design GUI prototypes. | GiangNH, LamTT, ThienNLH, GiapNH |

Table - Phase 1: Requirement gathering and analysis

* + - 1. Phase 2: System design

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Table - Phase 2: System design

* + - 1. Phase 3: Implementation

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Table - Phase 3: Implementation

* + - 1. Phase 4: Testing

|  |  |  |
| --- | --- | --- |
| Task | Description | Author |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Table - Phase 4: Testing

* + - 1. Phase 5: Deployment of System

|  |  |  |
| --- | --- | --- |
| Task | Description | Author |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Table - Phase 5: Deployment of System

* + - 1. Phase 6: Maintenance

|  |  |  |
| --- | --- | --- |
| Task | Description | Author |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Table - Phase 6: Maintenance

* + 1. All Meeting Minutes

All meeting minutes are saved at:

<https://github.com/Giang94/CapstoneProject_SmartRefrigerator/tree/master/Doc/Meeting%20Minutes>

* 1. Coding Convention