**B.Software Project Management Plan**

**1. Problem Definition**

**1.1Name of this Capstone project**

**- Information Management System for a datacenter**(**IMS**)

**1.2Problem Abstract**

In the “Information technology age”, the need of using servers as the data storage, uploading website to the internet or even to store useful software. Normally, people prefer rental server or entrusting their servers in data center. One of the reasons, because the cost to buy and maintain server is so expensive, and others related problems such as monitoring temperature in server room, fire prevention, management of electronic and cable system, network connection, and security(copy data, computer burglary,..). Therefore, in order to cut down lots of expenses as above, the individuals or companies often entrust their servers or rent servers at the prestigious data center .

Data center is the place to give us conditions to run and manage the server. The current situation of data management in data center is still facing many difficulties, for instance, customer information, sever, IP address, mostly managed by Excel, Word. It causes a lot of time and effort not only for staffs in data center, but also the customer.

The solution of these problems is to build a website named “Information Management System for a data center”. This website can help the moderators of data center to search and handle customer information, server information, and server placement, IP address allocation faster and easier. Information can be stored and accessed quickly and safely.

**1.3Project Overview**

**1.3.1 Current Situation**

Management of a huge system as data center is really a big deal. Their work are not just 24/24 server monitoring, but also manage and maintain other infrastructure such as network, temperature and so on. In the case of customer entrusts their servers to the center, how to set up an appointment in range of many kind of request for example upgrading server or temperately bringing server out of the center. Manually managing will take a lot of time and efforts, even more human errors. It will be annoying to customer if their history of upgrading server is tracked incorrectly, they would be in trouble with lots of nonsensical procedure. Or when IP address of a server is changed, staff has to find the location of that server to change the IP tag on it. It must take time to find the location even in a small data center.

**1.3.2 The proposed system**

The solution of these problems is to build a website named “Information Management System for a data center”. This website can help the moderators of data center to search and handle customer information, server information, and server placement, IP address allocation faster and easier. Information can be stored and accessed quickly and safely.

**1.3.3 Boundaries of the System**

* **The system could be used by manager, staff and customers with a laptop, PC or MAC.**
* **The used language of the system is English.**
* **The complete product includes:**

**+ The website**

**+ All the process document involved.**

**1.3.4 Development Environment**

**1.3.4.1 Hardware requirements**

* **For client:**

|  |  |  |
| --- | --- | --- |
| **Windows** | **Minimum Requirements** | **Recommended** |
| Operating System | Windows 7, 8 | Windows 7, 8 |
| Computer Processor | Intel® Core 2(TM) i3 CPU M370 @2.4GHz 3.39GHz | Intel® Core(TM) i5-2410M CPU @ 2.30GHz |
| Computer Memory | 2GB RAM | 4GB or more |
| Internet Connection | Cable, Wi-Fi (2 Mbps) | Cable, Wi-Fi (12 Mbps) |

**Table1 : Hardware Requirement for client**

* **For server:**

|  |  |  |
| --- | --- | --- |
| **Windows** | **Minimum Requirements** | **Recommended** |
| Operating System | Window Server 2008 | Window Server 2008 |
| Computer Processor | CPU Intel Xeon E3 2.0GHz | 2.0 GHz CPU 6 core E5- 2620 |
| Computer Memory | 2 GB RAM DDR3 | 4 GB RAM DDR2 |
| HDD | 100 GB HDD Raid 0,1 | 500 GB HDD Raid 0,1 |
| Bandwidth | 300Mbps | 500Mbps |
| International bandwidth | 2Mbps | 10Mbps |

**Table2 : Hardware Requirement for Sever**

**1.3.4.2 Software requirements**

* **Window Server 2008: operating system for deploy web service.**
* **Microsoft Windows 10 Professional: operating system and platform for development.**
* **SQL Server 2012: used to create and manage the database for system.**
* **StarUML 2.5.1: used to create models and diagrams.**
* **Slack: used for communication and meeting.**
* **Visual Studio Enterprise 2015: used to implement web-application**

**2. Project organization**

**2.1Software Process Model**

Project is developed under Waterfall Model.



Figure 1: Waterfall model

For more information: <http://www.tutorialspoint.com/sdlc/sdlc_waterfall_model.htm>

The purpose of applying Waterfall model for IMS is because of:

- Requirements of the project may be made clearly and difficult to change.

- In current phrase, if the error which in previous phrase or the update occur, we can return and fix it.

**2.2Roles and responsibilities**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Full name** | **Role in Group** | **Responsibilities** |
| **1** | **Ngo Dang Ha An** | Project manager | * Specify user requirement * Control the development process * Give out technique and business analysis support |
| **2** | **Le Thi Thu Ha** | Team Leader, BA, DEV, Tester | * Managing process * Designing database * Clarifying requirements * Prepare documents * GUI Design * Create test plan * Coding * Testing |
| **3** | **Huynh Lam Ha Tien** | Team Member, BA, DEV, Tester | * Designing database * Clarifying requirements * Prepare documents * GUI Design * Create test plan * Coding * Testing |
| **4** | **Cao Hong Nam** | Team Member, BA, DEV, Tester | * Designing database * Clarifying requirements * Prepare documents * GUI Design * Create test plan * Coding * Testing |

**Table 3 : Roles and Responsibilities Details**

**2.3Tools and Techniques**

* Front-end technologies: HTML5, CSS3, JavaScript, jQuery, AJAX.
* Application is built on .NET platform.
* Web Server: Microsoft IIS version 7.
* Database Management System: MS SQL Server 2012 .

**3. Project Management Plan**

**3.1Software development life cycle**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Phase** | **Description** | **Deliverables** | **Resource needed** | **Dependencies and Constrains** | **Risks** |
| Requirement Analysis | - Collect requirements base on user’s behaviours  - Identify and clarify requirements for the system in general | - Introduction of project  - Software requirement specification  - Project task plan  - Prototypes | 40 man-days | N/A | - Missing requirement  - Unclear scope  - Not have a clear understanding about business process |
| Design | - Design system Architecture  - Design component Diagram, conceptual diagram  - Detail design | - Software design description  - Technology notes | 60 man-days | Depend on “Requirement Analysis” | - Lack of experience  - Not full fill requirements |
| Implementation | - Implement physical database  - Coding system core functions and other feature with GUI  - Unit test | - Physical database diagram  - Main user’s functions on website | 80 man-days | Depend on “Design” | - Lack of experience  - Human mistake |
| Testing | - Write test case  - Do Integration test the system test  - Do Alpha test - Correct bugs  - Beta test  - Acceptance test | - Test document | 40 man-days | Depend on “Implementati on” | - Lack of experience - Missing test case |
| Maintenance | - Deploy on sever | - Installation guide  - User Manual | 20 man-days | Depend on “Testing” | - Lack of experience |

**Table 4 : Software Development Life Cycle Detail**

**3.2Phase Detail**

**3.2.1 Phase 1: Requirement Analysis**

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
| 1. Collect requirements | - Analysis real user’s behaviours  - Find which systems currently provide similar service, their strengths and weaknesses | Haltt  Tienhlh  Namch |
| 2. Identify and clarify main functions | - Define which main functions system should provide | Haltt  Tienhlh  Namch |
| 3. Create System Introduction | - Create Introduction Report. | Haltt  Tienhlh  Namch |
| 4. Software Project Management Plan | - Create Project Management Plan | Haltt  Tienhlh  Namch |
| 5. Prototype | - Build a prototype of propose website | Haltt  Tienhlh  Namch |
| 6. SRS | - Create SRS document | Haltt  Tienhlh  Namch |

**Table 5: Phase 1 - Requirement Analysis**

**3.2.2 Phase 2: Design**

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
| 1.Design system Architecture | -Design system architecture  -Design component diagram | Haltt  Tienhlh  Namch |
| 2. Database Design | -Based on parsed data to recommendation  - Based on other needs to recommendation | Haltt  Tienhlh  Namch |
| 3.Detail design | -Design for each function | Haltt  Tienhlh  Namch |
| 4. Technology research | -Note some technology will be applied in project | Haltt  Tienhlh  Namch |
| 5. Design Document | - Create software design document | Haltt  Tienhlh  Namch |

**Table 6 : Phase 2 - Design**

**3.2.3 Phase 3: Implementation**

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
| 1. Physical database | - Implement physical database | Haltt  Tienhlh  Namch |
| 2. Front-end web functions | - Implement front-end functions on web | Haltt  Tienhlh  Namch |
| 3. Back-end web functions | - Implement back-end functions on web | Haltt  Tienhlh  Namch |
| 4. Unit testing | -Write test case and testing for web functions | Haltt  Tienhlh  Namch |

**Table 7 : Phase 3 - Implementation**

**3.2.4 Phase 4: Testing**

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
| 1. Integration testing | -Write test case and testing modules | Haltt  Tienhlh  Namch |
| 2. System testing | - Write test case and testing system | Haltt  Tienhlh  Namch |
| 3. Alpha testing | - Do alpha test with customer | Haltt  Tienhlh  Namch |

**Table 8 : Phase 4 - Testing**

**3.2.5 Phase 5: Maintenance**

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
| 1. Installation guide | - Write installation guide | Haltt  Tienhlh  Namch |
| 2. User manual | - Write user manual | Haltt  Tienhlh  Namch |

**Table 9: Phase 5 - Maintenance**

**3.3All Meeting Minutes**

Refer to Meeting Minutes folder in CD.

**4.Coding Convention**

Using C# language to develop website:

- Naming Convention:

* Using Camel Case for method arguments and local variables.
* Using Pascal Case for class names and method names.

- Layout Convention:

* Write only one statement per line.
* Write only one declaration per line.
* If continuation lines are not indented automatically, indent them one tab stop (four spaces).
* Add at least one blank line between method definitions and property definitions.
* Use parentheses to make clauses in an expression apparent, as shown in the following code

- Commenting Convention:

* Place the comment on a separate line, not at the end of a line of code.
* Begin comment text with an uppercase letter.
* End comment text with a period.
* Insert one space between the comment delimiter (//) and the comment text, as shown in the following example.

Ex: // Here is your comment.

* Do not create formatted blocks of asterisks around comments.

Using C# Coding Convention from:

https://msdn.microsoft.com/en-us/library/ff926074.aspx