**B. Report No.2 Software Project Management Plan**  
**1. Problem Definition**  
**1.1 Name of this Capstone Project**

*Official name: Hospital portal*  
*Vietnamese name: Hệ thống cổng thông tin bênh viện*

**1.2 Problem Abstract**

This project is the solution for the problem of setting work schedule in hospital, staff management. The scope of this problem seems to be old and boring, but we realize that we still exploit the missing points of other systems and then development of the hospital portal has the strengths to support the management of hospitals more effectively.

Hospital portal is a website system that let user access from everywhere, the system also support on computer and mobile phone.

Nowadays, almost people have cell phones. At that point, the system sends a message to the user if there is any announce from the hospital.

We are also limited in time and human resources to develop a complete system but we build hospital portal by technology that makes the system easier to upgrade.

**1.3 Project Overview**  
**1.3.1 Current Situation**

*Below are the problems encountered in this project:*

* ***Skill:*** Lack of knowledge of common terminology used in hospitals, no one in team have been in contact directly with the hospital workflow.
* ***Absence of team members:*** Lack of human resources and time to build the project. The system need more than 13 weeks to complete all function that clarification and full details.
* ***Security***: There are some possible problem could happen with system such as: attacked during data transmission caused data loss, data corruption.

#### 1.3.2 The Proposed System

According to the immediate demand for hospital information. We build the website system that support access data even by PC, laptop, cell phone or tablet. We assign task for each member in team in vertical to make sure if any member cannot continue to work in our team there will be not profound influence to the project processes.

**Website for admin:**

This website is used by employees of the hospital include: “Admin, Manager, Scheduler and User” to interactive with functions of this system.

* Manage user.
* Manage department.
* Manage room resources.
* Manage meeting schedule.
* Manage mission schedule.
* Manage shift schedule.
* Manage notification.

**1.3.3 Boundaries of the System**

**The system can:**

* Send SMS to employee if they join in any mission.

|  |
| --- |
| Còn trống |

**1.3.4 Future plans**

Now, the system is user for one hospital only, so that it is not diversity about coverage and fluent. Our aspiration is that the system can be used in many hospitals so that the architecture of the system is very easy to maintain and expand.

* Customer don’t have to confuse when they want to find a hospital that provide what kind of service they need and could evaluate quantity thought feedback field.
* Allow customer to book medical appointment.
* Suggest to scheduler the best suitable schedule to reduce time.

**1.3.5 Development Environment**

**1.3.5.1 Hardware requirements**

**For server**

|  |  |  |
| --- | --- | --- |
| **Server** | **Minimum Requirements** | **Recommended** |
| **Internet Connection** | Cable, Wi-Fi (4 Mbps) | Cable, Wi-Fi (8 Mbps) |
| **Operating System** | Window Server 2008 | Window 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 2: Hardware Requirement for Server***

**For Mobile**

|  |  |  |
| --- | --- | --- |
| **Mobile** | **Minimum Requirements** | **Recommended** |
| **Internet Connection** | 2 Mbps | 4 Mbps |
| **Operating System** | Android 4.4.2 | Android 6.0 |
| **Hardware** | Bluetooth 4.0 supported | Bluetooth 4.0 supported |
| **Memory** | 1GB | 2GB or more |

Table 3: Hardware Requirement for Mobile

**For PC**

|  |  |  |
| --- | --- | --- |
| **PC** | **Minimum Requirements** | **Recommended** |
| **Internet Connection** | Cable, Wi-Fi (4 Mbps) | Cable, Wi-Fi (8 Mbps) |
| **Operating System** | Window 7 | Window 7 or more. |
| **Computer Memory** | 2GB RAM | 4GB RAM or more |

Table 4: Hardware Requirement for PC.

* + - 1. **Software requirements**

|  |  |  |
| --- | --- | --- |
| **Software** | **Name / Version** | **Description** |
| Operating system | Window 7 or above | Operating system and platform for development |
| Environment | Java EE 5 or above | Specification for developing web application |
| IDE | Netbeans 8.2, Visual studio code | Used to implement web application. |
| DBMS | SQLServer | Used to create and manage the database for system. |
| Source control | Source tree | Used for source control. |
| Web browser | Chrome 42 or above | Testing browser |

**2. Project organization**

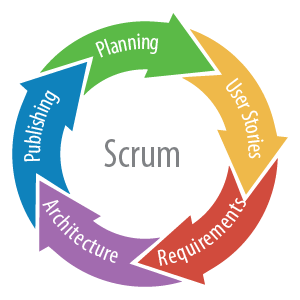
**2.1 Software Process Model**

This project is developed under scrum model. We apply customized scrum model to capable with current situation in our team. We choose this model because the following reasons:

- Variability: This project is not new, but because members of the team still do not have a complete view of hospital operating procedures, the continuous reception of new information is necessary. We collect software requirements from customers, thereby gradually improving the system structure. Therefore, the system will be constantly improved and changed to suit customer requirements.

- Humans resource and time limitation: Scrum has proven to deliver products to end-users 30% -40% faster than traditional methods. Because the Scrum model works with the principle of breaking down the software that needs to be produced into small parts to grow. So with such a rush, the use of the scum model is extremely suitable for our small group of people.

- User involvement: This project must be regularly reviewed and reviewed by the user so the requirement of the scrum process is necessary. We can minimize the risk of complete failure when a member withdraws from the group. As Scrum works in stages, the project team can take steps, then draw on the experience or continue to build on the advantages to improve the product.



Reference: <https://www.nomagic.com/news/new-noteworthy/magicdraw-noteworthy/magicdraw-18-2-fr/magicdraw-18-2-fr-all#scrum>

**2.2 Roles and responsibilities**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Full name** | **Role in Group** | **Responsibilities** |
| **1** | Phạm Công Thành | Project manager | * Specify user requirement * Control the development process * Give out technique and business analysis support |
| **2** | Hồ Hoàng Long | Team Leader,  BA, DEV, Tester | * Managing process * Designing database * Clarifying requirements * Prepare documents * GUI Design * Create test plan * Coding * Testing |
| **3** | Trần Phương Linh | Team member, BA, DEV, Tester | * Designing database * Clarifying requirements * Prepare documents * GUI Design * Create test plan * Coding * Testing |

Table 5: Roles and Responsibilities Details

**2.3 Tools and Techniques**

|  |  |
| --- | --- |
|  | **Techniques** |
| **Front-end** | HTML5  CSS3  Javascript  JQuery  Bootstrap  Angular 5 |
| **Back-end** | JavaEE  Restful API |

*Table 6: Tools and techniques*

**3. Project Management Plan**  
**3.1 Software development life cycle**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Phase** | **Description** | **Deliverables** | **Resource Needed** | **Dependencies**  **and Constrains** | **Risks** |
| Planning | - Analyze the current situation  - Plan whole project | - Introduction of proposed system  - Project task plan | 9 man-days | N/A | N/A |
| Requirement analysis | - Identify and  clarify project  requirements | - Software Requirement Specification  - Prototypes | 21 man-days | N/A | - Missing requirement  - Unclear scope of  project  - Lack of member share of understand |
| Design | - Architecture Design for the System  - Detail design using top-down breakdown  - Choose the Architecture Style | - Software design document  - Technology  notes | 21 man-days | Depend on  “Requirement  Analysis” | - Lack of  experience  - Not fulfil  requirement |
| Implementation | - Implement the all functions for the System | - Runnable System | 12 man-days | Depend on  “Design” | N/A |
| Deployment | - Deploy the system to server | - Deployment Result | 9 man-days | Depend on  “Implementation” | N/A |
| Testing | - Unit testing  - Component testing  - Intergration testing  - Acceptance testing  - Fix error | - Test Case List  - Test Report | 21 man-days | Depend on  “Deployment” | - Lack of  error |
| Evaluation | - Demo for user | - Feedback from user | 21 man-days | Depend on  “Testing” | N/A |

Table 7: Software Development Life Cycle Detail

**3.2 Phase Detail**

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
| ***1. Collect requirements*** | Find which systems currently provide similar service, their strengths and weakness. | LongHH, LinhTP |
| ***2. Identify and clarify*** ***main functions.*** | Define which main functions system should provide. | LongHH, LinhTP |
| ***3.Requirements specification*** | Defining the requirements in detail. | LongHH, LinhTP |
| ***4. Implement code*** | - GUI Design  - Collect and validate information about hospital portal  - Connect to database  - Implement backend | LongHH, LinhTP |

**4. Coding Convention**

Java: Using to develop web service.

* 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>

Angular: Using to develop mobile application.

* Naming Convention:
  + - * + Naming conventions are hugely important to maintainability and readability. This guide recommends naming conventions for the file name and the symbol name.
* Symbols and file names:
* Do use consistent names for all assets named after what they represent.
* Do use upper camel case for class names.
* Do match the name of the symbol to the name of the file.

Using Angular coding convention from:

https://angular.io/guide/styleguide

***5.1 Admin Test Case***

***5.1.1 Login event***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-1 | Login with empty input | 1. Go to login page  2. Input:  Case 1:   * Username: empty * Password: empty   Case 2:   * Username: ‘admin’ * Password: empty   Case 3:   * Username: empty * Password: ‘\*\*\*\*\*’   3. Click button “Login” | System show error message “Invalid username or password” |  | Pass | From 1/3/2017 To  5/04/2017 |
| TH-2 | Login with account not exist | 1. Go to login page  2. Input:   * Username: ‘test’ * Password: ‘\*\*\*\*\*\*\*’   3. Click button “Login” | System show error message “Invalid username or password” |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.1.2 Create/ Update user event***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-3 | Create/ Update user with empty username, email, full name, day of birth, phone | 1. Login at admin role successfully.  2. Go to manage user page.  3. Click add new user.  4. Input:   * Username: Empty * Email: Empty * Full name: Empty * Sex: Male * Day of birth: Empty * Department: “BOARD OF DIRECTOR” * Phone: Empty * Position: “Doctor” * Address: “1b Nha Chung, Da Lat, Lam Dong” * Certificate: “FPT University” * Role: “Manager” | System show error message “Username is required”  “Email is required”  “Full name is required”  “Day of birth is required”  “Phone is required” |  | Pass | From 1/3/2017 To  5/04/2017 |
| TH-4 | Create/ Update user with invalid email, invalid day of birth, invalid phone | 1. Login at admin role successfully.  2. Go to manage user page.  3. Click add new user.  4. Input:   * Username: “LinhTP” * Email: “AeonCity” * Full name: “Tran Nguyen Quang” * Sex: Male * Day of birth: “12/05/2018” * Department: “BOARD OF DIRECTOR” * Phone: “9723589884” * Position: “Doctor” * Address: “1b Nha Chung, Da Lat, Lam Dong” * Certificate: “FPT University” * Role: “Manager” | System show error message “Email is invalid”.  “Day of birth is invalid”  “Phone is invalid” |  | Pass | From 1/3/2017 To  5/04/2017 |
| TH-5 | Create/ Update user doesn’t exists in system | 1. Login at admin role successfully.  2. Go to manage user page.  3. Click add new user.  4. Input:   * Username: “LinhTP” * Email: “AeonCity@gmail.com” * Full name: “Tran Nguyen Quang” * Sex: Male * Day of birth: “02-02-1996” * Department: “BOARD OF DIRECTOR” * Phone: “01245497985” * Position: “Doctor” * Address: “1b Nha Chung, Da Lat, Lam Dong” * Certificate: “FPT University” * Role: “Manager” | System show message “Success”. |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.1.3 Active/ Deactivate user event***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-6 | Active/ Deactivate user | 1. Login at admin role successfully.  2. Go to manage user page.  3. Click Active/ deactivate button  4. Click yes button | System show message “Success”. |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.1.4 Create/ Update department event***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-7 | Create/ Update department with empty department name, empty department code | 1. Login at admin role successfully.  2. Go to manage department page.  3. Click Add button  4. Input:   * Department name: Empty * Department code: Empty * Description: “Test” | System show error message “Name is required”.  “Code is required” |  | Pass | From 1/3/2017 To  5/04/2017 |
| TH-8 | Create/ Update department doesn’t exists in system | 1. Login at admin role successfully.  2. Go to manage department page.  3. Click Add button  4. Input:   * Department name: “BOARD OF DIRECTOR” * Department code: “D1” * Description: “Test” | System show message “Success” |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.1.5 Active/ Deactivate department event***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-9 | Active/ Deactivate department | 1. Login at admin role successfully.  2. Go to manage department page.  3. Click Active/ deactivate button.  4. Click yes button. | System show message “Success”. |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.1.6 Create/ Update room event***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-10 | Create/ Update room with empty | 1. Login at admin role successfully.  2. Go to manage room page.  3. Click Add button  4. Input:   * Room name: Empty * Room code: Empty | System show error message “Room name is required” “Room size is required” |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.1.7 Active/Deactivate room event***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-11 | Active/ Deactivate room | 1. Login at admin role successfully.  2. Go to manage room page.  3. Click Active/ deactivate button.  4. Click yes button. | System show message “Success”. |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.2 Manager Test Case***

***5.2.1 Create/ Update mission schedule***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-12 | Create/ Update mission schedule with empty member , empty start date, end date, place | 1. Login at manager role successfully.  2. Go to manage mission page.  3. Click add button.  4. Input:   * Member: Empty * Start date: Empty * End date: Empty * Place: Empty | System show error message “Member is required”.  “Start date is required”  “End date is required”  “Place is required” |  | Pass | From 1/3/2017 To  5/04/2017 |
| TH-13 | Create/ Update mission schedule with invalid end date | 1. Login at manager role successfully.  2. Go to manage mission page.  3. Click add button.  4. Input:   * Member: LinhTP, LongHH * Start date: “6/4/2018” * End date: “5/4/2018” * Place: “Ha Noi” | System show error message  “End date must after start date” |  | Pass | From 1/3/2017 To  5/04/2017 |
| TH-14 | Create/ Update valid mission schedule valid | 1. Login at manager role successfully.  2. Go to manage mission page.  3. Click add button.  4. Input:   * Member: LinhTP, LongHH * Start date: “6/4/2018” * End date: “10/4/2018” * Place: “Ha Noi” | System show message “Success”. |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.2.2 Active/Deactivate mission schedule***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-15 | Active/deactivate mission schedule | 1. Login at manager role successfully.  2. Go to manage mission page.  3. Click Active/Deactivate button  4. Click yes button. | System show message “Success”. |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.2.3*** ***Create/ Update meeting schedule***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-16 | Create/ Update meeting schedule with empty meeting name, start time, end time, date, content | 1. Login at manager role successfully.  2. Go to manage meeting page.  3. Click Add button  4. Input   * Meeting name: Empty * Room: “201” * Start time: Empty * End time: Empty * Date: Empty * Content: Empty | System show error message “Name is required”.  “Start time is required”  “End time is required”  “Date is required”  “Content is required” |  | Pass | From 1/3/2017 To  5/04/2017 |
| TH-17 | Create/ Update valid meeting schedule | 1. Login at manager role successfully.  2. Go to manage meeting page.  3. Click Add button  4. Input   * Meeting name: “Training skill” * Room: “201” * Start time: “10:00 AM” * End time: “12:00 AM” * Date: “6/4/2018” * Content: “Carry pen and notebook” | System show message “Success” |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.2.4 Active/Deactivate meeting schedule***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-18 | Active/ Deactivate meeting schedule | 1. Login at manager role successfully.  2. Go to manage meeting page.  3. Click Active/ Deactivate button  4. Click yes button | System show message “Success” |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.2.5 Create/Update notification***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-19 | Create/ Update notification with empty name, content | 1. Login at manager role successfully.  2. Go to manage notification page.  3. Click Add button  4. Input:   * Notification name: Empty * Content: Empty | System show error message “Name is required”  “Content is required” |  | Pass | From 1/3/2017 To  5/04/2017 |
| TH-20 | Create/ Update valid notification | 1. Login at manager role successfully.  2. Go to manage notification page.  3. Click Add button  4. Input:   * Notification name: “Unexpected change” * Content: “There is a fire at G floor. Required everyone evacuation” | System show message “Success” |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.2.6 Active/Deactivate notification***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-21 | Active/ Deactivate notification | 1. Login at manager role successfully.  2. Go to manage notification page.  3. Click Active/Deactivate button  4. Click yes button | System show message “Success” |  | Pass | From 1/3/2017 To  5/04/2017 |

***5.3 User Test Case***

***5.3.1 Search meeting schedule***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Test Case Description** | **Test case procedure** | **Expected output** | **Inter-test case dependence** | **Result** | **Test Date** |
| TH-22 | Search meeting schedule with invalid to date | 1. Login at user role successfully.  2. Go to meeting schedule page.  3. Click quick search tab  4. Input   * From: “ 6/4/2018” * To: “5/4/2018”   5. Click search button | System show error message “To date must be after from date” |  | Pass | From 1/3/2017 To  5/04/2017 |
| TH-23 | Search valid meeting schedule | 1. Login at user role successfully.  2. Go to meeting schedule page.  3. Click quick search tab  4. Input   * From: “ 6/4/2018” * To: “10/4/2018”   5. Click search button | System show meeting list in range |  | Pass | From 1/3/2017 To  5/04/2017 |