**MINISTRY OF EDUCATION AND TRAINING**

**FPT UNIVERSITY**

Capstone Project Document

Equipment’s Classroom Management

|  |  |
| --- | --- |
| Group 10 | |
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| **Ext. Supervisor** | N/A |
| **Capstone Project Code** | ECRM |

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1. **Introduction**
2. **Software Project Management Plan**
   1. **Problem Definition**
      1. **Name of this Capstone Project**

**Equipment’s Classroom Management (ECRM).**

* + 1. **Problem Abstract**

The management a large number of classroom facilities is manual. It spends very much time for reporting and difficult to tracking equipment status. So, classroom cannot changes initiative when it is necessary. Addition, The lack of information and position of equipment are also one problem which is difficult for staff can find equipment.

* + 1. **Project Overview**
       1. **Current Situation**

Almost, the universities don’t use application for equipment management or some simple desktop application. So, we need an application can manage equipment quickly and easy to use for user. Equipment Classroom Management (ECRM) will be developed with two platform which permits to run in mobile and website. With pretension can help reduce time for notification is exactly failure equipment and manage classroom, equipment …

The system support run mobile version, it will be a strength which compare to the previous application.

* + - 1. **The proposed system**

The ECRM will be developed in web site and mobile application. Both of them will have the same features and function.

* Classroom management:
  + Supervisor staff can create a new classroom.
  + Supervisor staff can edit classroom.
* Room type management:
  + Supervisor staff can create a new room type.
  + Supervisor staff can edit room type.
* Notify about damaged equipment:
  + Staff can get notify about the damaged equipment.
* Equipment management:
* Create or mapping schedule by import excel file:
  + Supervisor staff can import the schedule excel file into the system and system will create a schedule.
* Statistic:
  + Staff can read statistic about the equipment likes life time, current status…
    - 1. **Boundaries of the System**
* The ECRM is used by FPT University’s teacher and staff and run by laptop, PC and android smart phone.
* Language: English.
* The lasted product contain:
* The ECRM web site.
* The ECRM android application.
  + - 1. **Development Environment**
         1. **Hardware requirements**

**For system**

|  |  |  |
| --- | --- | --- |
| Windows | Minimum Requirements | Recommended |
| Operating System | Window 7, 8 | Window 7,8 |
| Computer Processor | 2GB RAM | 4GB RAM or more |
| Computer Memory | Intel**®** Core 2 duo | Intel**®** Core™ i5 CPU, M460 @2.53 GHz |
| Internet Connection | Cable, wifi (2 Mbps) | Cable, wifi (4Mbps) |

Table 1: Hardware Requirement for system

* + - * 1. **Software requirements**
* Window Server 2008: Operating system for deploy webservice.
* Microsoft Windows 7 Professional: Operating system and platform for development.
* SQL Server 2008 Enterprise R2: used to create and manage the database for system.
* StarUML v2.1.2: used to created models and diagrams.
* Skype 7.0: used for communication and meeting.
* IntelliJ IDEA 14.0.3, JDK 7, Apache Tomcat 7, Android SDK 14: used to implement web application, web service, mobile application.
* Github & TortoiseSVN 1.8: used for source control.
  1. **Project organization**
     1. **Software Process Model**

The model for project is: Iterative Development Model



Figure 1: Iterative Development Model

Source: <http://en.wikipedia.org/wiki/Iterative_and_incremental_development>

The reasons for choose iterative development are:

* Requirement often change to perfection system
* Core flow will be focused implement and testing more than.
  + 1. **Roles and responsibilities**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Full name** | **Role in Group** | **Responsibilities** |
| **1** | Kieu Trong Khanh | Project manager | * Specify user requirement * Control the development process * Give out technique and business analysis support |
| **2** | Tran Vinh Quang | Team Leader, BA, Developer, Tester | * Managing process * Designing database * Clarifying requirements * Prepare documents * GUI design * Create test plan * Coding * Testing |
| **3** | Tang Viet Hung | Team Member, Developer, Tester | * Designing database * Clarifying requirements * Prepare documents * GUI design * Create test plan * Coding * Testing |
| **4** | Doan Nguyen Minh Chi | Team Member, Developer, Tester | * Designing database * Clarifying requirements * Prepare documents * GUI design * Create test plan * Coding * Testing |

Table 3: Roles and Responsibilities Details

* + 1. **Tools and Techniques**
* Front-end: HTML 5, Bootstrap, CSS3, Javascript, jQuery.
* Back-end: RESTful Webservice, Spring MVC, Hibernate,
* Web-server: Apache Tomcat 7.0.
* Database Management System: MS SQL Server 2008 Enterprise R2
  1. **Project Management Plan**
     1. **Software development life cycle**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Phase** | **Description** | **Deliverables** | **Resource needed** | **Dependencies and Constrains** | **Risk** |
| **Room Type Management** | * Support to create, edit room type. | * Website application allowed to create, edit room type of school. * Related document (SRS, SDD, User Guide…) |  | N/A | * Lack of experience. * Technology is difficult. * Not have a clear understanding about bussiness process. |
| **Classroom Management** | * Support to create, edit classroom with room type. * Support to check status, change status of room. * Support to import, mapping schedule. * Support to remove, update classroom. | * Website application allowed to create, edit, remove classroom. * Related document (SRS, SDD, User Guide…) |  | Dependence on “Room Type Management” | * Lack of experience. * Technology is difficult. * Not have a clear understanding about business process. |
| **Equipment**  **Management** | * Support to manage equipment on school. * Support to check life time,… of equipment. | * Website application allowed to manage equipment. * Related document (SRS, SDD, User Guide…) |  | N/A | * Lack of experience. * Technology is difficult. * Not have a clear understanding about bussiness process. |
| **Notify damage and fixing** | * Support user to notify about damaged equipment. * Support staff to notify about fixing. | * Website application allowed user receive notify. * Related document (SRS, SDD, User Guide…) |  | Dependence on “Manage Classroom”, “Manage Equipment” | * Lack of experience. * Technology is difficult. * Not have a clear understanding about bussiness process. |
| **Web Service** | * Build web service to develop android application. | * Web service provide API. * Related document (SRS, SDD, User Guide…) |  | Dependence on “Notify damage and fixing” | * Lack of experience. * Technology is difficult. * Not have a clear understanding about bussiness process. |
| **Android Application** | * Support user to notify about damaged equipment and receive notification in their smartphone using Android OS with internet connection. | * Android application allow user send notify about damage. * Related document (SRS, SDD, User Guide…) |  | Dependence on “Web Service” | * Lack of experience. * Technology is difficult. * Not have a clear understanding about bussiness process. |

Table 4: Software development life cycle

* + 1. **Phase Detail**
       1. **Phase 1: Manage Room Type.**

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
| **Planning** | * Identify start date, end date of iteration. * Identify what team should implement in this iteration. | QuangTV |
| **Requirements** | * Collect requirements from customer * Identify and clarify requirements | QuangTV, HungTV, ChiDNM |
| **Analysis & Design** | * Research and identify technology to implement function * Identify how to implements function * Create ER diagram, database * Create detail design for this function | QuangTV, HungTV, ChiDNM |
| **Implementation** | * Implement function base on detail design, technology had research. | QuangTV, HungTV, ChiDNM |
| **Deployment** | * Create deployment documents, user guide. * Deploy this function to server | QuangTV, HungTV, ChiDNM |
| **Testing** | * Write and run test case for this function * Do unit test and integration test. * Create testing document | QuangTV, HungTV, ChiDNM |
| **Evaluation** | * Receive feedback | QuangTV |

Table 5: Phase 1: Manage Room Type

* + - 1. **Phase 2: Manage Classroom.**

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
| **Planning** | * Identify start date, end date of iteration. * Identify what team should implement in this iteration. * Notice about feed of customer about previous iteration to team member. | QuangTV |
| **Requirements** | * Collect requirements from customer * Identify and clarify requirements | QuangTV, HungTV, ChiDNM |
| **Analysis & Design** | * Research and identify technology to implement function * Identify how to implements function * Create, update ER diagram, database * Create detail design for this function | QuangTV, HungTV, ChiDNM |
| **Implementation** | * Implement function base on detail design, technology had research. | QuangTV, HungTV, ChiDNM |
| **Deployment** | * Create deployment documents, user guide. * Deploy this function to server | QuangTV, HungTV, ChiDNM |
| **Testing** | * Write and run test case for this function * Do unit test and integration test. * Update testing document | QuangTV, HungTV, ChiDNM |
| **Evaluation** | * Receive feedback | QuangTV |

Table 6: Phase 2: Manage Classroom

* + - 1. **Phase 3: Manage Equipment.**

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
| **Planning** | * Identify start date, end date of iteration. * Identify what team should implement in this iteration. * Notice about feed of customer about previous iteration to team member. | QuangTV |
| **Requirements** | * Collect requirements from customer * Identify and clarify requirements | QuangTV, HungTV, ChiDNM |
| **Analysis & Design** | * Research and identify technology to implement function * Identify how to implements function * Create, update ER diagram, database * Create detail design for this function | QuangTV, HungTV, ChiDNM |
| **Implementation** | * Implement function base on detail design, technology had research. | QuangTV, HungTV, ChiDNM |
| **Deployment** | * Create deployment documents, user guide. * Deploy this function to server | QuangTV, HungTV, ChiDNM |
| **Testing** | * Write and run test case for this function * Do unit test and integration test. * Update testing document | QuangTV, HungTV, ChiDNM |
| **Evaluation** | * Receive feedback | QuangTV |

Table 7: Phase 3: Manage Equipment

* + - 1. **Phase 4: Web Service.**

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
| **Planning** | * Identify start date, end date of iteration. * Identify what team should implement in this iteration. * Notice about feed of customer about previous iteration to team member. | QuangTV |
| **Requirements** | * Collect requirements from customer * Identify and clarify requirements | QuangTV, HungTV, ChiDNM |
| **Analysis & Design** | * Research and identify technology to implement function * Identify how to implements function * Create, update ER diagram, database * Create detail design for this function | QuangTV, HungTV, ChiDNM |
| **Implementation** | * Implement function base on detail design, technology had research. | QuangTV, HungTV, ChiDNM |
| **Deployment** | * Create deployment documents, user guide. * Deploy this function to server | QuangTV, HungTV, ChiDNM |
| **Testing** | * Write and run test case for this function * Do unit test and integration test. * Update testing document | QuangTV, HungTV, ChiDNM |
| **Evaluation** | * Receive feedback | QuangTV |

Table 8: Phase 4: Web Service.

* + - 1. **Phase 5: Android Application.**

|  |  |  |
| --- | --- | --- |
| **Task** | **Description** | **Author** |
| **Planning** | * Identify start date, end date of iteration. * Identify what team should implement in this iteration. * Notice about feed of customer about previous iteration to team member. | QuangTV |
| **Requirements** | * Collect requirements from customer * Identify and clarify requirements | QuangTV, HungTV, ChiDNM |
| **Analysis & Design** | * Research and identify technology to implement function * Identify how to implements function * Create, update ER diagram, database * Create detail design for this function | QuangTV, HungTV, ChiDNM |
| **Implementation** | * Implement function base on detail design, technology had research. | QuangTV, HungTV, ChiDNM |
| **Deployment** | * Create deployment documents, user guide. * Deploy this function to server | QuangTV, HungTV, ChiDNM |
| **Testing** | * Write and run test case for this function * Do unit test and integration test. * Update testing document | QuangTV, HungTV, ChiDNM |
| **Evaluation** | * Receive feedback | QuangTV |

Table 9: Phase 5: Android Application

* + 1. **All Meeting Minutes**

Refer to Meeting Minutes folder

<https://github.com/tranquang9a1/ECRM>

* 1. **Coding Convention**

Java: Using to develop desktop application.

Summary:

* Naming Convention.
  + Use camel case for both variable and function name.
  + Use Pascal case for class, interface name.
  + The names of variables declared constants should be all uppercase with words separated by under-scores(“\_”).
* Four spaces should be used as the unit of indentation. The exact construction of the indentation (spaces vs tabs) is unspecified. Tabs must be set exactly every 8 spaces (not 4).
* When an expression will not fit on a single line, break it according to these general principles:
  + Break after a comma.
  + Break before an operator.
  + Align the new line with the beginning of the expression at the same level on the previous line.
* Declaration.
  + One declaration per line is recommended sice it encourages commenting.
  + In absolutely no case should variables and functions be declared on the same line
  + Do not put different types on the same line.
* Code Examples

Follow “Code Conventions for the Java TM Programming Language, by Sun Microsystems, rev April 20, 1999”.

<http://www.oracle.com/technetwork/java/codeconventions-150003.pdf>