**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 |

-Ho Chi Minh City, May 11, 2015-

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# Definitions, Acronyms and Abbreviations

|  |  |
| --- | --- |
| Name | Definitions |
| ECRM | Equipment’s Classroom Management |
| HTTP | Hyper Text Transfer Protocol |
| App | Application |
| API | Application Program Interface |

1. **Introduction**
   1. **Project Information**

* Project Name**: Equipment Classroom Management.**
* Project Code**: ECRM.**
* Product Type**: Web Application, Mobile Application.**
* Start Date**: May 11, 2015.**
* End Date**:** 
  1. **Introduction**

Nowadays, numbers of equipment in school are increasing with the rising of students and makes equipment management becoming more important. Therefore, our project looks to meet the demand of managing equipment. We provide website and mobile application for user to send and receive notification about damaged equipment, analyze damaged level to make recommendations, find available classroom and send SMS for related persons, view equipment statistics.

* 1. **Current Situation**

At the moment, all the equipment in the school is not managed by any software. Staff has to gather much information such as number of classroom, status of classroom, status of equipment in each room…., each 6 or 12 months they must check all the equipment about the damaged. When there is any problem occurred, teacher has to report directly to staff and it causes wasting time to report. After that, staff will track status, notice to fixer to fix this. In the other hand, staff must check which room is available if changing is needed.

* 1. **Problem Definition**

Advantages:

* Requires less human resources.

Disadvantages:

* Wasting time to report problem.
* Hard to manage equipment by document, book…
* Hard to find available room when needed.
  1. **Proposed Solution**

Building the application supports the staff manage the equipment’s classroom. The classroom type is present with position of each equipment. The user can report their damage by checking, then that report is notified to staff. The staff also notify to the reported about fixing.

* + 1. **Feature Function**

Staff can:

* Create account and manage account.
* Create room type and mapping to each class in school.
* Manage equipment in school.
* Create schedule by import schedule excel file.
* View equipment current status and statistic.
* Receive notification about damaged equipment.
* Resolve notification and notice to reporter.

Teacher can:

* Send notification about damaged equipment.
* Receive notify about fixed or changing room

System can:

* Analyze damaged level and give recommendations.
* Find available classroom.
* Send SMS.
  + 1. **Advantages and disadvantages**
* Advantages
* The report is created easier and faster. Saving time for equipment staff.
* Easy to find the available room if changing room is needed.
* The notifications are received real-time, so the equipment will fix faster.
* Easy to make decision thanks to recommendations from system.
* Staff easily finds the position of failure equipment which shows in classroom map.
* Equipment histories are researched exactly and quickly.
* Show statistics about equipment’s status, using time…
* Disadvantages
* The system would not check the behavior of user, so if the report is not correct, the notification will be wrong.
* System can’t apply to complicated classroom likes discuss room…
* The system could not check validate data imported from excel file.
* User must have internet connection to use this.
  1. **Functional Requirement**

Function requirements of the system are listed as below:

* + 1. **Equipment Management**
* Support to manage all equipment in school.
* Track status equipment.
  + 1. **Notification**
* Report the damage about equipment by checking. This also send notify to staff.
* Check the notification and fixing the equipment.
* Notify to reporter about that fix.
* Send SMS.
  + 1. **Classroom Management**
* Support to manage all classrooms in school.
* Track status of classroom.
  + 1. **Damaged Analysis And Recommendations**
* Analyze about damaged level of classroom and give recommendations.
  + 1. **Suggest Available Classroom**
* Find a similar available classroom with the current classroom.
  1. **Role and Responsibility**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Full Name | Role | Position | Contact |
| 1 | Kiều Trọng Khánh | Project Managers | Instructor | khanhkt@fpt.edu.vn |
| 2 | Trần Vĩnh Quang | Developer | Leader | quangtvse61078@fpt.edu.vn |
| 3 | Tăng Việt Hưng | Developer | Member | hungtvse61019@fpt.edu.vn |
| 4 | Đoàn Nguyễn Minh Chí | Developer | Member | chidnmse60717@fpt.edu.vn |
| 5 |  |  |  |  |

Table : Role and Reponsibility

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

* **Official Name:** Equipment’s Classroom Management.
* **Vietnamese Name:** Ứng dụng hỗ trợ quản lí trang thiết bị cho các phòng học
* **Abbreviation:** ECRM
  + 1. **Problem Abstract**

Reporting damaged equipment in classroom is very important. It affect the quality of teaching badly since it caused wasting time. If we can optimize it, the quality of teaching will improve. So the ECRM system will provide the platform where people can reduce reporting damaged equipment time, manage equipment and receive suggestions via web site and mobile application.

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

The ECRM is the system that helps manages equipment in classroom more convenient way. With teacher, they just click (with web app version) or touch (with mobile app version) on the equipment which is damaged and system will notify to the staff immediately. With staff, they can see specific equipment was damaged in which classroom and who reported it. They can also check which classroom is available due to the schedule excel file imported to the system. Staff can read the statistic about equipment in school if they want to.

The system also has restrictions and it comes from the data in schedule excel file. If staff imports incorrect data but match the template, the result will be wrong. One more thing is the system couldn’t check user’s behaviors. So if teacher report wrong position of the damaged equipment, there are no way the system can deal with it.

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

Our system includes three main subsystems: an online website application for teacher and staff, a mobile application for teacher and a mobile application for staff.

* + - * 1. **Website application**
* Classroom management:
* Staff can create a new classroom.
* Staff can edit classroom.
* Room type management:
* Staff can create a new room type.
* Staff can edit room type.
* Notify about damaged equipment:
* Staff can receive notification about the damaged equipment.
* Teacher can send notification.
* Equipment management:
* Staff can manage equipment.
* Staff can manage equipment information.
* Create or mapping schedule by import excel file:
* 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…
* Analysis:
  + System analyzes the damaged level and gives suggestions.
* Send SMS:
  + System sends SMS to related peoples.
* Suggest available classroom:
  + System find similar available classroom with current classroom and give suggestion.
    - * 1. **Mobile application for teacher**
* Teacher sends notification about damaged equipment.
* Teacher sees the map of room with interactive graphic in their account.
* Teacher receives notification about fixed equipment or changing room if needed.
  + - * 1. **Mobile application for staff**
* Staff can get notification from damaged equipment which reported by teacher.
* Staff can send notification to teacher about fixing equipment of changing room if needed
* Staff can send SMS to relative people such as: teacher, security…
* Staff can check status of all room in school.
  + - 1. **Boundaries of the System**
* The ECRM is used by teacher and staff, run in laptop, PC and android smart phone.
* Language: English.
* The lasted product contain:
* The website application for staff and teacher.
* The android application for staff.
* The android application for teacher.
  + - 1. **Development Environment**
         1. **Hardware requirements**

**For system**

|  |  |  |
| --- | --- | --- |
| Windows | Minimum Requirements | Recommended |
| Operating System | Window Sever 2008 | Window Server 2012 |
| Computer Processor | 512MB RAM | 2GB 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 : Hardware Requirement for system

* + - * 1. **Software requirements**
* Window Server 2008: Operating system for deploy web service.
* SQL Server 2008 Enterprise R2: used to create and manage the database for system.
* StarUML v5.0: 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, and 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 : Iterative Development Model

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

The reasons for choose iterative development are:

* Members are active but lack of experience so we need to receive feedback during project evolving.
* We have 14 weeks for this project. So we can defined this is small project. Iterative model is suitable for this project to approaching the user thinking.
* This project does not exist, so we must take the survey to customer to know the equipment management in each school.
* In each phase, members only focus for their function. This will make the result better.
* Customer is more actively involved, get higher priority.
* Requirement changed frequently.
  + 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 : Roles and Responsibilities Details

* + 1. **Tools and Techniques**
* Front-end: HTML 5, Bootstrap, CSS3, Javascript, jQuery.
* Back-end: RESTful Web service, 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 creating, editing room type of school. * Related document (SRS, SDD, User Guide…) |  | N/A | * Lack of experience. * Technology is difficult. * Not have a clear understanding about business 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 creating, editing, removing 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 managing equipment. * Related document (SRS, SDD, User Guide…) |  | N/A | * Lack of experience. * Technology is difficult. * Not have a clear understanding about business 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 business process. |
| **Web Service** | * Build web service to develop android application. | * Web service provides 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 business 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 business process. |

Table : Software development life cycle

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

|  |  |  |
| --- | --- | --- |
| **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 : Phase 1: Room Type Management

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

|  |  |  |
| --- | --- | --- |
| **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 : Phase 2: Classroom Management

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

|  |  |  |
| --- | --- | --- |
| **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 : Phase 3: Equipment Management

* + - 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 : 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 : 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 slice 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>.

1. **Software Requirement Specification**
   1. **User Requirement Specification**
      1. **Guest Requirement**

Guest is a person who does not login to the system. Guest can use some function in the system. These are some functions guest can use:

* Login
  + 1. **User Requirement**

User is guest, who uses his account to login to the system. In this system, we can define user is a teacher. Member can use some additional function, such as:

* Logout
* View Profile
* Update Account
* View Report History
* View Notification
* View Room Map
* Create Report
  + 1. **Staff Requirement**

Staff is manager of the system, we can define staff is an equipment manager in school. Staff can use these function:

* Add New Account
* Activate Account
* Deactivate Account
* Update Account
* View Room Type
* Create New Room Type
* Update Room Type
* Delete Room Type
* Create Classroom
* View Classroom
* Update Classroom
* Remove Classroom
* View Report
* Mapping Schedule
* View Statistic
* Resolve Report
  1. **System Requirement Specification**
     1. **External Interface Requirement**
        1. **User Interface**
* The user interface uses language Vietnamese
  + - 1. **Hardware Interface**
* N/A
  + - 1. **Software Interface**
* Firefox (v30 or above), Chrome (v14 or above) browser, enable Javascript
* Smartphone with Android 4.0 or above.
  + - 1. **Communication Protocol**
* Website using HTTP protocol for communication between the web browser and the web server.
* Mobile app using HTTP protocol for communication between app and web service.
  + 1. **System Overview Use Case**

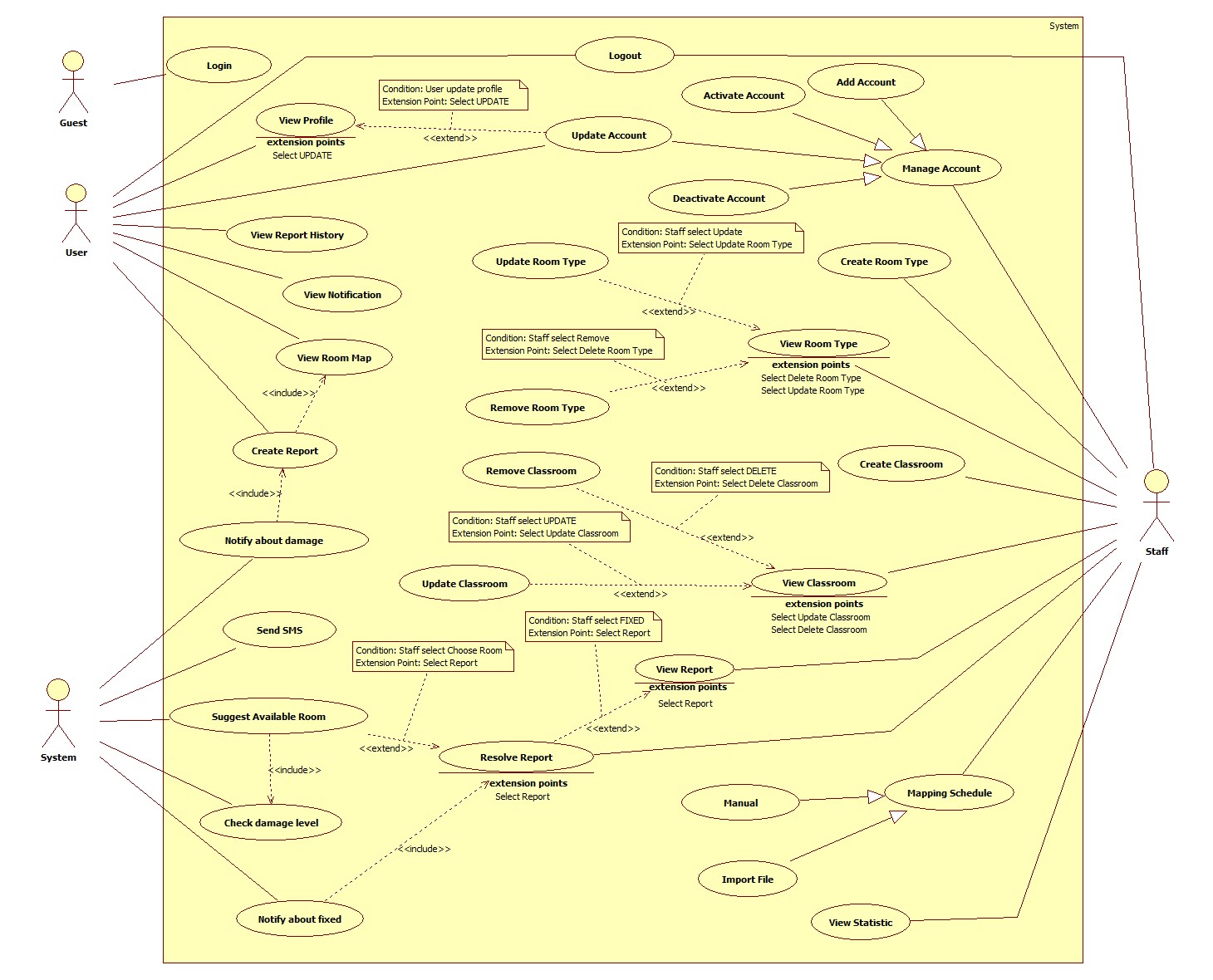


Figure : System Overview Use Case

* + 1. **List of Use Case**
       1. **<Guest> Overview Use Case**

****

Figure : Guest Overview Use Case

* + - 1. **<Guest> Login**



Figure : <Guest> Login

Use case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM001** | |  |  |
| **Use Case No.** | ECRM001 | **Use Case Version** | 1.0 |
| **Use Case Name** | Login |  |  |
| **Author** | Tang Viet Hung |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:** Guest | |  |  |
| **Summary:** This use case allows guest to login.  **Goal:** Authentication and authorization  **Triggers:** Guest click on “Đăng nhập” button  **Preconditions:**   * N/A   **Post Conditions:**   * **Success:** Guest will be logged in system with their roles. Show welcome message. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Guest clicks “Đăng nhập” button. | System navigates to “Đăng nhập” page.   * Username: textbox, min length: 6, max length: 20 required. * Password: textbox, min length: 6, max length: 20, required. * Đăng nhập: button | | 2 | Input field. |  | | 3 | Click on “Đăng nhập” button. | Guest will login system with their roles.  [Exception 1,2,3] |     **Alternative Scenario:** N/A    **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Wrong username or password. | Show unsuccessful message: “Sai username hoặc password. Hãy thử lại!” | | 2 | “Username” field or “Password” field is empty | Show error message: “Bạn chưa nhập Username or Password. Hãy thử lại” | | 3 | “Username” or “Password” field data length is longer than 20 character or lower than 6 character | Show error message: “Username và Password phải lớn hơn 6 và nhỏ hơn 20 ký tự!” |     **Relationships:** N/A  **Business Rules:**   * After login successfully, guest will login with their role: user, staff. * Only active user can login to system. * If it is first time user login to system. They will be redirect to “Change Password” page to change password. * On mobile application, user can only login ECRM User App. Staff can only login ECRM Staff App. * On website application, if guest login with role user will be redirect to homepage. If guest is staff, they will be redirected to admin page. | | | |

Table : <Guest> Login

* + - 1. <User> Overview Use Case

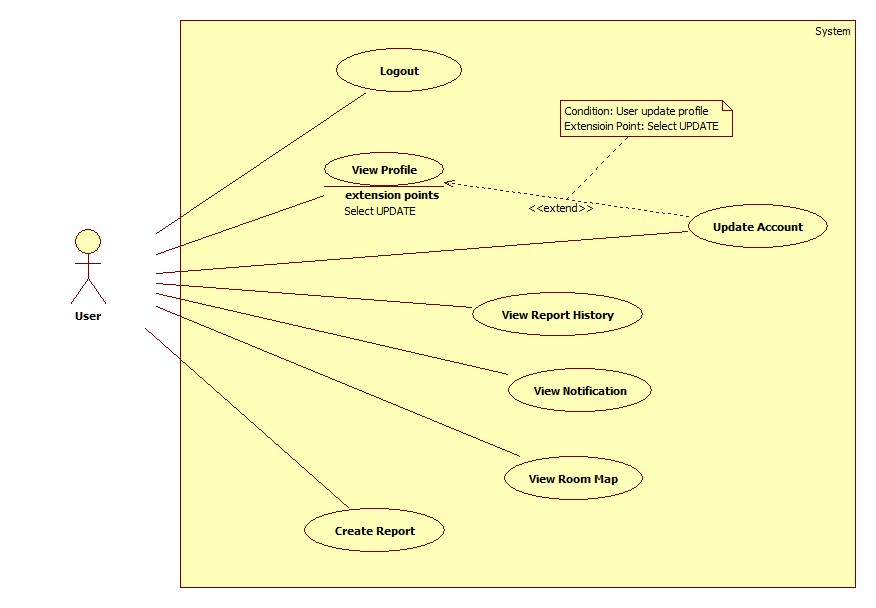


Figure : <User> Overview Use Case

* + - 1. <User> Logout

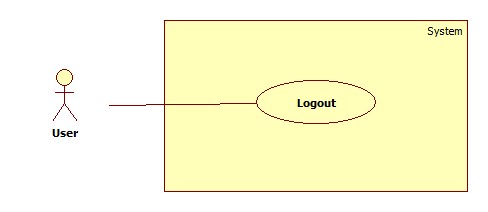


Figure : <User> Logout

**Use case specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM002** | |  |  |
| **Use Case No.** | ECRM002 | **Use Case Version** | 1.0 |
| **Use Case Name** | Logout |  |  |
| **Author** | Tang Viet Hung |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:** Guest | |  |  |
| **Summary:** This use case allows user to logout.  **Goal:** Logout of the system  **Triggers:** User click on “Logout” button  **Preconditions:**   * User has successfully logged in system.   **Post Conditions:**   * **Success:** User will be logged out of system. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Đăng xuất” button. | System show dialog: “Bạn có chắc muốn đăng xuất?” | | 2 | User clicks “Yes” button. | System navigates to login screen. |     **Alternative Scenario:**     |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “No” button in dialog. | System remains user in current page. |   **Exceptions:** N/A    **Relationships:** N/A  **Business Rules:**   * After logout successfully, guest can not use the system. | | | |

Table : <User> Logout

* + - 1. **<User> View Profile**

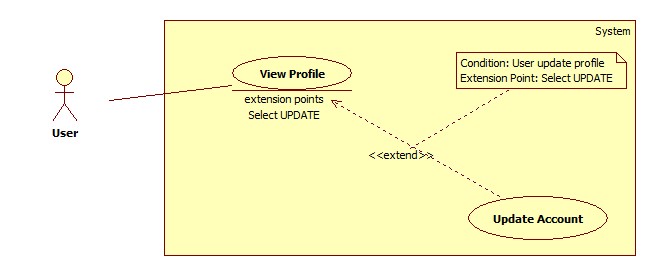
****

Figure : <User> View Profile

**Use case specification.**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM003** | |  |  |
| **Use Case No.** | ECRM003 | **Use Case Version** | 1.0 |
| **Use Case Name** | View Profile |  |  |
| **Author** | Tran Vinh Quang |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:** User | |  |  |
| **Summary:** This use case allows user to view all information of their account.  **Goal:** View information of account.  **Triggers:** User clicks on account name link.  **Preconditions:**   * User has successfully logged in system.   **Post Conditions:**   * **Success:** User will be see all of information of their account * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Account Name” link. | System navigates to profile page.  It contains the following information:   * Username: Label * Họ Tên: Textbox * “Số Điện Thoại”: Textbox * “Trạng thái”: Label * “Cập nhật”: button * “Thay đổi Password”: button.   [Exception 1] |     **Alternative Scenario:** N/A  **Exceptions:**     |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Connection error | Show error message: “Lỗi kết nối, vui long tải lại” |   **Relationships:** extend Update Account  **Business Rules:**   * From Profile Page, User can change their password, update new phone number and update real name. * User can edit textbox “Số Điện Thoại” and click “Cập nhật” to update new phone number. * User can edit textbox “Họ Tên” and click “Cập nhật” to update new real name | | | |

* + - 1. <User> Update Account

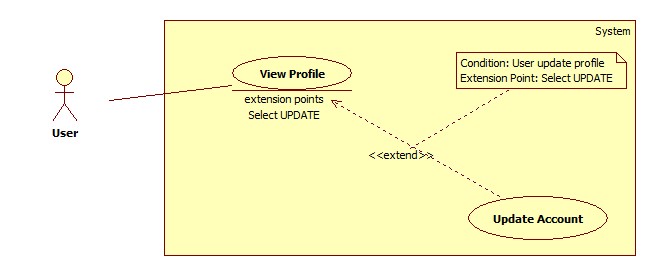
****

Figure : <User> Update Account

**Use case specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM004** | |  |  |
| **Use Case No.** | ECRM004 | **Use Case Version** | 1.0 |
| **Use Case Name** | Update Account |  |  |
| **Author** | Tran Vinh Quang |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:** User | |  |  |
| **Summary:** This use case allows user to change password of their account.  **Goal:** Change password of account.  **Triggers:** User clicks on “Cập nhật Password” button in Profile page.  **Preconditions:**   * User has successfully logged in system.   **Post Conditions:**   * **Success:** User will be changed their password, show successful message. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Change Password” link. | System navigates to “Change Password” page.  It contains form with the following information:   * Current Password: Textbox, type: Password * New Password: Textbox, min length: 6, max length: 20, type: Password, required. * Confirm Password: Textbox, min length: 6, max length: 20, type: Password, required. * “Thay đổi”: button | | 2 | User fills information into the form and click “Thay đổi” button. | System show successful message and redirect to Profile page.  [Exception 1, 2, 3,4,5] |     **Alternative Scenario:** N/A  **Exceptions:**     |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Connection error | Show error message: “Lỗi kết nối, vui lòng tải lại” | | 2 | Current password field is wrong | Show error message: “Sai password hiện tại, vui lòng nhập lại” | | 3 | New password and confirm password are not match | Show error message: “New Password and Confirm password không giống nhau, vui lòng nhập lại” | | 4 | New password and confirm password field data length is longer than 20 character or lower than 6 character. | Show error message: “Password phải nằm trong khoản từ 6 đến 20 ký tự” | | 5 | New password is same with current password | Show error message: “Mật khẩu mới phải khác mật khẩu hiện tại” |   **Relationships:** extend Update Account  **Business Rules:**   * If the first time user login to system, they will be redirect to “Change Password” page. * New password does not same with current password. | | | |

* + - 1. <User> View Report History

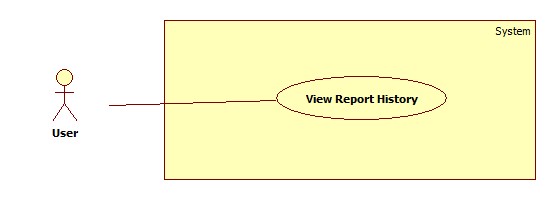


Figure : <User> View Report History

**Use case specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM005** | | | |
| **Use Case No.** | ECRM005 | **Use Case Version** | 1.0 |
| **Use Case Name** | View Report History | | |
| **Author** | ChiDNM | | |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:**   * User   **Summary:**   * This use case allows user to view detail resolve for them report.   **Goal:**   * User can view all report had reported by this user.   **Triggers:**   * User click “Detail” button in report history table. * User click resolve notify when report is resolved.   **Preconditions:**   * User has successfully login on system with role teacher. * This report must be created by user.   **Post Conditions:**   * **Success:** Show report detail and resolve of staff. * **Fail:** Show error message.   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | User click “Detail” button  [Alternative 1][Exception 1][Exception 2][Exception 3] |  | |  | System will show report with two tab:   * “Báo cáo” tab:   + “Phòng”: label   + “Người báo cáo”: label   + “Thời gian báo cáo”: label   + “Thiết bị”: label + “Xem bản đồ” button   + “Mức độ hư hại”: process   + “Mô tả từ giáo viên”: label   + “Sơ đồ phòng học”: map * “Khắc phục” tab:   + “Nhân viên”: label   + “Thời gian hoàn thành”: label   + “Cách khắc phục”: label   + “Lý do hư hỏng”: lable * “Thoát” button |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User click resolve notify when report is resolved. |  | |  | System will show report with two tab:   * “Báo cáo” tab:   + “Phòng”: label   + “Người báo cáo”: label   + “Thời gian báo cáo”: label   + “Thiết bị”: label + “Xem bản đồ” button   + “Mức độ hư hại”: process   + “Mô tả từ giáo viên”: label   + “Sơ đồ phòng học”: map * “Khắc phục” tab:   + “Nhân viên”: label   + “Thời gian hoàn thành”: label   + “Cách khắc phục”: label   + “Lý do hư hỏng”: lable   “Toát” button |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Report history not exist |  | |  | Show warning message: “Báo cáo hiện không tìm thấy.” And reload page. | | 2 | User view report of other user |  | |  | Show warning message: “Bạn không có quyền truy cập báo cáo này”. | | 3 | User did not created report |  | |  | Show warning message: “Bạn chưa tạo báo cáo nào” |   **Relationships:** N/A  **Business Rules:**   * User only views your report. | | | |

Table : <User> View Report History

* + - 1. <User> View Notification

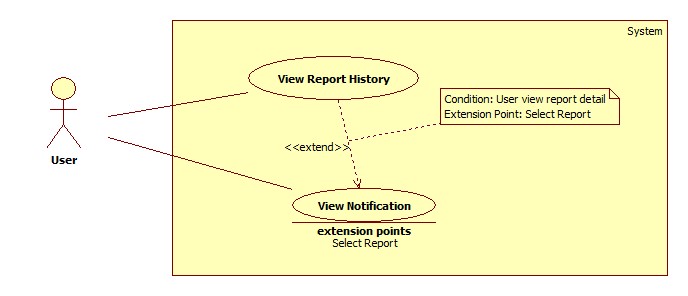


Figure : <User> View Notification

**Use case specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM006** | |  |  |
| **Use Case No.** | ECRM006 | **Use Case Version** | 1.0 |
| **Use Case Name** | View Notification |  |  |
| **Author** | Tran Vinh Quang |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:** User | |  |  |
| **Summary:** This use case allows user to view all notification of their account.  **Goal:** View all notification of account.  **Triggers:** User clicks on “Notification” button in Home page.  **Preconditions:**   * User has successfully logged in system.   **Post Conditions:**   * **Success:** User will see all of notification of their account. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Notification” button. | System navigates to “Notification” page.  It contains all of notification of their account, include unread and read. |     **Alternative Scenario:** N/A  **Exceptions:**     |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Connection error | Show error message: “Lỗi kết nối, vui lòng tải lại” |   **Relationships:** extend View Report History  **Business Rules:**   * From notification page, user can see detail report by click to report. | | | |

* + - 1. <User> View Room Map

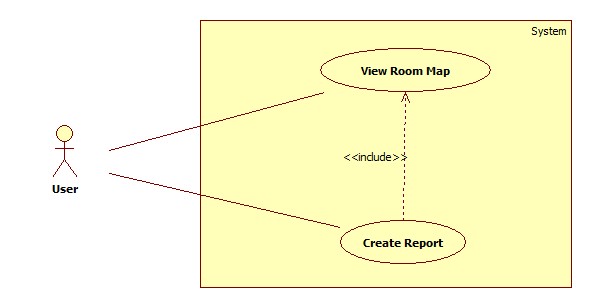
****

Figure : <User> View Room Map

**Use case specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM007** | |  |  |
| **Use Case No.** | ECRM007 | **Use Case Version** | 1.0 |
| **Use Case Name** | View Room Map |  |  |
| **Author** | Tran Vinh Quang |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:** User | |  |  |
| **Summary:** This use case allows user to view map of classroom they teach.  **Goal:** View map of classroom user teaching. (Apply for web application)  **Triggers:** User clicks on “Create Report” button in Home page.  **Preconditions:**   * User has successfully logged in system. * User must teaching in that time.   **Post Conditions:**   * **Success:** User will see map of classroom they teaching. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Create Report” button. | System navigates to “Map” page.  It contains the following information   * Map of room they teaching * Cancel: button   [Exception 1,2] |     **Alternative Scenario:** N/A  **Exceptions:**     |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Connection error | Show error message: “Lỗi kết nối, vui lòng tải lại” | | 2 | User does not teach any class | Show error message: “Bạn không dạy lớp nào! Vui lòng thử lại sau hoặc liên hệ với quản lí”. |   **Relationships:** N/A  **Business Rules:**   * From map page, user can create report about damage equipment by click to equipment in map. * Only user have teaching in class can see map of room. * If class had damaged equipment, that equipment will be showed with red color. Other equipment will be showed with white color | | | |

* + - 1. <User> Create Report

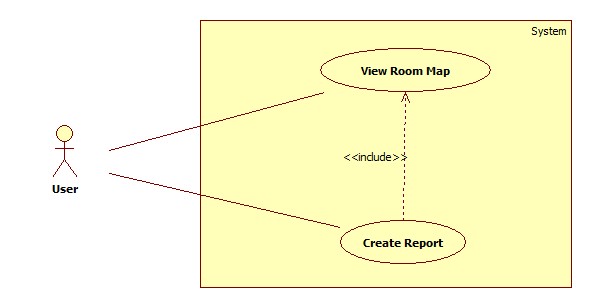


Figure : <User> Create Report

**Use case specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM008** | | | |
| **Use Case No.** | ECRM008 | **Use Case Version** | 1.0 |
| **Use Case Name** | Create damaged report | | |
| **Author** | ChiDNM | | |
| **Date** | 05/21/2015 | **Priority** | High |
| **Actor:**   * User   **Summary:**   * In this use case allows user to send report for staff about damaged equipment.   **Goal:**   * Staff will be received damaged report from user. * Teacher sends report about damaged equipment.   **Triggers:**   * User click “Tạo Báo Cáo” button in Notification screen of user.   **Preconditions:**   * User has login successful on system with role teacher. * User has teaching schedule in this classroom.   **Post Conditions:**   * **Success:** Report must be send to staff. And return Notification page. * **Fail:** Show error message.   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. User click “Tạo Báo Cáo” button. |  | |  | 1. System will show classroom map which are used by user. | | 1. User must choose damaged equipment, click “Tiếp theo” button.   [Exception 1, 2, 3] |  | |  | 1. Detail report will be shown in form:  * “Phòng”: label * “Thiết bị”: label * “Độ hư hỏng”: dropdown list, required * “Đánh giá của bạn”: dropdown list, required * “Mô tả hư hại”: text area, min length: 0, max length: 200, optional. * “Gửi báo cáo”: button | | 1. User fills the information into the form, and click “Gửi báo cáo” button.   [Exception 3] |  | |  | 1. Report will be saved. 2. Call SentNotificationStaff method of SocketIO  * Get staff is online * Notify for this staff about damaged report   [Alternative 1]   1. Return Notification page and show success message. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | List online staff is empty. |  | |  | System will dismiss this step and continue. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Click “Tiếp theo” button when no equipment is chosen. |  | |  | Show message: “Bạn cần chọn thiết bị hư hại trước khi qua bước tiếp theo”. | | 2 | User choose the equipment, which had reported. |  | |  | Show message: “Thiết bị này đã được report, vui lòng chọn thiết bị khác” | | 3 | Connection error |  | |  | Show error message: “Lỗi kết nối, vui lòng thử lại” |   **Relationships:** include by View Room Map (show classroom map).  **Business Rules:**   * “Tiếp theo” button only enable when user chose an equipment. * User will be reported this classroom until user have next lesson. * User can report equipment which has not any report in process. * “Mô tả hư hại” in detail report form is optional. * User only can report about class them teaching. | | | |

Table : <User> Create Report

* + - 1. <Staff> Use Case Overview

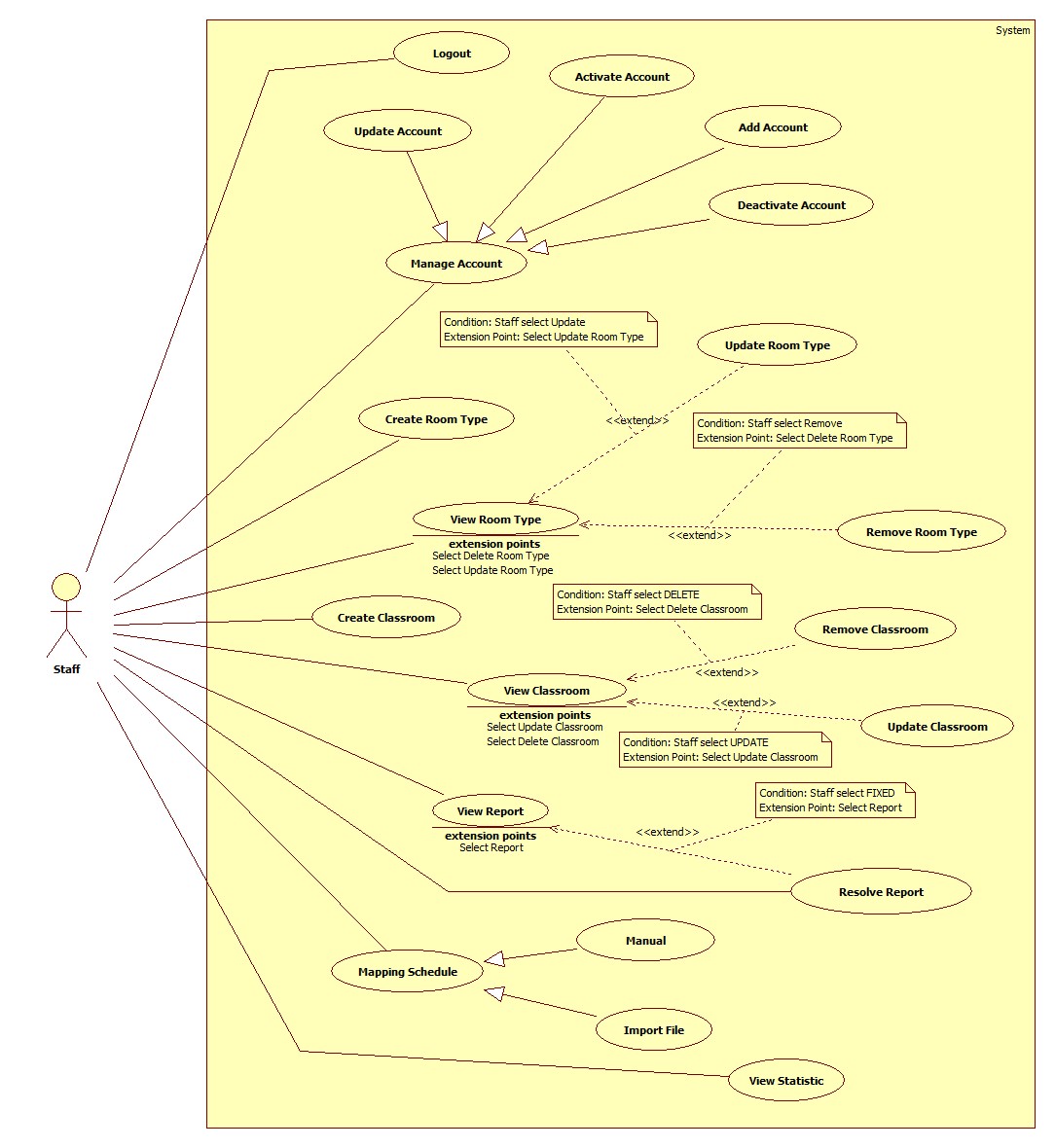


Figure : <Staff> Use case Overview

* + - 1. **<Staff> Add New Account**

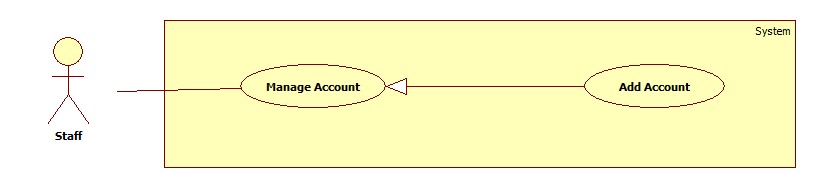
****

Figure : <Staff> Add New Account

**Use case specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM009** | |  |  |
| **Use Case No.** | ECRM009 | **Use Case Version** | 1.0 |
| **Use Case Name** | Add Account |  |  |
| **Author** | Tang Viet Hung |  |  |
| **Date** | 21/05/2015 | **Priority** | Normal |
| **Actor:** Staff | |  |  |
| **Summary:** This use case allows staff to add new account.  **Goal:** Add new account to the system.  **Triggers:** Staff wants to add new account.  **Preconditions:**   * User login as staff role.   **Post Conditions:**   * **Success:** New account will be created and show successful message. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff focuses on “Account” and clicks “Add Account” | System navigates to “Tạo tài khoản” page. Page includes form:   * Username: textbox, min length: 6, max length: 30, required. * Password: textbox, min length: 6, max length: 20, required * Họ tên: textbox, min length: 6, max length: 50, required. * Số điện thoại: textbox, min length: 10, max length: 11, type: number, required. * Chức vụ: dropdown list, required. * Clear: button. * Tạo tài khoản: button | | 2 | Staff enters information and then clicks “Tạo tài khoản” button.  [Alternative 1] | Create new account and show successful message: “Tài khoản được tạo thành công”.[Exception 1, 2, 3, 4, 5, 6] |     **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Staff click Clear button. |  | |  | System will reset all data had inputted. |       **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Length of “username” is not in range. | Show unsuccessful message: “Username bao gồm từ 6 đến 10 ký tự. Xin thử lại!” | | 2 | “Số điện thoại” is empty or contain characters. | Show unsuccessful message: “Số điện thoại không hợp lệ. Xin thử lại!” | | 3 | “Họ tên” is empty. | Show unsuccessful message: “Họ tên không được bỏ trống. Xin thử lại!” | | 4 | “Username” have been already existed. | Show unsuccessful message: “Username đã tồn tại, vui lòng nhập lại!” | | 5 | “Số điện thoại” field data length is not in range | Show unsuccessful message: “Số điện thoại không hợp lệ. Xin thử lại!” | | 6 | “Password” field data length is not in range | Show unsuccessful message: “Password không hợp lệ. Xin thử lại!” |     **Relationships:** N/A  **Business Rules:**   * Account is created with active status * “Số điện thoại” field data must start by “0”. * Staff only create account with role user * Admin can create account with role user or staff | | | |

* + - 1. <Staff> Activate Account

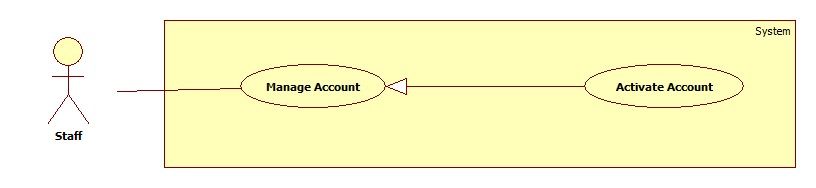


Figure : <Staff> Activate Account

**Use case specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM010** | |  |  |
| **Use Case No.** | ECRM010 | **Use Case Version** | 1.0 |
| **Use Case Name** | Activate Account |  |  |
| **Author** | Tang Viet Hung |  |  |
| **Date** | 21/05/2015 | **Priority** | Normal |
| **Actor:** Staff | |  |  |
| **Summary:** This use case allows staff to activate user’s account in system.  **Goal:** Activate user’s account  **Triggers:** Staff wants to activate user’s account.  **Preconditions:**   * User must login with staff role. * User’s account must be inactive. * User’s account must exist on system.   **Post Conditions:**   * **Success:** user’s account will be changed its status to Activated and show successful message. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff focuses on “Account” and clicks “Edit Account” | System navigates to “Quản lí tài khoản” page.   * Table contains columns:   + - Username: show all account username on system     - Classroom: teacher’s classroom.     - Check box. * Activate: button. * Deactivate: button. | | 2 | Staff checks the checkbox to select account. |  | | 3 | Staff clicks on “Activate” button | Update status of account and show successful message: “Cập nhật tài khoản thành công!”  [Exception 1,2,3] |     **Alternative Scenario:** N/A    **Exceptions:**     |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Staff didn’t check any check box and then clicks “Activate” | Show error message: “Phải chọn ít nhất một tài khoản!” | | 2 | Staff check both inactive and active account then clicks “Activate” | Show error message: “Vui lòng kiểm tra lại! Chỉ được chọn một loại account để thực hiện chức năng này” | | 3 | Staff check active account then clicks “Activate” | Show error message: “Account này đã được active!” |   **Relationships:** N/A  **Business Rules:**   * User only can login to the system with activated account. * Staff only can active account has status inactive * Staff only activate account has role user * Admin can activate all account in system | | | |

Table : <Staff> Activate Account

* + - 1. <Staff> Deactivate Account

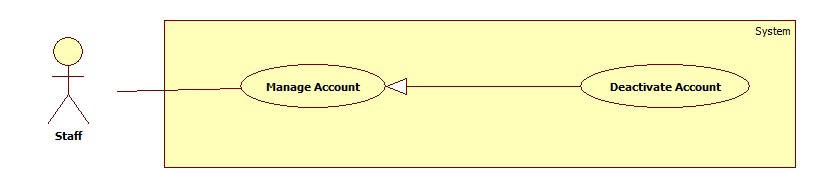


Figure : <Staff> Deactivate Account

**Use case specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM011** | |  |  |
| **Use Case No.** | ECRM011 | **Use Case Version** | 1.0 |
| **Use Case Name** | Activate Account |  |  |
| **Author** | Tang Viet Hung |  |  |
| **Date** | 21/05/2015 | **Priority** | Normal |
| **Actor:** Staff | |  |  |
| **Summary:** This use case allows staff to deactivate user’s account in system.  **Goal:** Deactivate user’s account, user can not login to the system  **Triggers:** Staff wants to deactivate user’s account.  **Preconditions:**   * User must login with staff role. * User’s account must be active. * User’s account must exist on system.   **Post Conditions:**   * **Success:** user’s account will be changed its status to inactive and show successful message. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff focuses on “Account” and clicks “Edit Account” | System navigates to “Quản lí tài khoản” page.   * Table contains columns:   + - Username: show all account username on system     - Classroom: teacher’s classroom.     - Check box. * Activate: button. * Deactivate: button. | | 2 | Staff checks the checkbox to select account. |  | | 3 | Staff clicks on “Deactivate” button | Update status of account and show successful message: “Cập nhật tài khoản thành công!”  [Exception 1,2,3] |     **Alternative Scenario:** N/A    **Exceptions:**     |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Staff didn’t check any check box and then clicks “Deactivate” | Show error message: “Phải chọn ít nhất một tài khoản!” | | 2 | Staff check both inactive and active account then clicks “Deactivate” | Show error message: “Vui lòng kiểm tra lại! Chỉ được chọn một loại account để thực hiện chức năng này” | | 3 | Staff check inactive account then clicks “Deactivate” | Show error message: “Account này đã bị inactive!” |   **Relationships:** N/A  **Business Rules:**   * User only can login to the system with activated account. * Staff only can deactivate account has status active * Staff only can deactivate account has role user * Admin can deactivate all account on system. | | | |

* + - 1. <Staff> Update Account

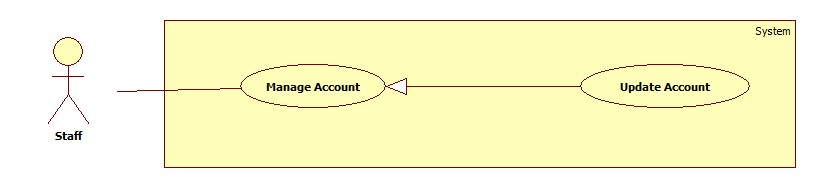


Figure : <Staff> Update Account

**Use case specification**

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| --- | --- | --- | --- |
| **USE CASE – ECRM012** | |  |  |
| **Use Case No.** | ECRM012 | **Use Case Version** | 1.0 |
| **Use Case Name** | Update Account |  |  |
| **Author** | Tran Vinh Quang |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:** User | |  |  |
| **Summary:** This use case allows user to change information includes password, real-name, phone number, role of account.  **Goal:** Change information includes password, real-name, phone number, role of account.  **Triggers:** Staff clicks on “Account” link in Account manage page.  **Preconditions:**   * Staff has successfully logged in system.   **Post Conditions:**   * **Success:** Account will be changed information, show successful message. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff clicks “Account” link. | System navigates to “Update Account” page.  It contains form with the following information:   * Username: textbox, min length: 6, max length: 30, required. * Password: textbox, min length: 6, max length: 20, required * Họ tên: textbox, min length: 6, max length: 50, required. * Số điện thoại: textbox, min length: 10, max length: 11, type: number, required. * Chức vụ: dropdown list, required. * Thay đổi: button | | 2 | User fills information into the form and click “Thay đổi” button. | System show successful message and redirect to Profile page.  [Exception 1, 2, 3, 4, 5, 6] |     **Alternative Scenario:** N/A  **Exceptions:**     |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Length of “username” is not in range. | Show unsuccessful message: “Username bao gồm từ 6 đến 10 ký tự. Xin thử lại!” | | 2 | “Số điện thoại” is empty or contain characters. | Show unsuccessful message: “Số điện thoại không hợp lệ. Xin thử lại!” | | 3 | “Họ tên” is empty. | Show unsuccessful message: “Họ tên không được bỏ trống. Xin thử lại!” | | 4 | “Username” have been already existed. | Show unsuccessful message: “Username đã tồn tại, vui lòng nhập lại!” | | 5 | “Số điện thoại” field data length is not in range | Show unsuccessful message: “Số điện thoại không hợp lệ. Xin thử lại!” | | 6 | “Password” field data length is not in range | Show unsuccessful message: “Password không hợp lệ. Xin thử lại!” |   **Relationships:** N/A  **Business Rules:**   * Staff only update information of user * Admin can update information of staff and user. | | | |

* + - 1. <Staff> View Room Type

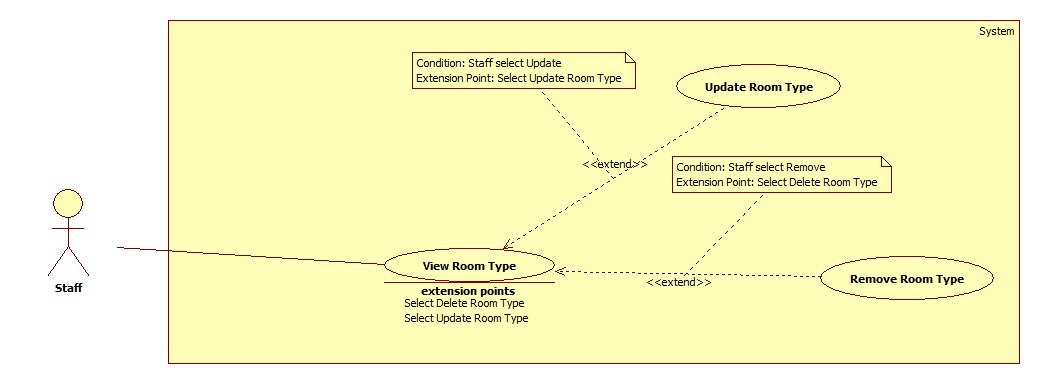


Figure : <Staff> View Room Type

**Use case specification**

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| --- | --- | --- | --- |
| **USE CASE – ECRM013** | |  |  |
| **Use Case No.** | ECRM013 | **Use Case Version** | 1.0 |
| **Use Case Name** | Update Account |  |  |
| **Author** | Tran Vinh Quang |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:** User | |  |  |
| **Summary:** This use case allows staff to view all type of room in school.  **Goal:** View all type of room in school  **Triggers:** Staff clicks on “Kiểu Phòng” link in Staff page.  **Preconditions:**   * Staff has successfully logged in system.   **Post Conditions:**   * **Success:** Show list of room type in school. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff focuses on “Phòng Học” and clicks “Kiểu Phòng”. | System navigates to “Kiểu Phòng” page. Page includes:   * Text box search. * Dropdown list. * Search: button. * Table with columns: * Số kiểu * Số chỗ ngồi * Check box * Xem: button. * Sửa: button * Xóa: button * Tạo mới: button |   **Alternative Scenario:** N/A  **Exceptions:**     |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | School did not have any room type. | Show unsuccessful message: “Hiện tại chưa có loại phòng nào” |   **Relationships:** extend by Update Room Type and Remove Room Type.  **Business Rules:** N/A | | | |

* + - 1. <Staff> Create New Room Type

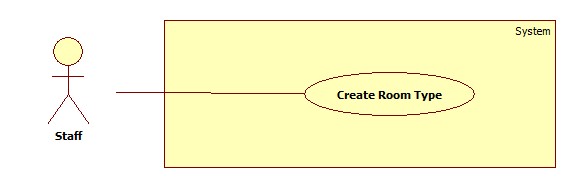


Figure : <Staff> Create Room Type

**Use case specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM014** | |  |  |
| **Use Case No.** | ECRM014 | **Use Case Version** | 1.0 |
| **Use Case Name** | Create Room Type |  |  |
| **Author** | Tang Viet Hung |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:** Staff | |  |  |
| **Summary:** This use case allows staff to create new room type.  **Goal:** Create room type to the system.  **Triggers:** Staff wants to create new room type.  **Preconditions:**   * User login as staff role.   **Post Conditions:**   * **Success:** New room type will be created and show successful message. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff focuses on “Phòng Học” and clicks “Kiểu Phòng”. | System navigates to “Kiểu Phòng” page. Page includes:   * Text box search. * Dropdown list. * Search: button. * Table with columns: * Số kiểu * Số chỗ ngồi * Check box * Xem: button. * Sửa: button * Xóa: button * Tạo mới: button   [Alternative 1, 2] | | 2 | Staff clicks on “Tạo Mới” button. | System navigates to “Tạo Mới Kiểu Phòng” page. Page includes:   * Số kiểu: textbox, disabled. * Máy lạnh: check box. * Máy chiếu: check box. * Tivi: check box. * Quạt: check box. * Loa: check box. * Số lượng dãy dọc: text box, number type, required. * Chấp nhận: button. * Cancel: button.   [Exception 1]  [Alternative 4] | | 3 | Staff inputs two textbox and clicks “Chấp nhận” button. | System will show table with number of column equal with number staff inputted in “Số lượng dãy dọc”. Each column includes:   * Số dãy ngang: text box, number type, required. * Số chỗ ngồi mỗi dãy ngang: text box, number type, required. * Xem: button.   [Exception 2] | | 4 | Staff inputs all fields and click “Xem” button. | System navigates to “Xem Kiểu Phòng” Page. Page includes:   * Classroom map. * Tạo Kiểu Phòng: button. * Cancel: button.   [Alternative 5] | | 5 | Staff clicks on “Tạo Kiểu Phòng” button. | System show successful message: “Tạo kiểu phòng mới thành công!” and navigate to “Kiểu Phòng” page. |     **Alternative Scenario:**     |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Staff inputs to text box search and clicks “Tìm kiếm” button. | Show result in table. | | 2 | Staff clicks “Xem” button. | Navigate to “Xem Kiểu Phòng” page. | | 4 | Staff clicks on “Cancel” button in “Tạo Mới Kiểu Phòng” page. | System navigates to “Kiểu Phòng” page. | | 5 | Staff clicks on “Cancel” button in “Xem Kiểu Phòng” page. | System navigates to “Tạo Mới Kiểu Phòng” page. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | “Số lượng dãy dọc” is empty or characters. | Show error message: “Số lượng dãy dọc không hợp lệ!” | | 2 | “Số chỗ ngồi mỗi dãy ngang” is empty or characters. | Show error message: “Số chỗ ngồi mỗi dãy ngang không hợp lệ!” |   **Relationships:** N/A  **Business Rules:** N/A | | | |

* + - 1. <Staff> Update Room Type

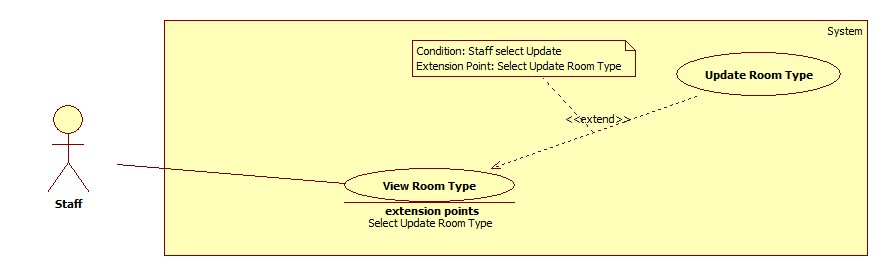


Figure : <Staff> Update Room Type

**Use case specification**

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| --- | --- | --- | --- |
| **USE CASE – ECRM015** | |  |  |
| **Use Case No.** | ECRM015 | **Use Case Version** | 1.0 |
| **Use Case Name** | Update Room Type |  |  |
| **Author** | Tang Viet Hung |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:** Staff | |  |  |
| **Summary:** This use case allows staff to update a room type.  **Goal:** Update a specific room type.  **Triggers:** Staff wants to update a room type.  **Preconditions:**   * User login as staff role. * Room type existed in database.   **Post Conditions:**   * **Success:** Room type will be updated. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff focuses on “Phòng Học” and clicks “Kiểu Phòng”. | System navigates to “Kiểu Phòng” page. Page includes:   * Text box search. * Dropdown list. * Search: button. * Table with columns: * Số kiểu * Số chỗ ngồi * Check box * Xem: button. * Sửa: button * Xóa: button * Tạo mới: button   [Alternative 1, 2] | | 2 | Staff clicks “Xem” button. | System navigates to “Xem Kiểu Phòng” page. Page includes:   * Sơ đồ kiểu phòng: map. * Xóa: button. * Chỉnh sửa: button. * Quay về: button.   [Alternative 3, 4] | | 3 | Staff clicks “Chỉnh sửa” button. | System navigates to “Chỉnh Sửa Kiểu Phòng” page. Page includes:   * Số kiểu: textbox, disabled. * Máy lạnh: check box. * Máy chiếu: check box. * Tivi: check box. * Quạt: check box. * Loa: check box. * Số lượng dãy dọc: text box, number type, required. * Chấp nhận: button. * Cancel: button.   [Exception 1]  [Alternative 5] | | 4 | Staff inputs two textbox and clicks “Chấp nhận” button. | System will show table with number of column equal with number staff inputted in “Số lượng dãy dọc”. Each column includes:   * Số dãy ngang: text box, number type, required. * Số chỗ ngồi mỗi dãy ngang: text box, number type, required. * Xem: button.   [Exception 2] | | 4 | Staff inputs all fields and click “Xem” button. | System navigates to “Xem Kiểu Phòng” Page. Page includes:   * Classroom map. * Tạo Kiểu Phòng: button. * Cancel: button. * [Alternative 6] | | 5 | Staff clicks on “Tạo Kiểu Phòng” button. | System show successful message: “Chỉnh sửa kiểu phòng thành công” and navigate to “Kiểu Phòng” page. |     **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Staff inputs to text box search and clicks “Tìm kiếm” button. | Show result in table. | | 2 | Staff clicks “Xem” button. | Navigate to “Xem Kiểu Phòng” page. | | 3 | Staff clicks “Xóa” button. | Show message: “Bạn có chắc muốn xóa kiểu phòng?” | |  | Staff clicks “Quay về” button. | Naviages to “Kiểu Phòng” page. | | 5 | Staff clicks on “Cancel” button in “Chỉnh Sửa Kiểu Phòng” page. | System navigates to “Kiểu Phòng” page. | | 6 | Staff clicks on “Cancel” button in “Xem Kiểu Phòng” page. | System navigates to “Chỉnh Sửa Kiểu Phòng” page. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | “Số lượng dãy dọc” is empty or characters. | Show error message: “Số lượng dãy dọc không hợp lệ!” | | 2 | “Số chỗ ngồi mỗi dãy ngang” is empty or characters. | Show error message: “Số chỗ ngồi mỗi dãy ngang không hợp lệ!” |   **Relationships:** N/A  **Business Rules:** N/A | | | |

* + - 1. <Staff> Delete Room Type

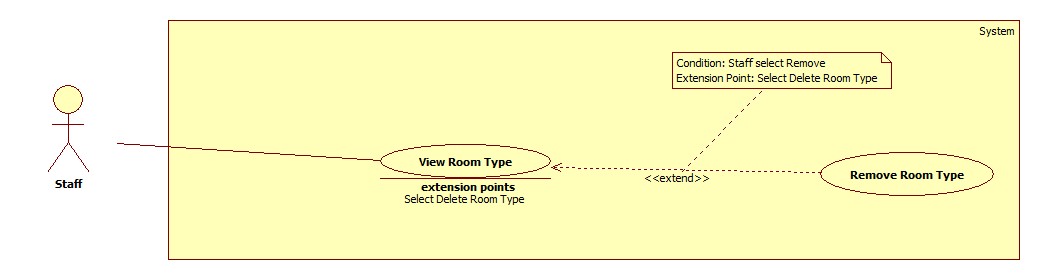


Figure : <Staff> Delete Room Type

**Use case specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM016** | |  |  |
| **Use Case No.** | ECRM016 | **Use Case Version** | 1.0 |
| **Use Case Name** | Delete Room Type |  |  |
| **Author** | Tang Viet Hung |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:** Staff | |  |  |
| **Summary:** This use case allows staff to delete a room type.  **Goal:** Delete a specific room type.  **Triggers:** Staff wants to delete a room type.  **Preconditions:**   * User login as staff role. * Room type existed in database.   **Post Conditions:**   * **Success:** Room type will be deleted and show successful message. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff focuses on “Phòng Học” and clicks “Kiểu Phòng”. | System navigates to “Kiểu Phòng” page. Page includes:   * Text box search. * Dropdown list. * Search: button. * Table with columns: * Số kiểu * Số chỗ ngồi * Check box * Xem: button. * Sửa: button * Xóa: button * Tạo mới: button   [Alternative 1, 2] | | 2 | Staff clicks “Xem” button. | System navigates to “Xem Kiểu Phòng” page. Page includes:   * Sơ đồ kiểu phòng: map. * Xóa: button. * Chỉnh sửa: button. * Quay về: button.   [Alternative 3, 4] | | 3 | Staff clicks “Xóa” button. | Show dialog: “Bạn có chắc muốn xóa kiểu phòng?”  [Alternative 5] | | 4 | Staff clicks “Yes” button in dialog. | System shows successful message: “Xóa kiểu phòng thành công” and navigates to “Kiểu Phòng” page. |     **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Staff inputs to text box search and clicks “Tìm kiếm” button. | Show result in table. | | 2 | Staff clicks “Tạo Mới” button. | Navigate to “Tạo Mới Kiểu Phòng” page. | | 3 | Staff clicks “Sửa” button. | Navigate to “Chỉnh Sửa Kiểu Phòng” page. | |  | Staff clicks “Quay về” button. | Naviages to “Kiểu Phòng” page | | 5 | Staff clicks “No” in dialog | System remains in “Xem Kiểu Phòng” Page. |   **Exceptions:** N/A  **Relationships:** N/A  **Business Rules:** N/A | | | |

* + - 1. <Staff> Create Classroom

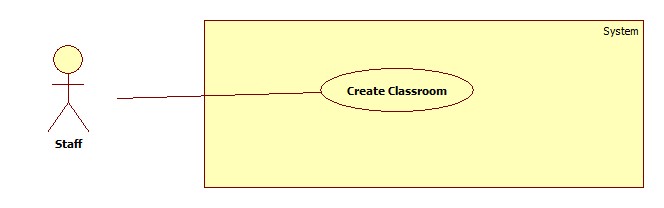


Figure : <Staff> Create Classroom

**Use case specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM017** | |  |  |
| **Use Case No.** | ECRM017 | **Use Case Version** | 1.0 |
| **Use Case Name** | Create Classroom |  |  |
| **Author** | Tran Vinh Quang |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:**   * Staff | |  |  |
| **Summary:**   * This use case allows staff to create new classroom (applied for web application)   **Goal:** Add new classroom to database  **Triggers:** Staff clicks on “Thêm Lớp Học” button in classroom management page.  **Preconditions:**   * User must login into the system with staff role.   **Post Conditions:**   * **Success:** New classroom will be added to database. Success message will be shown. * **Fail:** Error message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff clicks “Thêm Lớp Học” button | System navigates to “Thêm Lớp Học” page.  Show form with the following information:   * Tên phòng: Textbox, min length: 1, max length: 100, required. * Loại phòng: Drop down list, required (Phòng 25 ghế, Phòng 30 ghế…) * Tạo mới: button * Hủy: Button   [Alternative 1] | | 2 | Staff fills necessary information into the form |  | | 3 | Staff clicks “Tạo mới” button. | Classroom is added to database, success message “Thêm mới lớp học thành công” is shown. System is navigation to “Classroom Management Page”. [Exception 1,2,3,4,5,6,7] |     **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Staff click “Hủy” | System navigation to “Classroom Management Page” |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | “Tên phòng học” field is empty | Error message “Tên phòng học không được để trống!” is shown. | | 2 | “Tên phòng học” field data length is longer than 100 characters. | Error message “Tên phòng học không được quá 100 ký tự!” is shown. | | 3 | “Tên phòng học” field is duplicated in database | Error message “Phòng học có tên này đã được tạo, vui long sử dụng tên khác” is shown. |   **Relationships:** N/A  **Business Rules:** N/A | | | |

* + - 1. <Staff> View Classroom

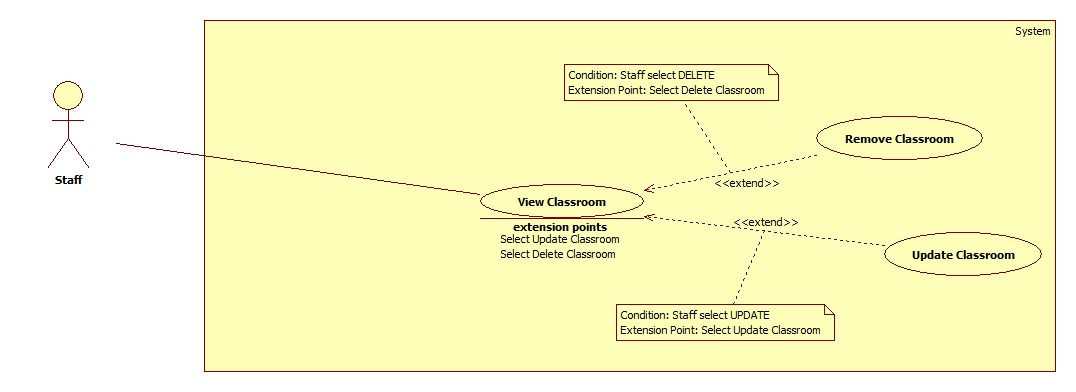


Figure : <Staff> View Classroom

**Use case specification**

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| --- | --- | --- | --- |
| **USE CASE – ECRM018** | |  |  |
| **Use Case No.** | ECRM018 | **Use Case Version** | 1.0 |
| **Use Case Name** | View Classroom |  |  |
| **Author** | Tran Vinh Quang |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:**   * Staff | |  |  |
| **Summary:**   * This use case allows staff to see all classroom have been created of school   **Goal:** See all classroom of school.  **Triggers:** Staff clicks on “Lớp Học” button in staff page.  **Preconditions:**   * User must login into the system with staff role.   **Post Conditions:**   * **Success:** Show all classroom of school. * **Fail:** Error message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff clicks “Lớp Học” button in staff page. | System navigates to “Lớp Học” page.  Show table with the following information:   * Tên phòng: Label * Loại phòng: Label * Tạo mới: button * Chỉnh sửa: button * Xóa: button   [Alternative 1] |     **Alternative Scenario: N/A**  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | No class created | Error message: “Không có phòng học nào được tạo” is shown. |   **Relationships:** extend by Update Classroom, Remove Classroom  **Business Rules:** N/A | | | |

* + - 1. <Staff> Update Classroom

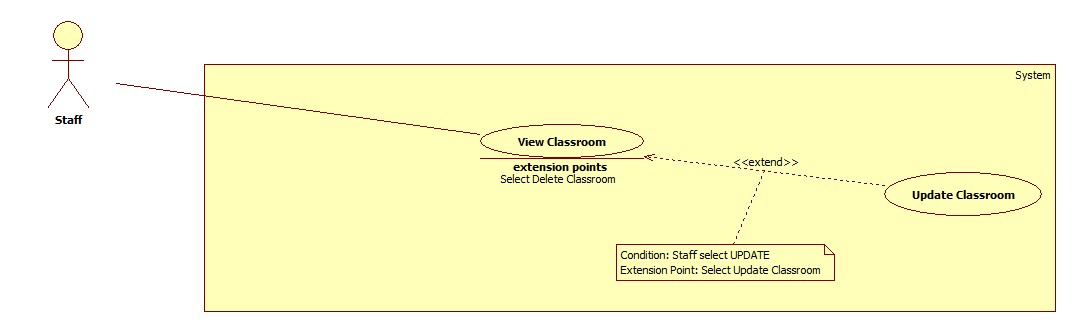


Figure : <Staff> Update Classroom

**Use case specification**

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| --- | --- | --- | --- |
| **USE CASE – ECRM019** | |  |  |
| **Use Case No.** | ECRM019 | **Use Case Version** | 1.0 |
| **Use Case Name** | Update Classroom |  |  |
| **Author** | Tran Vinh Quang |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:**   * Staff | |  |  |
| **Summary:**   * This use case allows staff to update information of classroom (applied for web application)   **Goal:** Update existed classroom.  **Triggers:** Staff clicks on “Sửa” button in classroom management page.  **Preconditions:**   * User must login into the system with staff role. * Classroom exists in database.   **Post Conditions:**   * **Success:** Classroom will be updated with new information. Success message will be shown. * **Fail:** Classroom will not be updated. Error message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff click on a class in classroom management page | System navigates to classroom detail page.  Show form with the following information:   * Tên phòng: Textbox, min length: 1, max length: 100, required. * Loại phòng: Drop down list, required (Phòng 25 ghế, Phòng 30 ghế…)   [Alternative 1] | | 2 | Staff fills necessary information into the form |  | | 3 | Staff clicks “Lưu” button. | Confirm dialog will be shown [Exception 1,2,3,4,5,6,7]  [Alternative 1,] | | 4 | Staff click “Đồng ý” button | Classroom will be updated and show successful message. System navigation to Classroom Management Page |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Staff click “Hủy” | Confirm dialog will be canceled and no change is made. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | “Tên phòng học” field is empty | Error message “Tên phòng học không được để trống!” is shown. | | 2 | “Tên phòng học” field data length is longer than 100 characters. | Error message “Tên phòng học không được quá 100 ký tự!” is shown. | | 3 | “Tên phòng học” field is duplicated in database | Error message “Phòng học có tên này đã được tạo, vui long sử dụng tên khác” is shown. |   **Relationships:** N/A  **Business Rules:**   * Staff can update name and type of classroom. | | | |

* + - 1. <Staff> Remove Classroom

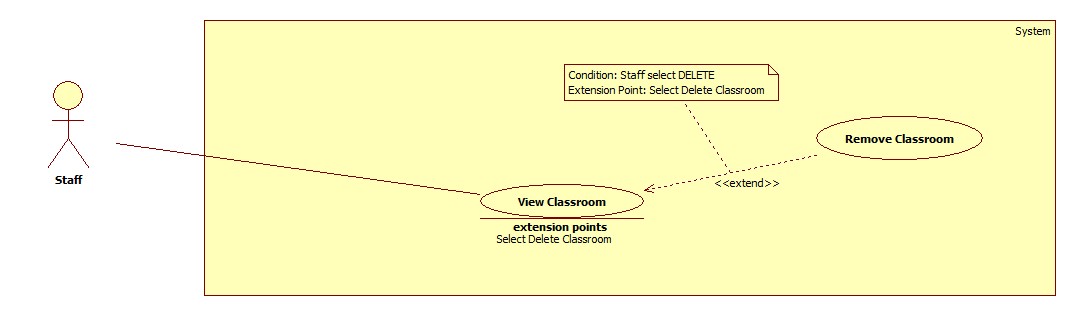


Figure : <Staff> Remove Classroom

**Use case specification**

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| **USE CASE – ECRM020** | |  |  |
| **Use Case No.** | ECRM020 | **Use Case Version** | 1.0 |
| **Use Case Name** | Remove Classroom |  |  |
| **Author** | Tran Vinh Quang |  |  |
| **Date** | 05/21/2015 | **Priority** | Normal |
| **Actor:**   * Staff | |  |  |
| **Summary:**   * This use case allows staff to remove of classroom (applied for web application)   **Goal:** Remove existed classroom from system.  **Triggers:** Staff clicks on “Xóa” button in classroom management page.  **Preconditions:**   * User must login into the system with staff role. * Classroom exists in database.   **Post Conditions:**   * **Success:** Classroom will be deleted from database. Success message will be shown. * **Fail:** Classroom will not be deleted. Error message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff click on a class in classroom management page | System navigates to classroom detail page.  Show form with the following information:   * Tên phòng: Textbox, min length: 1, max length: 100, required. disable * Loại phòng: Drop down list, required (Phòng 25 ghế, Phòng 30 ghế…) disable * Xóa: Button * Hủy: Button   [Alternative 1] | | 2 | Staff clicks “Xóa” button. | Confirm dialog will be shown [Exception 1,2,3,4,5,6,7]  [Alternative 1] | | 3 | Staff click “OK” | Classroom will be deleted and show successful message. System navigation to Classroom Management Page |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Staff click “Cancel” | Confirm dialog will be canceled and no change is made. |   **Exceptions: N/A**  **Relationships:** N/A  **Business Rules:**   * After delete classroom, all of information about class such as damage equipment, type, and schedule will be deleted. | | | |

* + - 1. <Staff> View Report

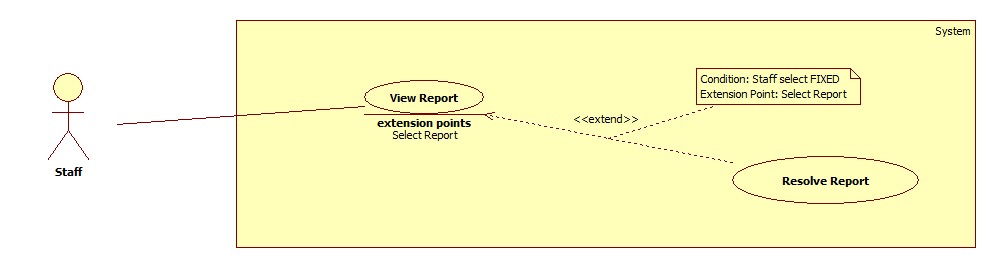


Figure : <Staff> View Report

**Use case specification**

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| --- | --- | --- | --- |
| **USE CASE – ECRM021** | | | |
| **Use Case No.** | ECRM021 | **Use Case Version** | 1.0 |
| **Use Case Name** | View report | | |
| **Author** | Tran Vinh Quang | | |
| **Date** | 05/21/2015 | **Priority** | Medium |
| **Actor:**   * Staff   **Summary:**   * This use case allows staff to view all report, which had reported from user. * **Goal:** * Staff see all report of system   **Triggers:**   * Staff click notify in “Báo cáo mới” tab.   **Preconditions:**   * User must login to system with role staff.   **Post Conditions:**   * **Success:** Staff see all report. * **Fail:** Show error message.   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Staff click notify in “Báo cáo mới” tab. |  | |  | 1. System will show report detail of notify with two tab and some button:  * “Báo cáo” tab:   + “Phòng”: label   + “Người báo cáo”: label   + “Thời gian báo cáo”: label   + “Thiết bị”: label + “Xem bản đồ” button   + “Mức độ hư hại”: process   + “Mô tả từ giáo viên”: label   + “Đề nghị đổi phòng”: label + “Đổi phòng” button * “Lịch sử” tab:   + “Thiết bị”: dropdown list   + Table history damaged of this equipment * “Khắc phục” button * “Khắc phục tất cả” button * “Thoát” button   [Alternative 1] [Alternative 2]  [Alternative 3] [Alternative 4] |   **Alternative Scenario: N/A**  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | No report had been created |  | |  | Show error message: “Hiện tại chưa có báo cáo nào”. |   **Relationships:** N/A  **Business Rules: N/A** | | | |

* + - 1. <Staff> Resolve Report

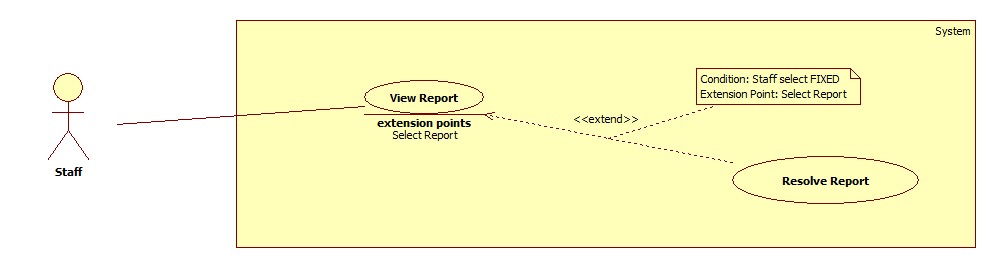


Figure : <Staff> Resolve Report

**Use case specification**

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| --- | --- | --- | --- |
| **USE CASE – ECRM022** | | | |
| **Use Case No.** | ECRM022 | **Use Case Version** | 1.0 |
| **Use Case Name** | Resolve report | | |
| **Author** | ChiDNM | | |
| **Date** | 05/21/2015 | **Priority** | High |
| **Actor:**   * Staff   **Summary:**   * This use case allows staff to resolve damaged equipment of this report, or all of damaged equipment in room.   **Goal:**   * Report will be resolved, and user will receive notify.   **Triggers:**   * Staff click notify in “Báo cáo mới” tab.   **Preconditions:**   * User must be staff.   **Post Conditions:**   * **Success:** Report must be resolved. And user receives resolve massage. * **Fail:** Show error message.   **Main Success Scenario:**   |  |  | | --- | --- | | Actor Action | System Response | | 1. Staff click notify in “Báo cáo mới” tab. |  | |  | 1. System will show report detail of notify with two tab and some button:  * “Báo cáo” tab:   + “Phòng”: label   + “Người báo cáo”: label   + “Thời gian báo cáo”: label   + “Thiết bị”: label + “Xem bản đồ” button   + “Mức độ hư hại”: process   + “Mô tả từ giáo viên”: label   + “Đề nghị đổi phòng”: label + “Đổi phòng” button * “Lịch sử” tab:   + “Thiết bị”: dropdown list   + Table history damaged of this equipment * “Khắc phục” button * “Khắc phục tất cả” button * “Thoát” button   [Alternative 1] [Alternative 2]  [Alternative 3] [Alternative 4] | | 1. Staff click “Khắc phục” button   [Exception 1] |  | |  | 1. System saves resolve data. 2. Send notify to this user.   [Alternative 5]   1. Return Notification page and show success message. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Staff click “Xem bản đồ” button |  | |  | Show classroom map with position of damaged equipment | | 2 | 1. Staff click “Đổi phòng” button |  | |  | 1. Show change room form with:  * “Phòng trống”: label * “Phòng khác”: button * “Đổi phòng” button * “Thoát” button | | 1. Staff click “Đổi phòng” button in this form |  | |  | 1. Change to new classroom, and show success message | | 3 | Staff choose “Lịch sử” tab |  | |  | Show resolve history of this equipment | | 4 | 1. Staff click “Khắc phục tất cả” button |  | |  | 1. Show list all damaged equipment in this room. | | 1. Staff will choose some damaged equipment which are fixed |  | |  | 1. System saves resolve data. 2. Send notify to this user. 3. Return Notification page and show success message. | | 5 | When user is offline |  | |  | System will send notify to user by SMS  [Exception 2] |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Staff click “Khắc phục” button, but this report is resolved no long. |  | |  | Turn off the report form and show warning message: “Báo cáo đã được xử lý bởi một nhân viên khác rồi.” | | 2 | Message Timeout |  | |  | Resent SMS 1 times at 10 minute later. |   **Relationships:** extend by View Report Map (show classroom map).  **Business Rules:**   * All damaged equipment always update when user report other equipment in this room. * When staff finishes a report, it will notify for other staff by real-time. * If damaged level of room is higher 40%, the system will show suggest change room. And “Đổi phòng” button in report detail will enable. * If damaged level of room is lower 40%, the system will not display suggest change room. And “Đổi phòng” button in report detail will disable. * Suggesting change room choose a rest room in schedule before report is shown. * SMS will send maximum which are 2 times. | | | |

* + - 1. <Staff> View Statistic

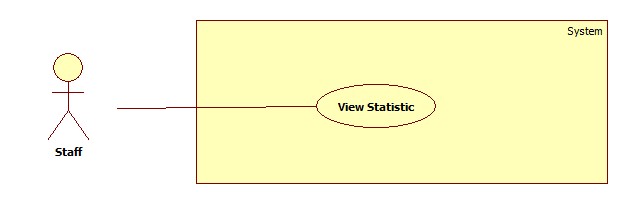


Figure : <Staff> View Statistic

**Use case specification**

* + - 1. <Staff> Mapping Schedule Manual

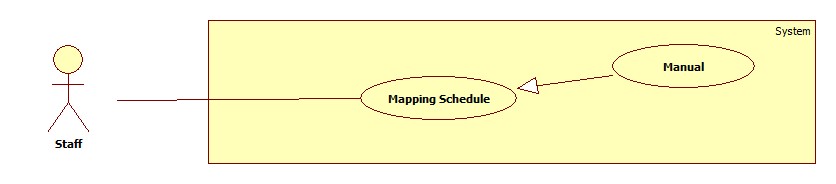


Figure : <Staff> Mapping Schedule Manual

**Use case specification**

* + - 1. <Staff> Mapping Schedule Import File

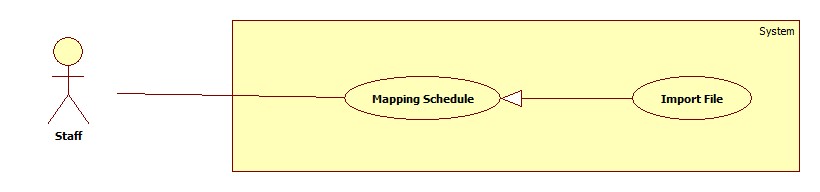


Figure : <Staff> Mapping Schedule Import File

Use case specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – ECRM003** | |  |  |
| **Use Case No.** | ECRM003 | **Use Case Version** | 2.0 |
| **Use Case Name** | Import File |  |  |
| **Author** | Tang Viet Hung |  |  |
| **Date** | 21/05/2015 | **Priority** | Normal |
| **Actor:** Staff | |  |  |
| **Summary:** This use case allows staff to import file schedule.  **Goal:** Import a schedule file.  **Triggers:** Staff want to import schedule file.  **Preconditions:**   * User login as staff role.   **Post Conditions:**   * **Success:** Schedule file will be imported and show successful message. * **Fail:** Unsuccessful message will be shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Staff focuses on “Lịch” and clicks “Nhập Lịch”. | System navigates to “Nhập Lịch” page. Page includes:   * Tìm: button * Import: button | | 2 | Staff clicks on “Tìm” button and choose schedule excel file from his computer. | System shows the name of schedule file. | | 4 | Staff clicks “Import” button. | System shows successful message.  [Exception 1] |     **Alternative Scenario:** N/A  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Staff import a wrong template excel file. | System shows error message. |   **Relationships:** N/A  **Business Rules:** N/A | | | |

3. Software System Attribute