** MINISTRY OF EDUCATION AND TRAINING**

**FPT UNIVERSITY**

Capstone Project Document

Student Finance Management

|  |  |
| --- | --- |
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| **Capstone Project code** | SFM |

-Ho Chi Minh City, 09/2015-*This page is intentionally left blank*

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# Definitions, Acronyms, and Abbreviations

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# Software Requirement Specification

## User Requirement Specification

### Guest Requirement

Guest is a person who doesn’t have access to the system. To use all functions, guest must login. This is a function guest can use:

* Login

### Student Requirement

Students who use the services of the system. In the current system there are 3 types of students are:

• Student common

• Student credit loans

• Students in the form of "Together you invest"

All the students were able to use some of the functions below:

• Review the learning process

o View the semester learned

o See the list of unfinished subjects (including arts subjects are owed or not eligible to attend if any)

• Review financial condition

o View the page of the tuition payment period studied

o See characteristics of the subjects pay tuition debt (if any)

o View the total amount borrowed and the interest to the present time

• View and update personal information

### Staff Requirement

Employees who manage the information related to students, academic and financial. The system classifies employees into three categories as follows:

• Student affairs

* Manage the list of students

• Training Management

* Manage the learning outcomes of students

•Financial management

* Manage tuition rates
* Management Beginning proceeds

### Manager Requirement

Manager who controls financial information on the learning process of students, besides manager manages the exchange rate and the amount corresponding to the school credit courses. Manager can:

* View Finance Information
* Manage Academic Suspension
* Manage Exchange Rate

### Admin Requirement

Admin is the person who manages the system. Admin can use these functions:

* Configure system.
* Manage Course.
* Manage user.

# System Requirement Specification

### External Interface Requirement

#### User Interface

* General requirement for graphics user interface is the GUI should be simple, clear, intuitive, and reminiscent.
* The interface design is an iterate process includes: design, sketching, prototyping, user assessment.
* Some design principles will be taken into consideration:
  + UI for business web applications - Janko Jovanovic [Ref:http://www.smashingmagazine.com/2010/02/25/designing-user-interfaces-forbusiness-web-applications/]
  + Ten principles of effective web design – Vitaly Friedman [Ref:http://www.smashingmagazine.com/2008/01/31/10-principles-of-effective-webdesign/]

#### Hardware Interface

**N/A**

#### Software Interface

* Web application: works with Firefox (v30 or above), Chromes (v14 or above), Internet Explorer (v10 or above) browse.

#### Communication Protocol

* Use HTTP protocol 1.1 for communication between the web browser and the web server.

### System Overview Use Case

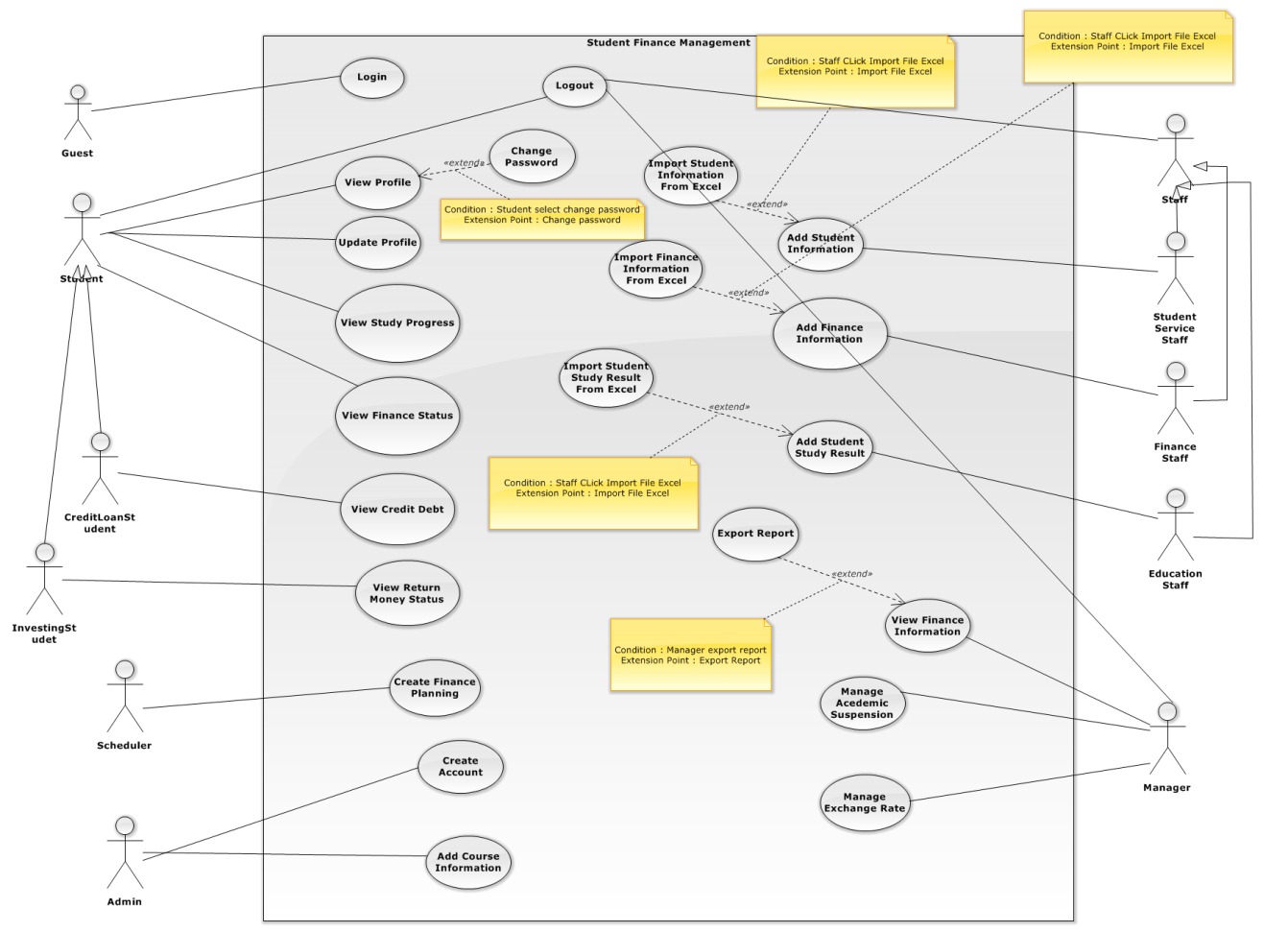
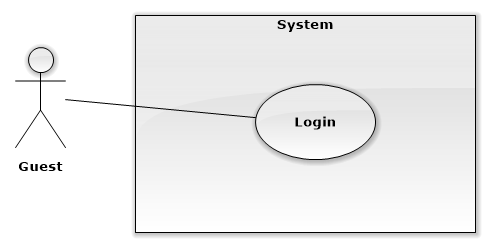


Figure 1: System Overview Use Case

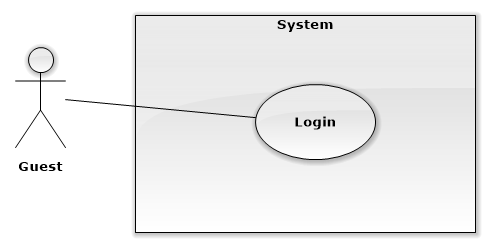
### List of Use Case

#### <Guest> Overview Use Case



**Figure 1: <Guest> Overview Use Case**

##### <Guest> Login Use Case Diagram



**Figure 2: <Guest> Login Use Case Diagram**

|  |  |  |  |
| --- | --- | --- | --- |
| USE CASE – Guest01 | | | |
| Use Case No. | Gu01 | Use Case Version | 1.0 |
| Use Case Name | Login | | |
| Author | TrungHD | | |
| Date | 06/10/2015 | Priority | Normal |
| Actor:   * Guest   Summary:   * This use case allows guest to log in the system.   Goal:   * Allows guest log in to system. After log in successful, guest will login system with their specific role.   Triggers:   * Guest sends command login.   Preconditions:   * N/A   Post Conditions:   * Success: Guest log in the system. * Fail: Show error message.   Main Success Scenario:   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Respone** | | 1 | Guest goes to login view. | System requires indentity information form Guest:   * Email: Free text input. * Password: Password input. | | 2 | Guest input information. |  | | 3 | Guest sends command login. | Guest will login system with their specific role. |   Alternative Scenario:   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Respone** | | 1 | Guest enter wrong indentity information. | System shows error message. |   Exceptions:   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Respone** | | 1 | Guest enter wrong indentity information. | System shows error message. |   Relationships: N/A  Bussiness Rules:   * Password are encrypted before being sent to server. * After login to system, guest will be redirected to specific view based on their role on the system: student, staff, manager. * If role is “Student”, the system will display to Student view. * If role is “Staff”, the system will display to Staff view. * If role is “Manager”, the system will display to Manager view. | | | |

#### <Student> Overview Use Case

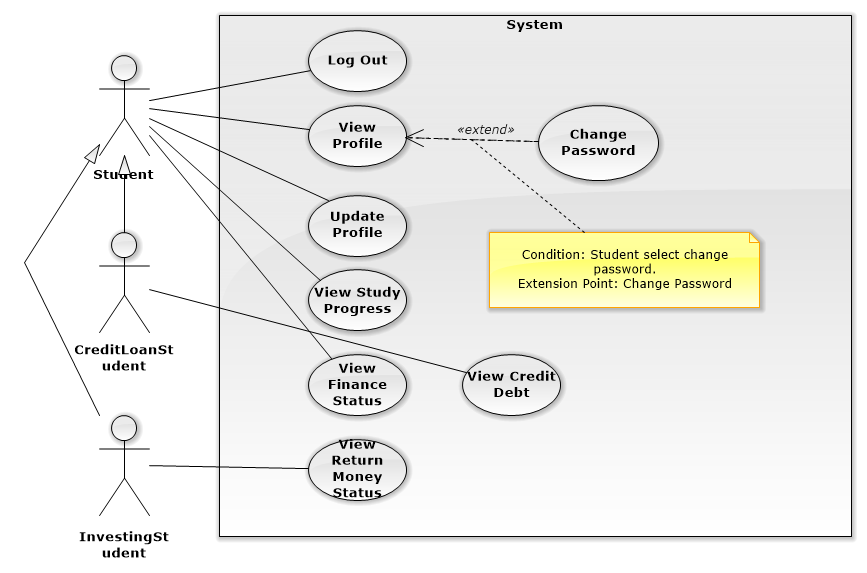
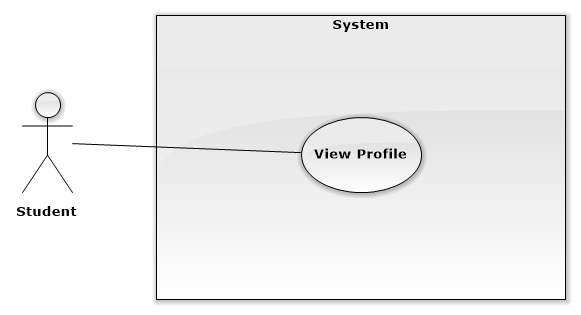


Figure 3: <Student> Overview Use Case

##### <Student> Log Out Use Case Diagram

##### <Student> View Profile Use Case Diagram



**Firgure 4: <Student> View Profile Use Case Diagram**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – STU001** | | | |
| **Use Case No.** | STU001 | **Use Case Version** | 1.0 |
| **Use Case Name** | View Profile | | |
| **Author** | Vu Nhat Anh Khoa | | |
| **Date** | 26/09/2015 | **Priority** | Normal |
| **Actor:**   * Student   **Summary:**   * This use case allows users to view their profile.   **Goal:**   * User’s profile information from database is shown on the screen.   **Triggers:**   * User can clicks either “Profile” tab on the navigation menu on the left, or the link labeled as their name at the top right of the screen.   **Preconditions:**   * User logs in with Student role   **Post Conditions:**   * **Success**: The system successfully shows user’s profile information * **Fail:** The system shows an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Profile” tab on the navigation menu on the left | Navigate user to their Profile screen and show information box containing detail information including:   * + User’s full name labeled as “Tên”: text.   + User’s code labeled as “MSSV”: text.   + User’s personal identification number labeled as “CMND”: text.   + User’s tuition status labeled as “Tình trạng”: text   + The year user started school labeled as “Khóa nhập học”: text   + User’s gender labeled as “Giới tinh”: text   + User’s day of birth labeled as “Ngày sinh”: text   + User’s address labeled as “Địa chỉ”: text   + User’s phone number labeled as “Số điện thoại”: text   + User’s email address labeled as “Email”: text   + The phone number of user’s parent labeled as “Số điện thoại của phụ huynh”: text   + The email address of user’s parent labeled as “Email của phụ huynh”: text |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks the link of their name at the top right of the screen | Navigate user to their Profile screen and show information box containing detail information including:   * + User’s full name labeled as “Tên”: text.   + User’s code labeled as “MSSV”: text.   + User’s personal identification number labeled as “CMND”.   + User’s tuition status labeled as “Tình trạng”: text   + The year user started school labeled as “Khóa nhập học”: text   + The English level when user started school labeled as “Tiếng Anh đầu vào”: text   + User’s gender labeled as “Giới tính”: text   + User’s day of birth labeled as “Ngày sinh”: text   + User’s address labeled as “Địa chỉ”: text   + User’s phone number labeled as “Số điện thoại”: text   + User’s email address labeled as “Email”: text   + The phone number of user’s parent labeled as “Số điện thoại của phụ huynh”: text   + The email address of user’s parent labeled as “Email của phụ huynh”: text |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Cannot connect to server. | System shows error message: “Cannot connect to server.” |   **Relationships:** N/A  **Business Rules:**   * The system fetches user only their own profile information from the database. | | | |

##### <Student> Change Password Use Case Diagram

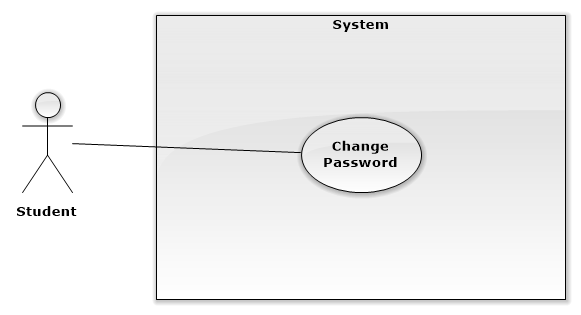
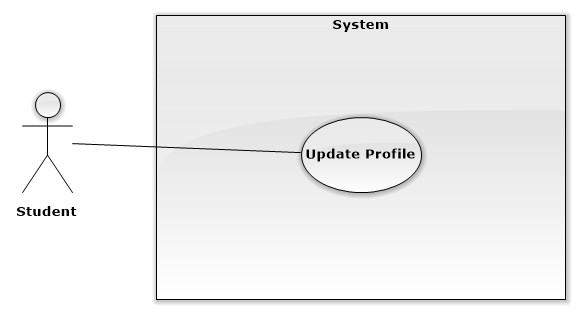


Figure : <Student> Change Password Use Case Diagram

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – STU003** | | | |
| **Use Case No.** | STU003 | **Use Case Version** | 1.0 |
| **Use Case Name** | Change Password | | |
| **Author** | Vu Nhat Anh Khoa | | |
| **Date** | 25/09/2015 | **Priority** | Normal |
| **Actor:**   * Student   **Summary:**   * This use case allows users to change their password accounts.   **Goal:**   * New password is updated to database.   **Triggers:**   * User clicks “Đổi password” link while on the Profile screen.   **Preconditions:**   * User logs in with Student role   **Post Conditions:**   * **Success**: The system successfully updates new password to database. * **Fail:** The system shows an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Đổi password” link from Profile screen | Navigate user to Change Password screen and show the following form:   * + Label: “Password hiện tại”, Textbox: free text input, required, length 6-32   + Label: “Password mới”, Textbox: free text input, required, length 6-32   + Label: “Nhập lại password mới”, Textbox: free text input, required, length 6-32   + Update button   + Cancel button | | 2 | User fills in the textboxes |  | | 3 | User clicks update button [Alternative Scenario] [Exception 2, 3] | * System updates new password to database. * Redirect user to Profile screen. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks cancel button | * System keeps current password in database. * Redirect user to Profile screen. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Cannot connect to server. | System shows error message: “Cannot connect to server.” | | 2 | If the value in “Password hiện tại” textbox doesn’t match with the current password in the database | System shows message: “Password hiện tại không đúng, xin hãy nhập lại” | | 3 | If the values in “Password mới” textbox and “Nhập lại password mới” textbox doesn’t match with each other | System shows message: “Password mới không trùng khớp, xin nhập lại” |   **Relationships:** N/A  **Business Rules:**   * In successful scenario, new password will be updated to the system * If all the textboxes is blank, the system keeps the current password in the database | | | |

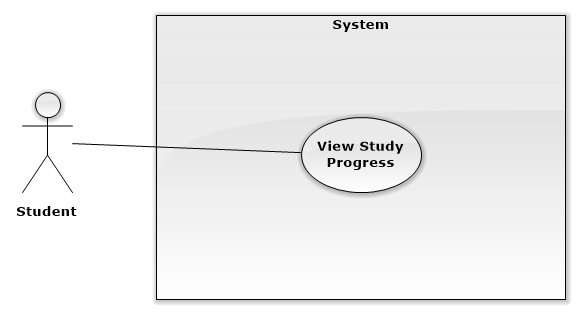
##### <Student> Update Profile Use Case Diagram



**Figure 5: <Student> Update Profile Use Case Diagram**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – STU002** | | | |
| **Use Case No.** | STU002 | **Use Case Version** | 1.0 |
| **Use Case Name** | Update Profile | | |
| **Author** | Vu Nhat Anh Khoa | | |
| **Date** | 25/09/2015 | **Priority** | Normal |
| **Actor:**   * Student   **Summary:**   * This use case allows users to update their profile information.   **Goal:**   * New information is updated to database.   **Triggers:**   * User clicks “Edit information” link while on the Profile screen.   **Preconditions:**   * User logs in with Student role   **Post Conditions:**   * **Success**: The system successfully updates new information to database. * **Fail:** The system shows an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Edit information” link from Profile screen | Navigate user to Edit Profile screen and show the following form:   * + Label: “Số điện thoại”, textbox   + Label: “Địa chỉ”, textbox   + Label: “Số điện thoại của phụ huynh”, textbox   + Label: “Email của phụ huynh”, textbox   + Update button | | 2 | User alters the information in the form [Alternative Scenario] |  | | 3 | User clicks update button | * System updates new information to database. * Redirect user to Profile screen with new information presenting. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User empties the fields |  | | 2 | User clicks update button | * System keeps current information in database. * Redirect user to Profile screen with current information presenting. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Cannot connect to server. | System shows error message: “Cannot connect to server.” |   **Relationships:** N/A  **Business Rules:**   * User’s profile is always loaded from the system * In successful scenario, new information will be updated to the system * Reloaded Profile screen will show updated information * If user leave the fields blank, current information will be kept. | | | |

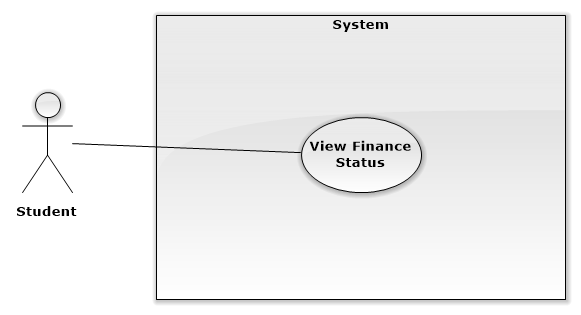
##### <Student> View Study Progress Use Case Diagram



**Figure: <Student> View Studies Progress Use Case Diagram**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – STU005** | | | |
| **Use Case No.** | STU005 | **Use Case Version** | 1.0 |
| **Use Case Name** | View Studied Progress | | |
| **Author** | Vu Nhat Anh Khoa | | |
| **Date** | 25/09/2015 | **Priority** | Normal |
| **Actor:**   * Student   **Summary:**   * This use case allows users to view their past semesters and subjects, as well as their incomplete subjects.   **Goal:**   * A list of subjects will be shown to user.   **Triggers:**   * User clicks “Các khóa đã học” tab on the navigation menu on the left for the Finished Semesters screen. * User clicks “Các môn chưa hoàn thành” tab on the navigation menu on the left for the Incomplete Subjects scene.   **Preconditions:**   * User logs in with Student role   **Post Conditions:**   * **Success**: The system successfully shows a list of subjects in tabular form. * **Fail:** The system shows an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Các khóa đã học” tab [Alternative Scenario] | Navigate user to Finished Semesters screen and show information box containing the latest semester user has taken   * System will show a list of subjects in tabular form and order by subject code. * The table contain the following columns:   + First column contains order number labeled as “STT”.   + Second column contains subject code labeled as “Mã Môn”.   + Third column contains subject name labeled as “Tên Môn”.   + Fourth column contains the number of credits labeled as “Số Tín Chỉ”   + Fifth column contains the semester’s half information labeled as “Half”   + Sixth column contains the grade of the subject labeled as “Điểm Trung Bình”   + Seventh column contains the status of the subject labeled as “Trạng Thái”   + The last column contains additional note for specific subjects labeled as “Ghi Chú” | | 2 | User selects a specific semester from a scroll down box | * System will show a list of subjects in tabular form and order by subject code in different semester with the columns as the same as above |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Các môn chưa hoàn thành” tab | Navigate user to Incomplete Subjects screen and show information box containing the subjects that didn’t meet requirements   * System will show a list of subjects in tabular form and order by subject code. * The table contain the following columns:   + First column contains order number labeled as “STT”.   + Second column contains subject code labeled as “Mã Môn”.   + Third column contains subject name labeled as “Tên Môn”.   + Fourth column contains the number of credits labeled as “Số Tín Chỉ”   + Fifth column contains the semester the subjects took place labeled as “Học kỳ”   + Sixth column contains the status of the subject labeled as “Trạng Thái”   + The last column contains additional note for specific subjects labeled as “Ghi Chú” |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Cannot connect to server. | System shows error message: “Cannot connect to server.” |   **Relationships:** N/A  **Business Rules:**   * All data is loaded from the system’s database | | | |

##### <Student> View Finance Status Use Case Diagram



**Figure: <Student> View Finance Status Use Case Diagram**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – STU004** | | | |
| **Use Case No.** | STU004 | **Use Case Version** | 1.0 |
| **Use Case Name** | View Finance Status | | |
| **Author** | Vu Nhat Anh Khoa | | |
| **Date** | 25/09/2015 | **Priority** | Normal |
| **Actor:**   * Student   **Summary:**   * This use case allows users to view all their past tuition payments and the tuition payment status for the next semester.   **Goal:**   * A list of semesters with the tuition and payment status will be shown to user.   **Triggers:**   * User clicks “Trạng thái đóng học phí” tab on the navigation menu on the left for the Tuition Payment Status screen * User clicks “ Trạng thái đóng tiền học lại” tab on the navigation menu on the left for the Retake Course Payment Status screen   **Preconditions:**   * User logs in with Student role   **Post Conditions:**   * **Success**: The system successfully shows a list of semesters with the tuition and payment status in tabular form. * **Fail:** The system shows an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Trạng thái đóng học phí” tab [Alternative Scenario] | * Navigate user to Tuition Payment Status screen * System will show a list of semesters with the tuition and payment status in tabular form and order by semester. * The table contain the following columns:   + First column contains order number labeled as “STT”.   + Second column contains the semester labeled as “Học Kỳ”.   + Third column contains the payment status labeled as “Trạng thái”.   + Fourth column contains the date of money transmission labeled as “Ngày Nộp”   + Fifth column contains the transmission deadline labeled as “Hạn chót”   + Sixth column contains the link to the detail transmission labeled as “Chi tiết” | | 2 | User clicks a “Chi tiết” link in the table | * System will show a pop-up page containing following information:   + User’s full name labeled as “Tên”: text.   + User’s code labeled as “MSSV”: text.   + The payment description labeled as “Nội dung đóng tiền”: text.   + User’s tuition status labeled as “Tình trạng”: text   + The original tuition charge labeled as “Mức học phí”: text   + The deduction fees labeled as “Khoản trừ”: text   + The tuition charge after deduction labeled as “Cần Nộp”: text   + The tuition payment status labeled as “Trạng thái”: text   + The transmission date labeled as “Ngày nộp”: text   + The bank in which student transmit the fees from labeled as “Ngân hàng”: text |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Trạng thái đóng học phí” tab | * Navigate user to Tuition Payment Status screen * System will show a list of semesters with the tuition and payment status in tabular form and order by semester. * The table contain the following columns:   + First column contains order number labeled as “STT”.   + Second column contains the subject code labeled as “Mã môn”.   + Third column contains subject name labeled as “Tên Môn”.   + Fourth column contains the payment status labeled as “Trạng thái”.   + Fifth column contains the date of money transmission labeled as “Ngày Nộp   + Sixth column contains the transmission deadline labeled as “Hạn chót”   + The last column contains the link to the detail transmission labeled as “Chi tiết” | | 2 | User clicks a “Chi tiết” link in the table | * System will show a pop-up page containing following information:   + User’s full name labeled as “Tên”: text.   + User’s code labeled as “MSSV”: text.   + The payment description labeled as “Nội dung đóng tiền”: text.   + User’s tuition status labeled as “Tình trạng”: text   + The original tuition charge labeled as “Mức học phí”: text   + The deduction fees labeled as “Khoản trừ”: text   + The tuition charge after deduction labeled as “Cần Nộp”: text   + The tuition payment status labeled as “Trạng thái”: text   + The transmission date labeled as “Ngày nộp”: text   + The bank in which student transmit the fees from labeled as “Ngân hàng”: text |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Cannot connect to server. | System shows error message: “Cannot connect to server.” |   **Relationships:** N/A  **Business Rules:**   * All information is loaded from the system’s database * For both of the Tuition Payment Status screen and Retake Course Payment Status Screen:   + The tuition status or “Tình trạng” have three values: “Học bổng”, “Tín dụng 50%”, and “Bình thường”   + The tuition payment status or “Trạng thái” have two values: “Đã nộp” and “Chưa nộp”   + In “Chi tiết” pop-up page, “Ngày nộp” will be blank if the tuition payment status (“Trạng thái”) is “Chưa nộp” | | | |

##### <Credit Loan Student> View Credit Debt Use Case

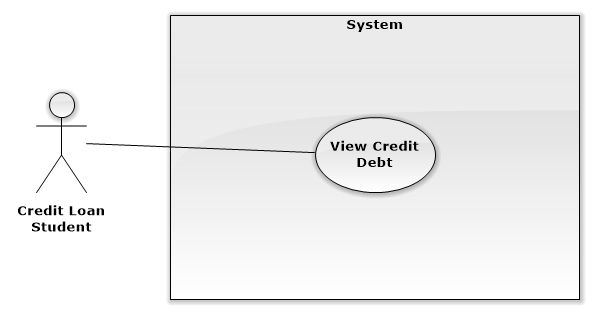
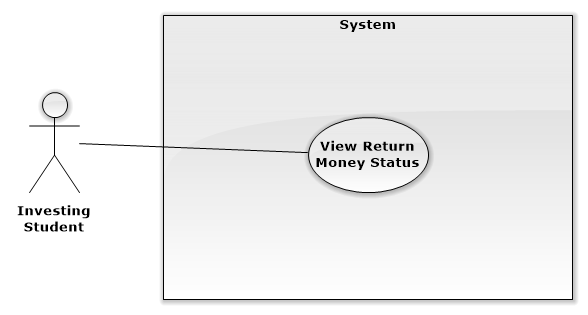


Figure: <Credit Loan Student> View Credit Debt Use Case Diagram

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – STU006** | | | |
| **Use Case No.** | STU006 | **Use Case Version** | 1.0 |
| **Use Case Name** | View Credit Debt | | |
| **Author** | Vu Nhat Anh Khoa | | |
| **Date** | 26/09/2015 | **Priority** | Normal |
| **Actor:**   * CreditStudent   **Summary:**   * This use case allows users to view their own student loans.   **Goal:**   * User’s debt information from database is shown on the screen.   **Triggers:**   * User clicks “Xem lãi vay” tab on the navigation menu on the left   **Preconditions:**   * User logs in with CreditStudent role   **Post Conditions:**   * **Success**: The system successfully shows user’s debt information * **Fail:** The system shows an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Xem lãi vay” tab on the navigation menu on the left | * Navigate user to View Debt screen and show two tabular form and order by date. * The first table contain the following columns:   + First column contains the date of the loan labeled as “Date”.   + Second column contains loan description labeled as “Nội dung”.   + Third column contains the tuition fees labeled as “Học phí”.   + Fourth column contains actual tuition charge labeled as “Thực nộp”   + Fifth column contains the loan labeled as “Vay”   + The last column contains additional note for specific subjects labeled as “Ghi Chú” * The second table contain the following columns:   + First column contains the total sum of the loan at the beginning of repayment periods labeled as “Số dư đầu kỳ”.   + Second column contains the interest labeled as “Lãi phát sinh”.   + Third column contains the amount of money pay by the student labeled as “Số tiền thanh toán”.   + Fourth column contains the total sum at the end of repayment periods labeled as “Số dư cuối kỳ”   + Fifth column contains the end date of repayment period labeled as “Lịch trả nợ”   + The last column contains the interest rate labeled as “Lãi suất” |   **Alternative Scenario:** N/A  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Cannot connect to server. | System shows error message: “Cannot connect to server.” |   **Relationships:** N/A  **Business Rules:**   * The system fetches user only their own debt information from the database. * The tables will be updated when new information is added to the system’s database. * “Số dư cuối kỳ” is calculated by this formula:   ***“Số dư cuối kỳ” = “Số dư đầu kỳ”+ “Lãi phát sinh” - “Thanh toán”***   * “Số dư đầu kỳ” of the next period is “Số dư cuối kỳ” of the previous one. | | | |

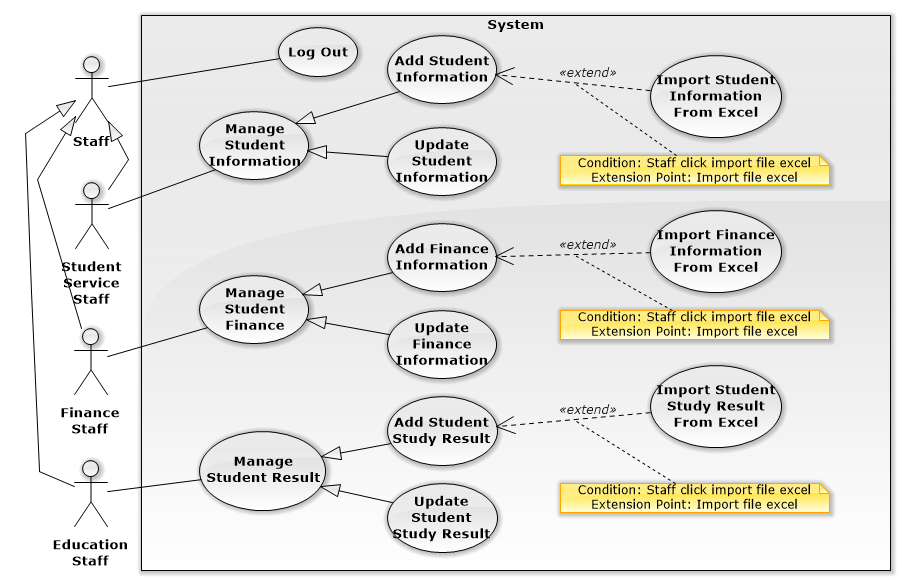
##### <Investing Student> View Return Money Status Use Case Diagram



**Figure: <Investing Student> View Return Money Status Use Case Diagram**

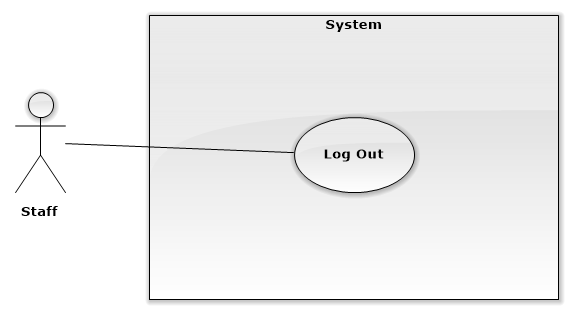
|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – STU007** | | | |
| **Use Case No.** | STU007 | **Use Case Version** | 1.0 |
| **Use Case Name** | View Return Money Status | | |
| **Author** | Vu Nhat Anh Khoa | | |
| **Date** | 26/09/2015 | **Priority** | Normal |
| **Actor:**   * InvestedStudent   **Summary:**   * This use case allows users to view their own student loans.   **Goal:**   * User’s debt information from database is shown on the screen.   **Triggers:**   * User clicks “Xem lãi vay” tab on the navigation menu on the left   **Preconditions:**   * User logs in with InvestedStudent role   **Post Conditions:**   * **Success**: The system successfully shows user’s debt information * **Fail:** The system shows an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Xem nợ tín dụng” tab on the navigation menu on the left | Navigate user to View Debt screen and show information box containing detail information including:   * + User’s full name labeled as “Tên”: text.   + User’s code labeled as “MSSV”: text.   + The original debt labeled as “Số nợ ban đầu”: text   + The current debt labeled as “Số nợ hiện tại”: text   + The money has been payed thus far labeled as “Số tiền đã trả”: text   + The monthly deadline for paying back the loan labeled as “Hạn trả nợ tiếp theo”: text.   + The current interest rate labeled as “Lãi suất hiện tại”: text |   **Alternative Scenario:** N/A  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Cannot connect to server. | System shows error message: “Cannot connect to server.” |   **Relationships:** N/A  **Business Rules:**   * The system fetches user only their own debt information from the database. * “Số nợ hiện tại”, “Số tiền đã trả”, “Hạn trả nợ tiếp theo”, and “Lãi suất hiện tại” are updated monthly. | | | |

#### <Staff> Overview Use Case



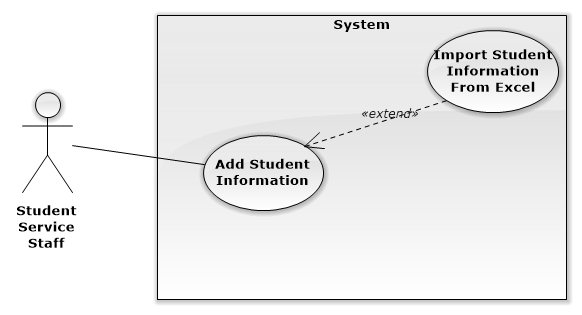
**Figure: <Staff> Overview Use Case**

##### <Staff> Log Out Use Case Diagram



**Figure: <Staff> Log Out Use Case Diagram**

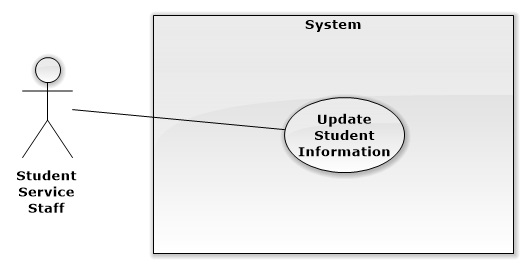
##### <Student Service Staff> Add Student Information Use Case Diagram



**Figure: <Student Service Staff> Add Student Information Use Case Diagram**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE - STAFF01** | | | |
| **Use Case No.** | STAFF01 | **Use Case Version** | 1.0 |
| **Use Case Name** | Add Student’s Information | | |
| **Author** | Ho Doan Trung | | |
| **Date** | 25/09/2015 | **Priority** | High |
| **Actor:**   * Student Service Staff   **Summary:**   * This use case allows staff enter list of student into the system   **Goal:**   * Allow staff enters student list. List of new students will be added to the system.   **Triggers:**   * The staff will select function to enter student information.   **Preconditions:**   * Staff login to the system with the rights of the Student Service Staff   **Post Conditions:**   * Success: The system will add list of student and notify it was added successfully * Fail: There is no list were added and the system will display error messages to the staff.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Staff will log in to site and enter student’s information. | The system will return:   * Page displayed data in order to add information. | | 2 | Staff sends command "add information" in page displays the data to the system. | The system will display the table include::   * Full name: Free text input * Sex: Radio button * Student ID: Free text input * Date of birth: Date * Address: Free text input * Email: email text input * Date admission: Date * Semester begin: Date * Compulsory English class: Drop down list * Supported: Number input * Parent’s phone number: Number input * Parent’s email: email text input | | 3 | Staff will enter new information and send command "Add" to the system. | The system will add new information and notify it was added successfully. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Staff send command “Import file excel” on website to system. | The system will display interface allows staff to upload excel files directly from your computer to the system. | | 2 | Staff select files to upload. |  | | 3 | Staff send the command "Upload" to the system. | The system will add data about student’s information then notify it was “added successfully”. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Length of “Full name” is not in range. | Show error message: “Full name” length must be from 6 to 30 characters!” | | 2 | “Sex” is not specified. | Show error message: “Sex” must be selected!” | | 3 | “Email” is wrong format. | Show error message: “”Email” must be formatted abc@example.fpt.edu.vn!” | | 4 | “Parent’s number” is wrong format. | Show error message: “Parent’s number is the number and length from 8-11 characters!” | | 5 | “Parent’s email” is wrong format. | Show error message: “Parent’s email must be formatted abc@example.com” |   **Relationships:** N/A  **Business Rules:**   * List of student was displayed by alphabet * List of student was divied into some pages, each page display 50 students. | | | |

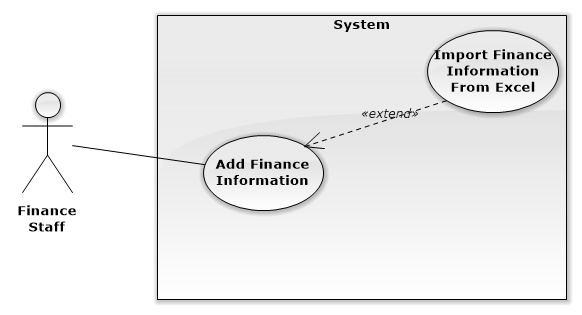
##### <Student Service Staff> Update Student Information Use Case Diagram



**Figure: < Student Service Staff > Update Student Informmation Use Case Diagram**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE -** STAFF02 | | | |
| **Use Case No.** | STAFF02 | **Use Case Version** | 1.0 |
| **Use Case Name** | Update Student’s Information | | |
| **Author** | Ho Doan Trung | | |
| **Date** | 25/09/2015 | **Priority** | High |
| **Actor:**   * Student Service Staff   **Summary:**   * This use case allows staff update student’s information.   **Goal:**   * Allow staff update student’s information. Student’s information will be updated to the system.   **Triggers:**   * The staff will select a row in list student and send command “Update”.   **Preconditions:**   * Staff login to the system with the rights of the Student Service Staff   **Post Conditions:**   * Success: The system will update student’s information and notify it was updated success full. * Fail: There is no student’s information were updated and the system will display error messages to the staff.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Staff choose one line in the table and then send command "Update" to the system to update information. | The system will display a table allows staff to edit information from the selected line include:   * Full name: Free text input * Sex: Radio button * Student ID: Free text input * Date of birth: Date * Address: Free text input * Email: email text input * Date admission: Date * Semester begin: Date * Compulsory English class: Drop down list * Supported: Number input * Parent’s phone number: Number input * Parent’s mail: email text input | | 2 | Staff choose the information they need to be updated to edit and then send command "Update" to the system. | The system will update new information and notify it was added successfully. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Staff enter new information in the wrong format. | The system informs error |   **Exceptions:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Length of “Full name” is not in range. | Show error message: “Full name” length must be from 6 to 30 characters!” | | 2 | “Sex” is not specified. | Show error message: “Sex” must be selected!” | | 4 | “Parent’s number” is wrong format. | Show error message: “Parent’s number is the number and length from 8-11 characters!” | | 5 | “Parent’s email” is wrong format. | Show error message: “Parent’s email must be formatted abc@example.com” |   **Relationships:** N/A  **Business Rules:**   * Components was marked is compulsory components and it cann’t blank. * Some information cann’t update include: Student’s email, Student ID, Semester begin, Compulsory English class, Date admission. | | | |

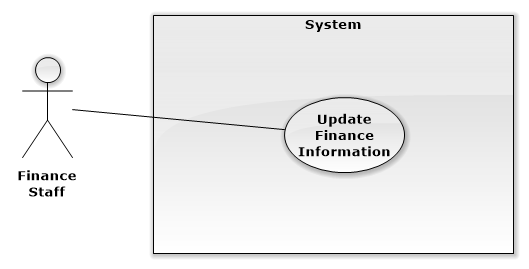
##### <Finance Staff> Add Finance Information Use Case Diagram



**Figure: <Finance Staff> Add Finance Information Use Case Diagram**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE -** STAFF03 | | | |
| **Use Case No.** | STAFF03 | **Use Case Version** | 1.0 |
| **Use Case Name** | Add Finance Information | | |
| **Author** | Ho Doan Trung | | |
| **Date** | 25/09/2015 | **Priority** | High |
| **Actor:**   * Finance Staff   **Summary:**   * This use case allows staff to enter the system about financial information of FPT University.   **Goal:**   * Allow staff to enter financial information. It will be added to the system.   **Triggers:**   * The staff will select function to enter financial information.   **Preconditions:**   * Staff login to the system with the rights of the Financial Staff   **Post Conditions:**   * Success: Financial information will be added to the system and then notify it was added successfully * Fail: There is no list were added and the system will display error messages to the staff.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Staff sends command "add information" in page displays the data to the system. | The system will display the table include:   * Tuition fee: Number input. * Relearn fee: Number input. * Exchange rate: Number input. * Fine level: Number input. * “Tiền thu trong kỳ”: Number input. | | 2 | Staff will enter new information and send command "Add" to the system. | The system will add new information and notify it was added successfully |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Staff send command “Import file excel” to system. | The system will display interface allows staff to upload excel files directly from your computer to the system. | | 2 | Staff selects files to upload. |  | | 3 | Staff send the command "Upload" to the system. | The system will add data finance’s information then notify it was “added successfully”. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | “Tuition fee” is wrong format | Show error message: “”Tuition fee” must be a number!” | | 2 | “Relearn fee” is wrong format | Show error message: “”Relearn fee” must be a number!” | | 3 | “Exchange rate” is wrong format | Show error message: “”Exchange rate” must be a number!” | | 4 | “Fine level” is wrong format | Show error message: “”Fine level” must be a number!” | | 5 | “Tiền thu trong kỳ” is wrong format. | Show error message: ““Tiền thu trong kỳ ” must be a number!” |   **Relationships:** N/A  **Business Rules:** N/A | | | |

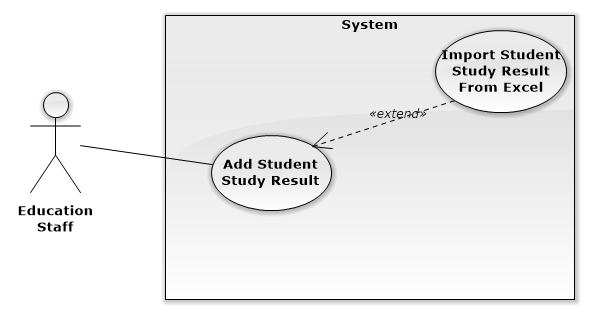
##### <Finance Staff> Update Finance Information Use Case Diagram



**Figure: <Finance Staff> Update Finance Information Use Case Diagram**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE -** STAFF04 | | | |
| **Use Case No.** | STAFF04 | **Use Case Version** | 1.0 |
| **Use Case Name** | Update Finance Information | | |
| **Author** | Ho Doan Trung | | |
| **Date** | 25/09/2015 | **Priority** | High |
| **Actor:**   * Finance Staff   **Summary:**   * This use case allows staff to update about financial information of FPT University.   **Goal:**   * Allow staff to update financial information. It will be updated to the system.   **Triggers:**   * The staff will send command “Update financial information” to system.   **Preconditions:**   * Staff login to the system with the rights of the Financial Staff   **Post Conditions:**   * Success: Financial information will be updated to the system and then notify it was updated successfully * Fail: There is no finance’s informatuon were updated and the system will display error messages to the staff.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Staff choose one line in the table and then send command "Update" to the system to update information. | The system will display a table allows staff to edit information from the selected line include:   * Tuition fee: Number input. * Relearn fee: Number input. * Exchange rate: Number input. * Fine level: Number input. * Tiền thu trong kỳ: Number input. | | 2 | Staff can choose the information they need to be updated to edit and then send the command "Update" to the system. | The system will update new information and notify it was added successfully. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Staff enter new information in the wrong format. | The system informs error |   **Exceptions:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | “Tuition fee” is wrong format | Show error message: “”Tuition fee” must be a number!” | | 2 | “Relearn fee” is wrong format | Show error message: “”Relearn fee” must be a number!” | | 3 | “Exchange rate” is wrong format | Show error message: “”Exchange rate” must be a number!” | | 4 | “Fine level” is wrong format | Show error message: “”Fine level” must be a number!” | | 5 | “ Tiền thu trong kỳ ” is wrong format. | Show error message: “”Tiền thu trong kỳ ” must be a number!” |   **Relationships:** N/A  **Business Rules:** N/A | | | |

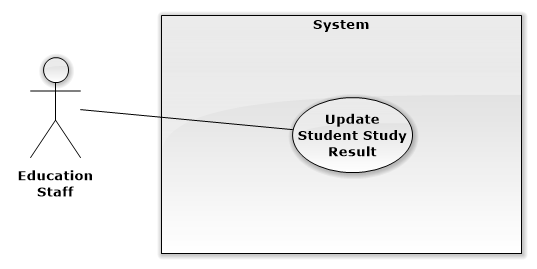
##### <Education Staff> Add Student Study Result Use Case Diagram



**Figure: <Education Staff> Add Student Study Result Use Case Diagram**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE -** STAFF05 | | | |
| **Use Case No.** | STAFF05 | **Use Case Version** | 1.0 |
| **Use Case Name** | Add Student Study Result | | |
| **Author** | Ho Doan Trung | | |
| **Date** | 25/09/2015 | **Priority** | High |
| **Actor:**   * Education Staff   **Summary:**   * This use case allows staff to enter to the system study results of student after each semester   **Goal:**   * Allow staff to enter the final study results. It will be added to the system   **Triggers:**   * The staff will send command “Add study results ” to the system   **Preconditions:**   * Staff must login to the system with the right of Education Staff   **Post Conditions:**   * Success: Final study results will be added to the system and then notify it was added successfully * Fail: There is no information were added and the system will display error messages to the staff.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Staff will login to site and enter study result | The system will return:   * Page displayed data in order to add or edit information. | | 2 | Staff sends command "add information" in page displays the data to the system. | The system will display the table include::   * Student ID: Free text input * Full name: Free text input * Mail: Email input * Score: Number input * Status: Free text input * Subject: Free text input | | 3 | Staff will enter new information. |  | | 4 | Staff send command "Add" to the system. | The system will add new information and notify it was added successfully. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Staff send command “Import file excel” to system. | The system will display interface allows staff to upload excel files directly from your computer to the system. | | 2 | Staff selects files to upload. |  | | 3 | Staff send the command "Upload" to the system. | The system will add data learning results then notify it was “added successfully”. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Length of “Full name” is not in range. | Show error message: ““Full name” length must be from 6 to 30 characters!” | | 2 | “Score” is wrong format. | Show error message: ""Score "must be the number and has a value greater than 0 and less than 10!" | | 3 | “Email” is wrong format. | Show error message: “”Email” phải đúng định dạng abc@example.fpt.edu.vn!” |   **Relationships:** N/A  **Business Rules:** N/A | | | |

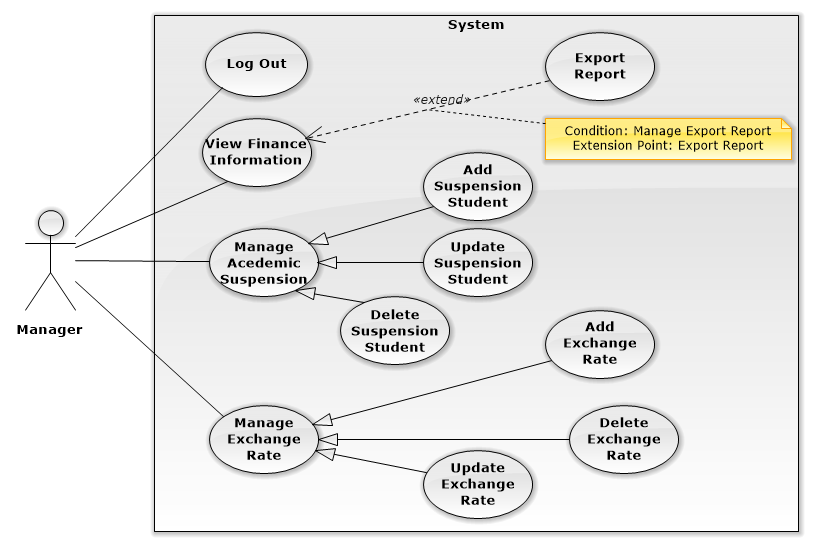
##### <Education Staff> Update Student Study Result Use Case Diagram



**Figure: <Education Staff> Update Student Study Result**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE -** STAFF06 | | | |
| **Use Case No.** | STAFF06 | **Use Case Version** | 1.0 |
| **Use Case Name** | Update Student Study Result | | |
| **Author** | Ho Doan Trung | | |
| **Date** | 25/09/2015 | **Priority** | High |
| **Actor:**   * Education Staff   **Summary:**   * This use case allows staff update to the system study results of student after each semester   **Goal:**   * Allow staff to update study results. It will be updated to the system.   **Triggers:**   * The staff will send command “Update study results” to the system.   **Preconditions:**   * Staff must login to the system with the right of Education Staff   **Post Conditions:**   * Success: Final study results will be updated to the system and then notify it was added successfully * Fail: There is no information were updated and the system will display error messages to the staff.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Staff choose one line in the table and then send command "Update" to the system to update information. | The system will display a table allows staff to edit information from the selected line include:   * Student ID: Free text input * Full name: Free text input * Mail: Email input * Score: Number input * Status: Free text input * Subject: Free text input | | 2 | Staff can choose the information they need to be updated to edit. |  | | 3 | Staff send the command "Update" to the system. | The system will update new information and notify it was added successfully. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Staff enter new information in the wrong format. | The system informs error |   **Exceptions:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Length of “Full name” is not in range. | Show error message: ““Full name” length must be from 6 to 30 characters!” | | 2 | “Score” is wrong format. | Show error message: ""Score "must be the number and has a value greater than 0 and less than 10!" | | 3 | “Email” is wrong format. | Show error message: “”Email” phải đúng định dạng abc@example.fpt.edu.vn!” |   **Relationships:** N/A  **Business Rules:** N/A | | | |

#### <Manager> Overview Use Case



**Figure: <Manager> Overview Use Case**

##### <Manager> Log Out Use Case Diagram

##### <Manager> View Finance Information Use Case Diagram

## Software System Attribute

#### Usability

##### Graphic User Interface

* All the texts, labels and alerts will be written in Vietnamese, except some English terms that the school is using.

##### Usability

* The system is easy to use. The school’s staffs will need less than 3 days of training to use the system effectively.
* Students don’t need any training to use the system.

##### Installation

* User can follow installation and manual guide for installation. If there are any problems, users can contact developers for help.

#### Reliability

* System notification success rate is less than 2 failed notifications per 1000 sent.
* System email notification deliver success rate is less than 2 failed deliveries per 1000 sent.
* Scheduler task run at 00:00 every day with 100% execution rate.
* Web service API response success rate is less than 2 failed requests per 10,000 requests.

#### Availability

* **N/A**

#### Security

* All input data will be validated before saving into database.
* All privacy information such as password will be encrypted to ensure security.
* The system automatically authorizes all users when they login to the system.

#### Maintainability

* The system is separated into modules.

#### Portability

* All users can use application on every OS supported web browser.

#### Performance

* Requests from web application are responded in less than 10 seconds at 8 Mbps bandwidth speed.
* Mobile checker application should return card information in less than 1 minute at 8 Mbps bandwidth speed.
* Mobile printer application should write data to NFC card successfully in less than 1 minute at 8 Mbps bandwidth speed.

## Conceptual Diagram

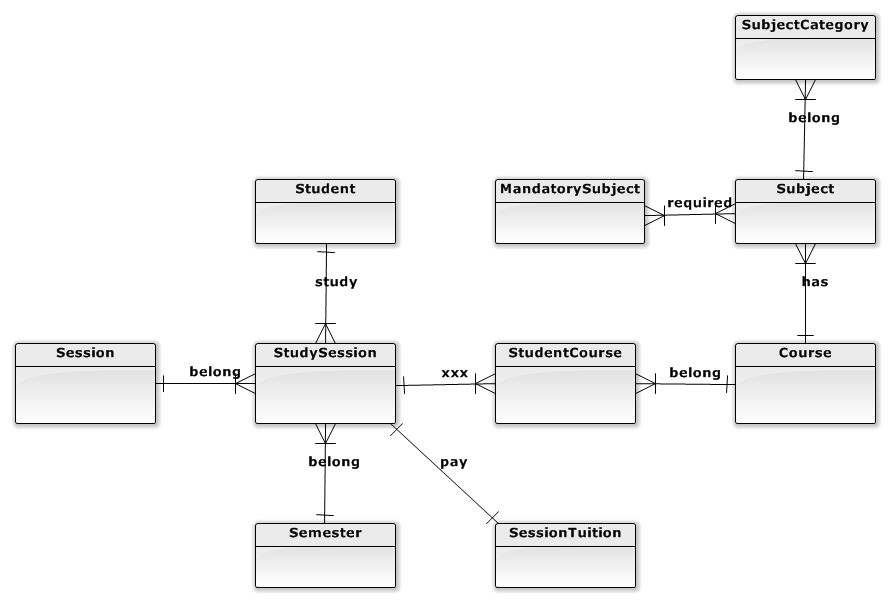


Figure 35: ERD - Conceptual Diagram