|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | |  | | **MINISTRY OF EDUCATION AND TRAINING** | | | **FPT UNIVERSITY** | | |
| Capstone Project Document |
| Online Medical Consultant System |
| |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | **Group 02 – Report 1** | | | **Group member** | Trần Nguyên Tiến Sứ - Team Member - SE60781  Trần Cao Danh - Team Member - SE60705 | | **Supervisor** | Mr. Nguyễn Huy Hùng | | **Ext. Supervisor** | N/A | | **Capstone Project code** | OMCS | | |
| – Ho Chi Minh City, 11 May / 2014 – |

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***ACKNOWLEDGEMENTS***

Thank you

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# Definitions, Acronyms, and Abbreviations

|  |  |
| --- | --- |
| OMCS | Online Medical Consultant System |

# Introduction

## Project Information

* Project name: **Online Medical Consultant System**
* Project Code: **OMCS**
* Product Type: **Web Application**
* Start Date: **May 11th, 2014**
* End Date: **August, 25th, 2014**

## Introduction

With the emergence of the Internet, many systems have been built to reduce the gap between patients and doctors. They provide the convenient way by let patient communicate face-to-face with health care provider via social media. That is successful story from many developed countries that we try to apply for Vietnam using different approaches.

Nowadays, Vietnam hospitals usually are overwhelmed[1] with patients. A lot of plans have been proposed to handle that situation[2]. Besides that, taking a medical treatment at hospitals not always a good choice due to the traveling cost, wasting time and unsafeness[3].

Based on observation, we see that there are many cases that patients don’t need to go to the hospital quite often because those can easily conduct via internet. So we want to improve the processes of medical treatment.

Reference:

[1] http://nld.com.vn/suc-khoe/loay-hoay-chuyen-giam-tai-benh-vien-20120315104111496.htm

[2] http://www.vietnamplus.vn/no-luc-giam-qua-tai-cac-benh-vien-tai-tp-ho-chi-minh/245738.vnp

[3] http://www.nhandan.com.vn/suckhoe/tieu-diem/item/22586202-bat-an-nhu-vao%E2%80%A6-benh-vien.html

[4] http://www.jmir.org/2013/10/e220/

# Project Management Plan

## Problem Definition

### Name of this Capstone Project

The official and formal project name is “Online Medical Consultant System”. Its abbreviation is OMCS.

### Problem Abstract

This system aims to provide the convenient way for doctor and patient to exchange information (chatting, sharing webcam, attachment).

In order to conduct a high quality consulting based on reliable information. This system helps hospitals to build medical profile template.

With many medical profiles linked to one patient, it’s more easier to extract some common information like immunization, allergy.

### Project Overview

#### The Current System

In Vietnam, there are some websites provide medical consultant services:

* **Alobacsi** *“Vì sức khỏe người Việt”*

<http://alobacsi.vn/kham-benh-online.htm>

Users can search questions in knowledge base (nearly 100.000 questions with answers). Make question by submit the form.

* **Tuvansuckhoe24h** *“Chia sẽ cùng chuyên gia”*

<http://www.tuvansuckhoe24h.com.vn/>

Support chatting using yahoo. Ask question for consultants

* **Bacsytructuyen**

<http://bacsytructuyen.com/>

This website collect articles, tips related to medical from many resources. Users can access those information. Besides that, patients can submit question by filling the form

All above systems have many disadvantages:

* Lack of interaction between patients and doctors
* Hardly can provide high quality consulting service due to missing reliable resources (medical profile, allergy, immunization,…)
* Patient cannot able to manage their own profile information, medical heath record

#### The Proposed System

The main system will be a website. It’s intended for used in one hospital or clinic.

The system will provide the following main features:

* *Hospital admin:*
* Define a template for medical profile with high customization, reusable patient information and built-in components.
* Update hospital information.
* Manage doctors, patients, specialty fields, film types, allergy types.
* Manage all created medical profiles.
* Manage comments from patient.
* *Doctors:*
* Manage patient information.
* Use predefined templates to create medical profile for patient.
* View conversation history, chat with patient.
* Request patient to show their webcam.
* View medical profile template.
* *Patients:*
* Manage some basic information, health medical record.
* View their medical profile.
* Request doctor to get consulted, share webcam, upload attachment.

#### Boundaries of the System

* The system is intended for using in one hospital (we named it as FPT Hospital)
* The language of the system is Vietnamese.
* The complete product includes:
* The website, for admin, doctor, patient to interactive with system.
* All the documents, reports during the time develop the system.
* This system currently not included for these features:
* Exporting medical profile.
* Managing medicine.
* Managing process of a hospital.
* This system not intend to replace the current medical treatment processes in hospital. It just provide the convenient and reliable ways to conduct medical consultant online, especially in re-examination.

#### Development Environment

##### Hardware requirements

**For server**

|  |  |  |
| --- | --- | --- |
| Windows | Minimum Requirements | Recommended |
| Internet Connection | 4Mbps | 8 Mbps |
| Operating System | Window Server 2008 | Window Server 2012 |
| Computer Processor | Intel® Core 2 Duo | Intel® Core(TM) i5 CPU , M 460 @ 2.53GHz |
| Computer Memory | 1GB RAM | 3GB or more |

Table 1: Hardware Requirement for Server

**For Web User**

|  |  |  |
| --- | --- | --- |
| Web | Minimum Requirements | Recommended |
| Internet Connection | 2Mbps | 4Mbps |
| Web Browser | Chrome 22 | Chrome 36 |

Table 2: Hardware Requirement for Web User

##### Software requirements

* OS: Microsoft Windows 7.
* Skype: used for communication and meeting
* Google Code & TortoiseSVN: used for source control.
* Website Server: IIS 7 Express
* IDE: Visual Studio 2012
* DBMS: SQL Server 2008 R2
* StarUML 5.0

## Project organization

### System Process Model

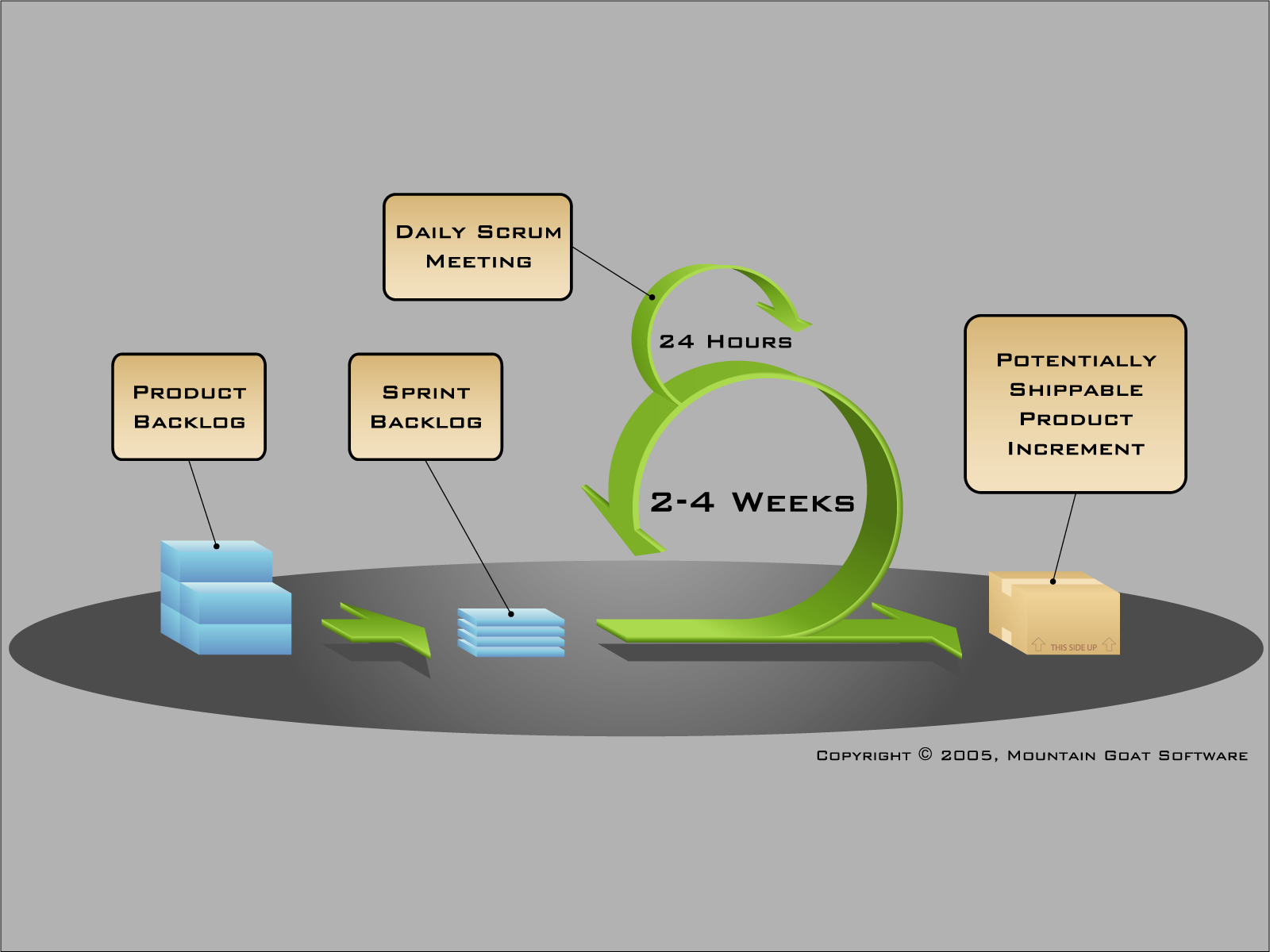


Figure 1 Scrum framework

We decided to apply SCRUM methodology in our project with many customizations:

* **Roles**

Teacher plays as a Product Owner and Scrum Master

Students play as Development Team

* **Event**

*Sprint*: each sprint is timeboxed for one week. Start and end at the same date

*Meeting*:

* *Planning 1*: choose stories from product backlog and put them into sprint backlog
* *Planning 2*: not conduct due to lack of time and resources
* *Daily meeting*: conduct every evening by using Skype
* *Review meeting*: conduct at the end of sprint where PO review the work that was completed
* *Retrospective meeting*: rarely hold. To take a look back on the previous sprints and discuss to made agreement for improvement
* **Artifacts**

*Product backlog*: list of requirements that are created and managed by PO.

*Sprint backlog*: list of works for the Development Team must address during the sprint.

*Burndown chart*: not conduct

*Impediment*: list of difficulties that the team meet during handle tasks.

* Reference Appendix: Impediment Backlog.

### Roles and Responsibilities

|  |  |  |
| --- | --- | --- |
| Full name | Role in Group | Responsibilities |
| Nguyễn Huy Hùng | Scrum Master, Product Owner | * Ensuring the team deliver value to the business * Manage product backlog, prioritizes userstory * Facility the team |
| Trần Nguyên Tiến Sứ | Team member | * Tracking & managing progress. * Designing database. * Analyzing requirements. * Planning & scheduling. * Coding. * Testing. * Writing documents & reports |
| Trần Cao Danh | Team member | * Analyzing requirements. * Designing database. * Coding. * Testing. * Writing documents. |

Table 3 Roles and Responsibilities

### Tools and Techniques

#### Tools:

* IDE: Microsoft Visual Studio 2012.
* DBMS: Microsoft SQL server 2008 R2 Express: Used as the database of the system.
* SVN: TortoiseSVN.
* Task management: Trello (<https://trello.com/>)
* Web browsers: Google Chrome, Firefox.
* Web Server: Microsoft IIS 7.0

#### Technologies:

* Web framework: ASP.NET MVC 4
* Entity Framework Model First
* Front-end: Backbone.js, Underscore.js, RequireJS, HTML 5, CSS 3, AJAX, Bootstrap

## Project management plan

### Product Backlog

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Category** | **Userstory** | **Description** | **Acceptance criteria** | **Delivery date** | **Sprint** |
| 1 | Document | Report 1 | As a team member, I want to have the introduction about the project so that I can understand the initial idea. | The report should follow the template from FPT University Good layout, cover all items | 20 May, 2014 | 1 |
| 2 |  | Report 2 | As a team member, I want to have the Project Management Plan so that I can work well on the project | The report should follow the template from FPT University Good layout, cover all items | 05 June, 2014 | 2, 3 |
| 3 |  | Report 3 | As a team member, I want to have the System Requirements Specifications | The report should follow the template from FPT University Good layout, cover all items All features are listed out and analysed carefully | 12 June, 2014 | 3, 4 |
| 4 |  | Report 4 | As a team member, I want to have the System Design Specifications so that I can have a good design to follow | The report should follow the template from FPT University Good layout, cover all items | 09 July, 2014 | 4, 5, 6, 7, 8 |
| 5 |  | Report 5 | As a team member, I want to have System Implementation & Test document so that I can have full-featured and well-tested release | The report should follow the template from FPT University Good layout, cover all items | 09 July, 2014 | 9, 10 |
| 6 |  | Report 6 |  | The report should follow the template from FPT University Good layout, cover all items | 05 June, 2014 | 2, 3 |
| 7 |  | Team document | As a team member, I want to have some document  (product backlog, sprint backlog, team wiki) created. So I can work well on OMCS | Product backlog with detail description, acceptance criteria, and delivery date Sprint backlog with breaked tasks with assignee |  | 1 |
| 8 | Feature | [User] Login | As a user, I want to login to the system | Login using email After login, redirect user based on their role |  | 1 |
| 9 |  | [User] Login with remember me | As a user, I want to login automatically |  |  |  |
| 10 |  | [User] Logout | As a user, I want to logout |  |  |  |
| 11 |  | [User] Register | As a guest, I want to register new account | Only required some basic information Send email to confirm email address Use capcha to enhanced security |  | 1 |
| 12 |  | [User] Forget password | As a user, I want to get new password by email when I forgot it, so that I can continue to use OMCS | Send email with gerenated new password |  | 1 |
| 13 |  | [User] Edit profile information | As a user, I want to update some information (firstname, address…) | Validate required fields, number |  | 1 |
| 14 |  | [Patient] View medical profile | As a patient, I want to view my medical profile, so that I can have overview about my dieases | List all medical profiles created for logged in patient Not allow patient to modify medical profile |  |  |
| 15 |  | [Patient] View linked medical profile information | As a patient, I want to extract some information (immunization, allegy) so that I can quickly have overview about them | Only show medical profile that use built-in modules (immunization, allergy) Link to medical profile that have extracted information |  |  |
| 16 |  | [Patient] Update patient information | As a patient, I want to update some information about my profile, basic health record | For user experience, use in-place editor to edit information |  |  |
| 17 |  | [Patient] Chat | As the user, I want to chat with doctor realtime So I can send message and doctor receive immediately | The behavior could be: The system list out all doctors with their status Patient can select doctor to chat with Patient can see old chat content |  |  |
| 18 |  | [Patient] Show webcam | As a patient, I want to share my webcam so the information's exchange is more easier | Doctor can see the stream that patient share Doctor can see the stream in full-screen |  |  |
| 19 |  | [Patient] Upload attachment | As a patient, I want to attach some files, images and send to doctor | If attach files are images, display on the chat content, otherwise, let doctor download it |  |  |
| 20 |  | [Patient] View consult history | As a patient, I want to see previous chat content with doctor, so that I haven't to remember everything | List all chat content with the sent time Sort chat message by time |  |  |
| 21 |  | [Patient] View doctor online | As a patient, I want to see who is online, so that I can get quickly response | When doctor go to Conversation page, their status is shown as online for patient Patient can see status real-time, donot need to refresh the page |  |  |
| 22 |  | [Patient] Change profile picture | As a patient, I want to change my profile picture |  |  |  |
| 23 |  | [Patient] Change password | As a patient, I want to change my password | Patient have to re-enter current password Patient have to enter new password twice |  |  |
| 24 |  | [Patient] Rating doctor | As a patient, I want to rate doctor for his consulting | Maximum point is 5 Doctor and other patients can see the average point of rating |  |  |
| 25 |  | [Patient] Comment doctor | As a patient, I want to give my comment for doctor so that I can show my opinions/ideas | Doctor and other patients can see the comment Doctor can comment to reply |  |  |
| 26 |  | [Doctor] Chat | As a doctor, I want to chat with patients so that I can help them | Doctor can see unread messages |  |  |
| 27 |  | [Doctor] Request webcam | As a doctor, I want to request camera from patients when needed | Only request to one patient at the same time |  |  |
| 28 |  | [Doctor] Upload attachment | As a doctor, I want to upload attachment and send to patient, so useful data could be exchange | If attach files are images, display on the chat content, otherwise, let patient download it |  |  |
| 29 |  | [Doctor] Create medical profile | As a doctor, I want to create medical profile for patient, so that I can update it instantly | Doctor can choose any exsting template to create One patient with have only one medical profile created from one template |  |  |
| 30 |  | [Doctor] View medical profile | As a doctor, I want to view medical profile of a patient, so that I can have overview about his diseases | Doctor can view medical profile created by other doctors |  |  |
| 31 |  | [Doctor] Update medical profile | As a doctor, I want to update medical profile created for patient |  |  |  |
| 32 |  | [Doctor] Create patient | As a doctor, I want to create account for patient so that new patient can use application instanly | Password of patient is sent to patient's email automatically |  |  |
| 33 |  | [Doctor] Edit patient information | As a doctor, I want to edit patient information, so that I can correct information |  |  |  |
| 34 |  | [Doctor] View comment/rating | As a doctor, I want to view comment/rating so that I can know feedback from patients |  |  |  |
| 35 |  | [Doctor] Add comment | As a doctor, I want to add new comment so that I can interact with my patients effectively |  |  |  |
| 36 |  | [Doctor] Search patient | As a doctor, I want to search patient so that I can increase my work performance |  |  |  |
| 37 |  | [Doctor] Change picture profile | As a doctor, I want to change my profile picture |  |  |  |
| 38 |  | [Doctor] Change password | As a doctor, I want to change my password | Doctor have to re-enter current password Doctor have to enter new password twice |  |  |
| 39 |  | [Admin] View medical profile | As an admin, I want to view medical profile from all patients for management |  |  |  |
| 40 |  | [Admin] Create doctor | As an admin, I want to create new doctor for my hospital | Admin can edit some information during add new doctor |  |  |
| 41 |  | [Admin] Edit doctor | As an admin, I want to edit information of a doctor, so that I can correct wrong information |  |  |  |
| 42 |  | [Admin] Search doctor | As an admin, I want to search doctors so that I can increase my work performance |  |  |  |
| 43 |  | [Admin] Deactive/Active doctor | As an admin, I want to deactive/active doctor, so that I can operate system well | Deactive doctor cannot access to the system anymore |  |  |
| 44 |  | [Admin] Create patient | As an admin, I want to create new patient |  |  |  |
| 45 |  | [Admin] Edit patient | As an admin, I want to edit some information of patient |  |  |  |
| 46 |  | [Admin] Search patient | As a admin, I want to search patient so that I can increase my work performance |  |  |  |
| 47 |  | [Admin] Deactive/Active patient | As an admin, I want to deactive/active patient, so that I can operate system well | Deactive patient cannot access to the system anymore |  |  |
| 48 |  | [Admin] Define medical profile template | As an admin, I want to define new medical profile template for my hospital | Template can re-use existing information from patients Template can use some built-in modules of system |  |  |
| 49 |  | [Admin] Update medical profile template | As an admin, I want to update medical profile template, so that my template can stay update with new changes | After updating, a summary changes should be listed out |  |  |
| 50 |  | [Admin] Change picture profile | As an admin, I want to change my profile picture |  |  |  |
| 51 |  | [Admin] Change password | As an admin, I want to change my password | Admin have to re-enter current password Admin have to enter new password twice |  |  |

Table 4 Product Backlog

### Sprint Backlog

* Reference Appendix: Sprint Backlog.

### All Meeting Minutes

* Reference Appendix: Meeting Minutes.

## Convention Rules

C#: Using to develop website.

# System Requirements Specifications (SRS)

## User Requirement Specification

**OMCS** is a website that provides the convenient way by let patient communicate face-to-face with health care provider via social media. It helps improving the processes of medical treatment.

### Guest Requirement

To satisfy the demand of guest, system has these functions:

* **Registration**: guest need to register to become member. Username, password, email are required for registration.
* **Login**: guest can logged in with email and password.

### User Requirement

After login successful, user have these functions:

* **Update profile**: user have the ability to manage their profile information. He can update some basic information (name, email, birthday, address,…) or change profile picture.
* **Change password**: user can change their password.

### Patient Requirement

If user login with role patient, he can have these functions:

* **Update personal health record:** patient has their own personal health record (height, weight, life styles,…) and he can update it.
* **View medical profile:** patient have ability to view their medical profile.
* **View doctor online:** patient can see doctor online status.
* **Chatting:** patient can choose doctor and send message to get consulted.
* **Upload attachment:** patient can upload files and send to doctor.
* **Show webcam:** patient can share their webcam for doctor.
* **Comment doctor:** patient can post comment about doctor.
* **Rating doctor:** patient can rate doctor.

### Doctor Requirement

If user login with role doctor, he can have these functions:

* **Manage patient:** doctor can create account for patient, update patient information, search patient
* **Update medical profile:** doctor can create medical profile for patient and update information.
* **View medical profile:** doctor can view medical profile of a patient.
* **Chatting:** doctor can reply message from patient
* **Upload attachment:** doctor can upload files and send to patient.
* **Request webcam:** doctor can request patient to share their webcam.
* **View comment/rating:** doctor can view comments from patients with average rating point.
* **Reply comment:** doctor have ability to reply comment from patients.

### Admin Requirement

If user login with role admin, he can have these functions:

* **Manage doctor:** admin can create, edit, active/de-active doctor account, search doctor.
* **Manage patient:** admin can create, edit, active/de-active patient account, search patient.
* **Define new medical profile template**
* **Update existing medical profile template**
* **Manage comment:** admin can review, delete comments.

## System Requirement Specification

### Use Case Overview

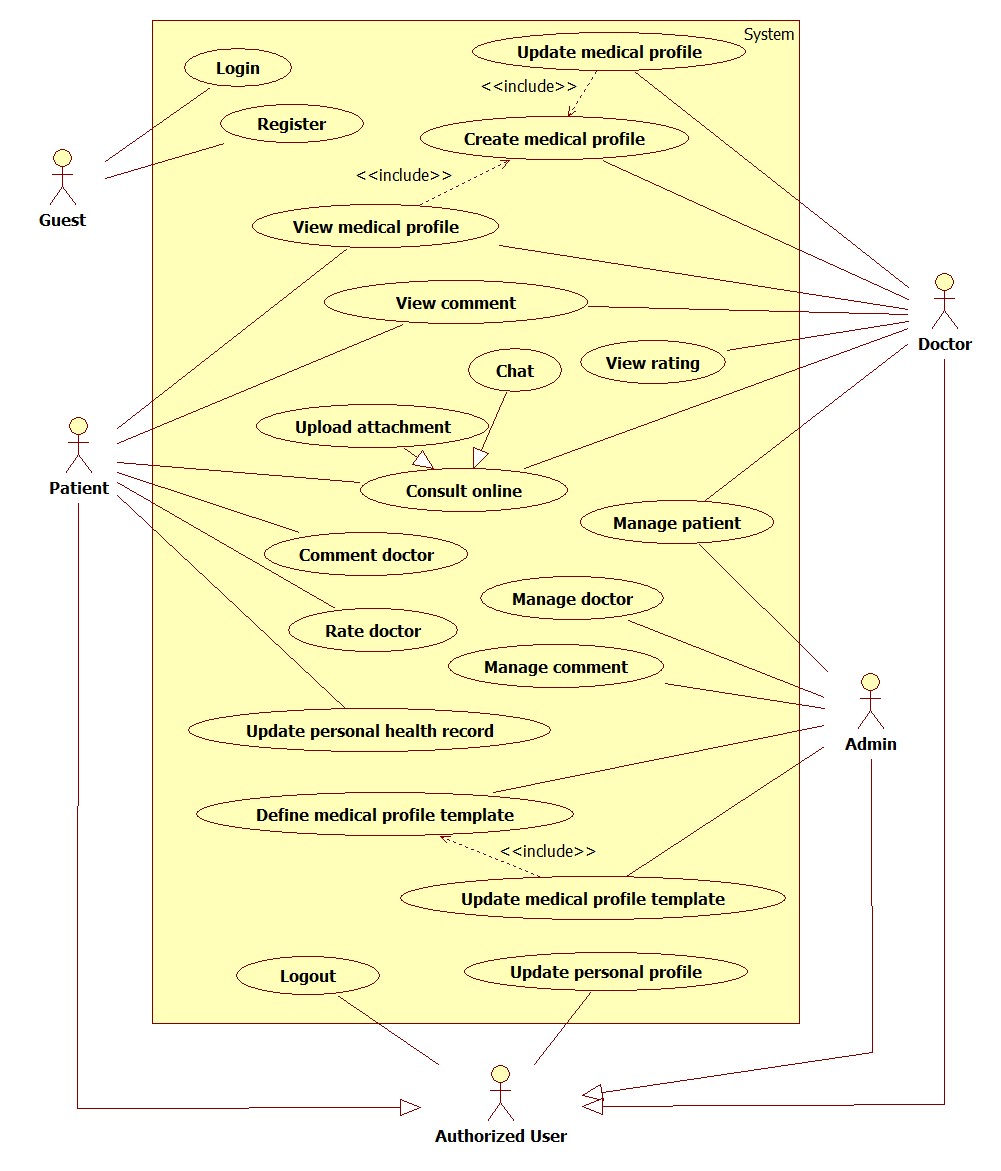


Figure 2 System Use Case Overview

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Figure 3 <Guest> Use Case Overview

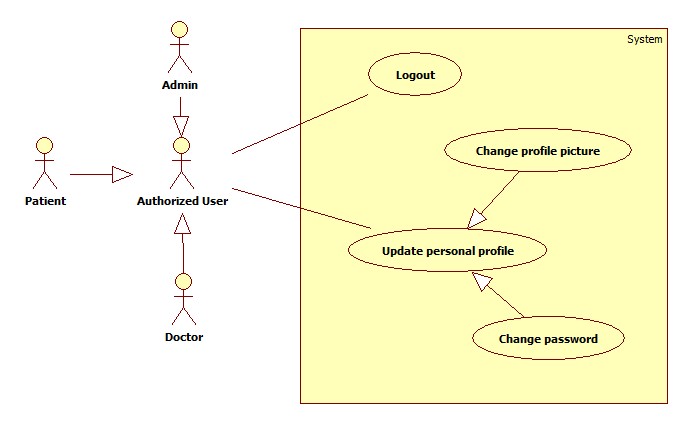


Figure 4 <Authorized User> Use Case Overview

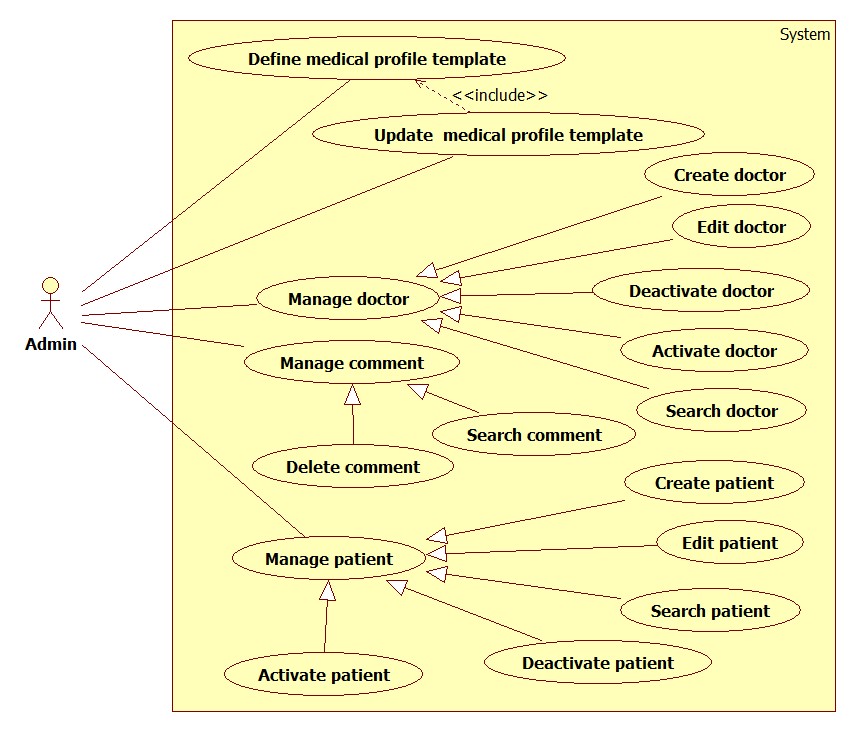


Figure 5 <Admin> Use Case Overview

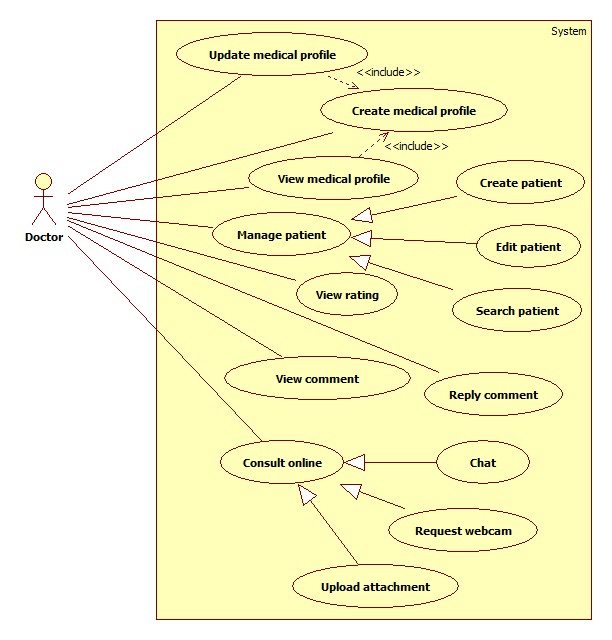


Figure 6 <Doctor> Use Case Overview

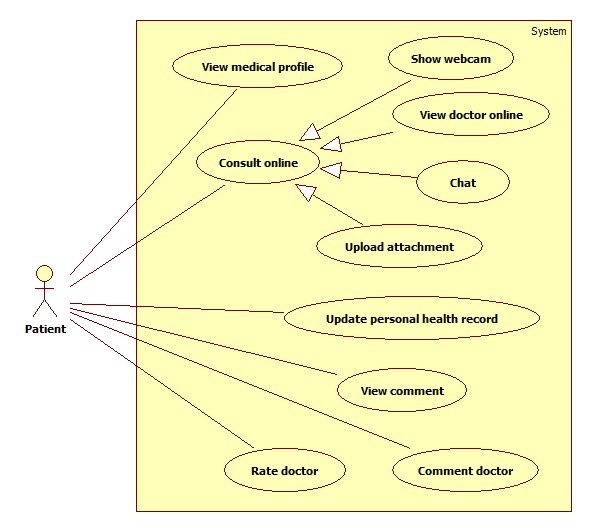


Figure 7 <Patient> Use Case Overview

### Functional Requirements

#### Functional Requirement 1 - Login

##### Use Case-1 Diagram



Figure 8 <Guest> Login

###### Use Case-1 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 1 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_001 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Guest> Login | | | |
| **Author** | SuTNT | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Guest   **Summary:** Logging into system  **Goal:** Check user’s role to use system’s functions.  **Triggers:**Click on “Đăng nhập” link to log in  **Preconditions:**   * Page is loaded successfully. * Users are in “Login” page.   **Post-Conditions:**   * Success: member login successfully. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click “Đăng nhập” link on “Trang Chủ” page. | * Redirect to “Login” page. * Display form to input login information: * Email [input] * Mật khẩu [input] * Đăng nhập [button] | | 2 | User input email and password. |  | | 3 | User clicks on “Đăng nhập” button. | * Validate email and password. * Redirect to page follow user’s role. |   **Alternative Scenario:** N/A  **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | When user fills wrong email or password. | Display a hint message “Email hoặc mật khẩu không đúng ". | | 2 | Email or password is blank. | Show message: “Vui lòng điền vào trường này”. | | 3 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** N/A  **Business Rules:**   * Each patient, doctor, admin has an account. * Only active account can log in. | | | | |

Table 5 <Guest> Login

#### Functional Requirement 2 - Register

##### Use Case-2 Diagram



Figure 9 <Guest> Register

##### Use Case-2 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 2 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_002 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Guest> Register | | | |
| **Author** | DanhTC | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Guest   **Summary:** User uses this function to register into system.  **Goal:** Help guest to create an account on website.  **Triggers:**Click on “Đăng ký” link to “Register” page.  **Preconditions:**   * Page is loaded successfully * Register page will be shown   **Post-conditions:**   * Guest become member of website   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Đăng ký” link on homepage | * Display “Đăng ký” page. * Display a form to input registration information. | | 2 | User fills all mandatory fields. |  | | 3 | User clicks on “Đăng ký” button. | * Validate the inputted information. * Insert into database. |   **Alternative Scenario:** N/A  **Exception:**   |  |  |  | | --- | --- | --- | | No | ActorAction | System Response | | 1 | “Email”, “Họ”, “Tên”, “Mật khẩu”, “Xác nhận mật khẩu” text-box is empty | Display message: “Bạn cần nhập giá trị này”. | | 2 | When user fills email not correct format | Display message “Email không đúng định dạng”. | | 3 | When user fills exist email | Display message “Địa chỉ email đã tồn tại”. | | 4 | Mandatory field which have a mark ”\*” is empty | Display message “Bạn cần nhập giá trị này”. | | 5 | When user fills password is more than 32 characters or less than 6 characters | Display message “Độ dài trong khoảng từ 6 đến 32 kí tự”. | | 6 | When user fills re-password not match password | Display message “Xác nhập mật khẩu không trùng khớp”. | | 7 | Captcha is empty | “Mã captcha không được để trống”. | | 8 | Captcha not match captcha picture | “Mã captcha không trùng khớp”. |   **Relationship:** N/A  **Business Rules:**   * Each created account must be inactive and has role “patient”. * Each created account will be active when users active theirs account through email. | | | | |

Table 6 <Guest> Register

#### Functional Requirement 3 - View Medical Profile

##### Use Case-3 Diagram



Figure 10 <Doctor><Patient> View Medical Profile

##### Use Case-3 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 3 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_003 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Doctor><Patient> View Medical Profile | | | |
| **Author** | SuTNT | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Patient * Doctor   **Summary:** This use case is about Viewing medical profile for a patient.  **Goal:** View detail of a medical profile.  **Triggers:** Patient clicks on “Xem chi tiết**”** button on “MedicalProfile” page.  **Preconditions:**   * User must log in with role “Patient” or “Doctor”.   **Post-Conditions:**   * Page load successfully.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Xem chi tiết” button. | Redirect into “Detail” page to shows medical profile details. |   **Alternative Scenario:** N/A  **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Medical profile is broken. | Display message “Hồ sơ bệnh án bị lỗi.” | | 3 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** N/A  **Business Rules:** N/A | | | | |

Table 7 <Doctor><Admin> View Medical Profile

#### Functional Requirement 4 – Chat

##### Use Case-4 Diagram



Figure 11 <Doctor><Patient> Chat

##### Use Case-4 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 4 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_004 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Doctor><Patient> Chat | | | |
| **Author** | DanhTC | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Doctor * Patient   **Summary:** This use case is about chatting between doctor and patient.  **Goal:** User can send message to each other.  **Triggers:**   * Doctor is on “DoctorConversation” page and patient is on “UserConversation” page. * User input to text-box and clicks on “Gửi” button to send message.   **Preconditions:**   * User must log in with role “Doctor” or “Patient”. * User is on chat page.   **Post-Conditions:**   * Success: Send and receive message successfully. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User inputs message to text-box and clicks on “Gửi” button. | Send message to chat partner and display that message for him/her. |   **Alternative Scenario:** N/A  **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 3 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** Consult online  **Business Rules:** N/A | | | | |

Table 8 <Doctor><Patient> Chat

#### Functional Requirement 5 – Request Webcam

##### Use Case-5 Diagram



Figure 12 <Doctor><Patient> Request Webcam

##### Use Case-5 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 5 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_005 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Doctor> Request Webcam | | | |
| **Author** | SuTNT | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Doctor   **Summary:** This use case is about Requesting webcam when chatting.  **Goal:** Doctor can request showing webcam from patient.  **Triggers:**   * User clicks on “Xem webcam” button on chat page.   **Preconditions:**   * User must log in with role “Doctor”. * User is on chat page.   **Post-Conditions:**   * Success: Send request successfully. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Xem webcam” button. | Display message “Bạn đã gửi yêu cầu xem webcam bệnh nhân...” on “Doctor” Page. |   **Alternative Scenario:** N/A  **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 3 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** Consult online  **Business Rules:**   * User can’t send the next request when patient doesn’t answer. | | | | |

Table 9 <Doctor><Patient> Request Webcam

#### Functional Requirement 6 – Show Webcam

##### Use Case-6 Diagram



Figure 13 < Patient> Show webcam

##### Use Case-6 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 6 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_006 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Patient> Show Webcam | | | |
| **Author** | DanhTC | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Patient   **Summary:** This use case is about Showing webcam when chatting.  **Goal:** User can show webcam.  **Triggers:**   * User receives request “Xem webcam” from doctor on “UserConversation” page. * User clicks on “Đồng ý” button and allows open webcam on website.   **Preconditions:**   * User must log in with role “Patient”. * Receive a request “Xem webcam”.   **Post-Conditions:**   * Success: Show webcam successfully. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Đồng” button on “Yêu cầu xem webcam” pop-up page. [Alternative 1] | * Display user’s webcam. * Send webcam to doctor. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User clicks on “Từ chối” button. | Send message “Yêu cầu bị từ chối” to doctor. |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” | | 2 | Webcam was not found. | Display message “Không tìm thấy webcam từ máy bệnh nhân”. |   **Relationship:** Consult online  **Business Rules:**   * Patient has webcam. | | | | |

Table 10 < Patient> Show webcam

#### Functional Requirement 7 – Upload Attachment

##### Use Case-7 Diagram

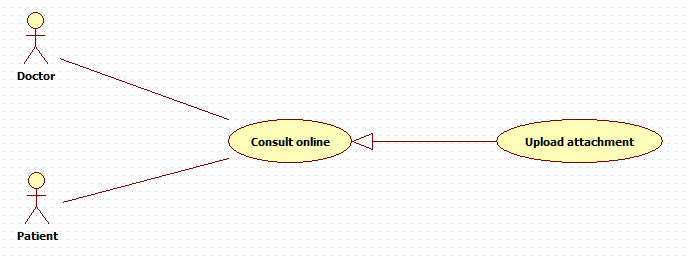


Figure 14 <Doctor>< Patient> Upload Attachment

##### Use Case-7 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 7 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_007 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Patient><Doctor> Upload Attachment | | | |
| **Author** | SuTNT | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Patient * Doctor   **Summary:** This use case is about Uploading attachment for user when chatting.  **Goal:** User can upload attachment when chatting.  **Triggers:** User clicks on “Gửi tập tin**”** button on chatpage.  **Preconditions:**   * User must log in with role “Patient” or “Doctor”. * User is on chat page.   **Post-Conditions:**   * Success: Upload attachment successfully. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Đính kèm” button on page. | Show “Open” window. This window will help user access to the file that user want to attach. | | 2 | User chooses the file and clicks “Open” button. [Alternative 1] | Send file to store in system.  If attached file is image, show it into chat content. Otherwise, give a link to the doctor or patient for downloading. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User clicks on “Cancel” button | Back to chat page and no file is attached |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | File size is larger than specified file. | Display message “Tập tin lớn hơn quy định. Vui lòng chọn tập tin phù hợp với yêu cầu” |   **Relationship:** Consult Online  **Business Rules:**   * Image file can be showed directly on chat window. | | | | |

Table 11 <Doctor>< Patient> Upload Attachment

#### Functional Requirement 8 – View Consulting History

##### Use Case-8 Diagram



Figure 15< Patient> View consult history

##### Case-8 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 8 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_008 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Patient> View Consulting History | | | |
| **Author** | DanhTC | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Patient   **Summary:** This use case is about Showing consulting history.  **Goal:** User can view consulting history.  **Triggers:** User clicks on “Lịch sử tư vấn**”** link.  **Preconditions:**   * User must log in with role “Patient”.   **Post-Conditions:**   * Success: Consulting history is show successfully. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Lịch sử tư vấn” link. | * Redirect to “Lịch sử tư vấn” page. * System will show a list of conversation as a grid and order by consulted date. | | 2 | User chooses the conversation and clicks on “Xem lược sử” button. | * Open “Lược sử” pop-up page. [Alternative 1] * Display conversation between doctor and patient from consulted date. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User clicks on “Bỏ qua” button | Close “Lược sử” pop-up page. |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** Consult Online  **Business Rules:** N/A | | | | |

Table 12 < Patient> View consult history

#### Functional Requirement 9 – View Doctor Online

##### Use Case-9 Diagram



Figure 16 < Patient> View doctor online

##### Use Case-9 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 9 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_009 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Patient> View doctor online | | | |
| **Author** | SuTNT | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Patient   **Summary:** This use case is about viewing doctor online for a patient.  **Goal:** Patient can view doctor online.  **Triggers:** Patient goes to “Tư vấn trực tuyến” page and online doctor will have online icon.  **Preconditions:**   * Page load successfully. * User must log in with role “Patient”.   **Post-Conditions:**   * Success: Online doctors appear in the list with online icon. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Tư vấn trực tuyến” link. | * Show the list of doctor and doctors will be grouped by specialty. * Online doctor will have online icon. |   **Alternative Scenario:** N/A  **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 3 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** Consult Online  **Business Rules:**   * When doctor go to “Tư Vấn Trực Tuyến”. Doctor status is online and update instantly for patients. * When doctor close page “Tư Vấn Trực Tuyến”. Doctor status become offline and update instantly for patients. | | | | |

Table 13 < Patient> View doctor online

#### Functional Requirement 10 – Update medical profile

##### Use Case-10 Diagram

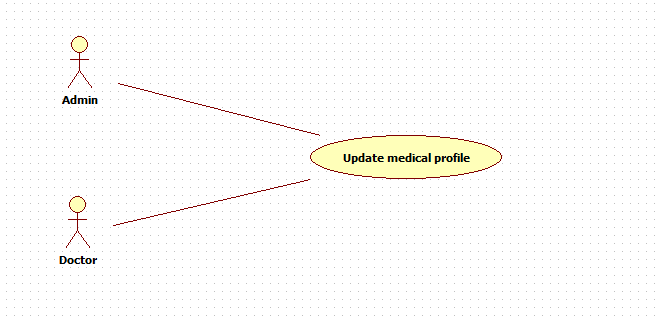


Figure 17 <Doctor>< Admin> Update medical profile

##### Case-10 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 10 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_010 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Doctor><Admin> Update medical profile | | | |
| **Author** | DanhTC | | | |
| **Date** | 30/05/2014 | **Priority** | Normal | |
| **Actor:**   * Doctor * Admin   **Summary:** This use case is doctor update medical profile.  **Goal:** Doctor can update medical profile.  **Triggers:** Doctor clicks on “Cập nhật**”** button on “DoctorMedicalProfile”page.  **Preconditions:** User must be logged - in as “Doctor”.  **Post-Conditions:**   * Success: A medical profile is updated in the system. * Failure: The doctor is presented with an error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User logged – in as “Doctor” and clicks on “Cập nhật” button on “DoctorMedicalProfile” page. | Display “UpdateMedicalProfile” page with patient’s fields has been added to doctor can edit and update. | | 2 | Input suitable fields want to update and click on “Cập nhật” button. | * Validate input data. * Display message: “Cập nhật thành công”. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Exit criteria from main flow: 4 validate input data fails | Exit criteria from main flow: 4 validate input data fails. |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 3 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** N/A  **Business Rules:** N/A | | | | |

Table 14<Doctor>< Admin> Update medical profile

#### Functional Requirement 11 – Create Doctor

##### Use Case-11 Diagram



Figure 18 <Admin> Create doctor

##### Use Case-11 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 11 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_011 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin> Create Doctor | | | |
| **Author** | SuTNT | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Admin   **Summary:** This use case allows admin can create new doctor.  **Goal:** Help admin to create new doctor account.  **Trigger:** Click on “Tạo Mới” button on “AdminDoctor” page.  **Precondition:**   * Page is loaded successfully. * Users have already logged in with role “admin”.   **Post-condition:**   * Success: New doctor is inserted into database. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Tạo Mới” button on “AdminDoctor” page. | * Open “Tạo mới bác sĩ” pop-up page. * Display input fields. | | 2 | User fills all mandatory fields. |  | |  | User clicks on “Lưu” button. [Alternative 1] | * Validate input data. * Redirect to “AdminDoctor” page. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User clicks on “Bỏ Qua” button | Close “Tạo Mới” pop-up page. |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Respons | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** Manage Doctor  **Business Rules:**   * Created account is active and has role “Doctor”. | | | | |

Table 15 <Admin> Create doctor

#### Functional Requirement 12 – Edit Doctor

##### Use Case-12 Diagram



Figure 19<Admin> Edit doctor

##### Use Case-12 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 13 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_012 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin> Edit Doctor | | | |
| **Author** | DanhTC | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Admin   **Summary:** This use case allows admin can edit doctor information.  **Goal:** Help admin to edit doctor account.  **Trigger:** Click on “Cập Nhật” button on “AdminDoctor” page.  **Precondition:**   * Page is loaded successfully. * Users have already logged in with role “admin”.   **Post-condition:**   * Success: Doctor’s information is updated in database. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Cập Nhật” button on “AdminDoctor” page. | * Open “Cập nhật” pop-up page. * Display input fields. | | 2 | User fills all mandatory fields. |  | | 3 | User clicks on “Lưu” button. [Alternative 1] | * Validate input data. * Redirect to “AdminDoctor” page. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User clicks on “Bỏ Qua” button | Close “Cập nhật” pop-up page. |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Reponse | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” | | 2 | When session timeout. | Display an informed message “Thời gian thực thi của bạn đã hết. Vui lòng đăng nhập lại”. | | 3 | Fail to update in database | Display message “Có lỗi xảy ra. Vui lòng thử lại”. |   **Relationship:** Manage Doctor  **Business Rules:**   * Username is forbidden. | | | | |

Table 16 <Admin> Edit doctor

#### Functional Requirement 13 – Search Doctor

##### Use Case-13 Diagram



Figure 20 <Admin> Search doctor

##### Use Case-13 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 13 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_013 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin> Search Doctor | | | |
| **Author** | SuTNT | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Admin   **Summary:** This use case allows admin can search doctor.  **Goal:** Help admin to search doctor account.  **Trigger:**   * In search screen, user inputs email/full name of doctor then they search all doctor with relative email/full name which they inputted. The searching results will show a list of doctor which follow doctor account’ created date. * User input to a blank text-box then clicks on “Tìm Kiếm” button.   **Precondition:**   * Page is loaded successfully. * Users have already logged in with role “admin”.   **Post-condition:**   * Success: Show search results which include a list of doctor. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User inputs the doctor’s email/full name into text-box. |  | | 2 | User clicks on “Tìm Kiếm” button. | * System will show a list of doctor as a grid and order by doctor account’s created date. [Alternative 1] * A doctor will show in a line as a record with these information: * First column is email. * Second column is full name. * Third column is status. * Fourth column is created date. * Fifth column has 2 buttons: “Cập Nhật” and “Vô Hiệu/Kích Hoạt”. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | No record found. | Display no record. |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 3 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** Manage Doctor  **Business Rules:**   * Search by doctor’s email/full name, using containing text search. | | | | |

Table 17<Admin> Search doctor

#### Functional Requirement 14 – Deactivate Doctor

##### Use Case-14 Diagram



Figure 21 <Admin> Deactivate Doctor

##### Use Case-14 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 14 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_014 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin> Deactivate Doctor | | | |
| **Author** | DanhTC | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:** Admin  **Summary:** This use case is about deactivating doctor account.  **Goal:** Help admin to deactivating a doctor account.  **Trigger:** Click on “Vô Hiệu” button corresponding with each doctor account in the doctor account list of “AdminDoctor” page.  **Precondition:**   * “AdminDoctor” page is loaded successfully. * Users have already logged in with role “admin”.   **Post-condition:**   * Success: The doctor account is deactivated and can’t log in. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click on “Vô Hiệu” button | * The corresponding doctor account change to “Bị Khóa” status. * “Vô Hiệu” button change to “Kích Hoạt” button. |   **Alternative Scenario:** N/A  **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” | | 2 | When session timeout. | Display an informed message “Thời gian thực thi của bạn đã hết. Vui lòng đăng nhập lại”. |   **Relationship:** Manage Doctor  **Business Rules:**   * Admin can’t activate/deactivate account of themselves or other admins. | | | | |

Table 18 <Admin> Deactivate Doctor

#### Functional Requirement 15 – Activate Doctor

##### Use Case-15 Diagram



Figure 22 <Admin> Activate doctor

##### Use Case-14 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 14 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_015 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin> Activate Doctor | | | |
| **Author** | SuTNT | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:** Admin  **Summary:** This use case is about activating doctor account.  **Goal:** Help admin to activating a doctor account.  **Trigger:** Click on “Kích Hoạt” button corresponding with each doctor account in the doctor account list of “AdminDoctor” page.  **Precondition:**   * “AdminDoctor” page is loaded successfully. * Users have already logged in with role “admin”.   **Post-condition:**   * Success: The doctor account is activated and can log in. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click on “Kích Hoạt” button | * The corresponding doctor account change to “Hoạt Động” status. * “Kích Hoạt” button change to “Vô Hiệu” button. |   **Alternative Scenario:** N/A  **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** Manage Doctor  **Business Rules:**   * Admin can’t activate/deactivate account of themselves or other admins. | | | | |

Table 19 <Admin> Activate doctor

#### Functional Requirement 16 – Create Patient

##### Use Case-16 Diagram

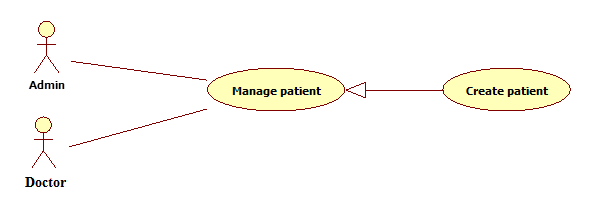


Figure 23 <Admin><Doctor> Create patient

##### Case-16 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 13 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_013 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin><Doctor> Create Patient | | | |
| **Author** | DanhTC | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Admin * Doctor   **Summary:** This use case allows admin/doctor can create new patient.  **Goal:** Help admin/doctor to create new patient account.  **Trigger:** Click on “Tạo Mới” button on “Quản lý bệnh nhân” navigation.  **Precondition:**   * Page is loaded successfully. * Users have already logged in with role “admin” or “doctor”.   **Post-condition:**   * Success: New patient is inserted into database. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Tạo Mới” button on “Quản lý bệnh nhân” navigation. | * Open “Tạo mới bệnh nhân” pop-up page. * Display input fields. | | 2 | User fills all mandatory fields. |  | | 3 | User clicks on “Lưu” button. [Alternative 1] | * Validate input data. * Redirect to “Index” page. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User clicks on “Bỏ Qua” button | Close “Tạo Mới” pop-up page. |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** Manage Patient  **Business Rules:**   * Created account is active and has role “Patient”. | | | | |

Table 20 <Admin><Doctor> Create patient

#### Functional Requirement 17 – Edit Patient

##### Use Case-17 Diagram

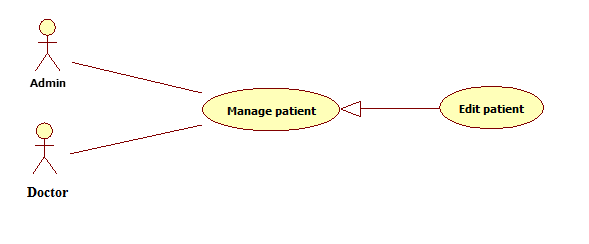


Figure 24 <Admin><Doctor> Edit patient

##### Use Case-17 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 13 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_017 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin><Doctor> Edit Patient | | | |
| **Author** | SuTNT | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Admin * Doctor   **Summary:** This use case allows admin/doctor can edit patient information.  **Goal:** Help admin/doctor to edit patient account.  **Trigger:** Click on “Cập Nhật” button on “Quản lý bệnh nhân” navigation.  **Precondition:**   * Page is loaded successfully. * Users have already logged in with role “admin” or “doctor”.   **Post-condition:**   * Success: Patient’s information is updated in database. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Cập Nhật” button on “Quản lý bệnh nhân” navigation. | * Open “Cập nhật” pop-up page. * Display input fields. | | 2 | User fills all mandatory fields. |  | | 3 | User clicks on “Lưu” button. [Alternative 1] | * Validate input data. * Redirect to “Index” page. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User clicks on “Bỏ Qua” button | Close “Cập nhật” pop-up page. |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** Manage Patient  **Business Rules:**   * Email is forbidden. * Password is forbidden. | | | | |

Table 21 <Admin><Doctor> Edit patient

#### Functional Requirement 18 – Search Patient

##### Use Case-18 Diagram

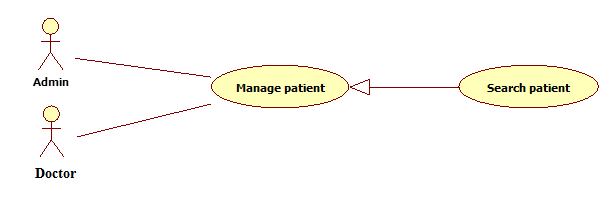


Figure 25 <Admin><Doctor> Search patient

##### Use Case-18 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 13 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_018 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin><Doctor> Search Patient | | | |
| **Author** | DanhTC | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Admin * Doctor   **Summary:** This use case allows admin/doctor can search patient.  **Goal:** Help admin/doctor to search patient account.  **Trigger:**   * In search screen, user inputs email/full name of patient then they search all patient with relative email/full name which they inputted. The searching results will show a list of patient which follow patient account’ created date. * User input to a blank text-box then clicks on “Tìm Kiếm” button.   **Precondition:**   * Page is loaded successfully. * Users have already logged in with role “admin” or “doctor”.   **Post-condition:**   * Success: Show search results which include a list of patient. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User inputs the patient’s email/full name into text-box. |  | | 2 | User clicks on “Tìm Kiếm” button. | * System will show a list of patient as a grid and order by patient account’s created date. [Alternative 1] * A patient will show in a line as a record with these information: * First column is email. * Second column is full name. * Third column is status. * Fourth column is created date. * Fifth column has 2 buttons: “Cập Nhật” and “Vô Hiệu/Kích Hoạt”. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | No record found. | Display no record. |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** Manage Patient  **Business Rules:**   * Search by patient’s email/full name, using containing text search. | | | | |

Table 22 <Admin><Doctor> Search patient

#### Functional Requirement 19 – Deactivate Patient

##### Use Case-19 Diagram



Figure 26 <Admin> Deactivate patient

##### Use Case-19 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 14 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_014 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin> Deactivate Patient | | | |
| **Author** | SuTNT | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Admin   **Summary:** This use case is about deactivating patient account.  **Goal:** Help admin to deactivating a patient account.  **Trigger:** Click on “Vô Hiệu” button corresponding with each patient account in the patient account list of “Quản lý bệnh nhân” navigation.  **Precondition:**   * “Index” page is loaded successfully. * Users have already logged in with role “admin”.   **Post-condition:**   * Success: The patient account is deactivated and can’t log in. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click on “Vô Hiệu” button | * The corresponding patient account change to “Bị Khóa” status. * “Vô Hiệu” button change to “Kích Hoạt” button. |   **Alternative Scenario:** N/A  **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” | | 2 | When session timeout. | Display an informed message “Thời gian thực thi của bạn đã hết. Vui lòng đăng nhập lại”. |   **Relationship:** Manage Patient  **Business Rules:**   * Admin can’t activate/deactivate account of themselves or other admins. | | | | |

Table 23 <Admin> Deactivate patient

#### Functional Requirement 20 – Activate Patient

##### Use Case-20 Diagram



Figure 27 <Admin> Activate patient

##### Use Case-20 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 14 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_20 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin> Activate Patient | | | |
| **Author** | DanhTC | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Admin   **Summary:** This use case is about activating patient account.  **Goal:** Help admin to activating a patient account.  **Trigger:** Click on “Kích Hoạt” button corresponding with each patient account in the patient account list of “Quản lý bệnh nhân” navigation.  **Precondition:**   * “Index” page is loaded successfully. * Users have already logged in with role “admin”.   **Post-condition:**   * Success: The patient account is activated and can log in. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click on “Kích Hoạt” button | * The corresponding patient account change to “Hoạt Động” status. * “Kích Hoạt” button change to “Vô Hiệu” button. |   **Alternative Scenario:** N/A  **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” | | 2 | When session timeout. | Display an informed message “Thời gian thực thi của bạn đã hết. Vui lòng đăng nhập lại”. |   **Relationship:** Manage Patient  **Business Rules:**   * Admin can’t activate/deactivate account of themselves or other admins. | | | | |

Table 24 <Admin> Activate patient

#### Functional Requirement 21 – Update Medical Profile Template

##### Use Case-21 Diagram

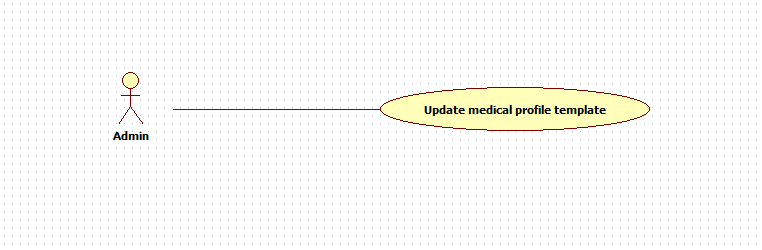


Figure 28 <Admin> Update medical profile template

##### Use Case-21 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 15 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_021 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin> Change Medical Profile Layout | | | |
| **Author** | SuTNT | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:** Admin  **Summary:** This use case is about change medical profile layout.  **Goal:** Help admin to change or update medical profile template.  **Trigger:** Click on “Sửa cấu trúc” bệnh nhân on “AdminMedicalProfile” page.  **Precondition:**   * Page is loaded successfully. * Users have already logged in with role “admin”.   **Post-condition:**   * Success: Medical profile template updated. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click on “Sửa cấu trúc” button | Show medical profile template is created. | | 2 | Drag in or drag out fields. | Add fields or remove fields. | | 3 | Click on “Cập nhật” button | Display message: “Cập nhật thành công” |   **Alternative Scenario:** N/A  **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** N/A  **Business Rules:** N/A | | | | |

Table 25 <Admin> Update medical profile template

#### Functional Requirement 22 – Change Picture Profile

##### Use Case-22 Diagram



Figure 29<Admin><Doctor><Patient> Change picture profile

##### Use Case-22 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 22 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_022 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin><Doctor><Patient> Change Picture Profile | | | |
| **Author** | DanhTC | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Admin * Patient * Doctor   **Summary:** This use case is about change medical profile picture  **Goal:** Help user to change their medical profile picture  **Trigger:** Click on profile picture in “Index” page and select “Cập nhật ảnh đại diện” to change medical profile picture.  **Precondition:**   * Page is loaded successfully. * Users have already logged in.   **Post-condition:**   * Success: User’s medical profile picture changed. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click on “Cập nhật ảnh đại diện” button on index page and select picture. | Display a “change profile” picture box. | | 2 | Select a template profile picture or upload owner’s picture. |  | | 3 | User clicks on “Cập nhật” button. | * Validate input data. * Save to database * Display new profile picture |   **Alternative Scenario:** N/A  **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” | | 2 | When session timeout. | Display an informed message”Thời gian thực thi của bạn đã hết. Vui lòng đăng nhập lại.” | | 3 | File size is larger than permission size. | Display message “Kích cỡ file lớn hơn quy định.” |   **Relationship:** Update Profile  **Business Rules:** N/A | | | | |

Table 26 <Admin><Doctor><Patient> Change picture profile

#### Functional Requirement 23 – Change Password

##### Use Case-23 Diagram

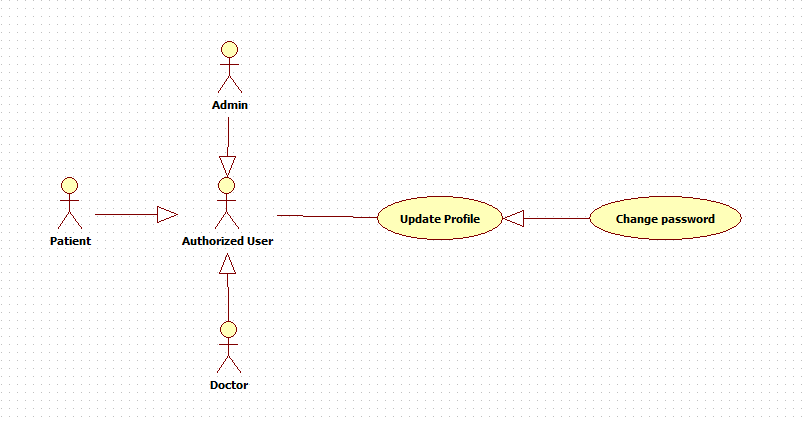


Figure 30 <Admin><Doctor><Patient> Change password

##### Use Case-23 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 17 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_017 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin><Doctor><Patient> Change Password | | | |
| **Author** | DanhTC | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Admin * Patient * Doctor.   **Summary:** This use case is about changing password for user.  **Goal:** User can change their password.  **Trigger:** Click on “Đổi mật khẩu” button on “Index” page to change password.  **Precondition:**   * Page is loaded successfully. * Users have already logged in.   **Post-condition:**   * Success: User’s password changed. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Đổi mật khẩu” link on profile page. [Alternative1] | Open “Đổi mật khẩu” pop-up page. | | 2 | User fills all mandatory fields. |  | | 3 | User clicks on “Đồng ý” button. [Alternative 1] | * Validate the inputted information * Update user in database. * Show message “Bạn đã thay đổi mật khẩu thành công”. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User clicks on “Bỏ Qua” button. | Close “Đổi mật khẩu” pop-up page. |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” | | 2 | When session timeout. | Display an informed message”Thời gian thực thi của bạn đã hết. Vui lòng đăng nhập lại.” |   **Relationship:** Update Profile  **Business Rules:** N/A | | | | |

Table 27 <Admin><Doctor><Patient> Change password

#### Functional Requirement 24 – Define New Medical Profile Template

##### Use Case-24 Diagram

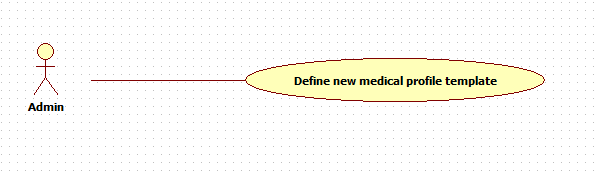


Figure 31 <Admin> Define new medical profile template

##### Use Case-24 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 17 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_024 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin> Define New Medical Profile Template | | | |
| **Author** | DanhTC | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:**   * Admin   **Summary:** This use case is about define new medical profile template.  **Goal:** User can define new medical profile template.  **Trigger:** Click on “Thêm mẫu hồ sơ mới” button on “Quản lý mẫu” page to define new medical profile template.  **Precondition:**   * Page is loaded successfully. * Users have already logged in.   **Post-condition:**   * Success: Define new medical profile template. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click on “Thêm mẫu hồ sơ mới” button on “Quản lý mẫu” page. [Alternative1] | Open “Thêm mẫu hồ sơ” pop-up page. | | 2 | User fills all mandatory fields. |  | | 3 | User clicks on “Tiếp tục” button. [Alternative 1] | * Validate the inputted information * Insert template in database. * Redirect to “Tạo mẫu hồ sơ” page. | | 4 | User drag fields want to create into “Mẫu hồ sơ”. | Fields will fix follow user drag in. | | 5 | Users click on “Lưu” button. | Display message “Mẫu hồ sơ đã được cập nhật thành công”. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User clicks on “Bỏ Qua” button. | Close “Thêm mẫu hô sơ” pop-up page. |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” | | 2 | When session timeout. | Display an informed message”Thời gian thực thi của bạn đã hết. Vui lòng đăng nhập lại.” |   **Relationship:** Define new medical profile  **Business Rules:** N/A | | | | |

Table 28 <Admin> Define new medical profile template

#### Functional Requirement 25 – Logout

##### Use Case-25 Diagram



Figure 32 <Admin><Doctor><Patient> Logout

##### Use Case-25 Specification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **USE CASE - 18 SPECIFICATION** | | | | |
| **Use-case No.** | UC\_025 | **Use-case Version** | | **1.0** |
| **Use-case Name** | <Admin><Doctor><Patient> Logout | | | |
| **Author** | SuTNT | | | |
| **Date** | 29/05/2014 | **Priority** | Normal | |
| **Actor:** Admin, patient, doctor  **Summary:** Log out system  **Goal:** Help user to log out their account.  **Triggers:** Click on “Đăng xuất” to log out  **Preconditions:**   * Page is loaded successfully. * Users have already logged in.   **Post-Conditions:**   * Success: users log out successfully. * Failure: System displays error message. Content of error message will specify in Exception section.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Đăng xuất” link on main page. | Logout user, redirect to Home page, logout successfully. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User clicks on “Không” button | Close confirm box. |   **Exception:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Internet connection has problem | Display message “Kết nối mạng bị lỗi. Xin thử lại” |   **Relationship:** Login  **Business Rules:** N/A | | | | |

Table 29 <Admin><Doctor><Patient> Logout

## Entity Relationship Diagram (ERD)

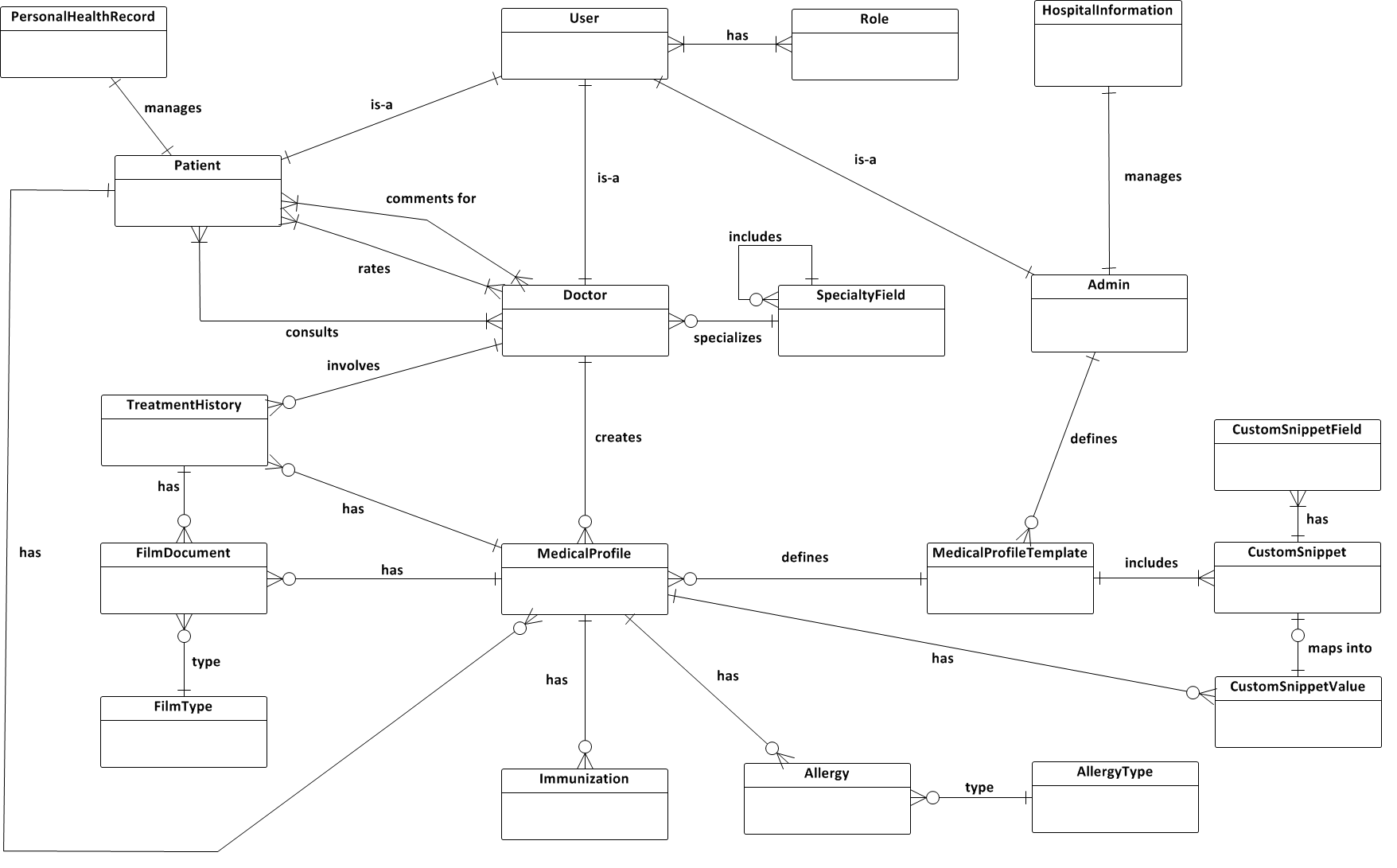


Figure Entity Relationship Diagram

## Data Dictionary

|  |  |
| --- | --- |
| **Entity Data dictionary: describe content of all entities** | |
| Entity Name | Description |
| User | Describe account of user of system. User can be: admin, patient, doctor… |
| Role | Describe role of user. |
| Doctor | Describe all doctors in system. |
| Admin | Describe administrator of system. Use this account to control other accounts, manage hospital information. |
| Patient | Describe all patients in system. Each patient maintain their own personal health record. |
| SpecialtyField | Manage specialty field of doctor. Currently, each doctor can be assigned to one specialty field. |
| HospitalInformation | Describe all detail information of a hospital. |
| PersonalHealthRecord | Describe some information about basic health of a patient. |
| MedicalProfileTemplate | Describe all medical profile template of hospital. They are managed by system admin. |
| CustomSnippet | Describe information to construct medical profile template |
| CustomSnippetField | Describe metadata for one CustomSnippet to easily visualize it. |
| CustomSnippetValue | Describe the value of a snippet that can be used for medical profile. |
| Immunization | Describe all immunizations that are belonged to medical profile. |
| Allergy | Describe all allergy that are belonged to medical profile. |
| AllergyType | Describe all type of allergy (Môi trường, Thức ăn, …) |
| MedicalProfile | Describe all medical profile that are defined by a medical profile template and are used for one patient. |
| TreatmentHistory | Describe all histories of treatment that are belonged to medical profile. |
| FilmDocument | Describe all film documents that are belonged to medical profile or treatment history. |
| FilmType | Describe all type of film document (X-Quang, Nội soi,…) |

# Software Design Description (SDD)

## Design Overview

* This document describes the technical and user interface design of OMCS system. It includes the architectural design, the detailed design of common functions and business functions and the design of database model.
* The architectural design describes the overall architecture of the system and the architecture of each main component.
* The detailed design describes static and dynamic structure for each component and functions. It includes class diagrams, class explanations and sequence diagrams for each use cases.
* The database design describes the relationships between entities and details of each entity.

## System Architectural Design



Figure 34: MVC Architecture

**(http://smist08.wordpress.com/tag/mvc/)**

**The Model** is the part of the application that handles the logic for the application data.  
Often model objects retrieve data (and store data) from a database.

**The View** is the parts of the application that handles the display of the data.  
Most often the views are created from the model data.

**The Controller** is the part of the application that handles user interaction.  
Typically controllers read data from a view, control user input, and send input data to the model.

**(**<http://www.w3schools.com/aspnet/mvc_intro.asp>**)**

## Component Diagram

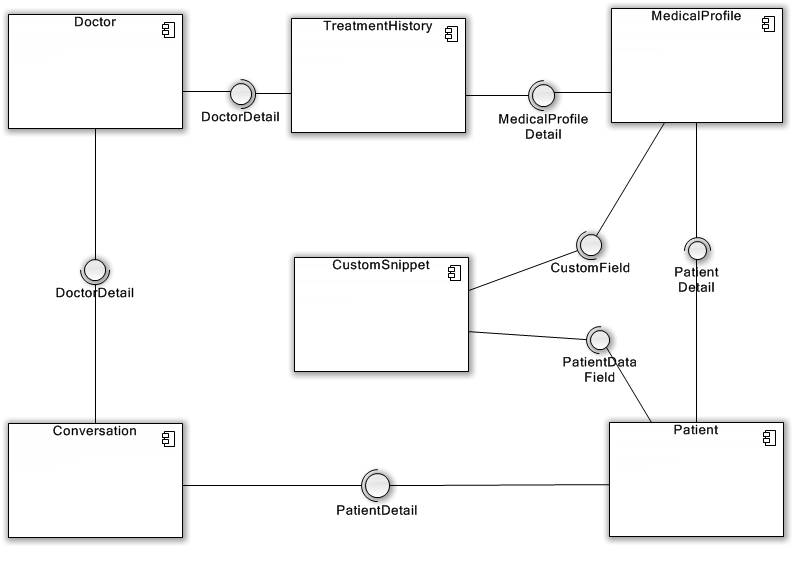


Figure 35: Component Diagram

## Detailed Description of Components

### Class Diagram

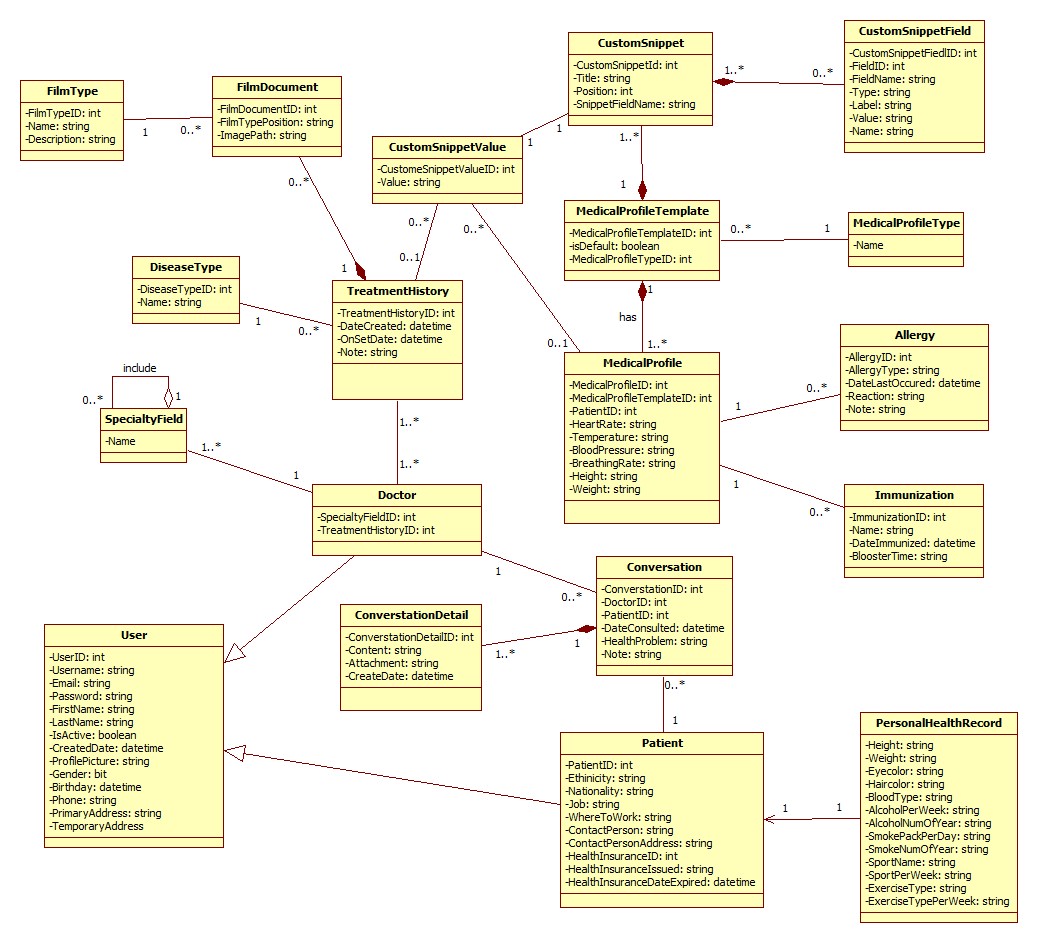


Figure 36: Class Diagram

### Class Diagram Explanation

#### User Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Visibility** | **Description** |
| UserID | int | public | ID of the user |
| Username | string | public | User name of the user |
| Email | string | public | Email of the user |
| Password | string | public | Password of the user |
| FirstName | string | public | First name of the user |
| LastName | string | public | Last name of the user |
| IsActive | boolean | public | Condition of the user’s account |
| CreatedDate | datetime | public | Created date of the user’s account |
| ProfilePicture | string | public | Profile picture name of the user |
| Gender | string | public | Gender of the user |
| Birthday | datetime | public | Birthday of the user |
| Phone | string | public | Phone of the user |
| PrimaryAddress | string | public | Primary address of the user |
| SecondaryAddress | string | public | Secondary address of the user |

#### SpecialtyField Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Visibility** | **Description** |
| Name | string | public | Name of the specialty field |

#### DiseaseType Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute Name** | **Type** | **Visibility** | **Description** |
| DiseaseTypeID | int | public | ID of the disease type |
| Name | string | public | Name of the disease type |

#### FilmType Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Type** | **Visibility** | **Description** |
| FilmTypeID | int | public | ID of the film type |
| Name | string | public | Name of the film type |
| Description | string | public | Description of the film type |

#### FilmDocument Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Type** | **Visibility** | **Description** |
| FilmDocumentID | int | public | ID of the film document |
| FilmTypePosition | string | public | Position of the film type |
| ImagePath | string | public | Path of the image |

#### CustomSnippetValue Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Type** | **Visibility** | **Description** |
| CustomSnippetValueID | int | public | ID of the custom snippet value |
| Value | string | public | Value of the custom snippet |

#### TreatmentHistory Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Type** | **Visibility** | **Description** |
| TreatmentHistoryID | int | public | ID of the treatment history |
| DateCreated | datetime | public | Created date of the treatment history |
| OnSetDate | datetime | public | Set date of the treatment history |
| Note | string | public | Note of the treatment history |

#### Doctor Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Type** | **Visibility** | **Description** |
| SpecialtyFieldID | int | public | ID of the specialty field |
| TreatmentHistoryID | int | public | ID of the treatment history |

#### ConversationDetail Model

#### CustomSnippet Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Type** | **Visibility** | **Description** |
| CustomSnippetID | int | public | ID of the custom snippet |
| Title | string | public | Title of the custom snippet |
| Position | int | public | Position of the custom snippet |
| SnippetFieldName | string | public | Name of the snippet field |

#### MedicalProfileTemplate Model

#### MedicalProfile Model

#### Conversation Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Type** | **Visibility** | **Description** |
| ConversationID | int | public | ID of the conversation |
| PatientID | int | public | ID of the patient |
| DoctorID | int | public | ID of the doctor |
| DateConsulted | datetime | public | Consulted date of the conversation |
| HealthProblem | string | public | Health problem of the conversation |
| Note | string | public | Note of the conversation |

#### Patient Model

#### CustomSnippetField Model

#### MedialProfileType Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Type** | **Visibility** | **Description** |
| Name | string | public | Name of the medical profile type |

#### Allergy Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Type** | **Visibility** | **Description** |
| AllergyID | int | public | ID of the allergy |
| AllergyTypeID | int | public | ID of the allergy type |
| DateLastOccurred | datetime | public | Last occurred date of the allergy |
| Reaction | string | public | Reaction of the allergy |
| Note | string | public | Note of the allergy |

#### Immunization Model

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Type** | **Visibility** | **Description** |
| ImmunizationId | int | public | ID of the immunization |
| Name | string | public | Name of the immunization |
| DateImmunized | datetime | public | Immunized date |
| BoosterTime | int | public | Booster time |

#### PersonalHealthRecord Model

## Sequence Diagram

### <Guest> Login

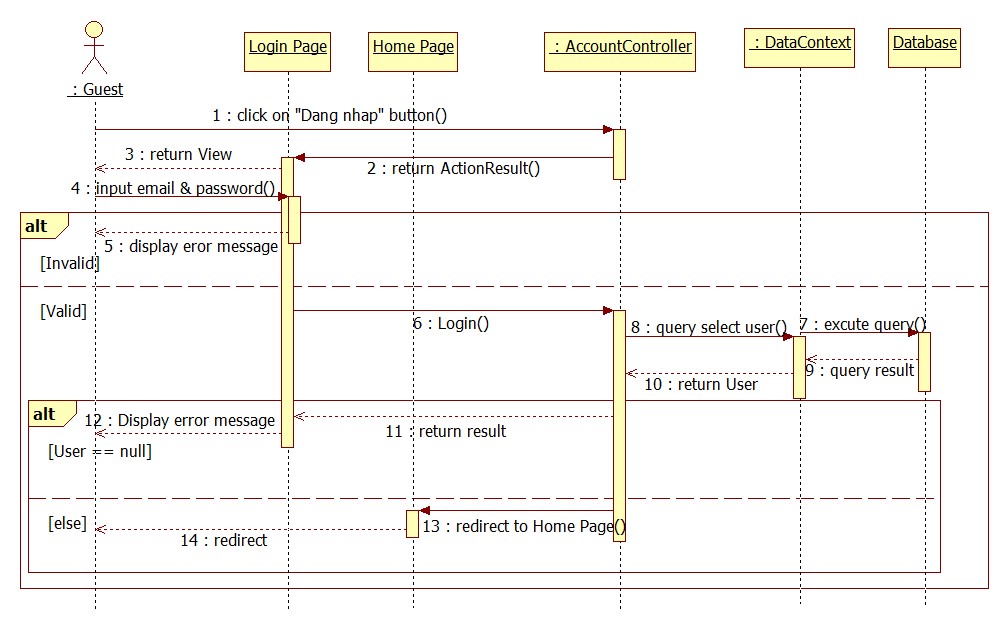


Figure 37: <Guest> Login Sequence Diagram

### <Guest> Register

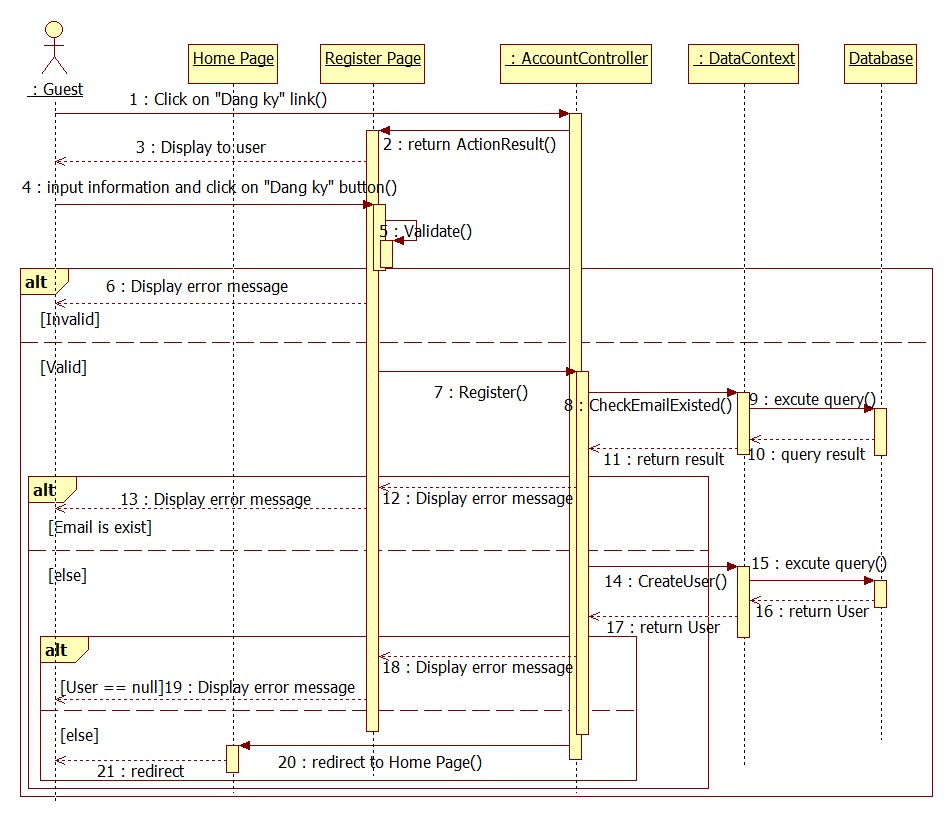


Figure 38: <Guest> Register Sequence Diagram

### <Authorized User> Change Password

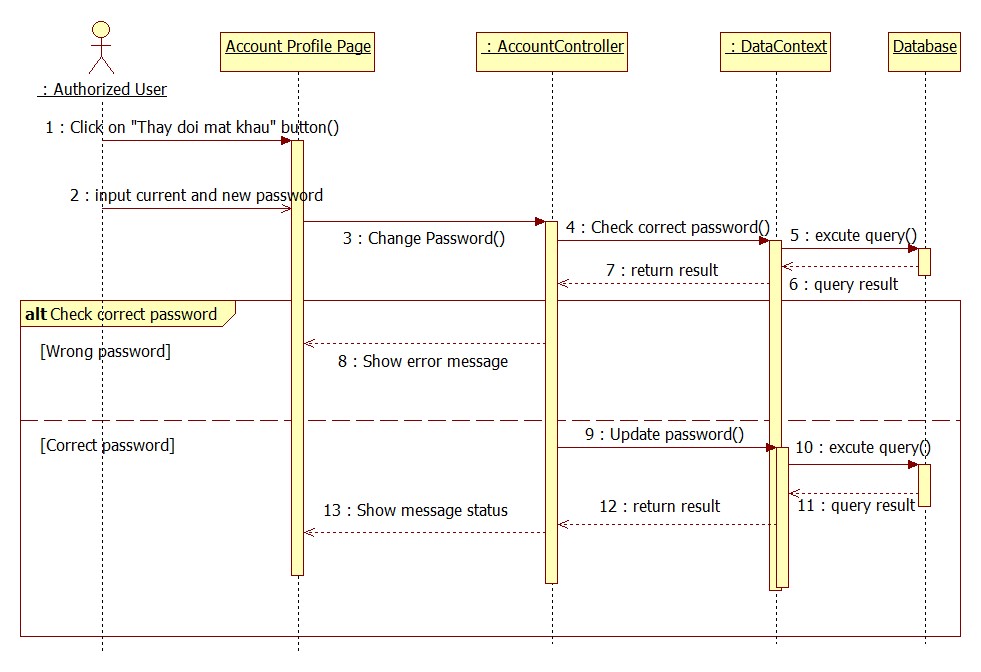


Figure 39: <Authorized User> Change Password Sequence Diagram

### <Authorized User> Change Profile Picture

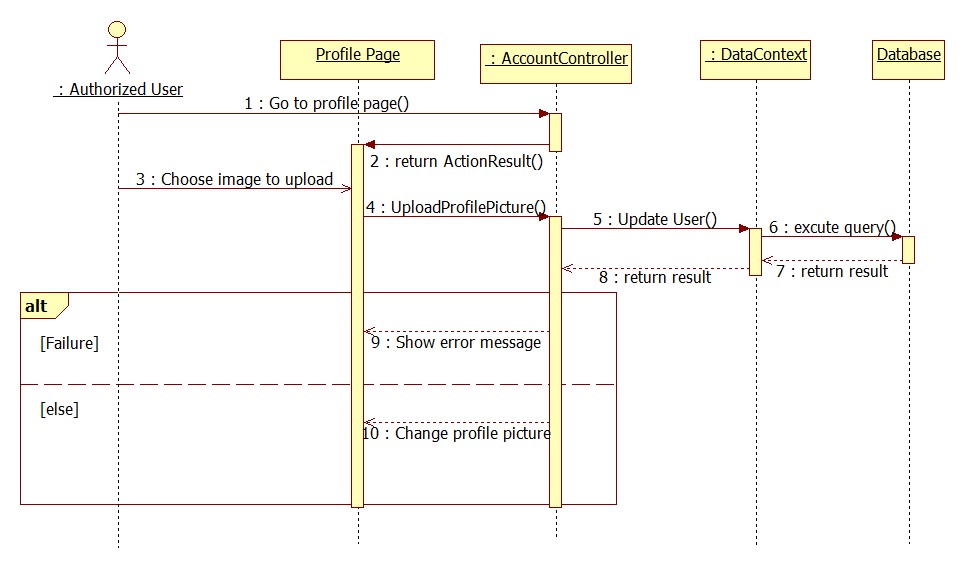


Figure 40: <Authorized User> Change Profile Picture Sequence Diagram

### <Patient> Conversation

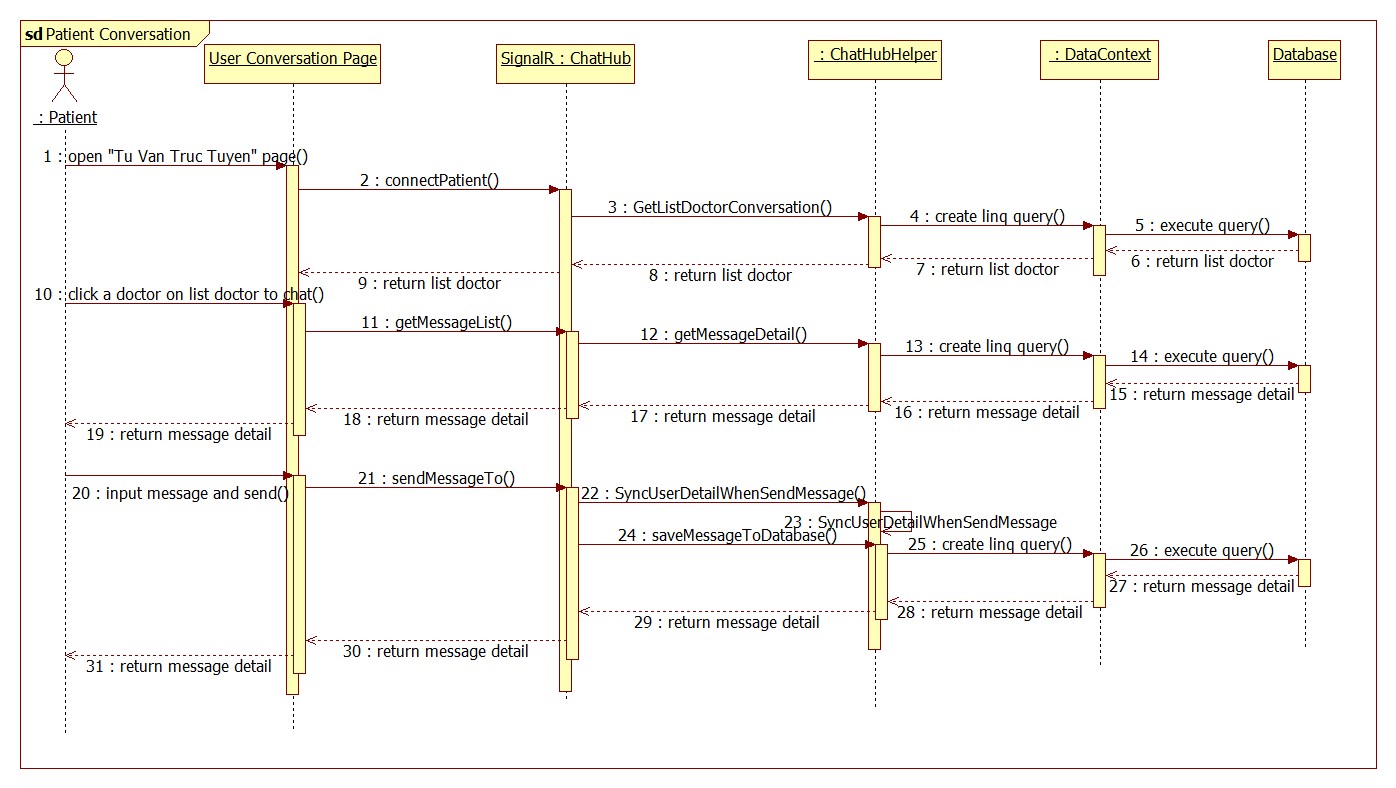


Figure 41: <Patient> Conversation Sequence Diagram

### <Doctor> Request Webcam

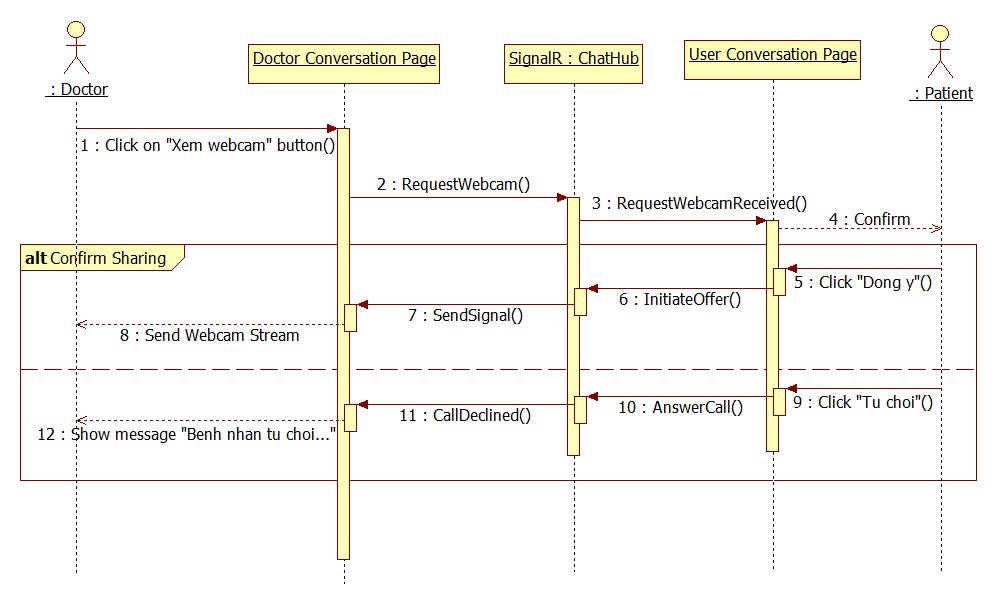


Figure 42: <Doctor> Request Webcam Sequence Diagram

### <Patient> Upload Attachment

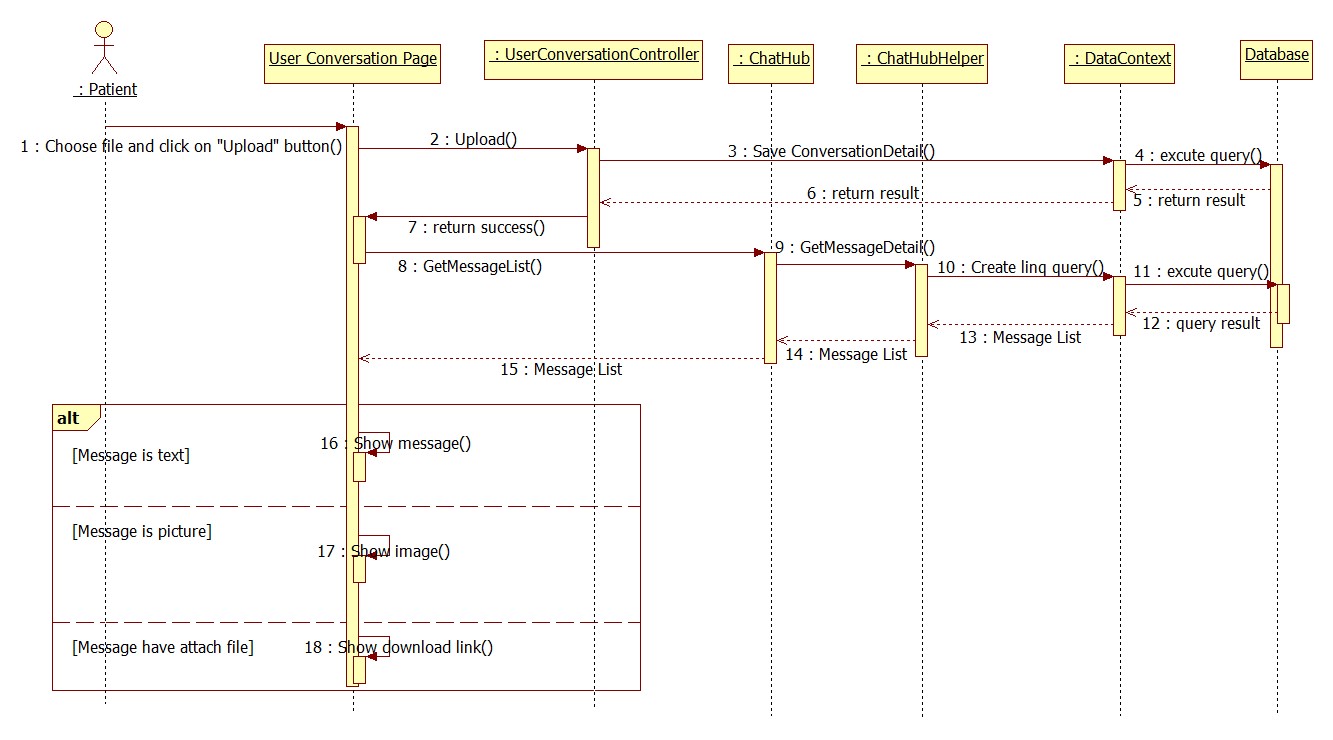


Figure 43: <Patient> Upload Attachment

### <Admin> Define New Medical Profile Template

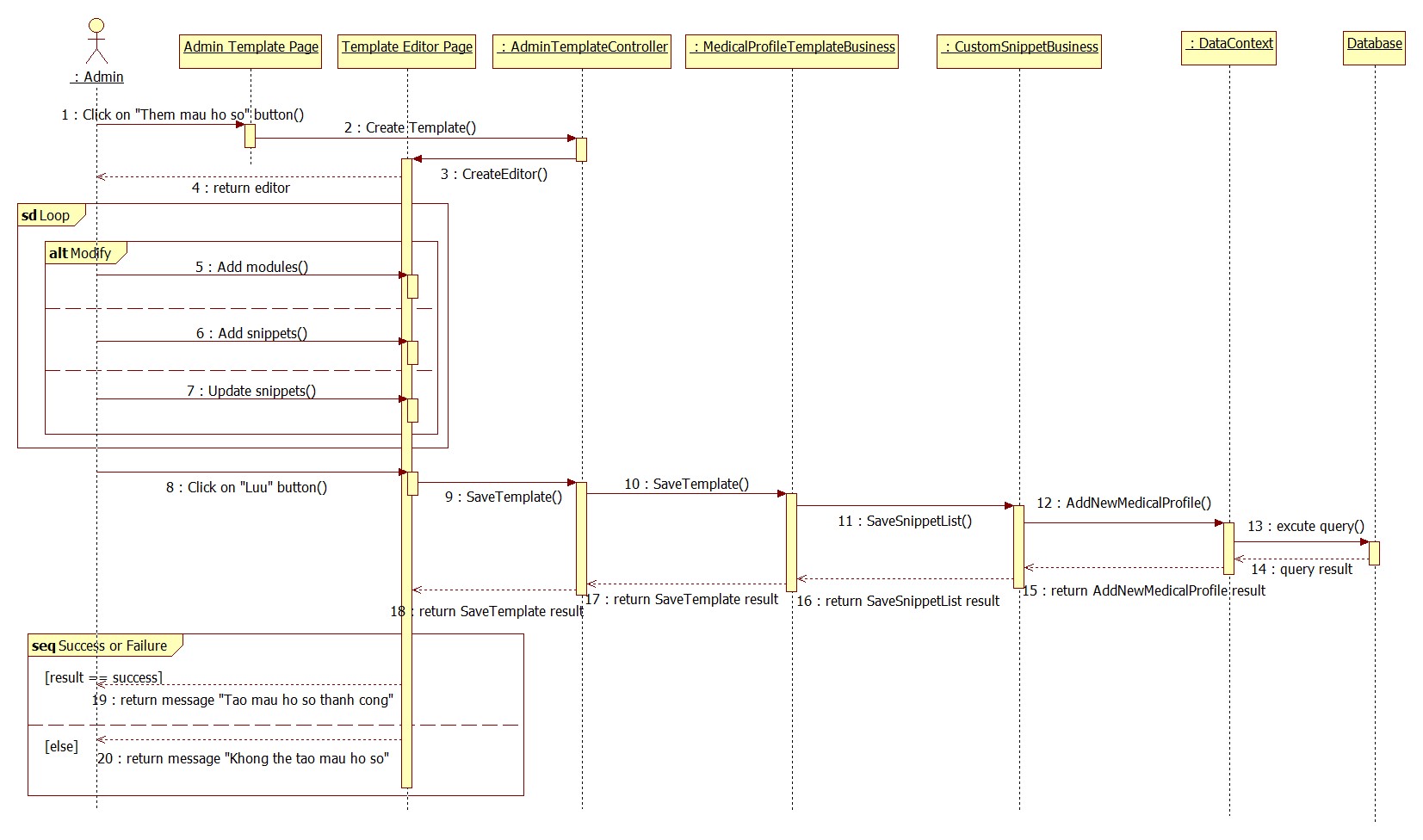


Figure 44 <Admin> Define New Medical Profile Template

### <Admin> Update Medical Profile Template

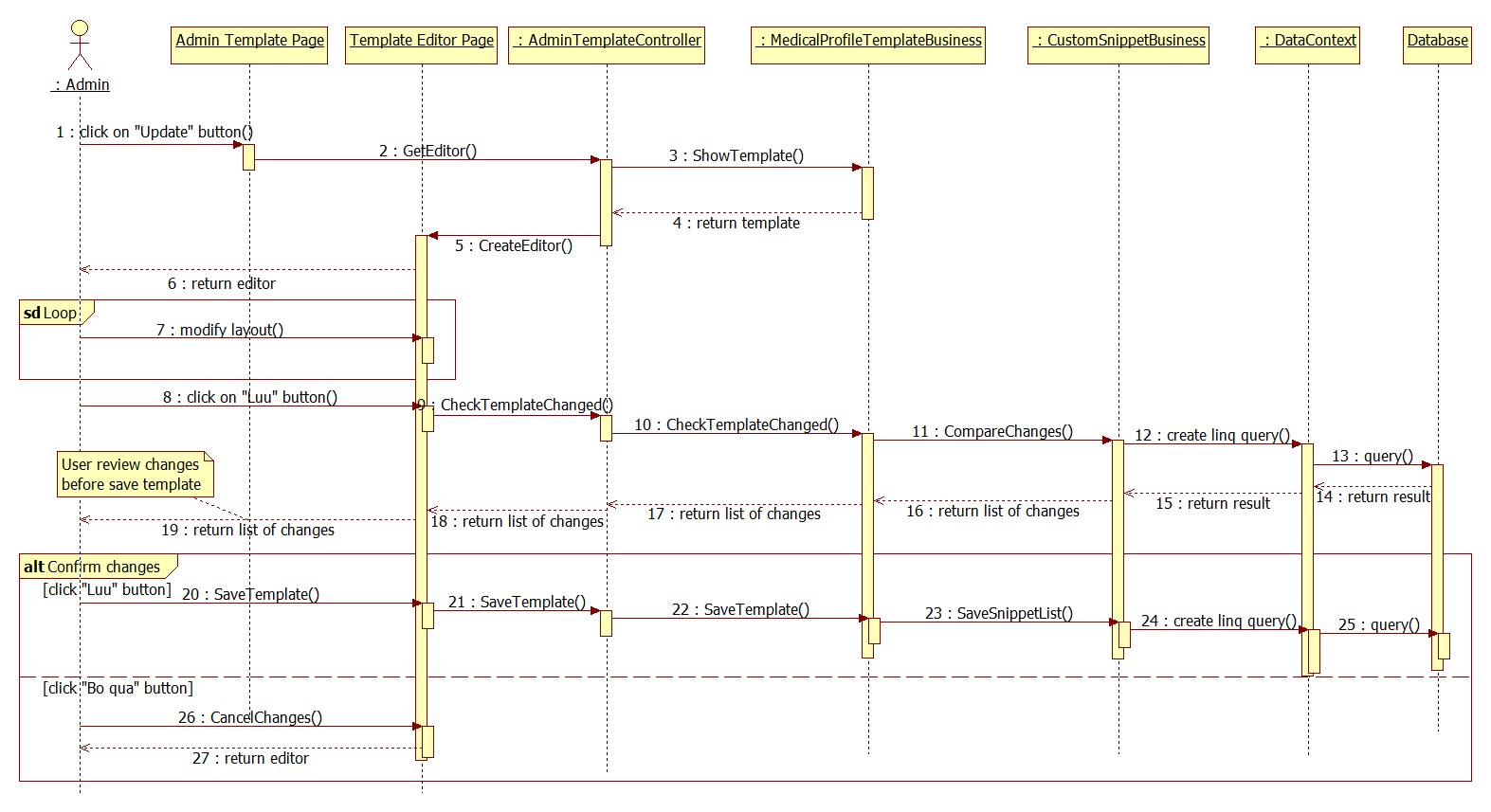


Figure 45 <Admin> Update Medical Profile Template

### <Doctor> Update Medical Profile

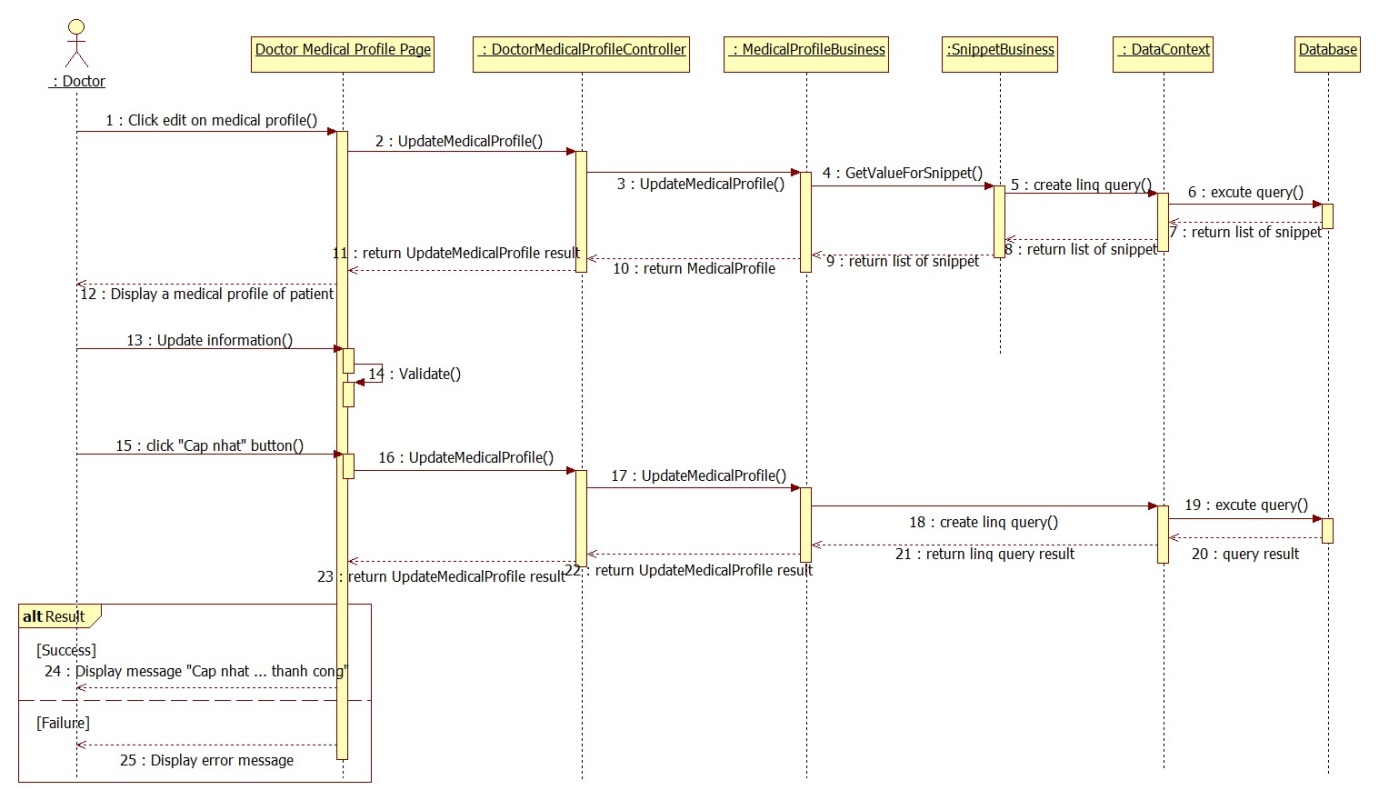


Figure 46: <Doctor> Update Medical Profile

### <Doctor> Views Medical Profile

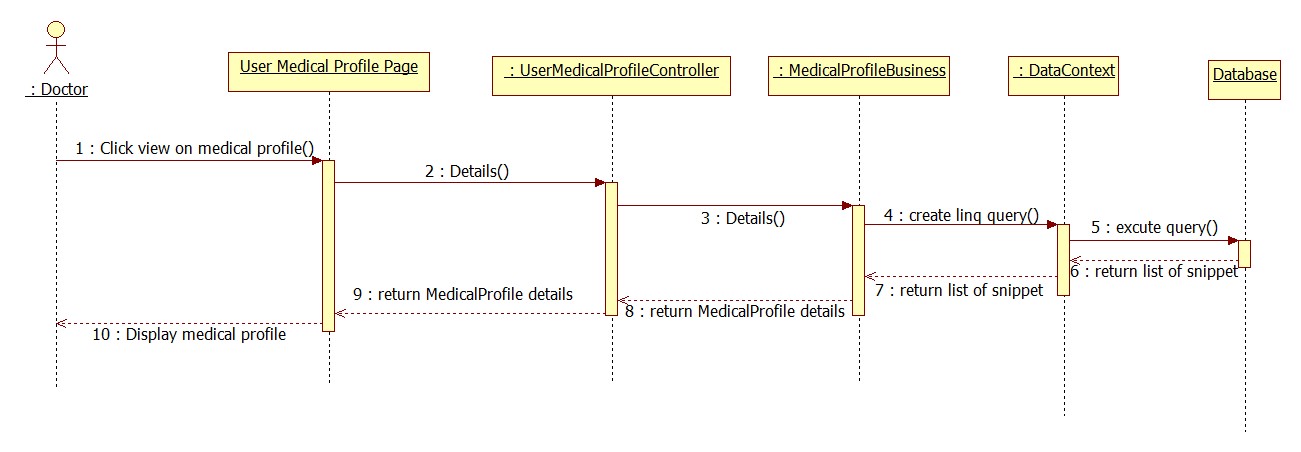


Figure 47: <Doctor> Views Medical Profile

### <Patient> Update Personal Health Record

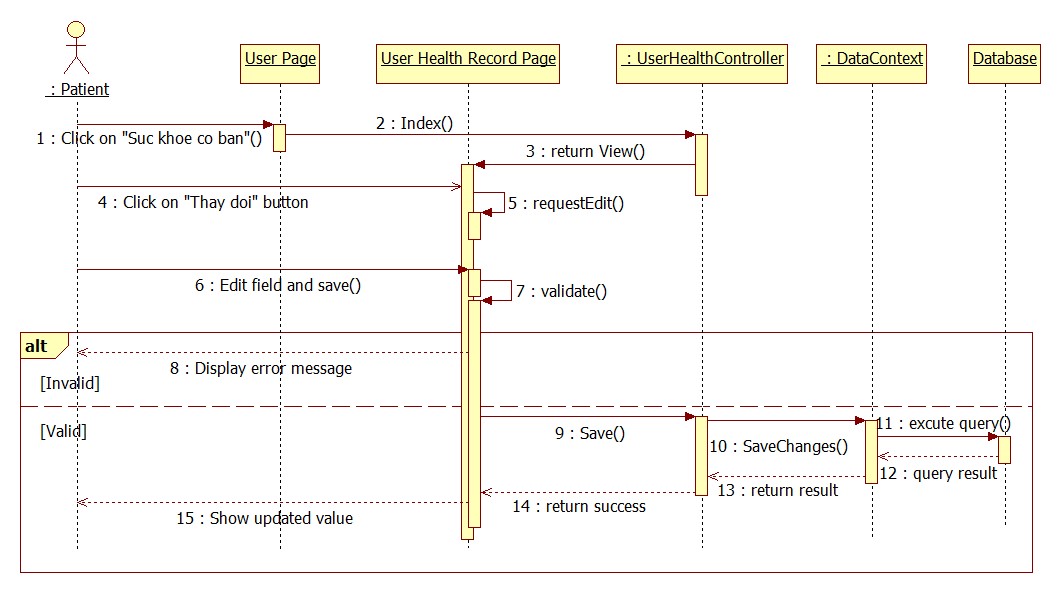


Figure 48: <Patient> Update Personal Health Record

### <Patient> View Medical Profile

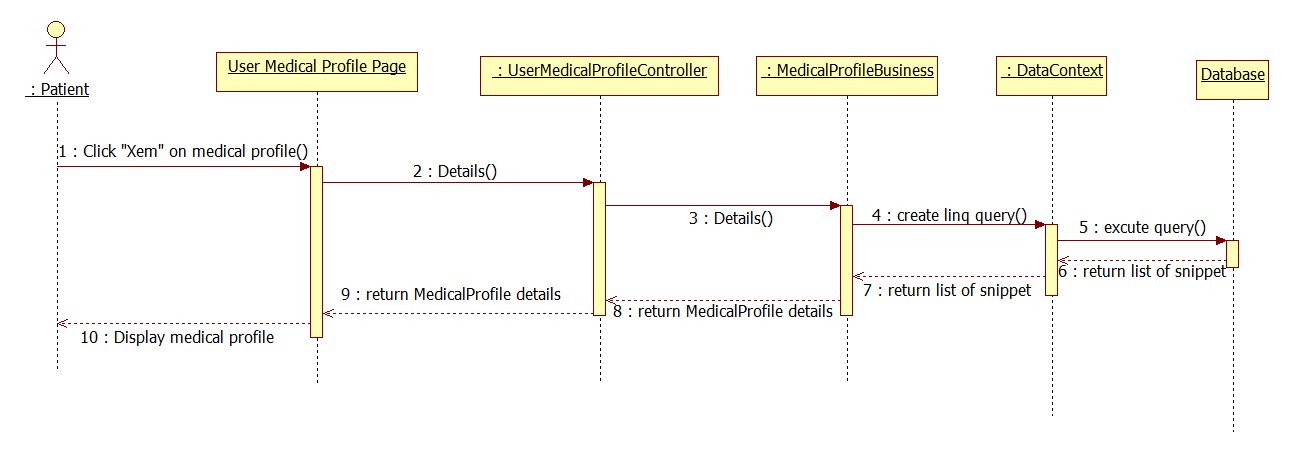


Figure 9: <Patient> View Medical Profile Record

## User Interface Design

## Database Design

