MINISTRY OF EDUCATION AND TRAINING

FPT UNIVERSITY

Capstone Project Document

ClinicManagement	
Group Members	Phạm Khương Duy - 60195 Nguyễn Văn Hơn - 60390 Lê Ngọc Thành - SE60620 Lê Văn Hùng - 60041
Supervisor	Mr. Nguyễn Văn Sang
Ext Supervisor	
Capstone Project code	CM

- Hanoi, 09/05/2016 -

1 Table of Contents

CHAPTER 1: INTRODUCTION....7
1.1 Purpose....7
1.2 Acronyms and Definitions....7
1.3 ABSTRACT....7
1.4 LITERATURE REVIEW....7
1.4.1 EvoMed....8
1.4.2 iHIS....8
1.5 PROPOSAL....9
1.5.1 The idea....9
1.5.2 Objectives....9
1.5.3 Brief description about system....9
1.5.4 System features....9
1.6 BENEFIT FROM PROJECT....10
1.6.1 For Organization....10
1.6.2 For Our group....10
1.6.3 For Community....10
1.7 CRITICAL ASSUMPTION AND CONSTRAINTS....11
1.8 POTENTIAL RISKS....11
1.9 REFERENCES....11
CHAPTER 2: PROJECT MANAGEMENT....12
2.1 Purpose....12
2.2 Definition and Acronyms....12
2.3 PROJECT OVERVIEW....12
2.3.1 Project Description....12
2.3.2 Scope....12
2.3.3 Standard Objectives....13
2.3.4 Milestone and Deliverables....13
2.4 PROJECT ORGANIZATION....14
2.4.1 Software Process Model....14
2.4.2 Project lifecycle....17
2.4.3 Roles and Responsibilities....18
2.5 TOOLS AND INFRASTRUCTURES....20

2.5.1 Hardware 20
2.5.2 Software 20
2.6 SCHEDULE 21
2.6.1 Detailed Schedule 21
2.6.2 Meeting Schedule 23
2.6.3 Effort Estimation 24
2.7 RISK MANAGEMENT 25
2.8 CODING CONVENTION 27
CHAPTER 3: SOFTWARE REQUIREMENTS SPECIFICATION 27
3.1 Overall Description 27
3.1.1 Business Process Overview 27
3.1.2 Product Features 27
3.1.3 User Characteristic 28
3.2 External Interface Requirements 28
3.2.1 User Interfaces 28
3.2.2 Communication Protocols 28
3.3 Entity Relation Model 29
3.3.1 Entity-Relationship Diagram 29
3.4 Functional Specification 30
3.4.1 UC001: Login 34
3.4.2 UC002: Log Out 36
3.4.3 UC003: View Profile 37
3.4.4 UC004: Edit Profile 39
3.4.5 UC005: Register 40
3.4.6 UC006: View Service 42
3.4.7 UC007: View Doctor Info 43
3.4.8 UC008: Appointment 44
3.4.9 UC009: View Medical History 46
3.4.10 UC010: View Appointment History 47
3.4.11 UC011: View List Staff 48
3.4.12 UC012: Add Staff 49
3.4.13 UC013: Edit Staff 51
3.4.14 UC014: View List Room 53

3.4.15 UC015: Add Room 54
3.4.16 UC016: Edit Room 55
3.4.17 UC017: Remove Room 57
3.4.18 UC018: View List Service 58
3.4.19 UC019: Add Service 59
3.4.20 UC020: Edit Service 61
3.4.21 UC021: Remove Service 62
3.4.22 UC022: View List Medicine 64
3.4.23 UC023: Add Medicine 65
3.4.24 UC024: Edit Medicine 66
3.4.25 UC025: Remove Medicine 68
3.4.26 UC026: View List Patient 69
3.4.27 UC026: View List Medical Record 70
3.4.28 UC028: View List Appointment 72
3.4.29 UC029: View List Working Time 73
3.4.30 UC030: Add Patient 74
3.4.31 UC031: Edit Patient 75
3.4.32 UC032: Add Medical Record 77
3.4.33 UC033: Add Working Time 78
3.4.34 UC034: Edit Working Time 80
3.4.35 UC035: Remove Working Time 81
3.4.36 UC036: Remove Appointment 83
3.4.37 UC037: View List Medical Record In Room 84
3.4.38 UC038: View Working Time 85
3.4.39 UC039: Edit Medical Record 86
3.4.40 UC040: Add Prescription 88
3.4.41 UC041: View List Invoice 90
3.4.42 UC042: Export File 91
3.4.43 UC043: View List Verify Medical Record 92
3.4.44 UC044: Verify Medical Record 93
3.4.45 UC045: View Working Result 95
3.4.46 UC046: Filter 96
3.4.47 UC047: Sort 97

3.4.48 UC048: Comment Appointment 98
3.5 Non-functional Specification 99
3.5.1 Reliability 99
3.5.2 Performance Requirements 99
3.5.3 User Interface 100
3.5.4 Hardware/Software Requirements 100
CHAPTER 4: SOFTWARE DESIGN 101
4.1 ARCHITECTURE DESIGN 101
4.1.1 Choice of Architecture Design 101
4.1.2 Description of System Interface 102
4.1.3 Architectural Presentation 102
4.1.4 Component/Package Design 104
4.2 DETAILED DESIGN 105
4.2.1 Common Design 105
4.2.2 Manage Service 106
4.2.3 Manage Room 113
4.2.4 Manage Medicine 119
4.2.5 Manage Staff 126
4.2.6 Patient 135
4.2.7 Doctor Management 141
4.2.8 Nurse Management 148
4.2.9 Manager 159
4.2.10 Reception Manager 162
4.3 DATABASE DESIGN 185
4.3.1 Database Diagram 186
4.3.2 Table Descriptions 186
CHAPTER 5: SOFTWARE TESTING DOCUMENTATION 193
5.1 Purposes 193
5.2 TEST PLAN 194
5.2.1 Scope of Testing 194
5.2.2 Requirements for Testing 194
5.2.3 Test Strategies 196
5.3 TEST CASES 201

5.3.1 Test Case Example 201
5.4 CHECKLISTS 202
5.4.1 Checklist about general 205
5.5 TEST LOGS 207
5.5.1 Defect Logs 207
5.5.2 Test Reports 208
CHAPTER 6: INSTALLATION GUIDE & USER MANUAL 208
6.1 INSTALLATION GUIDE 208
6.1.1 Purposes 208
6.1.2 Environments 208
6.1.3 Application Installation 209
15.1 USER's GUIDE 216
15.1.1 Purposes 216
15.1.2 Functional Description 216
6.3 PROJECT RESULT REPORT 300
6.3.2 Product Judging 300
6.3.3 Project Summary 300
6.3.4 Lessons Learnt 301

CHAPTER 1: INTRODUCTION

1.1 Purpose

This document is introduction about our capstone project in FPT University – Clinic Management Project. This project will help the clinic easy to manage clinic's information, patient's information, patient's medical examination history and patient's appointment calendar. Besides, patients can know their medical examination history and schedule appointment with doctor in the clinic.

1.2 Acronyms and Definitions

Acronym & Abbreviation	Definition	Note
CM	Clinic Management	

Table 1-1: Definitions and Acronyms

1.3 Abstract

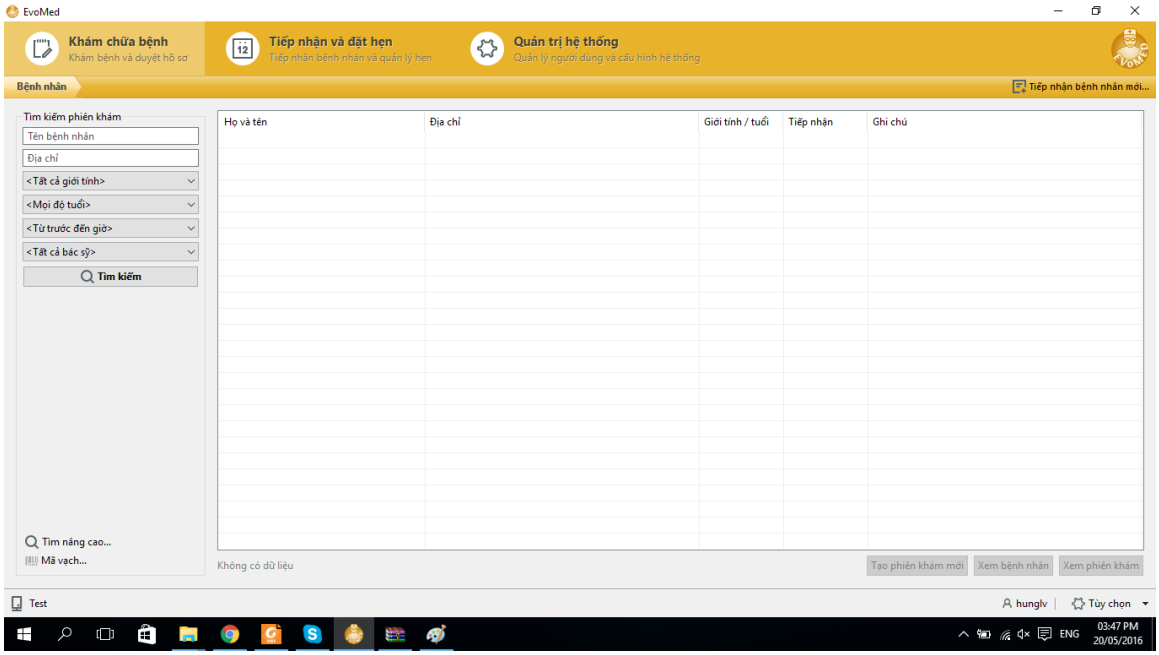
Medical Overview in Viet Nam: Medical is one of the most important subject of developing the country. Yearly, there are million patients who going to the hospital or the clinic have health check, try to be treated by doctor. Besides, the doctor has many works need to be handled everyday with hundred patients and the only tools to support them are paper and pens. Moreover, the medical history of patient is saving to health records. It is easily to be lost because of human careless. The result of this situation, the clinic is always in overloaded situation, the amount of work is increasing day by day, it can easily affect to the staff that execute medical process (doctor, nurse …).

For all the limitation of existing disadvantages above, we expect to develop a web application for the clinic that overcome the weakness, improve the performance of medical staff.

1.4 Literature review

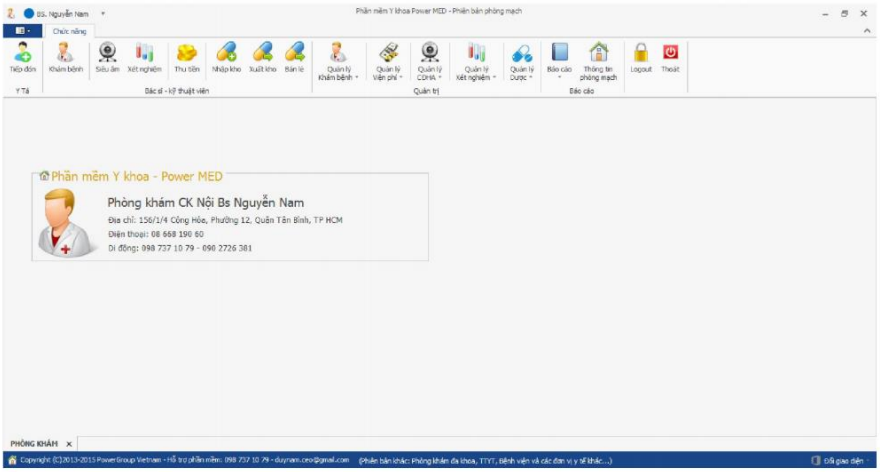
2 Through the network, I found plenty of group management software clinic as,EvoMed, iHIS, etc…

1.4.1 EvoMed



- Advantage:
  - Without networking
  - Support standard DICOM
  - Connect directly with laboratory management systems
  - Easy maintenance
- Disadvantage:
  - Patients do not interact with the system
  - Unable to connect to social networks
  - Patients easily loose history medical

1.4.2 iHIS



- Advantage:
    - Without networking
    - Support standard DICOM
    - Connect directly with laboratory management systems
    - Easy maintenance
- Disadvantage:
    - Patients do not interact with the system
    - Unable to connect to social networks
    - Patients easily loose history medical

1.5 Proposal

1.5.1 The idea

The idea of creating a clinic management application for website is not new; there are many existing webs now. However, our expected clinic management application is included some main functions of current webs and add to some special features such as an appointment, basic knowledge about some Common diseases, translation of multi-language.

1.5.2 Objectives

This project is the Capstone Project for all team members. We do this project to fulfill the requirements from FPT University studying program. During the time do this, we can learn how to develop a project, how to communicate with other team members, how to control time, how to do teamwork effectively. We also can work with some new technology such as develop for mobile, .NET technology etc. Therefore, after finishing this project, we can practice what we have learnt in university and learn so many new things. It is very necessary for our future work after graduating from FPT University.

1.5.3 Brief description about system

This project has two part that use for website and mobile. Users can easily find the functions they want with friendly and simple interface. This application helps patient who book an appointment, view medical records or knowledge of common diseases online, help the staff to handle medical procedure. Besides, the polyclinics can manage patient records and many other services. If they face any problem, they can get help from User Instruction and Feedback function.

1.5.4 System features

About the feature of clinic management system, it has main features of existing system such as create new medical record, open/view medical record, edit medical record, save medical record, delete medical record etc. There are the detailed functions of this system:

- **Create new appointment:** user create an appointment,
- **Create new medical records:** user creates medical record, it has all functions below:
    - **Add Profile**: fulfill patient individual information such as full name, birthday, gender, address, etc...
    - **Treatment**: a doctor checks the patient about health such as heart, blood pressure, blood group, etc... Then the doctor fill checked information.

- **Open/view existing medical records:** open medical records from storage and view it on screen.
- **Search medical records**: search medical records stored in Database by keyword.
- **Sort medical records**: sort all medical records stored in Database by alphabet or by modified time.
- **Delete medical records**: delete existing medical records stored in Database.
- **Save current medical records**: save a medical Records in Database.
- **Edit existing medical records**: edit existing medical records, it has all functions like when you create new medical records.
- **Report – Invoice**
    - Export Medical Examination Invoice
    - Export Medicine bill
    - Export Test bill
    - Report total income in a period of time

1.6 Benefit from project

1.6.1 For Organization

This project will help clinics reduce unnecessary tasks as well as improve productivity and operation of clinics. Also projects can be developed consistent expansion of hospitals and medical centers in the country and abroad.

1.6.2 For Our group

The benefits of the project to bring the group after being developed and implemented successfully:

- Enhance the ability teamwork: communication, conflict resolution, raise an opinion, to recognize strengths and weaknesses of each individual, etc...
- Enhance the experience and knowledge in project management: time management, job assignment and risks resolution, etc...
- The team members will enhance the technological knowledge and experience into practical use
- Understanding more about the medical knowledge.

1.6.3 For Community

When users use the system, they can get more benefits from it:

- Patients can schedule without having to wait for hours to clinic
- Patients, doctors and relatives easily manage patient records
- Doctors and nurses interact easier and less time-consuming
- Doctors will easily diagnose by viewing the medical history
- Clinic managers easily check and adjust the clinic by the report

1.7 Critical assumption and constraints

There are some assumptions that we realize after analyzing this project. The first assumption is about team member, We assume that all the developers are good at C# .NET technology such as (MVC4, Jquery, Javasrcipt , Ajax ,LINQ …). We have to study hard for being good at all of technology and for not missing any deadline of project plan. Besides, we also assume all of members do not have any health problems, so they are not absent and can do their works.

There are also some constraints of our project. Firstly, about the deadline, we have to finish this project on time. It has no extra time for us to complete developing application. Besides, the reports need to summited before deadline.

1.8 Potential risks

After analyzing this project, we may be facing some risks:

- We will not have enough time to do all things and miss the delivery deadline with the short duration (about 3 months).
- We don't have any knowledge about Clinic Management, so we need a lot of time to research
- It is the first time we do the project big like this, we will meet some problems about team communication and members will miss information.
- We don't have any experience about project management, risk management, etc. Thus, our project plan will be not good. We will meet the deadline and face to unknown risks.
- We will development in same project that make us easy to lose source code.

1.9 References

[1] http://evomed.vn/wiki/phan-mem-quan-ly-phong-kham-da-khoa/tinh-nang.html

[2] http://www.powersoft.vn/vi/news/San-pham/ihis-benh-vien-dien-tu-phien-ban-phong-kham-chuyen-khoa-9.html

CHAPTER 2: PROJECT MANAGEMENT

2.1 Purpose

Report2 is the document required in the process of graduation thesis of FPT University. It includes Introduction, Project Overview, Project Organization, Tools and infrastructures, schedule, risk management, quality management and coding convention. It helps the team members and the teachers understand our Capstone Project.

2.2 Definition and Acronyms

Acronym & Abbreviation	Definition	Note
RUP	Rational Unified Process	
ERD	Entity-relationship Diagram	
SRS	Software specification requirement	
SAD	Software architectural design	
SDD	Software detailed design	

Table 1-2: Definitions and Acronyms

2.3 Project overview

2.3.1 Project Description

Examination and treatment has always been of social concern. Today, the development of information technology has helped the clinic with the application process, but medical management software are the strengths and weaknesses. Our objective when developing the system will be based on the weaknesses. Patients easily treated and preserved medical history, examination schedule quickly. The office staff can manage patient records, appointments, medical examination done quickly and conveniently. Our systems help the interaction between patients and doctors easily because of the interaction of the patient to the system.

2.3.2 Scope

Our project scope is included:

- Developing user requirement and software
- Develop architecture and detailed design documents
- Coding and unit test
- Develop test case and execute system test
- The developing software will have the following functions

No	Group of Function	Function
1	Patient Management	Add/Edit profile account
		View medical history
		Book/review medical examination
2	Clinic Management	Add/Edit medical examination
		Add/Edit profile account of Patient
		View history of Patient
		Search Patient
		Add/Export Bill
		Add/Edit medical examination
3	Admin	Add/Edit Account of clinic staff
		Add/Edit room
		Add/Edit medicine
		Add/Edit service
4	Manager	View/Export Report

Table 2-1: Function Group

2.3.3 Standard Objectives

Metrics	Unit	Committed	Actual	Deviation
Start Date	dd-mm-yyyy	09-05-2016	09-05-2016	0 days
End Date	dd-mm-yyyy	23-08-2016	24-08-2016	0 days
Duration	elapsed days	77 days	78 days	0 days
Maximum Team Size	Person	4	4	0

Table 2-2: Project Standard Objectives

2.3.4 Milestone and Deliverables

No	Stage	Deliverable/ Milestone	Delivery Date	Inspect	Final	Delivery Location
1	Inception	Deliver Report No.1	20-05-2016			Project team
2	Inception	Project plan	26-05-2016			Project team

3	Inception	Deliver Report No.2	27-05-2016			Supervisor
4	Elaboration	User Requirement Specification	30-05-2016			Supervisor
5	Elaboration	Complete ERD	06-06-2016			Supervisor
6	Elaboration	Software Requirement Specification	10-06-2016			Supervisor
7	Elaboration	Deliver Report No.3	10-06-2016			Supervisor
8	Elaboration	Final Prototype	13-06-2016			Supervisor
9	Elaboration	System Architectural Design	16-06-2016			Supervisor
10	Elaboration	Deliver Report No.4	23-06-2016			Supervisor
11	Construction	Complete Coding	08-07-2016			Supervisor
12	Construction	Deliver Report No.5	22-07-2016			Supervisor
13	Construction	Deliver Report No.6	12-08-2016			Supervisor
15	Transition	The last Document and CD source code	23-08-2016			FU
16	Transition	Project completed	23-08-2016			FU

2.4 Project organization

2.4.1 Software Process Model

The Rational Unified Process is a Software Engineering Process. It is a set of principles for software development. It is an iterative software development process framework created by the Rational Software Corporation, a division of IBM since 2003. RUP is not a single concrete prescriptive process, but rather an adaptable process framework, intended to be tailored by the development organizations and software project teams that will select the elements of the process that are appropriate for their needs.

RUP is a specific implementation of the Unified Process." (Wikipedia, 2012, IBM Rational Unified Process, viewed 30 September 2013, http://en.wikipedia.org/wiki/IBM_Rational_Unified_Process)

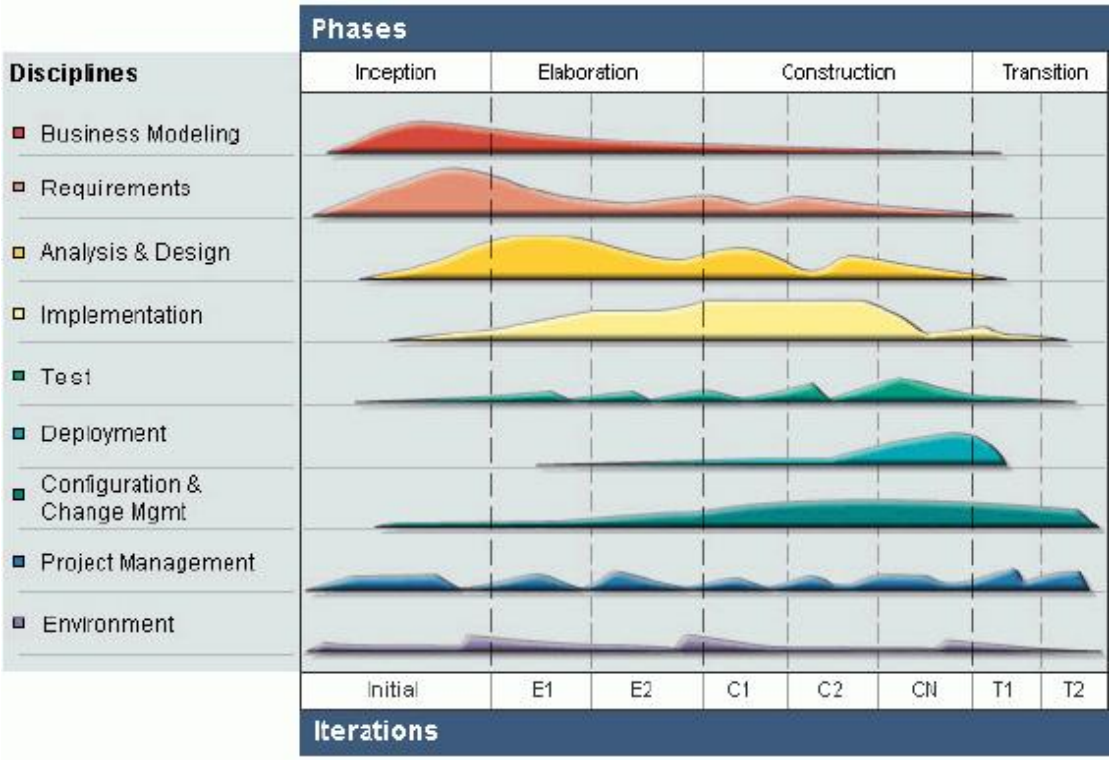


Figure 2-1: Rational Unified Process Model overview

RUP is based on a set of building blocks and content elements, describing what is to be produced, the necessary skills required and the step-by-step explanation describing how specific development goals are to be achieved. The main building blocks, or content elements, are the following:

• Roles (who): defines a set of related skills, competencies and responsibilities of an individual or a group of individuals as a team.

• Work Products (what): represents something resulting from a task, including all the documents and models produced while working through the process

• Task (how): describes a unit of work assigned to a Role that provides a meaningful result." (Wikipedia, 2012, IBM Rational Unified Process, viewed 30 September 2013, http://en.wikipedia.org/wiki/IBM_Rational_Unified_Process)

RUP is based on a set of building blocks, or content elements, describing what is to be produced, the necessary skills required and the step – by – step explanation describing how specific development goals are to be achieved. The main building blocks, or content elements, are the following.

Workers (who):defines the behavior and responsibilities of an individual, or a group of individuals working together as a team.

Artifacts (what): An artifact is a piece of information that is produced, modified, or used by a process. Artifacts are the tangible products of the project, the things the project produces or uses while working towards the final product.

Activities (how):An activity of a specific worker is a unit of work that an individual in that role may be asked to perform.

Workflows (when): is a sequence of activities that produces a result of observable value.

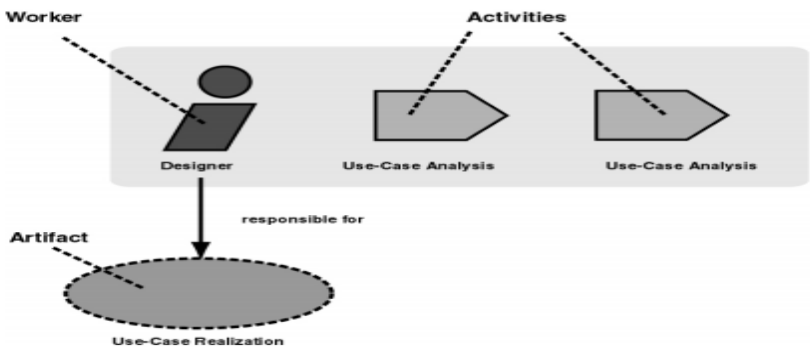


Figure 2-2: Workers, activities and artifacts

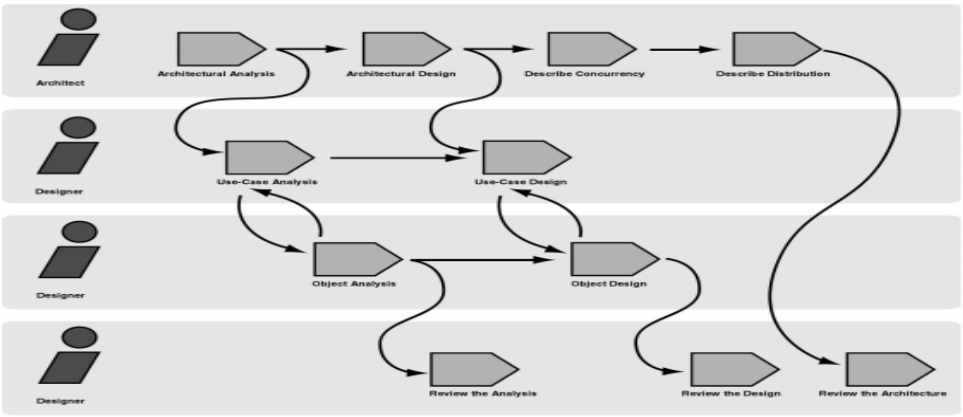


Figure 2-3: Example of workflow

The core process workflows are divided into six core “engineering” workflows

- **Six “engineering disciplines”:**
  - **Business modeling workflow**: In Business Modeling we document business processes using so called business use cases. This assures a common understanding among all stakeholders of what business process needs to be supported in the organization.
  - **Requirements workflow**: The goal of the Requirements workflow is to describe what the system should do and allows the developers and the customer to agree on that description.

- **Analysis and design workflow**: The goal of the Analysis & Design workflow is to show how the system will be realized in the implementation phase.
- **Implementation workflow**: The purpose of implementation is to define the organization of the code, to implement classes and objects in terms of components, to test the developed components as units, to integrate the results produced by individual implementers.
- **Test workflow**: The purposes of testing are to verify the interaction between objects, to verify the proper integration of all components of the software, to verify that all requirements have been correctly implemented, to identify and ensure defects are addressed prior to the deployment of the software.
- **Deployment workflow**: The purpose of the deployment workflow is to successfully produce product releases, and deliver the software to its end users. It covers a wide range of activities including.

- **Three supporting disciplines:**

  - **Configuration and change management workflow**: Software Project Management is the art of balancing competing objectives, managing risk, and overcoming constraints to deliver, successfully, a product in which meets the needs of both customers (the payers of bills) and the users.
  - **Project management workflow**: In this workflow we describe how to control the numerous artifacts produced by the many people who work on a common project.
  - **Environment workflow**: The purpose of the environment workflow is to provide the software development organization with the software development environment – both processes and tools – that are needed to support the development team.

2.4.2 Project lifecycle

Apply RUP model, Project lifecycle has fours phase:

- Inception Phase: Inception is the first phase of process. In this startup phase, we should provide business case of the system and determine the scope of project. Besides, we have to create the project management plan that has project schedule, effort estimation and risk management etc. At the end of this phase, we should check the objectives of project and decide whether to continue development or not. Hence, Inception phase must be properly planned and done. Based activities of this phase:
  Study business case and feasibility study of project
  - Complete draft ERD of system
  - Complete draft screen prototypes
  - Complete draft requirements
  - Determine project scopes
  - Complete project management plan
- Elaboration Phase: The objectives of this phase are to determine appropriate architectural and construction plan for the project. The architectural decision needs to be made for the entire system, and to describe most of the requirements of system. At the end of this phase, we must examine the objectives and scopes, the choice of architecture and decide whether to proceed to the next phase. Based activities of this phases:

- Complete user requirement specification
- Complete ERD, final prototypes
- Complete Software Requirement Specification
- Complete database model
- Complete System Architecture Design

- Construction Phase: Construction is the third phase of RUP lifecycle. In this phase, we must have done all the coding and testing work. After coding, developers will do unit test themselves, then test team will do functional test and regression test when finishing all. Based activities of this phase:
  - Complete coding and unit test
  - Complete functional and regression test
  - Complete user manual
- Transition Phase: Transition is the final phase of the RUP lifecycle. In this phase, project team has to deploy the application and give it to users. The next step is receiving feedback from users to identify the problems and then complete the system. Based activities of this phase:
  - Deploy the system
  - Deliver source code
  - Complete all reports and documents

2.4.3 Roles and Responsibilities

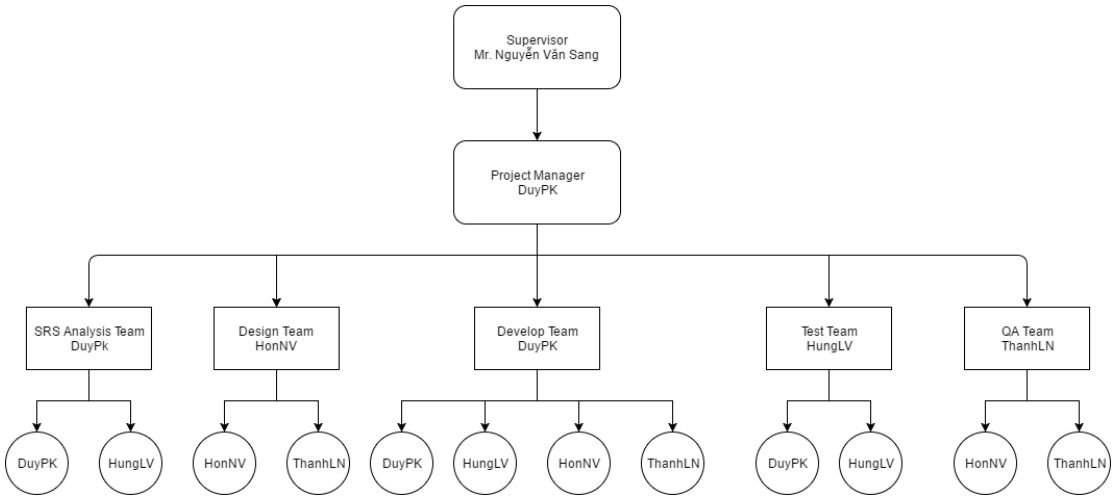


Figure 2-4: Project Organization

Member	Roles and Responsibilities	
	Roles	Responsibilities
DuyPK	• Project Manager • Technical Leader	- Create Work Breakdown Structure - Manage project stakeholders, project team, project risk, project schedule,

	• SRS Analysis Leader • Tester	project budget, project conflicts. - Track progress and adjust the work of the team members - Communication with other members and supervisor - Manage the technology of project - Co-operate with Developer to create software specification requirement (SRS), architectural design (SAD) and software detailed design (SDD). - Review document, product, and reports. - Unit test. - Write report - Support other team members.
HungLV	• Test Leader • Developer • SRS Analysis	- Coding - Create software specification requirement (SRS). - Create the test plan based on project plan and SRS, SDD documents. - Delegate testing tasks to testers and manage the rate of progress. - Create test data for all functions in both mobile and web application. - Create test cases for the system, both in document and script. - Write report - Execute test to ensure all functions fulfil requirements. - Support other team members.
HonNV	• Design Leader • Developer	- Design and develop web interface - Create plan to Font-end

	• QA Member	- Project Quality Assurance - Coding - Write report - Support other team members.
ThanhLN	• QA Leader • Developer • Design Member	- Manage the quantity of project - Coding - Draw mock-up and design web font-end - Write Report - Support other team members.

2.5 Tools and infrastructures

2.5.1 Hardware

No	Name	Purpose	Detail
1	Laptop	• Developing • Deploying • Testing	• HDD: 500GB • Ram: 4GB • Processor: Core I3 2.4 or Higher
2	Server Computer	Keep project source	Service from Github: https://github.com/

2.5.2 Software

No	Name		Version
1	Software	Microsoft Office	2016
		Microsoft Project	2013
		Visual Studio	2015 update 2
		Microsoft SQL server	2012
		Software Ideas Modeler	10
		Microsoft Windows	7, 8.1, 10
2	Framework	.Net Framework	4.6

2.6 Schedule

2.6.1 Detailed Schedule

2	ClinicManagement	77 days	Mon 5/9/16	Tue 8/23/16
3	Inception	15 days	Mon 5/9/16	Fri 5/27/16
4	Prepare Project	1 day	Mon 5/9/16	Mon 5/9/16
5	System feasible study	1 day	Tue 5/10/16	Tue 5/10/16
6	Kick-off meeting	0.5 days	Wed 5/11/16	Wed 5/11/16
7	Study business domain and context	1.5 days	Wed 5/11/16	Thu 5/12/16
8	Define business situation	2 days	Fri 5/13/16	Mon 5/16/16
9	Define project and system scope	2 days	Tue 5/17/16	Wed 5/18/16
10	Write report No.1: Introduction	1 day	Thu 5/19/16	Thu 5/19/16
11	Review & update report No.1: Draft version	1 day	Fri 5/20/16	Fri 5/20/16
12	Submit report No.1 Final Version	0 days	Fri 5/20/16	Fri 5/20/16
13	Technologies	5 days	Mon 5/16/16	Fri 5/20/16
14	Prepare development enviroment	2 days	Mon 5/16/16	Tue 5/17/16
15	Install SQL server 2012 and Visual 2015	1 day	Wed 5/18/16	Wed 5/18/16
16	Review technology and framework	2 days	Thu 5/19/16	Fri 5/20/16
17	Requirement	8 days	Wed 5/11/16	Fri 5/20/16
18	Collect business requirement and processes	3 days	Wed 5/11/16	Fri 5/13/16
19	Create draft screen prototypes	1 day	Mon 5/16/16	Mon 5/16/16
20	Review and edit screen prototypes	1 day	Tue 5/17/16	Tue 5/17/16
21	Complete draft screen prototypes	1 day	Wed 5/18/16	Wed 5/18/16
22	Create draft software requirement	1 day	Thu 5/19/16	Thu 5/19/16
23	Complete draft software requirement	1 day	Fri 5/20/16	Fri 5/20/16
24	Develop Project Plan	5 days	Mon 5/23/16	Fri 5/27/16
25	Problem definition	1 day	Mon 5/23/16	Mon 5/23/16
26	Create project schedule	2 days	Tue 5/24/16	Wed 5/25/16
27	Create report No.2: Project management Plan	1 day	Wed 5/25/16	Wed 5/25/16
28	Review and edit project management plan	1 day	Thu 5/26/16	Thu 5/26/16

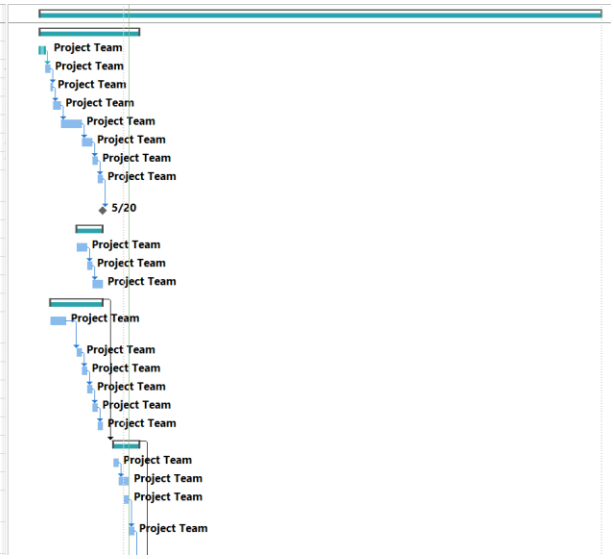


Figure 2-5: Project Plan-1

29	Review and give comment Report No.2: Draft	1 day	Fri 5/27/16	Fri 5/27/16
30	Submit report No.2 Final Version	0 days	Fri 5/27/16	Fri 5/27/16
31	Elaboration	19 days	Mon 5/30/16	Thu 6/23/16
32	Technologies	11 days	Mon 5/30/16	Mon 6/13/16
33	Coding prototypes	11 days	Mon 5/30/16	Mon 6/13/16
34	User Requirements Specification	6 days	Mon 5/30/16	Mon 6/6/16
35	Create use-case model	3 days	Mon 5/30/16	Wed 6/1/16
36	Develop main functions and processes	3 days	Thu 6/2/16	Mon 6/6/16
37	System Requirement Specification	10 days	Mon 5/30/16	Fri 6/10/16
38	Create entity relation diagram	3 days	Mon 5/30/16	Wed 6/1/16
39	Complete ERD	1 day	Mon 6/6/16	Mon 6/6/16
40	Create report No.3	3 days	Tue 6/7/16	Thu 6/9/16
41	Review & give comment Report No.3: Draft version	1 day	Fri 6/10/16	Fri 6/10/16
42	Submit Report No.3: Final version	0 days	Fri 6/10/16	Fri 6/10/16
43	Design	14 days	Mon 6/6/16	Thu 6/23/16
44	Create Design Overview	1 day	Mon 6/13/16	Mon 6/13/16
45	System Architectural Design	4 days	Mon 6/13/16	Thu 6/16/16
46	Define the system structure and collect system feature	1 day	Mon 6/13/16	Mon 6/13/16
47	Study the common System Architetu	2 days	Mon 6/13/16	Tue 6/14/16
48	Choice of System Architeture	1 day	Mon 6/13/16	Mon 6/13/16
49	Discussion of Alternative Design	1 day	Mon 6/13/16	Mon 6/13/16
50	Detail database design	5 days	Mon 6/6/16	Fri 6/10/16
51	Component Diagram	4 days	Mon 6/20/16	Thu 6/23/16
52	Define the component	1 day	Mon 6/20/16	Mon 6/20/16
53	General component diagram	1 day	Tue 6/21/16	Tue 6/21/16
54	Detail component diagram	2 days	Wed 6/22/16	Thu 6/23/16
55	Detailed description of components	8 days	Mon 6/13/16	Wed 6/22/16
56	CRC Cards (Class-Responsibility-Collaborators)	3 days	Mon 6/13/16	Wed 6/15/16

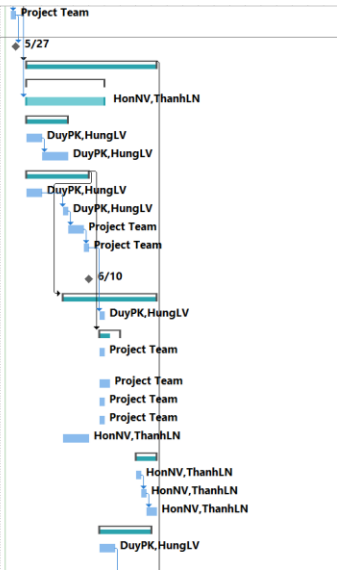


Figure 1-6: Project Plan-2

57	Create Class diagram	3 days	Thu 6/16/16	Mon 6/20/16
58	Details description of component (Client component)	2 days	Tue 6/21/16	Wed 6/22/16
59	**User Interface Design**	**5 days**	**Fri 6/17/16**	**Thu 6/23/16**
60	Desciption of the UI	5 days	Fri 6/17/16	Thu 6/23/16
61	Create Report No.4: SDS	5 days	Thu 6/16/16	Wed 6/22/16
62	Review and give comment Report No.4: Draft version	1 day	Thu 6/23/16	Thu 6/23/16
63	Submit Report No.4: Final version	0 days	Thu 6/23/16	Thu 6/23/16
64	**Construction**	**36 days**	**Fri 6/24/16**	**Fri 8/12/16**
65	**Requirement and Design**	**2 days**	**Fri 6/24/16**	**Mon 6/27/16**
66	Refine requirement document	2 days	Fri 6/24/16	Mon 6/27/16
67	Refine design document	2 days	Fri 6/24/16	Mon 6/27/16
68	**Coding and UnitTest**	**11 days**	**Fri 6/24/16**	**Fri 7/8/16**
69	Login, Logout, Change password	1 day	Fri 6/24/16	Fri 6/24/16
70	Manage Appointment schedule	5 days	Mon 6/27/16	Fri 7/1/16
71	Manage Medical Form	2 days	Mon 6/27/16	Tue 6/28/16
72	View Patient's History	1 day	Mon 6/27/16	Mon 6/27/16
73	Manage Patient's account	2 days	Mon 6/27/16	Tue 6/28/16
74	Manage Clinic Room	2 days	Mon 7/4/16	Tue 7/5/16
75	Manage Medicine	2 days	Mon 7/4/16	Tue 7/5/16
76	Manage Clinic's Service	2 days	Mon 7/4/16	Tue 7/5/16
77	Manage Employee's Account	2 days	Mon 7/4/16	Tue 7/5/16
78	View Report	2 days	Mon 7/4/16	Tue 7/5/16
79	UnitTest Login, Logout, Change password	1 day	Mon 6/27/16	Mon 6/27/16
80	UnitTest Manage Appointment schedule	5 days	Mon 7/4/16	Fri 7/8/16
81	UnitTest Manage Medical Form	2 days	Wed 6/29/16	Thu 6/30/16
82	UnitTest View Patient's History	2 days	Tue 6/28/16	Wed 6/29/16
83	UnitTest Manage Patient's account	2 days	Wed 6/29/16	Thu 6/30/16
84	UnitTest Manage Clinic Room	2 days	Wed 7/6/16	Thu 7/7/16

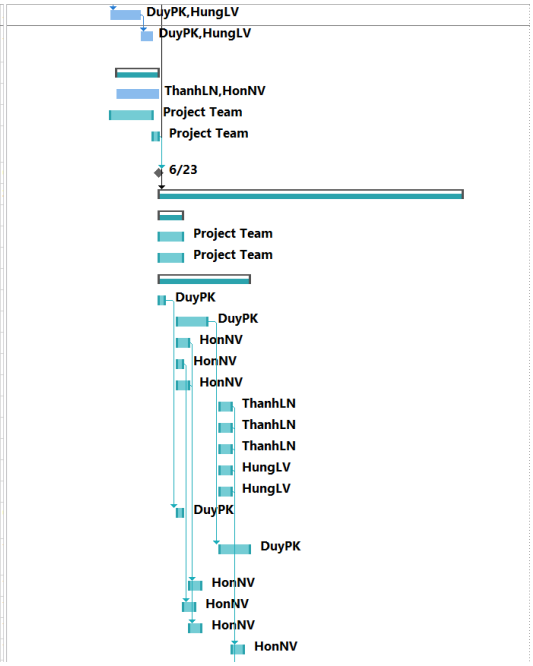


Figure 2-7: Project Plan-3

85	UnitTest Manage Medicine	2 days	Wed 7/6/16	Thu 7/7/16
86	UnitTest Manage Clinic's Service	2 days	Wed 7/6/16	Thu 7/7/16
87	UnitTest Manage Employee's Account	2 days	Wed 7/6/16	Thu 7/7/16
88	Unit Test View Report	2 days	Wed 7/6/16	Thu 7/7/16
89	**Testing**	**35 days**	**Mon 6/27/16**	**Fri 8/12/16**
90	**Create test document (Report 5)**	**6 days**	**Mon 6/27/16**	**Mon 7/4/16**
91	Create test plan	2 days	Mon 6/27/16	Tue 6/28/16
92	Create test case	3 days	Mon 6/27/16	Wed 6/29/16
93	Create test check-list	2 days	Tue 6/28/16	Wed 6/29/16
94	Execute Functional Test	7 days	Thu 6/30/16	Fri 7/8/16
95	Execute regression test	5 days	Wed 7/13/16	Tue 7/19/16
96	Create Report No.5	2 days	Wed 7/20/16	Thu 7/21/16
97	Review and give comment Report No.5: Draft version	1 day	Fri 7/22/16	Fri 7/22/16
98	Submit Report No.5: Final version	0 days	Fri 7/22/16	Fri 7/22/16
99	Create Report No.6	4 days	Mon 7/25/16	Thu 7/28/16
100	Review and give comment Report No.6	1 day	Fri 7/29/16	Fri 7/29/16
101	Submit Report No.6: Final version	0 days	Fri 7/29/16	Fri 7/29/16
102	Create Final Report	9 days	Mon 8/1/16	Thu 8/11/16
103	Review and give comment Final Report	1 day	Fri 8/12/16	Fri 8/12/16
104	Submit Final Report: Final version	0 days	Fri 8/12/16	Fri 8/12/16

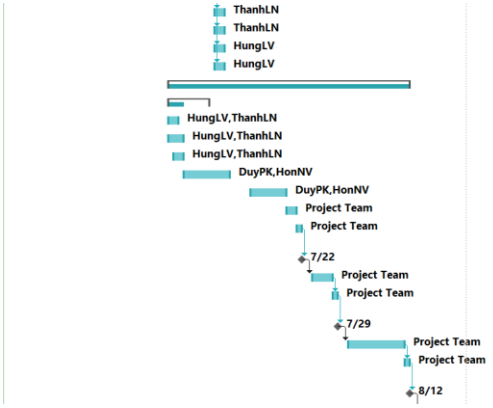


Figure 2-8: Project Plan-4

105	**Transition**	**7 days**	**Mon 8/15/16**	**Tue 8/23/16**
106	**Pre-closing**	**5 days**	**Mon 8/15/16**	**Fri 8/19/16**
107	Deliver Software Package Source	1 day	Mon 8/15/16	Mon 8/15/16
108	Conduct Project Review-Lession Learned	1 day	Mon 8/15/16	Mon 8/15/16
109	Deliver the soft version	1 day	Mon 8/15/16	Mon 8/15/16
110	Code demo 1	1 day	Tue 8/16/16	Tue 8/16/16
111	Code demo 2	1 day	Wed 8/17/16	Wed 8/17/16
112	Final Demo	1 day	Thu 8/18/16	Thu 8/18/16
113	Update, deliver the final soft and hardcopy version	1 day	Thu 8/18/16	Thu 8/18/16
114	Submit Document and Source code	1 day	Fri 8/19/16	Fri 8/19/16
115	**Closing**	**4 days**	**Thu 8/18/16**	**Tue 8/23/16**
116	Prepare for presentation	3 days	Thu 8/18/16	Mon 8/22/16
117	Practice to present Capstone Project	1 day	Tue 8/23/16	Tue 8/23/16
118	Finish project	0 days	Tue 8/23/16	Tue 8/23/16

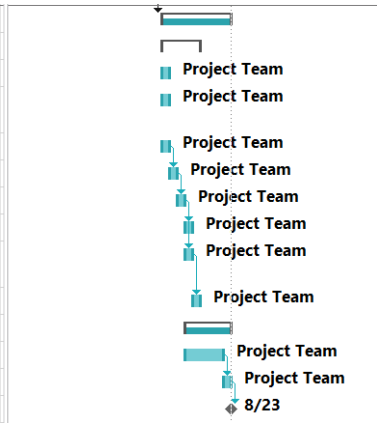


Figure 2-9: Project Plan-5

2.6.2 Meeting Schedule

During our developed time, we have two types of meeting:

- **Meeting with supervisor**: we have meeting with our supervisor once a week in 12:45 PM Friday. In this meeting, we will report what we have done in last week, raise issues to discuss with supervisor and supervisor will give us advices to deal with these problems.
- **Meeting with team member**: we have team meeting three times a week in Monday, Wednesday and Friday. In this meeting, each member will report what he has done last week to others and the problems he meets (if have). All members will discuss about these problems and PM or technical leader will give the final solution for each. Finally, PM will give the tasks for all members to do and report in the next meeting.

Here is the meeting minute template will be used for the project:

Fpt University

MEETING MINUTES

Project:	Clinic Management	**Project Code:**	ClinicManagement
Project Leader:	Pham Khuong Duy	**Conductor:**	Nguyen Van Sang
		Secretary:	Nguyen Van Hon
Date:	2016/05/20	**Time:**	12:30 – 13:15
Venue:	Room 216, Hoa Lac		
Topic of meeting:	Discussion about project requirement and project workflow		

Attendees:

No	Full name	Unit/Group	Position	Attendance
1	Nguyen Van Sang		Instructor / PM	Present
2	Pham Khuong Duy		Team lead	Present
3	Le Van Hung		Team member	Present
4	Nguyen Van Hon		Team member	Present
5	Le Ngoc Thanh		Team member	Present

Objectives

Agenda

- Discussion about project requirement
- Review project workflow

Contents

- Plan for next meeting
- Work done in last week.

Conclusion

Discussed Items	Decisions
Project requirement	- The clinic's process.
Plan for next meeting	- Review project workflow again

Figure 2-10: Meeting Template

2.6.3 Effort Estimation

Task Name	Worst case (days)	Best case (days)	Most likely case (days)	Expected case (days)
Inception	**68**	**56**	**64**	**60**
Technologies	28	16	24	20
Requirement	40	28	36	32
Develop Project Plan	28	16	24	20
Elaboration	**86**	**72**	**76**	**76**
Technologies	26	20	22	22

User Requirements Specification	26	22	24	24
System Requirement Specification	14	12	12	12
Design	20	18	18	18
Construction	**160**	**140**	**148**	**144**
Requirement and Design	12	6	8	8
Coding and Unit Test	44	36	40	36
Testing	104	98	100	100
Transition	**36**	**24**	**32**	**28**
Pre-closing	24	18	22	20
Closing	12	6	10	8
Total	**350**	**292**	**320**	**308**

2.7 Risk management

No	Risk	Description	Root Cause	Potential Response	Risk Owner
1	Over deadline	Some members of team do not finish their tasks before deadline		• Set punishment rules for members who miss the deadline • PM must give tasks for member clearly, surely they know exactly what they have to do	Project team
			The task and schedule is overload for members	• PM must review carefully the project management plan	PM
2	Technical risks	Some big technical problems happens and develop team cannot handle it	Short duration of studying C# technique	• Developers must study hard to know clearly about C# technique • Project team	Project team

				has some technical supervisors who can give advices and solutions about technical problems	
3	Communication risks	Members misunderstand others, leads to the wrong actions and decisions	● Lack of communication skills ● Careless in writing emails, talking with others	● All members must be careful in talking with others and writing reports or emails ● PM assigns member to write meeting minute after meeting or take note after discussing about issues, then send to all team members	Project team
4	Conflictions between team members	Members have argued, conflicted with others, leads to the uncomfortable environment	● Conflict in team in a long time ● High pressure when doing a huge work in a short time	● Set up team-building frequently for members to relax ● Set up open talk when members can truly talk about their uncomforted things	Project team
5	Misunderstand the requirements	Members do not understand clearly about the requirements, leads to the wrong solution when designing and coding	● Do not study clearly about the business case, not analyze exactly about the system ● Members do not have experiences in analyzing requirements	● Spend enough time and effort to study about business case, system requirements ● Receive advices from supervisor and experts when collecting requirements	Project team

6	Unrealistic project schedule	PM creates a unrealistic plan, so that members can not follow it to do their tasks	PM do not have experiences in making project schedule	• Meeting with all team to create project schedule • Receive advices from supervisor and experts when creating project schedule	PM

2.8 Coding convention

Follow C# Coding convention.

See the reference for all detail: https://msdn.microsoft.com/en-us/library/ff926074.aspx

CHAPTER 3: SOFTWARE REQUIREMENTS SPECIFICATION

3.1 Overall Description

3.1.1 Business Process Overview

Firstly, this system provides anything concern about the patients feature, give necessary information, such as all about the process of medical when they come to the clinic (create medical record, being treated by doctor …)

Second, the system all supply full of process of the clinic to help everyone in charge can easily to control, execute the clinic operation smoothly. For example, the doctor can treat the patients well by reviewing the past of medical history which is saving in data. It also gives the manager the view of statistical reports of the clinic.

3.1.2 Product Features

The Clinic Management is a webpage. It's designed for the audience is small or private clinics. We have research groups and consult different sources to produce energy rather than following the:

- Reception: This function is mainly the interaction between the patient and the clinic. The CM to ensure the registration of medical patients easily and quickly.
- Medical examination: This function is mainly to help doctors easily store the information needed to diagnose and treat disease. The CM supports storing the information of the patient, in addition to support doctors to prescribe medication.
- Reports: Export all reports to serve management needs, and operating of the clinic.

- Booking appointment: This feature can help the patient can easily book an appointment of service, doctor that suitable for their timeline. It will help the patients avoid wasting of their time.

3.1.3 User Characteristic

This system be used by four kind of user characteristics:

- **The Administrator level:** this user also has an experience in Software Engineer, IT knowledge and responsibility to maintain system when bugs occur.
- **The staff of the clinic:** have experience in using computer and information system, may be these staff need to be trained to use this system
- **The manager level:** they will use this system to supervise the clinic, they just need to look over the report function.
- **The Patient**: they will use this system to scheduled examination and medical history.

3.2 External Interface Requirements

3.2.1 User Interfaces

The design of the system is so friendly and easily to use with the users. The homepage with the navigation at the left which can make the users easy to navigate to others view. Besides the navigation is the main content of the website which is show the main information. All the information in menu is grouped, it can help the users easily to find down and access the features

3.2.2 Communication Protocols

The main communication protocol of website is applied Hypertext Transfer Protocol (HTTP).

3.3 Entity Relation Model

3.3.1 Entity-Relationship Diagram

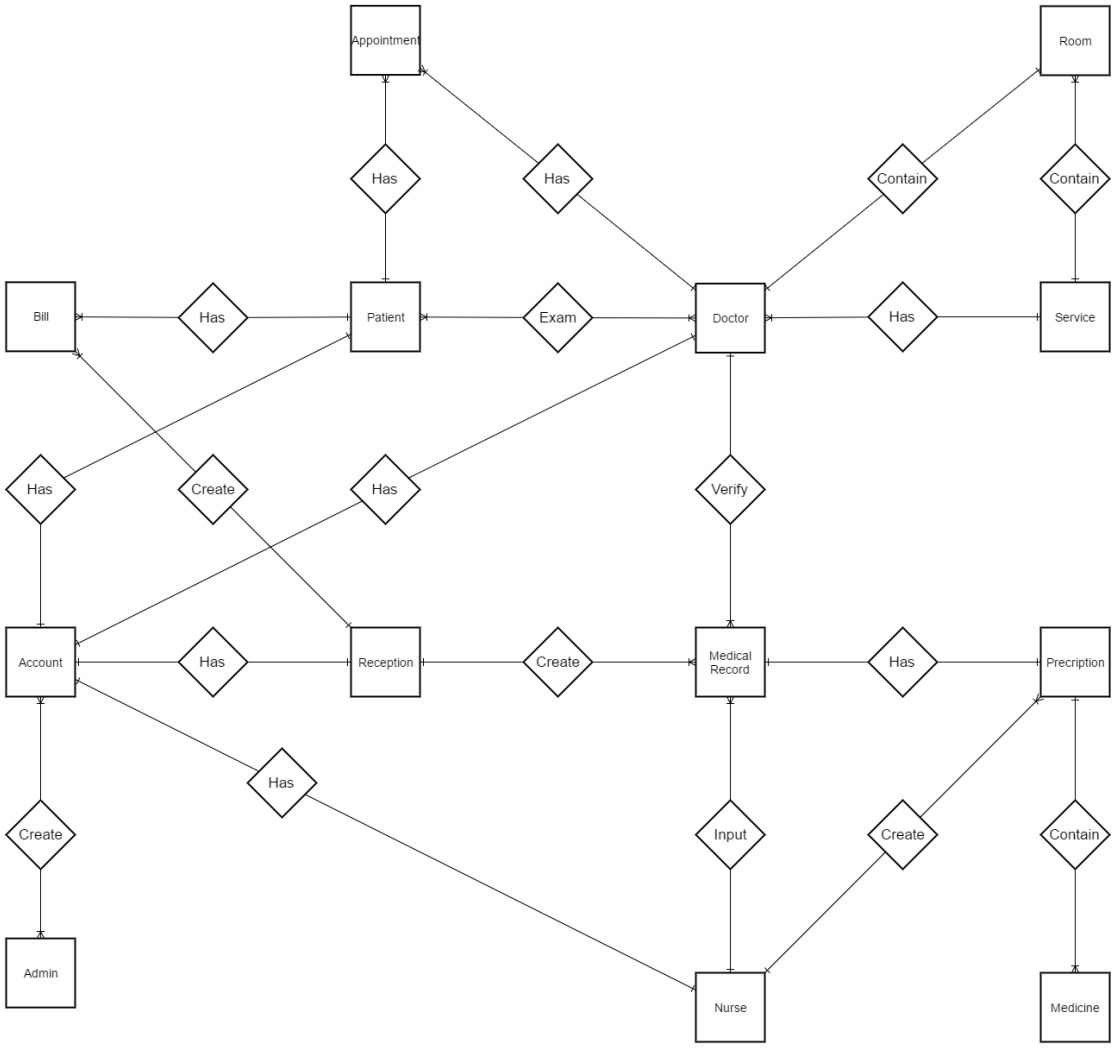


Figure 3-1: Entity Diagram

3.4 Functional Specification

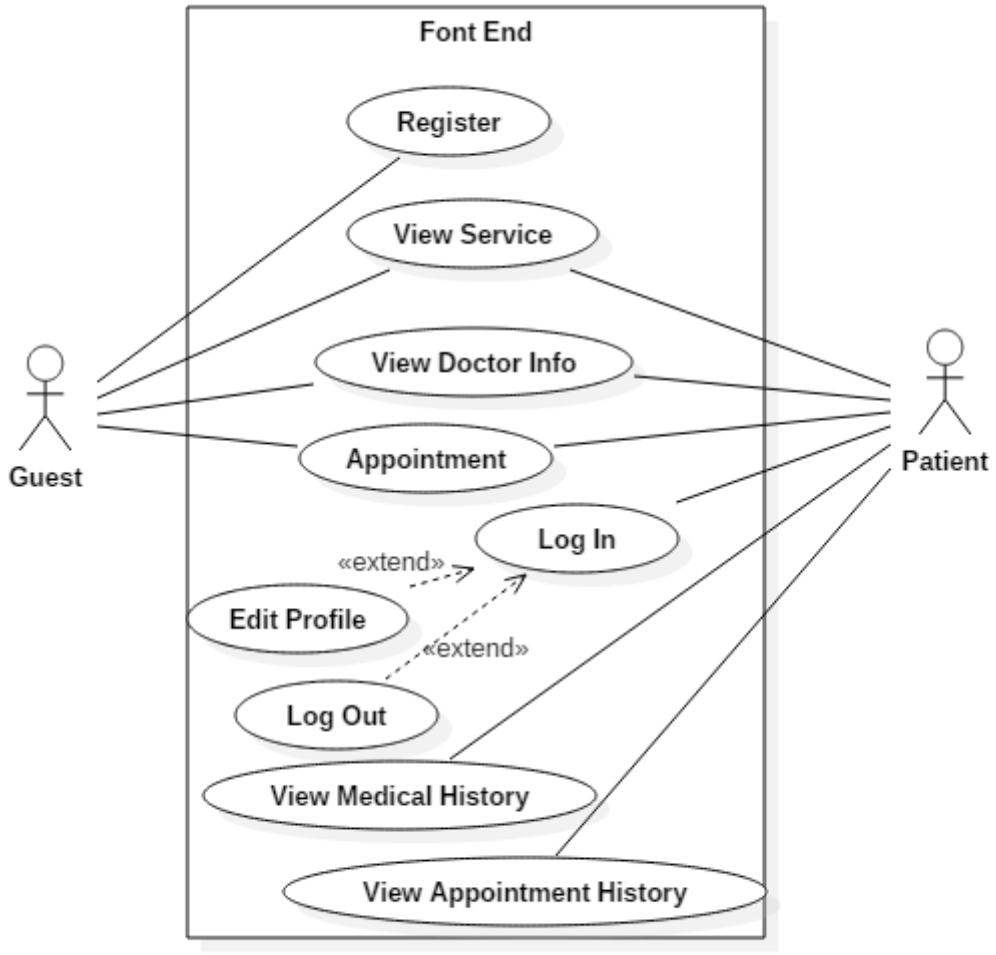


Figure 3-2: Use case Front End

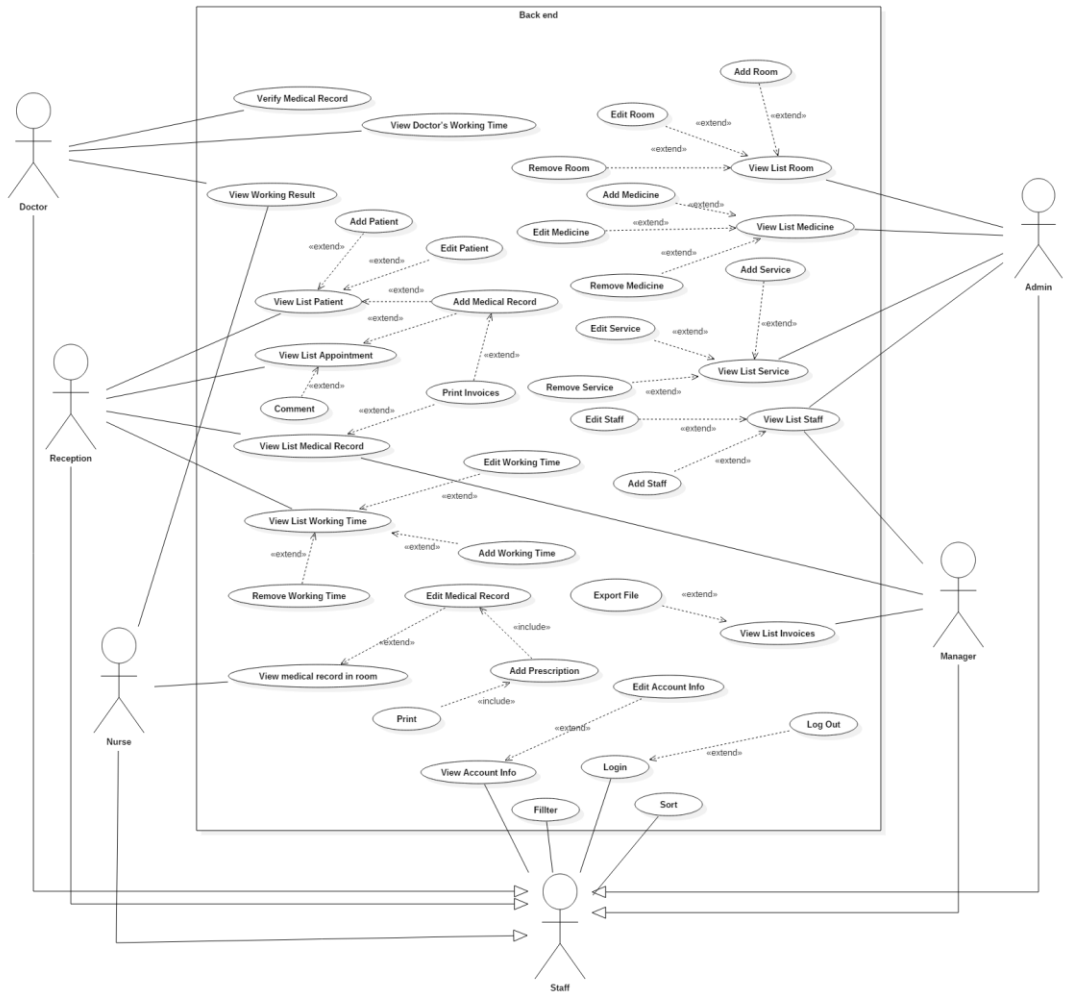


Figure 3-3: Use case Back End

List User Case:

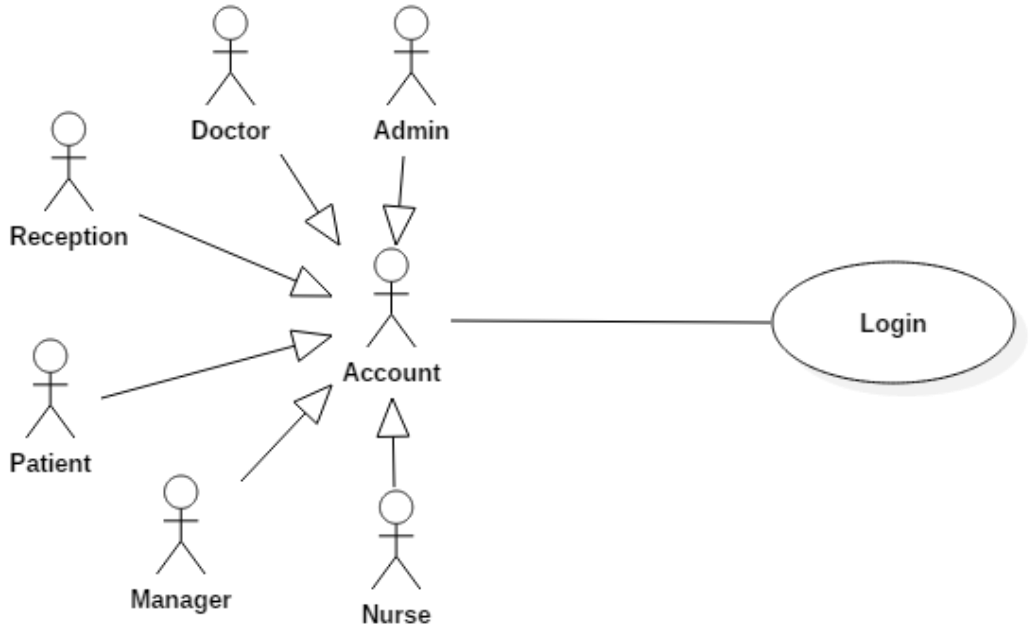
Model	Actors	User Case ID	User Name
System	Account	UC001	Login
	Account	UC002	Log Out
	Account	UC003	View Profile
	Account	UC004	Edit Profile
Font-end	Guest	UC005	Register
	Guest, Patient	UC006	View Service

	Guest, Patient	UC007	View Doctor Info
	Guest, Patient	UC008	View Doctor Info
	Patient	UC009	Appointment
	Patient	UC010	View Medical History
Back-end	Admin, Manager	UC011	View List Staff
	Admin	UC012	Add Staff
	Admin	UC013	Edit Staff
	Admin	UC014	View List Room
	Admin	UC015	Add Room
	Admin	UC016	Edit Room
	Admin	UC017	Remove Room
	Admin	UC018	View List Service
	Admin	UC019	Add Service
	Admin	UC020	Edit Service
	Admin	UC021	Remove Service
	Admin	UC022	View List Medicine
	Admin	UC023	Add Medicine
	Admin	UC024	Edit Medicine
	Admin	UC025	Remove Medicine
	Reception	UC026	View List Patient
	Reception	UC027	View List Medical Record
	Reception	UC028	View List Appointment
	Reception	UC029	View List Working Time
	Reception	UC030	Add Patient

	Reception	UC031	Edit Patient
	Reception	UC032	Add Medical Record
	Reception	UC033	Add Working Time
	Reception	UC034	Edit Working Time
	Reception	UC035	Remove Working Time
	Reception	UC036	Remove Appointment
	Nurse	UC037	View List Medical Record
	Nurse, Doctor	UC038	View Working Time
	Nurse	UC039	Edit Medical Record
	Nurse	UC040	Add Prescription
	Manager	UC041	View List Invoice
	Manager	UC042	Export File
	Doctor	UC043	View List Verify Medical Record
	Doctor	UC044	Verify Medical Record
	Doctor	UC045	View Working Result
	Staff	UC046	Filter
	Staff	UC047	Sort
	Reception	UC048	Appointment Comment

3.4.1 UC001: Login

3.4.1.1 Use Case Diagram



3.4.1.2 Use Case Specification

Use Case ID	UC001	**Version**	1.0
Use Name	Login		
Actor	Admin, Patient, Doctor, Nurse, Reception, Manager		
Description	The function allows a User Login to the system, when user have an account and account is still active		
Precondition	User need navigate to Webpage and has his own account, which can be used to log-in to the system The log-in panel will appear and let the user input and summit their account and password to the system.		
Trigger	User click “Login” button		
Post-Condition	System validation and accept account connect to system		
Main flows			
Step	**Actor**	**Action**	
1	User	Navigate to Font-end or Back-end web page	
2	System	Display Home page and Login form with the following fields:	

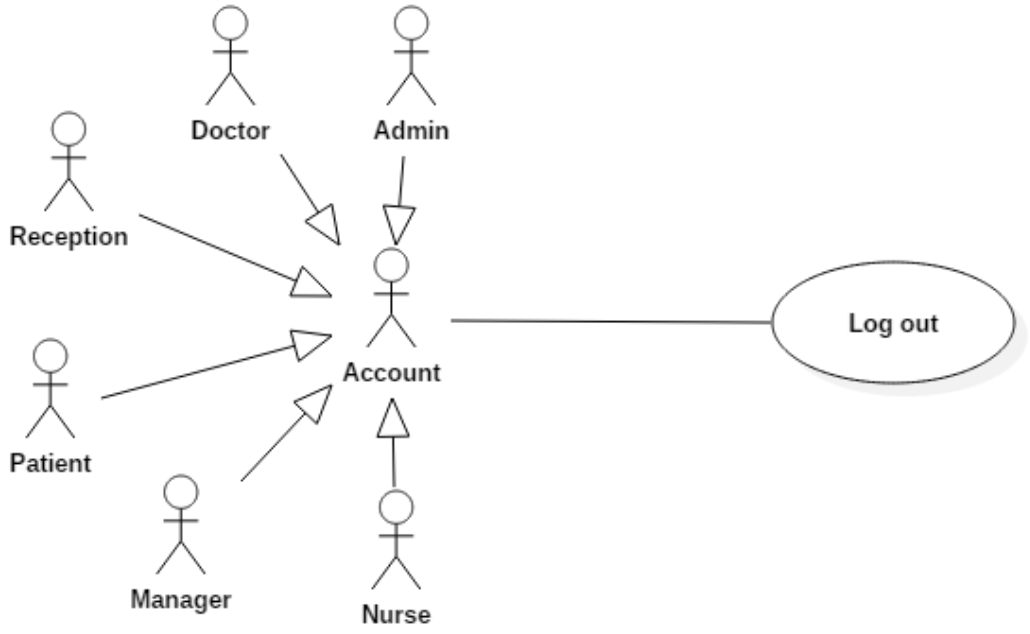
		- User name - Password - Login button
3	User	Enter user name and password into User Name & Password fields on the Login screen, then click on Login button.
4	System	Validate the entered user name and password Check Account role Display Home page with role
Alternative flows		
AT1	At step 2 in the main flows, if there is an internal error in the system	
Step	**Actor**	**Action**
2.1	System	Display error message
AT1	At step 4 in the main flows, if System failed to validate user name & password	
Step	**Actor**	**Action**
4.1	System	Display error message

Business Rules

#	Rule Description
BR01	Display correct Home page with role
BR02	N/A

3.4.2 UC002: Log Out

3.4.2.1 Use Case Diagram



3.4.2.2 Use Case Specification

Use Case ID	UC002	**Version**	1.0
Use Name	Log Out		
Actor	Admin, Patient, Doctor, Nurse, Reception, Manager		
Description	The function allows a User log out of the system, when user have login to system.		
Precondition	User had already logged in to the system before		
Trigger	User click “Log Out” button		
Post-Condition	System disconnect account		
Main flows			
Step	**Actor**	**Action**	
1	User	Click the “Log out” button from the user panel	
2	System	Display Home page Disconnect account	
Alternative flows			

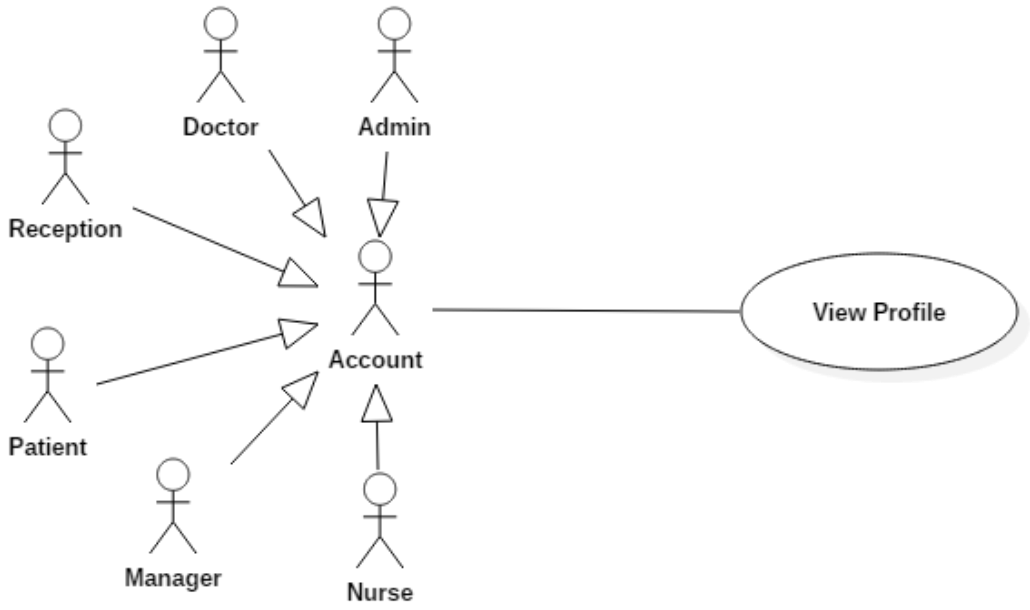
AT1	N/A	
Step	**Actor**	**Action**
N/A	N/A	N/A

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.3 UC003: View Profile

3.4.3.1 Use Case Diagram



3.4.3.2 Use Case Specification

Use Case ID	UC003	**Version**	1.0
Use Name	View Profile		
Actor	Admin, Patient, Doctor, Nurse, Reception, Manager		

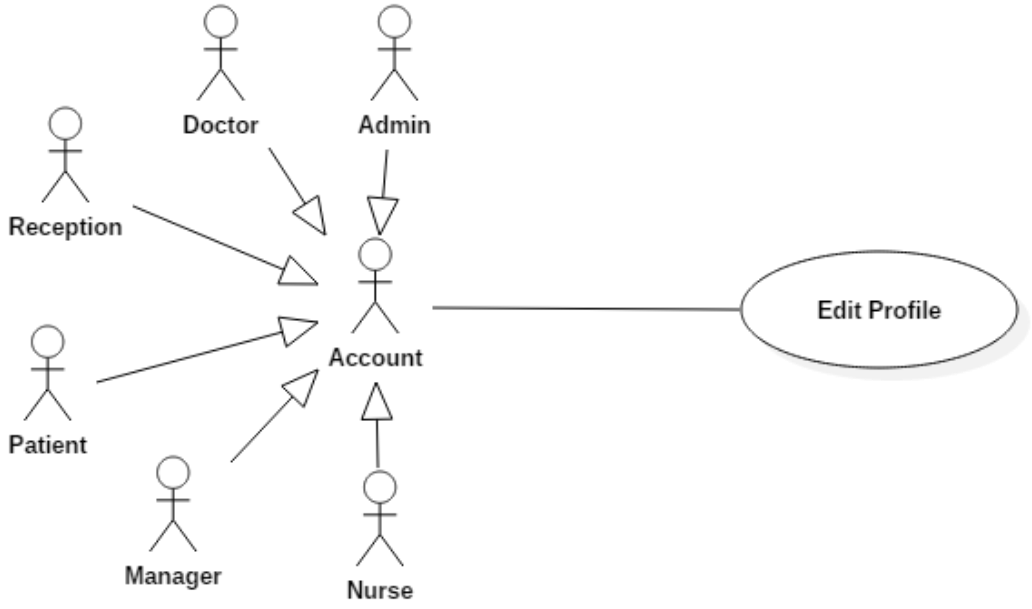
Description	The function allows a user can view profile in the system.	
Precondition	User login successful	
Trigger	User view profile then click “Thông Tin Tài Khoản” button	
Post-Condition	System display profile from and data correct of account	
Main flows		
Step	**Actor**	**Action**
1	User	Login successful
2	System	Display home page
3	User	Click Account button at top right
4	System	Display list menu
5	User	Click “Thông tin tài khoản” button
6	System	Display Account Profile page
Alternative flows		
AT1	N/A	
Step	**Actor**	**Action**
N/A	N/A	N/A

Business Rules

#	Rule Description
BR01	Don’t Display Password
BR02	N/A

3.4.4 UC004: Edit Profile

3.4.4.1 Use Case Diagram



3.4.4.2 Use Case Specification

Use Case ID	UC004	**Version**	1.0
Use Name	Edit Profile		
Actor	Admin, Patient, Doctor, Nurse, Reception, Manager		
Description	The function allows a user edit user's info in the system.		
Precondition	User login successful		
Trigger	User enter data correct into all field then click "Lưu" button		
Post-Condition	System display message "Edit Staff successful" then display Home Page		
Main flows			
Step	**Actor**	**Action**	
1	User	Go to View Profile Form	
2	System	Display Account Profile page	
3	User	Click "Cập Nhật" button	
4	System	Display Edit Account Profile page	

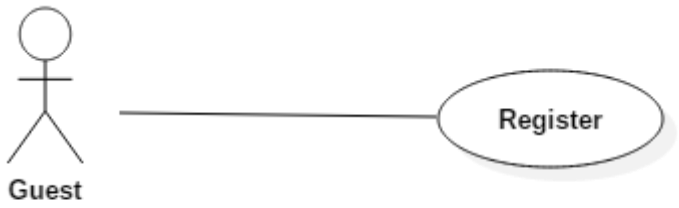
5	User	Edit data valid all field
6	System	Validates data
7	User	Click “Luu” button
8	System	Saving data Display Home page
Alternative flows		
AT1	At step 6 in the main flows**,** if data incorrect	
Step	**Actor**	**Action**
6.1	System	Display error message
AT2	At step 7 in the main flows**,** if User click “Hủy” button	
Step	**Actor**	**Action**
7.1	System	Don’t save data Display Home page

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.5 UC005: Register

3.4.5.1 Use Case Diagram



3.4.5.2 Use Case Specification

Use Case ID	UC005	**Version**	1.0
Use Name	Register		
Actor	Guest		
Description	The function allows a Guest register account to system. When user haven't account.		
Precondition	Guest navigate to Register page		
Trigger	Guest input correct data all field then click "Đăng Kí" link text		
Post-Condition	System save data into database		
Main flows			
Step	**Actor**	**Action**	
1	Guest	Go to Register page	
2	System	Display Register page	
3	Guest	Input data valid all field	
4	System	Validation data	
5	Guest	Click "Đăng Kí" button	
6	System	Save data into database Display Home Page	
Alternative flows			
AT1	At step 3 in the main flows**,** if Guest input invalid data		
Step	**Actor**	**Action**	
3.1	System	Display error message	
AT2	At step 5 in the main flows**,** if patient "Hủy" button		
Step	**Actor**	**Action**	
5.1	System	Don't save data into System Display Home page	

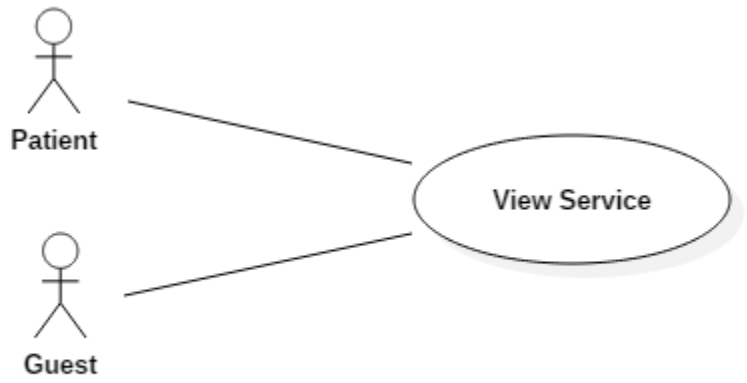
Business Rules

#	**Rule Description**
BR01	N/A

BR02	N/A

3.4.6 UC006: View Service

3.4.6.1 Use Case Diagram



3.4.6.2 Use Case Specification

Use Case ID	UC006	**Version**	1.0
Use Name	View Service		
Actor	Guest, Patient		
Description	The function allows a Guest/Patient to view service info in the system.		
Precondition	User go to Home Page		
Trigger	Guest/Patient click “Dịch Vụ” tab on top menu		
Post-Condition	System display List Information Service page		
Main flows			
Step	**Actor**	**Action**	
1	Guest/Patient	Go to Home page	
2	System	Display Home page	
3	Guest/Patient	Click to “Dich vụ” menu on top menu	
4	System	Display List Information Service page	
Alternative flows			
AT1	N/A		
Step	**Actor**	**Action**	

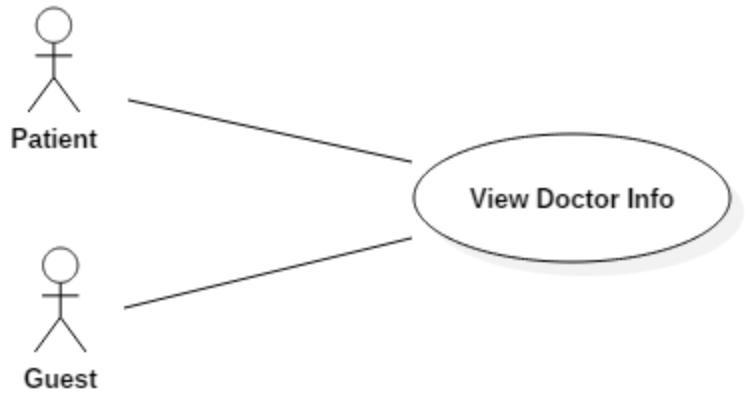
N/A	N/A	N/A

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.7 UC007: View Doctor Info

3.4.7.1 Use Case Diagram



3.4.7.2 Use Case Specification

Use Case ID	UC007	Version	1.0
Use Name	View Doctor Info		
Actor	Guest, Patient		
Description	The function allows a Guest/Patient to view Doctor info in the system.		
Precondition	User go to Home Page		
Trigger	Guest/Patient click “Bác Sĩ” tab on top menu		
Post-Condition	Display List Doctor Information page		
Main flows			

Step	Actor	Action
1	Guest/Patient	Go to Home page
2	System	Display Home page
3	Guest/Patient	Click to "Bác Sĩ" menu on top menu
4	System	Display List Doctor Information page
Alternative flows		
AT1	N/A	
Step	**Actor**	**Action**
N/A	N/A	N/A

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.8 UC008: Appointment

3.4.8.1 Use Case Diagram

3.4.8.2 Use Case Specification

Use Case ID	UC008	Version	1.0
Use Name	Appointment		
Actor	Patient		
Description	The function allows Patient add appointment in the system.		
Precondition	User go to Home Page		

		Login system with Patient role
Trigger		Patient click “Đặt Lich Khám” tab on top menu then input valid data and click “Đặt” button
Post-Condition		System save data into system
Main flows		
Step	**Actor**	**Action**
1	Patient	Login successful
2	System	Display Home page
3	Patient	Click to “Đăt Lịch Khám” menu on top menu
4	System	System display list menu: - “Đặt lịch theo ngày” submenu - “Đặt lich theo bác sĩ’ submenu
5	Patient	Click “Đặt lịch theo ngày” submenu
6	System	Display Appointment by date time page
7	Patient	Input data valid
8	System	Validation data
9	Guest	Click “Đặt” button
10	System	Saving data into system Display Home page
Alternative flows		
AT1	At step 6 in the main flows, if patient click “Đặt lich theo bác sĩ’ submenu	
Step	**Actor**	**Action**
6.1	System	Display Appointment by doctor page
AT2	At step 8 in the main flows, if patient input invalid data	
Step	**Actor**	**Action**
8.1	System	Display error message

Business Rules

#	Rule Description
BR01	When guest book appointment, the system register account for guest
BR02	N/A

3.4.9 UC009: View Medical History

3.4.9.1 Use Case Diagram

3.4.9.2 Use Case Specification

Use Case ID	UC009	**Version**	1.0
Use Name	View Medical History		
Actor	Patient		
Description	The function allows Patient can view history Medical on the system.		
Precondition	Patient login to system		
Trigger	Patient click to “Account” menu, then click “Lịch sử Khám” sub menu		
Post-Condition	System display all medical record of Patient		
Main flows			
Step	**Actor**	**Action**	
1	Patient	Login successful	
2	System	Display home page	
3	Patient	Click account menu	
4	System	Display List submenu	
5	Patient	Click “Lịch Sử Khám” sub menu	
6	System	Display medical history page	
Alternative flows			
AT1	At step 6 in the main flows, if Patient haven’t medical		

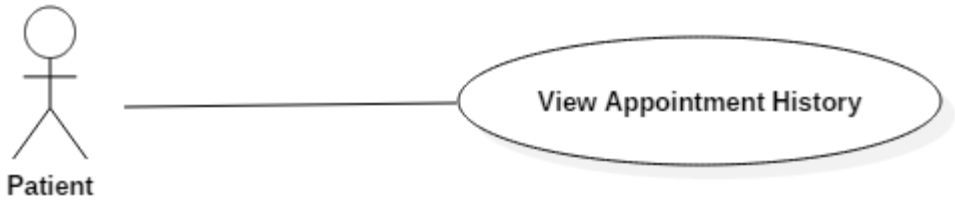
Step	Actor	Action
6.1	System	Display medical history page with null

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.10 UC010: View Appointment History

3.4.10.1 Use Case Diagram



3.4.10.2 Use Case Specification

Use Case ID	UC010	Version	1.0
Use Name	View Appointment History		
Actor	Patient		
Description	The function allows Patient can view history Appointment on the system.		
Precondition	Patient login to system		
Trigger	Patient click to “Account” menu, then click “Danh Sách Lịch Hẹn” sub menu		
Post-Condition	System display all Appointment of Patient		
Main flows			
Step	Actor	Action	
1	Patient	Login successful	
2	System	Display home page	

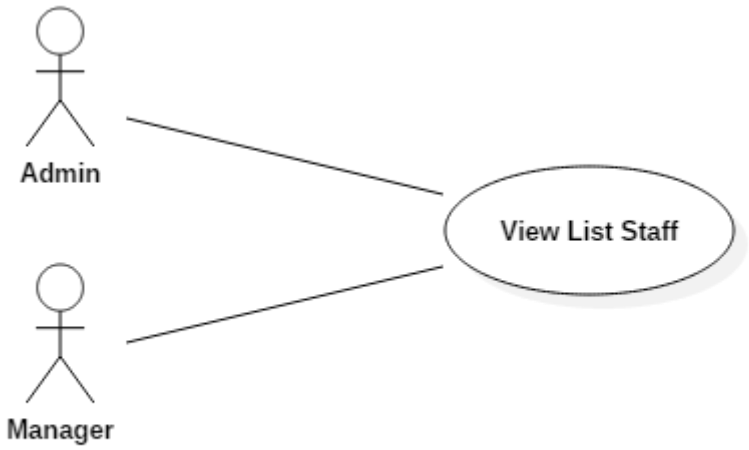
3	Patient	Click account menu
4	System	Display List submenu
5	Patient	Click “Danh Sách Lịch Hẹn” sub menu
6	System	Display Appointment history page
Alternative flows		
AT1	At step 6 in the main flows, if Patient haven’t appointment	
Step	**Actor**	**Action**
6.1	System	Display medical history page with null

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.11 UC011: View List Staff

3.4.11.1 Use Case Diagram



3.4.11.2 Use Case Specification

Use Case ID	UC011	**Version**	1.0

Use Name		View List Staff
Actor		Admin, Manager
Description		The function allows a Admin/Manager view list staff in the system.
Precondition		User login successful User is admin
Trigger		Admin/Manager click "Nhân Viên" submenu at left menu
Post-Condition		System display all staff exist on system
Main flows		
Step	**Actor**	**Action**
1	Admin/Manager	Go to Home page
2	System	Display home page
3	Admin/Manager	Click "Nhân Viên" submenu at left menu
4	System	Display list staff page
Alternative flows		
AT1	At step 4 in the main flows**,** if list staff is empty	
Step	**Actor**	**Action**
4.1	System	Display list staff page null

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.12 UC012: Add Staff

3.4.12.1 Use Case Diagram

3.4.12.2 Use Case Specification

Use Case ID	UC012	**Version**	1.0
Use Name	Add Staff		
Actor	Admin		
Description	The function allows a Admin create to new staff in the system.		
Precondition	User login successful User is admin Admin go to view list staff page		
Trigger	Admin input valid data all field then click “Lưu” button		
Post-Condition	System saving data and display list staff page		
Main flows			
Step	**Actor**	**Action**	
1	Admin	Go to Home page	
2	System	Display home page	
3	Admin	Click “Nhân Viên” submenu at left menu	
4	System	Display list staff page	
5	Admin	Click “Tạo mới” button	
6	System	Display add staff page	
7	Admin	Enter data correct into all field	
8	System	System validates data	
9	Admin	Click “Lưu” button	
10	System	Saving data into system Display list staff page	
Alternative flows			
AT1	At step 10 in the main flows, if Admin click “Hủy” button		

Step	Actor	Action
10.1	System	Don't save data Display list staff page
AT2	At step 8 in the main flows**,** if Admin input invalid data	
Step	**Actor**	**Action**
8.1	System	Display error message

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.13 UC013: Edit Staff

3.4.13.1 Use Case Diagram

3.4.13.2 Use Case Specification

Use Case ID	UC013	Version	1.0
Use Name	Edit Staff		
Actor	Admin		
Description	The function allows a Admin edit staff in the system.		
Precondition	User login successful User is admin		

		Admin go to List Staff page
Trigger		Admin edit data valid all field then click “Lưu” button
Post-Condition		System saving data and display list staff page
Main flows		
Step	**Actor**	**Action**
1	Admin	Go to Home page
2	System	Display home page
3	Admin	Click “Nhân Viên” submenu at left menu
4	System	Display list staff page
5	Admin	Click “Sửa” button
6	System	Display edit staff page
7	Admin	Edit data valid all field
8	System	System validates data
9	Admin	Click “Lưu” button
10	System	Saving data into system Display list staff page
Alternative flows		
AT1	At step 10 in the main flows**,** if Admin click “Hủy” button	
Step	**Actor**	**Action**
10.1	System	Don’t save data Display list staff page
AT2	At step 8 in the main flows**,** if Admin input invalid data	
Step	**Actor**	**Action**
8.1	System	Display error message
AT3	At step 6 in the main flows**,** if Admin click button at column “Trạng Thái”	
Step	**Actor**	**Action**
6.1	System	Change status of Staff is Active or Not Active

Business Rules

#	Rule Description

BR01	N/A
BR02	N/A

3.4.14 UC014: View List Room

3.4.14.1 Use Case Diagram

3.4.14.2 Use Case Specification

Use Case ID	UC014	**Version**	1.0
Use Name	View List Room		
Actor	Admin		
Description	The function allows a Admin to view list room in the system, when admin navigate to View List Room page		
Precondition	User login successful User is admin		
Trigger	Admin click “Phòng” submenu on left menu		
Post-Condition	System display view list room page		
Main flows			
Step	**Actor**	**Action**	
1	Admin	Go to Home page	
2	System	Display home page	
3	Admin	Click “Room” submenu at left menu	
4	System	Display list room page	
Alternative flows			
AT1	At step 4 in the main flows**,** if List room is empty		
Step	**Actor**	**Action**	
4.1	System	Display list room page is null	

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.15 UC015: Add Room

3.4.15.1 Use Case Diagram

3.4.15.2 Use Case Specification

Use Case ID	UC015	Version	1.0
Use Name	Add Room		
Actor	Admin		
Description	The function allows a Admin create to new room in the system.		
Precondition	User login successful User is admin Go to list room page		
Trigger	Admin input valid data all field then click “Lưu” button		
Post-Condition	System saving data and display list room page		
Main flows			
Step	Actor	Action	
1	Admin	Go to Home page	
2	System	Display home page	
3	Admin	Click “Phòng” submenu at left menu	
4	System	Display list room page	
5	Admin	Click “Tạo mới” button	
6	System	Display add room page	

7	Admin	Enter data correct into all field
8	System	System validates data
9	Admin	Click “Lưu” button
10	System	Saving data into system Display list Room page
Alternative flows		
AT2	At step 8 in the main flows**,** if Admin input invalid data	
Step	**Actor**	**Action**
8.1	System	Display error message
AT2	At step 10 in the main flows**,** if Admin click “Hủy” button	
Step	**Actor**	**Action**
10.1	System	Don’t Save data Display list room page

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.16 UC016: Edit Room

3.4.16.1 Use Case Diagram

3.4.16.2 Use Case Specification

Use Case ID	UC016	**Version**	1.0
Use Name	Edit Room		
Actor	Admin		
Description	The function allows a Admin edit Room in the system.		
Precondition	User login successful User is admin Admin go to List Room page		
Trigger	Admin edit data valid all field then click “Lưu” button		
Post-Condition	System saving data and display list Room page		
Main flows			
Step	**Actor**	**Action**	
1	Admin	Go to Home page	
2	System	Display home page	
3	Admin	Click “Phòng” submenu at left menu	
4	System	Display list room page	
5	Admin	Click “Sửa” button	
6	System	Display edit room page	
7	Admin	Edit data valid all field	
8	System	System validates data	
9	Admin	Click “Lưu” button	
10	System	Saving data into system Display list room page	
Alternative flows			
AT1	At step 10 in the main flows**,** if Admin click “Hủy” button		
Step	**Actor**	**Action**	
10.1	System	Don’t save data Display list room page	
AT2	At step 8 in the main flows**,** if Admin input invalid data		
Step	**Actor**	**Action**	
8.1	System	Display error message	

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.17 UC017: Remove Room

3.4.17.1 Use Case Diagram

3.4.17.2 Use Case Specification

Use Case ID	UC017	Version	1.0
Use Name	Remove Room		
Actor	Admin		
Description	The function allows a Admin remove room active in the system.		
Precondition	User login successful User is admin Go to list room page		
Trigger	Admin click “Xóa” button of room		
Post-Condition	System deleted data of room		
Main flows			
Step	Actor	Action	
1	Admin	Go to List Room page	
2	System	Display list room page	
3	Admin	Click “Xóa” button	
4	System	Display Pop-up confirm: - Are you want to delete? - “OK” button - “Cancel” button	

5	Admin	Click “OK” button
6	System	Delete data of Room in system. Display list room page
Alternative flows		
AT1	At step 4 in the main flows**,** if admin click “Cancel” button	
Step	**Actor**	**Action**
4.1	System	Display list room page

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.18 UC018: View List Service

3.4.18.1 Use Case Diagram

3.4.18.2 Use Case Specification

Use Case ID	UC018	**Version**	1.0
Use Name	View List Service		
Actor	Admin		
Description	The function allows a Admin to view list service in the system, when admin navigate to View List Service page		
Precondition	User login successful		

		User is admin
Trigger		Admin click “Dịch Vụ” submenu on left menu
Post-Condition		System display view list service page
Main flows		
Step	**Actor**	**Action**
1	Admin	Go to Home page
2	System	Display home page
3	Admin	Click “Dịch Vụ” submenu at left menu
4	System	Display list service page
Alternative flows		
AT1	At step 4 in the main flows**,** if List service is empty	
Step	**Actor**	**Action**
4.1	System	Display list service page is null

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.19 UC019: Add Service

3.4.19.1 Use Case Diagram

3.4.19.2 Use Case Specification

Use Case ID	UC019	**Version**	1.0

Use Name	Add Service	
Actor	Admin	
Description	The function allows a Admin create to new service in the system.	
Precondition	User login successful User is admin Go to list service page	
Trigger	Admin input valid data all field then click “Lưu” button	
Post-Condition	System saving data and display list service page	
Main flows		
Step	**Actor**	**Action**
1	Admin	Go to Home page
2	System	Display home page
3	Admin	Click “Dịch vụ” submenu at left menu
4	System	Display list service page
5	Admin	Click “Tạo mới” button
6	System	Display add service page
7	Admin	Enter data correct into all field
8	System	System validates data
9	Admin	Click “Lưu” button
10	System	Saving data into system Display list Service page
Alternative flows		
AT2	At step 8 in the main flows**,** if Admin input invalid data	
Step	**Actor**	**Action**
8.1	System	Display error message
AT2	At step 10 in the main flows**,** if Admin click “Hủy” button	
Step	**Actor**	**Action**
10.1	System	Don’t Save data Display list service page

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.20 UC020: Edit Service

3.4.20.1 Use Case Diagram

3.4.20.2 Use Case Specification

Use Case ID	UC020	Version	1.0
Use Name	Edit Service		
Actor	Admin		
Description	The function allows a Admin edit service in the system.		
Precondition	User login successful User is admin Admin go to List Service page		
Trigger	Admin edit data valid all field then click “Lưu” button		
Post-Condition	System saving data and display list Service page		
Main flows			
Step	Actor	Action	
1	Admin	Go to Home page	
2	System	Display home page	
3	Admin	Click “Dịch Vụ” submenu at left menu	
4	System	Display list service page	
5	Admin	Click “Sửa” button	
6	System	Display edit service page	
7	Admin	Edit data valid all field	
8	System	System validates data	

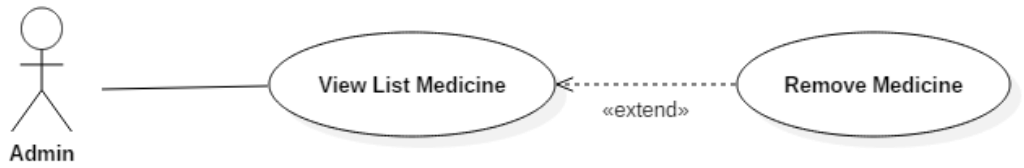
9	Admin	Click “Lưu” button
10	System	Saving data into system Display list service page
Alternative flows		
AT1	At step 10 in the main flows**,** if Admin click “Hủy” button	
Step	**Actor**	**Action**
10.1	System	Don’t save data Display list service page
AT2	At step 8 in the main flows**,** if Admin input invalid data	
Step	**Actor**	**Action**
8.1	System	Display error message

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.21 UC021: Remove Service

3.4.21.1 Use Case Diagram



3.4.21.2 Use Case Specification

Use Case ID	UC021	**Version**	1.0
Use Name	Remove Service		
Actor	Admin		

Description		The function allows a Admin remove service active in the system.
Precondition		User login successful User is admin Go to list service page
Trigger		Admin click “Xóa” button of service
Post-Condition		System deleted data of service
Main flows		
Step	**Actor**	**Action**
1	Admin	Go to List Service page
2	System	Display list service page
3	Admin	Click “Xóa” button
4	System	Display Pop-up confirm: - Are you want to delete? - “OK” button - “Cancel” button
5	Admin	Click “OK” button
6	System	Delete data of Service in system. Display list Service page
Alternative flows		
AT1	At step 4 in the main flows**,** if admin click “Cancel” button	
Step	**Actor**	**Action**
4.1	System	Display list service page

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.22 UC022: View List Medicine

3.4.22.1 Use Case Diagram

3.4.22.2 Use Case Specification

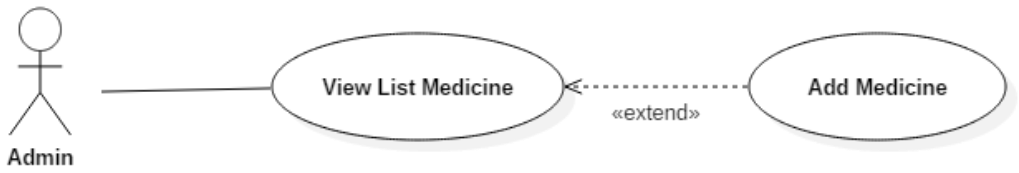
Use Case ID	UC022	**Version**	1.0
Use Name	View List Medicine		
Actor	Admin		
Description	The function allows a Admin to view list medicine in the system, when admin navigate to View List medicine page		
Precondition	User login successful User is admin		
Trigger	Admin click “Thuốc” submenu on left menu		
Post-Condition	System display view list medicine page		
Main flows			
Step	**Actor**	**Action**	
1	Admin	Go to Home page	
2	System	Display home page	
3	Admin	Click “Thuốc” submenu at left menu	
4	System	Display list medicine page	
Alternative flows			
AT1	At step 4 in the main flows**,** if list medicine is empty		
Step	**Actor**	**Action**	
4.1	System	Display list medicine page is null	

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.23 UC023: Add Medicine

3.4.23.1 Use Case Diagram



3.4.23.2 Use Case Specification

Use Case ID	UC023	Version	1.0
Use Name	Add Medicine		
Actor	Admin		
Description	The function allows a Admin add medicine in the system.		
Precondition	User login successful User is admin Go to list medicine page		
Trigger	Admin input valid data all field then click “Lưu” button		
Post-Condition	System saving data and display list medicine page		
Main flows			
Step	Actor	Action	
1	Admin	Go to Home page	
2	System	Display home page	
3	Admin	Click “Thuốc” submenu at left menu	
4	System	Display list medicine page	
5	Admin	Click “Tạo mới” button	
6	System	Display add medicine page	

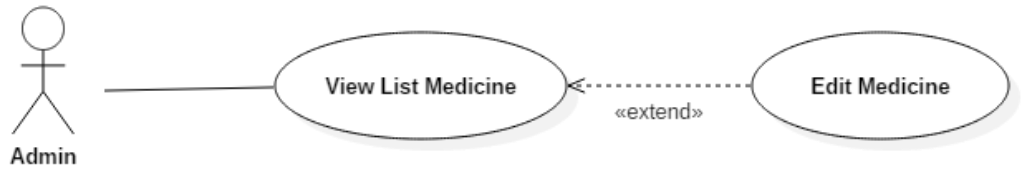
7	Admin	Enter data correct into all field
8	System	System validates data
9	Admin	Click “Lưu” button
10	System	Saving data into system Display list medicine page
Alternative flows		
AT2	At step 8 in the main flows**,** if Admin input invalid data	
Step	**Actor**	**Action**
8.1	System	Display error message
AT2	At step 10 in the main flows**,** if Admin click “Hủy” button	
Step	**Actor**	**Action**
10.1	System	Don’t Save data Display list medicine page

Business Rules

#	Rule Description
BR01	Display only Medicine is active
BR02	

3.4.24 UC024: Edit Medicine

3.4.24.1 Use Case Diagram



3.4.24.2 Use Case Specification

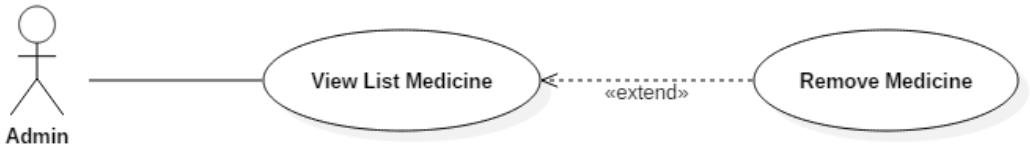
Use Case ID	UC024	**Version**	1.0
Use Name	Edit Medicine		
Actor	Admin		
Description	The function allows a Admin edit medicine in the system.		
Precondition	User login successful User is admin Admin go to List medicine page		
Trigger	Admin edit data valid all field then click “Lưu” button		
Post-Condition	System saving data and display list medicine page		
Main flows			
Step	**Actor**	**Action**	
1	Admin	Go to Home page	
2	System	Display home page	
3	Admin	Click “Thuốc” sub-menu at left menu	
4	System	Display list medicine page	
5	Admin	Click “Sửa” button	
6	System	Display edit medicine page	
7	Admin	Edit data valid all field	
8	System	System validates data	
9	Admin	Click “Lưu” button	
10	System	Saving data into system Display list medicine page	
Alternative flows			
AT1	At step 10 in the main flows**,** if Admin click “Hủy” button		
Step	**Actor**	**Action**	
10.1	System	Don’t save data Display list medicine page	
AT2	At step 8 in the main flows**,** if Admin input invalid data		
Step	**Actor**	**Action**	
8.1	System	Display error message	

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.25 UC025: Remove Medicine

3.4.25.1 Use Case Diagram



3.4.25.2 Use Case Specification

Use Case ID	UC025	**Version**	1.0
Use Name	Remove Medicine		
Actor	Admin		
Description	The function allows a Admin remove medicine active in the system.		
Precondition	User login successful User is admin Go to list medicine page		
Trigger	Admin click “Xóa” button of medicine		
Post-Condition	System deleted data of medicine		
Main flows			
Step	**Actor**	**Action**	
1	Admin	Go to List medicine page	
2	System	Display list medicine page	
3	Admin	Click “Xóa” button	
4	System	Display Pop-up confirm: - Are you want to delete? - “OK” button - “Cancel” button	
5	Admin	Click “OK” button	

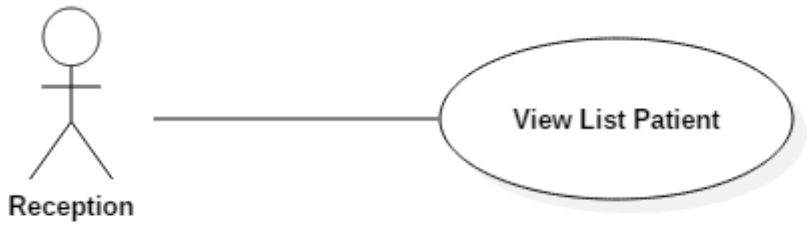
6	System	Delete data of medicine in system. Display list medicine page
Alternative flows		
AT1	At step 4 in the main flows, if admin click "Cancel" button	
Step	**Actor**	**Action**
4.1	System	Display list medicine page

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.26 UC026: View List Patient

3.4.26.1 Use Case Diagram



3.4.26.2 Use Case Specification

Use Case ID	UC026	**Version**	1.0
Use Name	View List Patient		
Actor	Reception		
Description	The function allows a Reception to view list patient in the system, when Reception navigate to List patient page		
Precondition	User login successful User is Reception		
Trigger	Reception click "Danh Sách Bệnh Nhân" submenu on left menu		
Post-Condition	System display view list patient page		

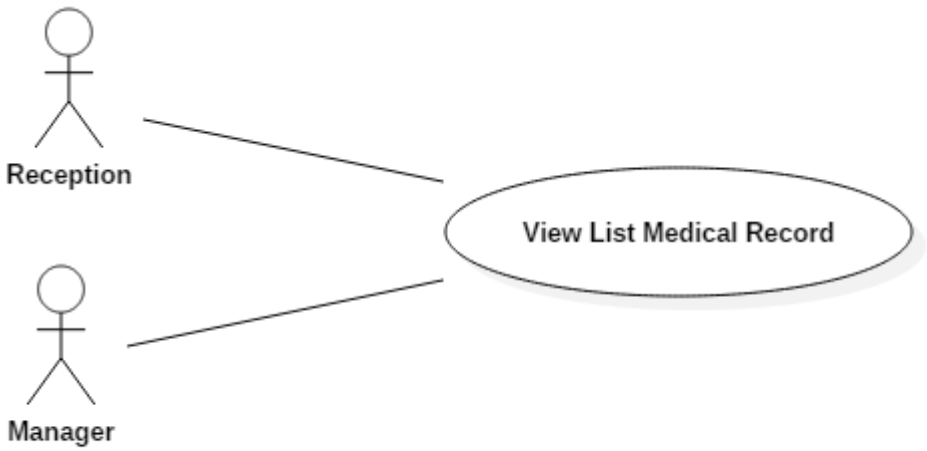
Main flows		
Step	**Actor**	**Action**
1	Reception	Go to Home page
2	System	Display home page
3	Reception	Reception click “Danh Sách Bệnh Nhân” submenu at left menu
4	System	Display list patient page
Alternative flows		
AT1	At step 4 in the main flows**,** if list patient is empty	
Step	**Actor**	**Action**
4.1	System	Display list patient page is null

Business Rules

#	Rule Description
BR01	Loading all account have role is patient
BR02	N/A

3.4.27 UC026: View List Medical Record

3.4.27.1 Use Case Diagram



3.4.27.2 Use Case Specification

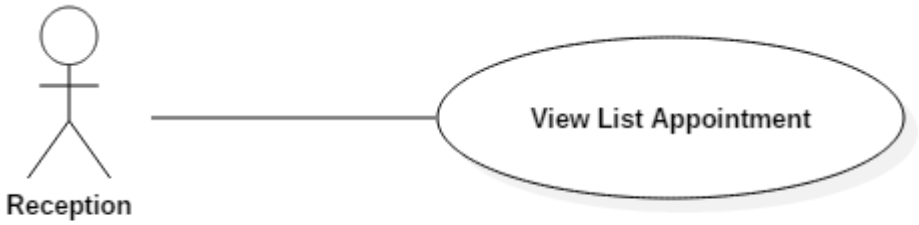
Use Case ID	UC027	**Version**	1.0
Use Name	View List Medical Record		
Actor	Reception, Manager		
Description	The function allows a Reception/Manager to view list medical record in the system.		
Precondition	User login successful User is Reception/Manager		
Trigger	Reception/Manager click “Danh Sách Phiếu Khám” submenu on left menu		
Post-Condition	System display view list medical record page		
Main flows			
Step	**Actor**	**Action**	
1	Reception/Manager	Go to Home page	
2	System	Display home page	
3	Reception/Manager	Click “Danh Sách Phiếu Khám” submenu at left menu	
4	System	Display list medical record page	
Alternative flows			
AT1	At step 4 in the main flows**,** if list medical record is empty		
Step	**Actor**	**Action**	
4.1	System	Display list medical record page is null	

Business Rules

#	**Rule Description**
BR01	Loading Medical record isn’t done
BR02	N/A

3.4.28 UC028: View List Appointment

3.4.28.1 Use Case Diagram



3.4.28.2 Use Case Specificati8n

Use Case ID	UC026	**Version**	1.0
Use Name	View List Appointment		
Actor	Reception		
Description	The function allows a Reception to view list appointment in the system		
Precondition	User login successful User is Reception		
Trigger	Reception click “Danh Sách Lich Hẹn” submenu on left menu		
Post-Condition	System display view list appointment page		
Main flows			
Step	**Actor**	**Action**	
1	Reception	Go to Home page	
2	System	Display home page	
3	Reception	Click “Danh SáchLịch Hẹn” submenu at left menu	
4	System	Display list appointment page	
Alternative flows			
AT1	At step 4 in the main flows**,** if list appointment is empty		
Step	**Actor**	**Action**	
4.1	System	Display list appointment page is null	

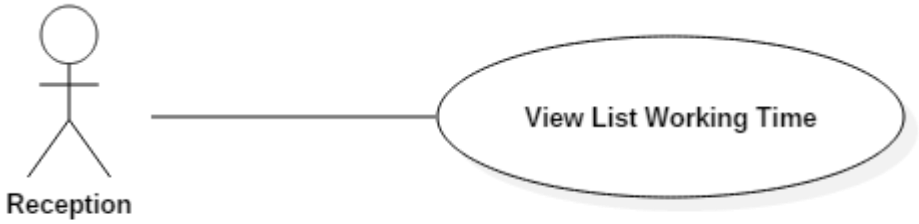
Business Rules

#	**Rule Description**

BR01	Loading appointment during day
BR02	N/A

3.4.29 UC029: View List Working Time

3.4.29.1 Use Case Diagram



3.4.29.2 Use Case Specificati8n

Use Case ID	UC029	**Version**	1.0
Use Name	View List Working Time		
Actor	Reception		
Description	The function allows a Reception to view list working time in the system		
Precondition	User login successful User is Reception		
Trigger	Reception click "Lịch Làm Việc Bác Sĩ" submenu on left menu		
Post-Condition	System display view list working time page		
Main flows			
Step	**Actor**	**Action**	
1	Reception	Go to Home page	
2	System	Display home page	
3	Reception	Click "Lịch Làm Việc Bác Sĩ" submenu at left menu	
4	System	Display list working time page	
Alternative flows			
AT1	At step 4 in the main flows**,** if list working time is empty		
Step	**Actor**	**Action**	
4.1	System	Display list working time page is null	

Business Rules

#	Rule Description
BR01	Loading all working time of Doctor
BR02	N/A

3.4.30 UC030: Add Patient

3.4.30.1 Use Case Diagram

3.4.30.2 Use Case Specification

Use Case ID	UC030	Version	1.0
Use Name	Add Patient		
Actor	Reception		
Description	The function allows a Admin add patient in the system.		
Precondition	User login successful User is Reception Go to List patient page		
Trigger	Reception input data valid all field then click “Lưu” button		
Post-Condition	System saving data and display list patient page		
Main flows			
Step	Actor	Action	
1	Reception	Go to Home page	
2	System	Display home page	
3	Reception	Click “Danh Sách Bệnh Nhân” sub-menu at left menu	
4	System	Display list patient page	
5	Reception	Click “Tạo Bệnh Nhân” button	

6	System	Display add Patient page
7	Reception	Input data valid all field
8	System	System validates data
9	Reception	Click “Luu” button
10	System	Saving data into system Display list patient page
Alternative flows		
AT1	At step 10 in the main flows**,** if Reception click “Hủy” button	
Step	**Actor**	**Action**
10.1	System	Don’t save data Display list patient page
AT2	At step 8 in the main flows**,** if reception input invalid data	
Step	**Actor**	**Action**
8.1	System	Display error message

Business Rules

#	Rule Description
BR01	Display Patient is active
BR02	N/A

3.4.31 UC031: Edit Patient

3.4.31.1 Use Case Diagram

3.4.31.2 Use Case Specification

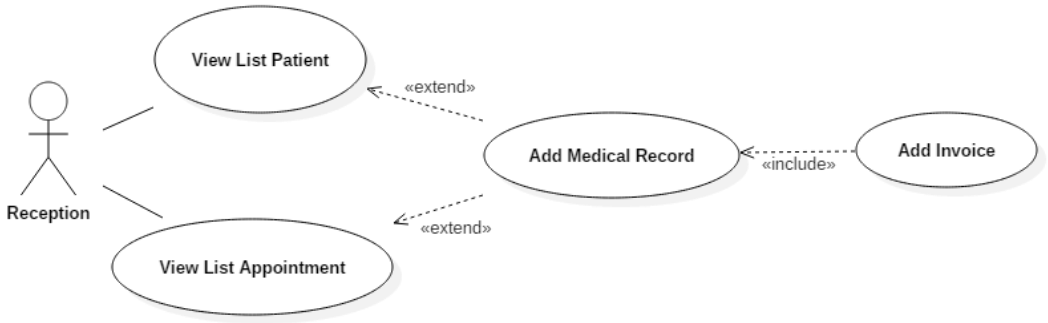
Use Case ID	UC031	**Version**	1.0
Use Name	Edit Patient		
Actor	Reception		
Description	The function allows a Admin edit patient in the system.		
Precondition	User login successful User is Reception Go to List patient page		
Trigger	Reception edit data valid all field then click “Lưu” button		
Post-Condition	System saving data and display list patient page		
Main flows			
Step	**Actor**	**Action**	
1	Reception	Go to Home page	
2	System	Display home page	
3	Reception	Click “Danh Sách Bệnh Nhân” sub-menu at left menu	
4	System	Display list patient page	
5	Reception	Click “Sửa” button	
6	System	Display edit Patient page	
7	Reception	Edit data valid all field	
8	System	System validates data	
9	Reception	Click “Lưu” button	
10	System	Saving data into system Display list patient page	
Alternative flows			
AT1	At step 10 in the main flows**,** if Reception click “Hủy” button		
Step	**Actor**	**Action**	
10.1	System	Don’t save data Display list patient page	
AT2	At step 8 in the main flows**,** if reception input invalid data		
Step	**Actor**	**Action**	
8.1	System	Display error message	

Business Rules

#	Rule Description
BR01	Loading all patient
BR02	

3.4.32 UC032: Add Medical Record

3.4.32.1 Use Case Diagram



3.4.32.2 Use Case Specification

Use Case ID	UC032	Version	1.0
Use Name	Add Medical Record		
Actor	Reception		
Description	The function allows a Reception can create new Medical Record on the system.		
Precondition	Reception login to system Reception go to list patient page or list appointment page		
Trigger	Reception input valid data all filed then click “Lưu” button		
Post-Condition	System save to data Medical Record of Patient into system then display invoice page.		
Main flows			
Step	Actor	Action	
1	Reception	Click “Phiếu Khám” button	

2	System	Display add medical record page
3	Reception	Input data valid all field
4	System	Validation data
5	Reception	Click “Tạo” button
6	System	Saving data Display pop-up confirm
7	Reception	Click “OK” button
8	System	Display printer page
Alternative flows		
AT1	At step 4 in the main flows**,** if Reception input data incorrect	
Step	**Actor**	**Action**
4.1	System	Display error message
AT2	At step 5 in the main flows**,** if Reception click “Hủy” button	
Step	**Actor**	**Action**
5.2	System	Don’t save data into system Display list patient page or list appointment page
AT3	At step 8 in the main flows**,** if Reception click “Cancel” button	
Step	**Actor**	**Action**
8.2	System	Don’t display printer page

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.33 UC033: Add Working Time

3.4.33.1 Use Case Diagram

3.4.33.2 Use Case Specification

Use Case ID	UC033	**Version**	1.0
Use Name	Add Working Time		
Actor	Reception		
Description	The function allows Reception can add working for doctor, nurse on the system.		
Precondition	Reception login to system Reception go to list working time		
Trigger	Reception click "Tạo mới Lịch" button at list working time page then input valid data all field and click "Lưu" button		
Post-Condition	System saving data and display list working time		
Main flows			
Step	**Actor**	**Action**	
1	Reception	Go to list working time	
2	System	Display list working time page of Doctors/Nurse	
3	Reception	Click "Tạo mới" button	
4	System	Display add working time page	
5	Reception	Input valid data all field	
6	System	Validation data	
7	Reception	Click "lưu" button	
8	System	Saving data Display list working time page	
Alternative flows			
AT1	At step 5 in the main flows**,** if Reception input invalid data		
Step	**Actor**	**Action**	
5.1	System	Display error message	

AT2	At step 8 in the main flows**,** if Reception click "Hủy" button	
Step	**Actor**	**Action**
8.1	System	Don't save data Display list working time page

Business Rules

#	Rule Description
BR01	Create working time for only doctor, nurse
BR02	N/A

3.4.34 UC034: Edit Working Time

3.4.34.1 Use Case Diagram

3.4.34.2 Use Case Specification

Use Case ID	UC034	**Version**	1.0
Use Name	Edit Working Time		
Actor	Reception		
Description	The function allows Reception can edit working time of Doctor, Nurse on the system.		
Precondition	Reception login to system Reception go to list working time page		
Trigger	Reception click "Sửa" button then input valid data all field and click "Lưu" button		
Post-Condition	System saving data then display list working time page		
Main flows			
Step	**Actor**	**Action**	

1	Reception	Go to list working time page
2	System	Display list working time page
3	Reception	Click “Sửa” button
4	System	Display edit working time page
5	Reception	Edit valid data all field
6	System	Validation data
7	Reception	Click “Lưu” button
8	System	System save data Display list working time page
Alternative flows		
AT1	At step 5 in the main flows, if Reception input invalid data	
Step	**Actor**	**Action**
5.1	System	Display error message
AT2	At step 8 in the main flows, if Reception click “Hủy” button	
Step	**Actor**	**Action**
5.1	System	Don’t Save data Display list working time page

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.35 UC035: Remove Working Time

3.4.35.1 Use Case Diagram

3.4.35.2 Use Case Specification

Use Case ID	UC035	**Version**	1.0
Use Name	Remove Working Time		
Actor	Reception		
Description	The function allows Reception can remove working time of Doctor, Nurse on the system.		
Precondition	Reception login to system Reception go to list working time page		
Trigger	Reception click “Xóa” button then Click “Đồng Ý” button		
Post-Condition	System delete data of working time then display list working time page		
Main flows			
Step	**Actor**	**Action**	
1	Reception	Go to list working time page	
2	System	Display list working time page	
3	Reception	Click “Xóa” button	
4	System	Display Pop-up confirm	
5	Reception	Click “Đồng Ý” button	
6	System	Deleted data of working time Display list working time page	
Alternative flows			
AT1	At step 6 in the main flows**,** if Reception click “Hủy” button		
Step	**Actor**	**Action**	
6.1	System	Don’t delete data Display list working time page	

Business Rules

#	**Rule Description**
BR01	N/A
BR02	N/A

3.4.36 UC036: Remove Appointment

3.4.36.1 Use Case Diagram

3.4.36.2 Use Case Specification

Use Case ID	UC036	**Version**	1.0
Use Name	Remove Appointment		
Actor	Reception		
Description	The function allows Reception can remove appointment of Patient on the system, when appointment expire.		
Precondition	Reception login to system Reception go to list appointment page		
Trigger	Reception click “Xóa” button then Click “Đồng Ý” button		
Post-Condition	System delete data of appointment then display list working time page		
Main flows			
Step	**Actor**	**Action**	
1	Reception	Go to list appointment page	
2	System	Display list appointment page	
3	Reception	Click “Xóa” button	
4	System	Display Pop-up confirm	
5	Reception	Click “Đồng Ý” button	
6	System	Deleted data of appointment Display list appointment page	
Alternative flows			
AT1	At step 6 in the main flows, if Reception click “Hủy” button		
Step	**Actor**	**Action**	
6.1	System	Don’t delete data Display list appointment page	

Business Rules

#	Rule Description
BR01	Display invoice have status is done
BR02	N/A

3.4.37 UC037: View List Medical Record In Room

3.4.37.1 Use Case Diagram

3.4.37.2 Use Case Specification

Use Case ID	UC037	Version	1.0
Use Name	View List Medical Record in Room		
Actor	Nurse		
Description	The function allows a Nurse to view list medical record in room.		
Precondition	Nurse login successful		
Trigger	Nurse click “Danh Sách Phiếu Khám” submenu on left menu		
Post-Condition	System display view list medical record in room page		
Main flows			
Step	Actor	Action	
1	Nurse	Go to Home page	
2	System	Display home page	
3	Nurse	Click “Danh Sách Phiếu Khám” submenu at left menu	
4	System	Display list medical record in room page	

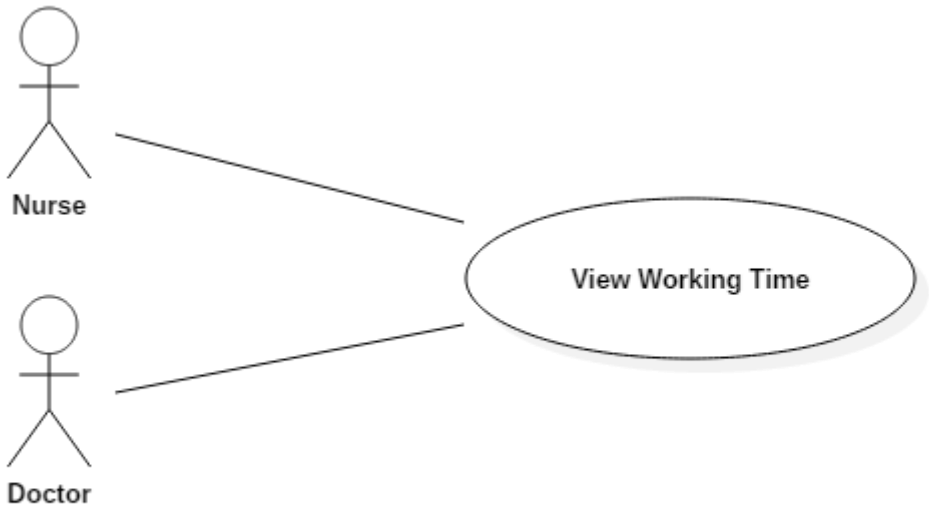
Alternative flows		
AT1	At step 4 in the main flows**,** if list medical record is empty	
Step	**Actor**	**Action**
4.1	System	Display list working time page is null

Business Rules

#	Rule Description
BR01	Display only medical record of room
BR02	N/A

3.4.38 UC038: View Working Time

3.4.38.1 Use Case Diagram



3.4.38.2 Use Case Specification

Use Case ID	UC038	Version	1.0
Use Name	View Working Time		
Actor	Nurse, Doctor		
Description	The function allows a Nurse/Doctor to view working time in room.		

Precondition	Nurse/Doctor login successful	
Trigger	Nurse click “Danh Sách Phiếu Khám” submenu on left menu	
Post-Condition	System display view list medical record in room page	
Main flows		
Step	**Actor**	**Action**
1	Nurse/Doctor	Go to Home page
2	System	Display home page
3	Nurse/Doctor	Click “Lịch Làm Việc” submenu at left menu
4	System	Display working time page
Alternative flows		
AT1	At step 4 in the main flows**,** if working time is empty	
Step	**Actor**	**Action**
4.1	System	Display working time page is null

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.39 UC039: Edit Medical Record

3.4.39.1 Use Case Diagram

3.4.39.2 Use Case Specification

Use Case ID	UC039	**Version**	1.0
Use Name	Edit Medical Record		

Actor	Nurse	
Description	The function allows a Nurse/Doctor edit medical record, when doctor exam patient.	
Precondition	Nurse login successful Nurse go to list medical record in room page	
Trigger	Nurse click “Khám” button then input valid data and click “Lưu” button	
Post-Condition	System saving data Display prescription page	
Main flows		
Step	**Actor**	**Action**
1	Nurse	Go to list medical record in room page
2	System	Display list medical record in room page
3	Nurse	Click “Khám” button
4	System	Display edit medical record page
5	Nurse	Input valid data all field
6	System	Validation data
7	Nurse	Click “Lưu” button
8	System	Saving data Display prescription page
Alternative flows		
AT1	At step 6 in the main flows**,** if nurse input invalid data	
Step	**Actor**	**Action**
6.1	System	Display error message
AT2	At step 8 in the main flows**,** if nurse click “Hủy” button	
Step	**Actor**	**Action**
8.1	System	Don’t save data Display list medical record in room page

Business Rules

#	Rule Description

BR01	N/A
BR02	N/A

3.4.40 UC040: Add Prescription

3.4.40.1 Use Case Diagram

3.4.40.2 Use Case Specification

Use Case ID	UC040	**Version**	1.0
Use Name	Add Prescription		
Actor	Nurse		
Description	The function allows a Nurse add Prescription into system.		
Precondition	Nurse login successful Nurse go to list medical record in room page. Nurse complete input medical record.		
Trigger	Nurse input medicine to prescription then click “Kê Toa Thuốc” button		
Post-Condition	System saving data Display list medical record in room page		
Main flows			
Step	**Actor**	**Action**	
1	Nurse	Go to input medical record	
2	System	Display edit medical record page	
3	Nurse	Input valid data all field	
4	System	Validation data	
5	Nurse	Click “Lưu” button	
6	System	Display add prescription	
7	Nurse	Click “Thêm Thuốc” button	
8	System	Display add medicine to prescription page	
9	Nurse	Input valid data all field	
10	System	Validation data	
11	Nurse	Click “Lưu” button	

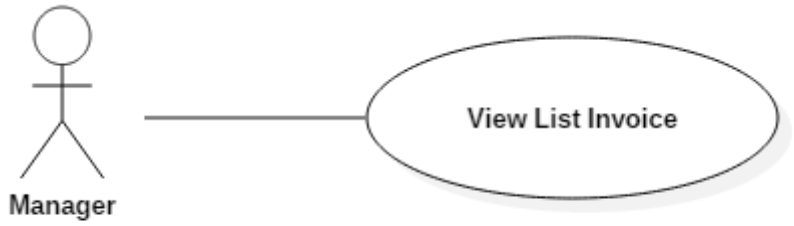
12	System	Display add Prescription page
13	Nurse	Click “Tạo” button
14	System	Save data Display Printer page
Alternative flows		
AT1	At step 9 in the main flows**,** if nurse input invalid data	
Step	**Actor**	**Action**
9.1	System	Display error message
AT2	At step 12 in the main flows**,** if nurse click “Hủy” button	
Step	**Actor**	**Action**
12.1	System	Don’t save data Display add prescription page
AT3	At step 14 in the main flows**,** if nurse click “Hủy” button	
Step	**Actor**	**Action**
14.1	System	Don’t save data Display list medical record in room page

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.41 UC041: View List Invoice

3.4.41.1 Use Case Diagram



3.4.41.2 Use Case Specification

Use Case ID	UC041	**Version**	1.0
Use Name	View List Invoice		
Actor	Manager		
Description	The function allows a Manager view list invoice into system.		
Precondition	Manager login successful		
Trigger	Manager "Báo cáo doanh thu" sub-menu at left menu		
Post-Condition	Display list invoice page		
Main flows			
Step	**Actor**	**Action**	
1	Manager	Go to home page	
2	System	Display home page	
3	Manager	Click "Báo cáo doanh Thu" sub-menu at left menu	
4	System	Display list invoice page	
Alternative flows			
AT1	At step 4 in the main flows**,** if list invoice is null		
Step	**Actor**	**Action**	
4.1	System	Display list invoice null	

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.42 UC042: Export File

3.4.42.1 Use Case Diagram

3.4.42.2 Use Case Specification

Use Case ID	UC042	Version	1.0
Use Name	Export File		
Actor	Manager		
Description	The function allows a Manager export file with type Excel, PDF, Image, Word.		
Precondition	Manager login successful Manager go to view list invoice record		
Trigger	Manager click “Export” button		
Post-Condition	Display print page		
Main flows			
Step	Actor	Action	
1	Manager	Go to list invoice	
2	System	Display list invoice page	
3	Manager	Click “Export” button	
4	System	Display pop-up confirm	
5	Manager	Click “Đồng Ý” button	
6	System	Export list invoice with type PDF, Word, Excel, Image	
Alternative flows			
AT1	At step 6 in the main flows, if Manager click “Hủy” at		

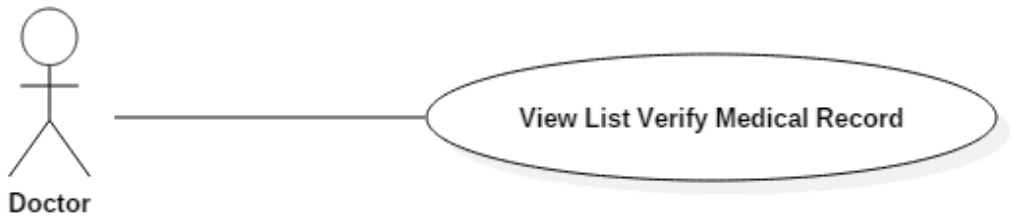
Step	Actor	Action
6.1	System	Don't export file Display list invoice page

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.43 UC043: View List Verify Medical Record

3.4.43.1 Use Case Diagram



3.4.43.2 Use Case Specification

Use Case ID	UC043	Version	1.0
Use Name	View List Verify Medical Record		
Actor	Doctor		
Description	The function allows a Doctor view list verify medical record.		
Precondition	Doctor login successful Doctor go to home page		
Trigger	Doctor click "DS Phiếu Khám" sub-menu at left menu		
Post-Condition	Display list verify medical record page		
Main flows			
Step	Actor	Action	
1	Doctor	Go to homepage	

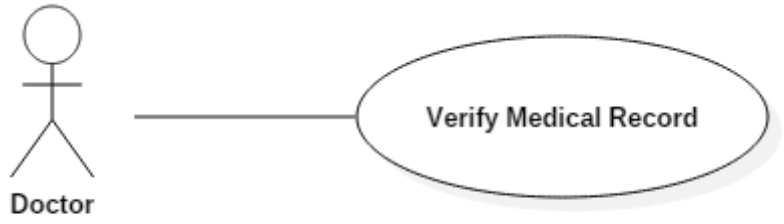
2	System	Display homepage
3	Doctor	Click “DS Phiếu Khám” sub-menu at left menu
4	System	Display list verify medical record page
Alternative flows		
AT1	At step 4 in the main flows**,** if list verify medical record is null	
Step	**Actor**	**Action**
5.1	System	Display list invoice page with null

Business Rules

#	Rule Description
BR01	Display medical record have status verify
BR02	N/A

3.4.44 UC044: Verify Medical Record

3.4.44.1 Use Case Diagram



3.4.44.2 Use Case Specification

Use Case ID	UC044	**Version**	1.0
Use Name	Verify Medical Record		
Actor	Doctor		
Description	The function allows a Doctor verify medical record.		
Precondition	Doctor login successful Doctor go to list verify medical record page		

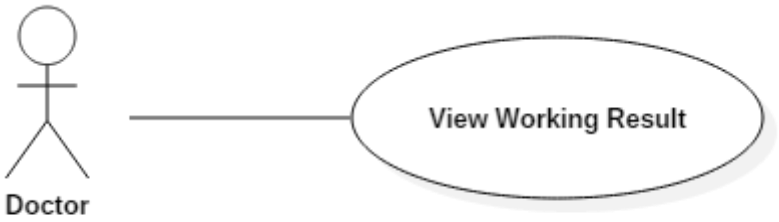
Trigger		Doctor click “Xem chi Tiết” button then click “Xác Nhận” button
Post-Condition		Saving data and change status of medical record Display list verify medical record page
Main flows		
Step	**Actor**	**Action**
1	Doctor	Go to list verify medical record page
2	System	Display list verify medical record page
3	Doctor	Click “Xem chi tiết” button
4	System	Display verify medical record page
5	Doctor	Click “Xác nhận” button
6	System	Saving data and medical record change status confirm Display list verify medical record page
Alternative flows		
AT1	At step 6 in the main flows**,** if Doctor click “Khám Lại” button	
Step	**Actor**	**Action**
6.1	System	Saving data and medical record change status reject Display list verify medical record page

Business Rules

#	Rule Description
BR01	Display medical record have status verify
BR02	N/A

3.4.45 UC045: View Working Result

3.4.45.1 Use Case Diagram



3.4.45.2 Use Case Specification

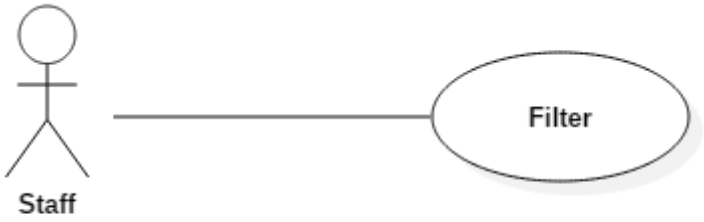
Use Case ID	UC045	**Version**	1.0
Use Name	Verify Medical Record		
Actor	Doctor		
Description	The function allows a Doctor view working result.		
Precondition	Doctor login successful		
Trigger	Doctor click “Kết quả Làm việc” sub-menu at left- menu		
Post-Condition	Display working result page		
Main flows			
Step	**Actor**	**Action**	
1	Doctor	Go to homepage	
2	System	Display homepage	
3	Doctor	Click “Kế quả làm việc” sub-menu at left menu	
4	System	Display working result page	
Alternative flows			
AT1	At step 6 in the main flows**,** if working result is null		
Step	**Actor**	**Action**	
6.1	System	Display working result page is null	

Business Rules

#	Rule Description
BR01	Display working result during day
BR02	N/A

3.4.46 UC046: Filter

3.4.46.1 Use Case Diagram



3.4.46.2 Use Case Specification

Use Case ID	UC046	**Version**	1.0
Use Name	Filter		
Actor	Doctor, Nurse, Admin, Manager, Reception		
Description	The function allows a Staff can filter.		
Precondition	Staff login successful Staff go to page have filter text box		
Trigger	Staff input valid filter text box		
Post-Condition	Display result filter		
Main flows			
Step	**Actor**	**Action**	
1	Staff	Go to page have filter text box	
2	System	Display page have filter text box	
3	Staff	Input valid data	
4	System	Display filter result	
Alternative flows			
AT1	At step 4 in the main flows**,** if Staff input invalid data		
Step	**Actor**	**Action**	

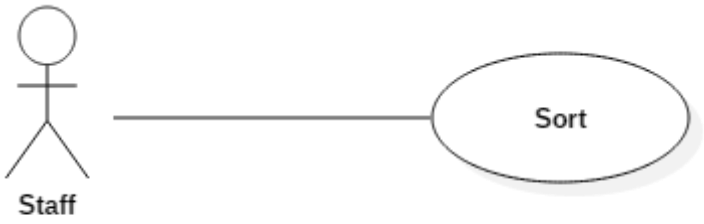
4.1	System	Display filter result is null

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.47 UC047: Sort

3.4.47.1 Use Case Diagram



3.4.47.2 Use Case Specification

Use Case ID	UC047	Version	1.0
Use Name	Sort		
Actor	Doctor, Nurse, Admin, Manager, Reception		
Description	The function allows a Staff can sort.		
Precondition	Staff login successful Staff go to page have filter text box		
Trigger	Staff click sort		
Post-Condition	Display sort result		
Main flows			
Step	Actor	Action	
1	Staff	Go to page have sort	
2	System	Display page have sort	
3	Staff	Click sort button	

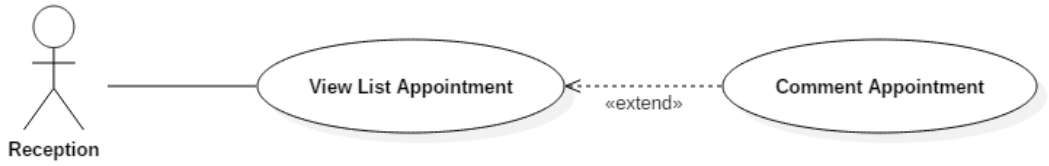
4	System	Display sort result
Alternative flows		
AT1	At step 4 in the main flows**,** if page null	
Step	**Actor**	**Action**
4.1	System	Display sort result is null

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.4.48 UC048: Comment Appointment

3.4.48.1 Use Case Diagram



3.4.48.2 Use Case Specification

Use Case ID	UC048	**Version**	1.0
Use Name	Comment Appointment		
Actor	Reception		
Description	The function allows a Reception can comment into Appointment.		
Precondition	Reception login successful Reception go to list appointment page		
Trigger	Reception input to comment field valid data then click “Luu” button		
Post-Condition	Display list appointment page		
Main flows			
Step	**Actor**	**Action**	

1	Reception	Go to list appointment page
2	System	Display list appointment page
3	Reception	Click “Chi Tiết” button
4	System	Display Appointment detail page
5	Reception	Input to comment field data valid
6	System	Don’t anything
7	Reception	Click “Lưu” button
8	System	Save data Display list appointment page
Alternative flows		
AT1	N/A	
Step	**Actor**	**Action**
N/A	N/A	N/A

Business Rules

#	Rule Description
BR01	N/A
BR02	N/A

3.5 Non-functional Specification

3.5.1 Reliability

If the software is crashed, it should be repaired in 30 minutes.

Defect rate: we accept an average of 10 bugs per KLOC (kilo line of codes), however, this number should not exceed 15 bugs per KLOC

3.5.2 Performance Requirements

3.5.2.1 Availability

The system is approximately 99% and must be available 24 hours a day, 7 days a week. User must have the ability to access website by any web browser in his or her computers.

3.5.2.2 Response time

- Web pages maximum loading is around 4 seconds
- Limit access must be 10000

3.5.3 User Interface

a. Arrangement

- Have 2 website: patient page and clinic page.
- Patient page is public website for patient. This page is view information of clinic pubic.
- Clinic page is internal website. Clinic staff using the function on the website for easy work.

b. Color

- The system has been designed to use less and simple color to make the page be fresh and clearly to user. Users can easily notice what they want

c. Text

- All text bases on Times New Roman style. Their size and font style will rely on their type, their function. The text style will be divided into some specific types to make the website be unified

3.5.4 Hardware/Software Requirements

All data and applications installed at the servers, so it should be required the best equipment. When equipped servers, it is necessary to pay attention to the following element:

- **Configuration suggestions of hardware:**

#	Name	Configuration	Description
1	Application Server	RAM: 8GB Hard disk: 250GB Chipset: Core i7	Server for application server to deploy web application with the minimum configuration
2	Client	RAM: 4GB Hard disk: 150GB Chipset: Core i3	Notebooks for developing/testing with the minimum configuration

- **Configured transmission line**:

Depending on the actual topography of each deployment environment that function setting up the network will be able to use copper cable, optical cable or wireless.

- **Configuration suggestions of software:**

Software name	Version	Source
Microsoft edge		Microsoft

Chrome	51	Google
Operating System: Microsoft® Windows	7, 8, 10	Microsoft
.Net Framework	4.0	Microsoft
SQL Server	2008	Microsoft
Visual studio	2015	Microsoft

CHAPTER 4: SOFTWARE DESIGN

4.1 Architecture design

4.1.1 Choice of Architecture Design

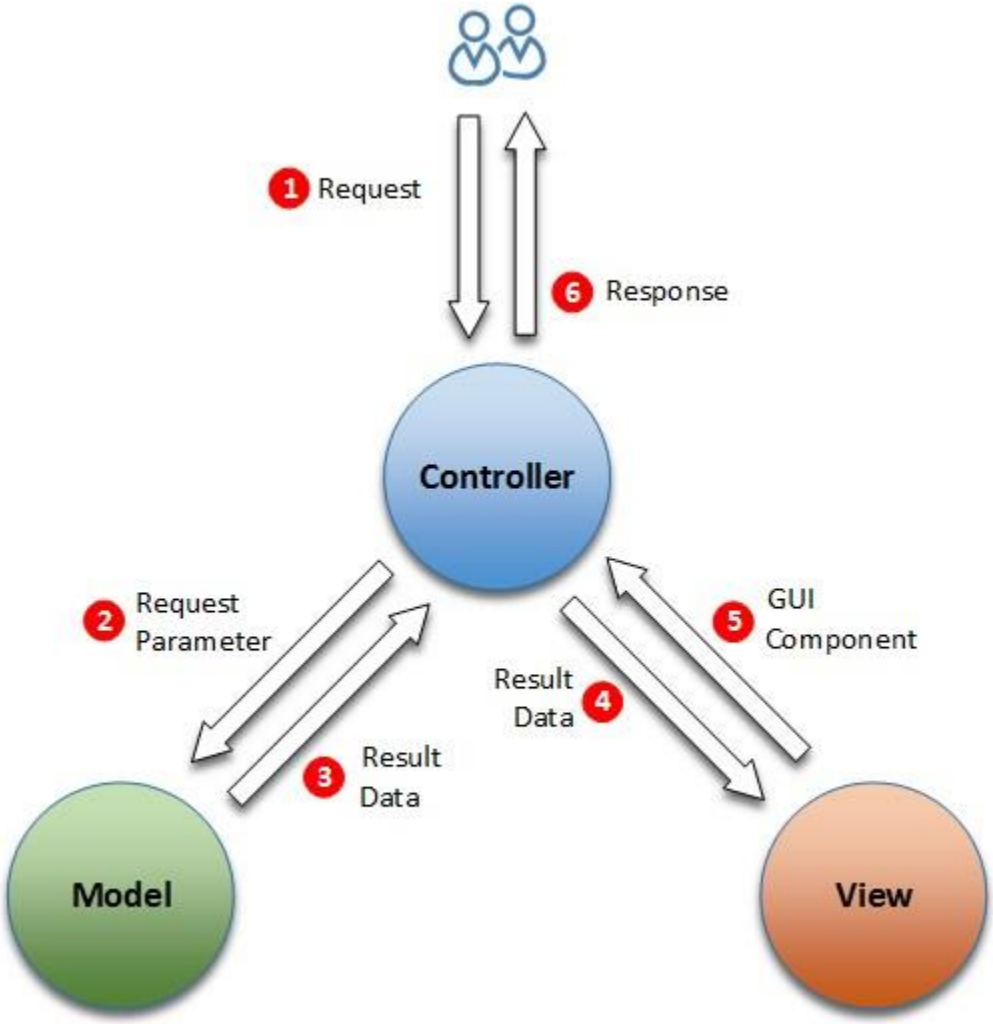


Figure 4-1: System Architecture

The system will be implemented using MVC pattern. This pattern is comprised by three tiers:

- Model contains domain entities and the business logic associate with them.

- View contains the information needed for Controller to generate an output for the user.

- Controller plays a role as the mediator between View and Model. Controller is the place that handle user's request first. When user send a request to the Controller, it will call the business logic in the Model and receive data from Model. Then Controller selects the appropriate View and render that View with data from Model before return the GUI back to user.

4.1.2 Description of System Interface

4.1.2.1 User interfaces

The whole purpose of user interface design is to enable people to interact easily with your system by communicating meaning and function.

4.1.2.2 Hardware interfaces

This site must run over the internet with devices such as laptop, mobile, tablet … that should be connect to internet

4.1.2.3 Software interfaces

Run best on Microsoft Edge, chrome

4.1.2.4 Communication Interfaces

The system shall use the HTTP protocol for communication over the internet

4.1.3 Architectural Presentation

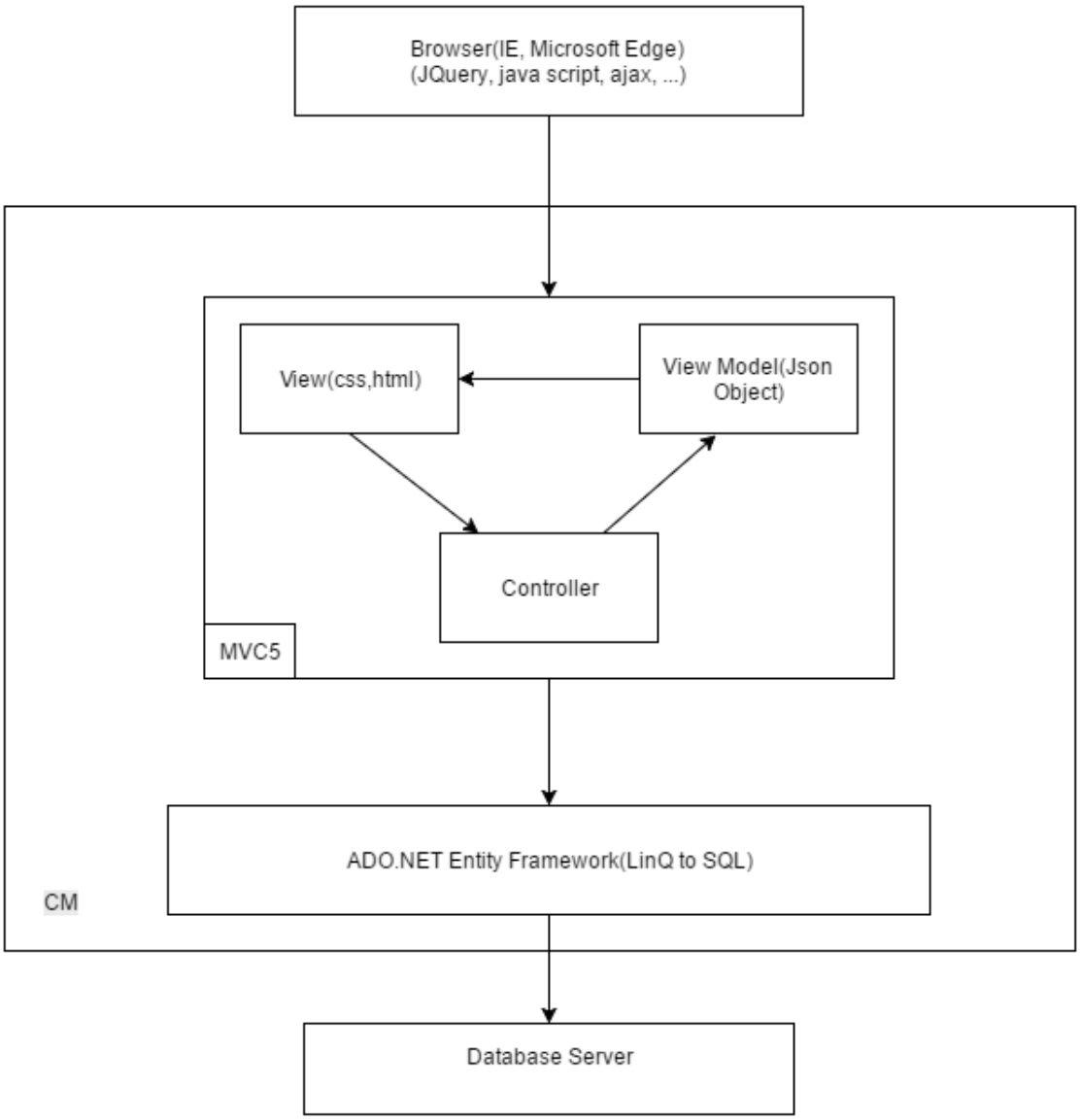


Figure 4-2: System overview

4.1.4 Component/Package Design

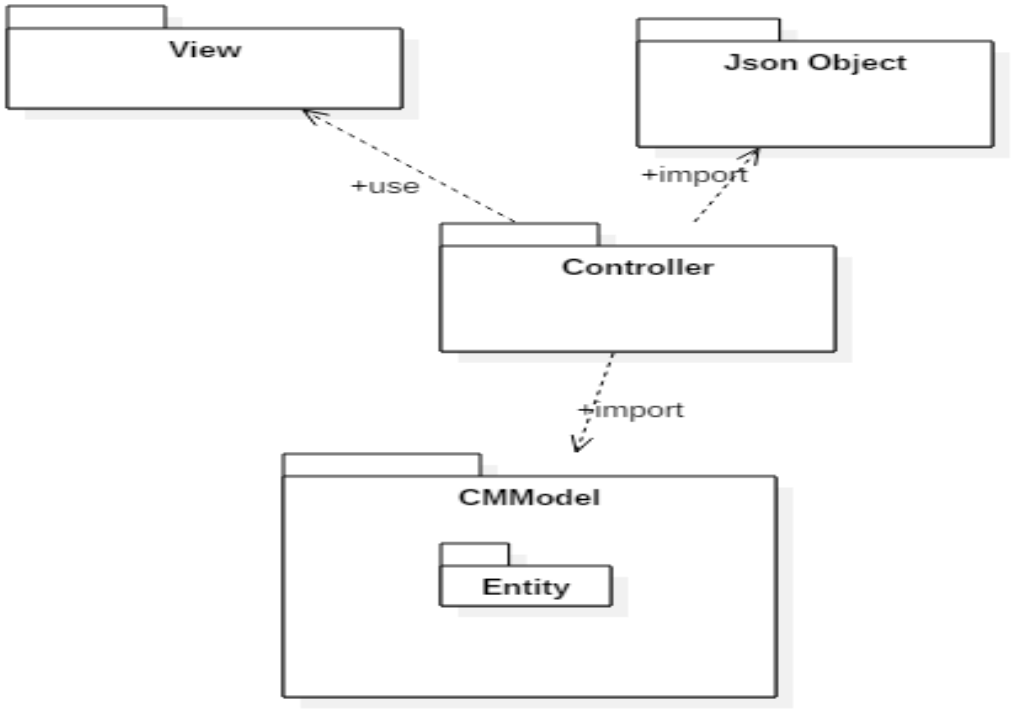


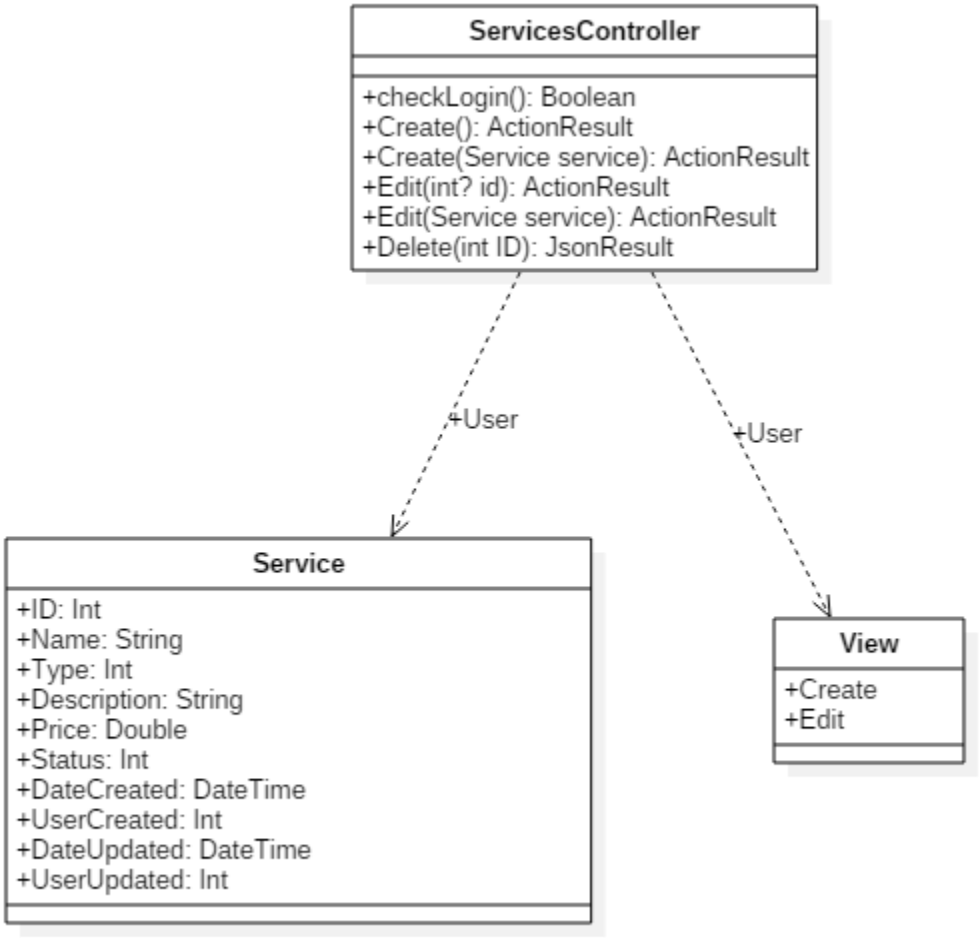
Figure 4-3: Package Diagram

4.2 Detailed design

4.2.1 Common Design

4.2.2 Manage Service

4.2.2.1 Class Diagram



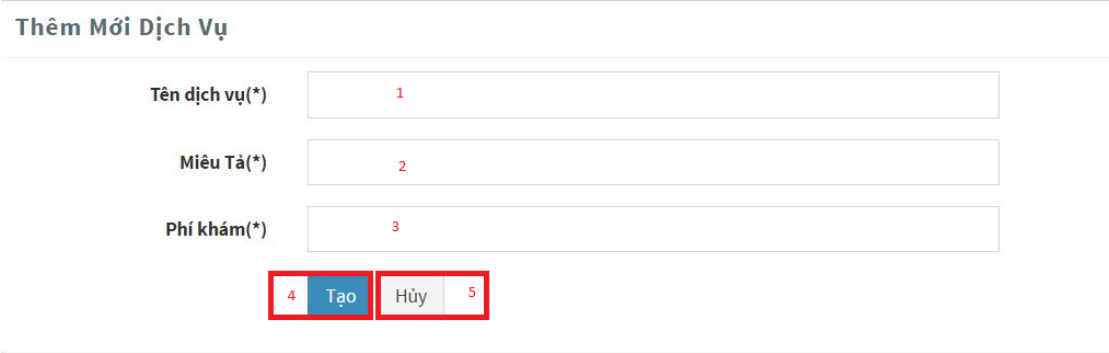
4.2.2.1.1 ServiceController

Class	ServiceController
Description	This class execute all services from database
Base Class	Controller
Constructor	N/A
Prototype	N/A
Source File	ServiceController.cs

Namespace	ClinicManager.Controllers			
Methods	**Name**	**Input**	**Output**	**Description**
	checkLogin	N/A	Boolean	This method executes to check login
	Create	N/A	ActionResult	This method executes to return a view of create
	Create	Service	ActionResult	This method executes to return to insert a record in database
	Edit	Int	ActionResult	This method executes to return to view edit service
	Edit	Service	ActionResult	This method executes to edit a record in database
	Delete	Int	JsonResult	This method executes to delete a record in database

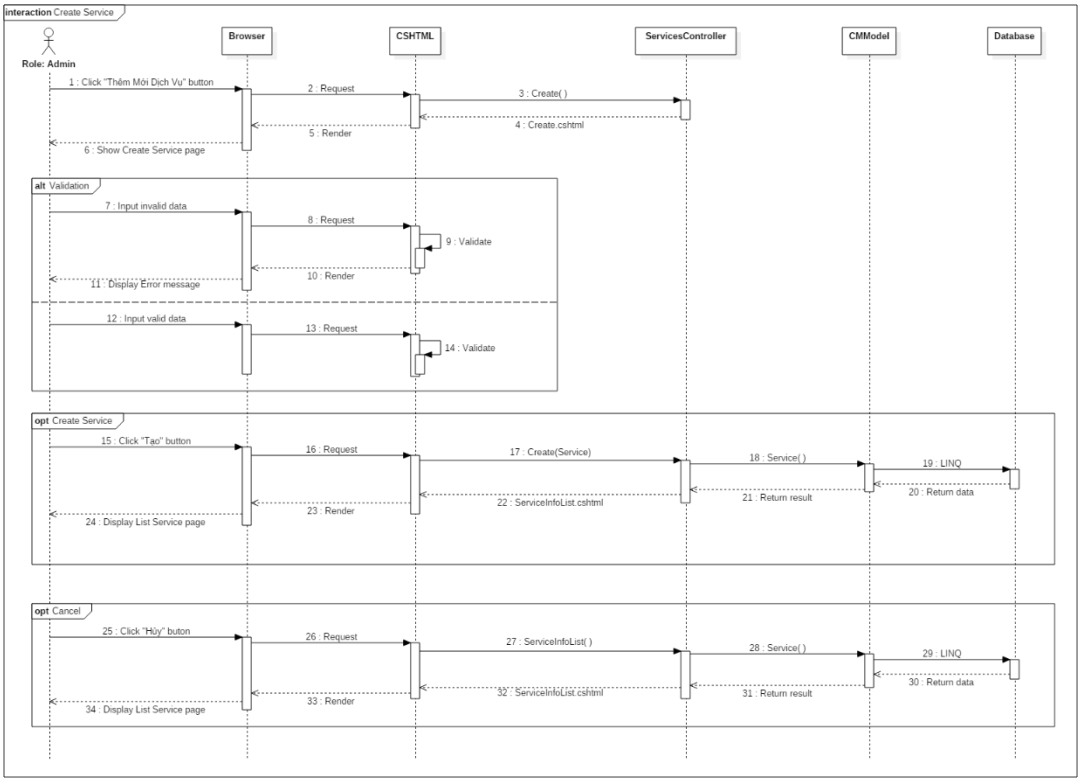
4.2.2.2 Add Service

4.2.2.2.1 Screen Design



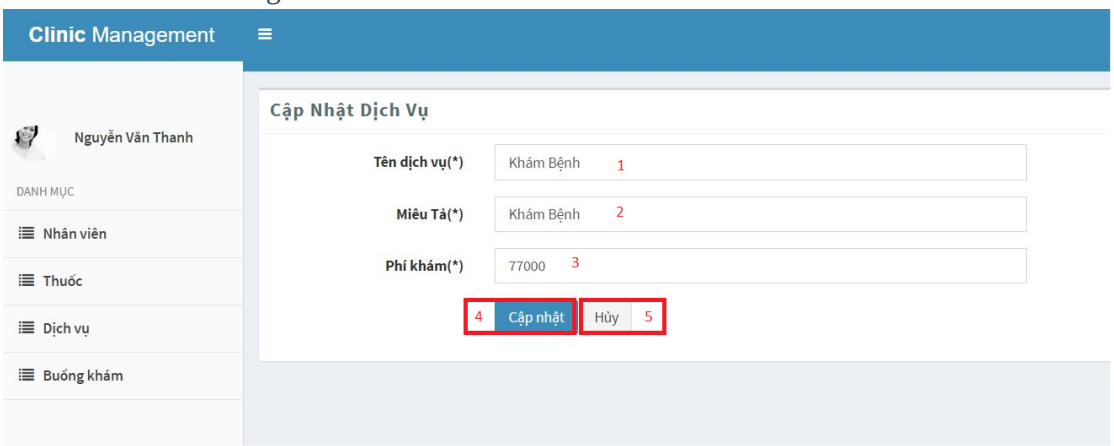
No	Object/Control Name	Type	Required	Description
1	Tên Dịch Vụ	Text box	Yes	Name of Service
2	Miêu Tả	Text box	Yes	Description of Service
3	Phí Khám	Text box	Yes	Price of Service
4	Tạo	Button	Yes	Add new Service
5	Hủy	Button	Yes	Cancel add new Service

4.2.2.2.2 Sequence Diagram



4.2.2.3 Edit Service

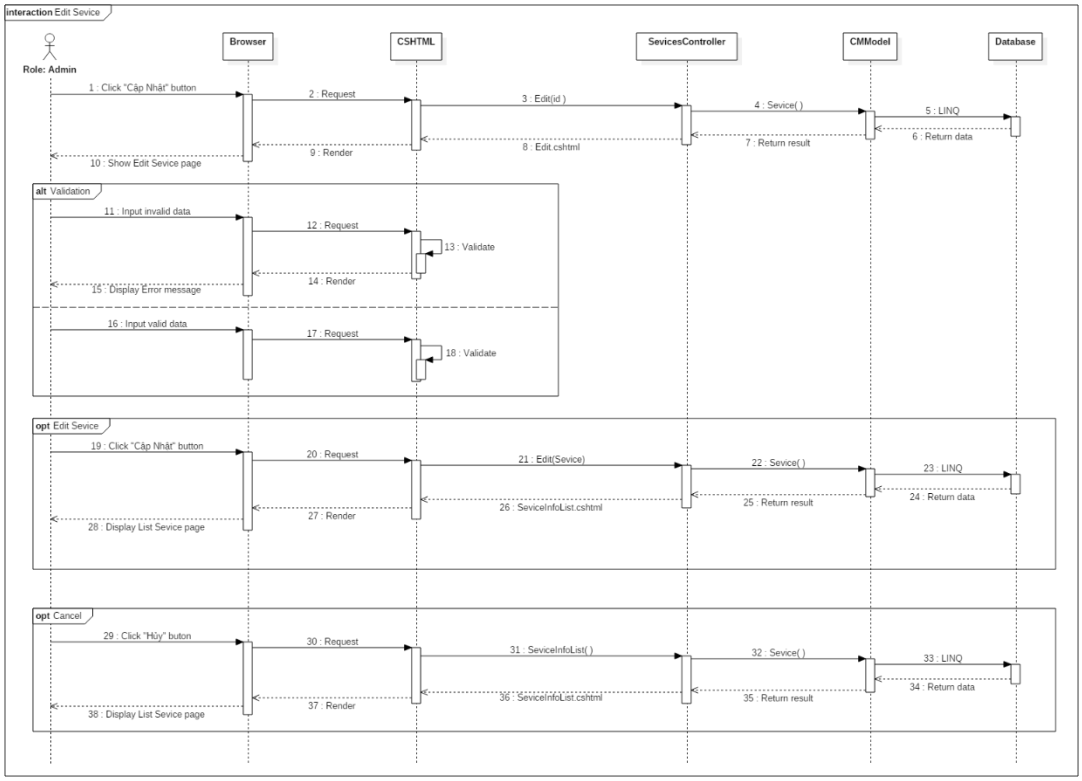
4.2.2.3.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Tên Dịch Vụ	Text box	Yes	Name of Service
2	Miêu Tả	Text box	Yes	Description of

				Service
3	Phí Khám	Text box	Yes	Price of Service
4	Cập Nhật	Button	Yes	Edit Service
5	Hủy	Button	Yes	Cancel add new Service

4.2.2.3.2 Sequence Diagram



4.2.2.4 Remove Service

4.2.2.4.1 Screen Design

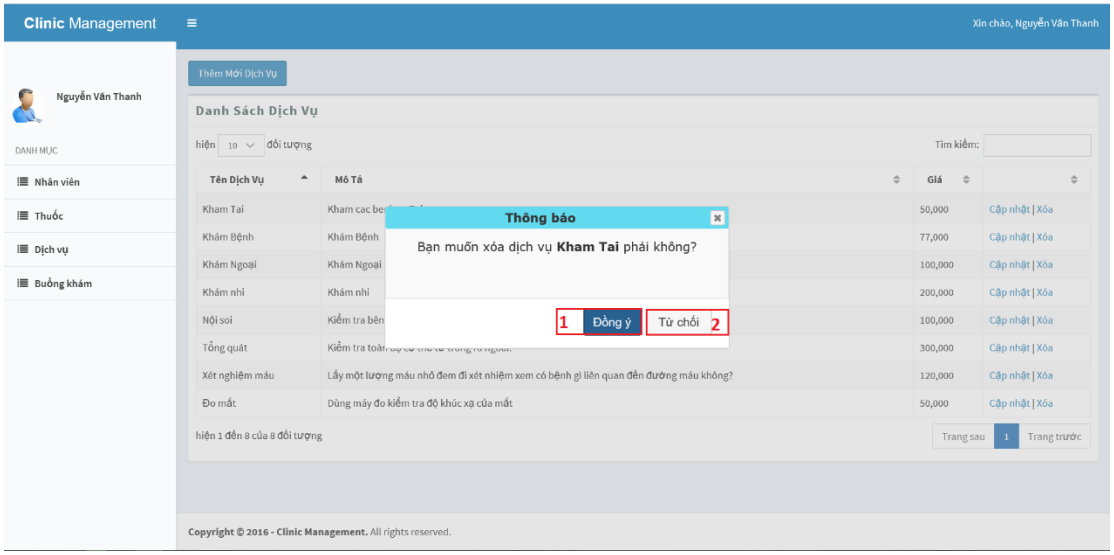
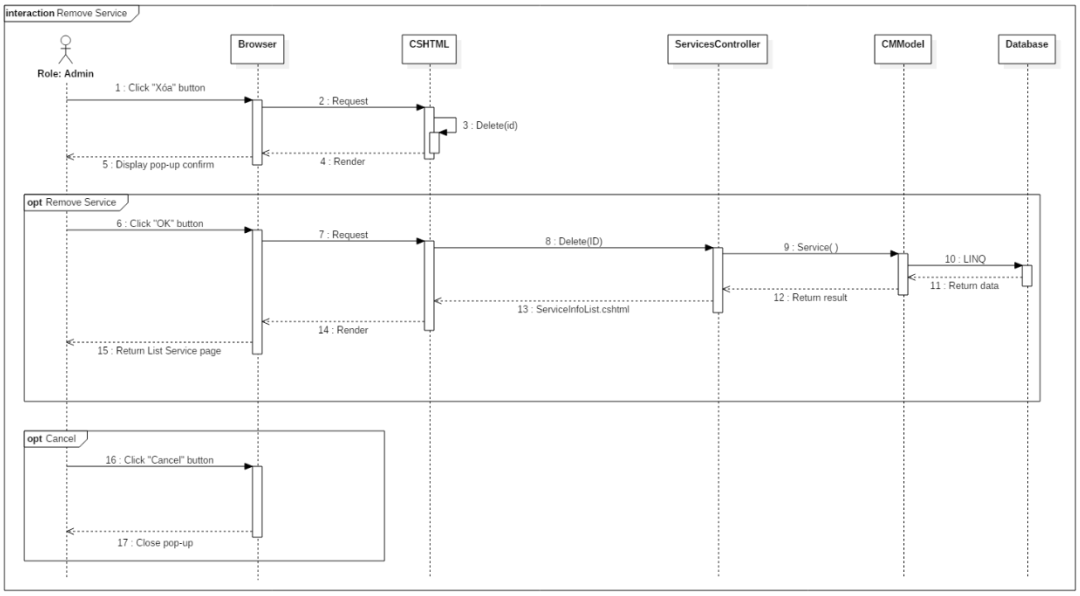


Table 4-x: Manage news- Delete news

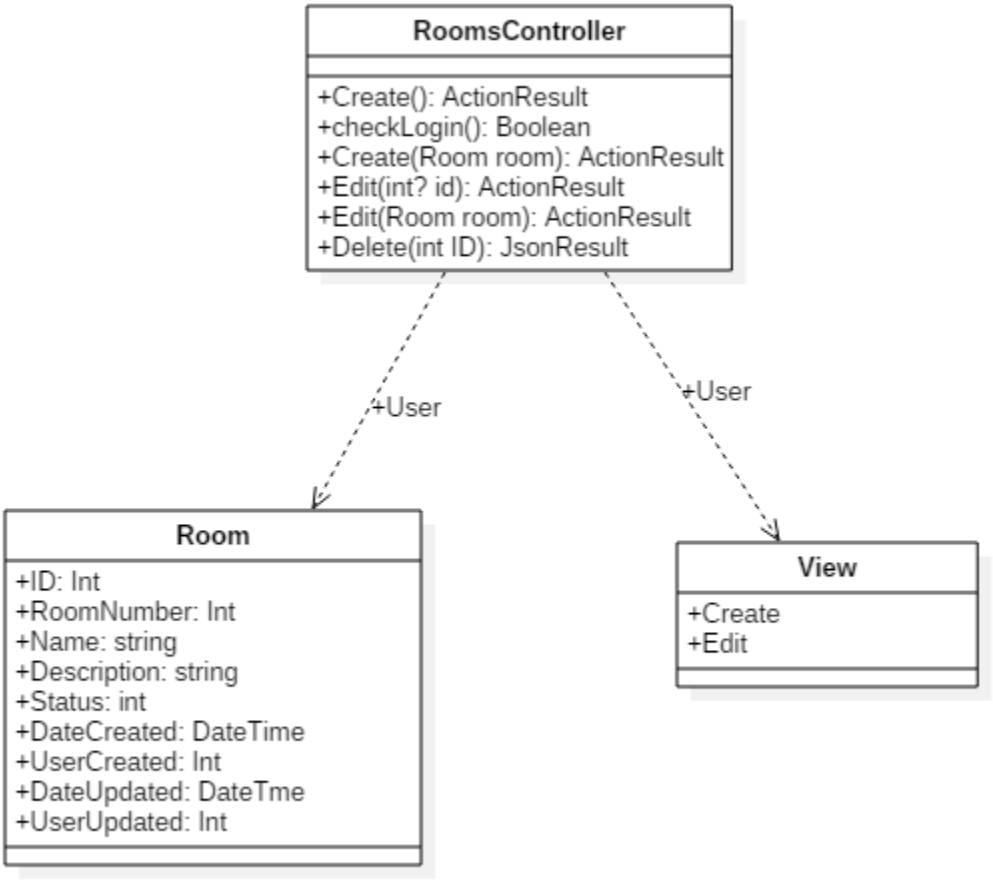
No	Object/Control Name	Type	Required	Description
1	"Đồng ý"	Button	Yes	Remove Service
2	"Từ chối"	Button	Yes	Cancel remove Service

4.2.2.4.2 Sequence Diagram



4.2.3 Manage Room

4.2.3.1 Class Diagram



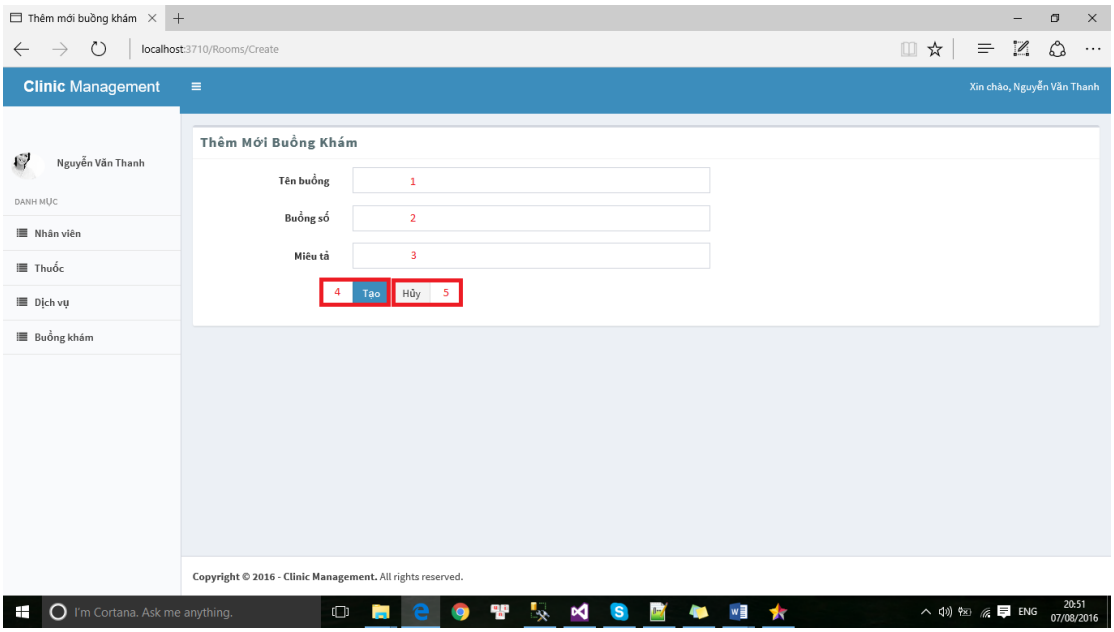
4.2.3.1.1 RoomController

Class	RoomController
Description	This class execute all room from database
Base Class	Controller
Constructor	N/A
Prototype	N/A

Source File	RoomController.cs			
Namespace	ClinicManager.Controllers			
Methods	**Name**	**Input**	**Output**	**Description**
	checkLogin	N/A	Boolean	This method executes to check login
	Create	N/A	ActionResult	This method executes to return a view of create
	Create	Room	ActionResult	This method executes to return to insert a record in database
	Edit	Int	ActionResult	This method executes to return to view edit room
	Edit	Room	ActionResult	This method executes to edit a record in database
	Delete	Int	JsonResult	This method executes to delete a record in database

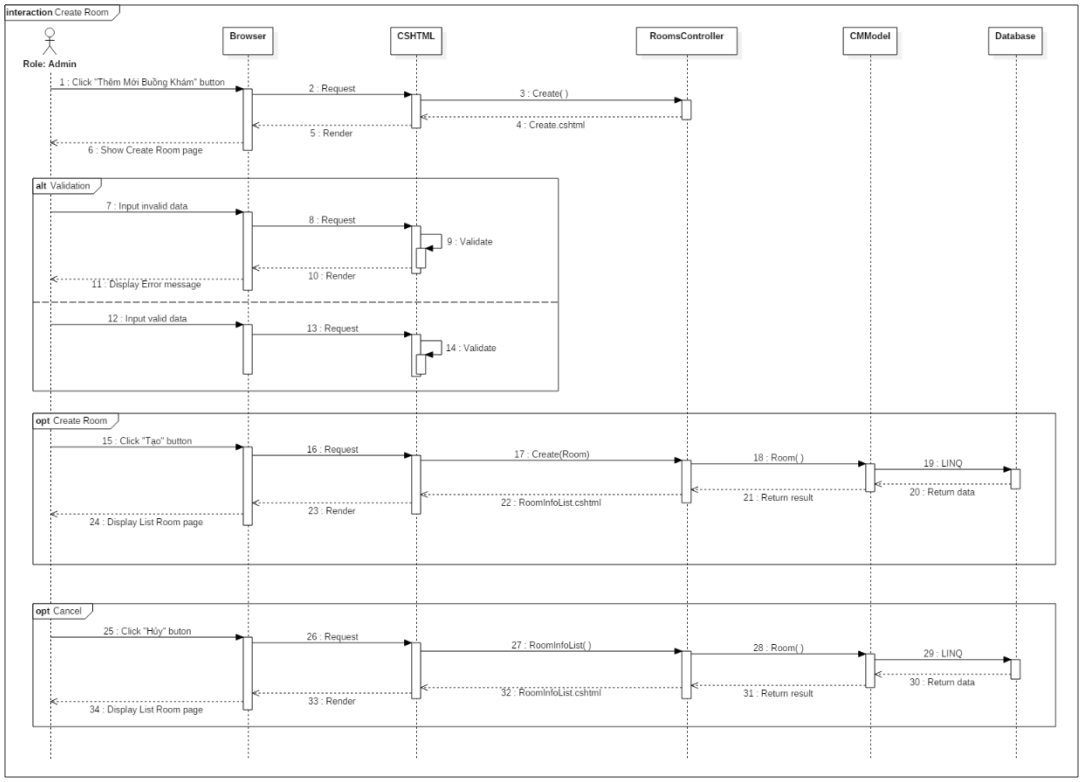
4.2.3.2 Add Room

4.2.3.2.1 Screen Design



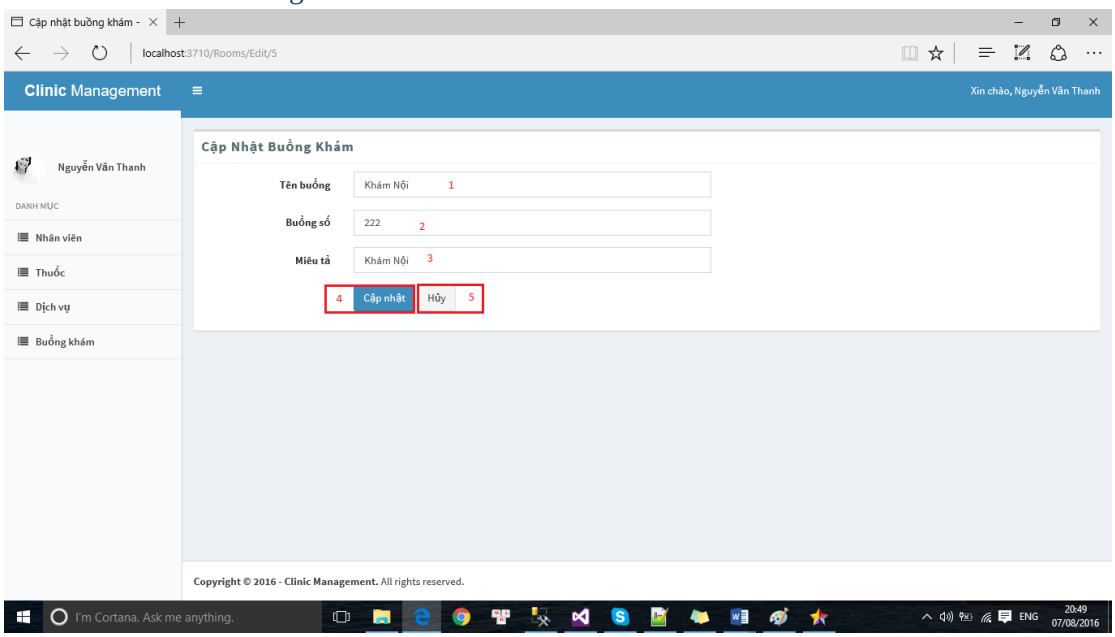
No	Object/Control Name	Type	Required	Description
1	Tên Buồng	Text box	Yes	Name of Room
2	Buồng Số	Text box	Yes	Description of Room
3	Miêu Tả	Text box	Yes	Price of Room
4	Tạo	Button	Yes	Add new Room
5	Hủy	Button	Yes	Cancel add new Room

4.2.3.2.2 Sequence Diagram



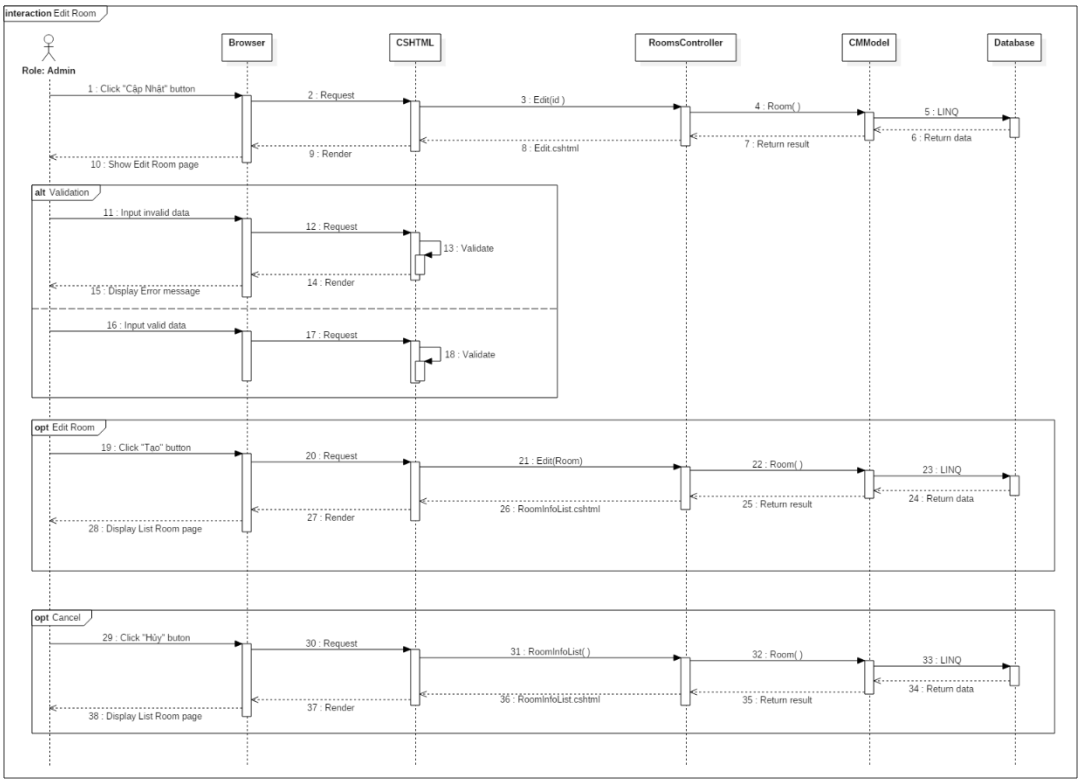
4.2.3.3 Edit Room

4.2.3.3.1 Screen Design



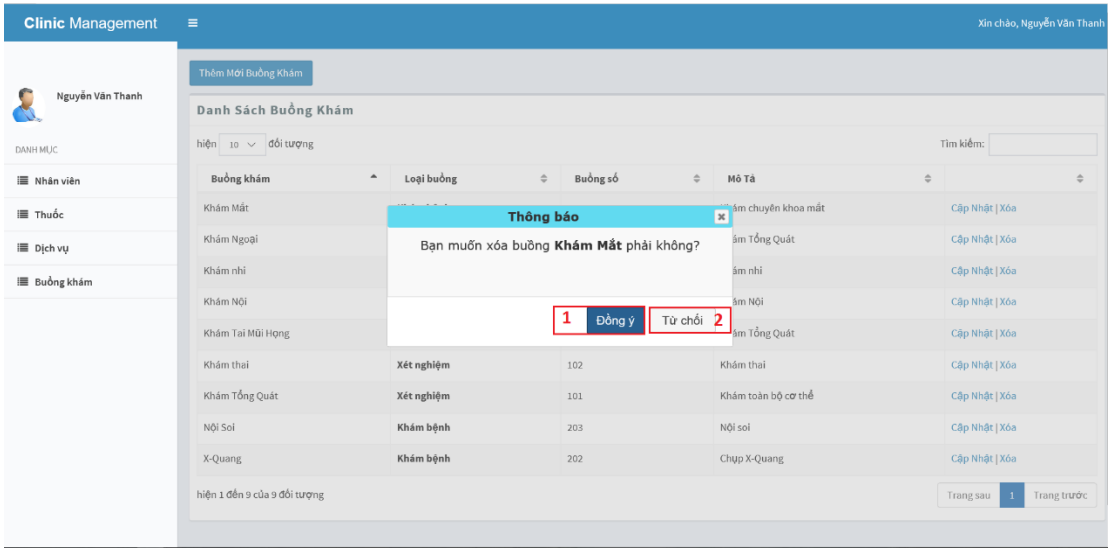
No	Object/Control Name	Type	Required	Description
1	Tên Buồng	Text box	Yes	Name of Room
2	Buồng Số	Text box	Yes	Description of Room
3	Miêu Tả	Text box	Yes	Price of Room
4	Cập nhật	Button	Yes	Add new Room
5	Hủy	Button	Yes	Cancel add new Room

4.2.3.3.2 Sequence Diagram



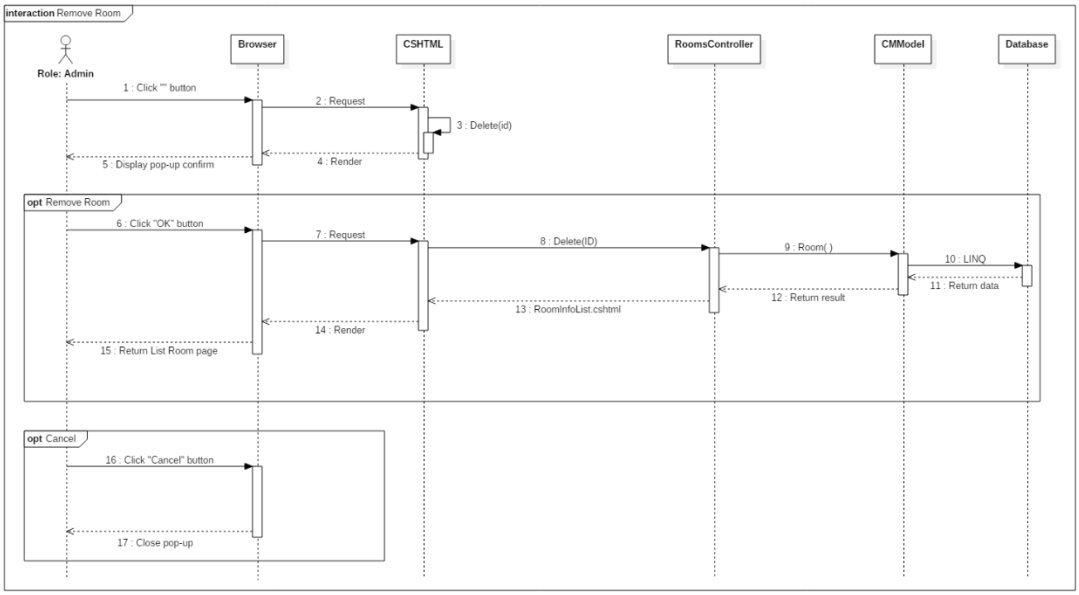
4.2.3.4 Remove Room

4.2.3.4.1 Screen Design



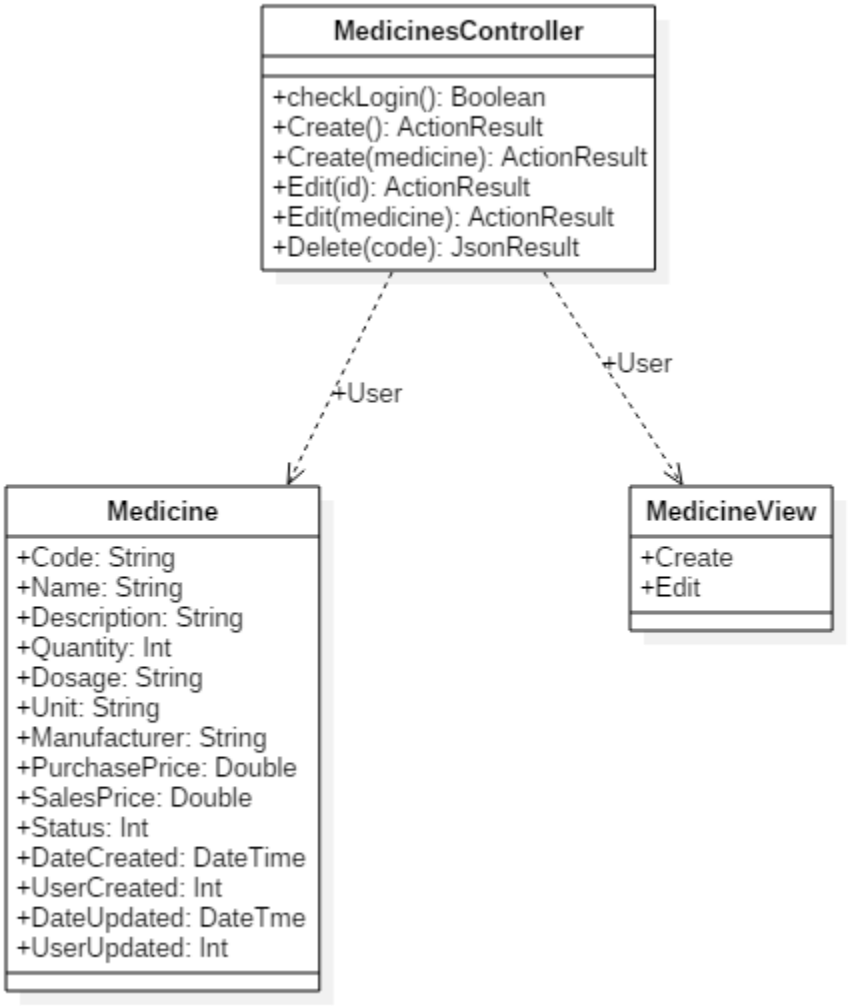
No	Object/Control Name	Type	Required	Description
1	"Đồng ý"	Button	Yes	Remove Room
2	"Từ chối"	Button	Yes	Cancel remove Room

4.2.3.4.2 Sequence Diagram



4.2.4 Manage Medicine

4.2.4.1 Class Diagram



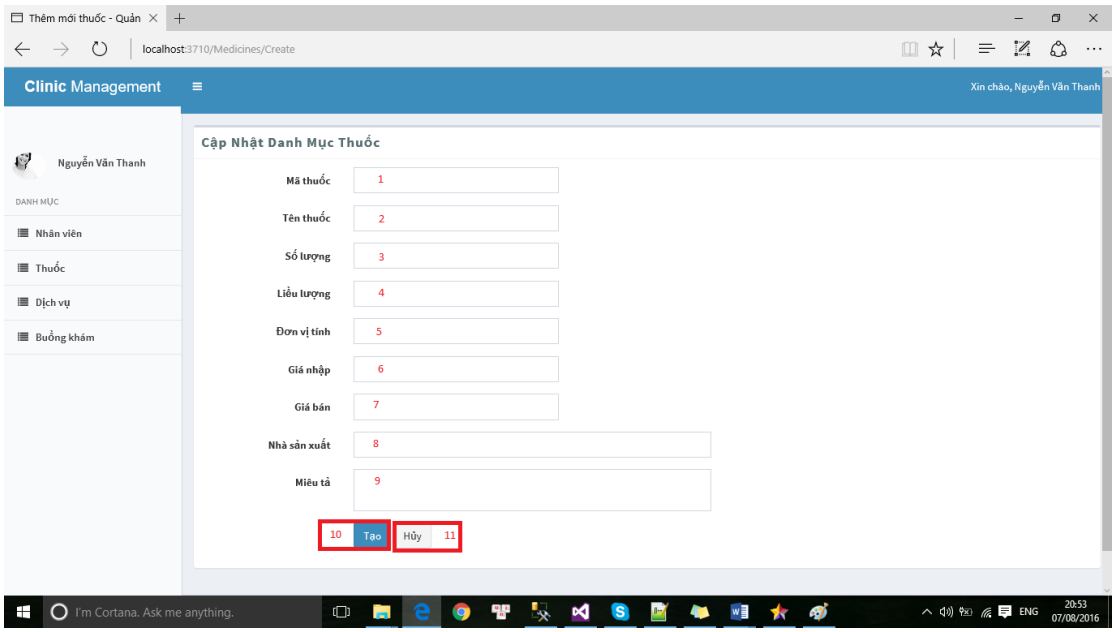
4.2.4.1.1 MedicineController

Class	MedicineController
Description	This class execute all medicine from database
Base Class	Controller
Constructor	N/A
Prototype	N/A

Source File	MedicinesController.cs			
Namespace	ClinicManager.Controllers			
Methods	**Name**	**Input**	**Output**	**Description**
	checkLogin	N/A	Boolean	This method executes to check login
	Create	N/A	ActionResult	This method executes to return a view of create
	Create	Medicine	ActionResult	This method executes to return to insert a record in database
	Edit	Int	ActionResult	This method executes to return to view edit medicine
	Edit	Medicine	ActionResult	This method executes to edit a record in database
	Delete	Int	JsonResult	This method executes to delete a record in database

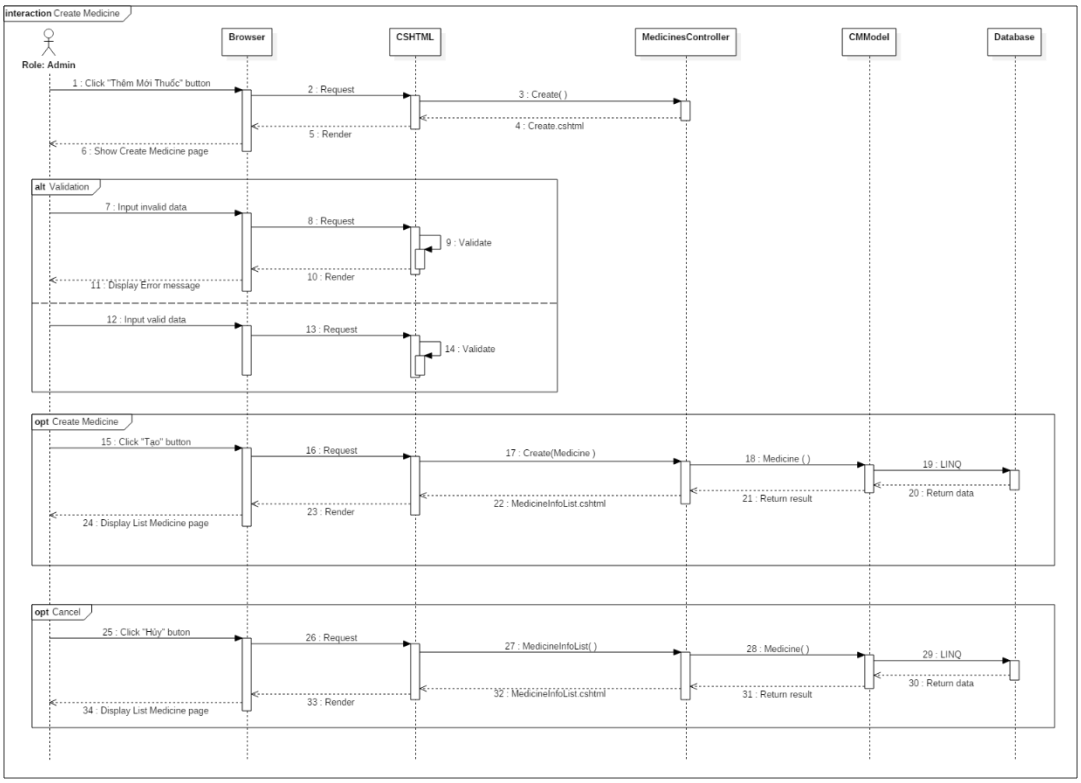
4.2.4.2 Add Medicine

4.2.4.2.1 Screen Design



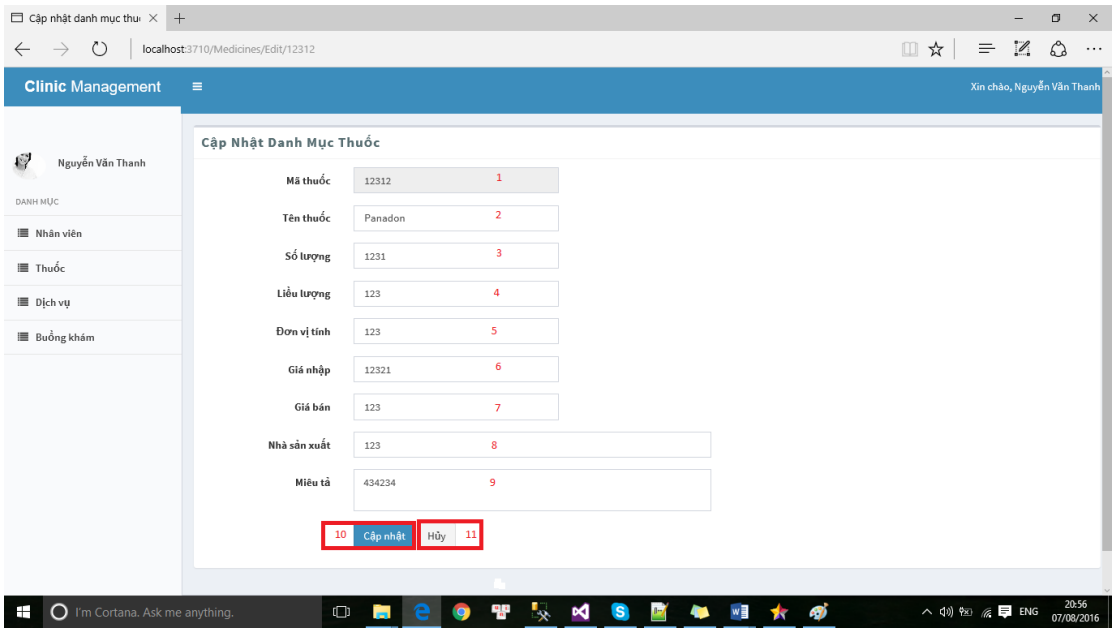
No	Object/Control Name	Type	Required	Description
1	Mã Thuốc	Text box	Yes	Code of Medicine
2	Tên Thuốc	Text box	Yes	Name of Medicine
3	Số Lượng	Text box	Yes	Quantity of Medicine
4	Liều Lượng	Text box	Yes	Dosage of Medicine
5	Đơn vị tính	Text box	Yes	Unit of Medicine
6	Giá nhập	Text box	Yes	Purchase Price of Medicine
7	Giá bán	Text box	Yes	Sale Price of Medicine
8	Nhà sản xuất	Text box	Yes	Manufacturer of medicine
9	Miêu tả	Text box	Yes	Description of Medicine
10	Tạo	Button	Yes	Add new Medicine
11	Hủy	Button	Yes	Cancel add new Medicine

4.2.4.2.2 Sequence Diagram



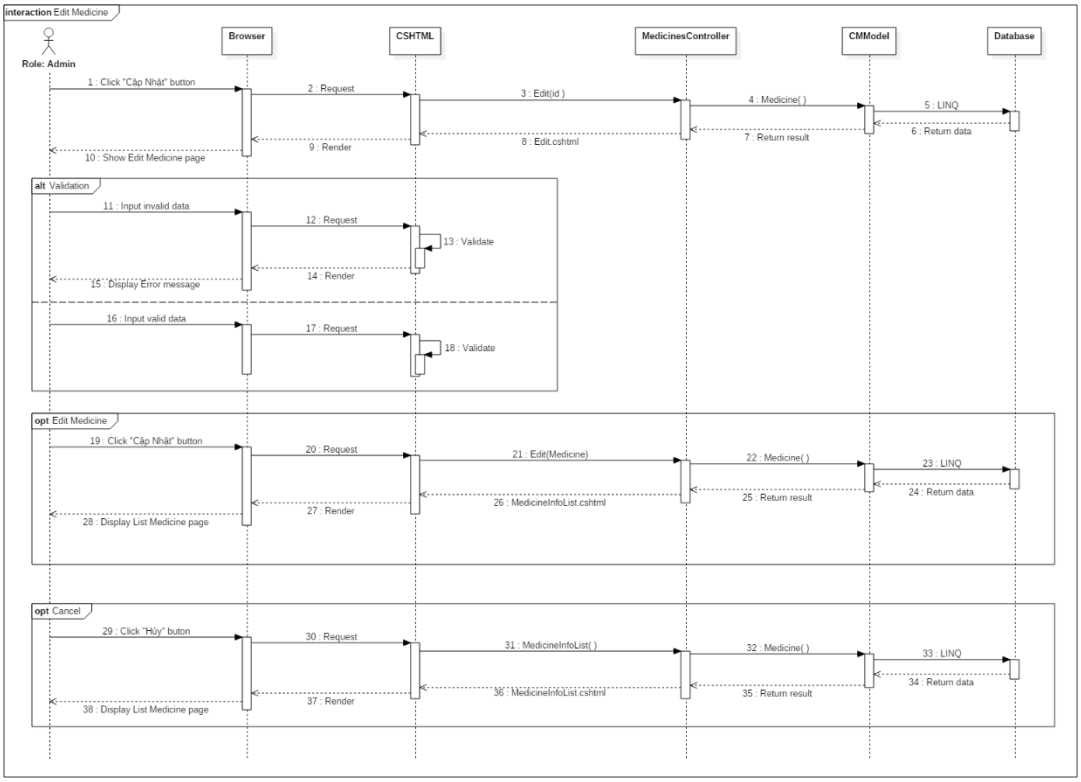
4.2.4.3 Edit Medicine

4.2.4.3.1 Screen Design



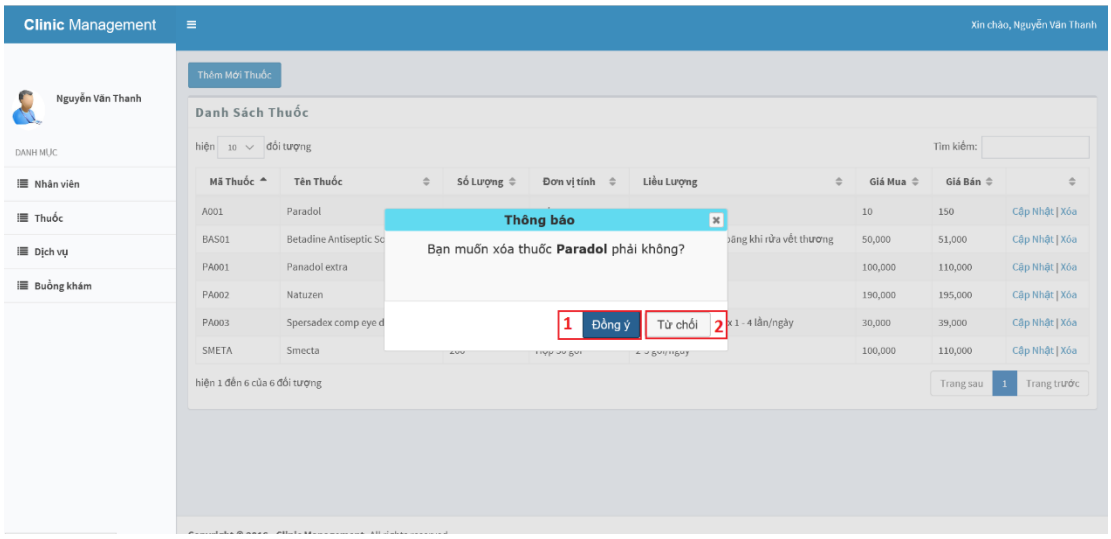
No	Object/Control Name	Type	Required	Description
1	Mã Thuốc	Label	No	Code of Medicine
2	Tên Thuốc	Text box	Yes	Name of Medicine
3	Số Lượng	Text box	Yes	Quantity of Medicine
4	Liều Lượng	Text box	Yes	Dosage of Medicine
5	Đơn vị tính	Text box	Yes	Unit of Medicine
6	Giá nhập	Text box	Yes	Purchase Price of Medicine
7	Giá bán	Text box	Yes	Sale Price of Medicine
8	Nhà sản xuất	Text box	Yes	Manufacturer of medicine
9	Miêu tả	Text box	Yes	Description of Medicine
10	Cập nhật	Button	Yes	Add new Medicine
11	Hủy	Button	Yes	Cancel add new Medicine

4.2.4.3.2 Sequence Diagram



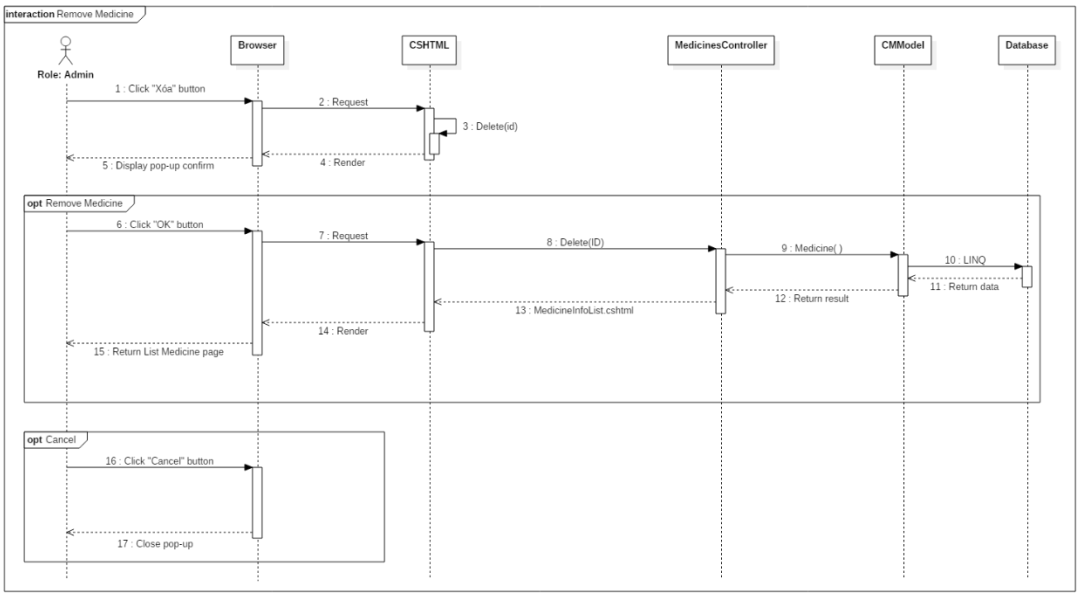
4.2.4.4 Remove Medicine

4.2.4.4.1 Screen Design



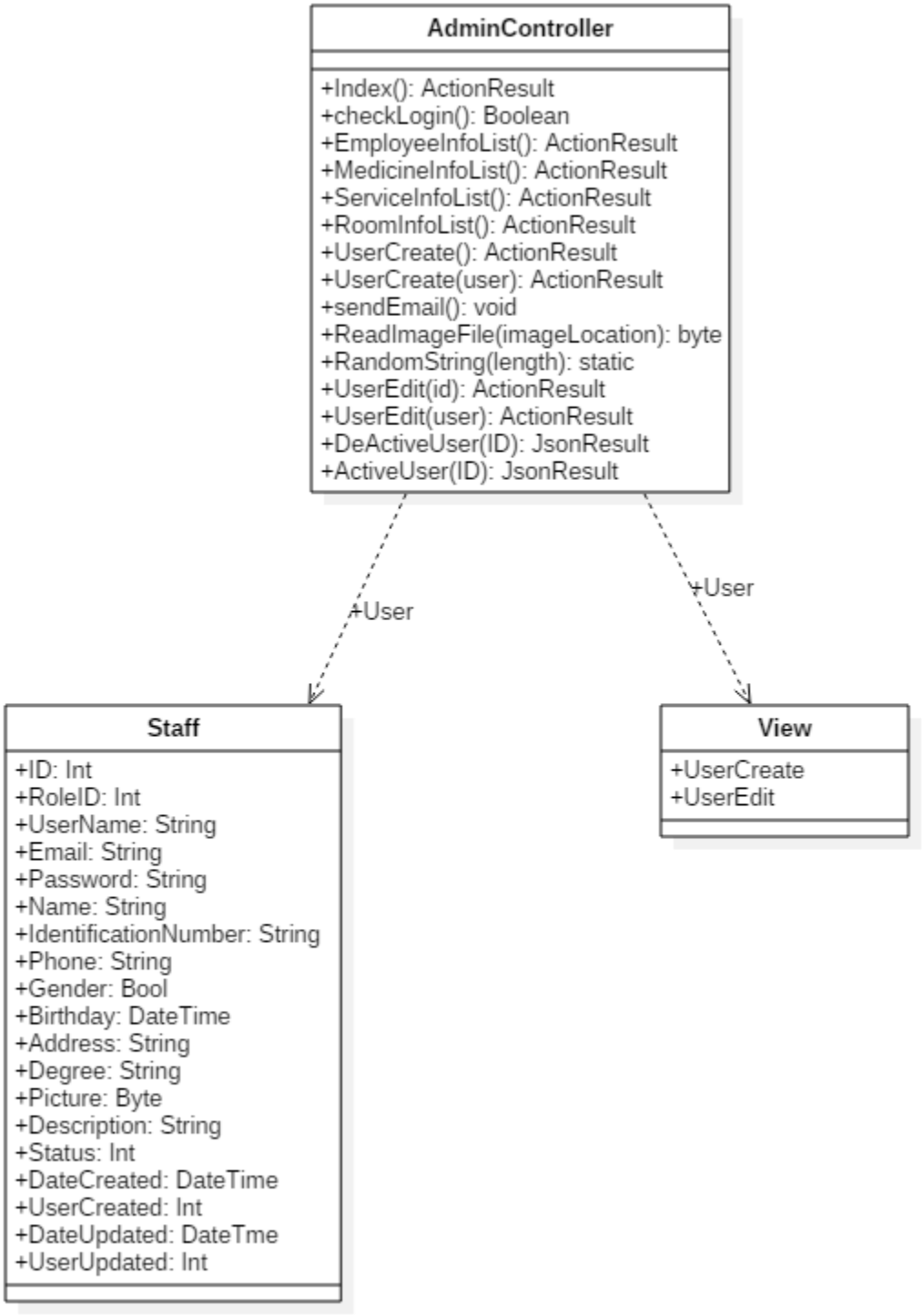
No	Object/Control Name	Type	Required	Description
1	"Đồng ý"	Button	Yes	Remove Medicine
2	"Từ chối"	Button	Yes	Cancel remove Medicine

4.2.4.4.2 Sequence Diagram



4.2.5 Manage Staff

4.2.5.1 Class Diagram



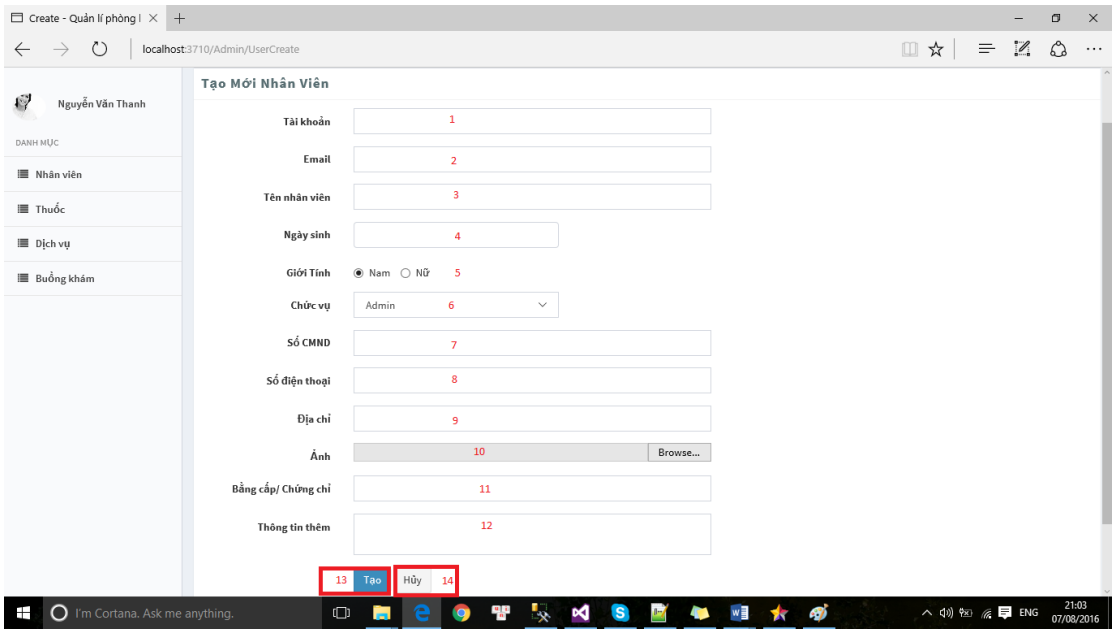
4.2.5.1.1 AdminController

Class	**AdminController**			
Description	This class execute all staff from database			
Base Class	Controller			
Constructor	N/A			
Prototype	N/A			
Source File	AdminController.cs			
Namespace	ClinicManager.Controllers			
Methods	**Name**	**Input**	**Output**	**Description**
	checkLogin	N/A	Boolean	This method executes to check login
	EmployeeInfoList	N/A	ActionResult	This method executes to return a list of employee
	ServiceInfoList	N/A	ActionResult	This method executes to return a list of services
	RoomInfoList	N/A	ActionResult	This method executes to return a list of rooms
	UserCreate	(User, HttpPostedFileBase)	ActionResult	This method executes to create user in database
	ReadImageFile	string	byte	This method

				executes to load image
	UserEdit	User	ActionResult	This method executes to edit user in database
	DeActiveUser	Int	JsonResult	This method executes to deactive user in database
	ActiveUser	Int	JsonResult	This method executes to active user in database

4.2.5.2 Add Staff

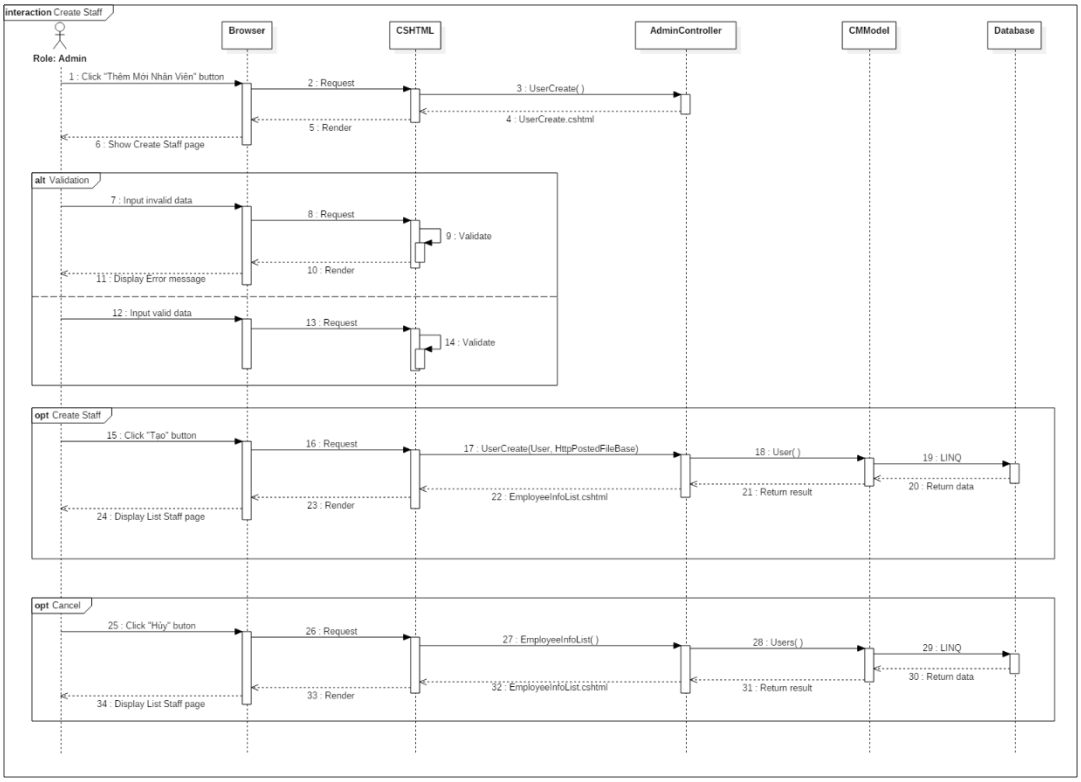
4.2.5.2.1 Screen Design



No	Object/Control Name	Type	Required	Description

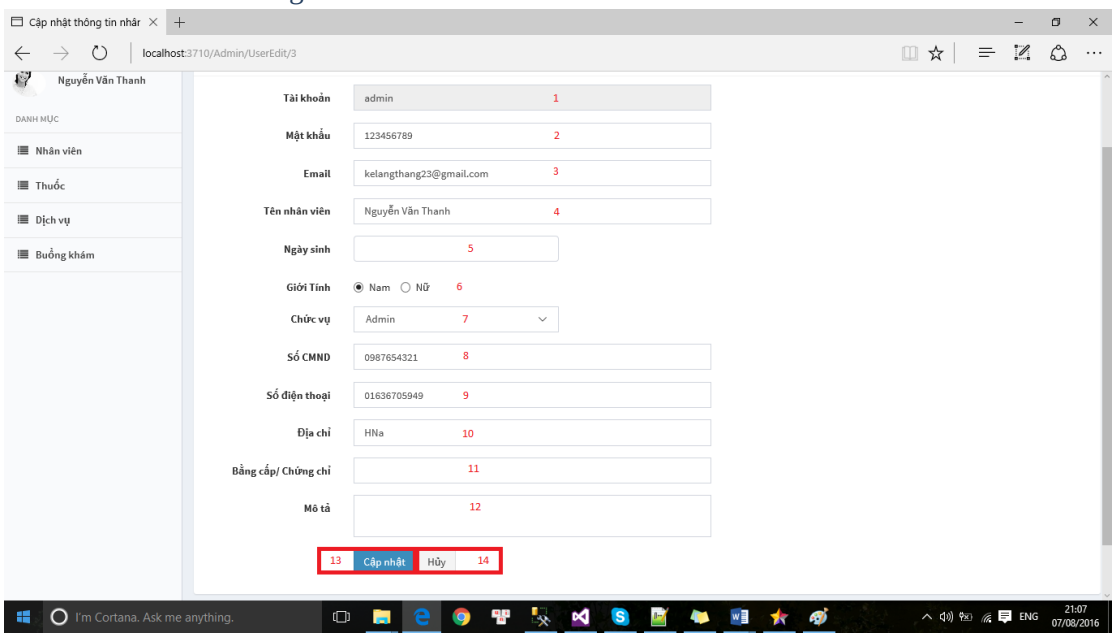
1	Tài khoản	Text box	Yes	Account of Staff
2	Email	Text box	Yes	Email of Staff
3	Tên nhân viên	Text box	Yes	Name of Staff
4	Ngày sinh	Text box	Yes	Birthdate of Staff
5	Giới tính	Radio button	Yes	Sex of Staff
6	Chức vụ	Text box	Yes	Position of Staff
7	Số CMND	Text box	Yes	Identification of Staff
8	Số điện thoại	Text box	Yes	Phone of Staff
9	Địa Chỉ	Text box	Yes	Address of Staff
10	Ảnh	Link	Yes	Picture of Staff
11	Bằn cấp chứng chỉ	Text box	Yes	Degree of Staff
12	Thông tin thêm	Text box	Yes	Description of Staff
10	Tạo	Button	Yes	Add new Staff
11	Hủy	Button	Yes	Cancel add new Staff

4.2.5.2.2 Sequence Diagram



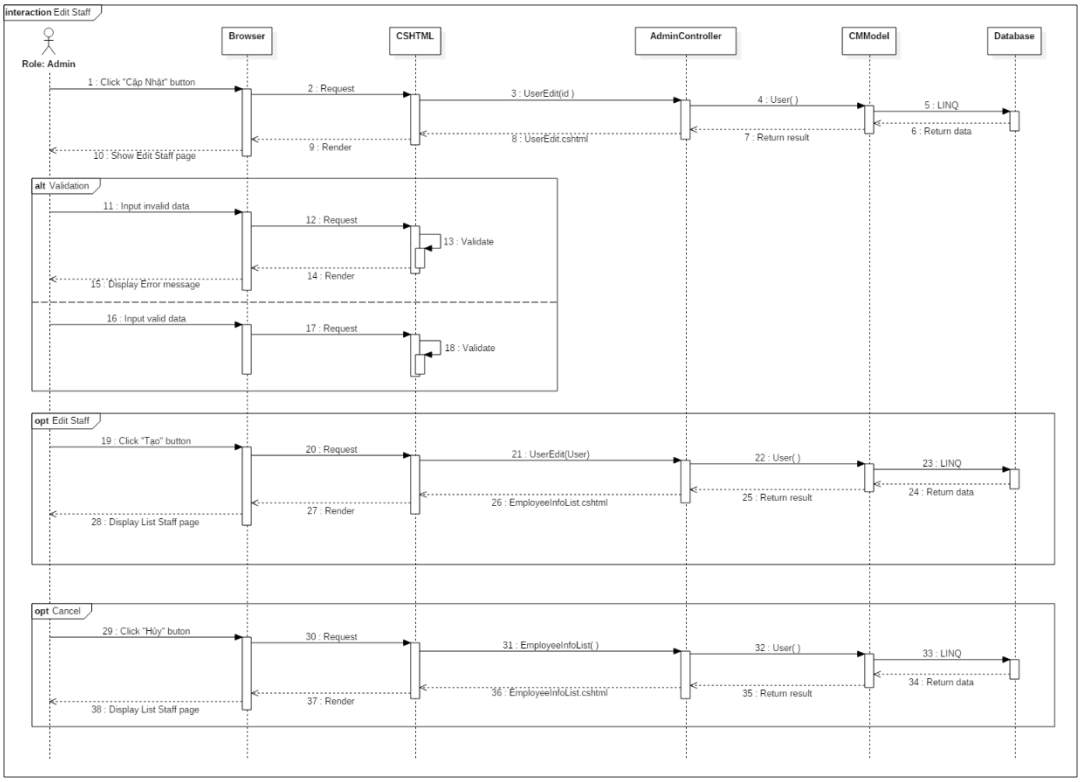
4.2.5.3 Edit Staff

4.2.5.3.1 Screen Design



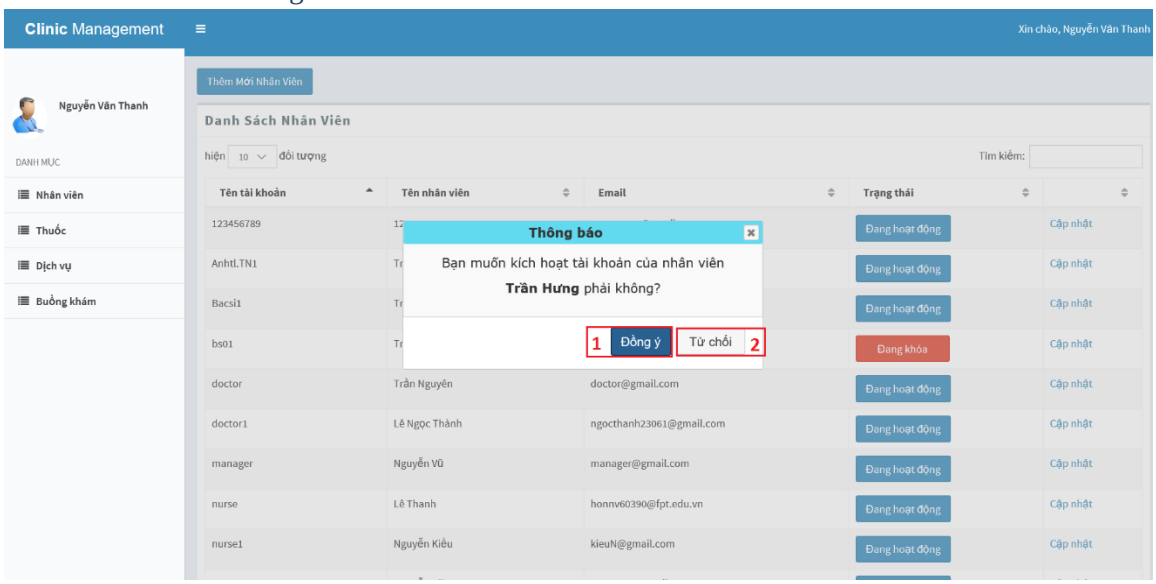
No	Object/Control Name	Type	Required	Description
1	Tài khoản	Label	Yes	Account of Staff
2	Email	Text box	Yes	Email of Staff
3	Tên nhân viên	Text box	Yes	Name of Staff
4	Ngày sinh	Text box	Yes	Birthdate of Staff
5	Giới tính	Radio button	Yes	Sex of Staff
6	Chức vụ	Text box	Yes	Position of Staff
7	Số CMND	Text box	Yes	Identification of Staff
8	Số điện thoại	Text box	Yes	Phone of Staff
9	Địa Chỉ	Text box	Yes	Address of Staff
10	Ảnh	Link	Yes	Picture of Staff
11	Bằn cấp chứng chỉ	Text box	Yes	Degree of Staff
12	Thông tin thêm	Text box	Yes	Description of Staff
10	Cập Nhật	Button	Yes	Edit Staff
11	Hủy	Button	Yes	Cancel edit Staff

4.2.5.3.2 Sequence Diagram



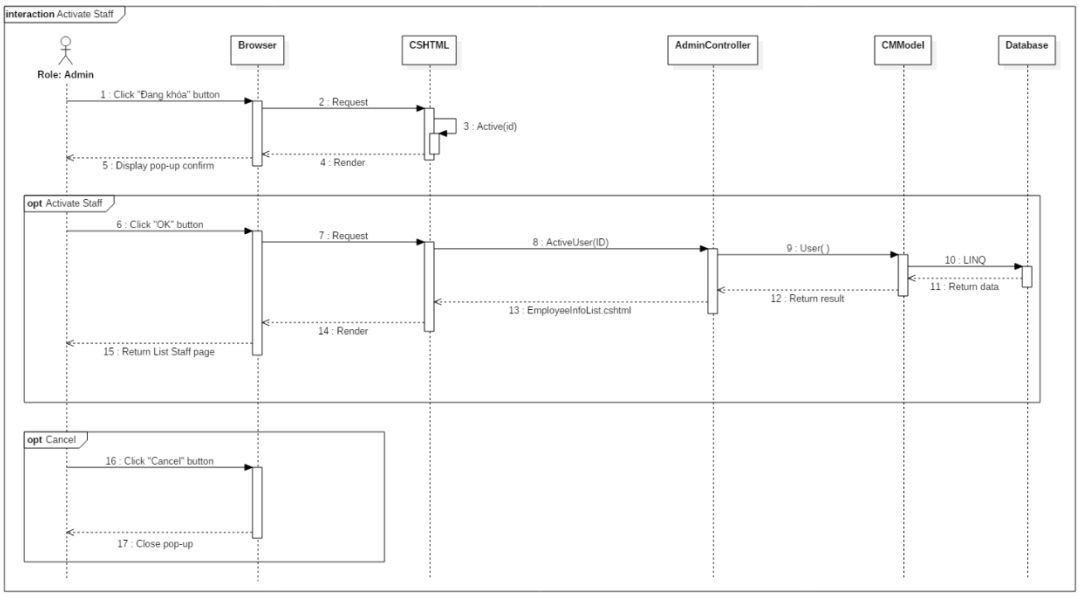
4.2.5.4 Active Staff

4.2.5.4.1 Screen Design



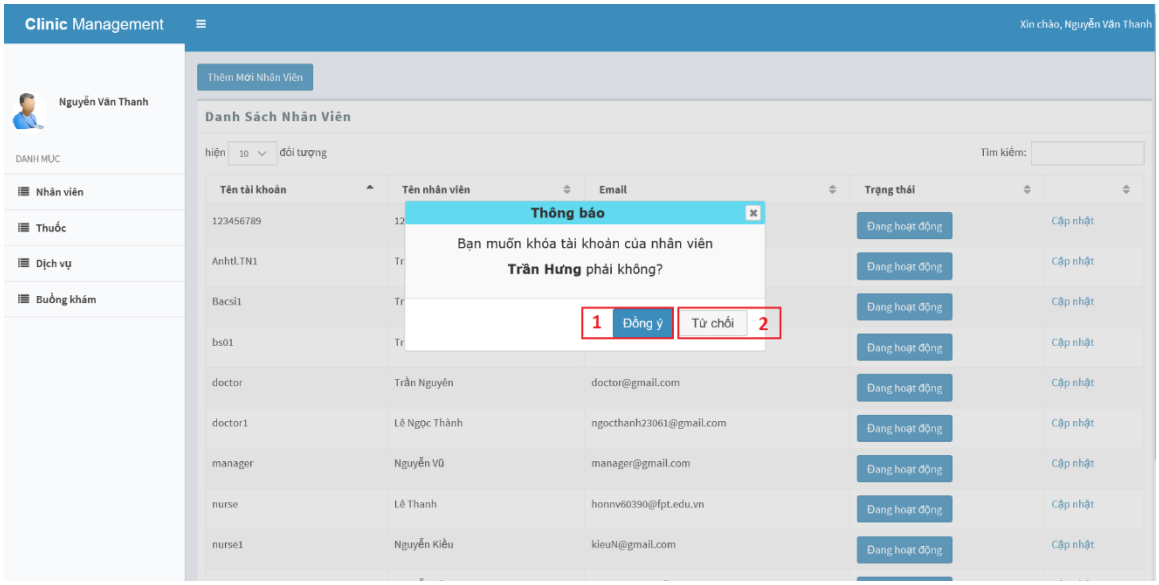
No	Object/Control Name	Type	Required	Description
1	OK	Button	Yes	Active Staff
2	Cancel	Button	Yes	Cancel Staff

4.2.5.4.2 Sequence Diagram



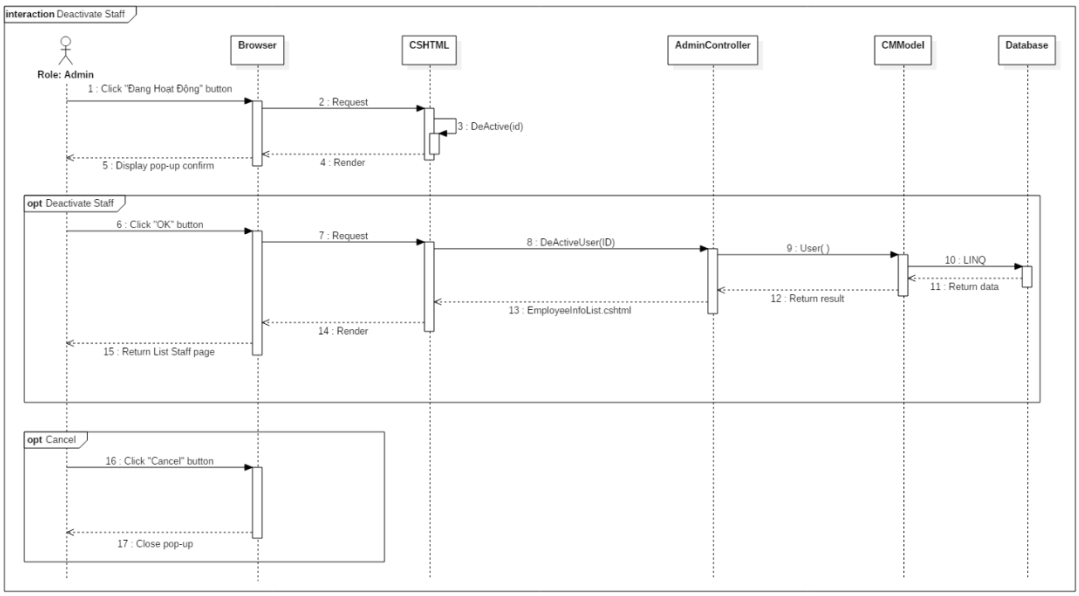
4.2.5.5 Deactivate Staff

4.2.5.5.1 Screen Design



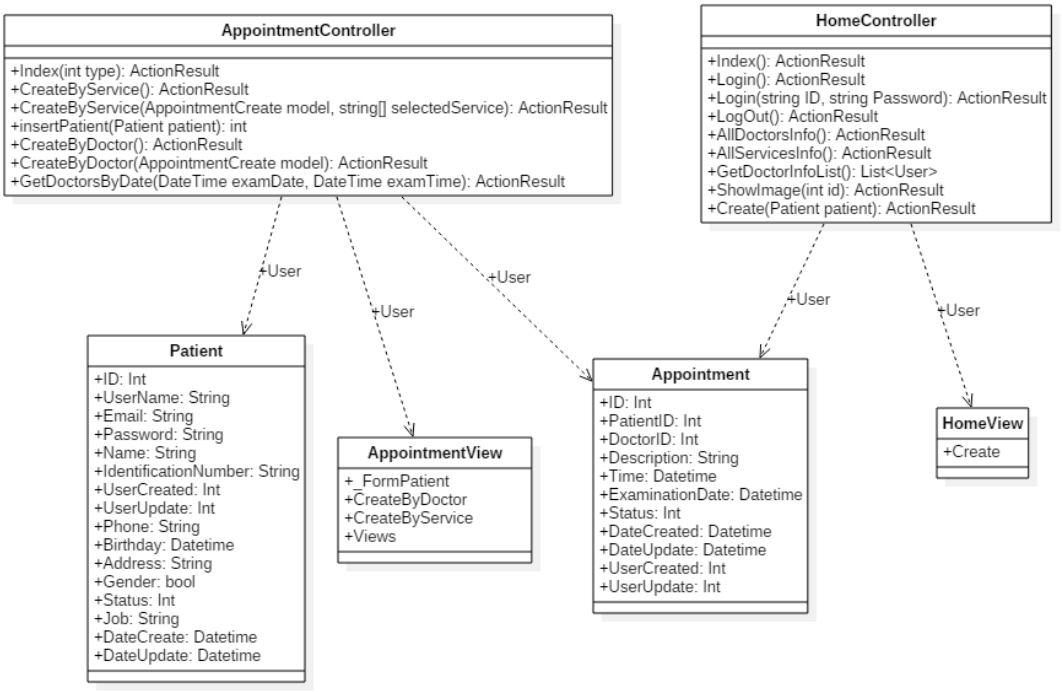
No	Object/Control Name	Type	Required	Description
1	Đồng ý	Button	Yes	Deactivate Staff
2	Từ chối	Button	Yes	Cancel Staff

4.2.5.5.2 Sequence Diagram



4.2.6 Patient

4.2.6.1 Class Diagram



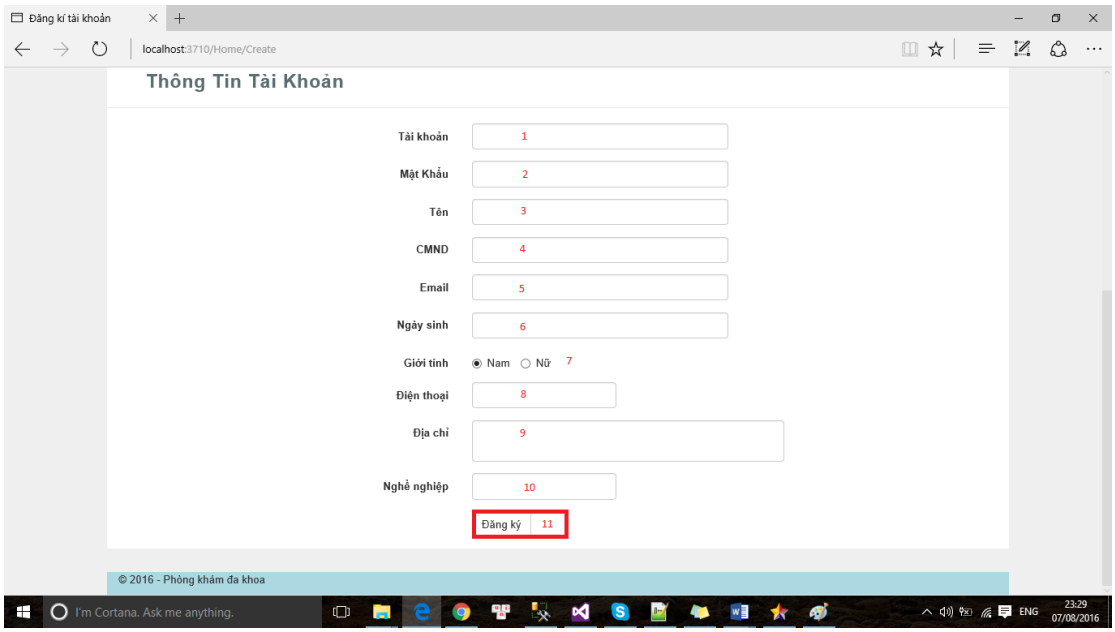
4.2.6.1.1 AppointmentController

Class	**AppointmentController**			
Description	This class execute all appointment from database			
Base Class	Controller			
Constructor	N/A			
Prototype	N/A			
Source File	AppoinmentController.cs			
Namespace	ClinicManager.Controllers			
Methods	**Name**	**Input**	**Output**	**Description**
	CreateByService	AppoinmentCreate,string[]	ActionResult	This method executes to book appointment

				service
	CreateByDoctor	AppoinmentCreate	ActionResult	This method executes to book appointment doctor
	GetDoctorsByDate	Datetime,datetime	ActionResult	This method executes to return working time of doctor
	CreateByService	N/A	ActionResult	This method executes to return to view of appointment service
	CreateByDoctor	N/A	ActionResult	This method executes to return to view of appointment doctor

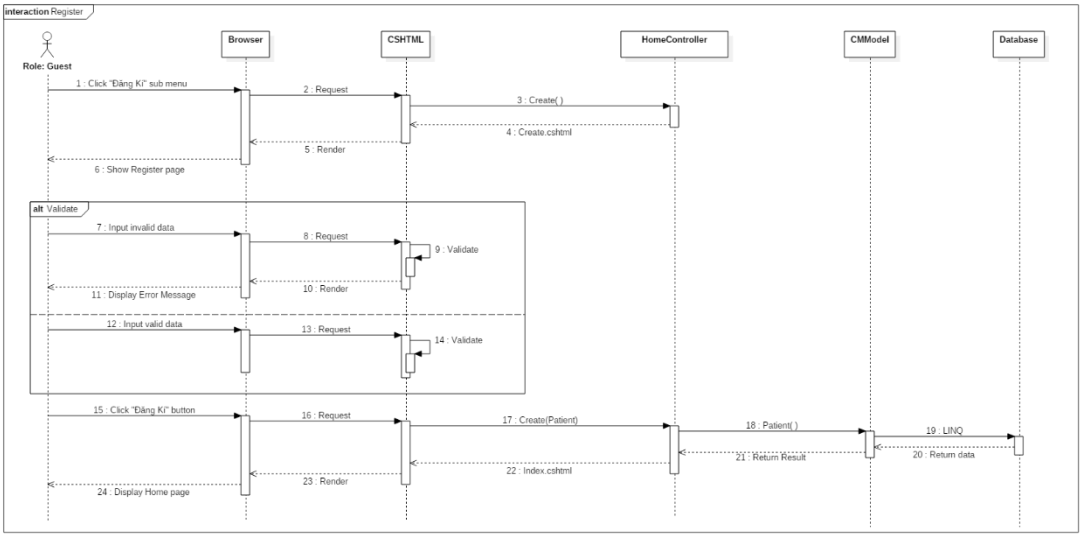
4.2.6.2 Register

4.2.6.2.1 Screen Design



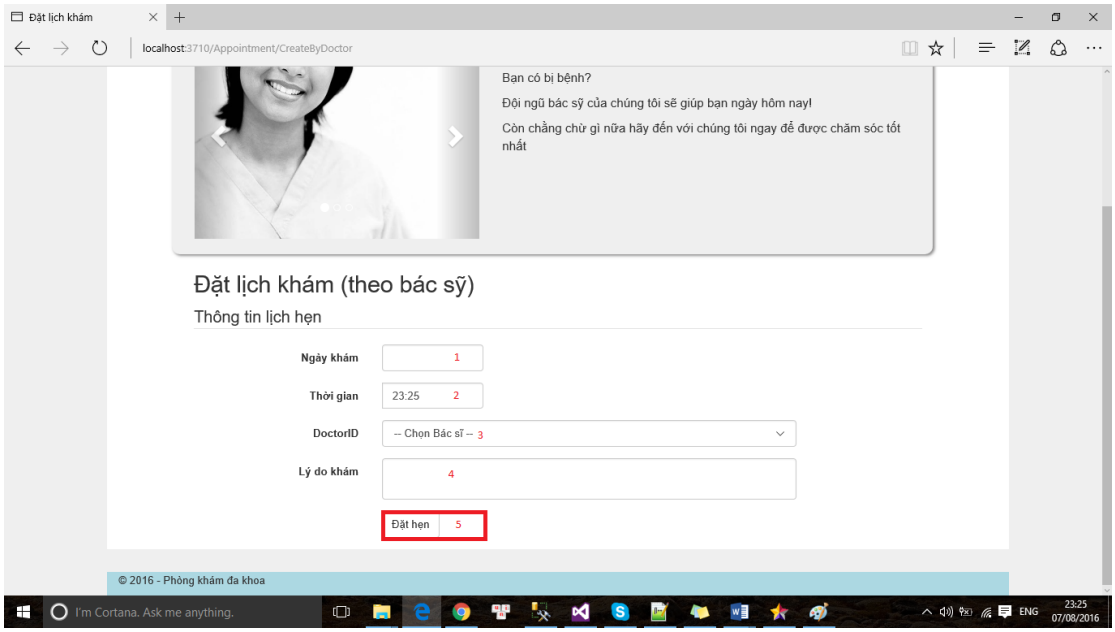
No	Object/Control Name	Type	Required	Description
1	Tài khoản	Text box	Yes	Account of Patient
2	Mật Khẩu	Text box	Yes	Password of Patient
3	Tên	Text box	Yes	Name of Patient
4	CMND	Text box	Yes	Identification of Patient
5	Email	Text box	Yes	Email of Patient
6	Ngày sinh	Text box	Yes	Birthdate of Patient
7	Giới tính	Radio button	Yes	Sex of Patient
8	Điện thoại	Text box	Yes	Phone of Patient
9	Địa Chỉ	Text box	Yes	Address of Patient
10	Nghề Nghiệp	Text box	Yes	Job of Patient
11	Đăng ký	Button	Yes	Register Patient

4.2.6.2.2 Sequence Diagram



4.2.6.3 Appointment by Doctor

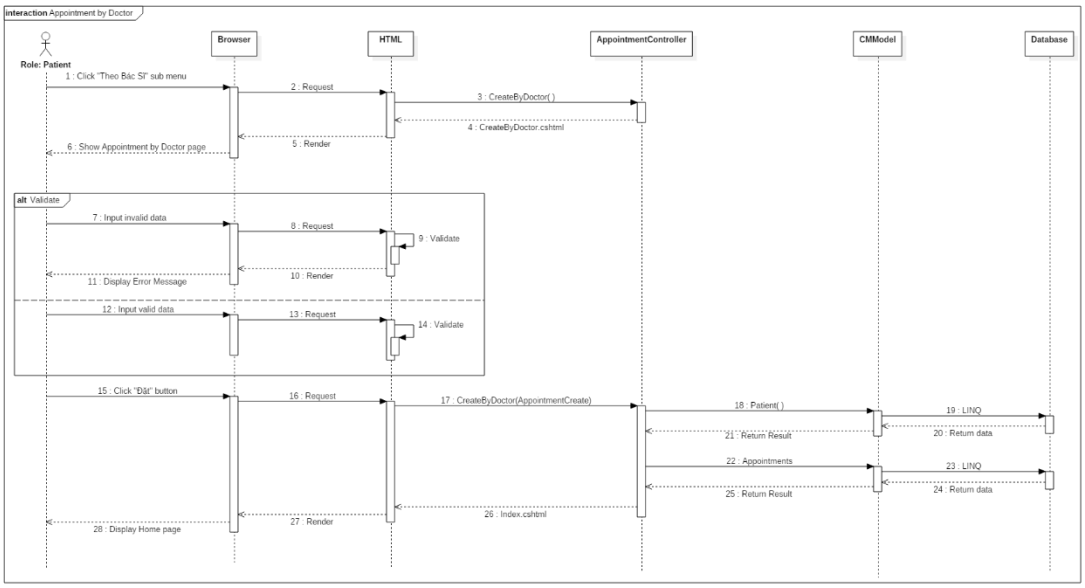
4.2.6.3.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Ngày khám	Text box	Yes	Date
2	Thời gian	Text box	Yes	Time

3	DoctorID	Select box	Yes	Doctor
4	Lý do khám	Text box	Yes	Medical reasons
5	Đặt	Button	Yes	Add new appointment

4.2.6.3.2 Sequence Diagram

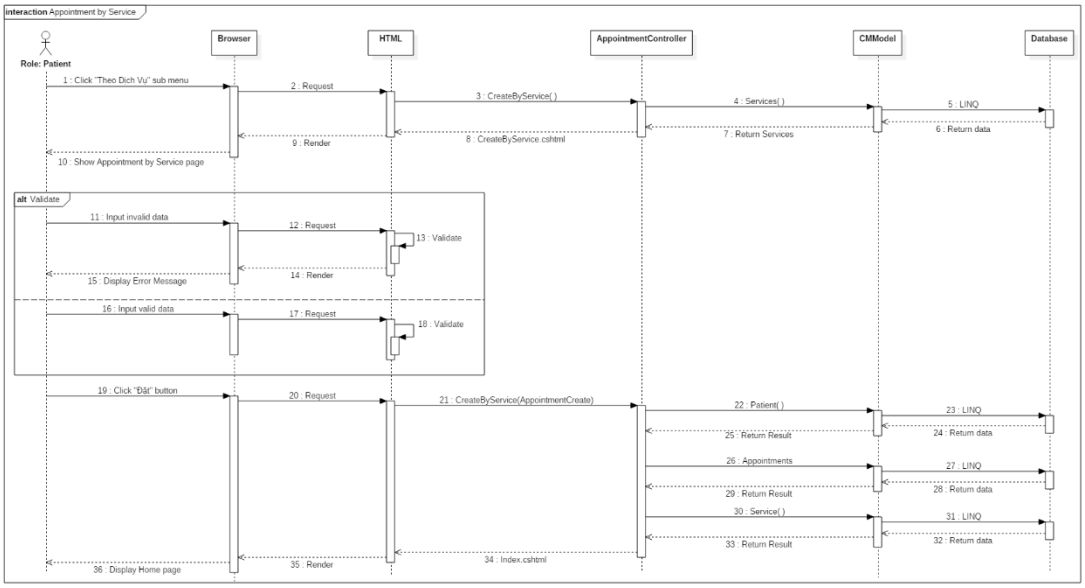


4.2.6.4 Appointment by Service

4.2.6.4.1 Screen Design

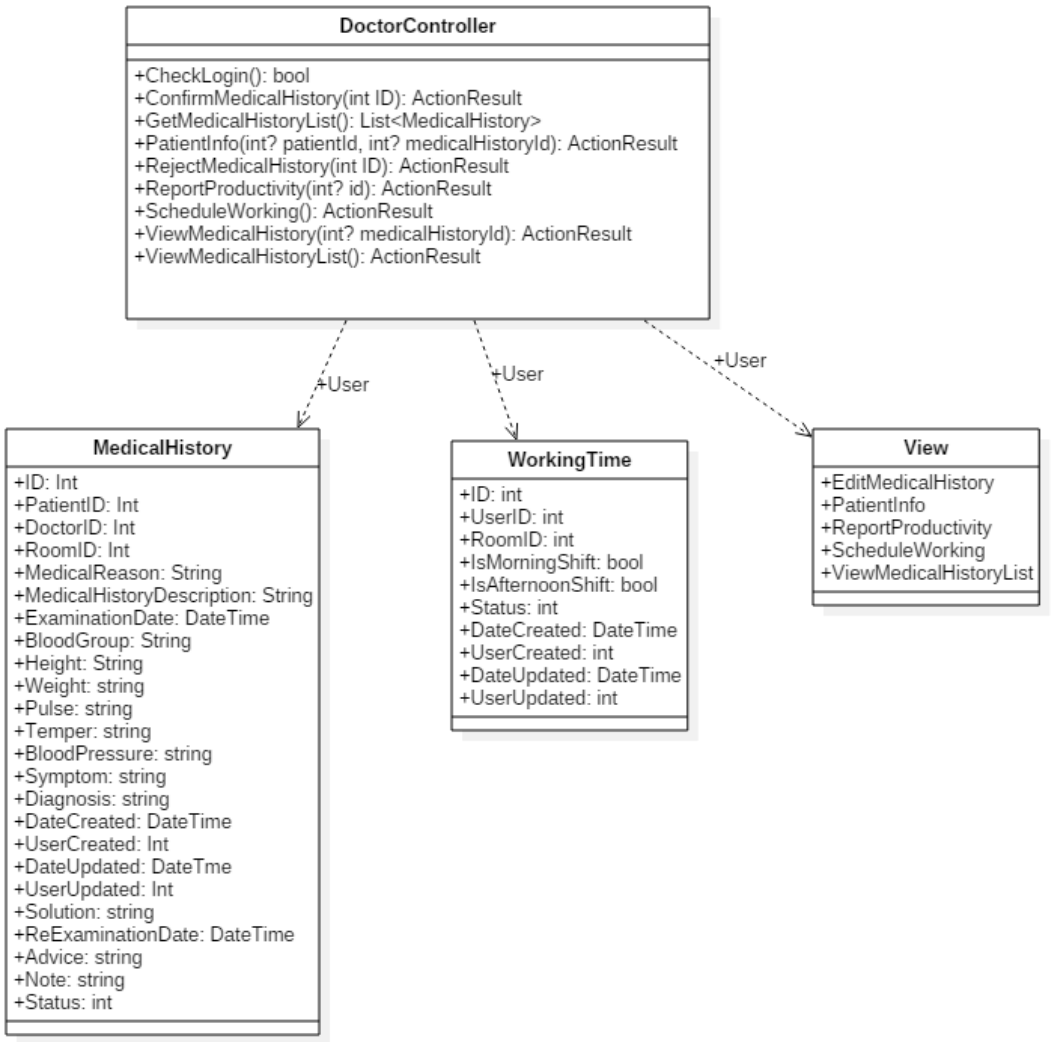
No	Object/Control Name	Type	Required	Description
1	Danh sách dịch vụ	Tablet	Yes	List Service
2	Dịch Vụ	Check Box	Yes	Service
3	Tổng tiền	Label	Yes	Total Money
4	Ngày Khám	Text Box	Yes	Date of appointment
5	Thời Gian	Drop Box	Yex	Time of appointment
6	Lý do khám	Text box	Yes	Medical reasons
7	Đặt	Button	Yes	Add new appointment

4.2.6.4.2 Sequence Diagram



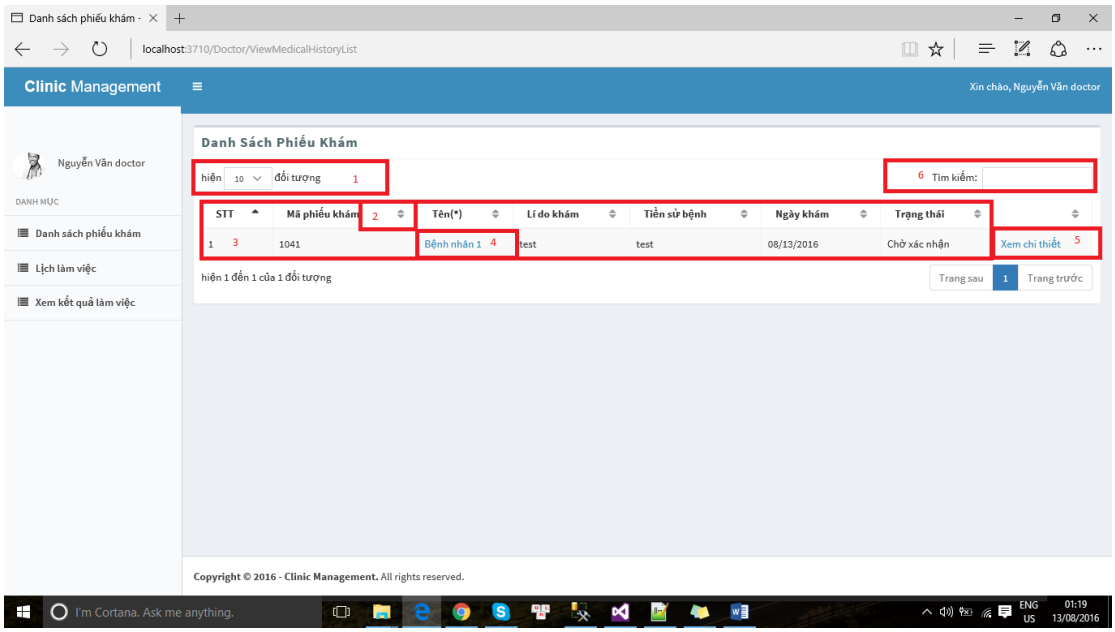
4.2.7 Doctor Management

4.2.7.1 Class Diagram



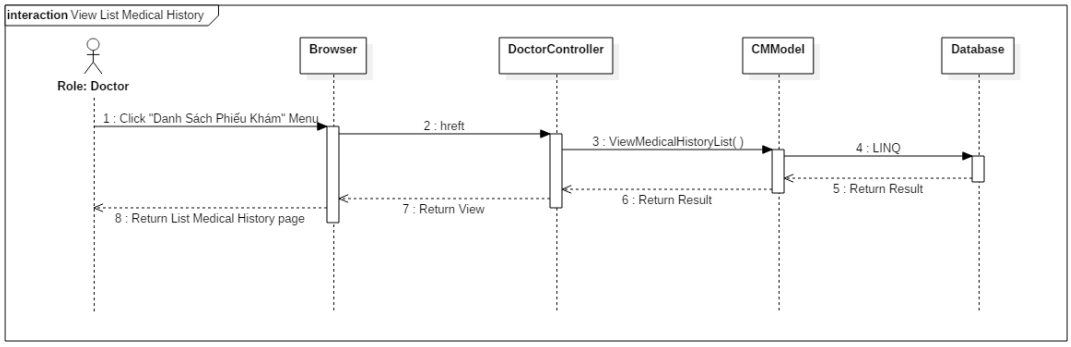
4.2.7.2 View List Verify Medical History

4.2.7.2.1 Screen Design



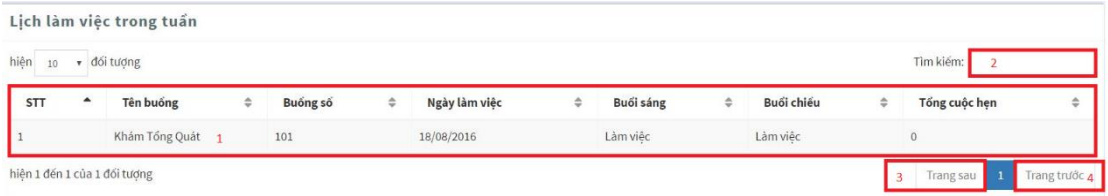
No	Object/Control Name	Object/Control Name in English	Type	Required	Length	Description
1	Số Lượng Đối Tượng	Number of rows	Combo-box	Yes	N/A	Choose number of rows in table
2	Sắp Xếp	Sort	Button	Yes	N/A	Sort
3	Danh Sách Phiếu Khám	Medical History Table	Table	Yes	N/A	Medical History Tablet
4	Bệnh Nhân	Patient Name	Link Text	Yes	N/A	Patient Name link text
5	Xem Chi Tiết	View Detail	Link Text	Yes	N/A	Go to medical history detail
6	Tìm Kiếm	Search text box	Text box	Yes	N/A	Go to backward page

4.2.7.2.2 Sequence Diagram



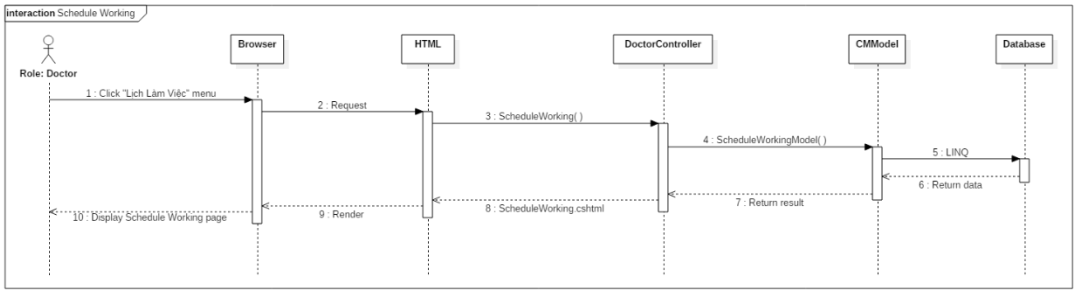
4.2.7.3 View List Schedule Working

4.2.7.3.1 Screen Design



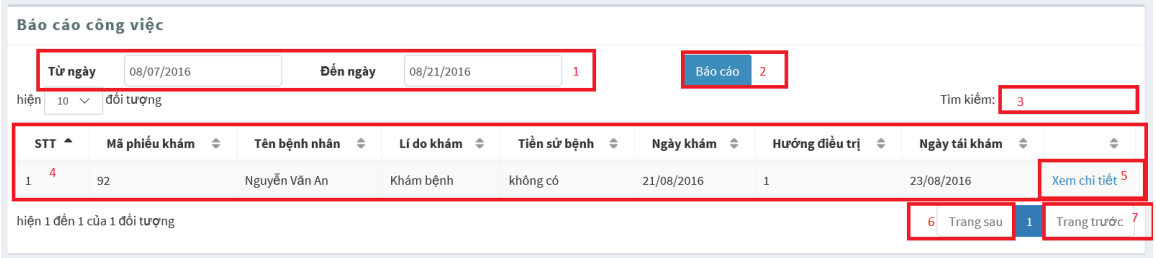
No	Object/Control Name	Type	Required	Description
1	Danh Sách Lịch Làm Việc	Table	Yes	List Working Time
2	Tìm	Text box	Yes	Search
3	Trang Trước	Button	Yes	Previous page
4	Trang Sau	Button	Yes	Next page

4.2.7.3.2 Sequence Diagram



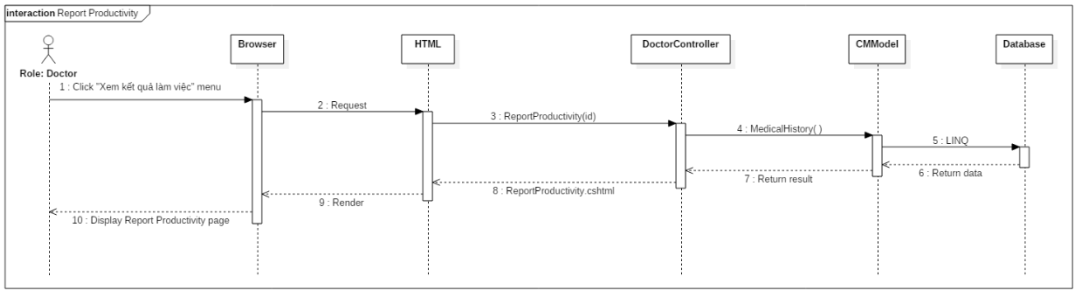
4.2.7.4 View Work Results

4.2.7.4.1 Screen Design



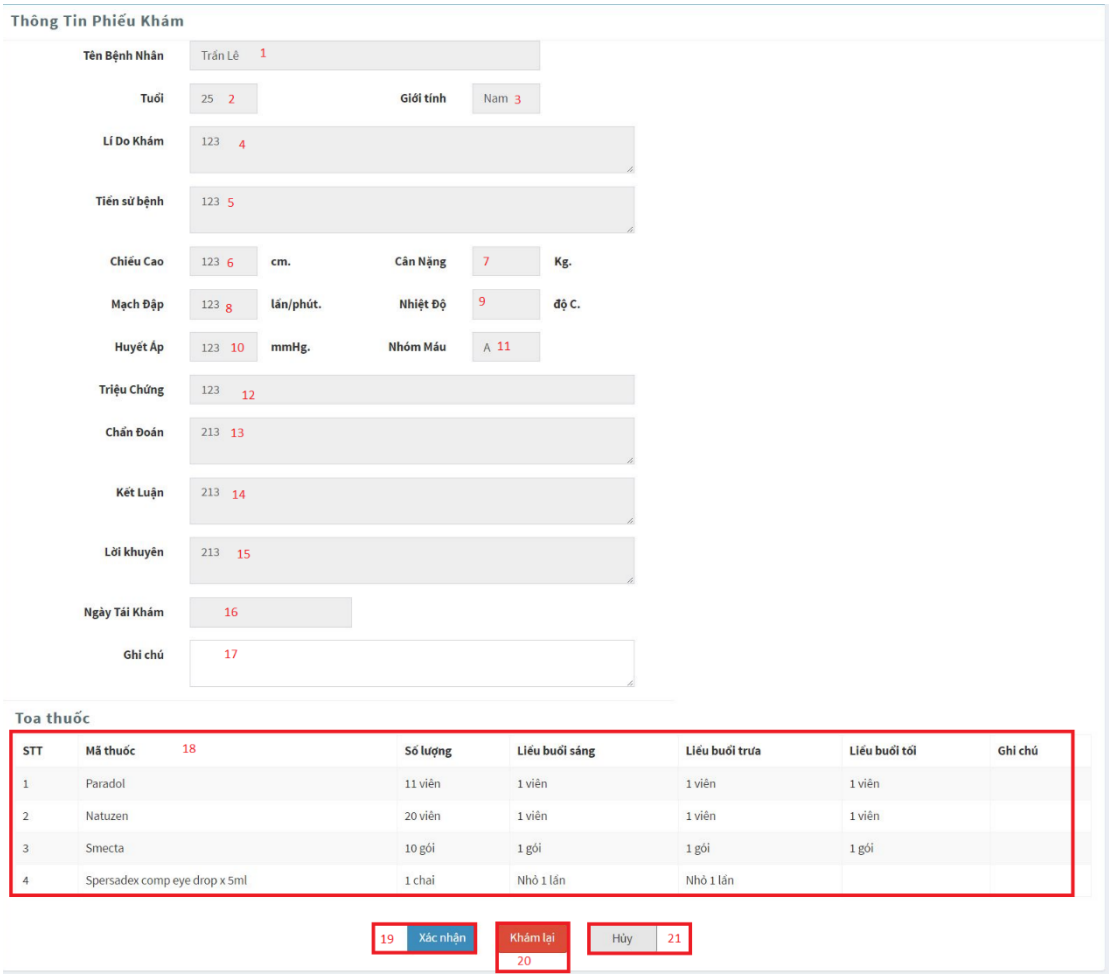
No	Object/Control Name	Type	Required	Description
1	Thời gian	Text box	Yes	Input time
2	Báo Cáo	Button	Yes	Display list report by "Thời Gian Báo Cáo"
3	Tìm Kiếm	Text box	Yes	Search item in list
4	Danh Sách Báo Cáo	Table	Yes	List Report of Doctor
5	Xem Chi Tiết	Link Text	Yes	Display Report detail
6	Trang Sau	Button	Yes	Previous page
7	Trang Trước	Button	Yes	Nex page

4.2.7.4.2 Sequence Diagram



4.2.7.5 Verify Medical History

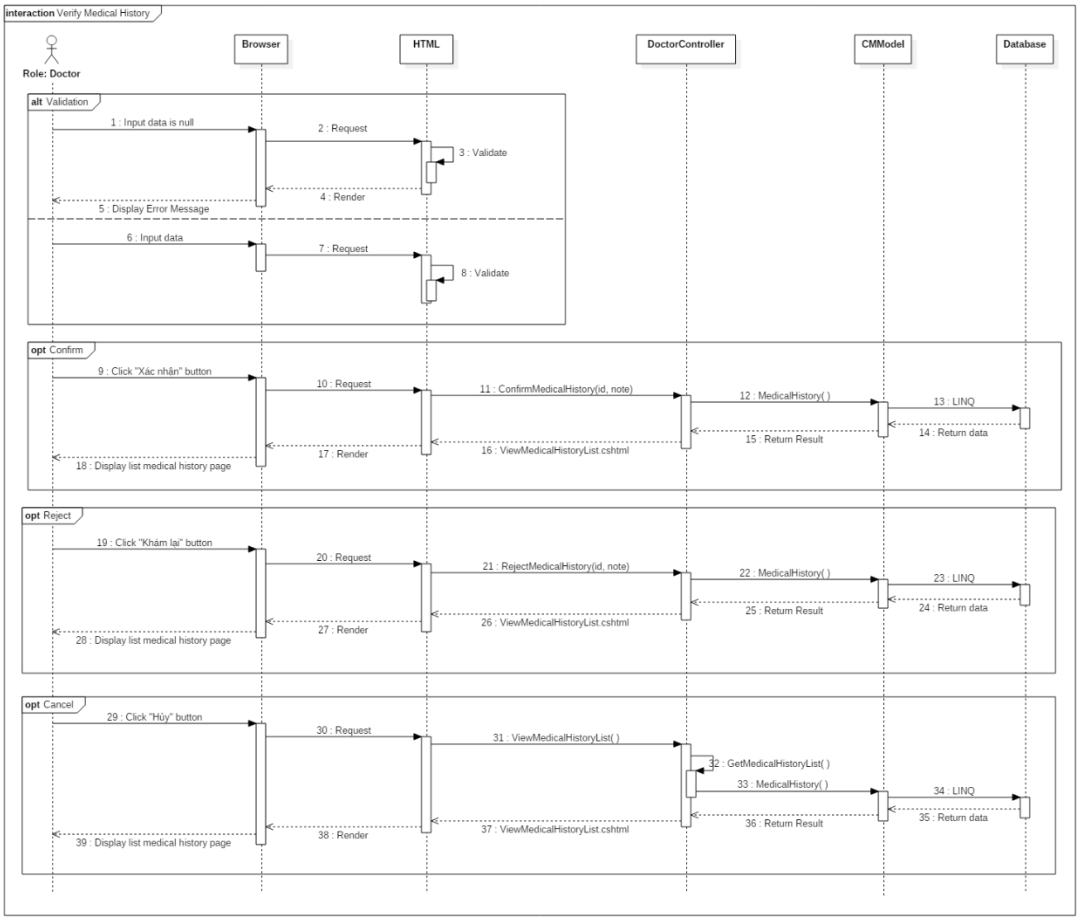
4.2.7.5.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Tên Bệnh Nhân	Label	Yes	Name of Patient

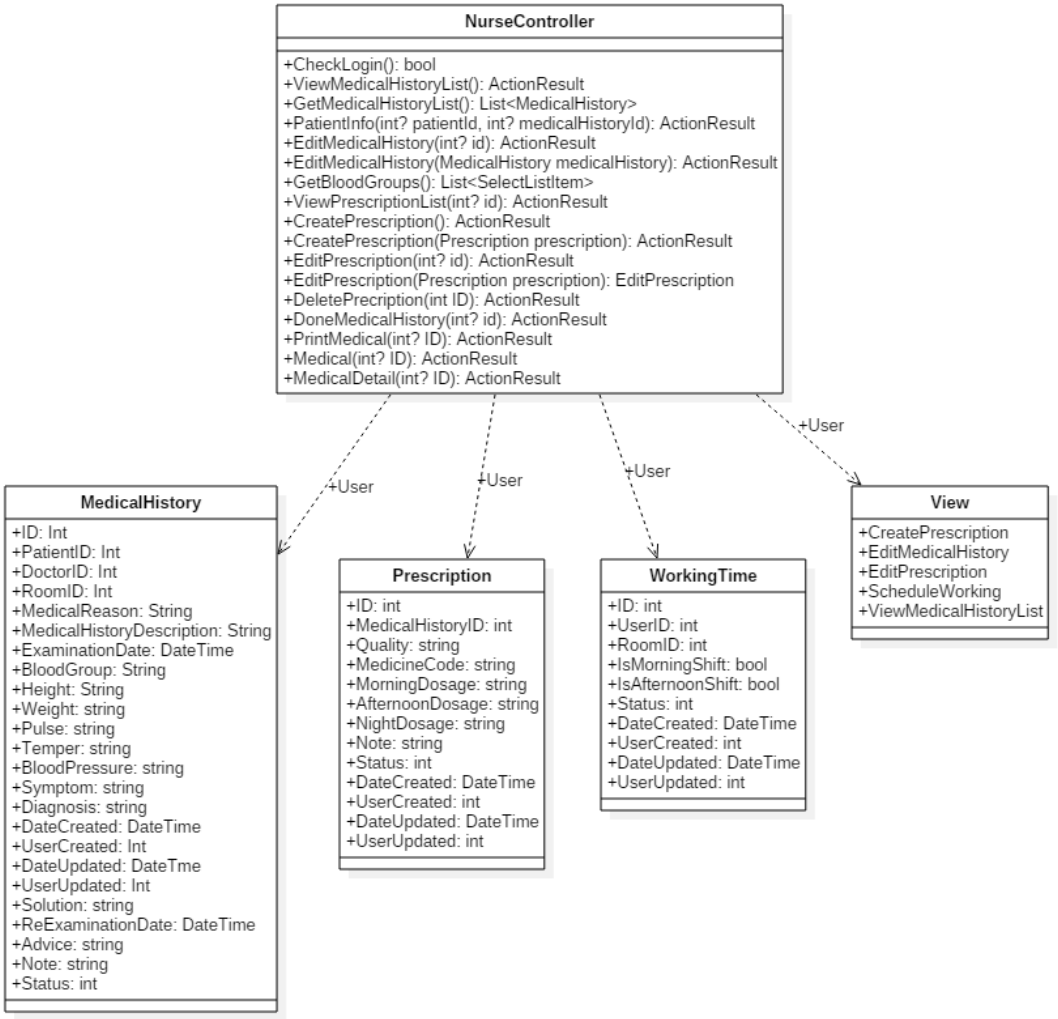
2	Tuổi	Label	Yes	Age of Patient
3	Giới Tính	Label	Yes	Sex of Patient
4	Lý Do Khám	Label	Yes	Reason Examination
5	Tiểu Sử Bệnh	Text box	No	Anamnesis
6	Chiều Cao	Text box	No	Height of Patient
7	Cân Nặng	Text box	No	Weight of Patient
8	Mạch Đập	Text Box	No	Pulse rate
9	Nhiệt Độ	Text Box	No	Body temperature
10	Huyết Áp	Text Box	No	Blood pressure
11	Nhóm Máu	Drop Box	Yes	Blood group
12	Triệu Chứng	Text Box	No	Symptom of Patient
13	Chuẩn Đoán	Text Box	No	Diagnose
14	Kết Luận	Text Box	Yes	Conclusion
15	Lời Khuyên	Text Box	No	Advice for Patient
16	Ngày Tái Khám	Text Box	No	Re-examination
17	Ghi Chú	Button	Yes	Note
18	Toa Thuốc	Table	Yes	Prescription
19	Xác Nhận	Button	Yes	Confirm medical history
20	Khám Lại	Button	Yes	Reject medical history
21	Hủy	Button	Yes	Cancel

4.2.7.5.2 Sequence Diagram



4.2.8 Nurse Management

4.2.8.1 Class Diagram

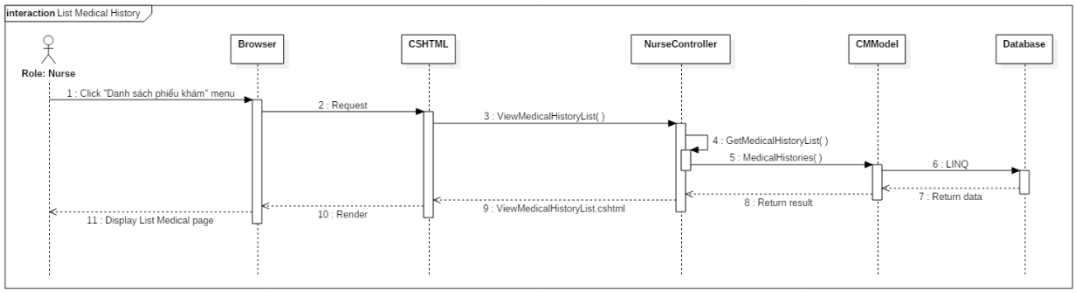


4.2.8.2 View List Medical History

4.2.8.2.1 Screen Design

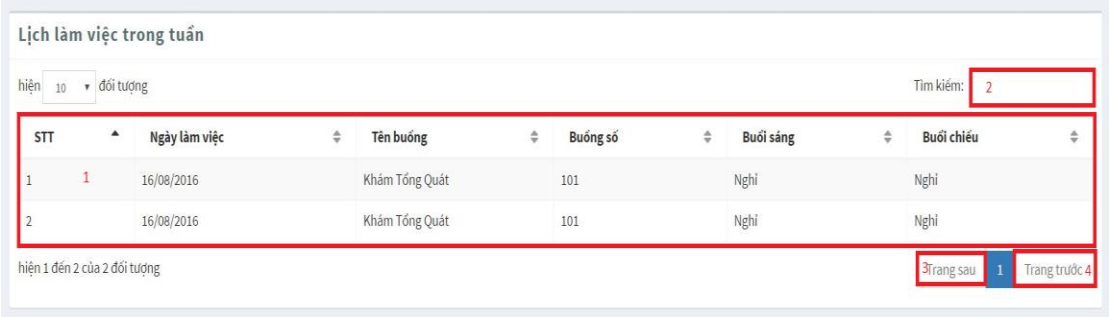
No	Object/Control Name	Type	Required	Description
1	Danh Sách Phiếu Khám	Table	Yes	List Medical History
2	Tên Bệnh Nhân	Link text	Yes	Name of Patient
3	Tìm	Text box	Yes	Search
4	Xem Chi Tiết	Link text	Yes	Medical History Detail
5	In Phiếu Khám	Link text	Yes	Printer Medical History
6	Khám	Link text	Yes	Edit Medical History
7	Trang Trước	Button	Yes	Previous page
8	Trang Sau	Button	Yes	Next page

4.8.2.2 Sequence Diagram



4.2.8.3 View Working Schedule

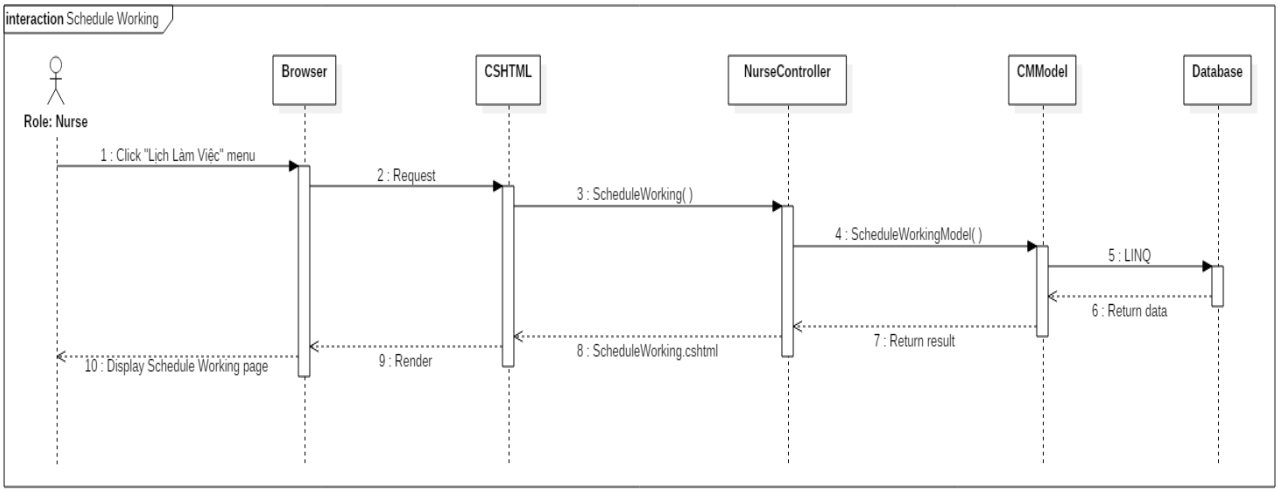
4.2.8.3.1 Screen Design



No	Object/Control Name	Type	Required	Description

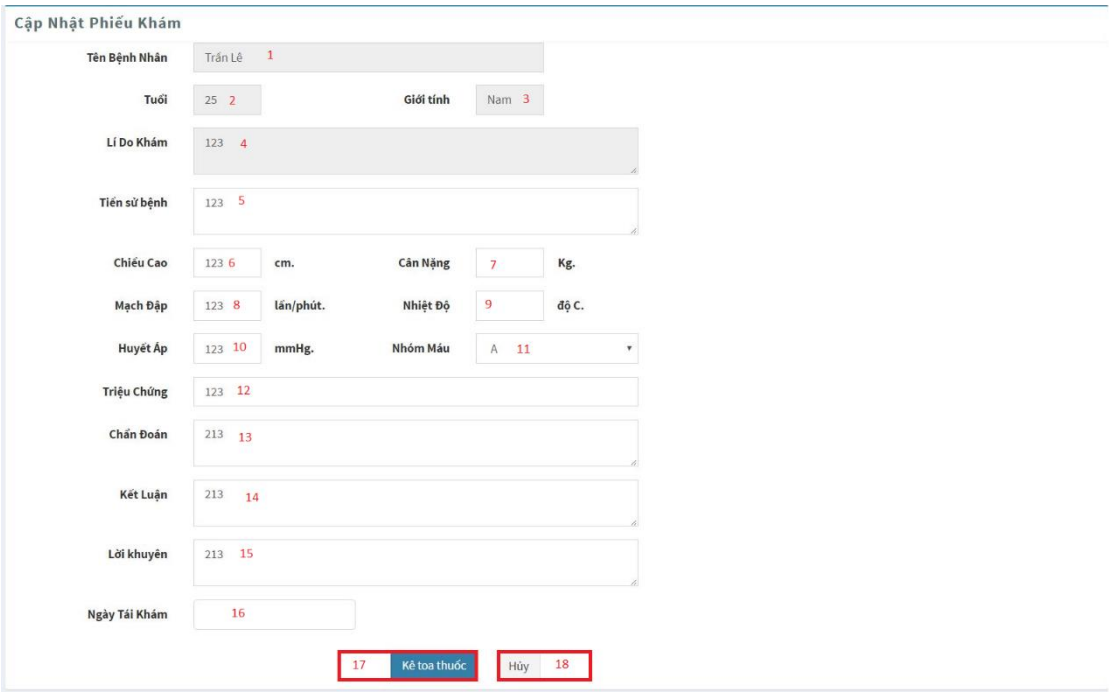
1	Danh Sách Lịch Làm Việc	Table	Yes	List Working Time
2	Tìm	Text box	Yes	Search
3	Trang Trước	Button	Yes	Previous page
4	Trang Sau	Button	Yes	Next page

4.2.8.3.2 Sequence Diagram



4.2.8.4 Edit Medical History

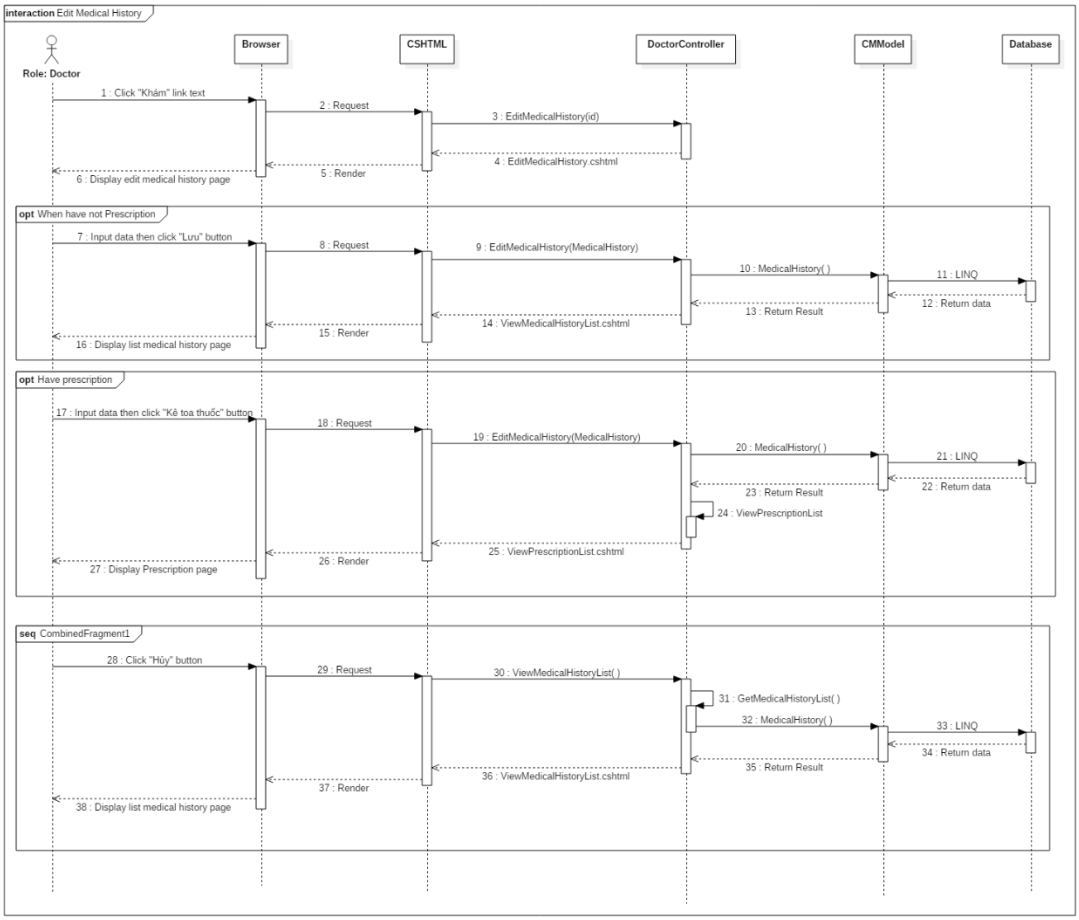
4.2.8.4.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Tên Bệnh Nhân	Label	Yes	Name of Patient
2	Tuổi	Label	Yes	Age of Patient
3	Giới Tính	Label	Yes	Sex of Patient
4	Lý Do Khám	Label	Yes	Reason Examination
5	Tiểu Sử Bệnh	Text box	No	Anamnesis
6	Chiều Cao	Text box	No	Height of Patient
7	Cân Nặng	Text box	No	Weight of Patient
8	Mạch Đập	Text Box	No	Pulse rate
9	Nhiệt Độ	Text Box	No	Body temperature
10	Huyết Áp	Text Box	No	Blood pressure

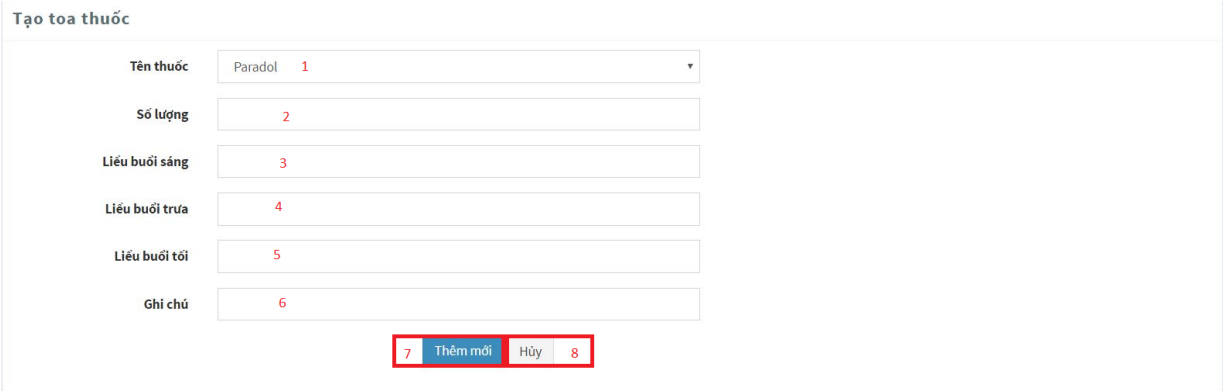
11	Nhóm Máu	Drop Box	Yes	Blood group
12	Triệu Chứng	Text Box	No	Symptom of Patient
13	Chuẩn Đoán	Text Box	No	Diagnose
14	Kết Luận	Text Box	Yes	Conclusion
15	Lời Khuyên	Text Box	No	Advice for Patient
16	Ngày Tái Khám	Text Box	No	Re-examination
17	Kê Toa Thuốc	Button	Yes	Prescription
18	Hủy	Button	Yes	Cancel

4.2.8.4.2 Sequence Diagram



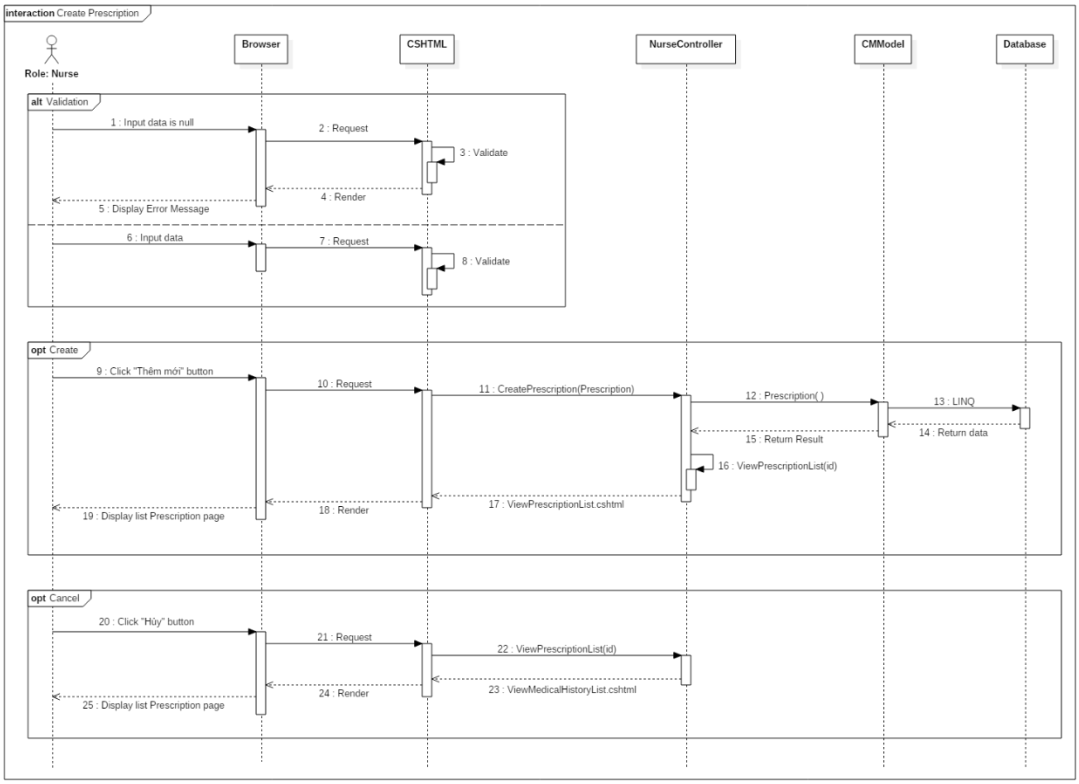
4.2.8.5 Create Prescription

4.2.8.5.1 Screen Design



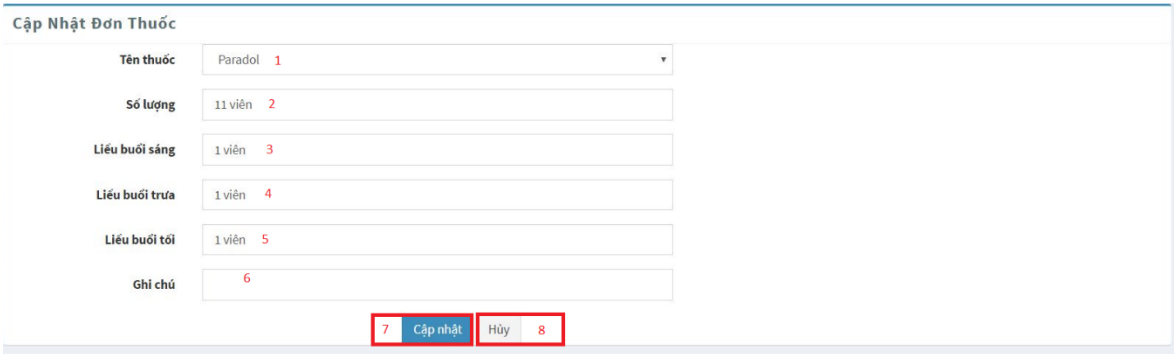
No	Object/Control Name	Type	Required	Description
1	Tên Thuốc	Drop Box	Yes	Name of Medicine
2	Số Lượng	Text Box	No	Quantity
3	Liều Buổi Sáng	Text Box	No	Morning Dose
4	Liều Buổi Trưa	Text Box	No	Afternoon doses
5	Liều Buổi Tối	Text box	No	Evening Dose
6	Ghi Chú	Text box	No	Note
7	Tạo	Button	Yes	Create button
8	Hủy	Button	Yes	Cancel button

4.2.8.5.2 Sequence Diagram



4.2.8.6 Edit Prescription

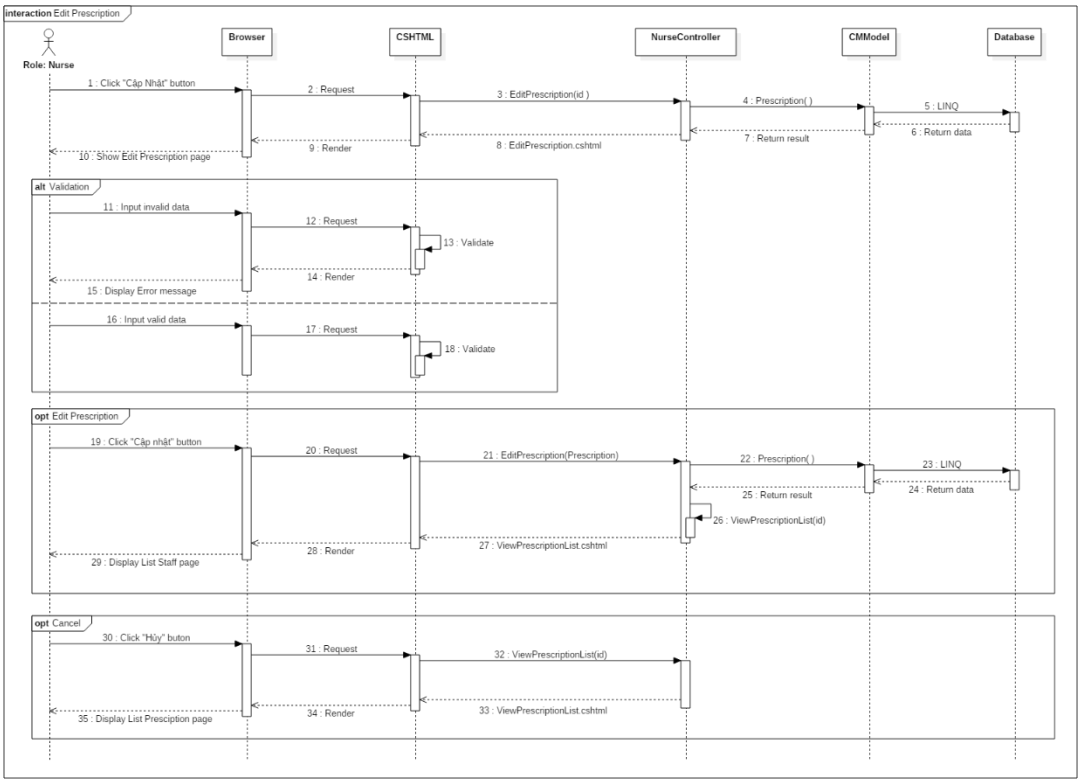
4.2.8.6.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Tên Thuốc	Drop Box	Yes	Name of Medicine
2	Số Lượng	Text Box	No	Quantity
3	Liều Buổi Sáng	Text Box	No	Morning Dose

4	Liều Buổi Trưa	Text Box	No	Afternoon doses
5	Liều Buổi Tối	Text box	No	Evening Dose
6	Ghi Chú	Text box	No	Note
7	Cập Nhật	Button	Yes	Edit button
8	Hủy	Button	Yes	Cancel button

4.2.8.6.2 Sequence Diagram

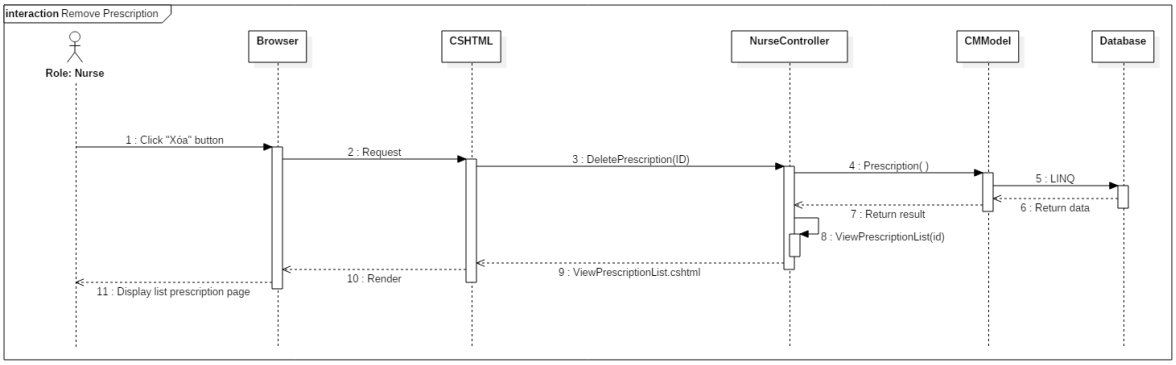


4.2.8.7 Remove Prescription

4.2.8.7.1 Screen Design

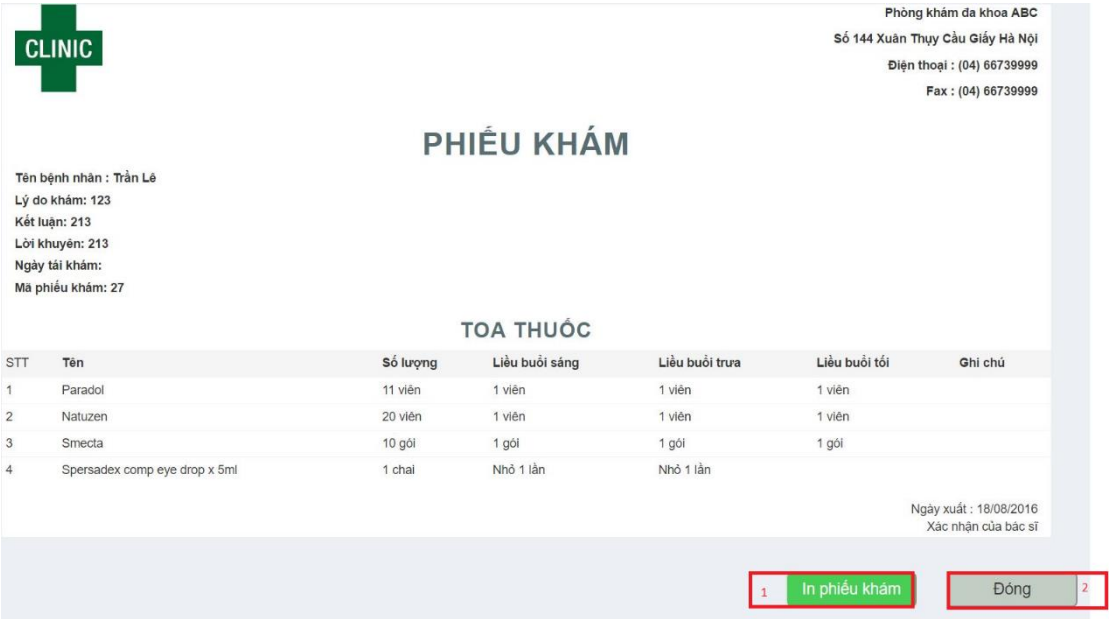
No	Object/Control Name	Type	Required	Description
1	Xóa	Link Text	Yes	Remove Toa Thuốc

4.2.8.7.2 Sequence Diagram



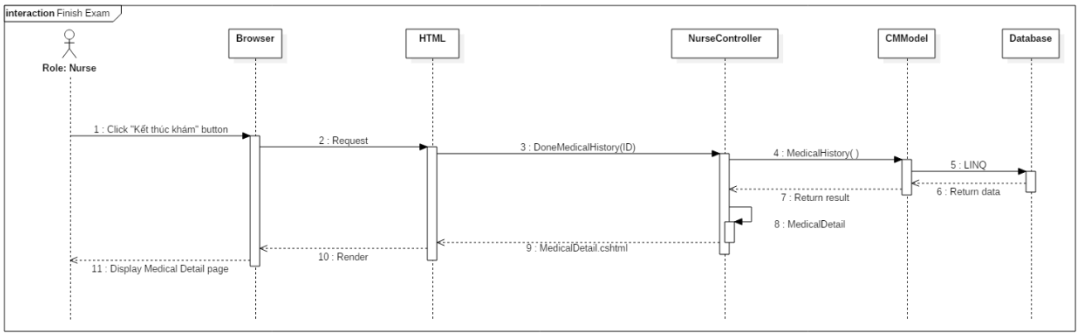
4.2.8.8 Final Medical Examination

4.2.8.8.1 Screen Design



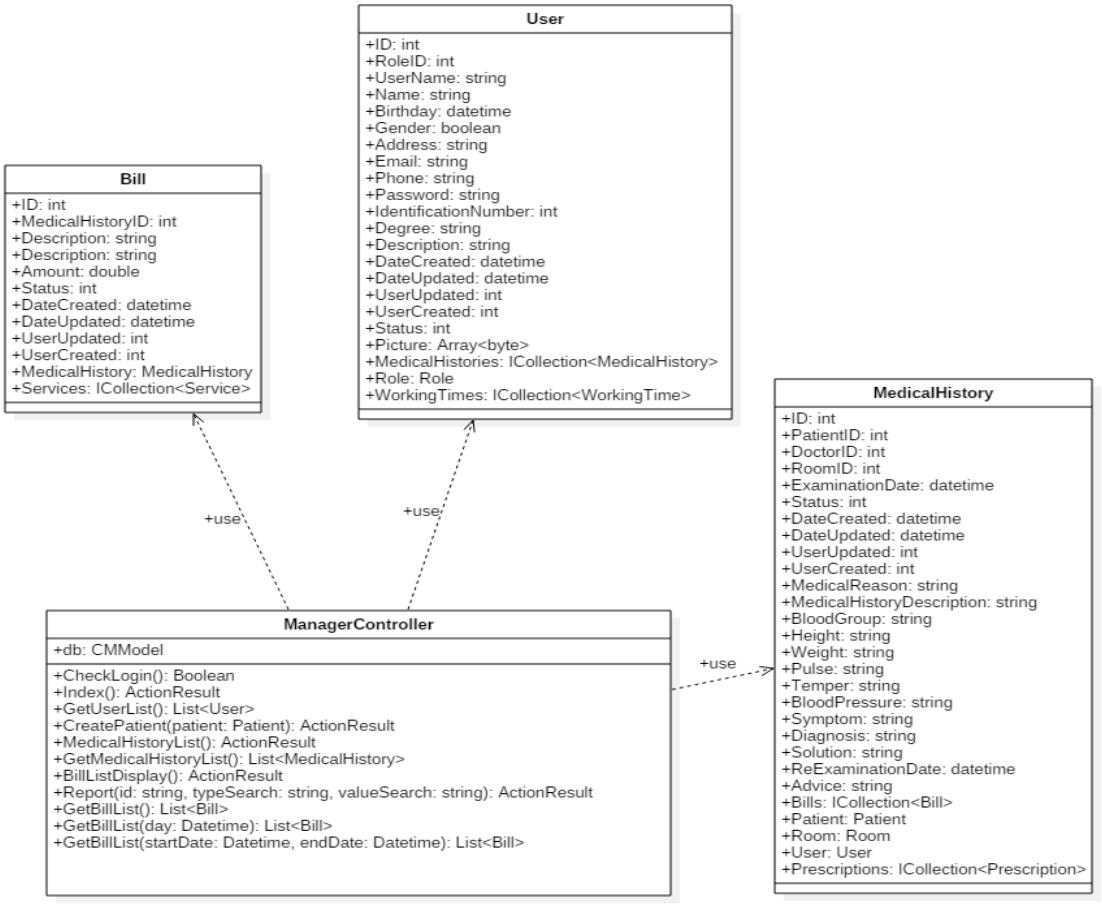
No	Object/Control Name	Type	Required	Description
1	In Đống Phiếu Khám	Button	Yes	Printer
2	Đóng	Button	Yes	Close

4.2.8.8.2 Sequence Diagram



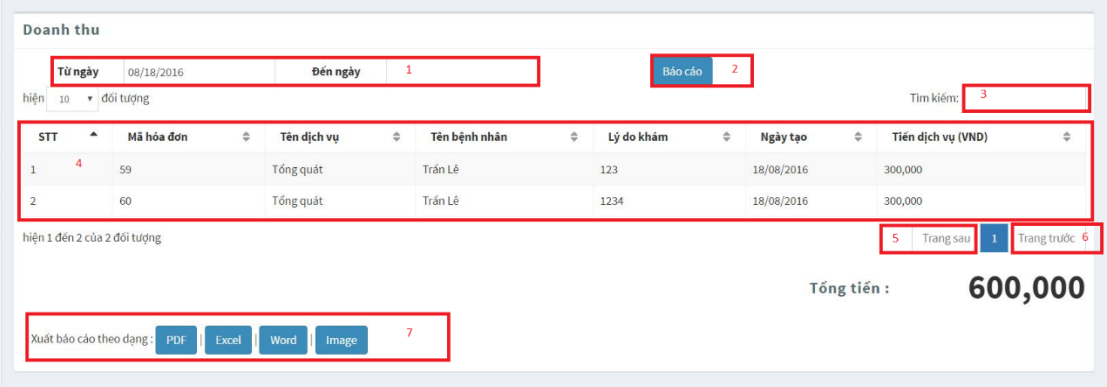
4.2.9 Manager

4.2.9.1 Class Diagram



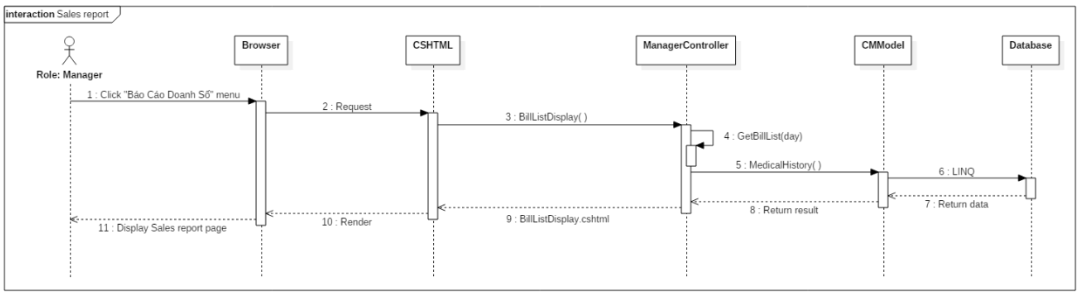
4.2.9.2 Sales report

4.2.9.2.1 Screen Design



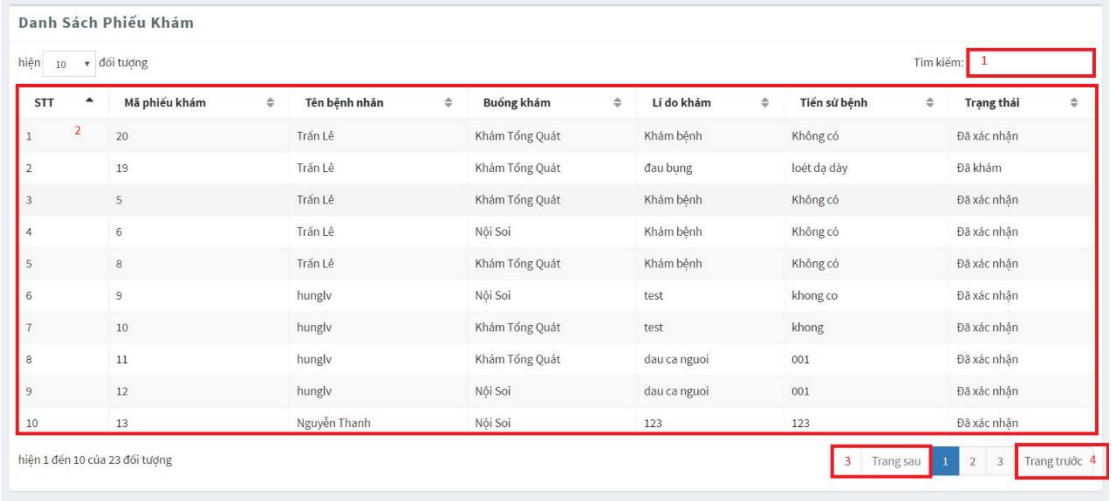
No	Object/Control Name	Type	Required	Description
1	Thời gian	Text box	Yes	Input time
2	Báo Cáo	Button	Yes	Display list report by “Thời Gian Báo Cáo”
3	Tìm Kiếm	Text box	Yes	Search item in list
4	Danh Sách Báo Cáo	Table	Yes	List report
5	Trang Sau	Button	Yes	Previous page
6	Trang Trước	Button	Yes	Nex page
7	Xuất Báo Cáo	Button	Yes	Export List Report By File Types

4.2.9.2.2 Sequence Diagram



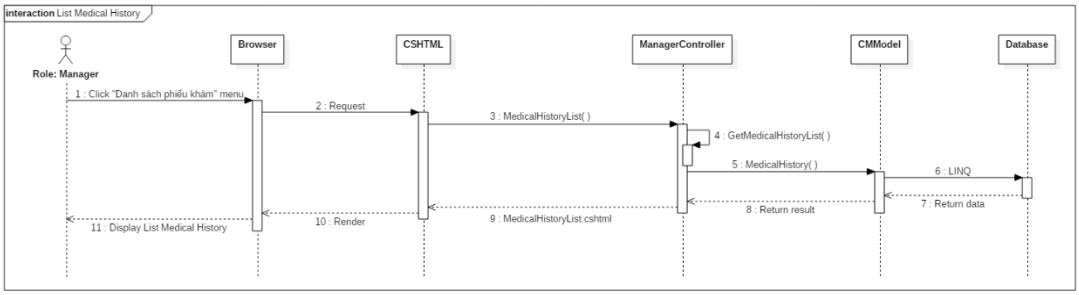
4.2.9.3 List Medical Record

4.2.9.3.1 Screen Design



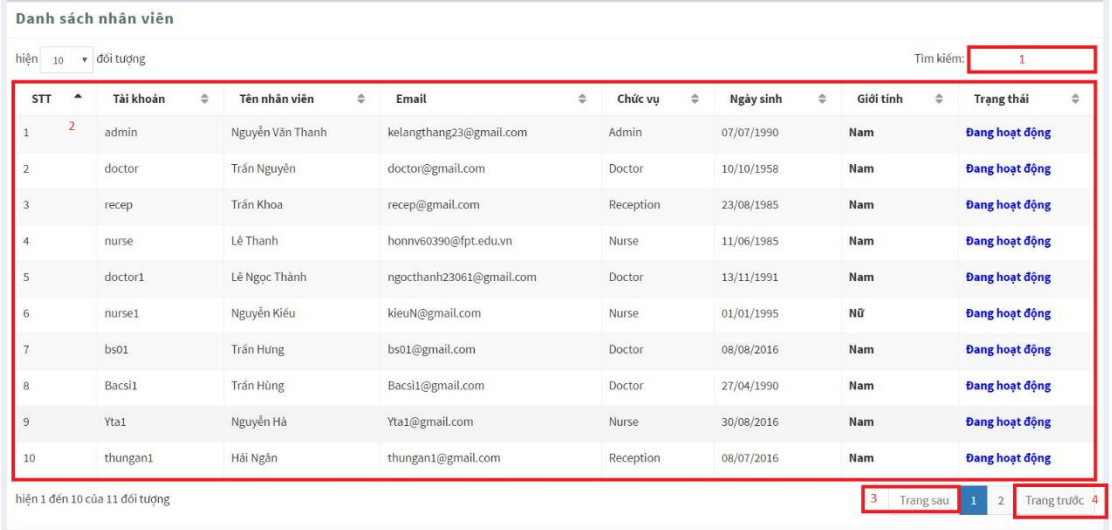
No	Object/Control Name	Type	Required	Description
1	Tìm Kiếm	Text box	Yes	Search item in list
2	Danh Sách Phiếu Khám	Table	Yes	List Medical History
3	Trang Sau	Button	Yes	Previous page
4	Trang Trước	Button	Yes	Nex page

4.2.9.3.2 Sequence Diagram



4.2.9.4 List Staff

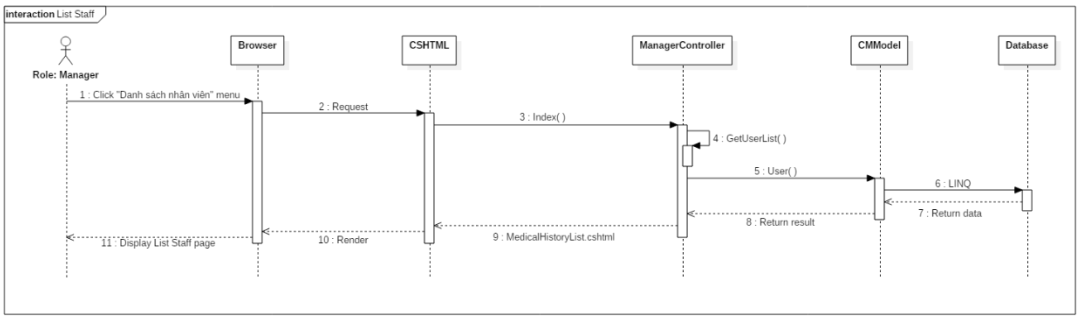
4.2.9.4.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Tìm Kiếm	Text box	Yes	Search item in list

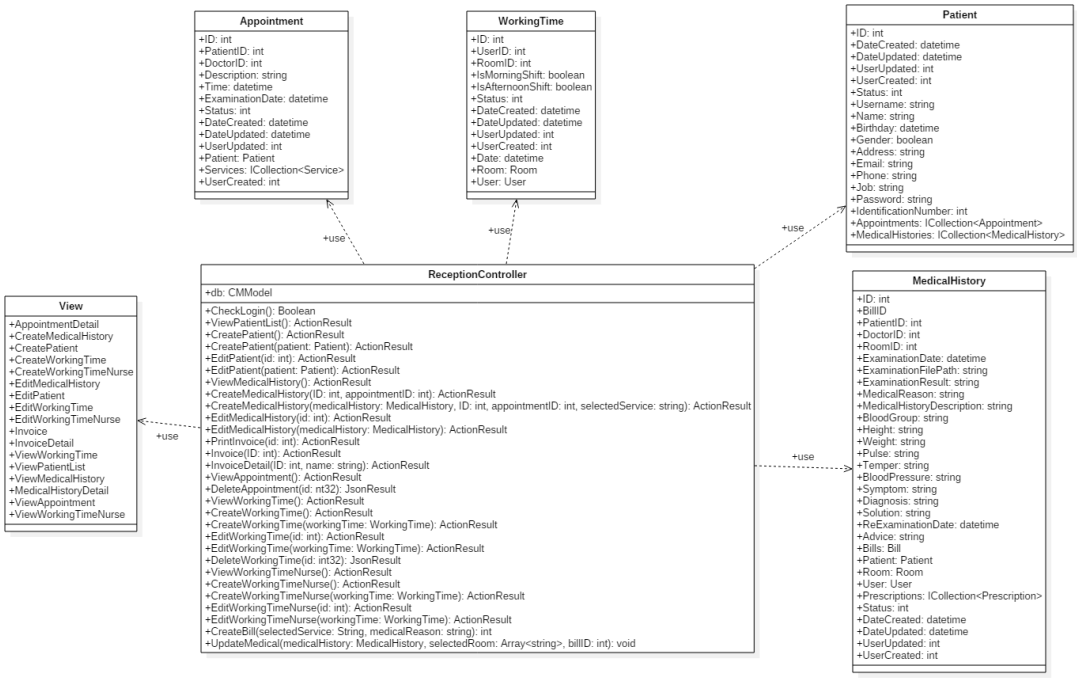
2	Danh Sách Nhân Viên	Table	Yes	List Staff
3	Trang Sau	Button	Yes	Previous page
4	Trang Trước	Button	Yes	Nex page

4.2.9.4.2 Sequence Diagram



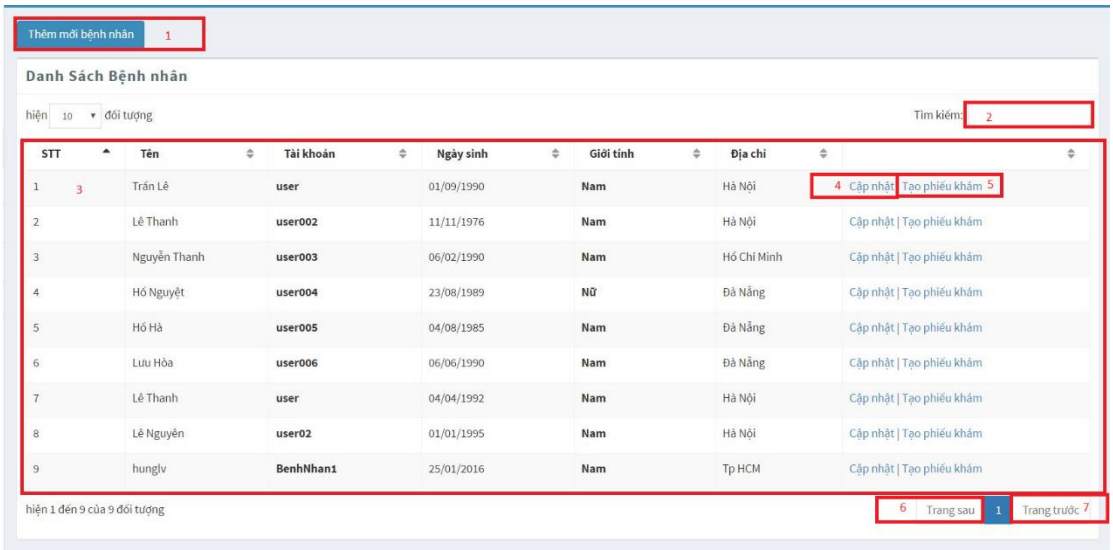
4.2.10 Reception Manager

4.2.10.1Class Diagram



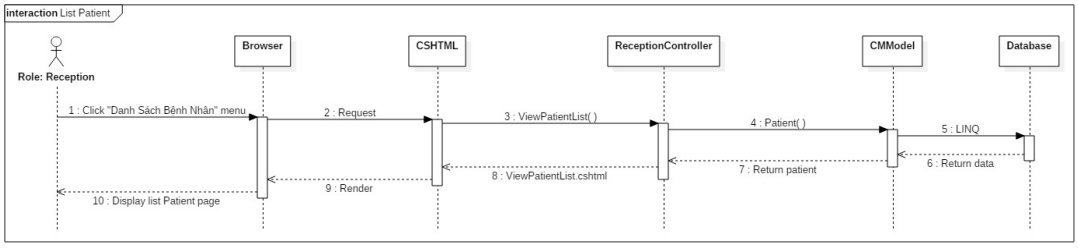
4.2.10.2View List Patient

4.2.10.2.1 Screen Design



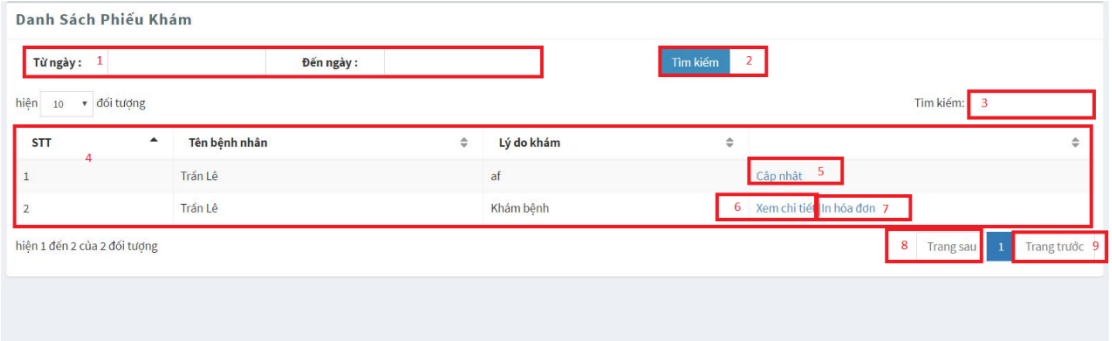
No	Object/Control Name	Type	Required	Description
1	Thêm Mới Bệnh Nhân	Button	Yes	Add New Patient
2	Tìm Kiếm	Text box	Yes	Search item in list
3	Danh Sách Bệnh Nhân	Table	Yes	List Patient
4	Cập Nhật	Link Text	Yes	Edit Patient
5	Tạo Phiếu Khám	Link Text	Yes	Create Medical History
6	Trang Sau	Button	Yes	Previous page
7	Trang Trước	Button	Yes	Nex page

4.2.10.2.2 Sequence Diagram



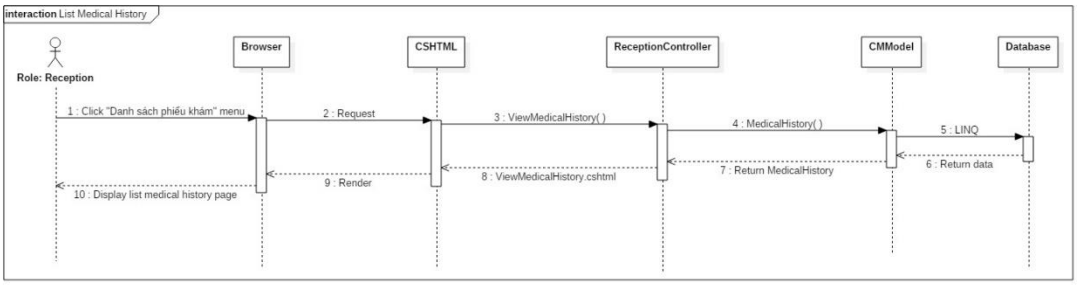
4.2.10.3View List Medical History

4.2.10.3.1 Screen Design



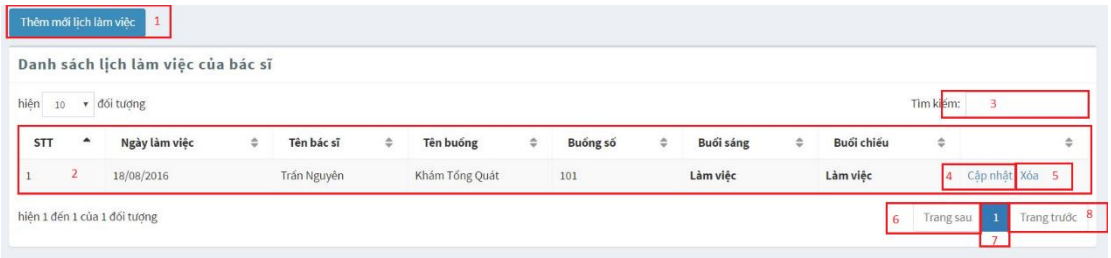
No	Object/Control Name	Type	Required	Description
1	Thời gian	Text box	Yes	Input time
2	Tìm Kiếm	Button	Yes	Search by Time
3	Tìm Kiếm	Text box	Yes	Search item in list
4	Danh Sách Phiếu Khám	Table	Yes	List Create Medical History
5	Cập Nhật	Link Text	Yes	Edit Create Medical History
6	Xem Chi Tiết	Link Text	Yes	Create Medical History Detail
7	In Hóa Đơn	Link Text	Yes	Print Bill
8	Trang Sau	Button	Yes	Previous page
9	Trang Trước	Button	Yes	Nex page

4.2.10.3.2 Sequence Diagram



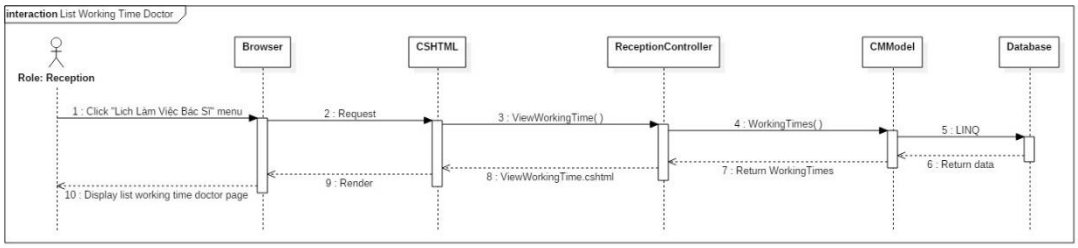
4.2.10.4View List Working Time of Doctor

4.2.10.4.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Thêm mới lịch làm việc	Button	Yes	Go to create doctor's work schedule
2	Danh sách lịch làm việc bác sĩ	Table	Yes	List doctor's work schedule
3	Tìm Kiếm	Text box	Yes	Search item in list
4	Cập Nhật	Link Text	Yes	Edit doctor's work schedule
5	Xóa	Link Text	Yes	Delete doctor's work schedule
6	Trang Sau	Button	Yes	Previous page
7	Page number	Label	Yes	Page number
9	Trang Trước	Button	Yes	Nex page

4.2.10.4.2 Sequence Diagram



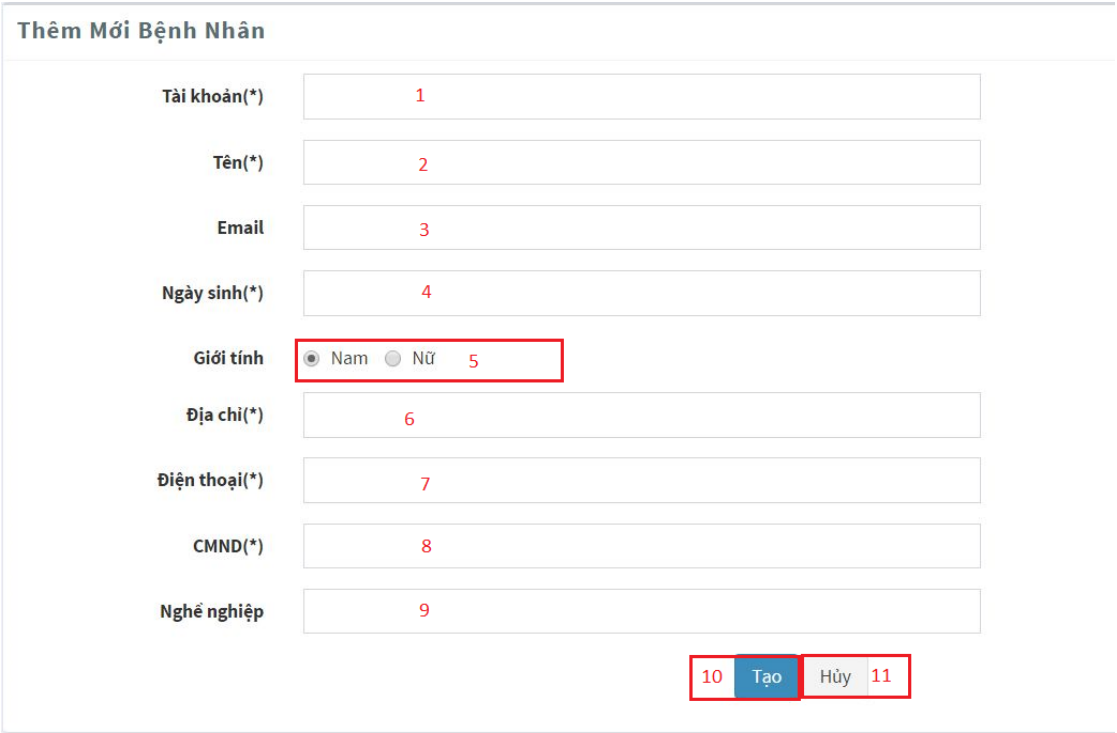
4.2.10.5View List Working Time of Nurse

4.2.10.5.1 Screen Design

4.2.10.5.2 Sequence Diagram

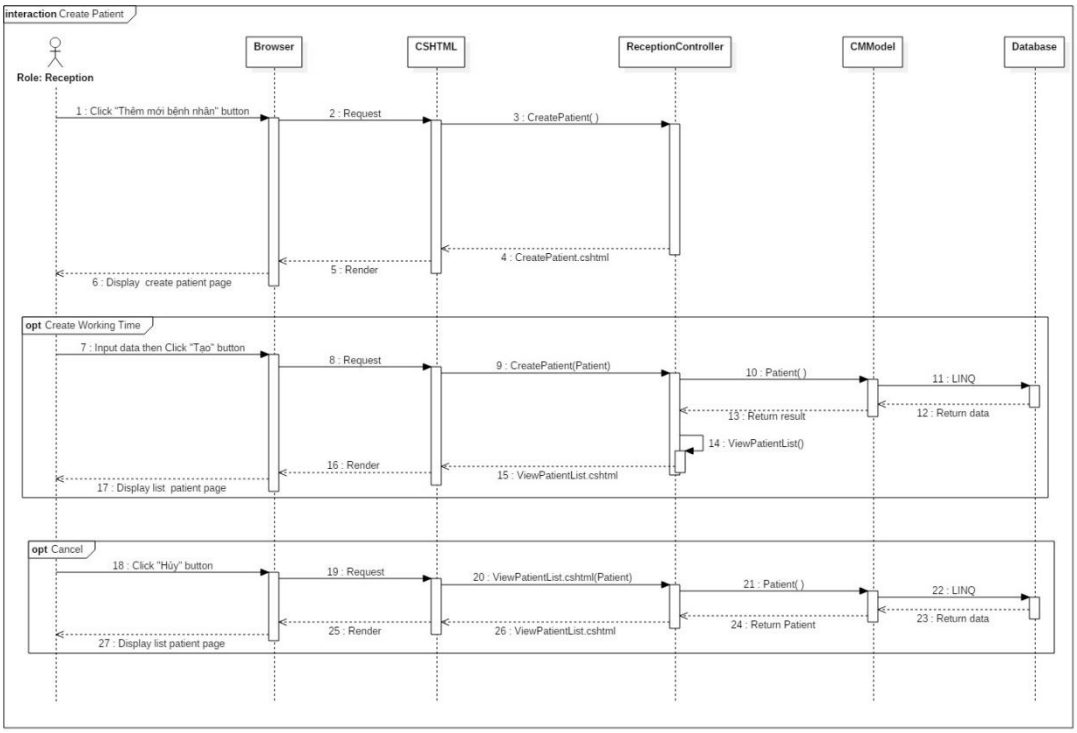
4.2.10.6Create Patient

4.2.10.6.1 Screen Design



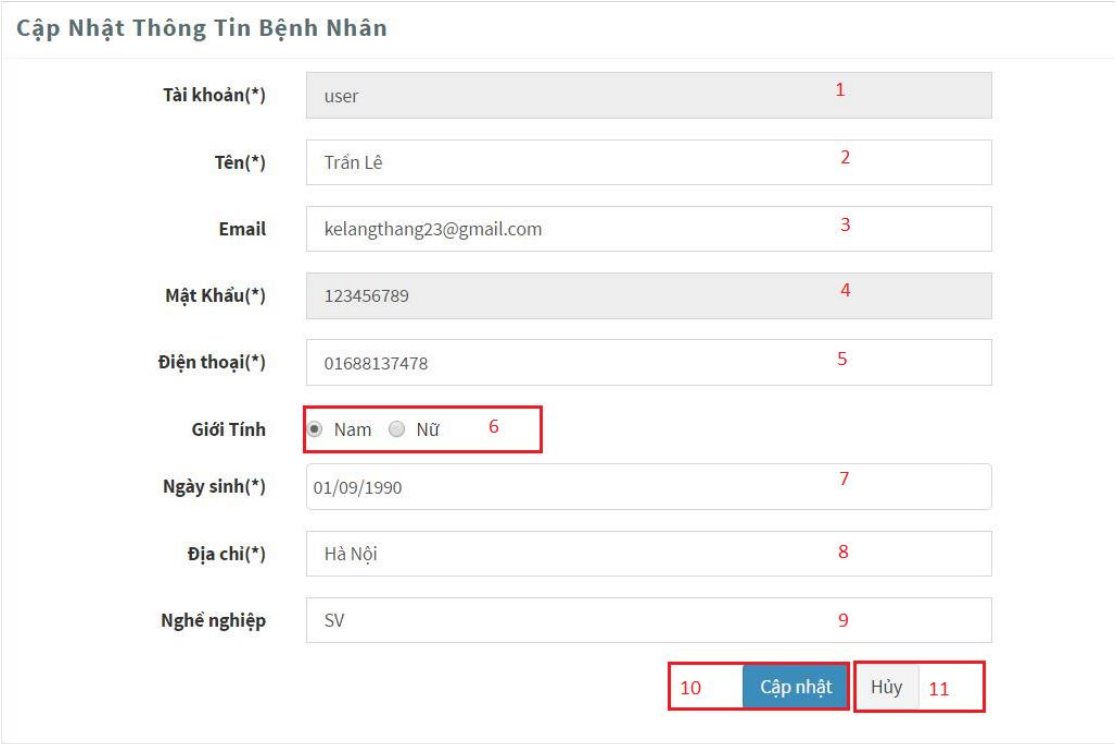
No	Object/Control Name	Type	Required	Description
1	Tài khoản	Text box	Yes	Patient's username
2	Tên	Text box	Yes	Patient's fullname
3	Email	Text box	Yes	Patient's Email
4	Ngày sinh	Text box	Yes	Patient's BirthDay
5	Địa chỉ	Text box	Yes	Patient's Address
6	CMND	Text box	Yes	Patient's Identification number
7	Nghề nghiệp	Text box	Yes	Patient's Job
8	Tạo	Button	Yes	Create patient
9	Hủy	Button	Yes	Cancel and go back to View List Patient

4.2.10.6.2 Sequence Diagram



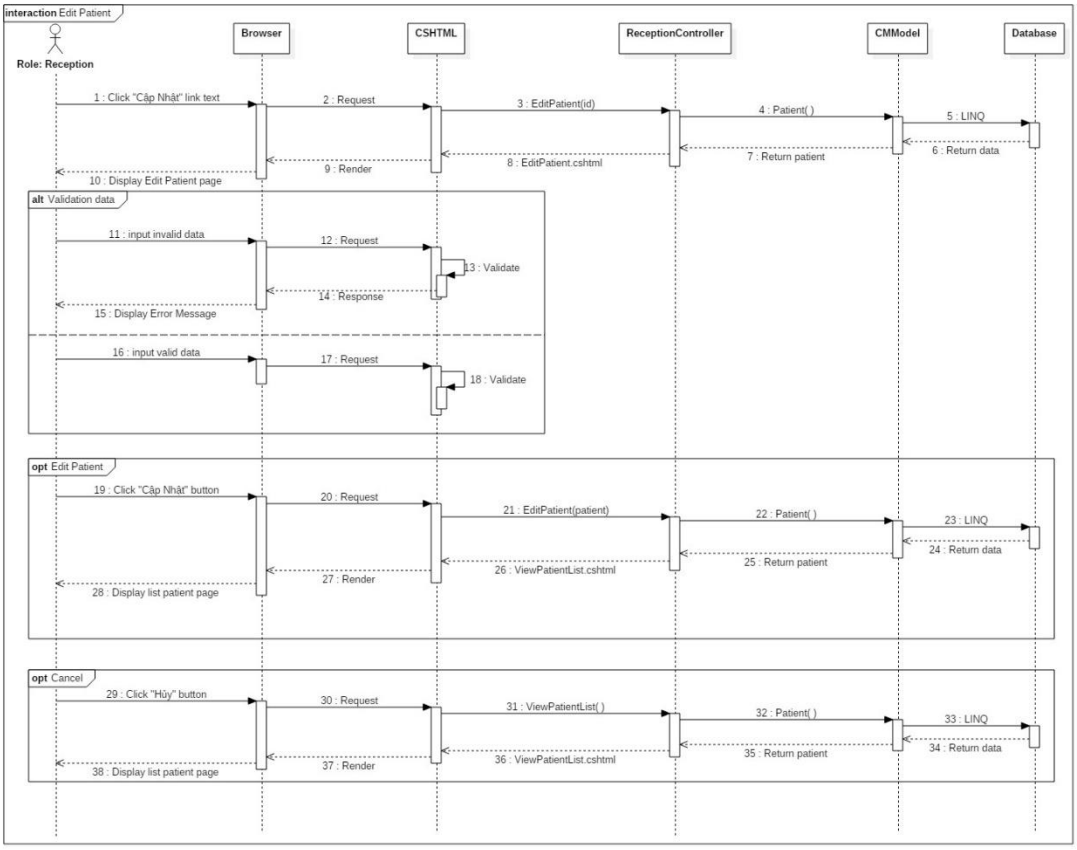
4.2.10.7 Update Patient

4.2.10.7.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Tài khoản	Text box	Yes	Patient's username
2	Tên	Text box	Yes	Patient's fullname
3	Email	Text box	Yes	Patient's Email
4	Ngày sinh	Text box	Yes	Patient's BirthDay
5	Địa chỉ	Text box	Yes	Patient's Address
6	CMND	Text box	Yes	Patient's Identification number
7	Nghề nghiệp	Text box	Yes	Patient's Job
8	Cập nhật	Button	Yes	Update patient
9	Hủy	Button	Yes	Cancel and go back to View List Patient

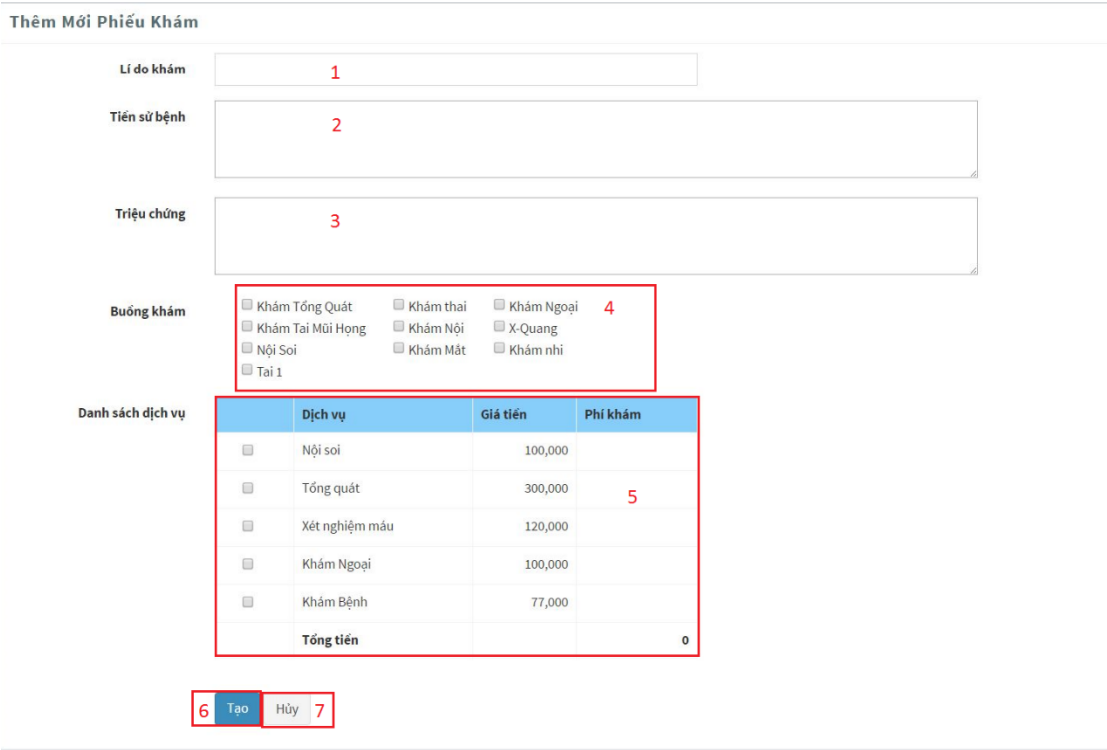
4.2.10.7.2 Sequence Diagram



4.2.10.8 Create Medical History

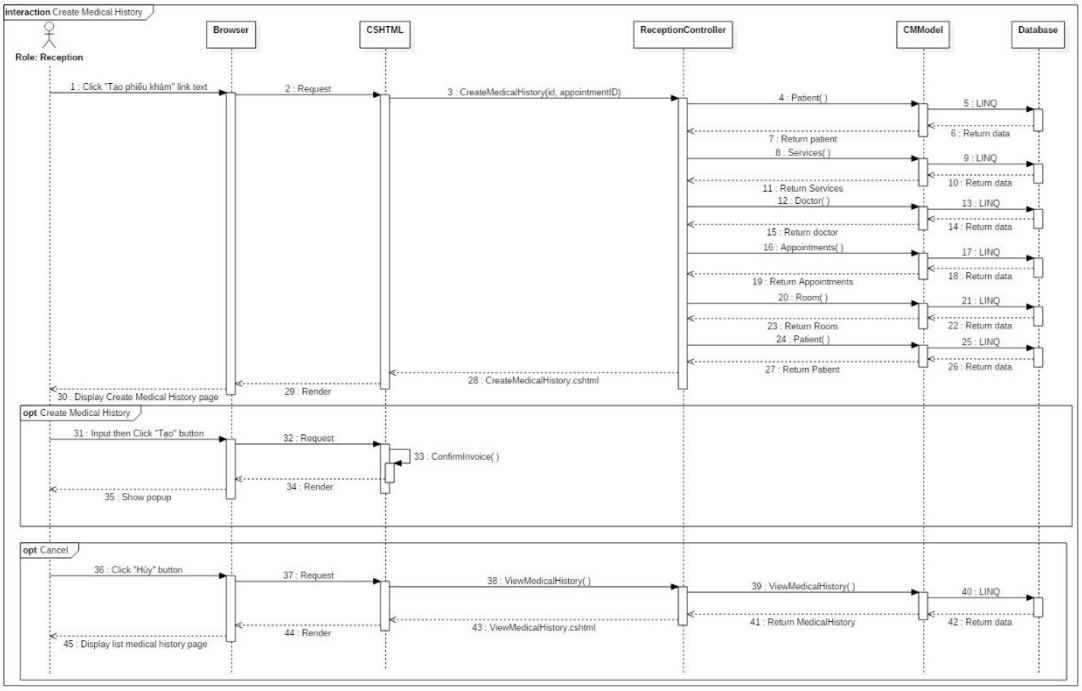
4.2.10.8.1 View Confirm Popup

4.2.10.8.1.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Lý do khám	Text box	Yes	Patient's reason
2	Tiền sử bệnh	Text box	Yes	Patient's medical record
3	Triệu chứng	Text box	Yes	Patient's Symptom
4	Buồng khám	Table	Yes	Confirm appointment' note
5	Danh sách dịch vụ	Table	Yes	List of services
6	Tạo	Button	Yes	Create medical history and show popup confirm invoice
7	Hủy	Button	Yes	Go back to View list medical history page

4.2.10.8.1.2 Sequence Diagram

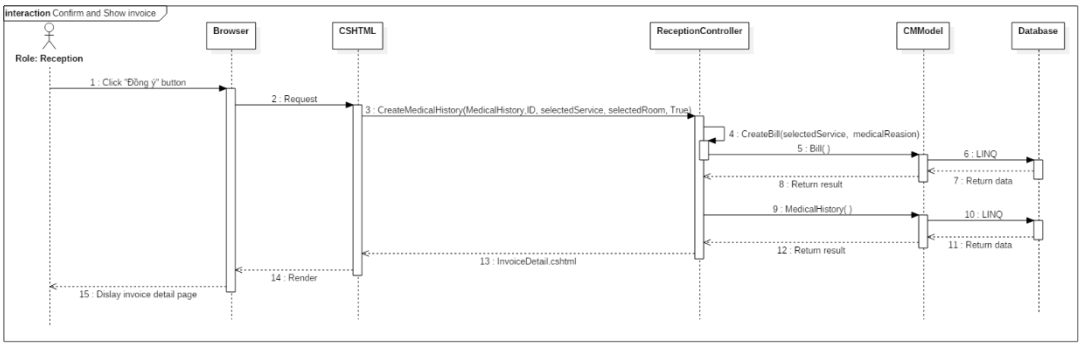


4.2.10.9 Confirm and Print Invoice

4.2.10.9.1 Screen Design

No	Object/Control Name	Type	Required	Description
1	Đồng ý	Button	Yes	Confirm and print invoice
2	Từ chối	Button	Yes	Not confirm and go back to view medical history list page

4.2.10.9.2 Sequence Diagram

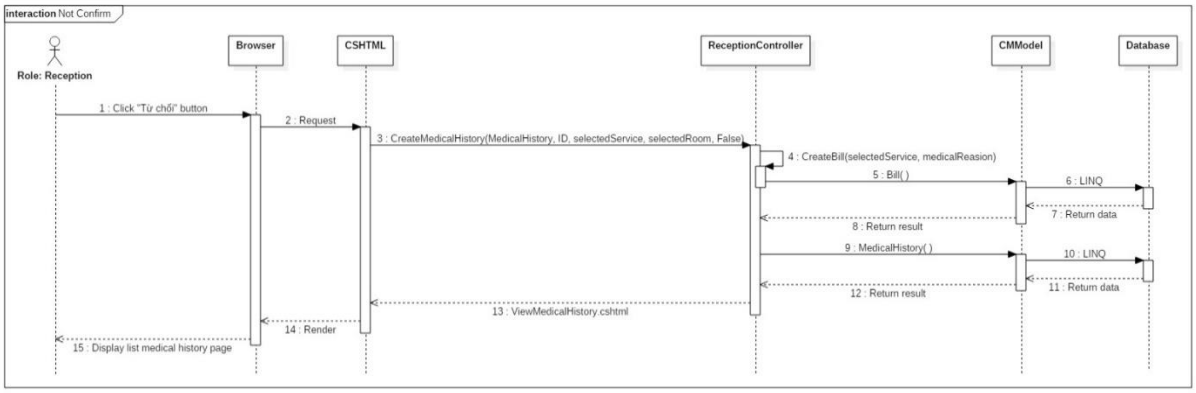


4.2.10.10 Not confirm invoice

4.2.10.10.1 Screen Design

No	Object/Control Name	Type	Required	Description
1	Đồng ý	Button	Yes	Confirm and print invoice
2	Từ chối	Button	Yes	Not confirm and go back to view medical history list page

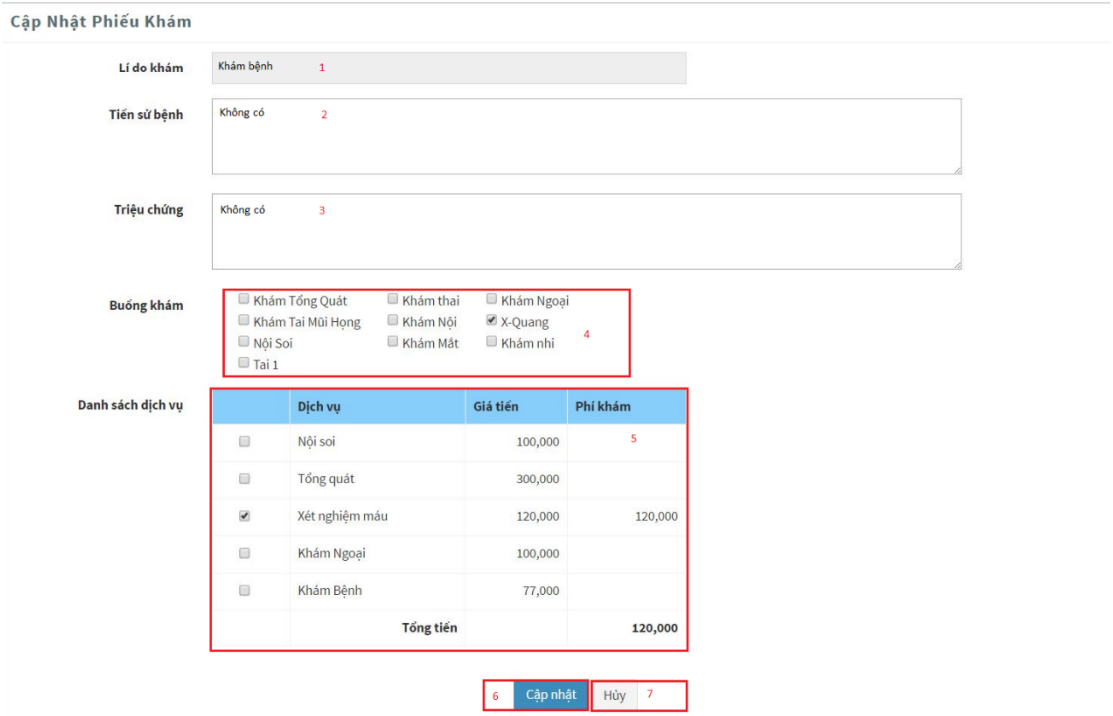
4.2.10.10.2 Sequence Diagram



4.2.10.11 Update Medical History

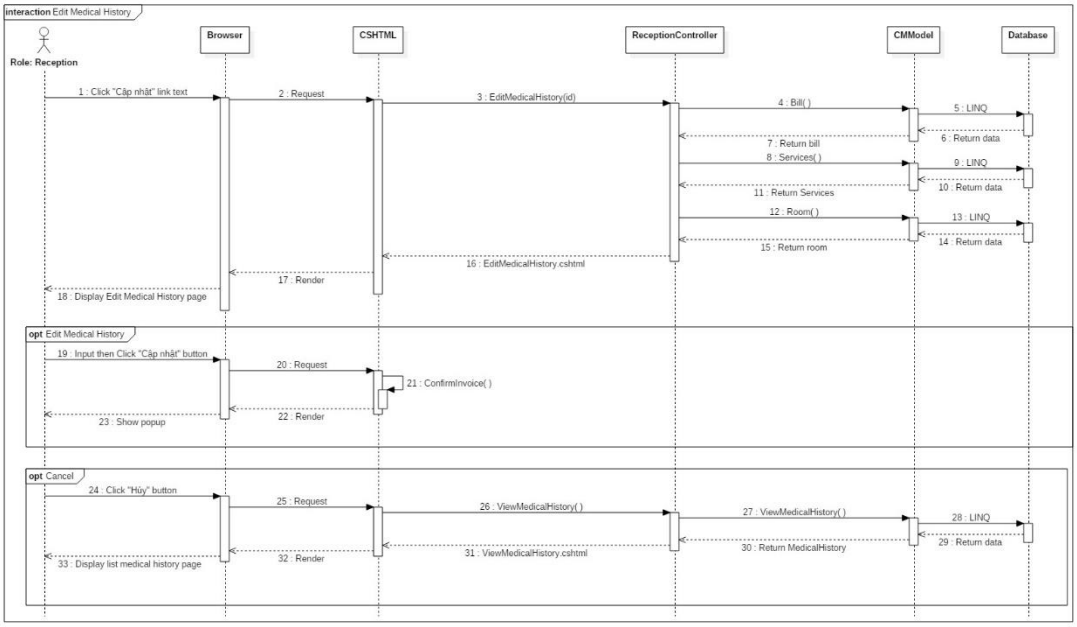
4.2.10.11.1 View Confirm Popup

4.2.10.11.1.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Lý do khám	Text box	Yes	Patient's reason
2	Tiền sử bệnh	Text box	Yes	Patient's medical record
3	Triệu chứng	Text box	Yes	Patient's Symptom
4	Buồng khám	Table	Yes	Confirm appointment' note
5	Danh sách dịch vụ	Table	Yes	List of services
6	Cập nhật	Button	Yes	Update medical history and show popup confirm invoice
7	Hủy	Button	Yes	Go back to View list medical history page

4.2.10.11.1.2 Sequence Diagram

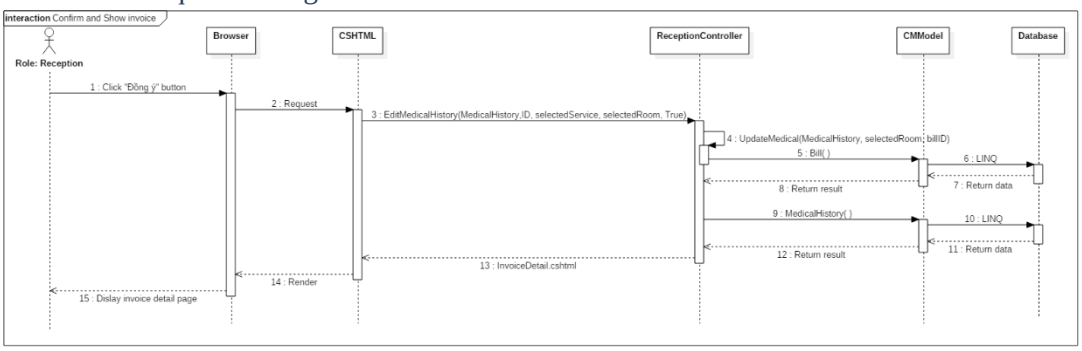


4.2.10.12 Confirm and Print Invoice

4.2.10.12.1 Screen Design

No	Object/Control Name	Type	Required	Description
1	Đồng ý	Button	Yes	Confirm and print invoice
2	Từ chối	Button	Yes	Not confirm and go back to view medical history list page

4.2.10.12.2 Sequence Diagram

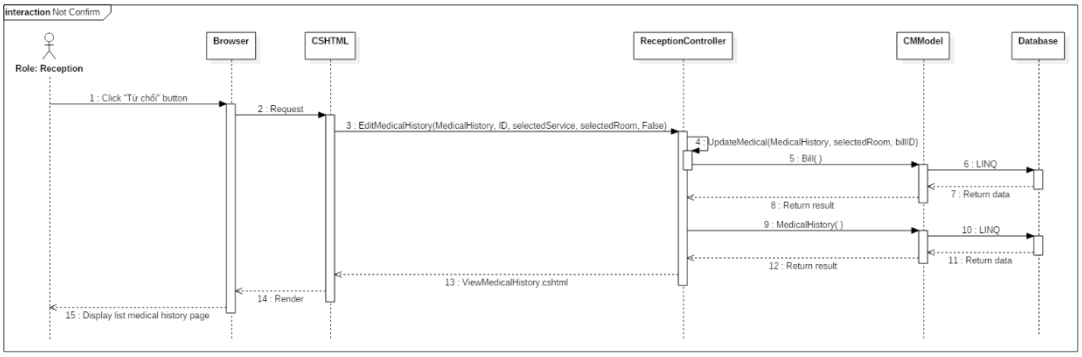


4.2.10.13 Not confirm

4.2.10.13.1 Screen Design

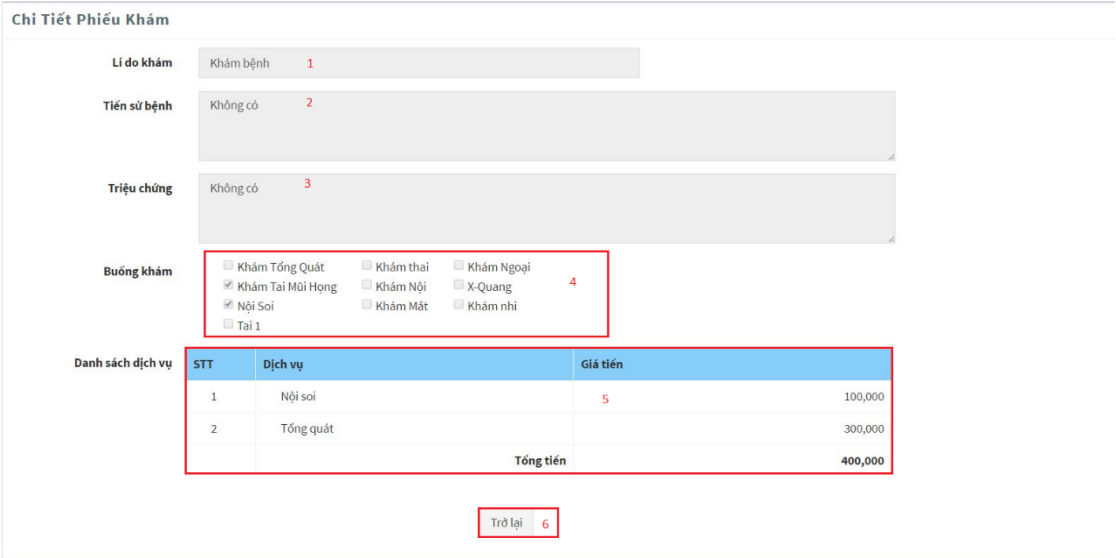
No	Object/Control Name	Type	Required	Description
1	Đồng ý	Button	Yes	Confirm and print invoice
2	Từ chối	Button	Yes	Not confirm and go back to view medical history list page

4.2.10.13.2 Sequence Diagram



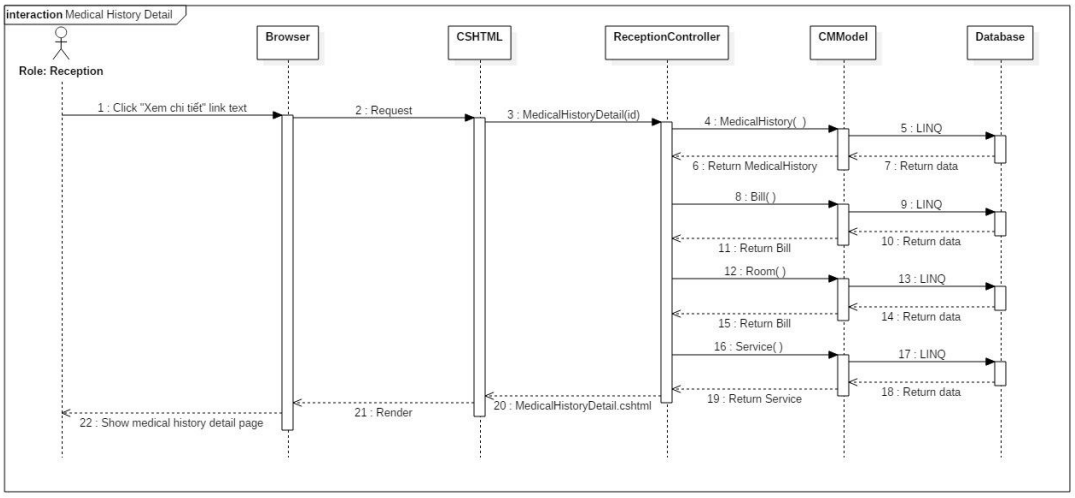
4.2.10.14 View Medical History Detail

4.2.10.14.1 Screen Design



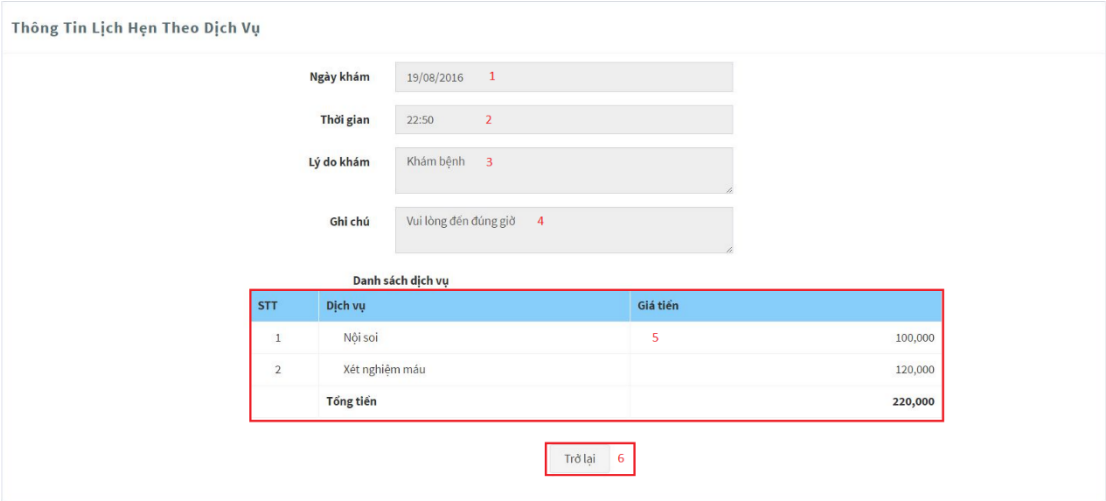
No	Object/Control Name	Type	Required	Description
1	Lý do khám	Text box	Yes	Patient's reason
2	Tiền sử bệnh	Text box	Yes	Patient's medical history
3	Triệu chứng	Text box	Yes	Patient's Symptom
4	Buồng khám	Table	Yes	List of rooms
5	Danh sách dịch vụ	Table	Yes	List of services
6	Trở lại	Button	Yes	Go back to View list medical history

4.2.10.14.2 Sequence Diagram



4.2.10.15 View Appointment's Detail

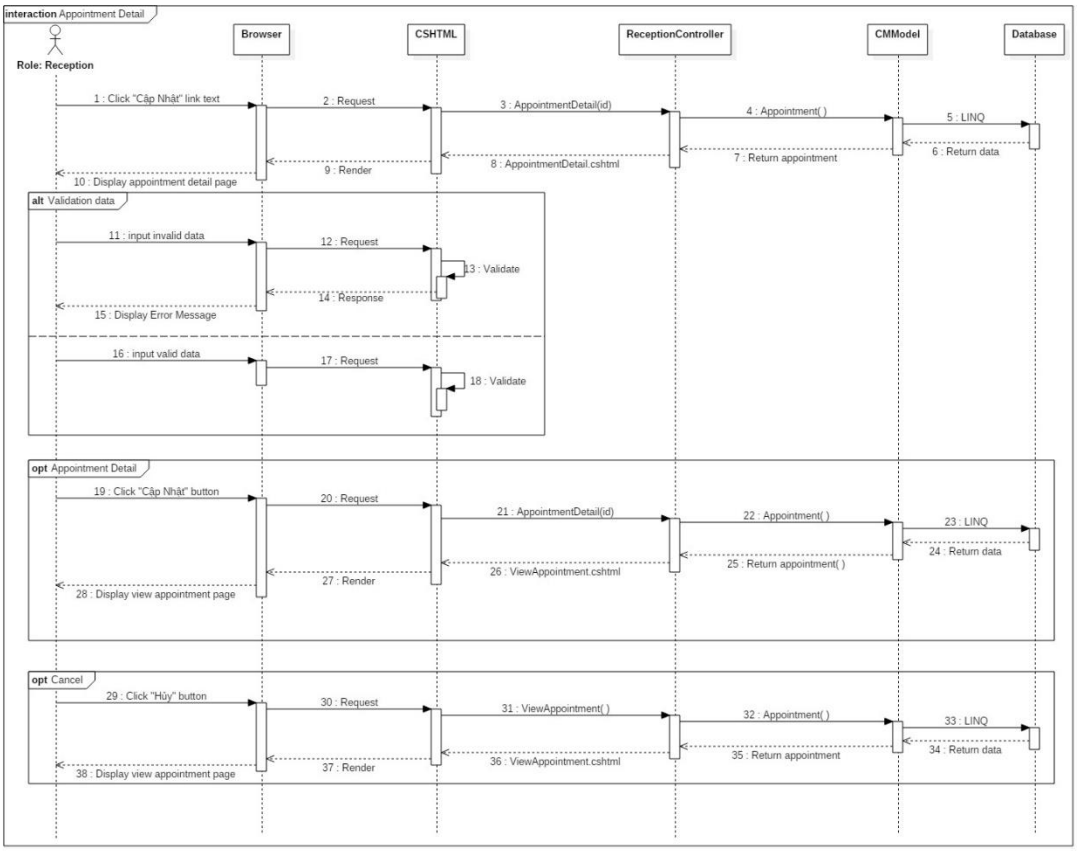
4.2.10.15.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Ngày khám	Text box	Yes	Appointment date
2	Thời gian	Text box	Yes	Appointment time
3	Lý do khám	Text box	Yes	Patient's reason
4	Ghi chú	Text area	Yes	Confirm appointment' note
5	Danh sách dịch vụ	Table	Yes	List of services

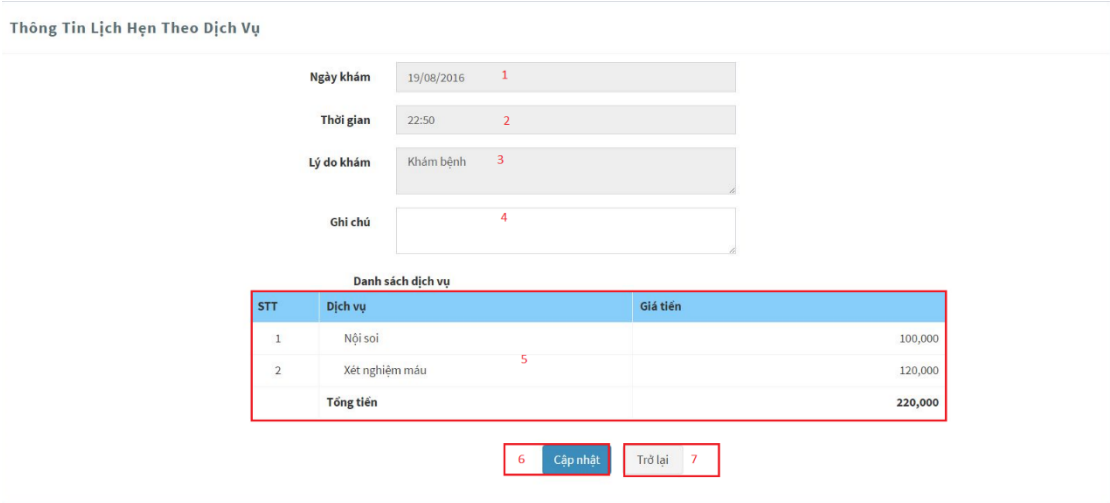
6	Trở lại	Button	Yes	Go back to view appointment list

4.2.10.15.2 Sequence Diagram



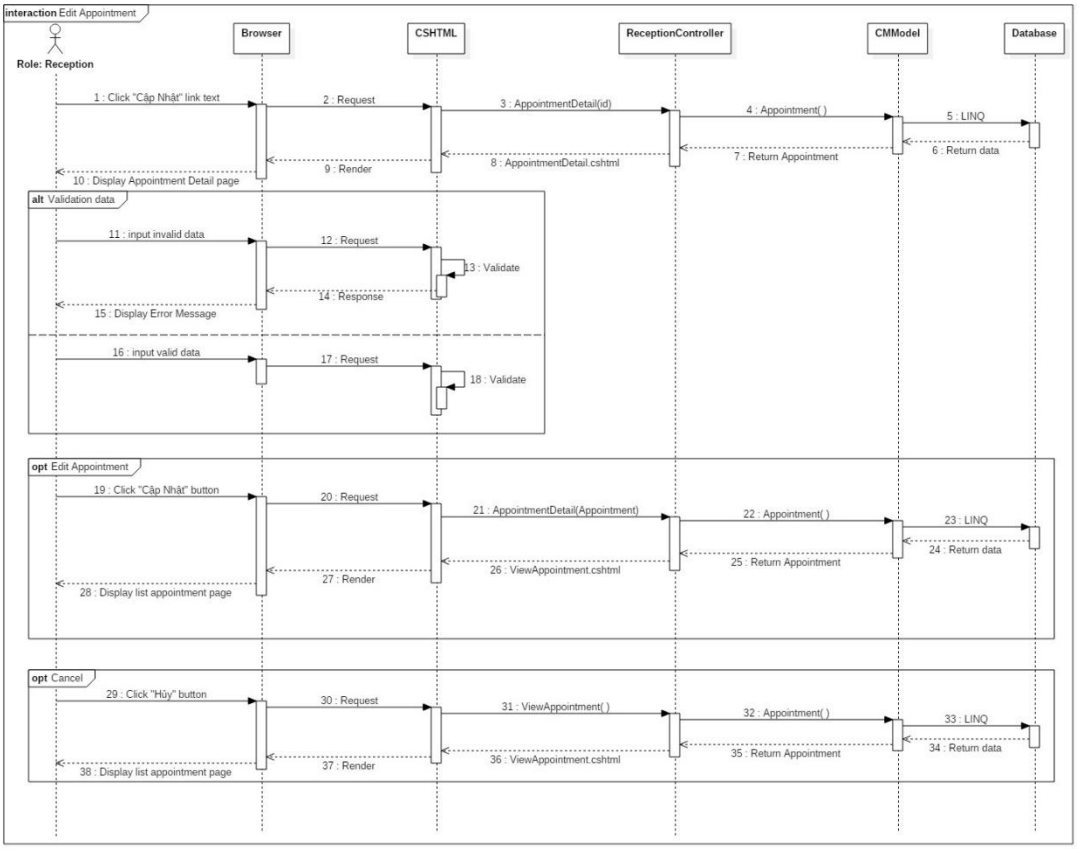
4.2.10.16 Edit Appointment

4.2.10.16.1 Screen Design



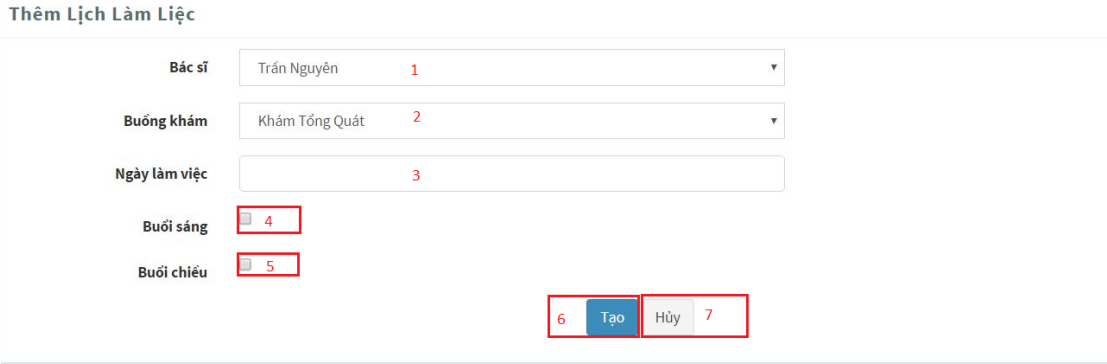
No	Object/Control Name	Type	Required	Description
1	Ngày khám	Text box	Yes	Appointment date
2	Thời gian	Text box	Yes	Appointment time
3	Lý do khám	Text box	Yes	Patient's reason
4	Ghi chú	Text area	Yes	Confirm appointment' note
5	Danh sách dịch vụ	Table	Yes	List of services
6	Cập nhật	Button	Yes	Update and confirm appointment
7	Trở lại	Button	Yes	Go back to View list medical history

4.2.10.16.2 Sequence Diagram



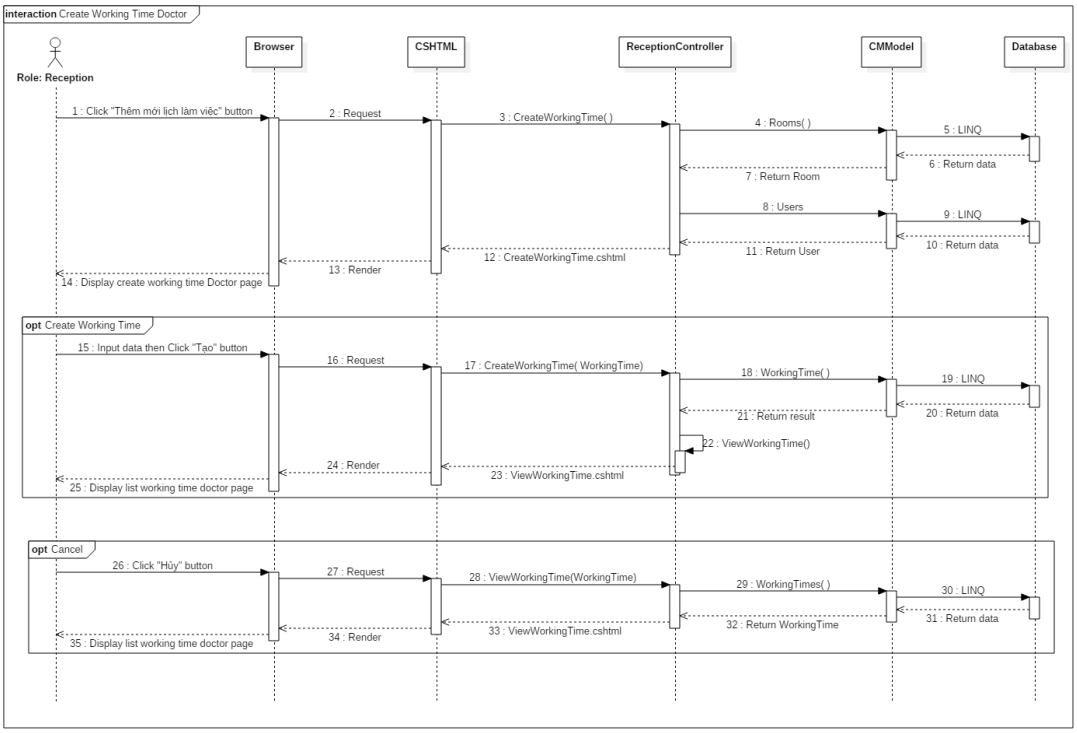
4.2.10.17 Create Doctor's Working Time

4.2.10.17.1 Screen Design



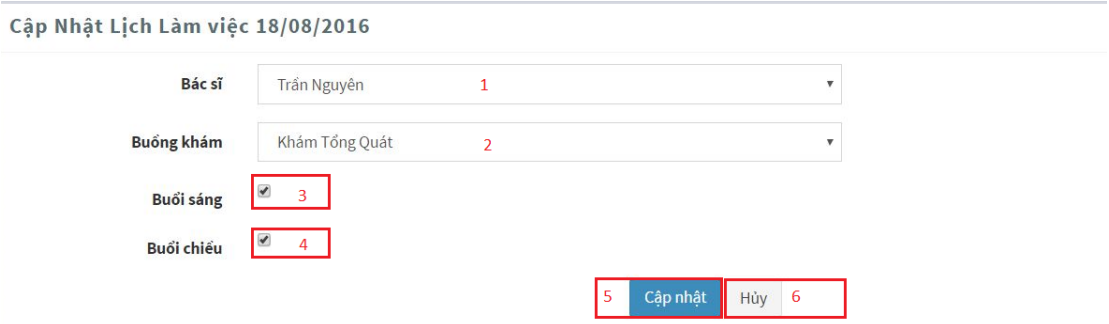
No	Object/Control Name	Type	Required	Description
1	Bác sĩ	Drop down list	Yes	List of doctor
2	Buồng khám	Drop down list	Yes	List of rooms
3	Ngày làm việc	Text box	Yes	Work date
4	Buổi sáng	Check box	Yes	Morning shift
5	Buổi chiều	Check box	Yes	Afternoon shift
6	Tạo	Button	Yes	Create working time
7	Hủy	Button	Yes	Go back to view list working time of doctor page

4.2.10.17.2 Sequence Diagram



4.2.10.18 Edit Doctor's Working Time

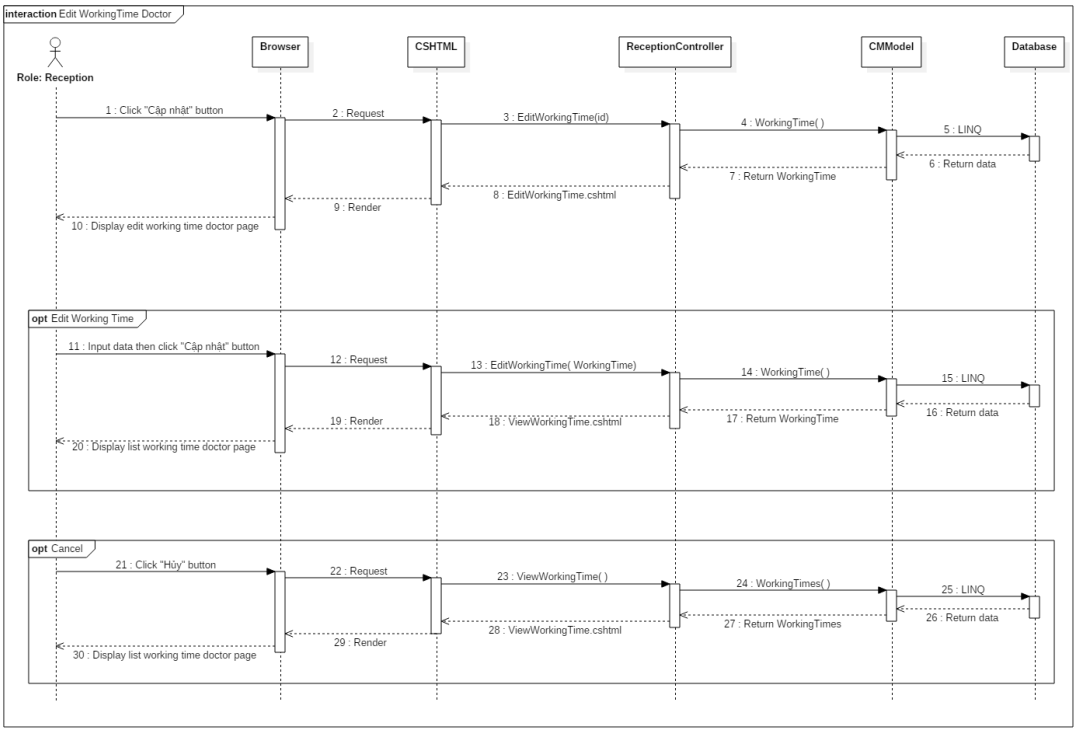
4.2.10.18.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Bác sĩ	Drop down list	Yes	List of doctor
2	Buổng khám	Drop down list	Yes	List of rooms
3	Buổi sáng	Check box	Yes	Morning shift
4	Buổi chiều	Check box	Yes	Afternoon shift

5	Cập nhật	Button	Yes	Update working time
6	Hủy	Button	Yes	Go back to view list working time of doctor page

4.2.10.18.2 Sequence Diagram

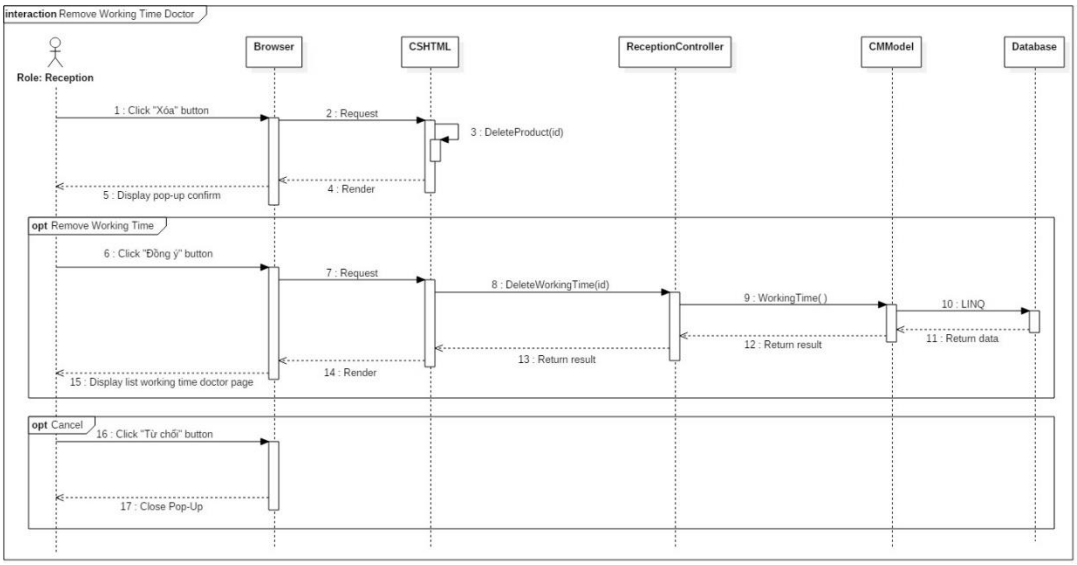


4.2.10.19 Delete Doctor's Working Time

4.2.10.19.1 Screen Design

No	Object/Control Name	Type	Required	Description
1	Đồng ý	Button	Yes	Delete working time
2	Từ chối	Button	Yes	Not delete working time

4.2.10.19.2 Sequence Diagram



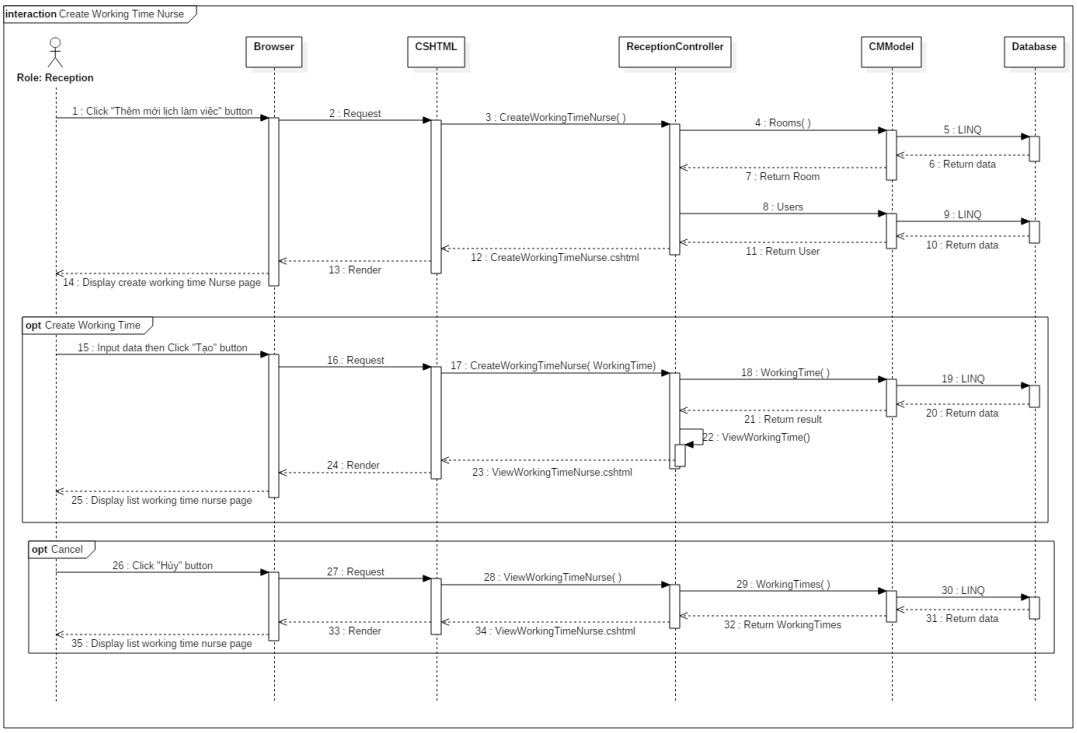
4.2.10.20 Create Nurse's Working Time

4.2.10.20.1 Screen Design

No	Object/Control Name	Type	Required	Description
1	Y tá	Drop down list	Yes	List of nurse
2	Buồng khám	Drop down list	Yes	List of rooms
3	Ngày làm việc	Text box	Yes	Work date
4	Buổi sáng	Check box	Yes	Morning shift
5	Buổi chiều	Check box	Yes	Afternoon shift
6	Tạo	Button	Yes	Create working time

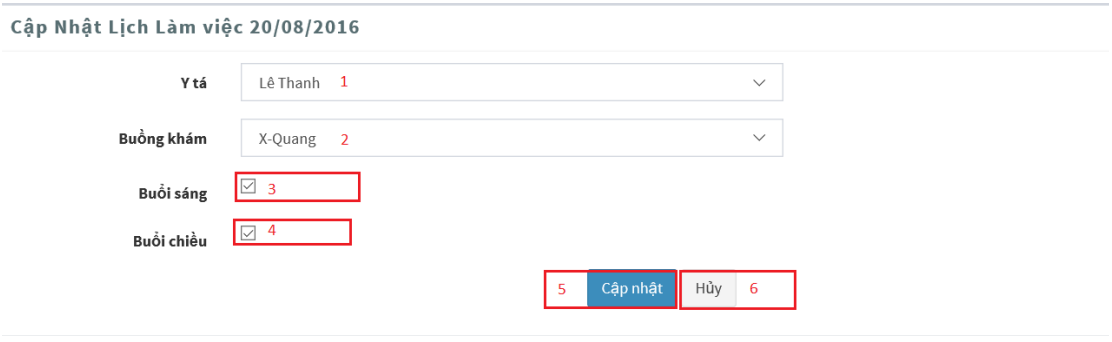
7	Hủy	Button	Yes	Go back to view list working time of doctor page

4.2.10.20.2 Sequence Diagram



4.2.10.21 Edit Nurse's Working Time

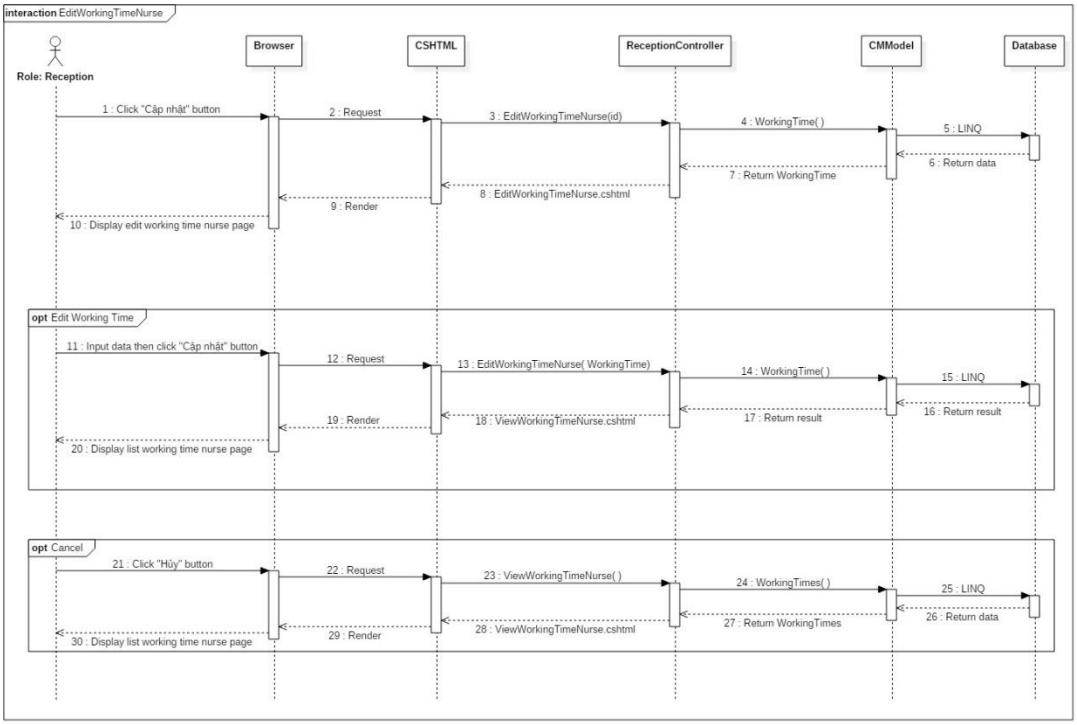
4.2.10.21.1 Screen Design



No	Object/Control Name	Type	Required	Description
1	Y tá	Drop down list	Yes	List of nurse
2	Buồng khám	Drop down list	Yes	List of rooms

3	Buổi sáng	Check box	Yes	Morning shift
4	Buổi chiều	Check box	Yes	Afternoon shift
5	Cập nhật	Button	Yes	Update working time
6	Hủy	Button	Yes	Go back to view list working time of doctor page

4.2.10.21.2 Sequence Diagram



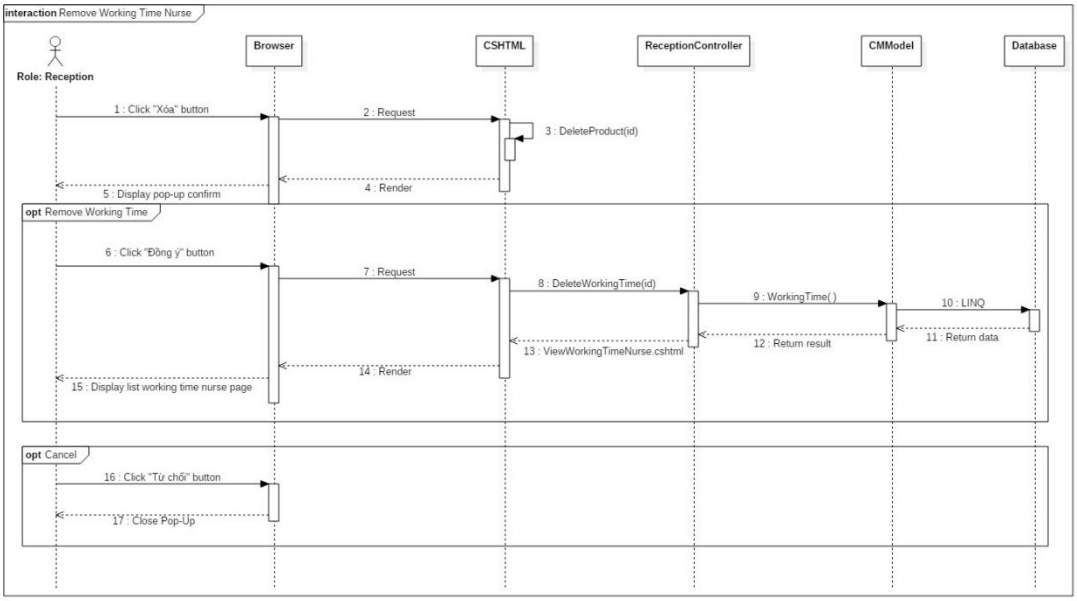
4.2.10.22 Delete Nurse's Working Time

4.2.10.22.1 Screen Design

No	Object/Control Name	Type	Required	Description

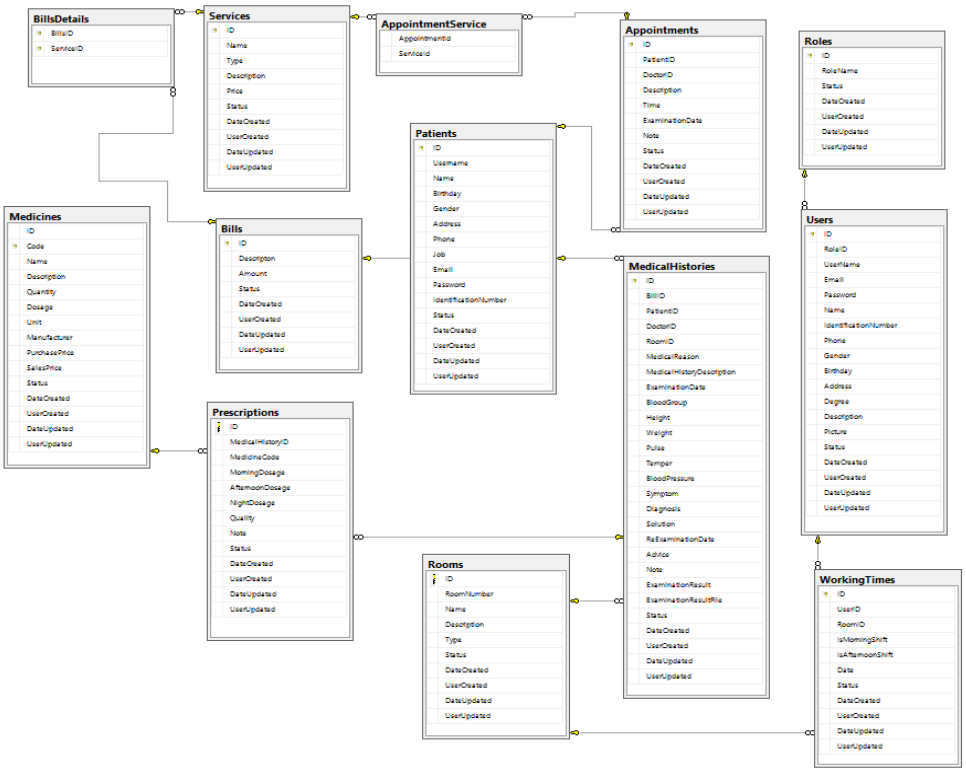
1	Đồng ý	Button	Yes	Delete working time
2	Từ chối	Button	Yes	Not delete working time

4.2.10.22.2 Sequence Diagram



4.3 Database design

4.3.1 Database Diagram



4.3.2 Table Descriptions

4.3.2.1 Appointments

Attribute	Type	Null	Constraints	Description
ID	int		PK	
PatientID	int		FK	
DoctorID	int	x		
Description	nvarchar(250)	x		
Time	datetime	x		Thời gian đến khám
ExaminationDate	date	x		Ngày khám
Note	nvarchar(250)	x		
Status	int	x		Trạng thái

UserCreated	int	x		
DateCreated	Date	x		
DateUpdated	date	x		
UserUpdated	int	x		

4.3.2.2 AppointmentService

Attribute	Type	Null	Constraints	Description
AppointmentId	int		FK	
ServiceId	int		FK	

4.3.2.3 Bills

Attribute	Type	Null	Constraints	Description
ID	int		PK	
MedicalHistoryID	int		FK	
Descripton	Nvachar(250)	x		
Amount	Float	x		Tổng tiền
Status	Int	x		Trạng thái
DateCreated	Date	x		
UserCreated	int	x		
DateUpdated	Date	x		
UserUpdated	Int	x		

4.3.2.4 BillsDetails

Attribute	Type	Null	Constraints	Description
BillsID	int		PK/FK	
ServiceID	int		PK/FK	

4.3.2.5 MedicalHistories

Attribute	Type	Null	Constraints	Description
ID	int		PK	
PatientID	int		FK	
DoctorID	int	x		
RoomID	int		FK	
MedicalReason	Nvarchar(250)	x		Lí do khám
MedicalHistoryDescription	Nvarchar(250)	x		
ExaminationDate	date	x		Ngày khám
BloodGroup	Nvarchar(50)	x		Nhóm máu
Height	Nvarchar(50)	x		Chiều cao
Weight	Nvarchar(50)	x		Cân nặng
Pulse	Nvarchar(50)	x		Mạch đập
Temper	Nvarchar(50)	x		Nhiệt độ
BloodPressure	Nvarchar(50)	x		Huyết áp
Symptom	Nvarchar(250)	x		Triệu chứng
Diagnosis	Nvarchar(250)	x		Chẩn đoán
Solution	Nvarchar(250)	x		Giải pháp
ReExaminationDate	Date	x		Ngày tái khám
Advice	Nvachar(max)	x		Lời khuyên
Status	Int	x		
DateCreated	Date	x		
UserCreated	Int	x		
DateUpdated	Date	x		
UserUpdated	Int	x		

4.3.2.6 Medicines

Attribute	Type	Null	Constraints	Description
Code	Nvachar(50)		PK	
Name	Nvachar(50)	x		
Descripton	Nvachar(50)	x		
Quantity	int	x		
Dosage	Nvachar(50)	x		Liều lượng
Unit	Nvachar(50)	x		
Manufacturer	Nvachar(50)	x		Nhà sản xuất
PurchasePrice	Float	x		Giá mua
SalesPrice	Float	x		Giá bán
Status	Int	x		
DateCreated	Date	x		
UserCreated	Int	x		
DateUpdated	Date	x		
UserUpdated	Int	x		

4.3.2.7 Patients

Attribute	Type	Null	Constraints	Description
ID	int		PK	
Username	Nvachar(50)			
Name	Nvachar(50)	x		
Birthday	Date	x		
Gender	bit	x		
Address	Nvachar(150)	x		
Phone	Nvachar(50)	x		

Job	Nvachar(50)	x		
Email	Nvachar(50)	x		
Password	Nvachar(50)	x		
Status	Int	x		
DateCreated	date	x		
UserCreated	Int	x		
IdentificationNumber	Nvarchar(50)	x		
DateUpdated	Date	x		
UserUpdated	int	x		

4.3.2.8 Prescriptions

Attribute	Type	Null	Constraints	Description
ID	int		PK	
MedicalHistoryID	int		FK	
MedicineCode	Nvachar(50)		FK	
MorningDosage	Nvachar(50)	x		
AfternoonDossage	Nvachar(50)	x		
NightDosage	Nvachar(50)	x		
Status	int	x		
DateCreated	date	x		
UserCreated	int	x		
Note	Nvachar(max)	x		
Quality	Nvachar(50)	x		
DateUpdated	Date	x		
UserUpdated	Int	x		

4.3.2.9 Roles

Attribute	Type	Null	Constraints	Description
ID	int		PK	
RoleName	Nvarchar(50)	x		
Status	Int	x		
DateCreated	date	x		
UserCreated	int	x		
DateUpdated	Date	x		
UserUpdated	Int	x		

4.3.2.10Rooms

Attribute	Type	Null	Constraints	Description
ID	int		PK	
RoomNumber	int	x		
Name	Nvarchar(50)	x		
Description	Nvarchar(250)	x		
Status	Int	x		
DateCreated	date	x		
UserCreated	int	x		
DateUpdated	Date	x		
UserUpdated	Int	x		

4.3.2.11Services

Attribute	Type	Null	Constraints	Description
ID	int		PK	
Name	Nvarchar(50)	x		
Type	int	x		
Description	Nvarchar(250)	x		

Price	Float	x		
Status	Int	x		
DateCreated	date	x		
UserCreated	int	x		
DateUpdated	Date	x		
UserUpdated	Int	x		

4.3.2.12Users

Attribute	Type	Null	Constraints	Description
ID	int		PK	
RoleID	Int		FK	
UserName	Nvarchar(50)	x		
Email	Nvarchar(50)	x		
Password	Nvarchar(50)	x		
Name	Nvarchar(50)	x		
IdentificationNumber	Nvarchar(50)	x		
Phone	Nvarchar(50)	x		
Gender	bit	x		
Birthday	date	x		
Address	Nvarchar(150)	x		
Degree	Nvarchar(max)	x		
Description	Nvarchar(max)	x		
Picture	Binary(7000)	x		
Status	Int	x		
DateCreated	date	x		
UserCreated	int	x		

DateUpdated	Date	x		
UserUpdated	Int	x		

4.3.2.13WorkingTimes

Attribute	Type	Null	Constraints	Description
ID	int		PK	
UserID	int		FK	
RoomID	int		FK	
Day	int			
IsMorningShift	bit			
IsAfternoonShift	bit			
Status	Int	x		
DateCreated	date	x		
UserCreated	int	x		
DateUpdated	Date	x		
UserUpdated	Int	x		
Date	date			

CHAPTER 5: SOFTWARE TESTING DOCUMENTATION

5.1 Purposes

This is document have purpose:

- Testing all Functional are implemented as Design Requirements.
- Units and the inspection system based on the document to have a test procedure
- Units and the inspection system determines the documentation process
- Units and the inspection system identifies the test method.

5.2 Test plan

5.2.1 Scope of Testing

The stages of testing: Our team apply the three levels for testing Clinic Management:

- **Integration Testing**: It have our team find interface defects between the modules/functions.
- **System Testing**: Our team you can test the system has complied with all the requirements set out or not.
- **Acceptance Testing**: Our team you can determine whether the system is ready for release.

- Types of testing: Our team use two types is:

+ Functional vs non-functional testing

+ User interface testing

- Range of testing: Our team you test all functions in the document requirements. The test will perform in approved version.

5.2.2 Requirements for Testing

5.2.2.1 Test Items

This is all function will be test :

No	Group Function	Functions
1	System	Login
		Log Out
		View Profile
		Edit Profile
2	Font-end	Register
		View Service
		View Doctor Info
		View Doctor Info
		Appointment
		View Medical History

3	Back-end	View List Staff
		Add Staff
		Edit Staff
		View List Room
		Add Room
		Edit Room
		Remove Room
		View List Service
		Add Service
		Edit Service
		Remove Service
		View List Medicine
		Add Medicine
		Edit Medicine
		Remove Medicine
		View List Patient
		View List Medical Record
		View List Appointment
		View List Working Time
		Add Patient
		Edit Patient
		Add Medical Record
		Add Working Time
		Edit Working Time
		Remove Working Time

		Remove Appointment
		View List Medical Record
		View Working Time
		Edit Medical Record
		Add Prescription
		View List Invoice
		Export File
		View List Verify Medical Record
		Verify Medical Record
		View Working Result
		Filter
		Sort

5.2.2.2 Acceptance Test Criteria

Test coverage: >= 80%

Test successful coverage: >= 80%

Number of test cases failed: less than 3% of total test cases

5.2.2.3 Testing Risks

Our team can you meet the following risks:

- Inexperienced members in testing, leading to lack of test cases
- Test time can't be much should not test the potential problems

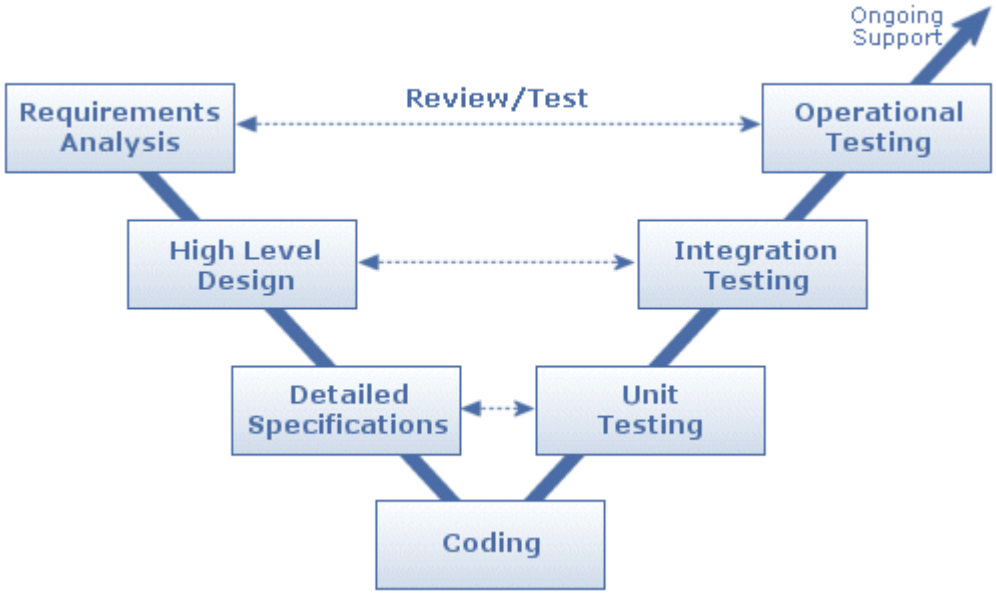
5.2.3 Test Strategies

5.2.3.1 Test Policies

- "Test without good faith"
- "Find bugs as soon as possible and always make sure they have been fixed"
- "No outstanding high severity faults"
- "Ensuring the product covers key features and attributes requirements"

5.2.3.2 Test Model

Using V-Model to implement testing process



Technique:

- Integration test: Bottom-up method will be used for IT.
- Acceptance test: Based on requirements in SRS, test team will create scenarios for acceptance test to ensure project's business. In AT, tester will create test scripts based on these scenarios and run automatically in project execution.

Completion criteria:

- All planned test cases have been executed compared with expected result in test cases.
- Acceptance test cases must be green (passed) at least 95%.
- All defects must be logged into test documents and re-tested after it is fixed.
- All defects, which are accepted by customer or project technical leader and project manager, will be marked as accepted and not be retested.
- All defects must be resolved or accepted.

These criteria will be applied for all test types.

Special considerations:

- Test databases will be required

- Testing may be stopped when
    - Time runs out
    - A certain number of defects found
    - Require a certain test coverage
    - Stop when testing becomes unproductive.

5.2.3.3 Types of Testing

5.2.3.3.1 Functional Testing

Function testing of the target-of-test should focus on any requirements for test that can be traced directly to use cases (or business functions), and business rules. The goals of these tests are to verify proper data acceptance, processing, and retrieval, and the appropriate implementation of the business rules. This type of testing is based upon black box techniques, that is, verifying the application (and its internal processes) by interacting with the application via the GUI and analyze the output (results). Identified below is an outline of the testing recommended for each application.

Test Objective:	The type of this test is to ensure proper target-of-test functionality, including user interaction, all function defined in specification document implemented correctly.
Technique:	The test team will execute each use case, use-case flow, or function, using valid and invalid data, to verify the following: • The expected results occur when valid data is used. • The appropriate error or warning messages are displayed when invalid data is used. • Each business rule is properly applied.
Completion Criteria:	- All planned tests have been executed. - All identified defects have been addressed and closed
Special Considerations:	Testing may be stopped when • Time runs out • A certain number of defects found • Require a certain test coverage Stop when testing becomes unproductive

5.2.3.3.2 User Interface Testing

User Interface (UI) testing verifies a user's interaction with the software. The goal of UI testing is to ensure that the User Interface provides the user with the appropriate access and navigation through the functions of the target-of-test. In addition, UI testing ensures that the objects within the UI function as expected and conform to corporate or industry standards.

Test Objective:	Verify the following: - Navigation through the target-of-test properly reflects business functions and requirements, including window-to-window, field-to-field, and use of access methods (tab keys, mouse movements, accelerator keys
Technique:	Create or modify tests for each page to verify proper navigation and object states for each page
Completion Criteria:	Each window successfully verified to remain consistent with benchmark version or within acceptable standard
Special Considerations:	

5.2.3.4 Test Stages

Type of Test	Stage of Test		
	Integration Testing	**System Testing**	**Acceptance Testing**
Function & Non-function Test	x	x	x
User Interface Test	x	x	x

5.2.3.5 Tools/Environments

Tool Name	Version
Google Chrome	Version 52.0.2743.116 m
Excel	Version 16.0.6741.2021
Window	10
SQL	2008
Visual Studio	2015

5.2.3.6 Resources

Member	Position	Responsibilities
Lê Văn Hùng	Test Lead	- Assign test tasks - Manage test resources - Create test plan - Review test cases - Execute test - Review test report
Phạm Khương Duy	Tester	- Create test cases - Execute test - Create test report

5.3 Test cases

5.3.1 Test Case Example Patient

Module Code	*Patient*		
Test requirement	*Testing all funtion for patient : Register, Appointment, Disease History Exam, Appointment history*		
Tester			
Pass	**Fail**	**Untested**	**N/A**
40	0	0	0

ID	Test Case Description	Test Case Procedure	Expected Output
	Function Register		
[Patient-]	Testing GUI of Register page	1. Navigate to Homepage Font-end 2. Click "Đăng Kí" button	The Register page display : - Tài Khoản text box - Mật Khẩu text box - Xác Nhận Mật Khẩu text box - Tên text box - CMND text box - Email text box - Ngày sinh text box - Giới tính check box - Số Điện Thoại text box - Địa Chỉ text box - Nghề Nghiệp text box
[Patient-1]	Testing Register successful when input to all field valid data	1. Navigate to Homepage Font-end 2. Click "Đăng Kí" button 3. Input to all field valid data 4. Click "Đăng kí" button	The Hompage Font-end is display with login
[Patient-2]	Testing Register successful when input to required field valid data	1. Navigate to Homepage Font-end 2. Click "Đăng Kí" button 3. Input to required field valid data 4. Click "Đăng kí" button	The Hompage Font-end is display with login
[Patient-3]	Testing Register successful when input to required and some unnecessary field valid data	1. Navigate to Homepage Font-end 2. Click "Đăng Kí" button 3. Input to required and some unnecessary field valid data 4. Click "Đăng kí" button	The Hompage Font-end is display with login
[Patient-4]	Testing Register unsuccessful when input invalid data	1. Navigate to Homepage Font-end 2. Click "Đăng Kí" button 3. Input to invalid data 4. Click "Đăng kí" button	Display error message
[Patient-5]	Testing Register Account existed	1. Navigate to Homepage Font-end 2. Click "Đăng Kí" button 3. Input account existed 4. Click "Đăng kí" button	Display error message
	Function Create Appointment		
[Patient-6]	Test GUI of Appointment when appointment by service and not login	1. Navigate Homepage Font-end 2. Click "Đặt Lịch Khám" menu 3. Click "Theo Dịch Vụ" sub-menu	Naviage to Login form and display Pop-UP message : - Vui lòng đăng nhập trước khi đặt lịch khám
[Patient-7]	Test GUI of Appointment when appointment by doctor and not login	1. Navigate Homepage Font-end 2. Click "Đặt Lịch Khám" menu 3. Click "Theo Bác Sĩ" sub-menu	Naviage to Login form and display Pop-UP message : - Vui lòng đăng nhập trước khi đặt lịch khám - "Đóng" button
[Patient-8]	Testing Close Message Pop-Up	1. Navigate Homepage Font-end 2. Click "Đặt Lịch Khám" menu 3. Click "Theo Bác Sĩ"/"Theo Dịch Vụ" sub-menu 4. Click "Đóng" button	Close pop-up message
[Patient-9]	Test GUI of Appointment when appointment by doctor and login successful	1. Navigate Homepage Font-end 2. Login successful 3. Click "Đặt Lịch Khám" menu 4. Click "Theo Bác Sĩ" sub-menu	The appointment page : - Appointment form : + Ngày Khám text box + Thời gian text box + Bác Sĩ drop down list + Lý Do Khám text box + "Đặt Hẹn" button

Reference file Test Case

5.3.2 Test Case Example Admin

Code	*Admin*			
Test requiremen	*Testing admin function : Room, Service, Medicine, Staff*			
Tester				
Pass	**Fail**	**Untested**	**N/A**	**Number of Test cases**
75	0	0	0	75

ID	Test Case Description	Test Case Procedure	Expected Output	Inter-test case Dependence
	Function Room			
[Admin-]	Test GUI List Room page	1. Login the Back-end with Admin role. 2. Click "Phòng" menu in the left menu	The List Room Page display : - "Thêm mới buồng khám" button - Filter text box - List room : + Column Buồng Khám + Column Loại Buồng + Column Buồng Số + Column Mô Tả - "Cập Nhật" button - "Xóa" button	
[Admin-1]	Test GUI Add Room page	1. Login the Back-end with Admin role. 2. Click "Phòng" menu in the left menu 3. Click "Thêm mới buồng khám" button	The Add Room page display : + Text box Tên phòng + Text box Buồng Số + Text Box Miêu Tả + Check box Xét Nghiệm + Check box Khám Bệnh - "Tạo" button - "Hủy" button	
[Admin-2]	Test GUI Edit Room page	1. Login the Back-end with Admin role. 2. Click "Phòng" menu in the left menu 3. Click "Cập Nhật" button	The Edit Room page display : + Text box Tên phòng + Text box Buồng Số + Text Box Miêu Tả + Check box Xét Nghiệm + Check box Khám Bệnh - "Cập Nhật" button - "Hủy" button	
[Admin-3]	Testing add room when input to all field valid data	1. Login the Back-end with Admin role. 2. Click "Phòng" menu in the left menu 3. Click "Thêm mới buồng khám" button 4. Input to all field valid data 5. Click "Tạo" button	The List Room Page display	
[Admin-4]	Testing add room when input to required field valid data	1. Login the Back-end with Admin role. 2. Click "Phòng" menu in the left menu 3. Click "Thêm mới buồng khám" button 4. Input to required field valid data 5. Click "Tạo" button	The List Room Page display	
[Admin-5]	Testing add room when input to required and some unnecessary field valid data	1. Login the Back-end with Admin role. 2. Click "Phòng" menu in the left menu 3. Click "Thêm mới buồng khám" button 4. Input to required and some unnecessary field valid data 5. Click "Tạo" button	The List Room Page display	
[Admin-6]	Testing add room when input invalid data	1. Login the Back-end with Admin role. 2. Click "Phòng" menu in the left menu 3. Click "Thêm mới buồng khám" button 4. Input to invalid data 5. Click "Tạo" button	The error message	
[Admin-7]	Testing edit room when input to all field valid data	1. Loign the Back-end with Admin role 2. Click "Phòng" menu in the left menu 3. Click "Cập Nhật" button 4. Input to all field valid data 5. Click "Cập Nhật" button	The List Room Page display	

5.3.3 Test Case Example Nurse

Module Code	*Nurse*			
Test requirement	*Testint Nurse Function : Edit Medical History Prescription, Working Time*			
Tester				
Pass	**Fail**	**Untested**	**N/A**	**Number of Test cases**
32	0	0	0	32

ID	Test Case Description	Test Case Procedure	Expected Output	Inter-test case Dependence
	Function Edit Medical History			
[Nurse-]	Test GUI list medical history page in room	1. Login sucessful with Nurse role 2. Click "DS Phiếu Khám" menu	Display list medical history page : - Filter text box - List Medica record : + Column STT + Column Mã Phiếu Khám + Column Tên Bệnh Nhân + Column Lý Do Khám + Column Tiền Sử Bệnh + Column Ngày Khám + Column Ngày Tái Khám + Column Trạng Thái + "Khám" link text when medical history not edit + "Xem Chi Tiết" link text + "In Phiếu Khám" link text	
[Nurse-1]	Test GUI edit medical history page	1. Login sucessful with Nurse role 2. Click "Danh Sách Phiếu Khám" menu 3. Click "Khám" link text	Display edit medical history page : - Label Tên Bệnh Nhân - Label Tuổi - Label Giớ Tính - Label Lí Do Khám - Text box Tiền Sử Bệnh - Text box Nhóm Máu - Text box Chiều Cao - Text box Cân Nặng - Text box Mạch Đập - Text box Huyết Áp - Text box Nhiệt Độ - Text box triệu chứng - Text box Chuẩn đoán - Text box Kết Luận - Text box Ngày Tái Khám - Text box Lời Khuyên - "Kê Toa Thuốc" button - "Hủy" button	
[Nurse-2]	Test GUI medical history detail page	1. Login sucessful with Nurse role 2. Click "DS Phiếu Khám" menu 3. Click "Xem Chi Tiết" Link text	Display edit medical history page : - Label Tên Bệnh Nhân - Label Tuổi - Label Giớ Tính - Label Lí Do Khám - Label Tiền Sử Bệnh - Label Nhóm Máu - Label Chiều Cao - Label Cân Nặng - Label Mạch Đập - Label Huyết Áp - Label Nhiệt Độ - Label triệu chứng - Label Chuẩn đoán - Label Kết Luận - Label Ngày Tái Khám - Label Lời Khuyên - "Quay Lại" button	
[Nurse-3]	Testing edit medical history when input to all field valid data	1. Login sucessful with Nurse role 2. Click "Danh Sách Phiếu Khám" menu 3. Click "Khám" link text 4. Input to all field valid data 5. Click "Kê Toa Thuốc" button	The prescription page display	
[Nurse-4]	Testing edit medical history when input to required field valid data	1. Login sucessful with Nurse role 2. Click "Danh Sách Phiếu Khám" menu 3. Click "Khám" link text 4. Input to required field valid data 5. Click "Kê Toa Thuốc" button	The prescription page display	

5.3.4 Test Case Example Doctor

Module Code	*Doctor*		
Test requirement	*Testint Doctor Function : Verify medical history, Working Time, Working Result*		
Tester			
Pass	**Fail**	**Untested**	**N/A**
20	0	0	0

ID	Test Case Description	Test Case Procedure	Expected Output
	Function Verify medical history		
[Doctor-]	Test GUI list medical history page have status is verify	1. Login sucessful with Doctor role 2. Click "Danh Sách Phiếu Khám" menu	Display list medical history page : - Filter text box - List Medica record : + Column STT + Column Mã Phiếu Khám + Column Tên Bệnh Nhân + Column Lý Do Khám + Column Tiền Sử Bệnh + Column Ngày Khám + Column Hướng Điều Trị + Column Ngày Tái khám + Column Trạng Thái + "Xem Chi Tiết" button
[Doctor-1]	Test GUI verify medical history page	1. Login sucessful with Doctor role 2. Click "DS Phiếu Khám" menu 3. Click "Xem Chi Tiết" button	Display Verify medical history page : - Label Tên Bệnh Nhân - Label Tuổi - Label Giớ Tính - Label Lí Do Khám - Label Tiền Sử Bệnh - Label Nhóm Máu - Label Chiều Cao - Label Cân Nặng - Label Mạch Đập - Label Huyết Áp - Label Nhiệt Độ - Label triệu chứng - Label Chuẩn đoán - Label Kết Luận - Label Ngày Tái Khám - Label Lời Khuyên - Text box Ghi Chú - "Xác Nhận" button - "Khám Lại" button - "Hủy" button
[Doctor-2]	Testing verify medical succesful when input data to note field	1. Login sucessful with Doctor role 2. Click "DS Phiếu Khám" menu 3. Click "Xem Chi Tiết" button 4. Input data to note field 5. Click "Xác Nhận" button	Display list medical history haven't medical history verified
[Doctor-3]	Testing verify medical unsuccessful when not input data to note field	1. Login sucessful with Doctor role 2. Click "DS Phiếu Khám" menu 3. Click "Xem Chi Tiết" button 4. Not input data to note field 5. Click "Xác Nhận" button	Display error message

5.3.5 Test Case Example Reception

Module Code	*Reception*		
Test requirement	*Receprion Filter Patient, Medical History, Appointment, Working Schedule*		
Tester			
Pass	**Fail**	**Untested**	**N/A**
86	0	0	0

ID	Test Case Description	Test Case Procedure	Expected Output
	Function Patient		
[Reception-]	Test GUI List Patient page	1. Login the Back-end with Reception role. 2. Click "Danh Sách Bệnh Nhân" menu in the left menu	The List Patient Page display : - "Thêm" button - Filter text box - List patient : + Column STT + Column Tên + Column Tài Khoản + Column Ngày Sinh + Column Giới Tính + Column Địa Chỉ - "Cập Nhật" button - "Tạo Phiếu Khám" button
[Reception-1]	Test GUI Add Patient page	1. Login the Back-end with Reception role. 2. Click "Danh Sách Bệnh Nhân" menu in the left menu 3. Click "Thêm mới bệnh nhân" button	The Edit Patient page display : - Tài Khoản text box - Tên text box - Email text box - Ngày sinh text box - Giới tính select box - Địa Chỉ text box - Số Điện Thoại text box - Số CMND text box - Nghề Nghiệp text box - "Tạo" button - "Hủy" button

5.4 Checklists

5.4.1 Checklist about general

5.4.1.1 Checklist for Layout

Questions		Yes	No	N/A
1	Does the layout appear the same when using Chrome, Firefox and Microsoft Edge?	X		
2	Are the name in buttons and label clearly?	X		
3	Are all required fields have an asterisk to indicate they are required?	X		
4	Can the text be read easily using a regular laptop?	X		
5	Are all fonts to be the same?	X		
6	Are the fonts enlarged that make any destroy layout?	X		
7	Is form label stands still when validating message appears?	X		
8	Should front-end layout stretch when browser is resized?		X	
9	Does navigation in back-end layout change when user navigate to another page?		X	
10	Are all the fields prompts spelt correctly?	X		

11	Is all user inputs captured in upper case or lower case consistently?	X		
12	Are all messages in the system translated to Vietnamese	X		

5.4.1.2 Checklist for authorization

Questions		Yes	No	N/A
1	Does error message appear when user is redirected from a zone that required login?	X		
2	Is the user required to fix entries which have failed validation tests?	X		
3	Have any fields got multiple validation rules and if so are all rules being applied?	X		
4	Do all mandatory fields require user input?	X		

5.4.1.3 Checklist for submission

Questions		Yes	No	N/A
TABLES AND FIGURES				
1	Under all images, is there a figure?	X		
2	Are all tables referred to in text?	X		
3	Does all the table of the same type have the same widths			X
REFERENCES				
1	Are references cited both in text and in the reference list?		X	
2	Do the text citations and reference list entries agree both in spelling and in date?			X
3	Are journal titles in the reference list spelled out fully?	X		
4	Are the references (both in the parenthetical text citations and in the reference list) ordered alphabetically by the authors' surnames?			X
5	Are inclusive page numbers for all articles or chapters in books provided in the reference list			X
6	Are references to studies included in your meta-analysis preceded by an asterisk?			X
FORMAT				
1	Does the size of the document is A4.	X		
2	Does the margin of the document is all 1"	X		
3	Does page number exist?	X		
4	Are all pages numbered in sequence, starting with the title page?	X		
5	Are the figure captions on the same page as the figures?	X		
PARAGRAPHS AND HEADINGS				

1	Is the heading numbered correctly?	X		
2	Does level 1 heading include a page break?	X		
3	Do all headings of the same level appear in the same format?	X		
4	Does document have header and footer	X		

5.5 Test logs

5.5.1 Defect Logs

- My team manage to bug list by https://producteev.com.

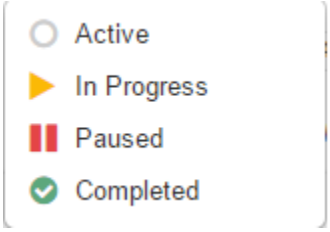
- All member using their email register account on https://producteev.com.

- When tester found a bug, the tester create a task then assign task for developer

- All member can see list bug

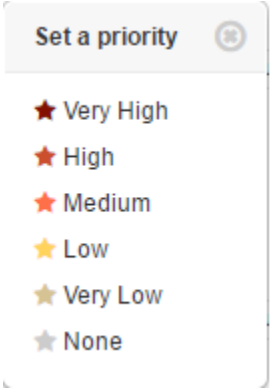
- Each task has icon display for priority and status

- Status of task:



- Active: The task is in the initial open state
- In Progress: The task is being actively worked on at the moment
- Paused: Work has started on the task but the process is blocked
- Completed: Task is completed

- Priority of task:



5.5.2 Test Reports

Project Name	Clinic Management	**Creator**	Hunglv
Project Code	CM	**Reviewer/Approver**	SangNV
Document Code		**Issue Date**	August 7th 2016

No	Module code	Pass	Fail	Untested	N/A	Number of test cases
1	Patient	40	0	0	0	40
2	Admin	75	0	0	0	75
3	General	23	0	0	0	23
4	Reception	86	0	0	0	86
5	Nurse	32	0	0	0	32
6	Doctor	20	0	0	0	20
7	Manager	17	0	0	0	17

CHAPTER 6: INSTALLATION GUIDE & USER MANUAL

6.1 Installation guide

6.1.1 Purposes

This document contains guide-lines step by step to use CM application, and set up its own database.

6.1.2 Environments

Following are the software required to start the CM application:

- Operating System: Windows 7, Windows 8, Windows 8.1, Windows 10
- Application server: CM system requires an application server IIS version 7
- Browsers: Firefox 20 or higher, Google Chrome 16 or later.
- .NET 4.0 Framework

- Database: SQL Server 2012
- Tool: Microsoft visual studio 2015

6.1.3 Application Installation

6.1.3.1 Deploy Database

- Open "~\Clinic Management\CM_Database.sql"
- Change to user's directory that has install SQL Server and replace this location in script file

```
USE [master]
GO
/****** Object:  Database [ClinicManagement]    Script Date: 8/15/2016 4:02:54 AM ******/
CREATE DATABASE [ClinicManagement]
 CONTAINMENT = NONE
 ON  PRIMARY
( NAME = N'ClinicManagement', FILENAME = N'C:\Program Files\Microsoft SQL Server\MSSQL11.MSSQLSERVER\MSSQL\DATA\ClinicManagement.mdf' , SIZE = 3072KB , MAXSIZE = UNLIMITED, FILEGROWTH = 1024KB )
 LOG ON
( NAME = N'ClinicManagement_log', FILENAME = N'C:\Program Files\Microsoft SQL Server\MSSQL11.MSSQLSERVER\MSSQL\DATA\ClinicManagement_log.ldf' , SIZE = 1024KB , MAXSIZE = 2048GB , FILEGROWTH = 10%)
GO
ALTER DATABASE [ClinicManagement] SET COMPATIBILITY_LEVEL = 110
GO
IF (1 = FULLTEXTSERVICEPROPERTY('IsFullTextInstalled'))
begin
EXEC [ClinicManagement].[dbo].[sp_fulltext_database] @action = 'enable'
end
GO
ALTER DATABASE [ClinicManagement] SET ANSI_NULL_DEFAULT OFF
GO
ALTER DATABASE [ClinicManagement] SET ANSI_NULLS OFF
GO
ALTER DATABASE [ClinicManagement] SET ANSI_PADDING OFF
GO
ALTER DATABASE [ClinicManagement] SET ANSI_WARNINGS OFF
GO
ALTER DATABASE [ClinicManagement] SET ARITHABORT OFF
GO
ALTER DATABASE [ClinicManagement] SET AUTO_CLOSE OFF
GO
ALTER DATABASE [ClinicManagement] SET AUTO_CREATE_STATISTICS ON
GO
ALTER DATABASE [ClinicManagement] SET AUTO_SHRINK OFF
GO
ALTER DATABASE [ClinicManagement] SET AUTO_UPDATE_STATISTICS ON
GO
ALTER DATABASE [ClinicManagement] SET CURSOR_CLOSE_ON_COMMIT OFF
```

Figure 2 Update database script

- Execute script.

6.1.3.2 Deploy Application

7 Go Start → Control panel → Click on Programs and Features → Click on Turn Windows features on or off.

8 Select this features in the picture below to install IIS Service.

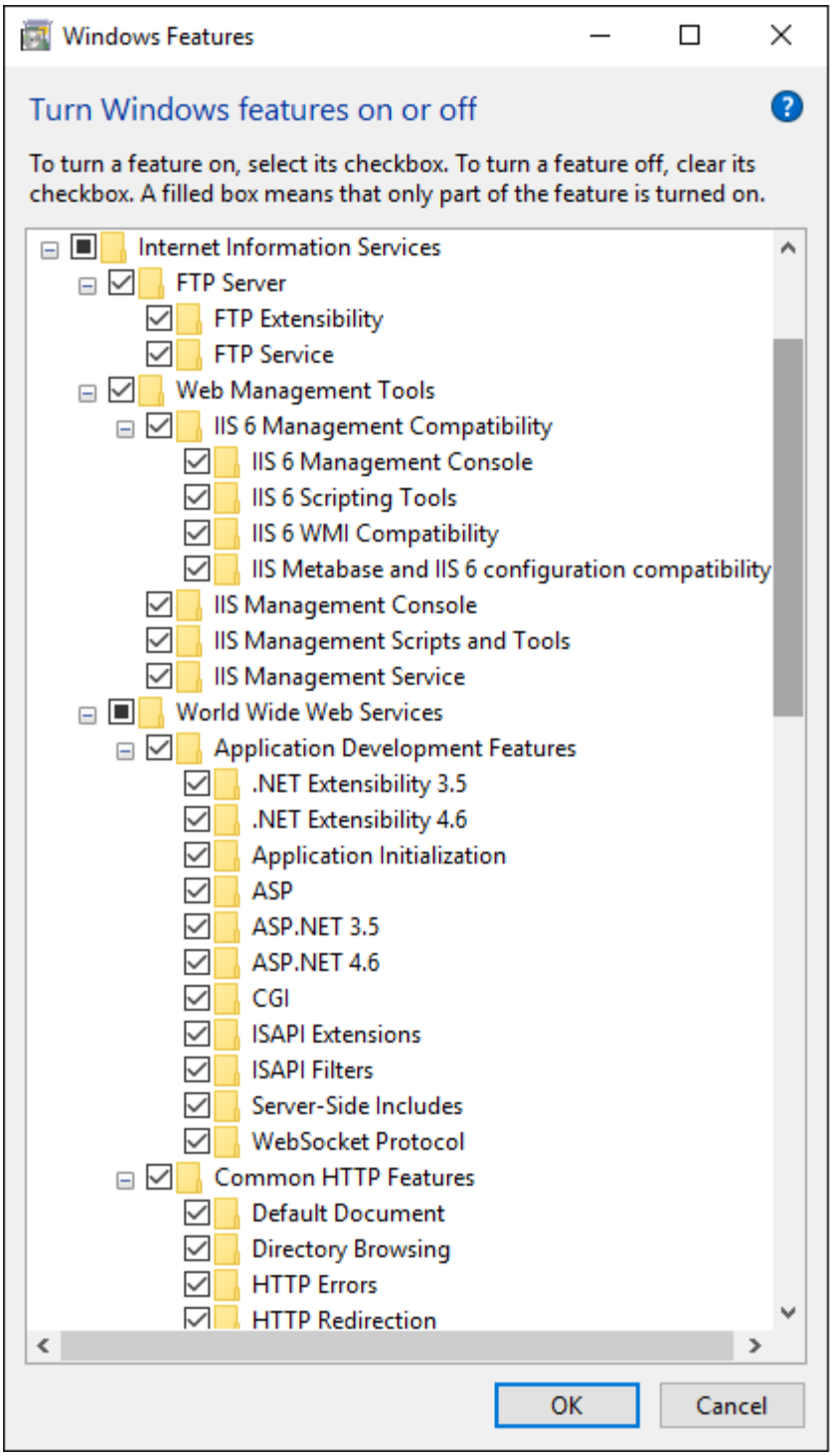


Figure 2: Set up IIS-1

9 Go Start → type Run → input inetmgr

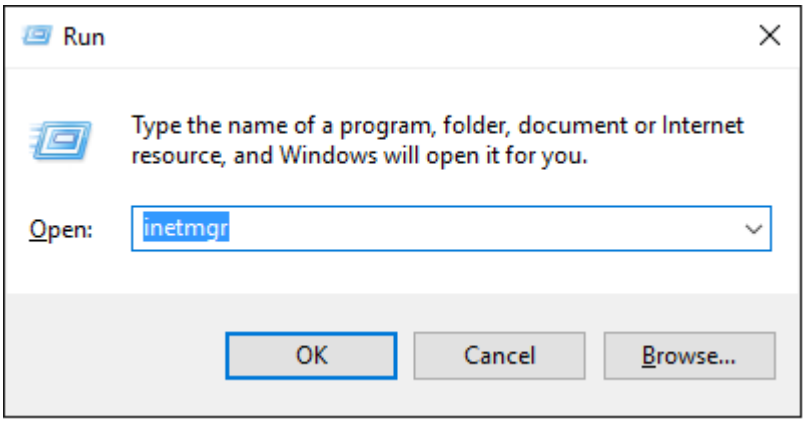


Figure 3: Set up IIS-2

10 Go Application Pools → Choose DefaultAppPool → Basic settings

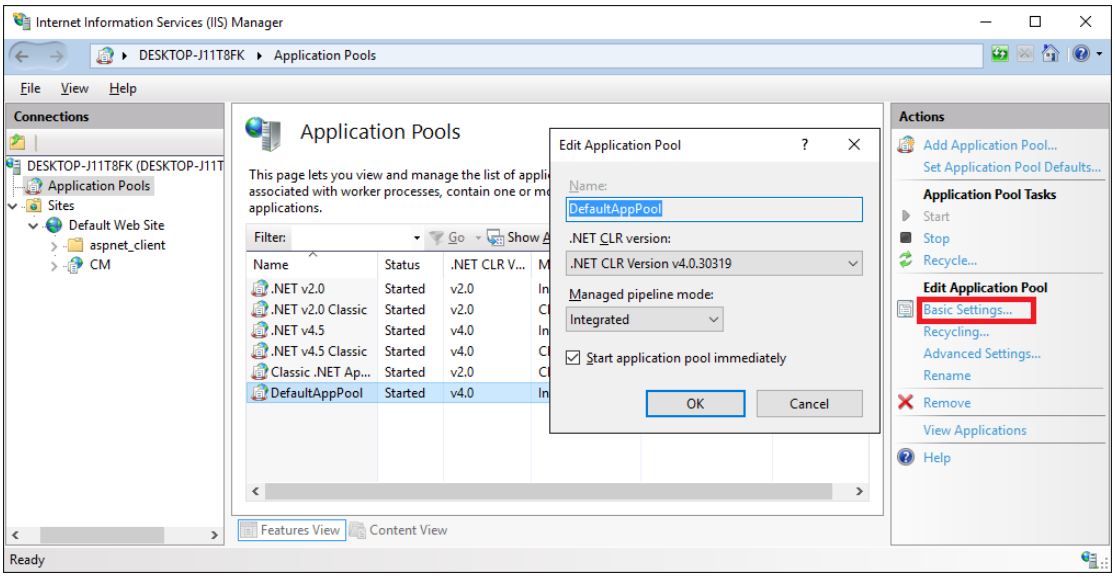


Figure 4: Set up IIS-3

11 Publish Website by using visual studio 2015

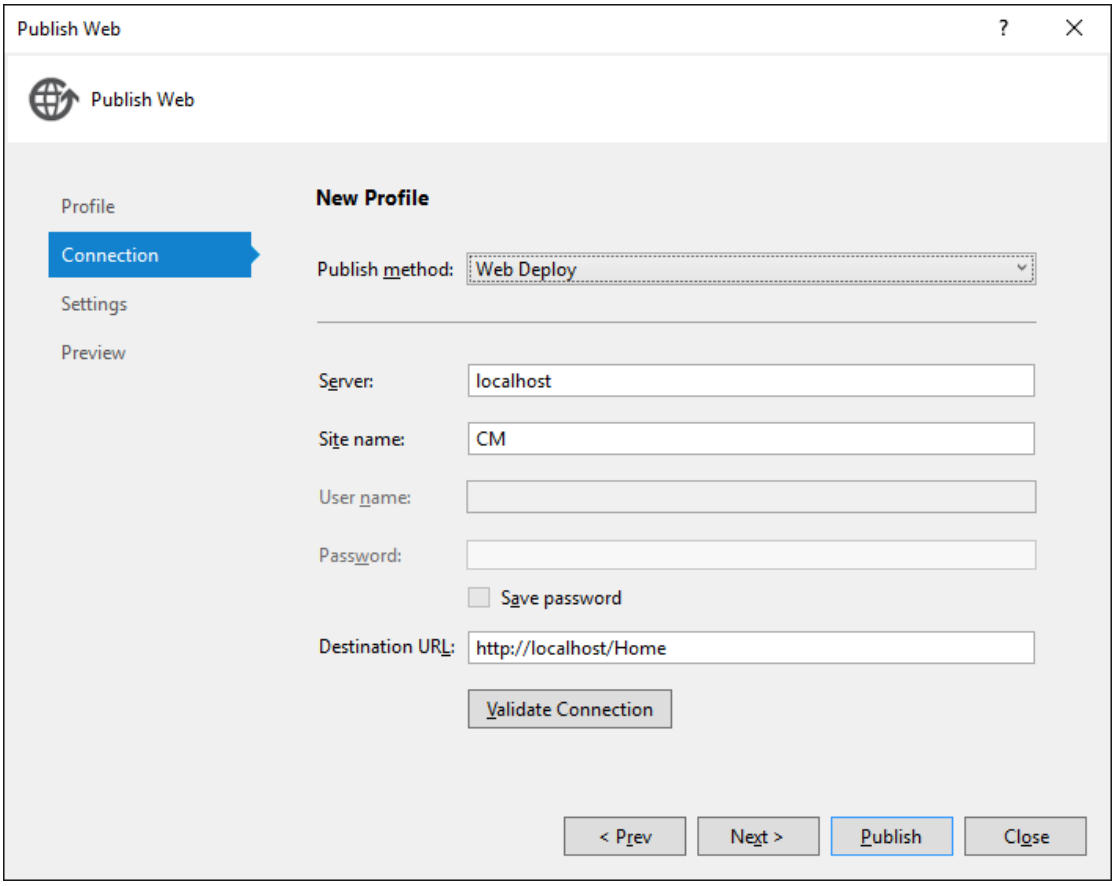


Figure 5: Publish website

12 Open Microsoft SQL Server Management Studio → Go Security → Right click to select New Login → Setup this like the picture below

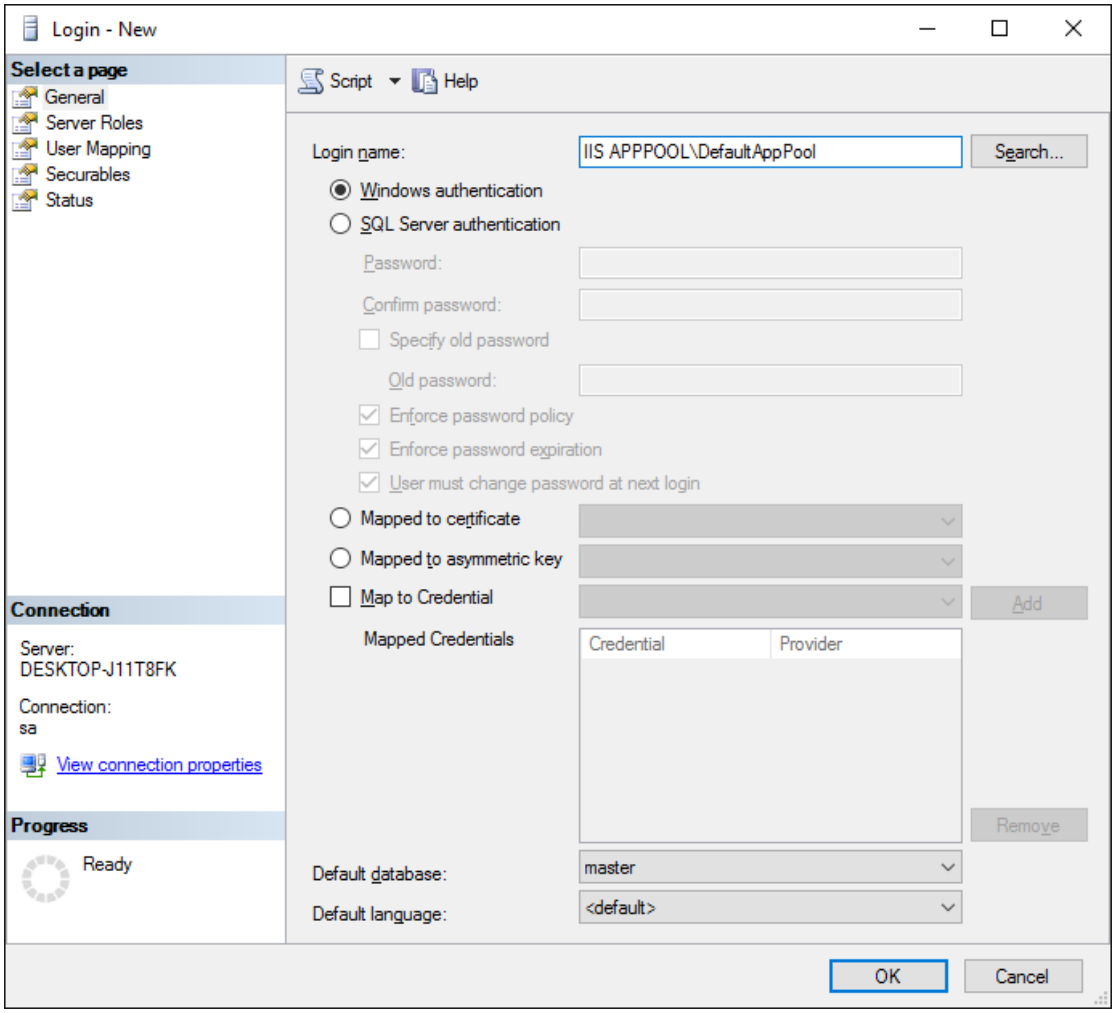


Figure 6: Set up login for IIS APPPOOL\DEFAULTAPPPOOL-1

13 Go to login user has been created → Right click then select Properties → Click on User Mapping → Setup this like the picture below

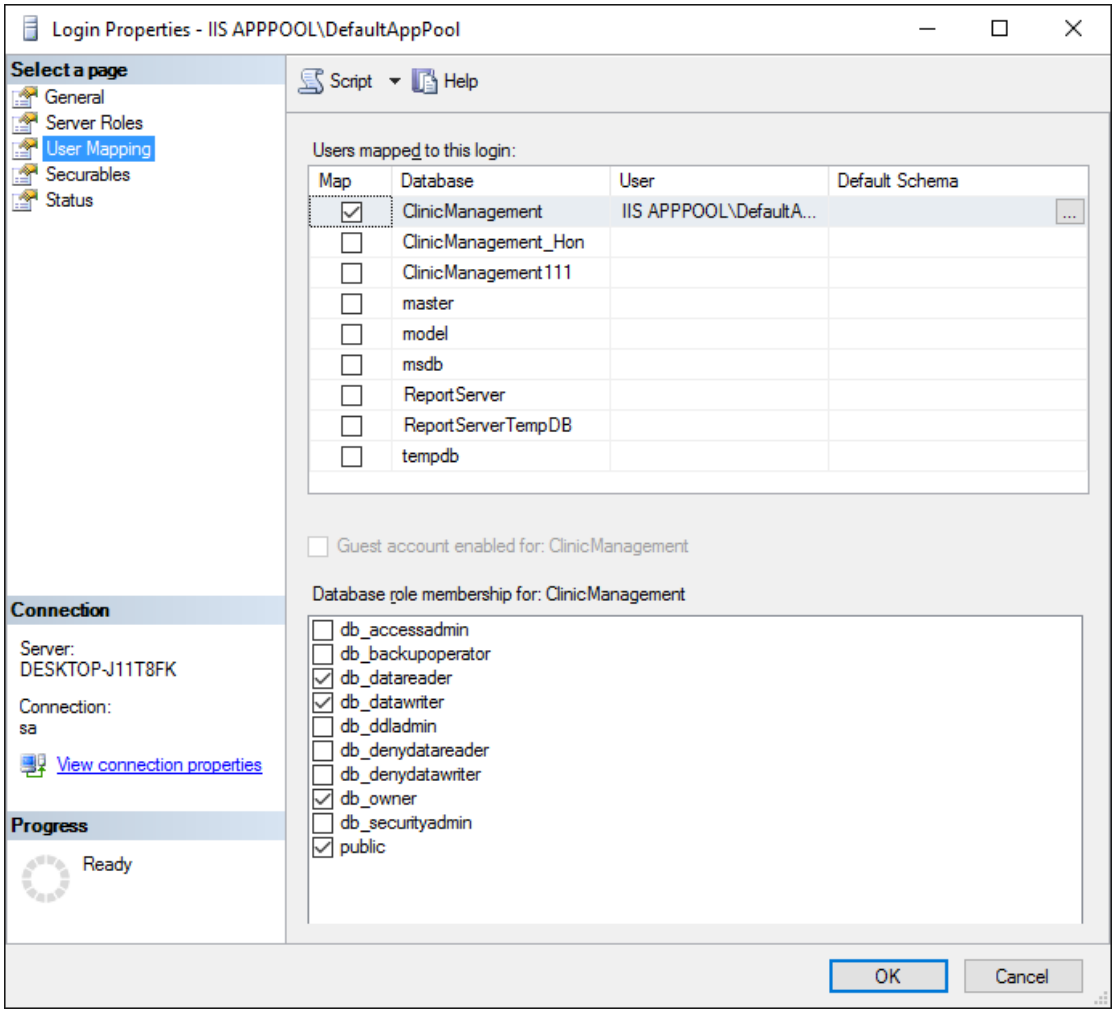


Figure 7: Set up login for IIS APPPOOL\DEFAULTAPPPOOL-2

14 Go Sites → Right click to select Add Website → Setup this like the picture below.

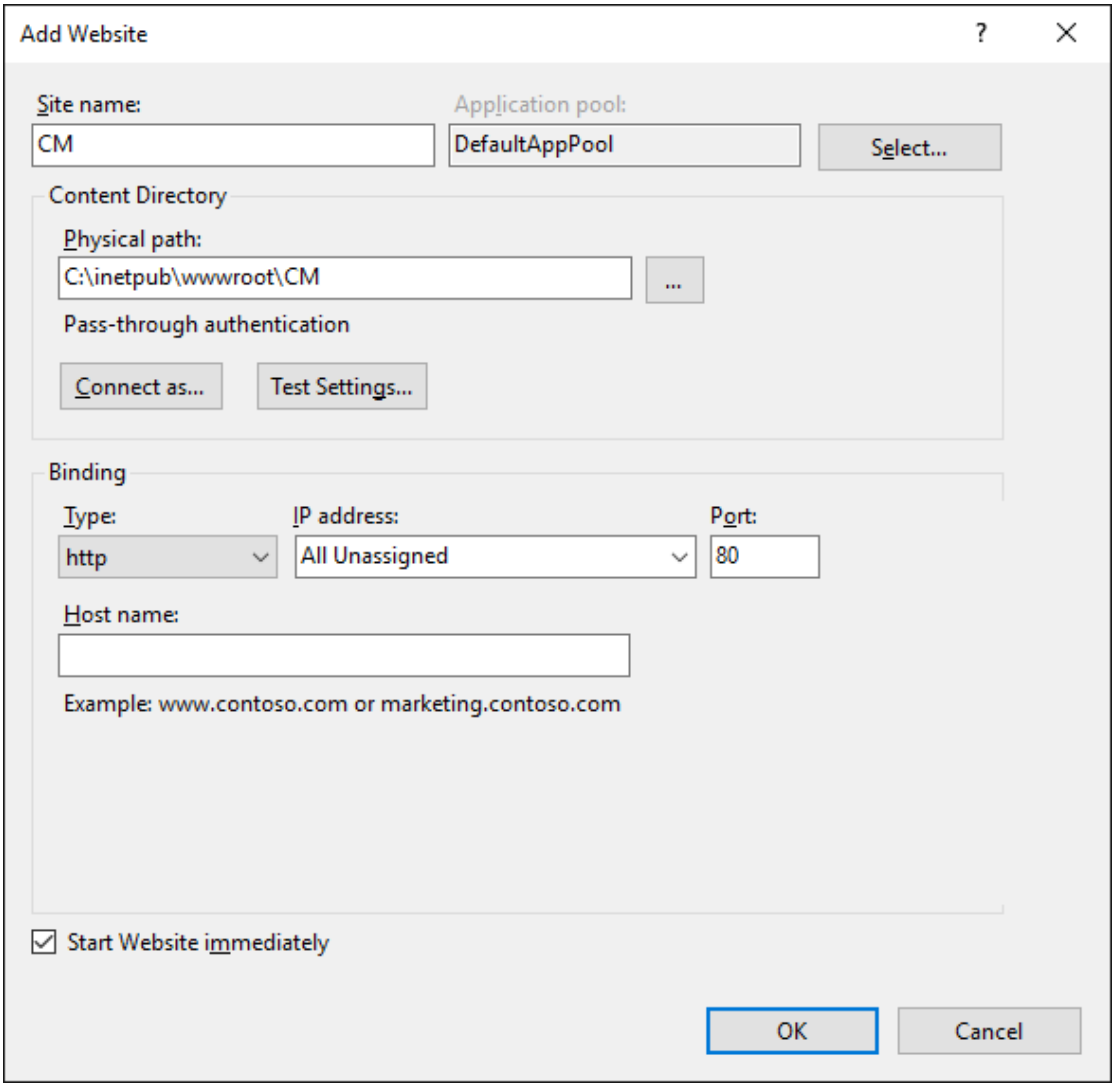
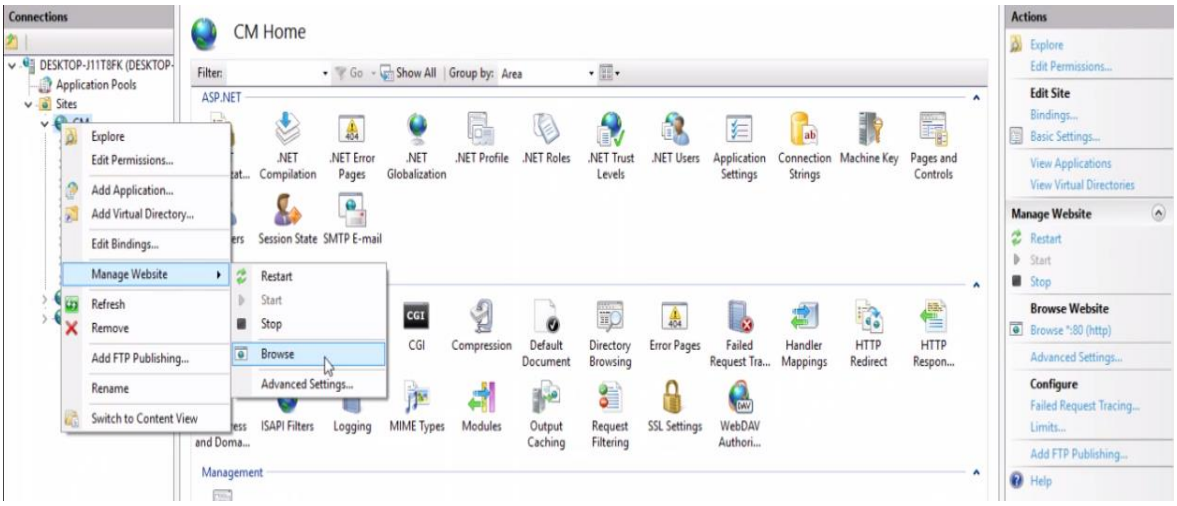


Figure 8: Create new site

15 Right click on CM – Manage Website – Browse



15.1 User's guide

15.1.1 Purposes

These guidelines are the instructions of general steps for users to use all functions of CM application.

15.1.2 Functional Description

About the functions of CM application, it has features of patient and staff in the clinic. There are the detailed functions application:

- Patient management:
  - Create an appointment: by doctor or by service
  - View appointment list: see list of appointment
  - View medical history: see list of medical history and amount of money for each time they come to clinic
- Reception management:
  - Manage a patient's account: create and update.
  - View, create and update medical history:
  - Check appointment and create medical history from appointment.
  - Manage doctor's work schedule.
  - Manage nurse's work schedule.
  - Export invoice
- Nurse management:
  - Update medical history
  - View work schedule
- Doctor management:
  - Confirm about medical history.
  - View work schedule
  - View work result in day
- Manager management:
  - View clinic's revenue report.

  - View list of staff.
  - View list of medical history
- Administrator management:
  - Manage staff.
  - Manage medicine.
  - Manage service.
  - Manage room.

15.1.2.1 UC001- Common Function

15.1.2.1.1 UC001-01 How to register a new account

- Go to http://localhost:3710/Home
- Click "Đăng ký"

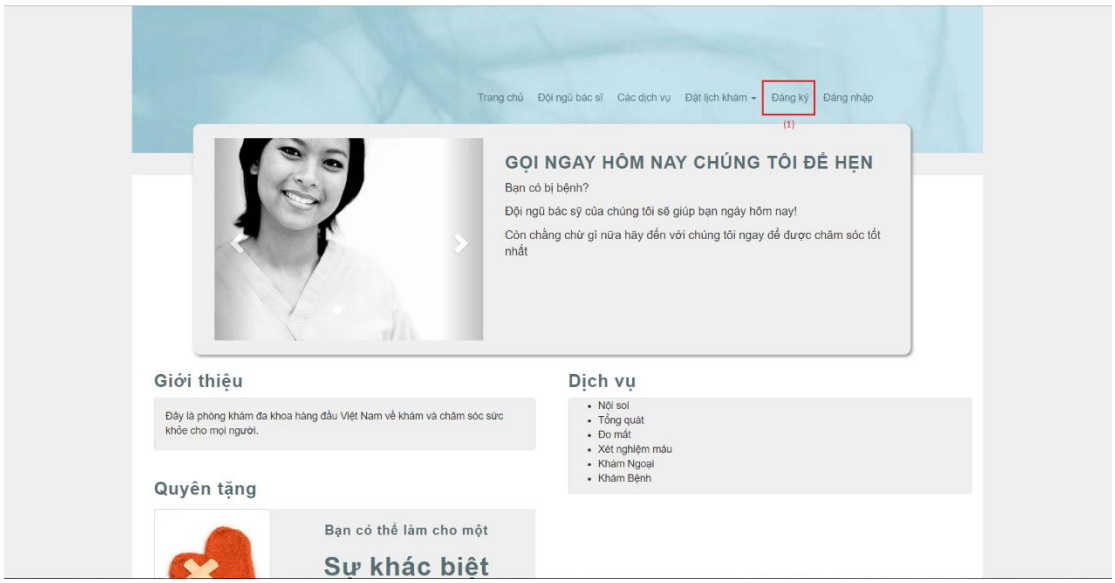


Figure 3 Register account

- Input account's information
- Click "Đăng ký" to create new account

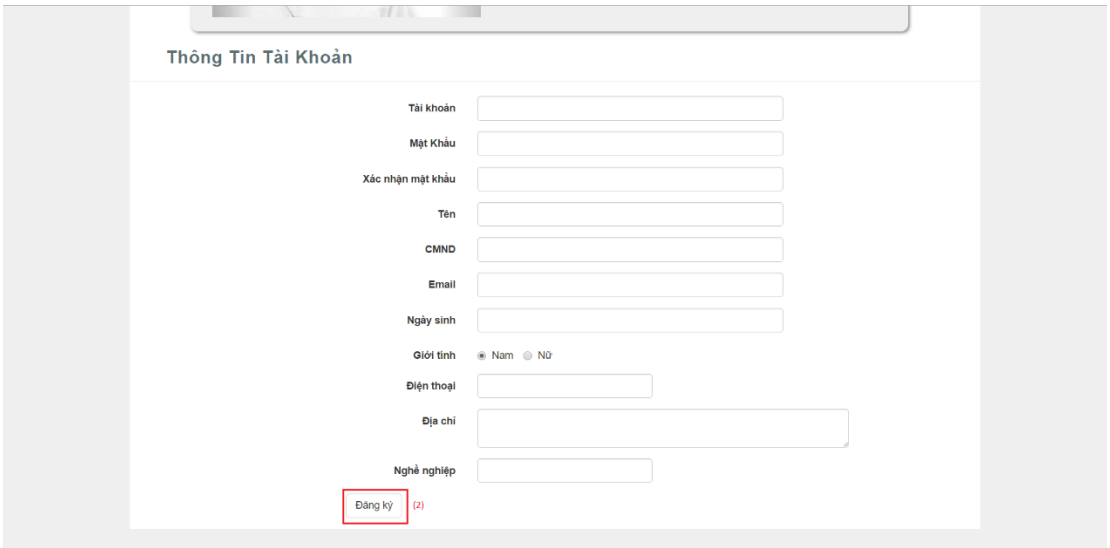


Figure 4 Register account

6.2.2.1.2 UC001-02 Create appointment by service

- Go to http://localhost:3710/Home.
- Click "Đăng nhập"
- Enter Username and Password.
- Click "Đăng nhập" to login

-

Figure 5 User log in

- In Home page, click "Đặt lịch hẹn"
- Choose "Theo dịch vụ".

Figure 6 Create appointment by service

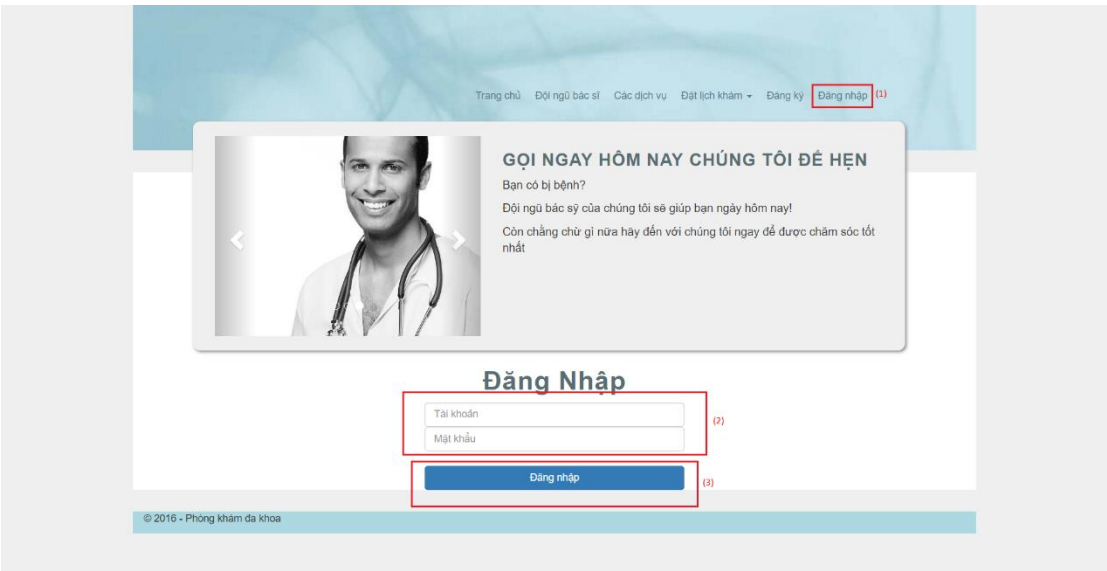
- Choose service
- Enter appointment's information
- Click "Đặt" to setup an appointment

Figure 7 Create appointment by service

6.2.2.1.3 UC001-03 Create appointment by doctor

- Go to http://localhost:3710/Home
- Click “Đặt lịch khám”
- Choose “Theo Bác sĩ”

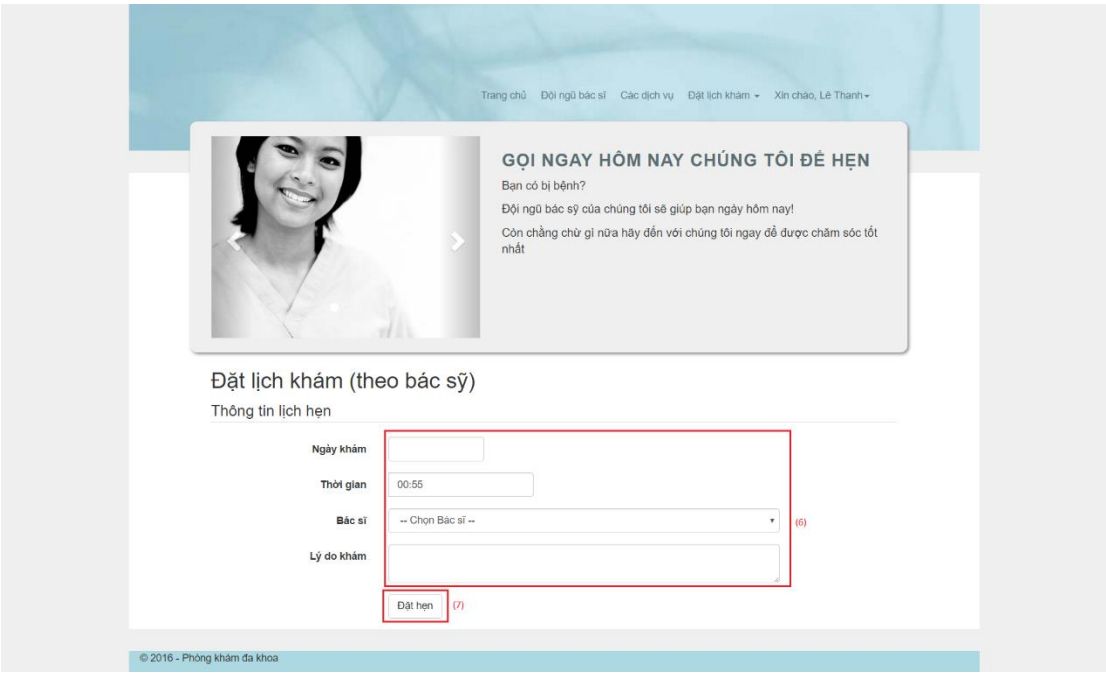
- Enter Username and Password.
- Click “Đăng nhập” to login



- Click “Đặt lịch khám”.

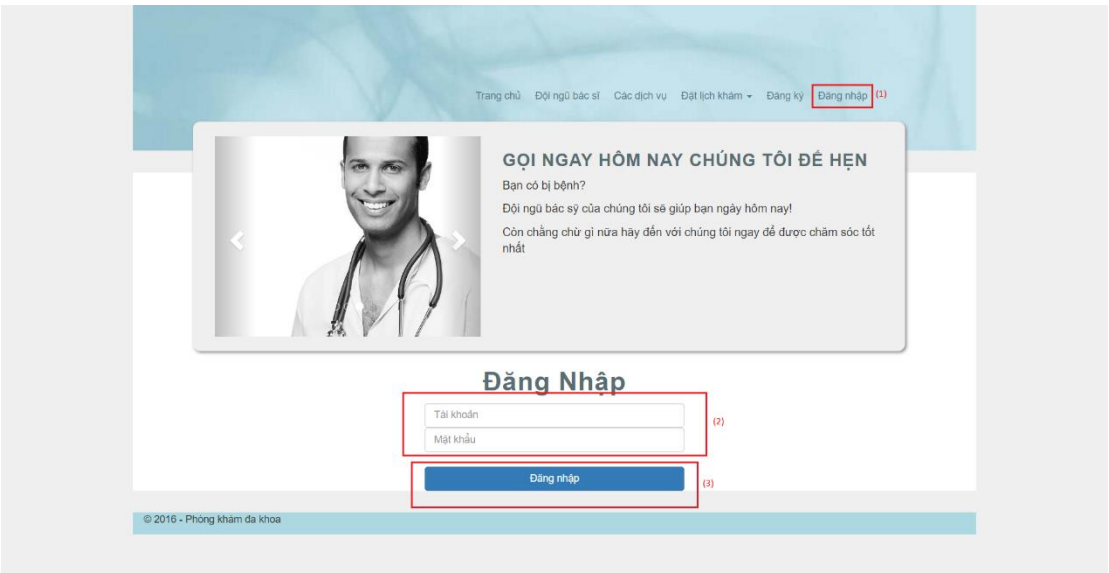
- Choose “Theo Bác sĩ”

- Choose appointment’s information
- Click “Đặt” to setup an appointment



6.2.2.1.4 UC001-04 How a user login

- Go to http://localhost:3710/Home.
- Click “Đăng nhập”
- Enter Username and Password.
- Click “Đăng nhập” to login

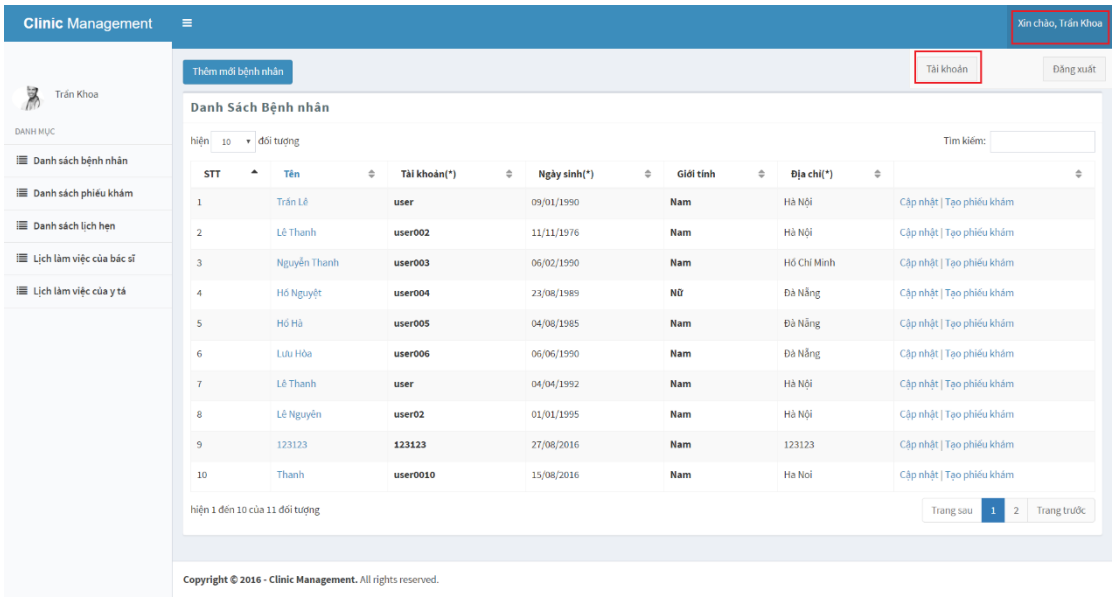


6.2.2.1.5 UC001-05 How a staff login

- Go to http://localhost:3710/Management/Login
- Enter Username ID and Password
- Click “Đăng nhập” to log in.

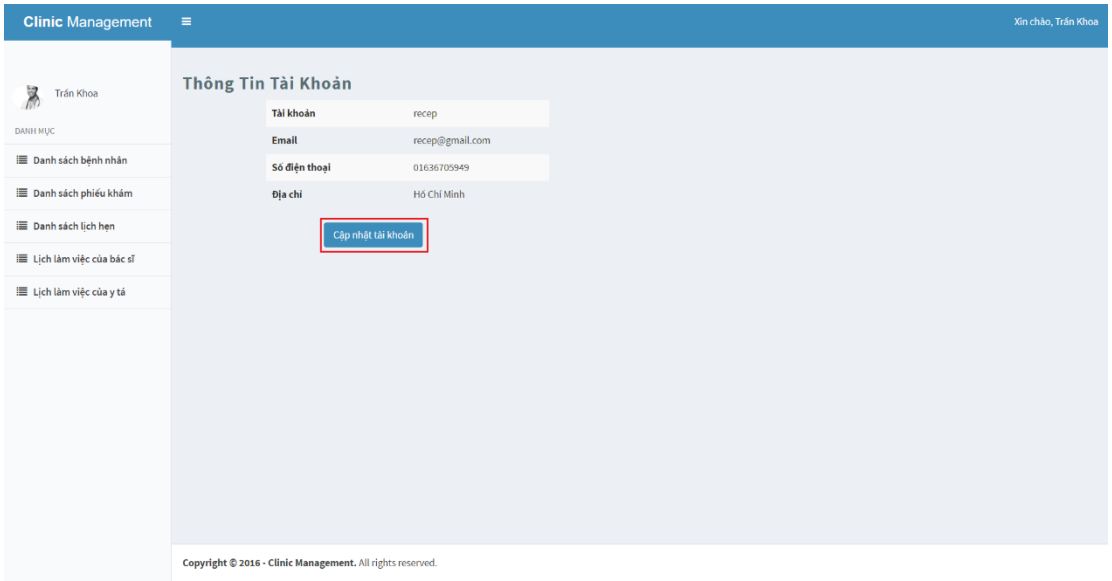
6.2.2.1.6 UC001-05 How to view staff’s account details

- Click “Xin chào,” plus user’s name in home page
- Choose “Tài khoản”

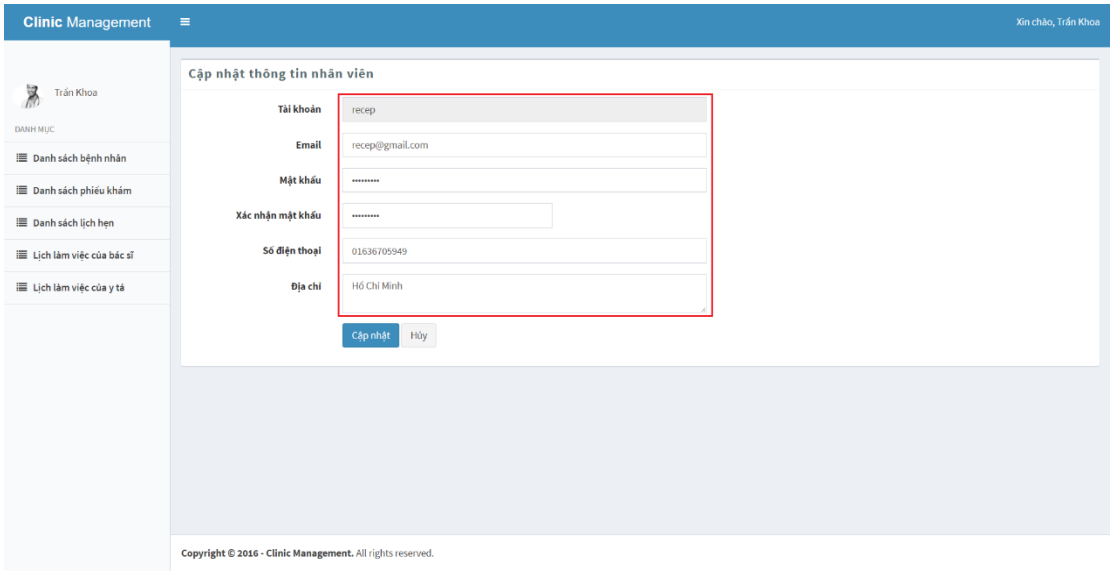


6.2.2.1.7 UC001-05 How to change staff's profile

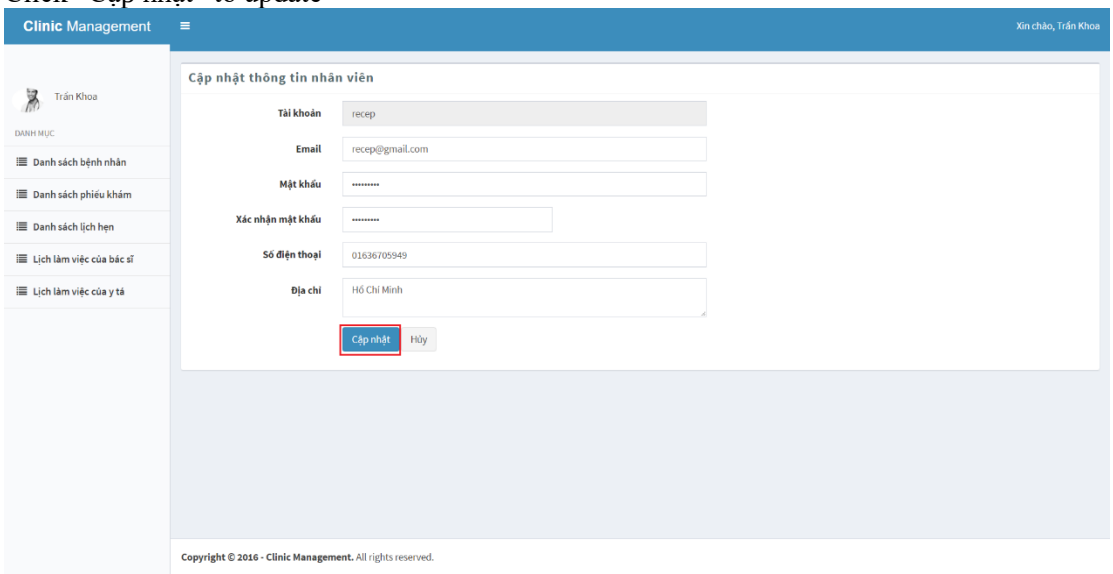
- Click "Cập nhật tài khoản"



- Update account's information

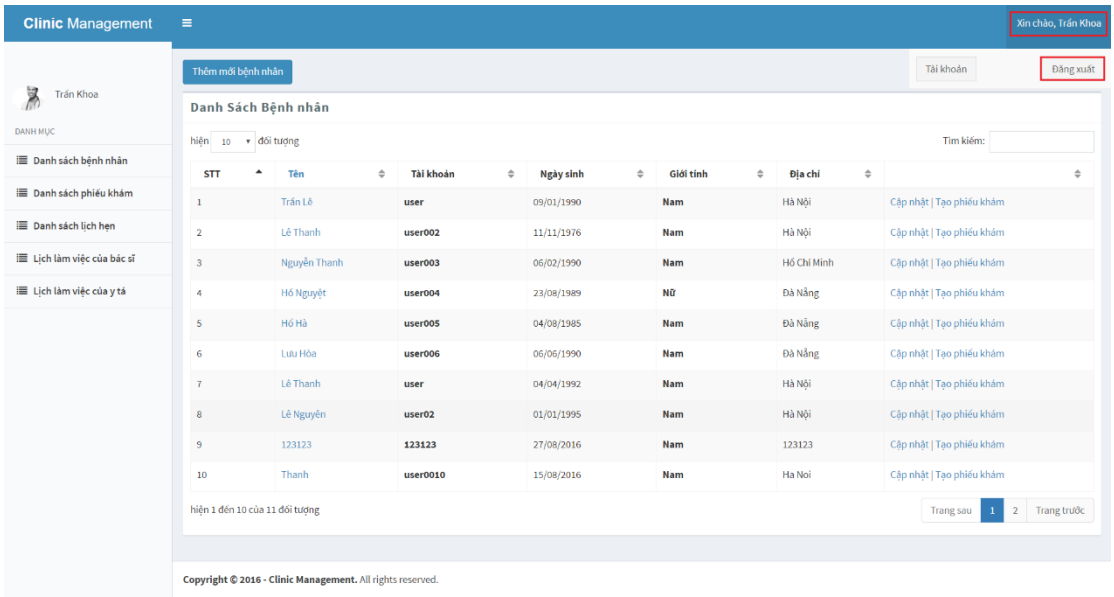


- Click "Cập nhật" to update



6.2.2.1.8 UC001-05 How to log out staff's account

- Click "Xin chào," plus user's name in home page
- Choose "Đăng xuất"



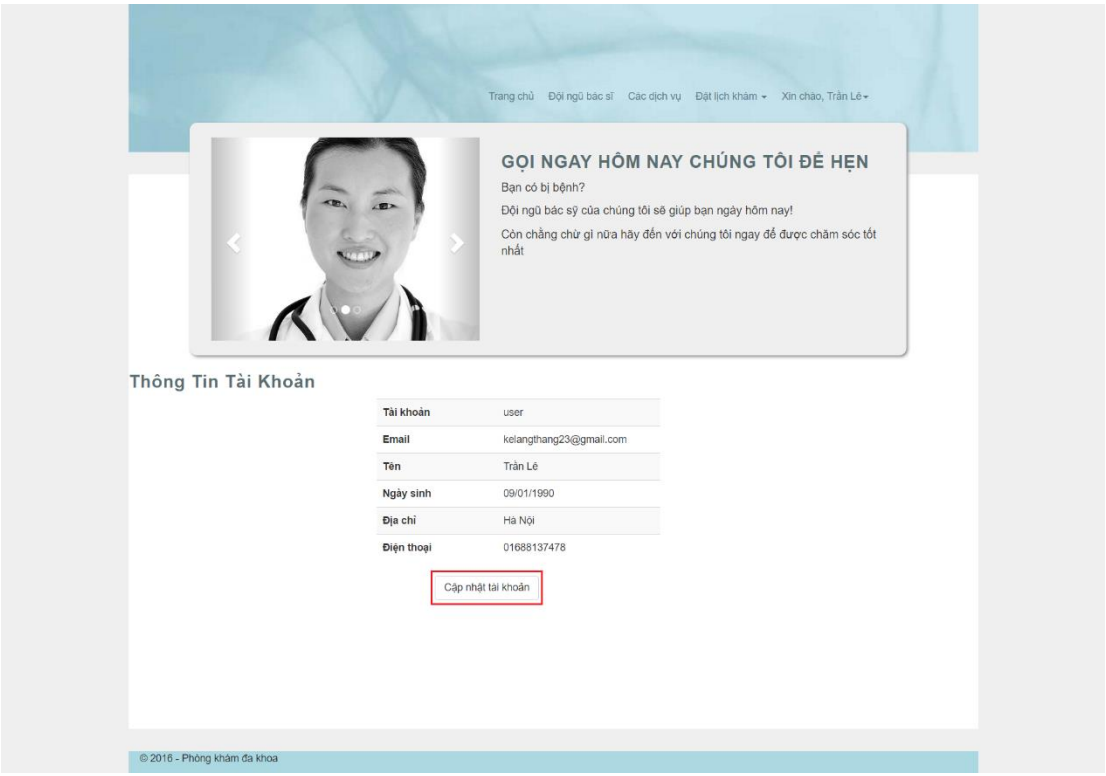
6.2.2.2 UC002- Patient Management

6.2.2.2.1 UC002-01 How to view account's detail

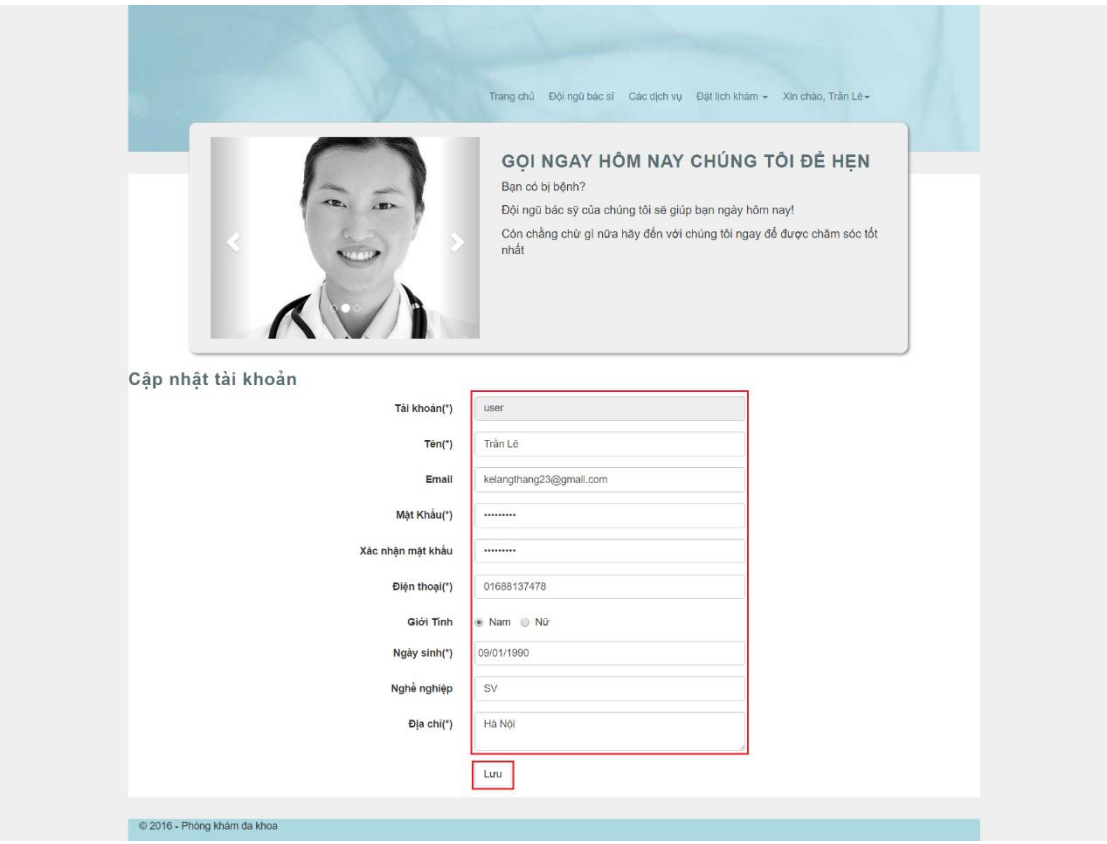
- After login successful, click "Xin chào," plus user's name in home page.
- Choose "Tài khoản"

6.2.2.2.2 UC002-02 How to update profile

- After go to Account detail page.
- Click “Cập nhật tài khoản”.



- Update account’s information.
- Click “Cập nhật” to save.

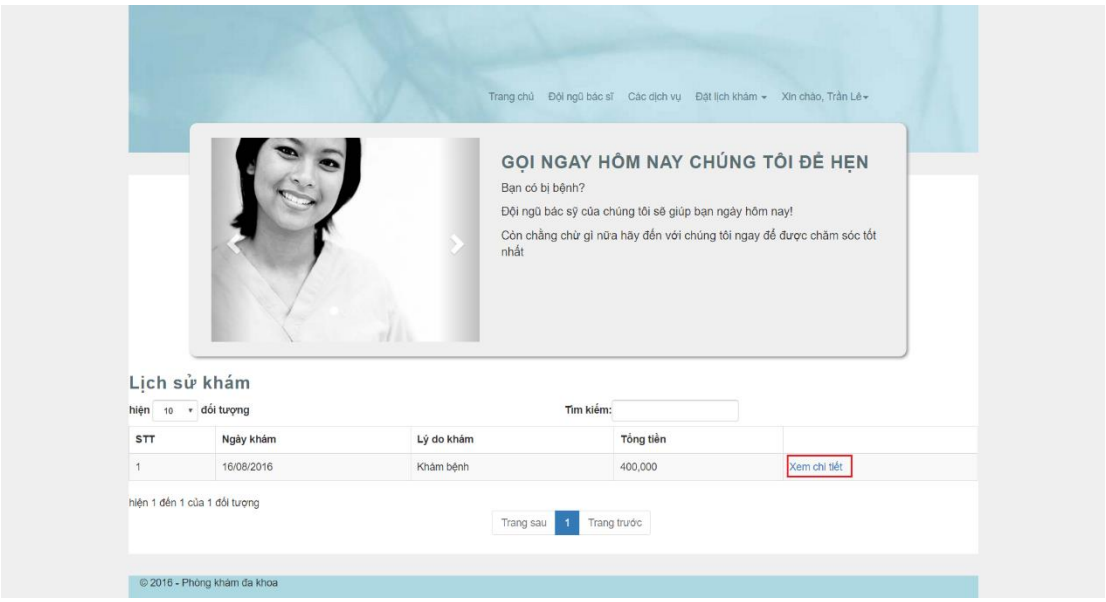


6.2.2.2.3 UC002-03 How to view medical history list

- After login successful, click “Xin chào,” plus user’s name.
- Click “Lịch sử khám”

6.2.2.2.4 UC002-04 How to view medical history's detail

- After go to medical history list, click "Xem chi tiết"

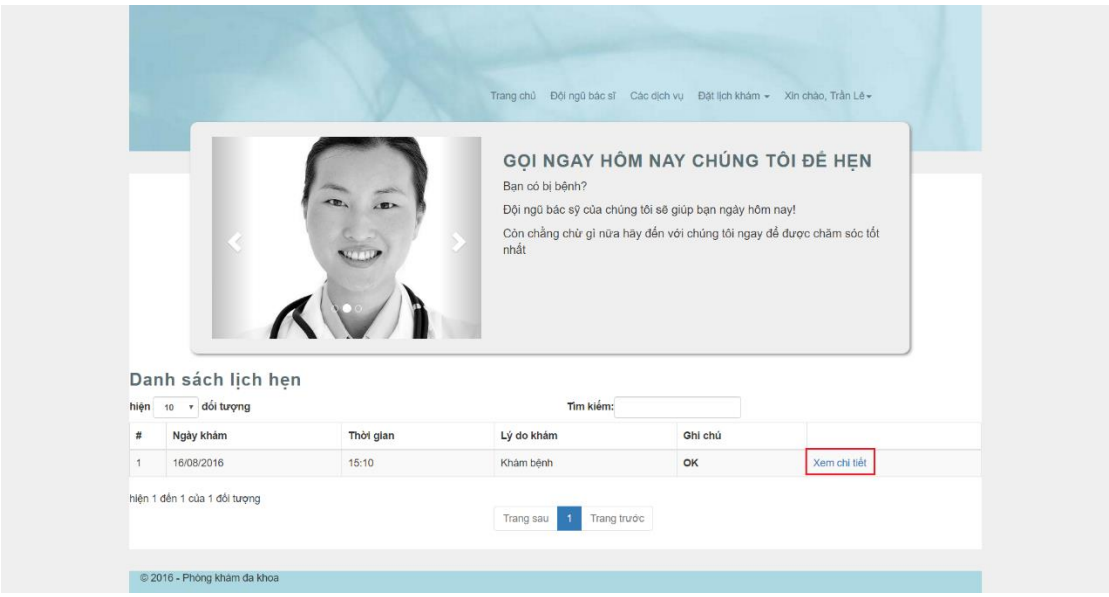


6.2.2.2.5 UC002-05 How to view Appointment List

- After login successful, click "Xin chào," plus user's name.
- Click "Danh sách lịch hẹn"

6.2.2.2.6 UC002-06 How to view appointment's detail

- After go to View Appointment List, click "Xem chi tiết" in View Appointment List



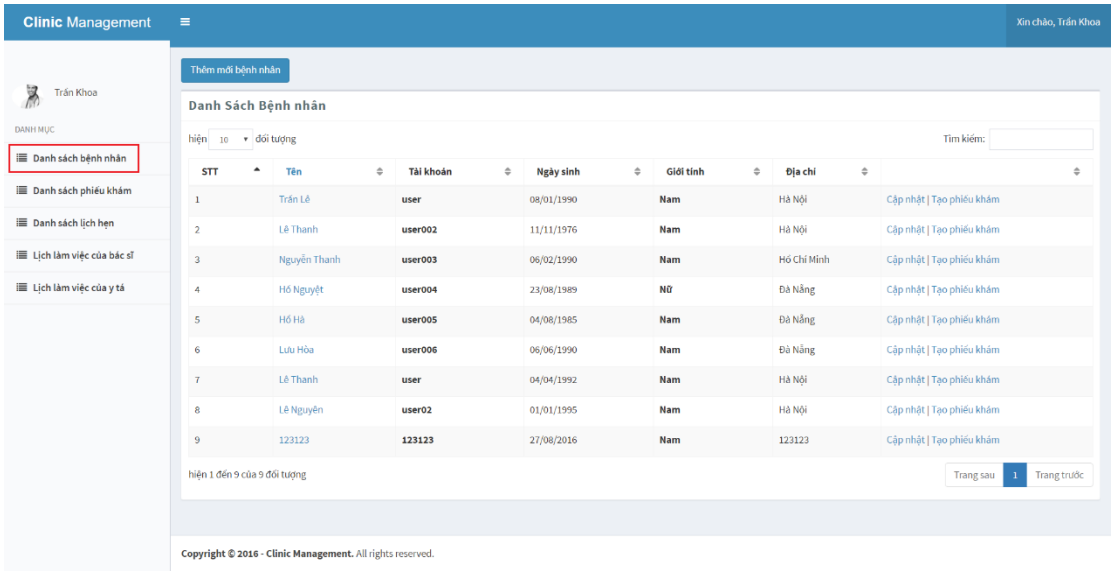
6.2.2.2.7 UC002-07 How to log out

- After login successful, Click “Xin chào,” plus user’s name in home page.
- Choose “Đăng xuất”.

6.2.2.3 UC003- Reception Management

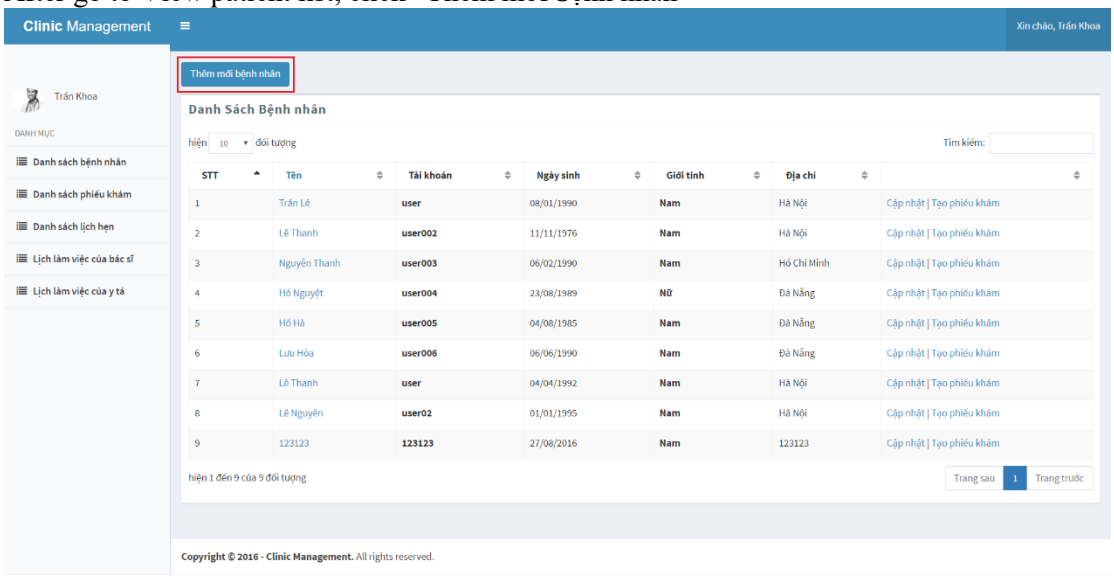
6.2.2.3.1 UC003-01 How to view patient list

- After login successful, click “Danh sách bệnh nhân”

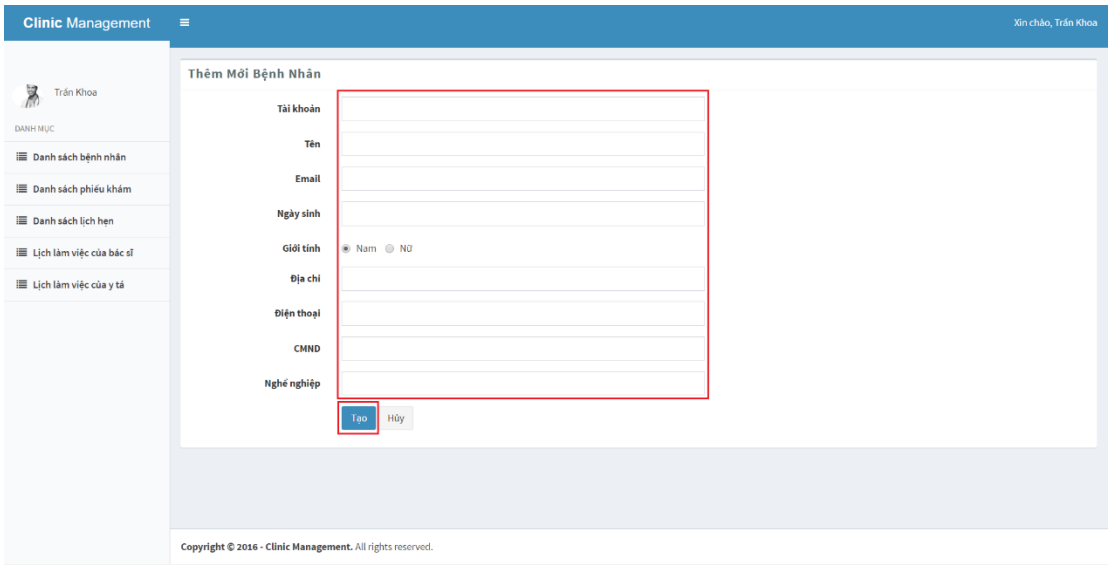


6.2.2.3.2 UC003-02 How to create a new atient

- After go to View patient list, click “Thêm mới bệnh nhân”

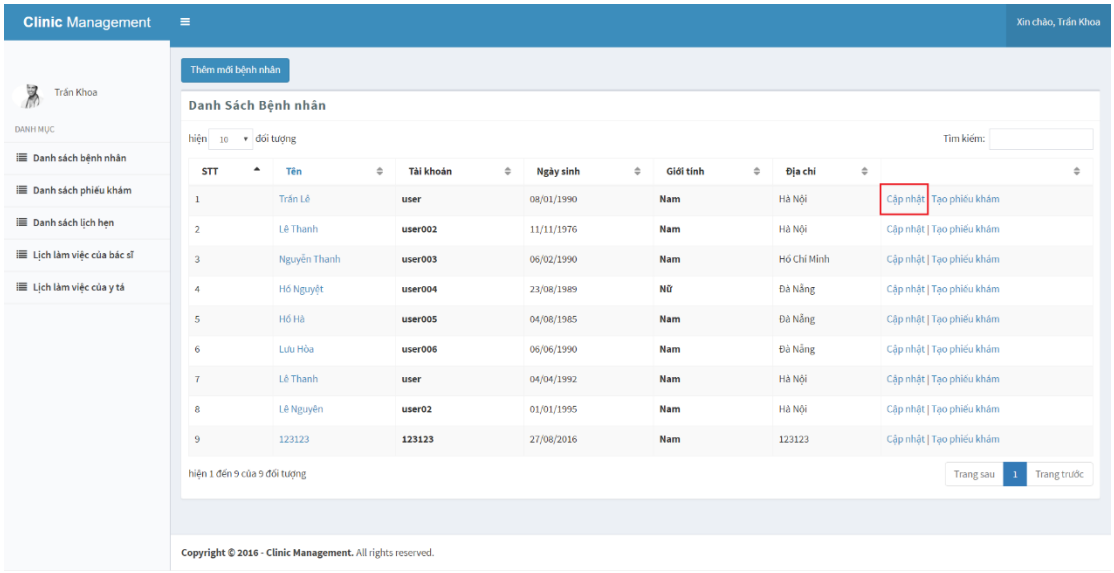


- Input patient’s information
- Click “Tạo” to create a new patient.

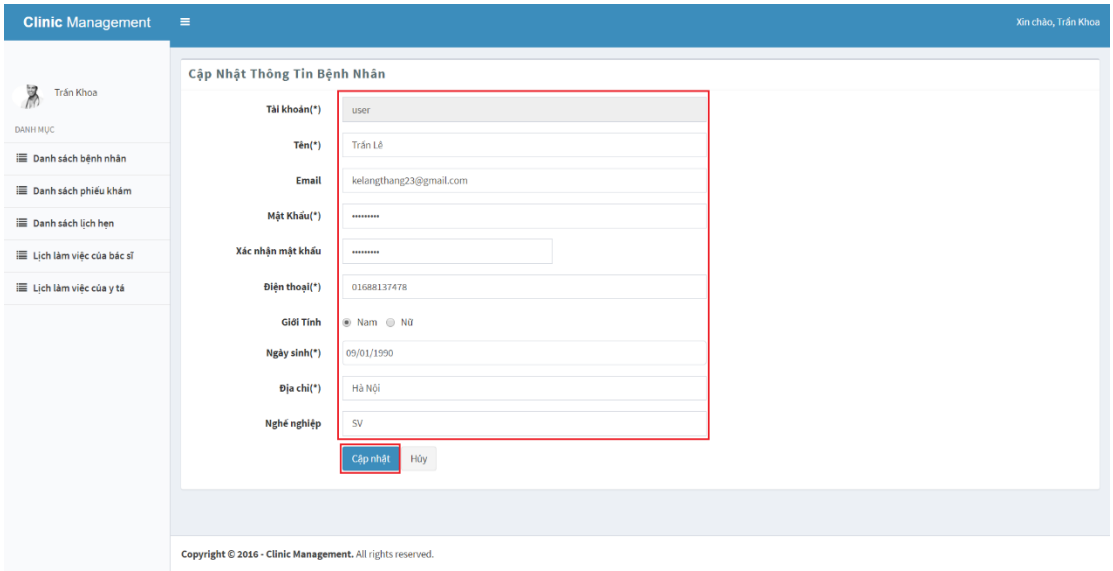


6.2.2.3.3 UC003-03 How to update patient's information

- After go to View patient list, click "Cập nhật" at the patient you want to update.

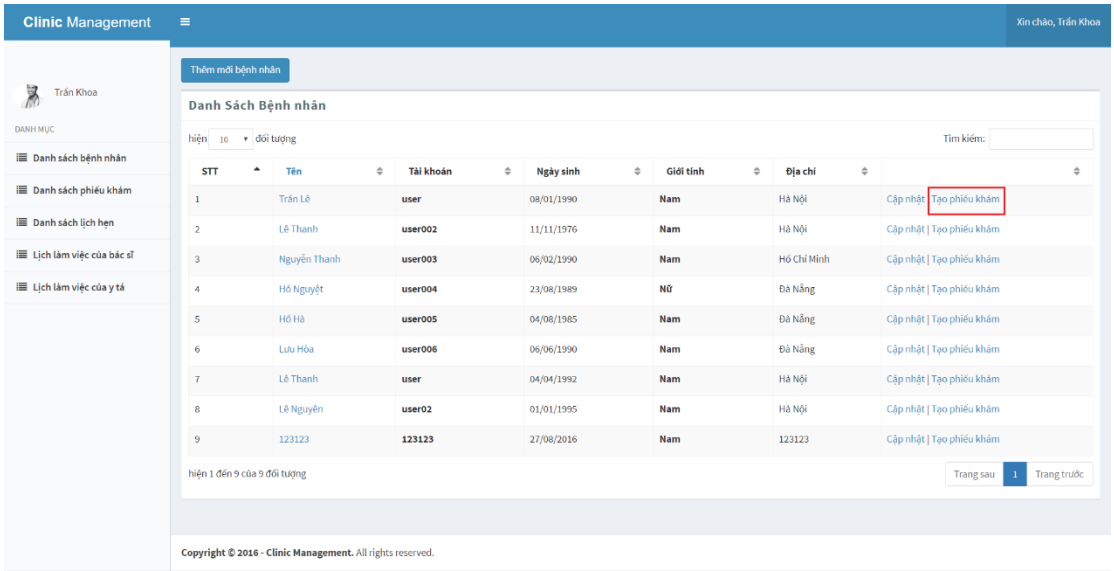


- Update patient's information.
- Click "Cập nhật" to update.

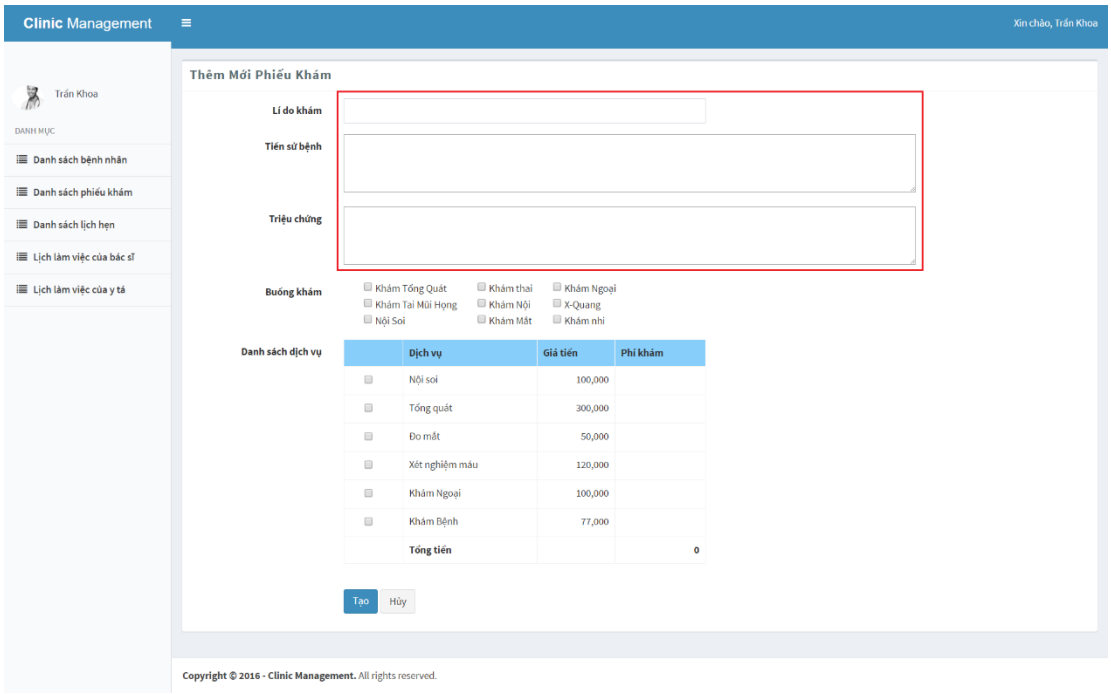


6.2.2.3.4 UC003-04 How to create a new medical history from patient

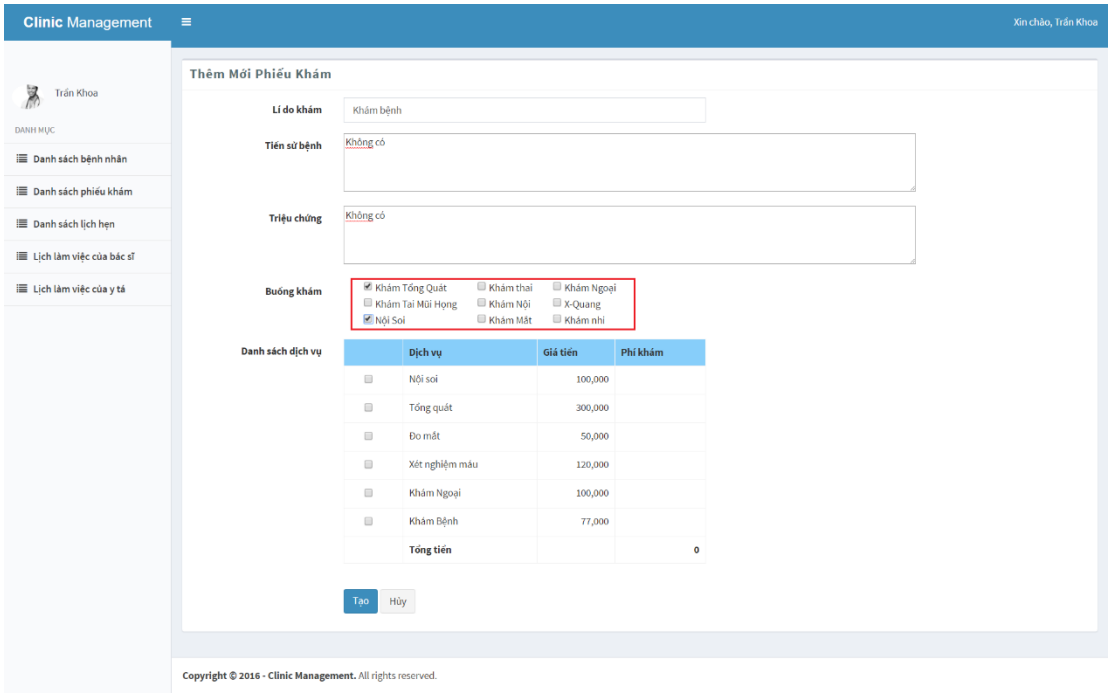
- In the view patient list page, click "Tạo phiếu khám" in patient user want to create medical history.



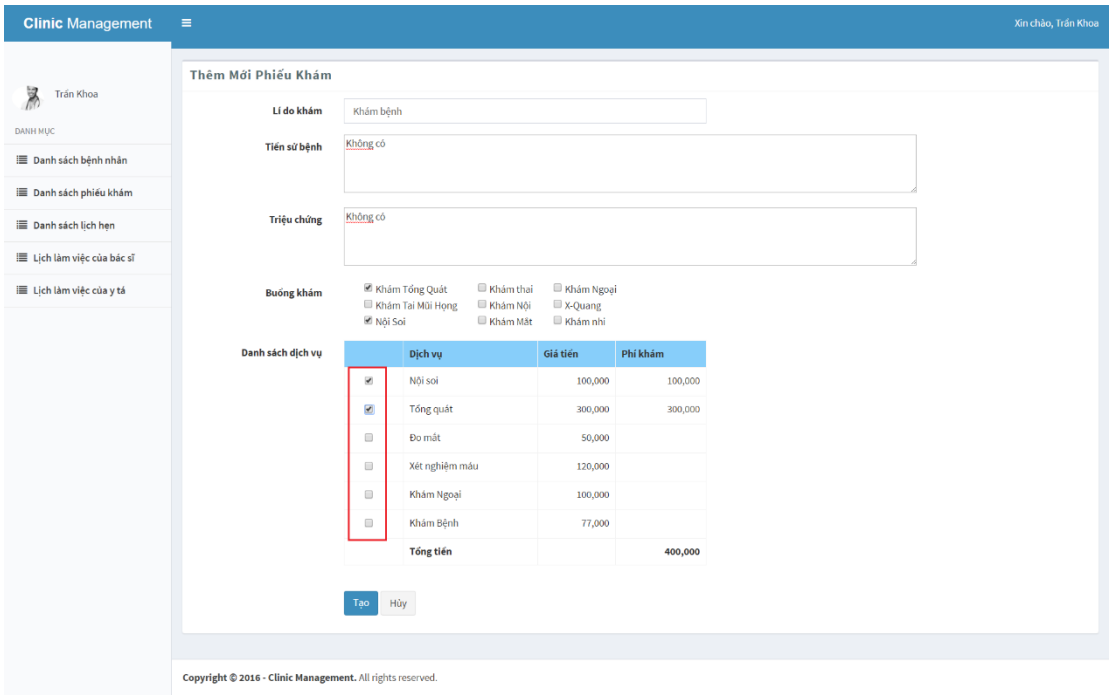
- Input information



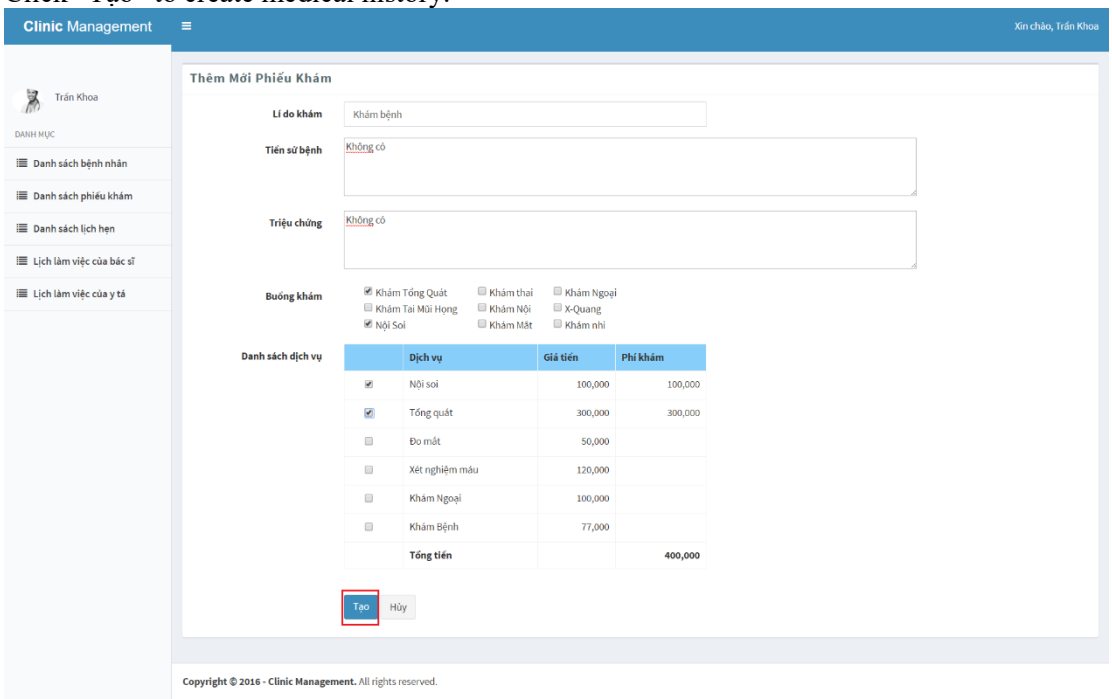
- Choose room



- Choose service

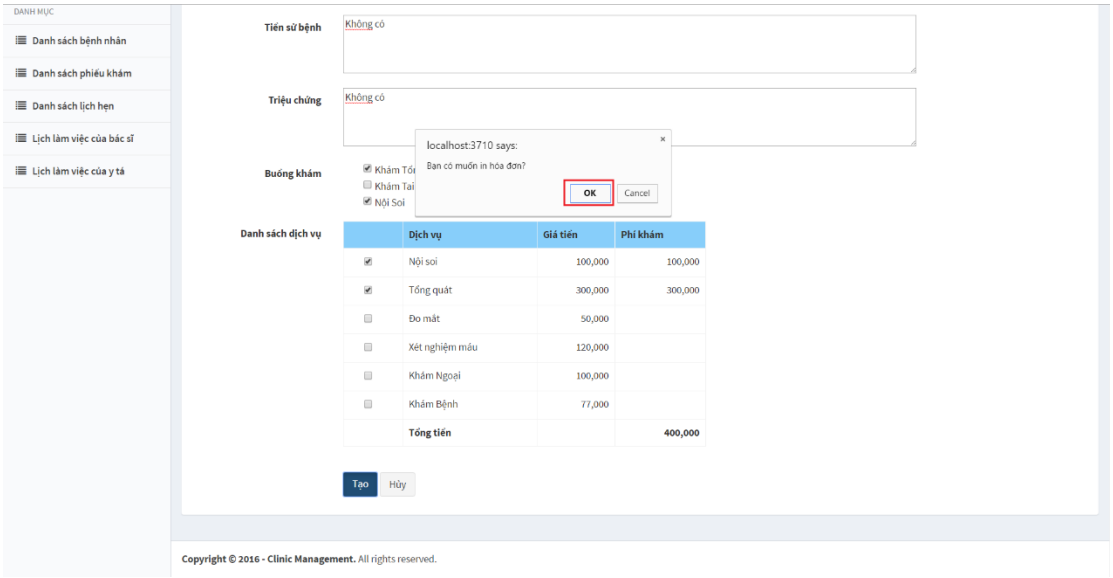


- Click “Tạo” to create medical history.



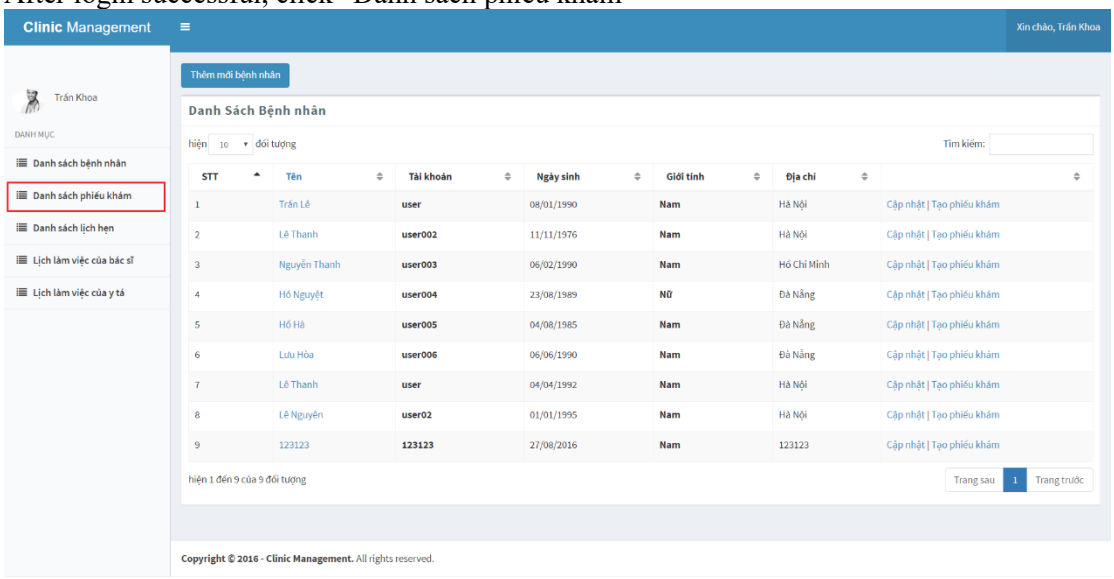
6.2.2.3.5 UC003-05 How to export invoice when create medical history

- After click “Tạo” to create medical history, click “OK” when dialog is showed.



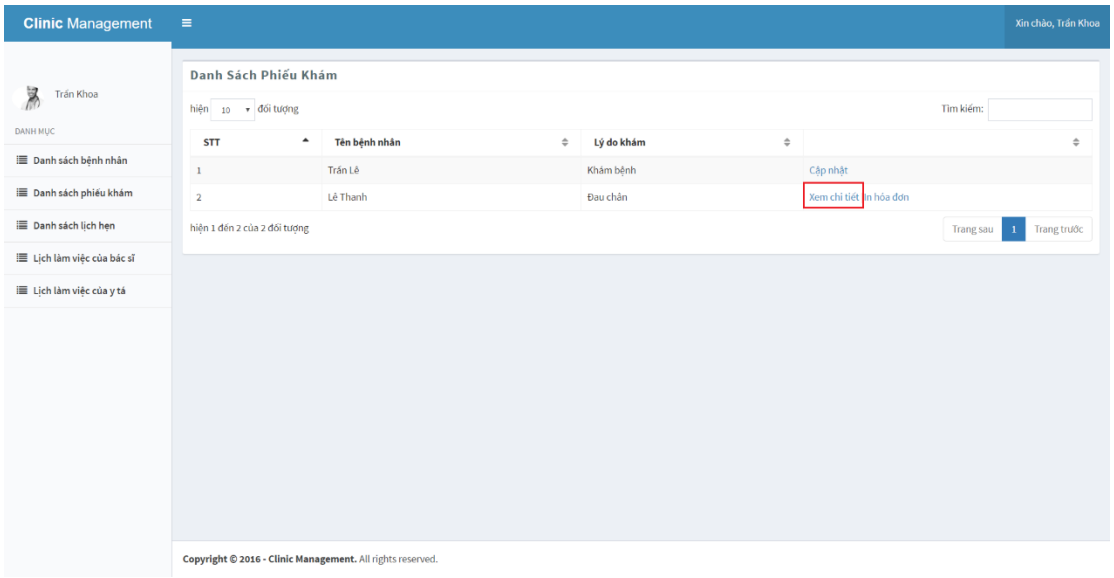
6.2.2.3.6 UC003-06 How to view medical history list

- After login successful, click "Danh sách phiếu khám"



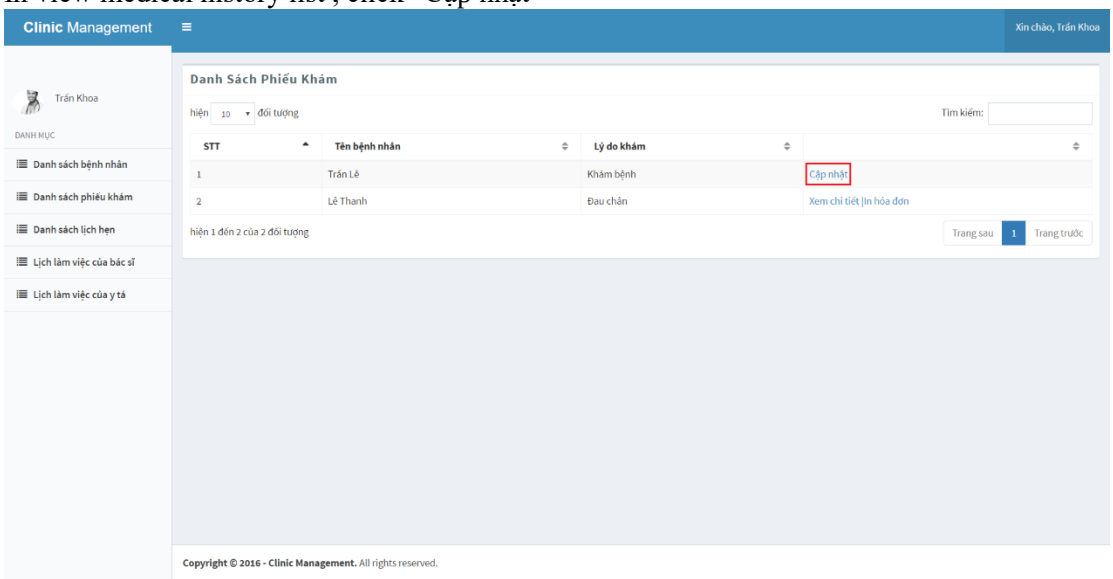
6.2.2.3.7 UC003-07 How to view medical history's detail

- In view medical history list, click "Xem chi tiết"

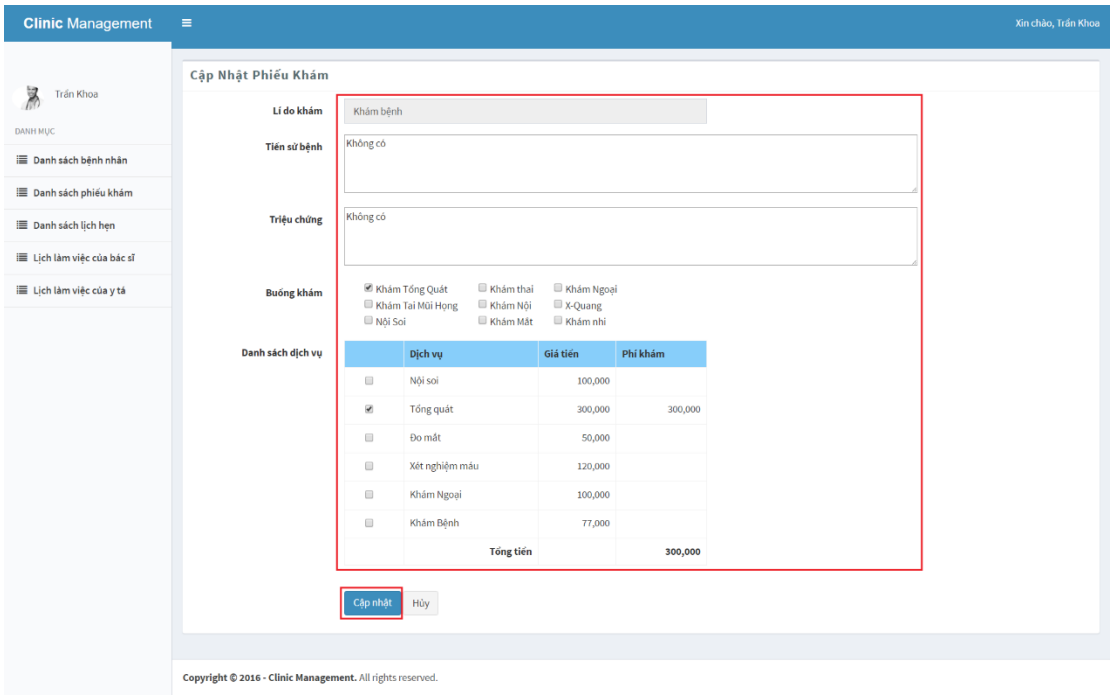


6.2.2.3.8 UC003-08 How to update medical history and export invoice

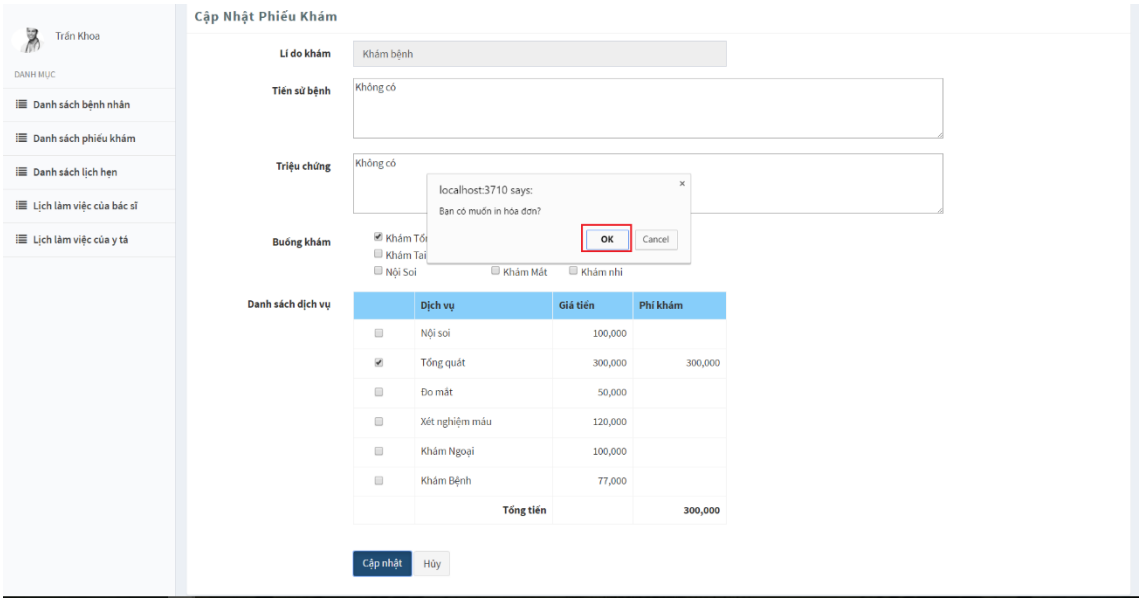
- In view medical history list , click “Cập nhật”



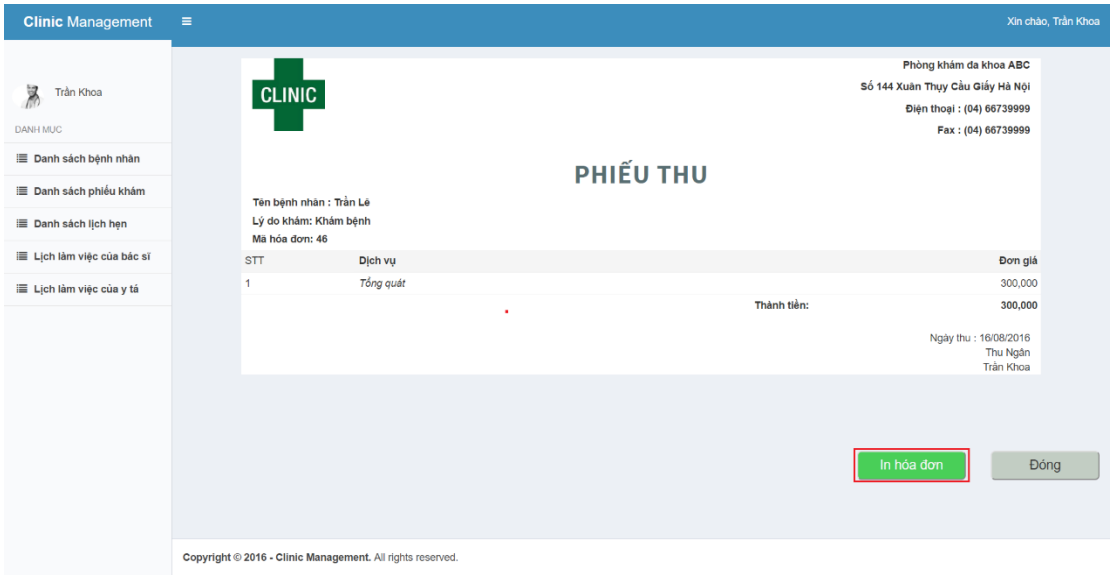
- Update information.
- After update, click “Cập nhật”.



- After click “Cập nhật”, click “OK” when dialog is showed.

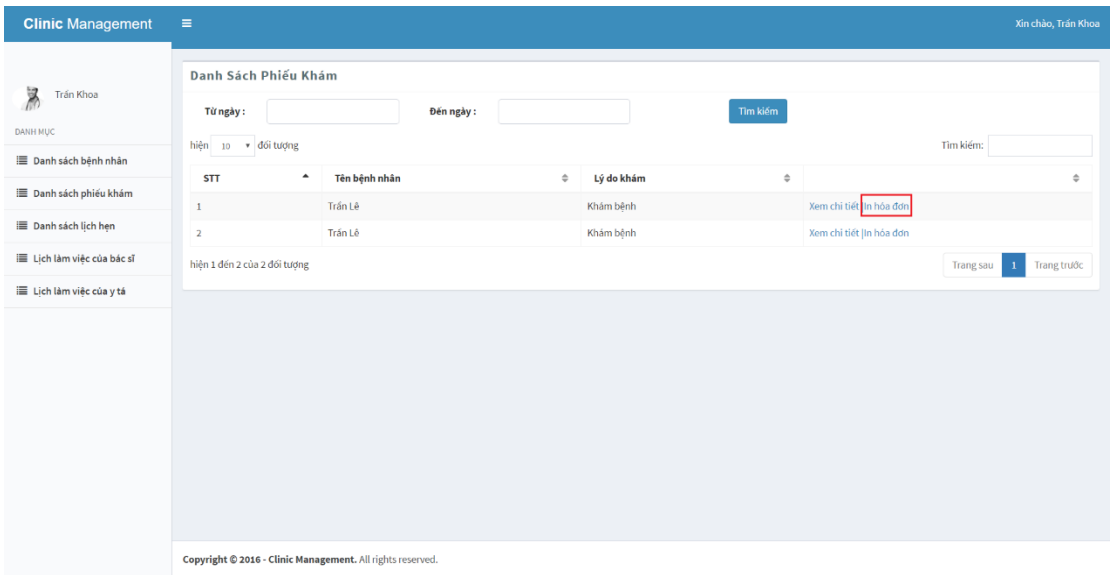


- Click “In hóa đơn” to download invoice file.

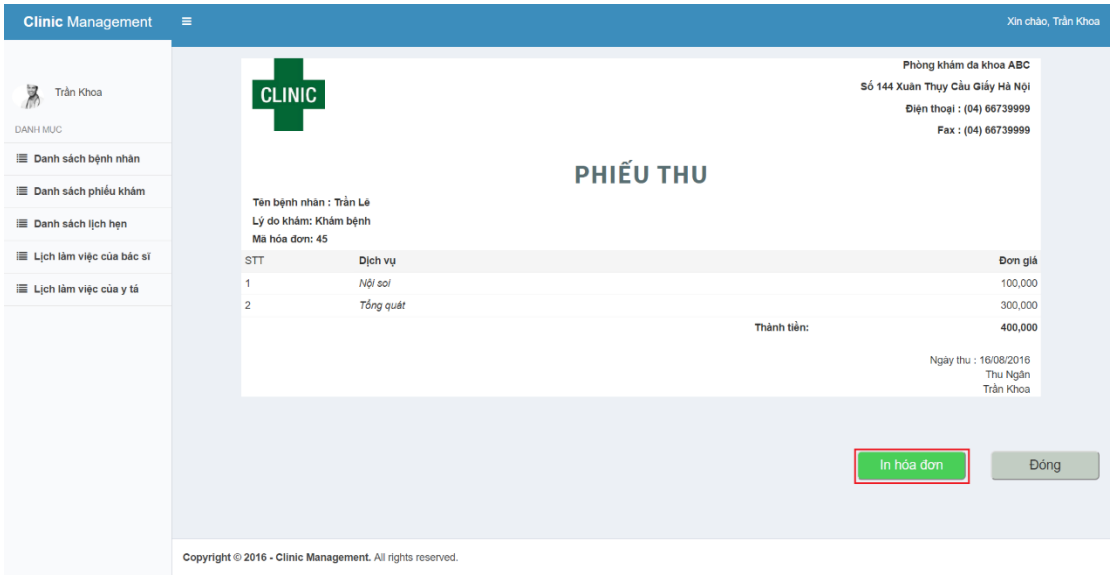


6.2.2.3.9 UC003-09 How to export invoice from medical history list

- In view medical history list, click “In hóa đơn”.

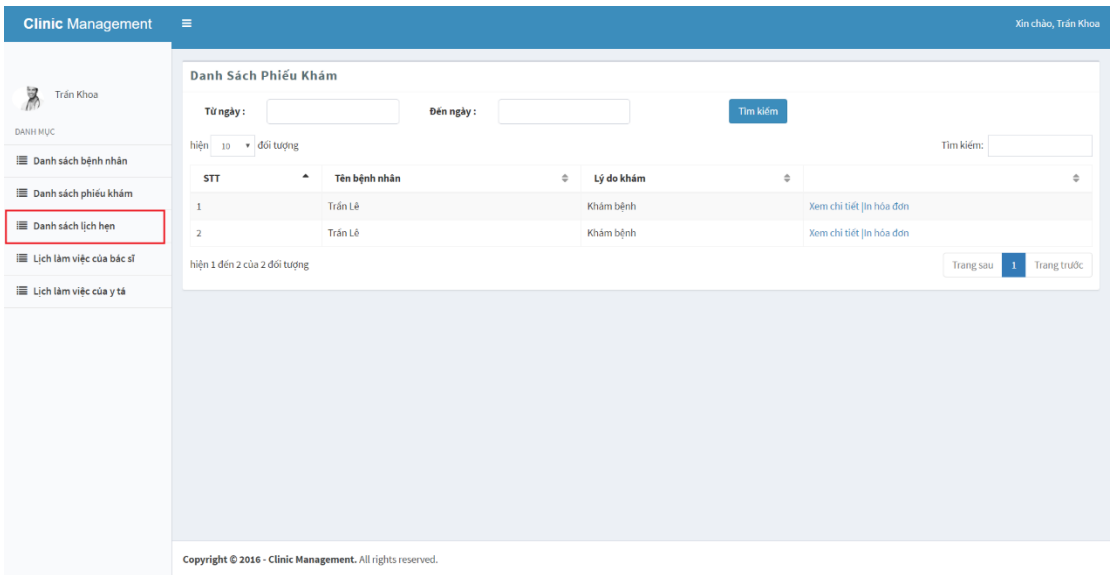


- Click “In hóa đơn” to download invoice file.



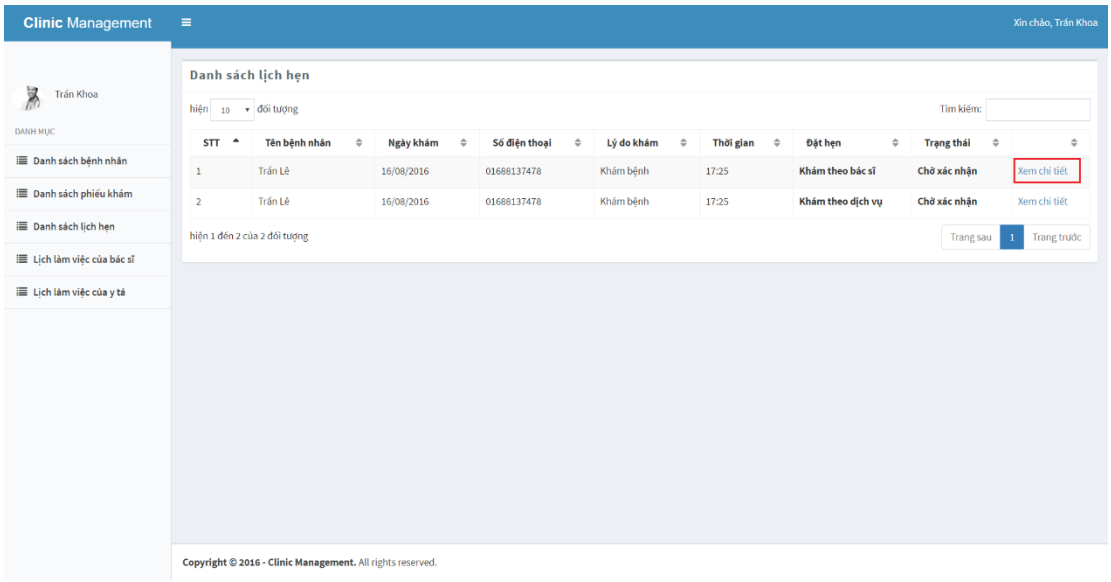
6.2.2.3.10 UC003-10 How to view appointment list

- After login successful, click “Danh sách lịch hẹn”

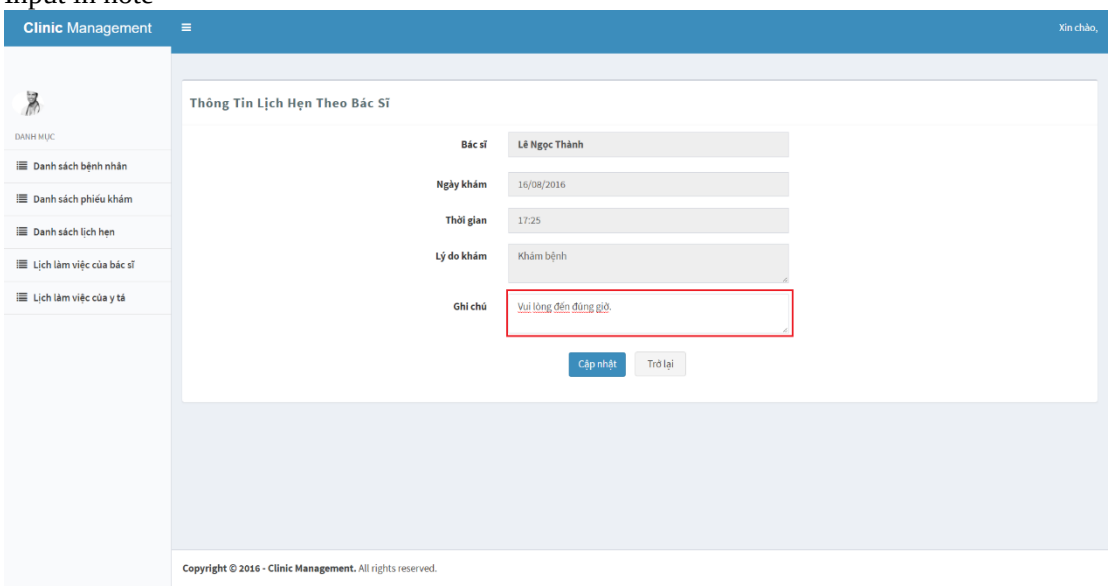


6.2.2.3.11 UC003-11 How to view appointment’s detail and confirm appointment

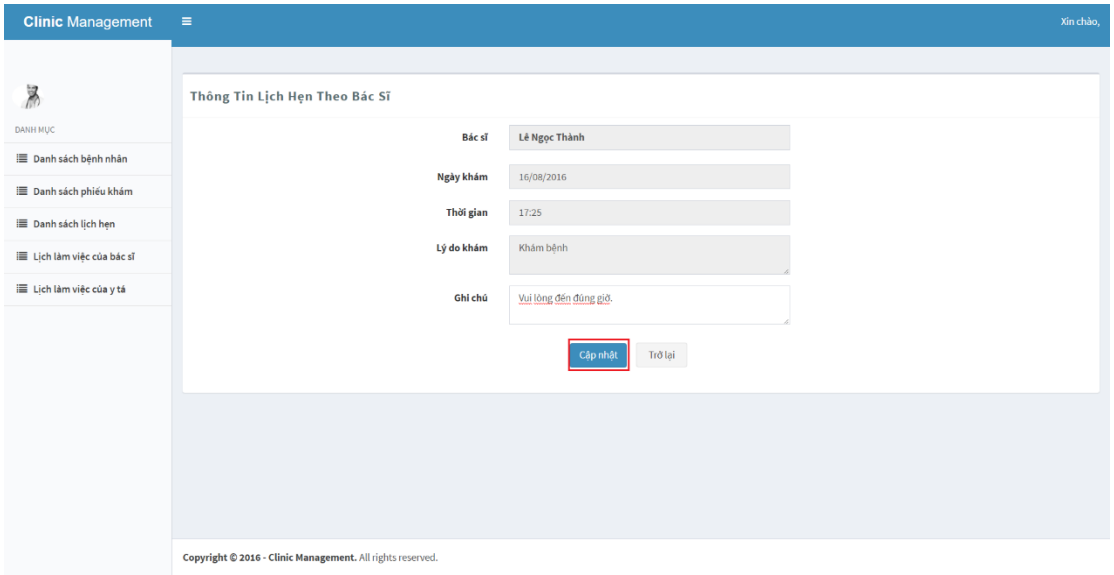
- In view appointment list, click “Xem chi tiết”



- Input in note

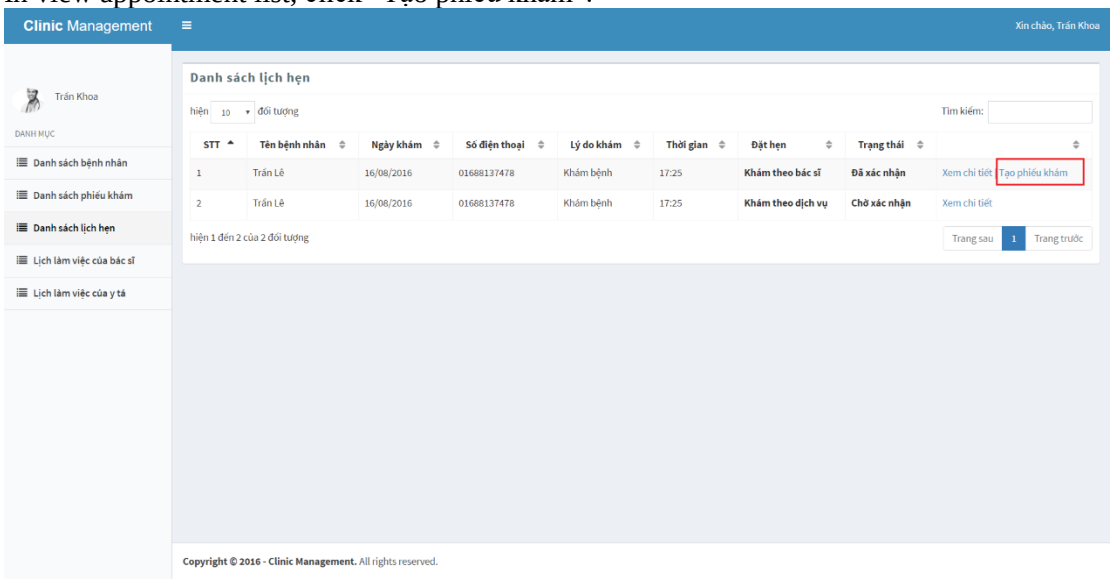


- Click “Cập nhật” to confirm the appointment.

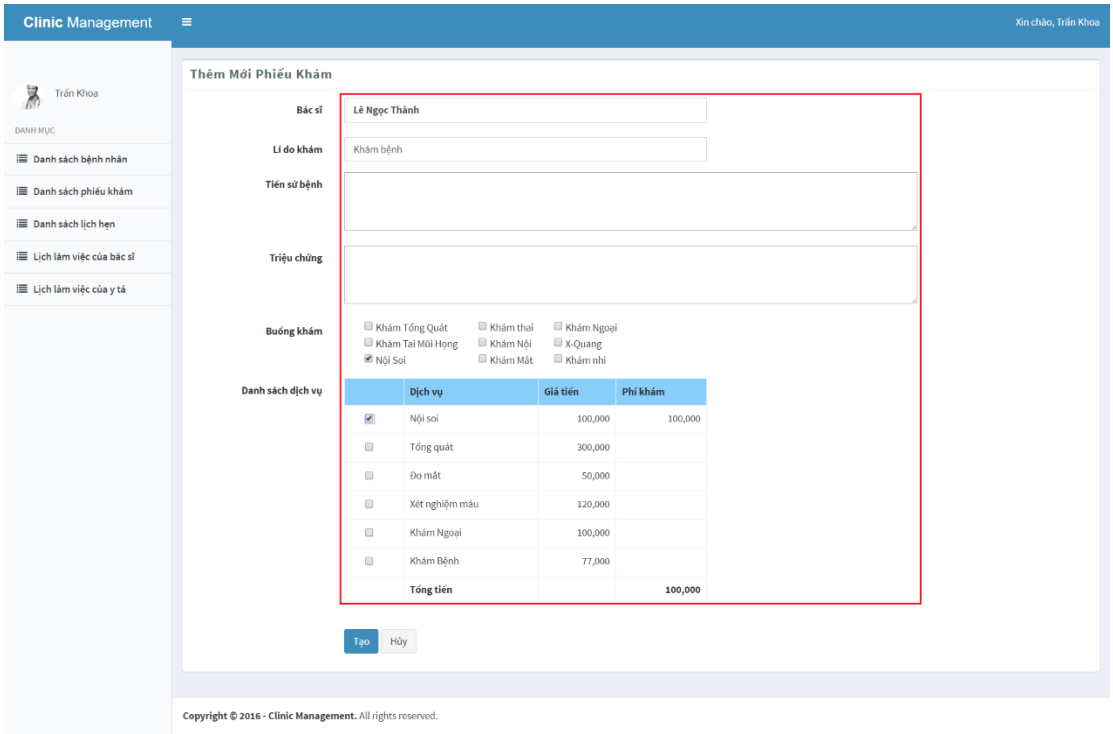


6.2.2.3.12 UC003-12 How to create medical history from appointment

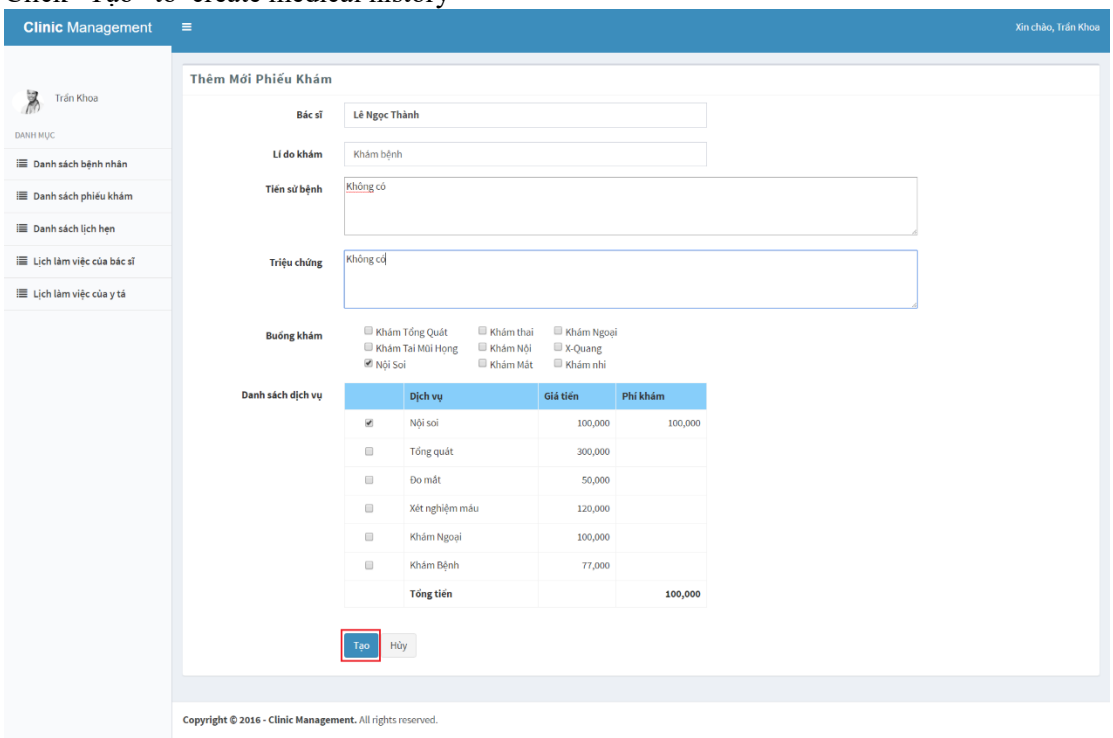
- In view appointment list, click “Tạo phiếu khám”.



- Input information

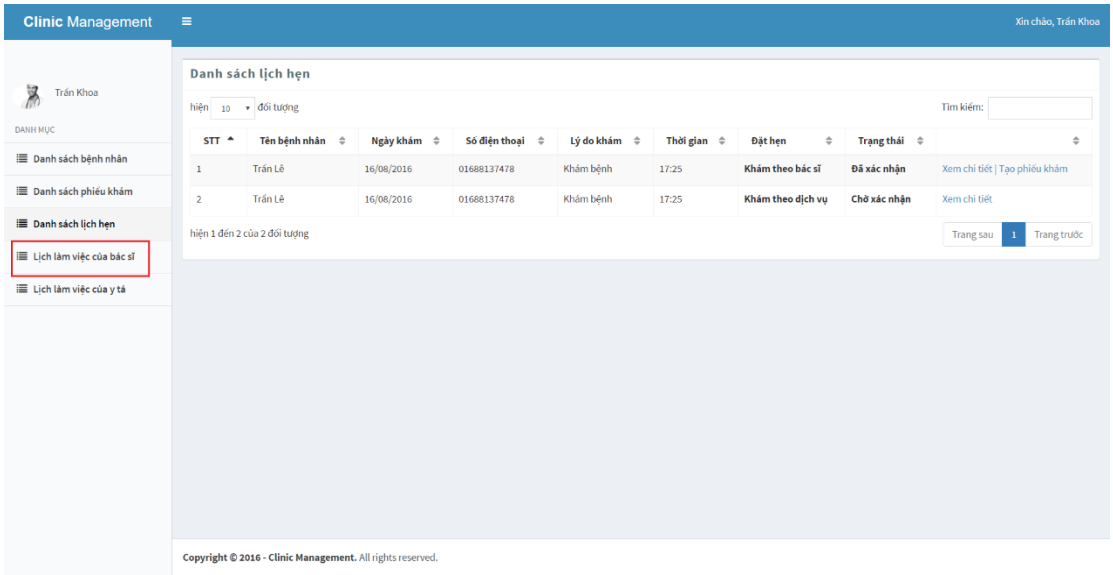


- Click "Tạo" to create medical history



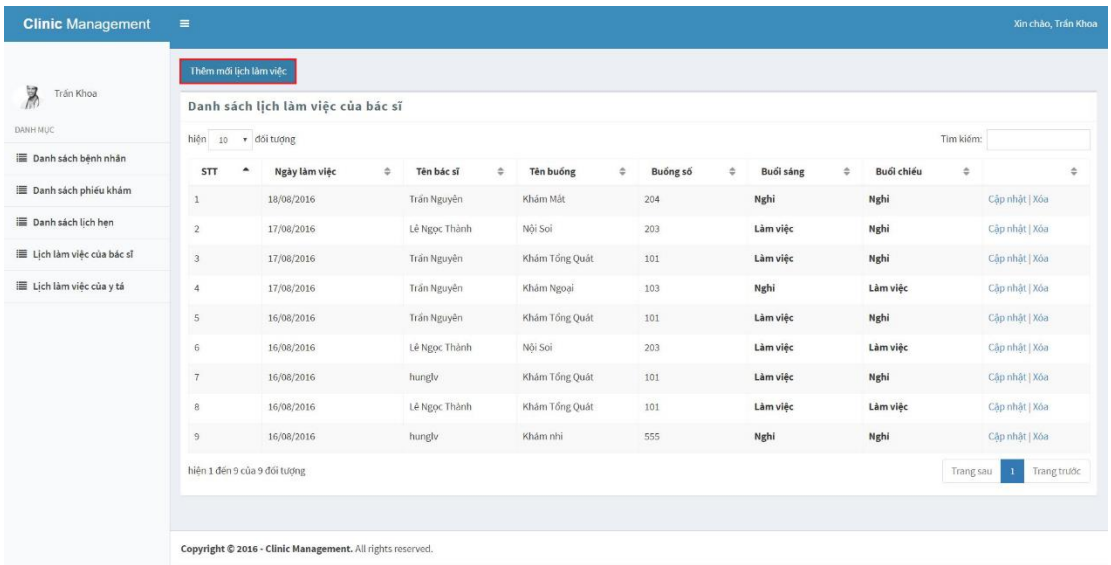
6.2.2.3.13 UC003-13 How to view doctor's work schedule list

- After login successful, click "Lịch làm việc của bác sĩ"

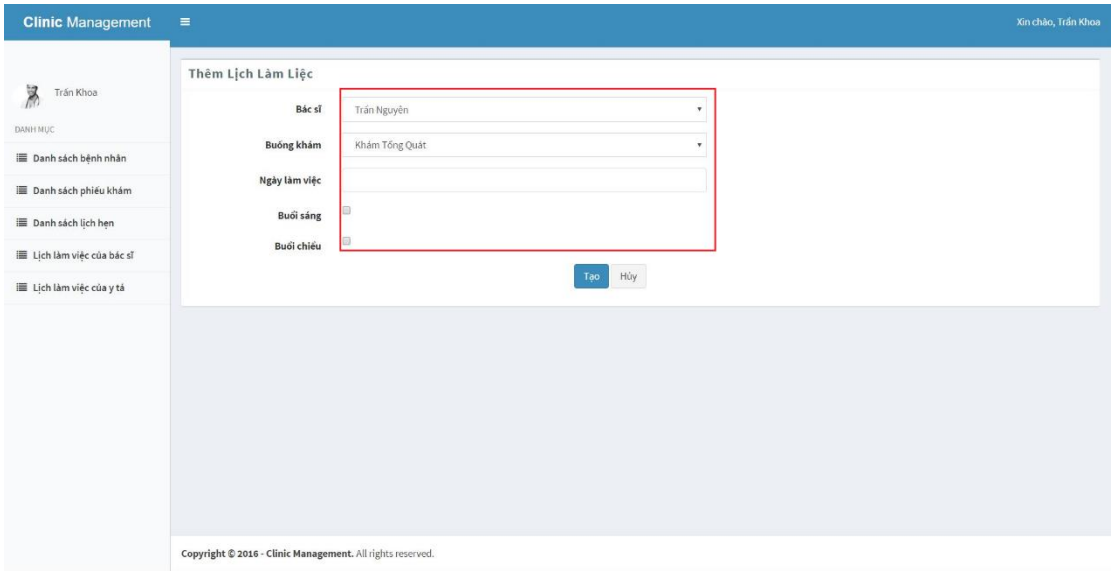


6.2.2.3.14 UC003-14 How to create doctor's work schedule

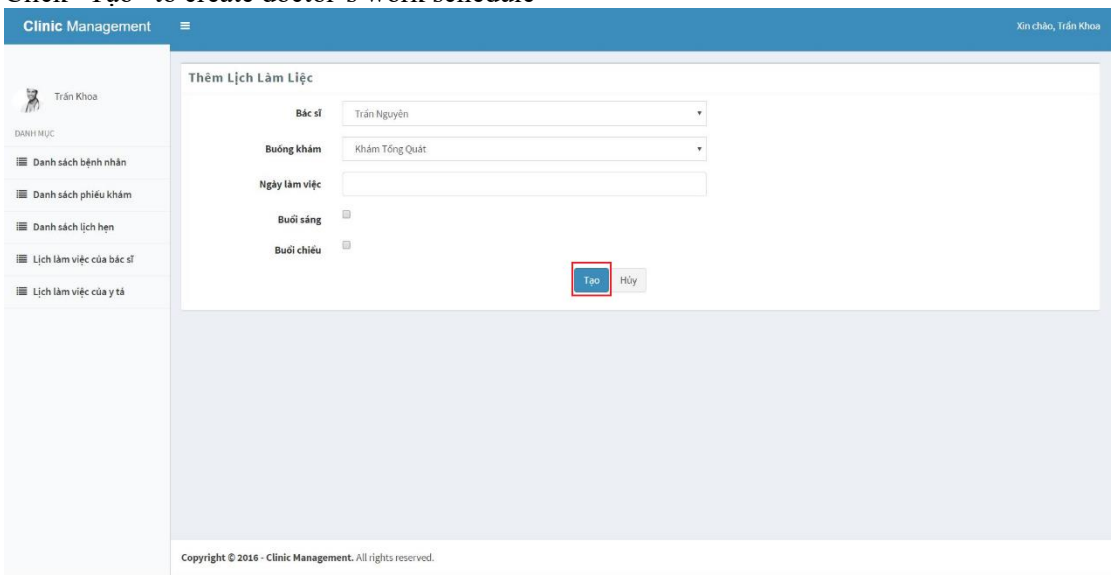
- In view doctor's work schedule, click "Thêm mới lịch làm việc".



- Choose doctor, room and input

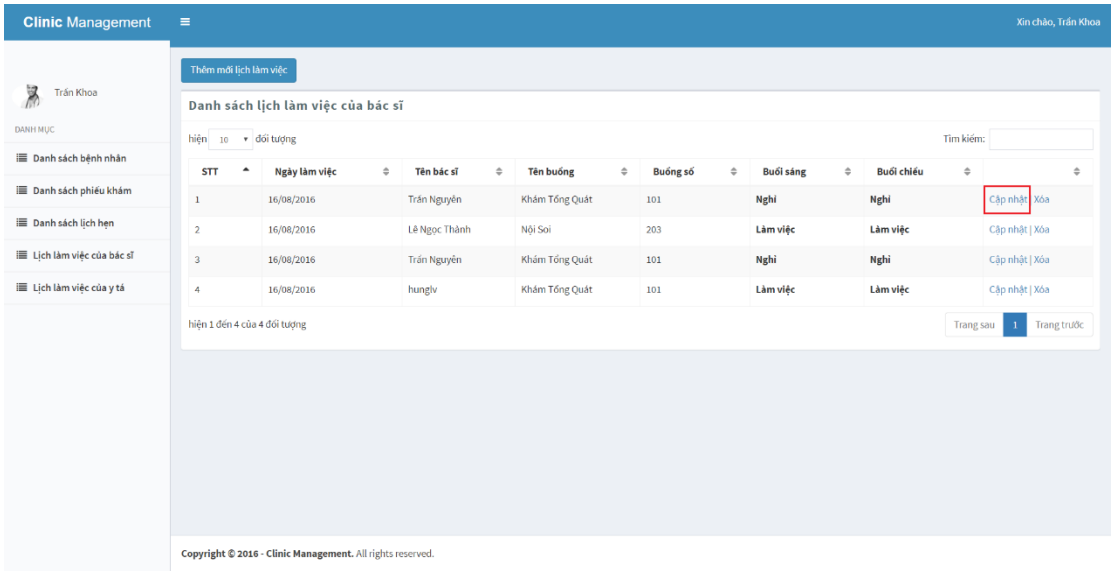


- Click "Tạo" to create doctor's work schedule

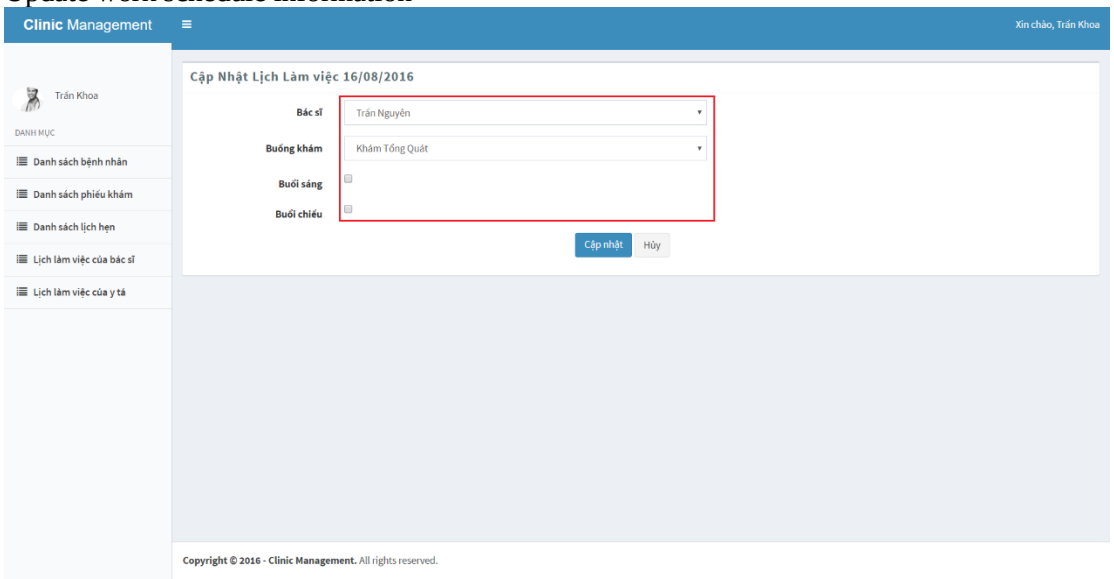


6.2.2.3.15 UC003-15 How to update doctor's work schedule

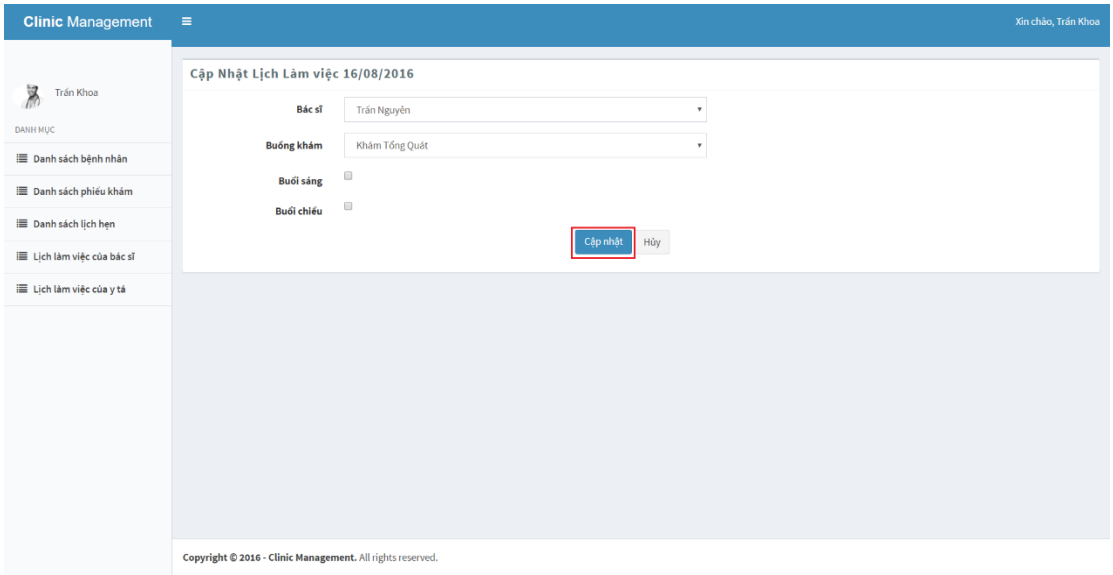
- In view doctor's work schedule list, click "Cập nhật" at work schedule you want to update.



- Update work schedule information

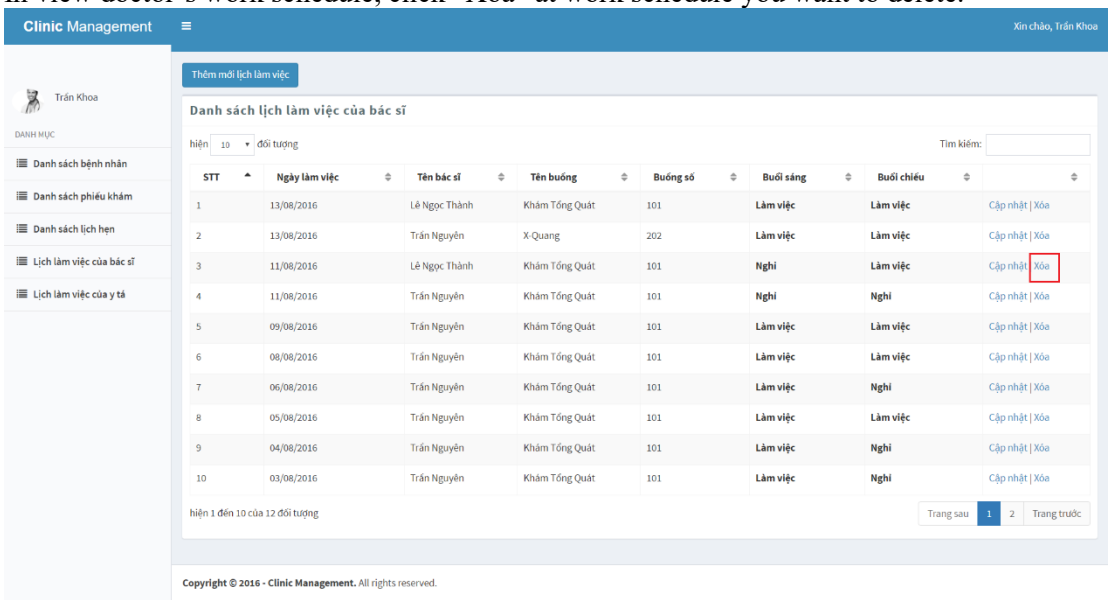


- Click “Cập nhật” to update.

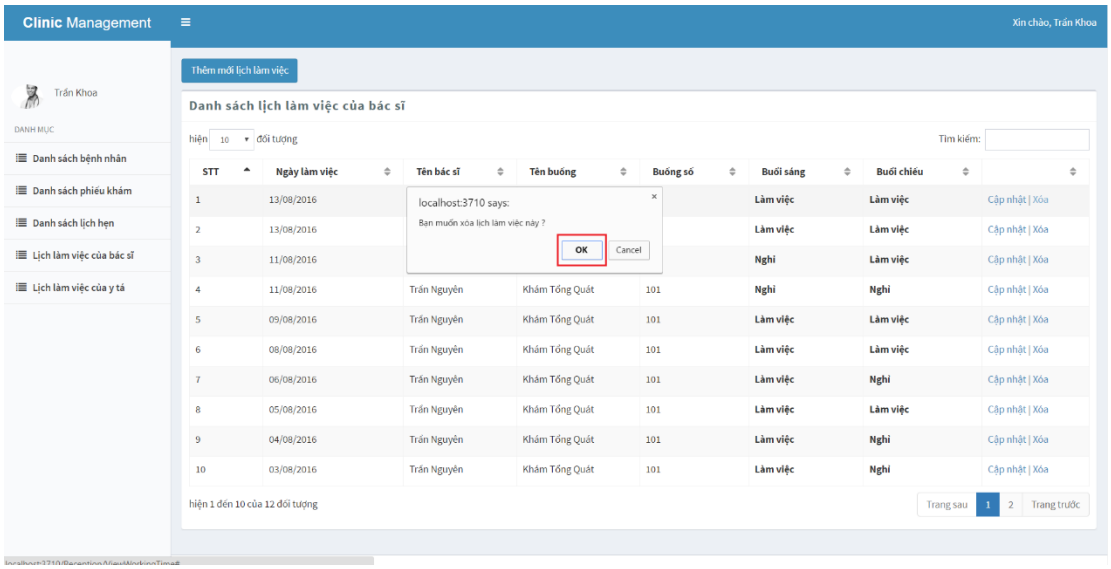


6.2.2.3.16 UC003-16How to delete doctor's work schedule

- In view doctor's work schedule, click "Xóa" at work schedule you want to delete.

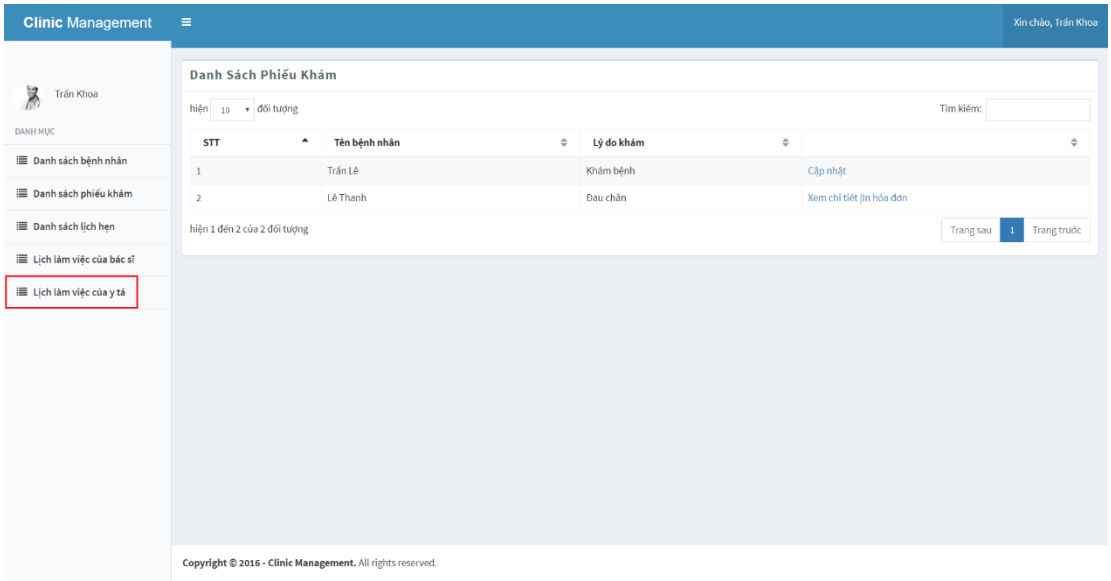


- Click "OK" to delete when dialog is showed,



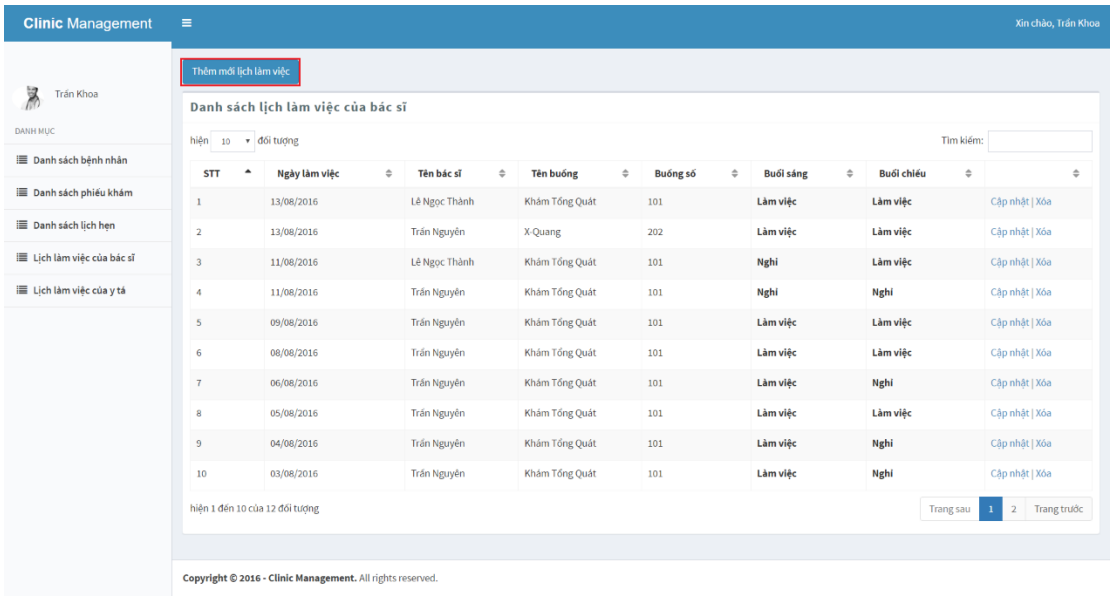
6.2.2.3.17 UC003-17 How to view nurse's work schedule list

- After login successful, click "Lịch làm việc của y tá".

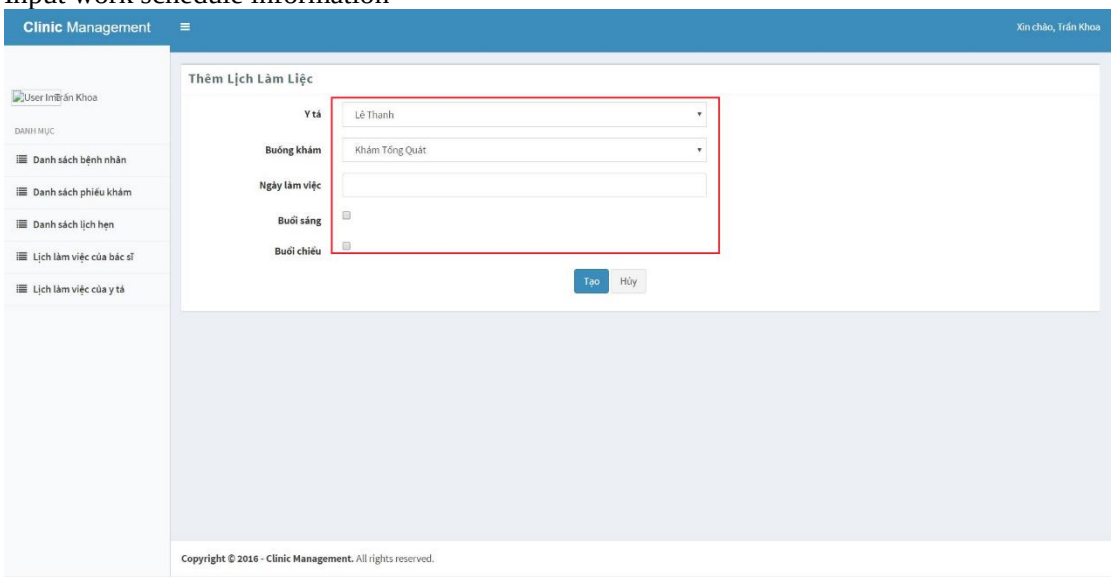


6.2.2.3.18 UC003-18How to create nurse's work schedule

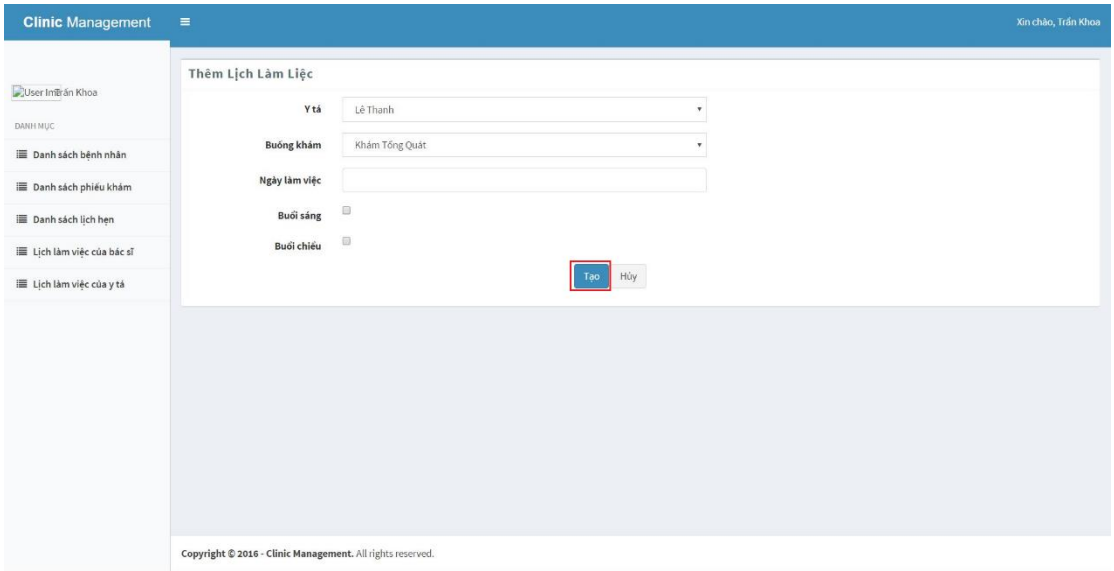
- In view nurse's work schedule, click "Thêm mới lịch làm việc".



- Input work schedule information

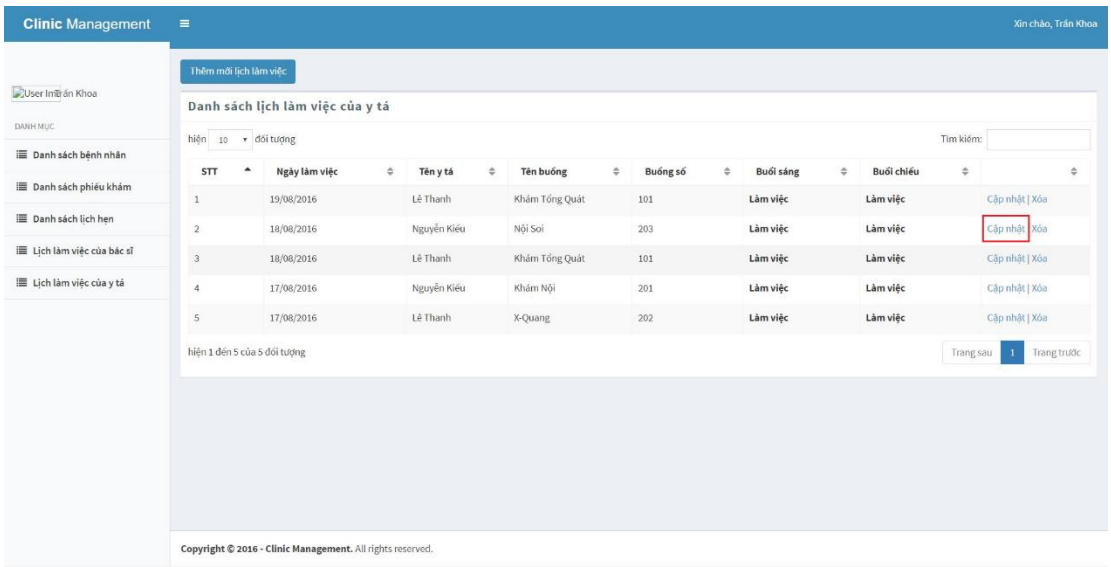


- Click “Tạo” to create nurse’s work schedule.

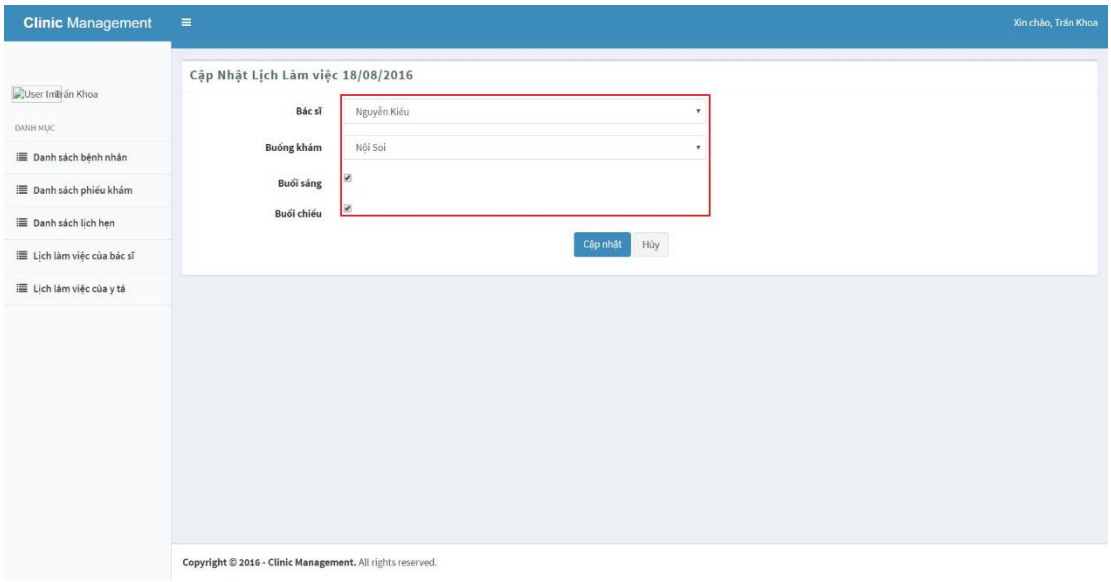


6.2.2.3.19 UC003-19 How to update nurse's work schedule

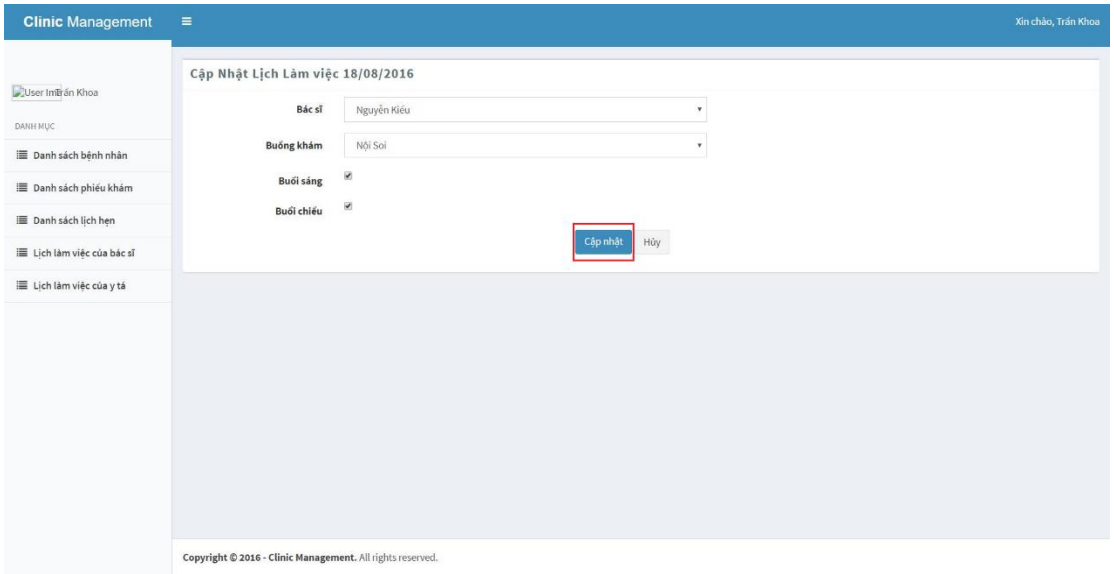
- In view nurse's work schedule, click "Cập nhật" at nurse's work schedule you want to update.



- Update work schedule information.

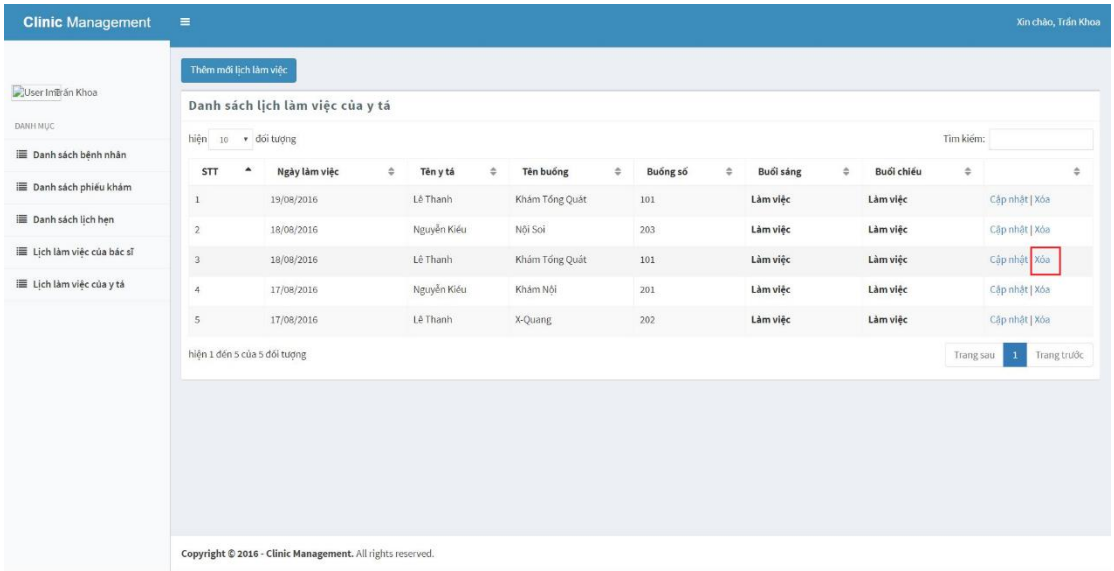


- Click "Cập nhật" to update.

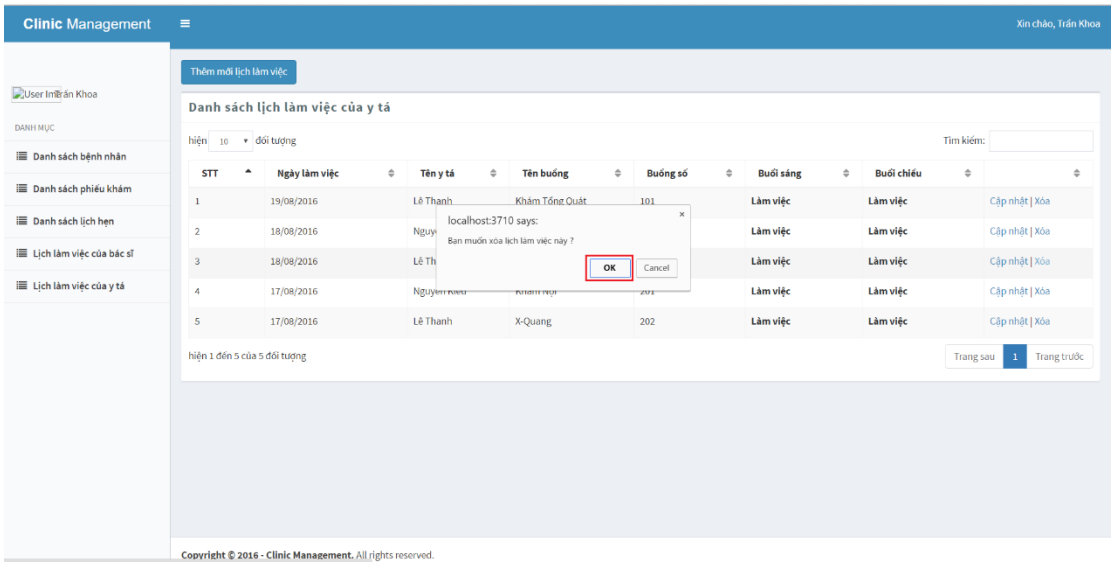


6.2.2.3.20 UC003-20 How to delete nurse's work schedule

- In view nurse's work schedule, click "Xóa" at nurse's work schedule you want to delete.



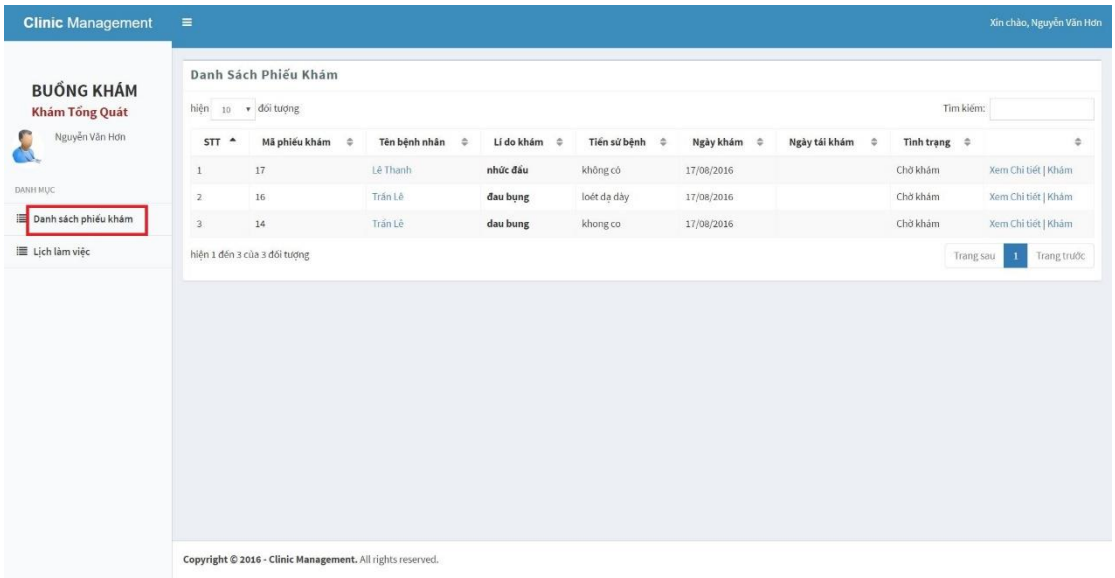
- Click “OK” to delete when dialog is showed.



6.2.2.4 UC004- Nurse Management

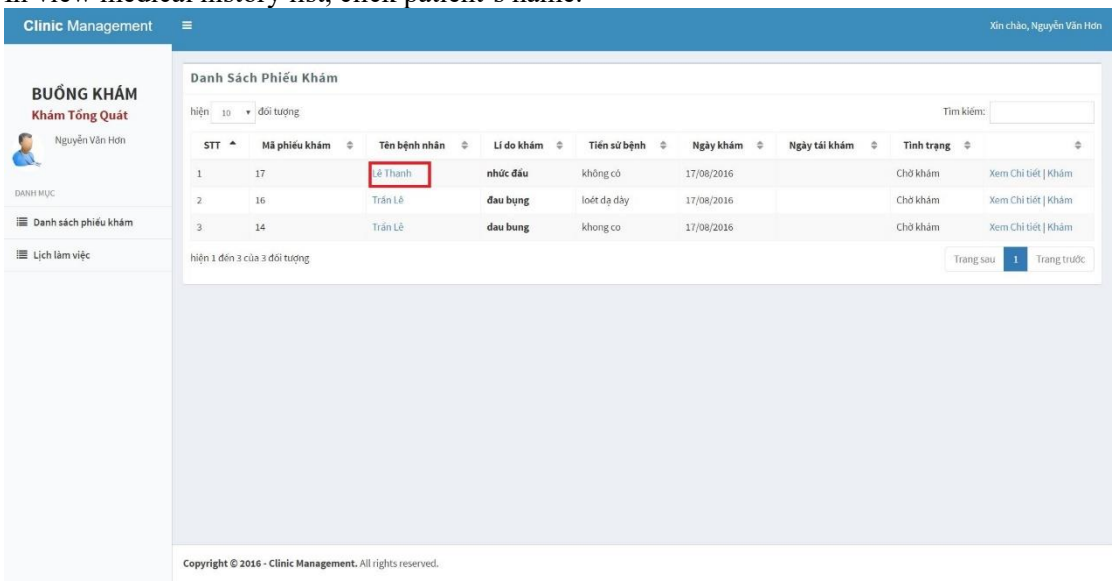
6.2.2.4.1 UC004-01 How to view medical history list

- After login successful, Click “Danh sách phiếu khám”.

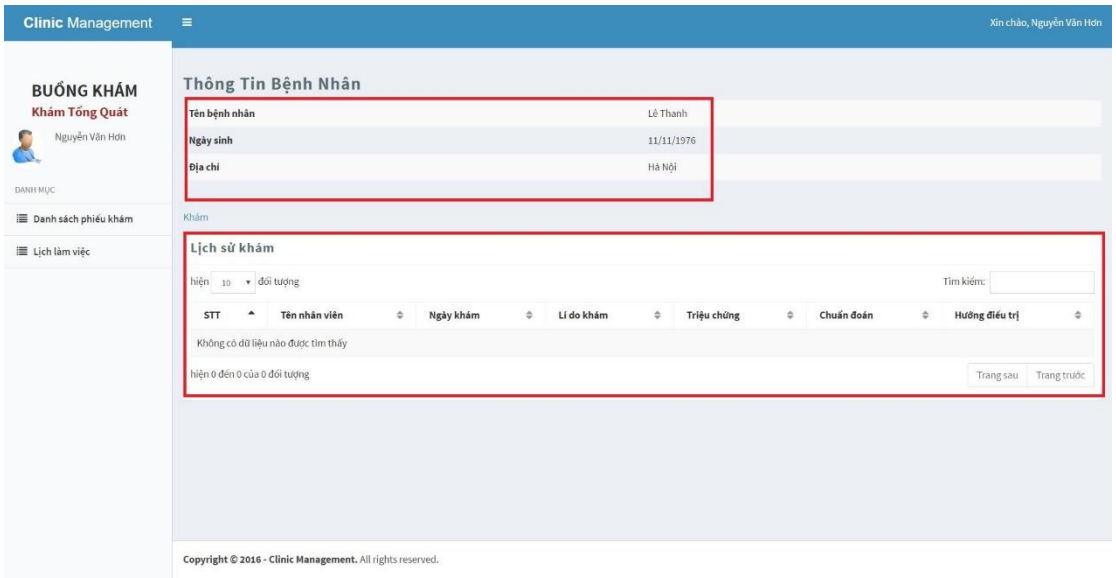


6.2.2.4.2 UC004-02 How to view Patient Information

- In view medical history list, click patient's name.



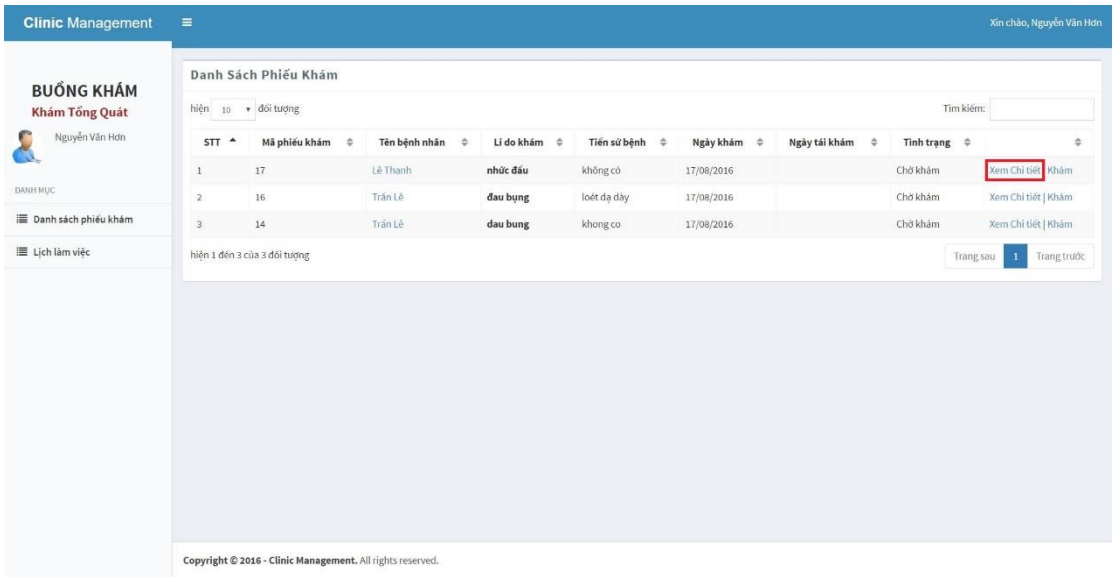
- The patient information page includes: patient information, medical history.

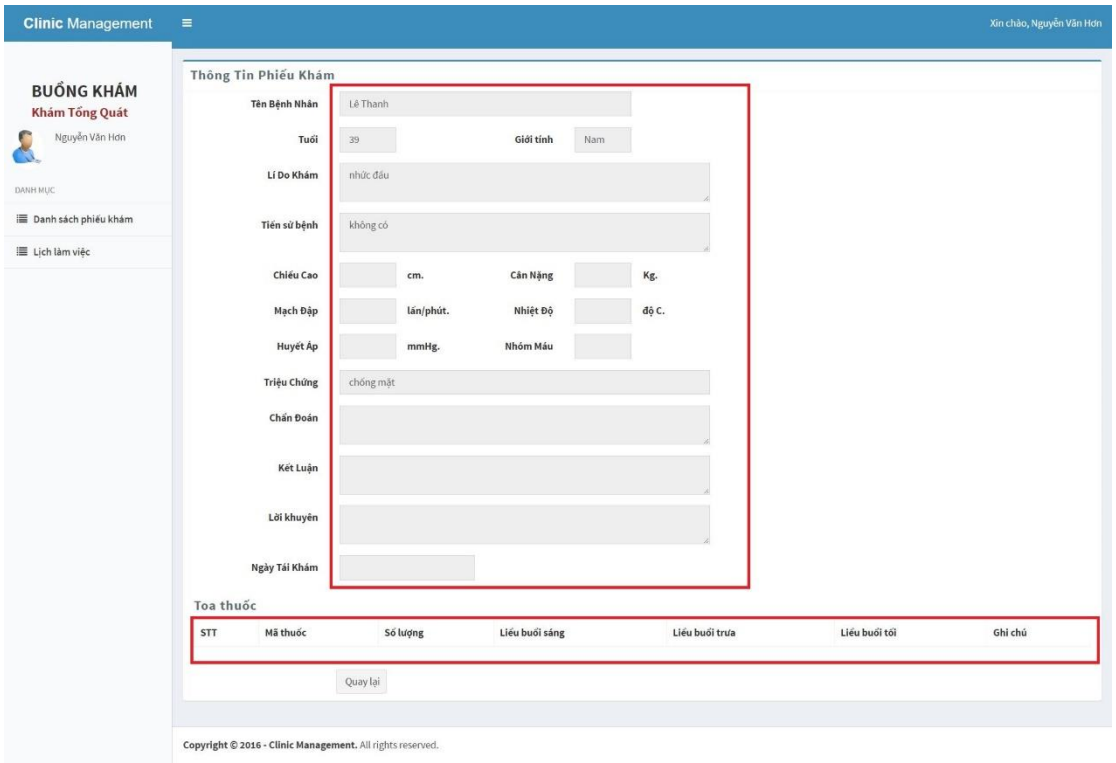


6.2.2.4.3 UC004-03 How to view medical history detail

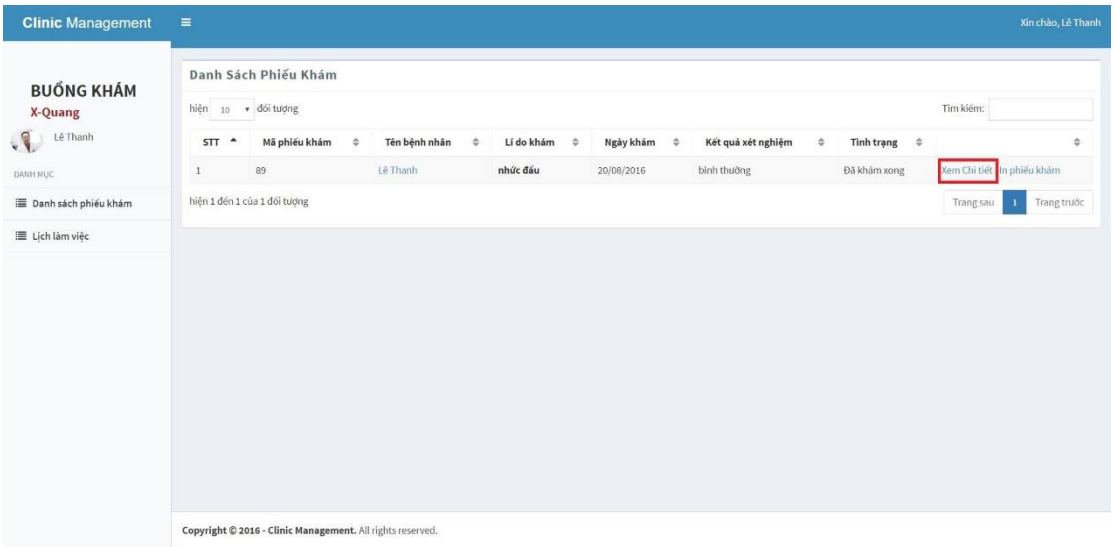
- In view medical history list, click “Xem chi tiết”.

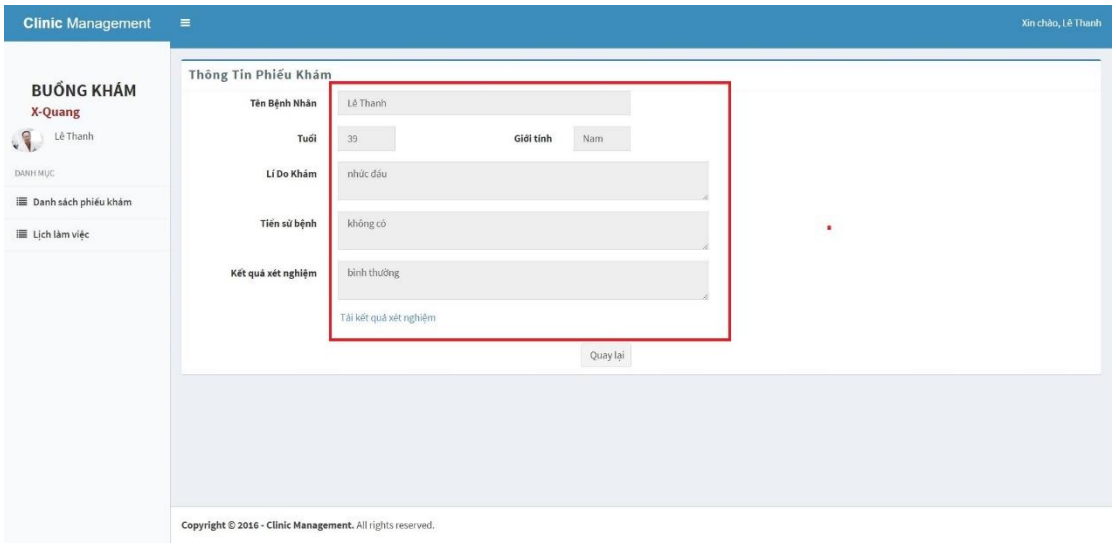
  - Case 1: View Medical history detail page includes: medical history, prescription information.



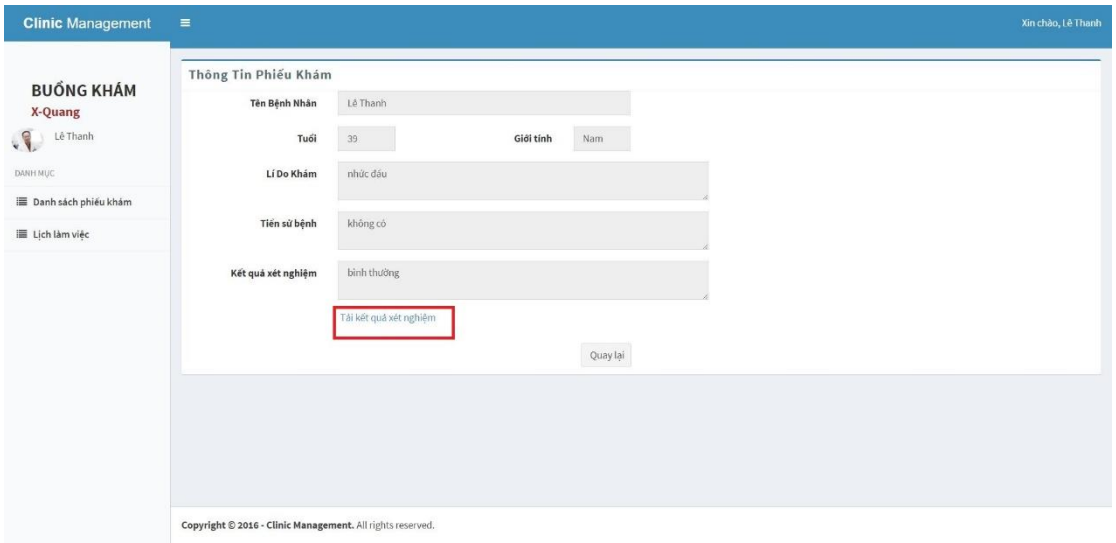


- Case 2: View test form.



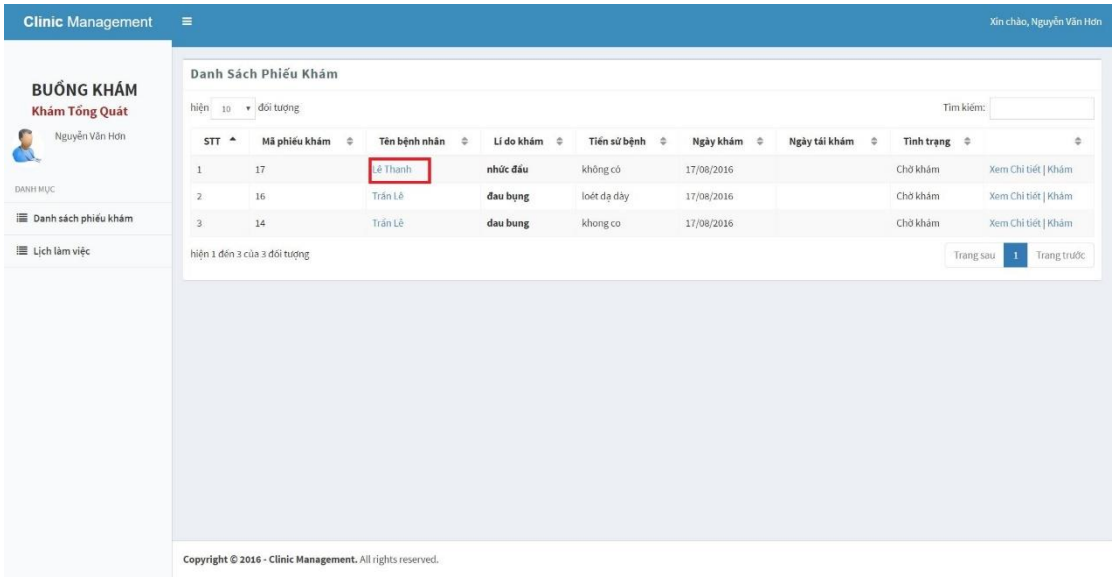


Click “Tải kết quả xét nghiệm” to view examination result

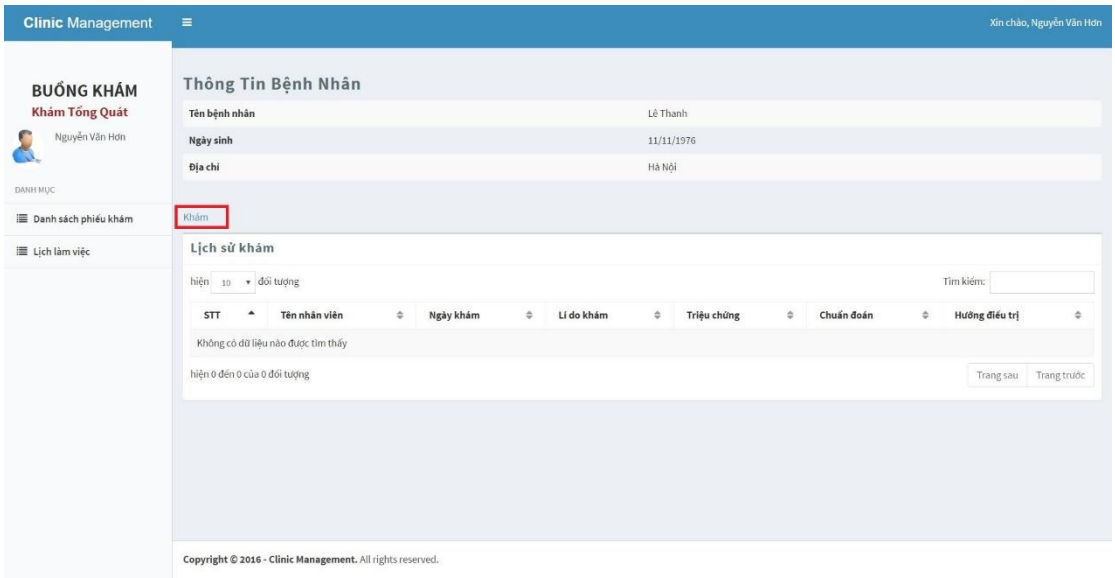


6.2.2.4.4 UC004-04 How to update medical history

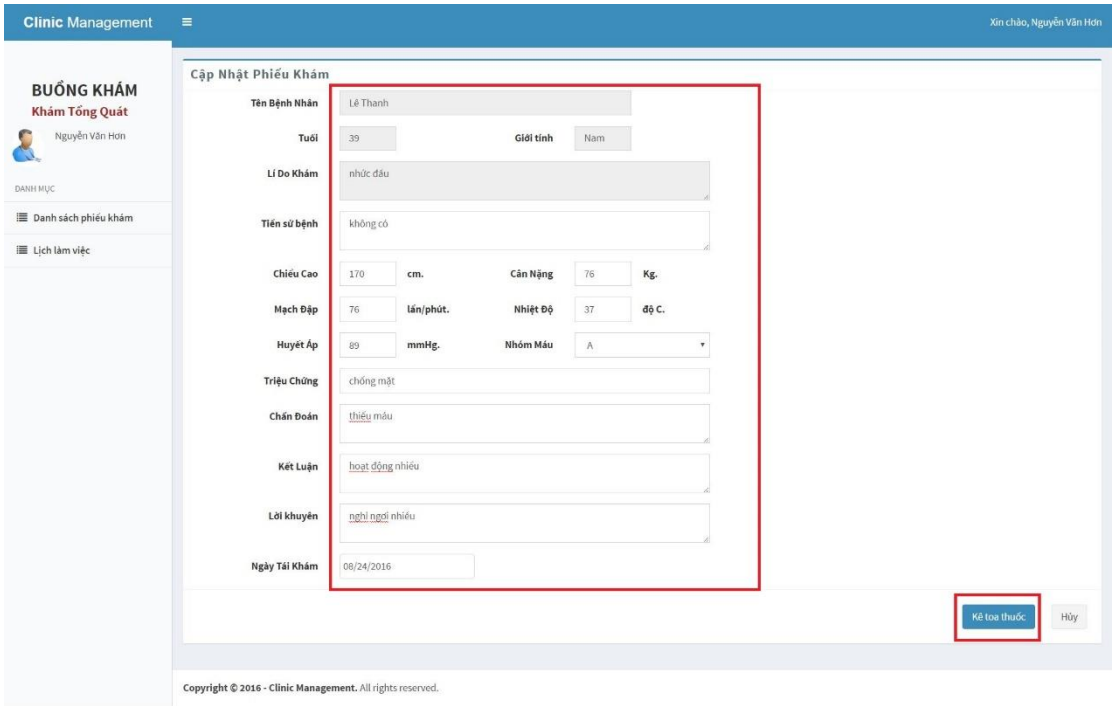
- Case 1:
  - In view medical history list, click patient's name.



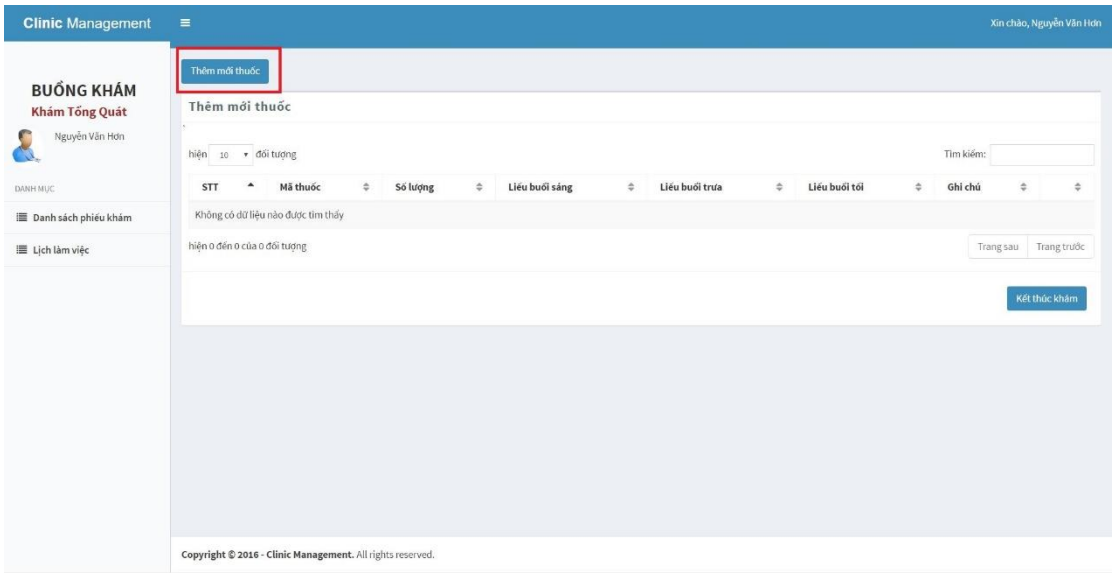
  - In patient information page, click "Khám".



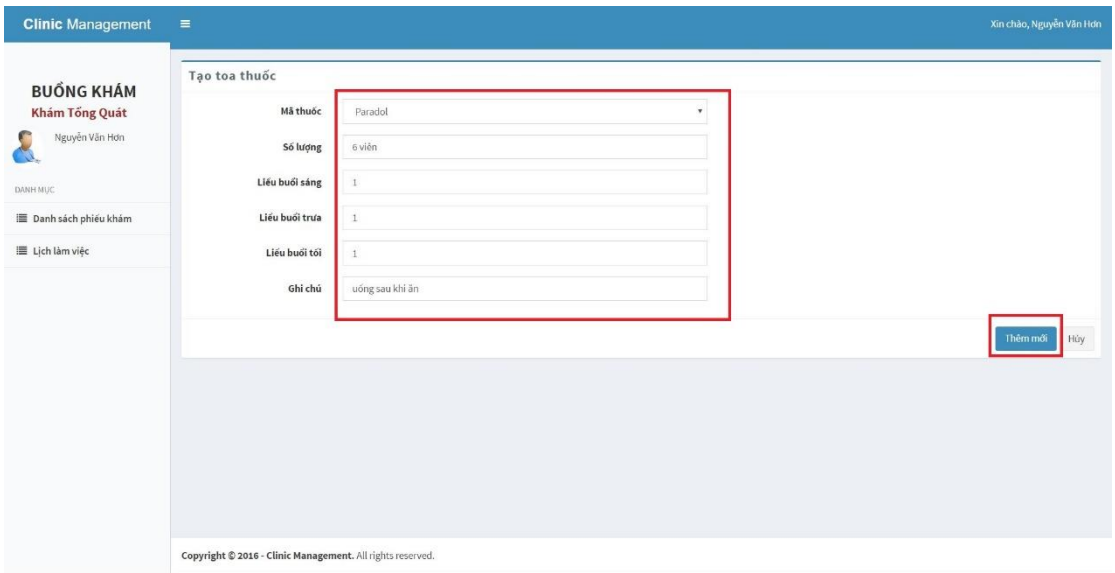
- Input medical history's information. Then click "Kê toa thuốc".



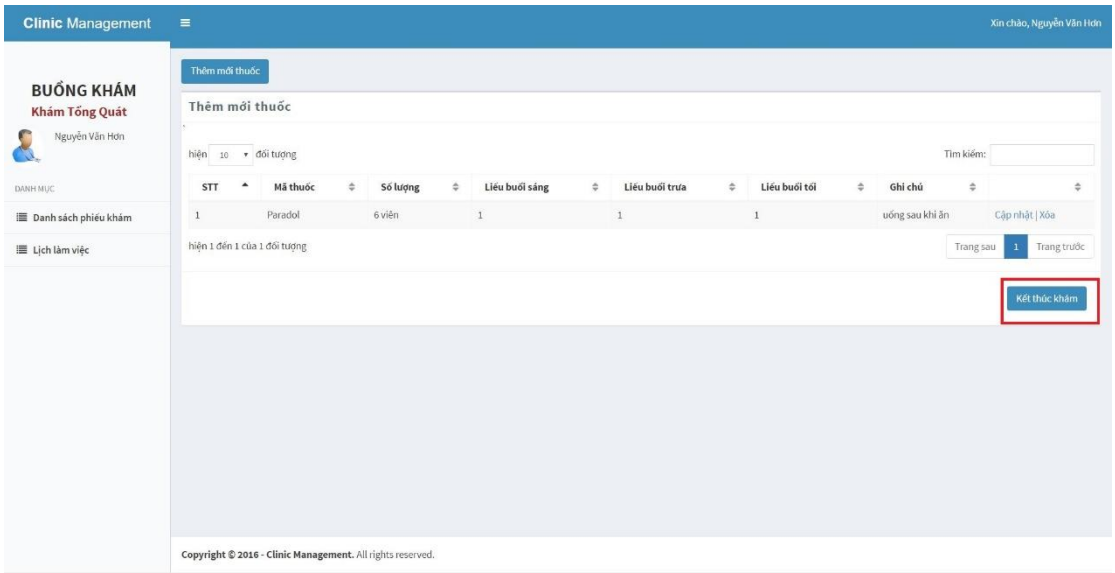
- If create new prescription. Click "Thêm mới toa thuốc".



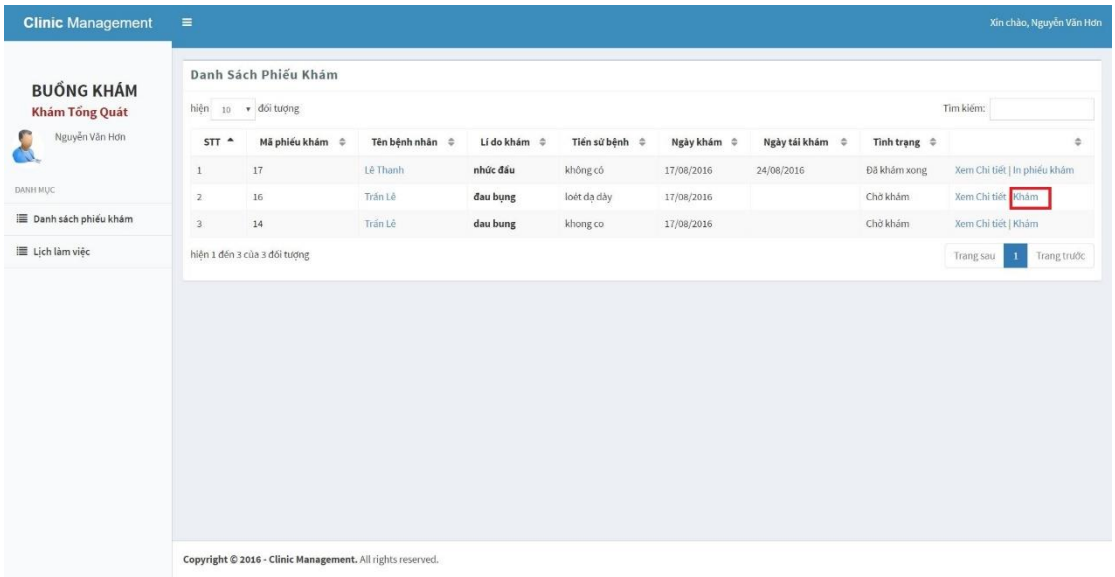
- Input prescription's information. Then click "Thêm mới".



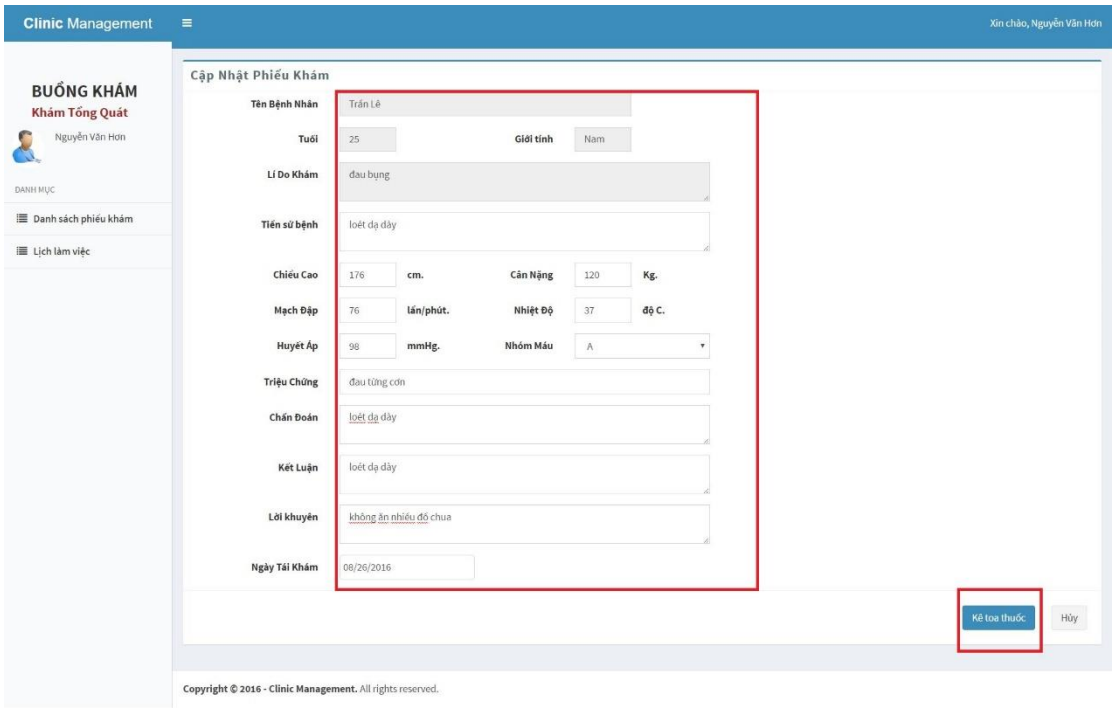
- If do not create new prescription, click "Kết thúc khám".



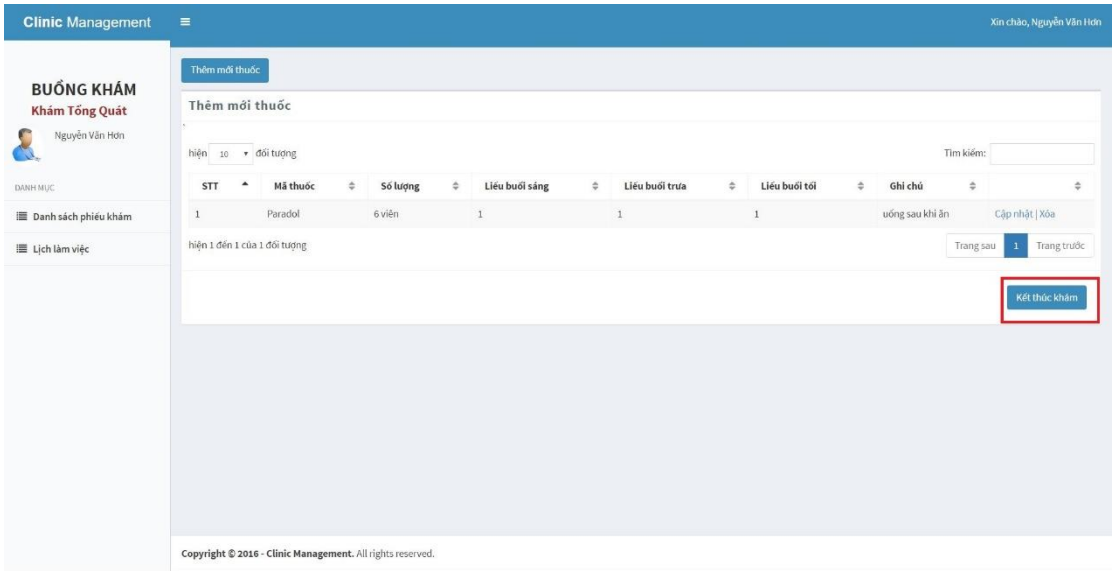
- Case 2:
  - In view medical history list, click “Khám”.



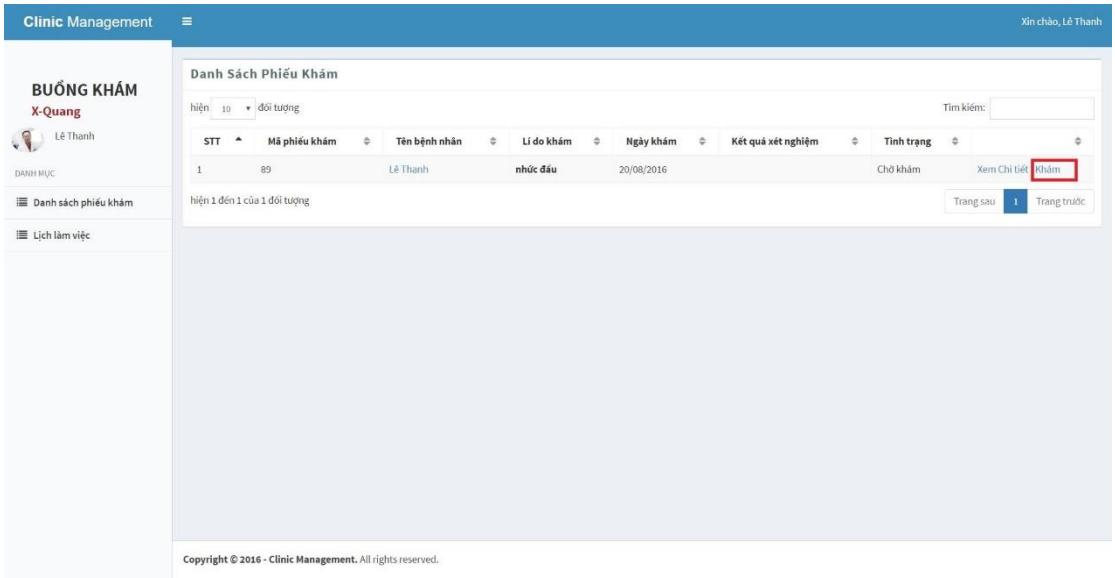
  - Input medical history’s information. Then click “Kê toa thuốc”.



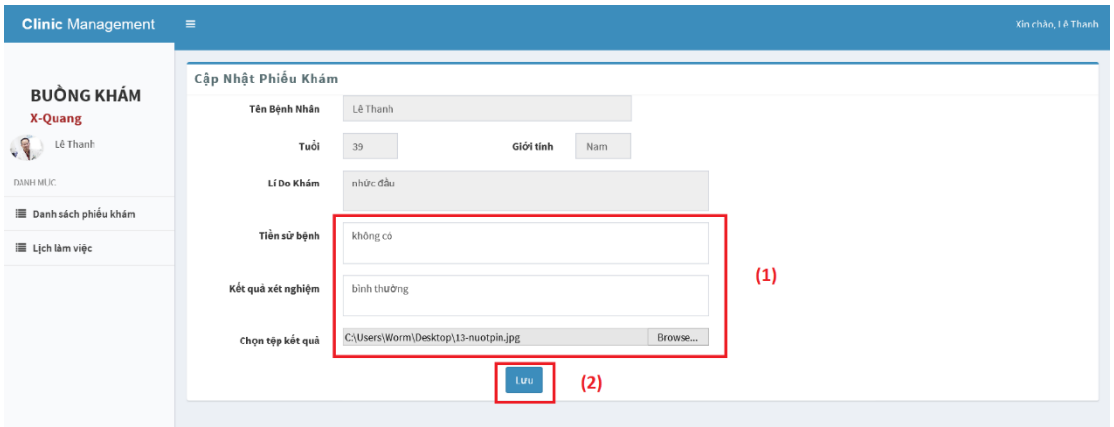
- If do not create new prescription, click “Kết thúc khám”.



- Case 3: update test form
  - In view medical history list, click “Khám”.

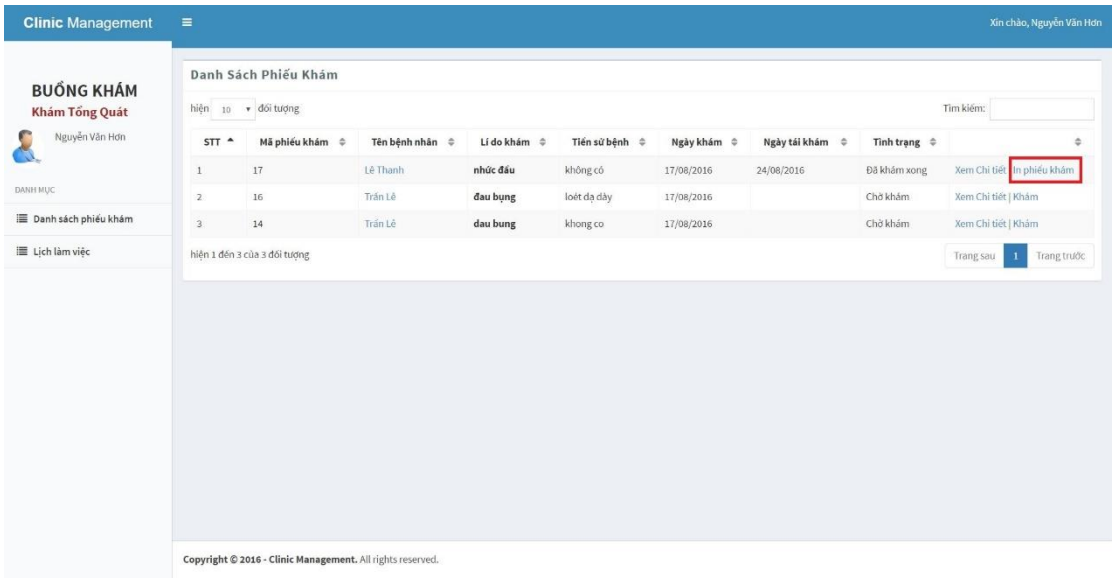


- Input examination's information. Then click "Lưu".

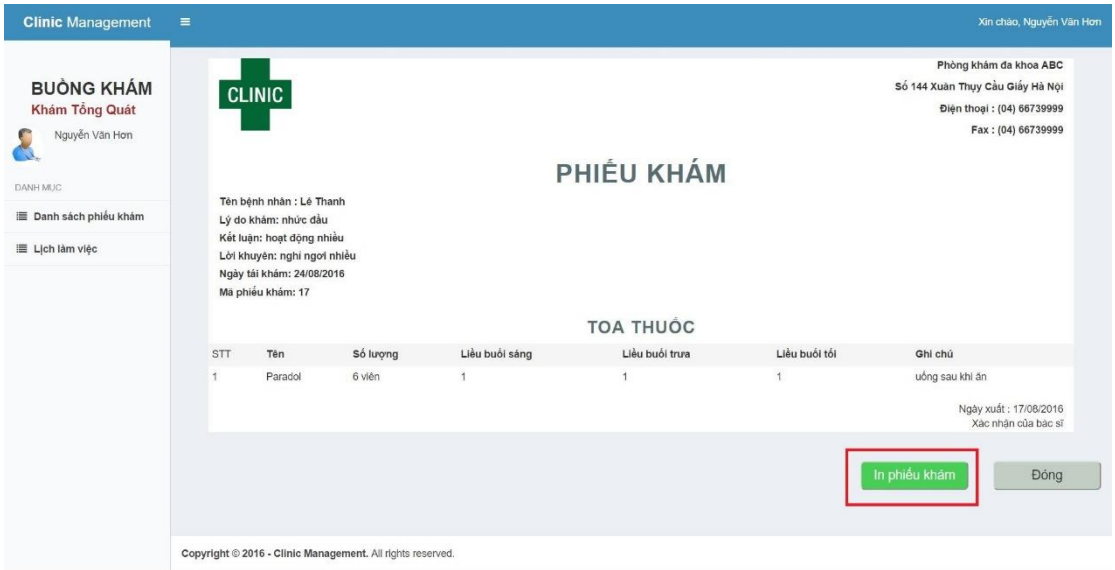


6.2.2.4.5 UC004-05 How to print medical history

- Case 1:
  - In view medical history list, click "In phiếu khám".



- In print medical history page clicks “In phiếu khám”.



- Medical history printed behind

CLINIC

Phòng khám đa khoa ABC
Số 144 Xuân Thụy Cầu Giấy Hà Nội
Điện thoại : (04) 66739999
Fax : (04) 66739999

PHIẾU KHÁM

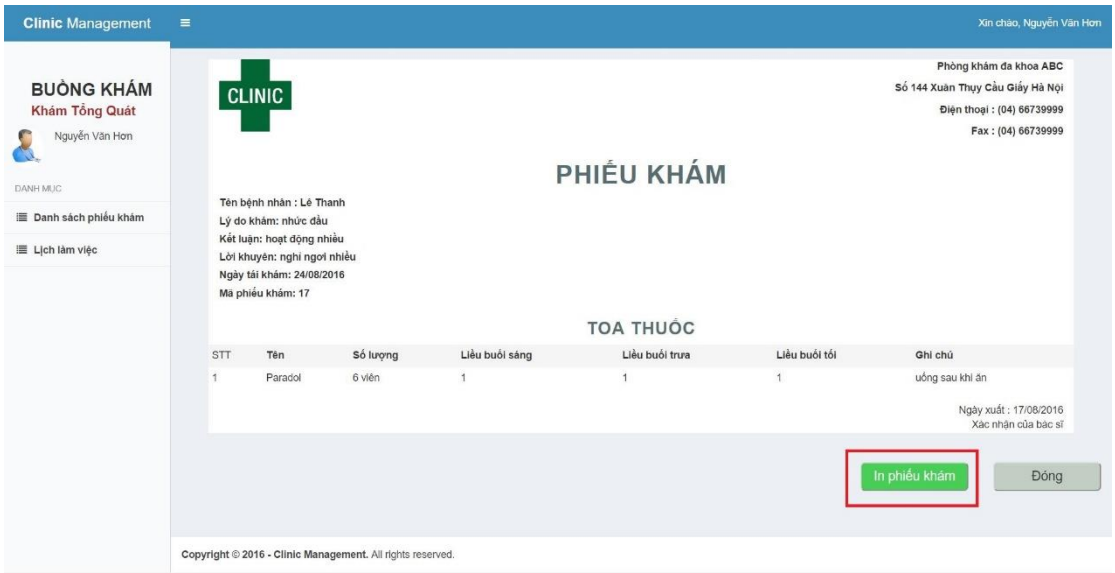
Tên bệnh nhân : Lê Thanh
Lý do khám: nhức đầu
Kết luận: hoạt động nhiều
Lời khuyên: nghỉ ngơi nhiều
Ngày tái khám: 24/08/2016
Mã phiếu khám: 17

TOA THUỐC

STT	Tên	Số lượng	Liều buổi sáng	Liều buổi trưa	Liều buổi tối	Ghi chú
1	Paradol	6 viên	1	1	1	uống sau khi ăn

Ngày 17/08/2016
Xác nhận của bác sĩ

- Case 2:
  - Step by step such as case 1 or case 2 of “UC004-04 How to update medical history”.
  - In print medical history page clicks “In phiếu khám”.



  - Medical history printed behind

CLINIC

Phòng khám đa khoa ABC
Số 144 Xuân Thụy Cầu Giấy Hà Nội
Điện thoại : (04) 66739999
Fax : (04) 66739999

PHIẾU KHÁM

Tên bệnh nhân : Lê Thanh
Lý do khám: nhức đầu
Kết luận: hoạt động nhiều
Lời khuyên: nghỉ ngơi nhiều
Ngày tái khám: 24/08/2016
Mã phiếu khám: 17

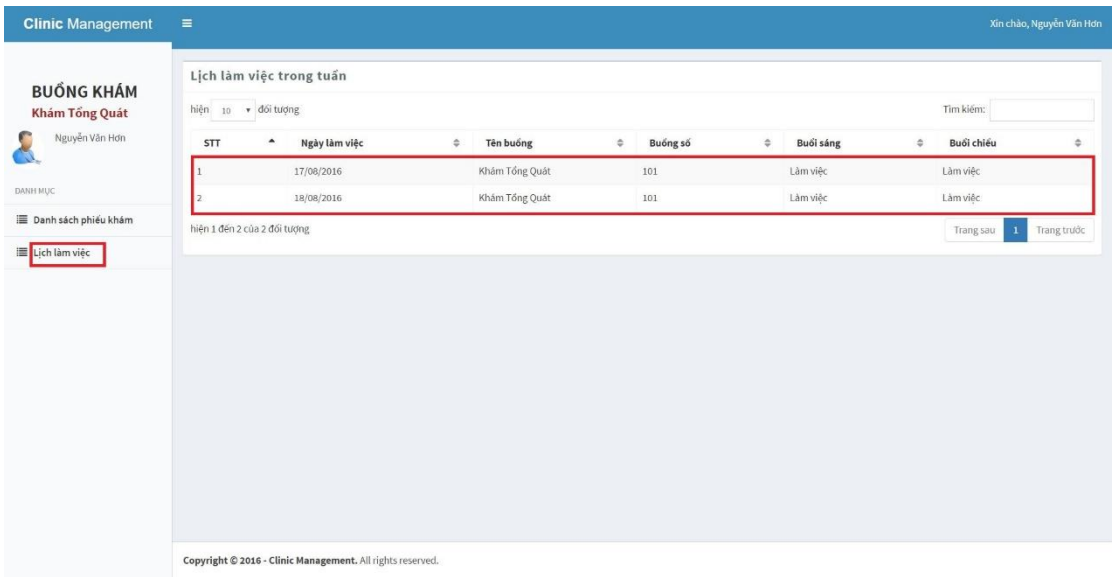
TOA THUỐC

STT	Tên	Số lượng	Liều buổi sáng	Liều buổi trưa	Liều buổi tối	Ghi chú
1	Paradol	6 viên	1	1	1	uống sau khi ăn

Ngày 17/08/2016
Xác nhận của bác sĩ

6.2.2.4.6 UC004-06 How to view nurse's working schedule

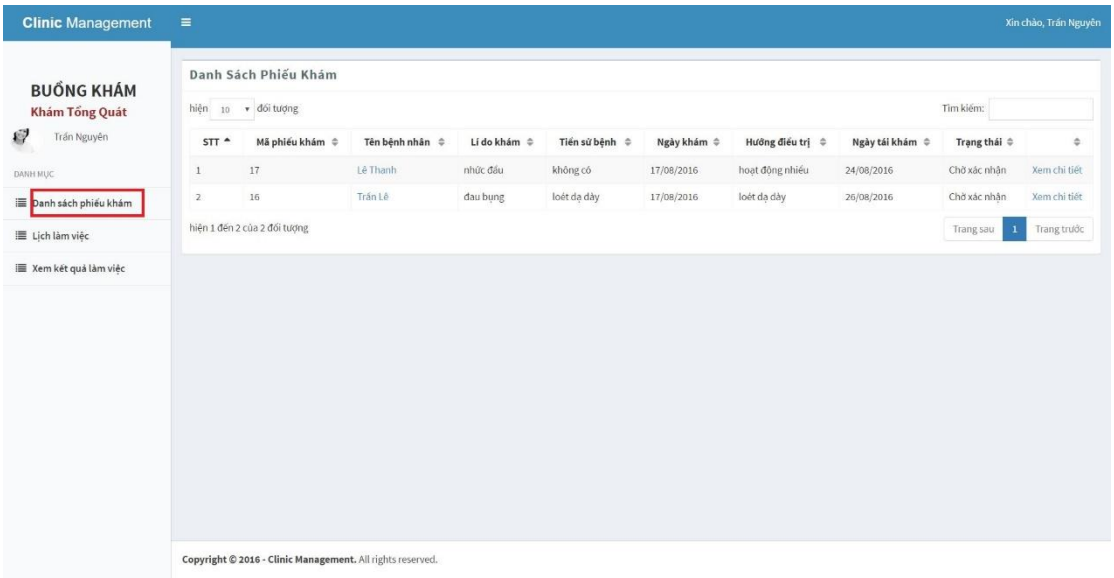
- After login successful, Click "Lịch làm việc".



6.2.2.5 UC005- Doctor Management

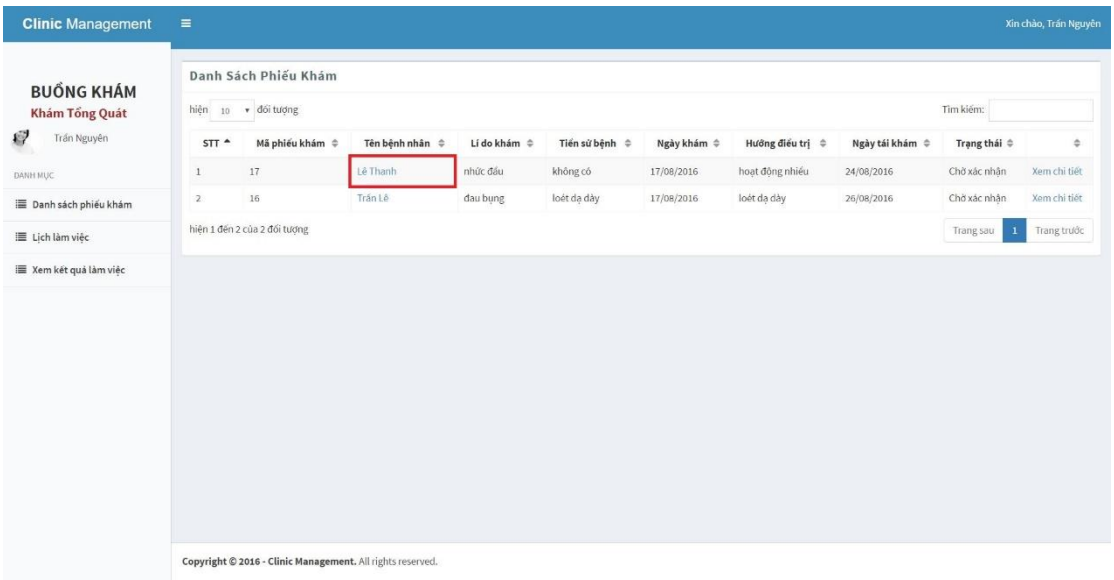
6.2.2.5.1 UC005-01 How to view medical history list

- After login successful, Click "Danh sách phiếu khám".

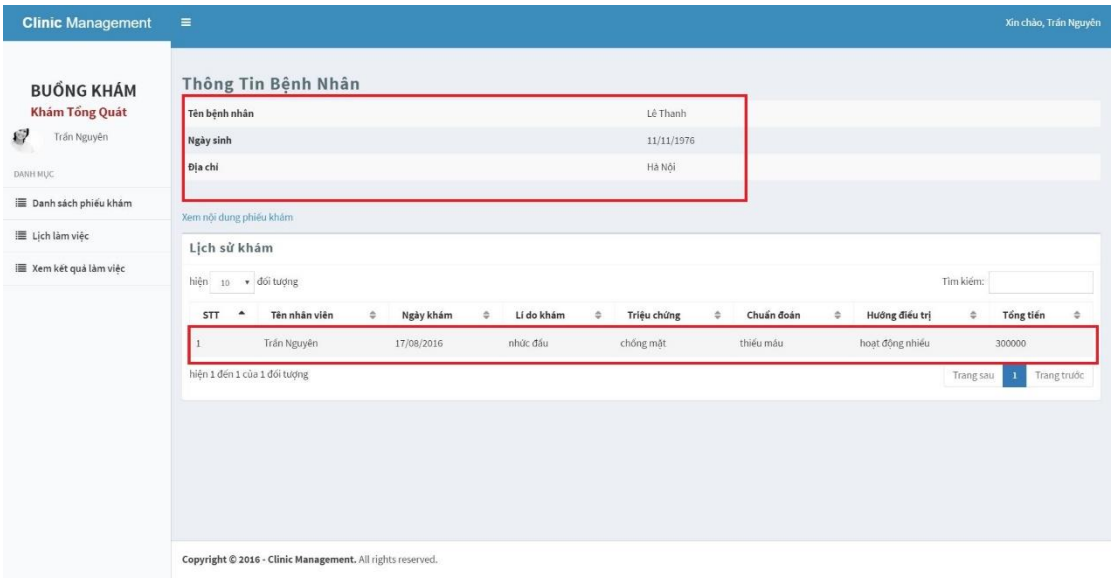


6.2.2.5.2 UC005-02 How to view patient information

- In view medical history list, click patient's name.

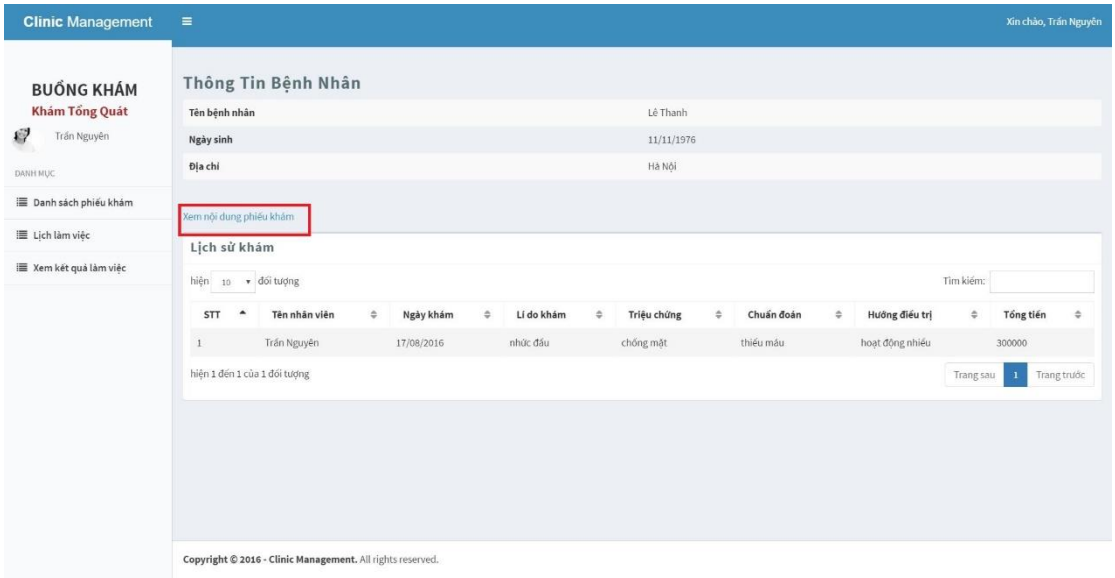


- Patient information page includes: patient information, medical history.

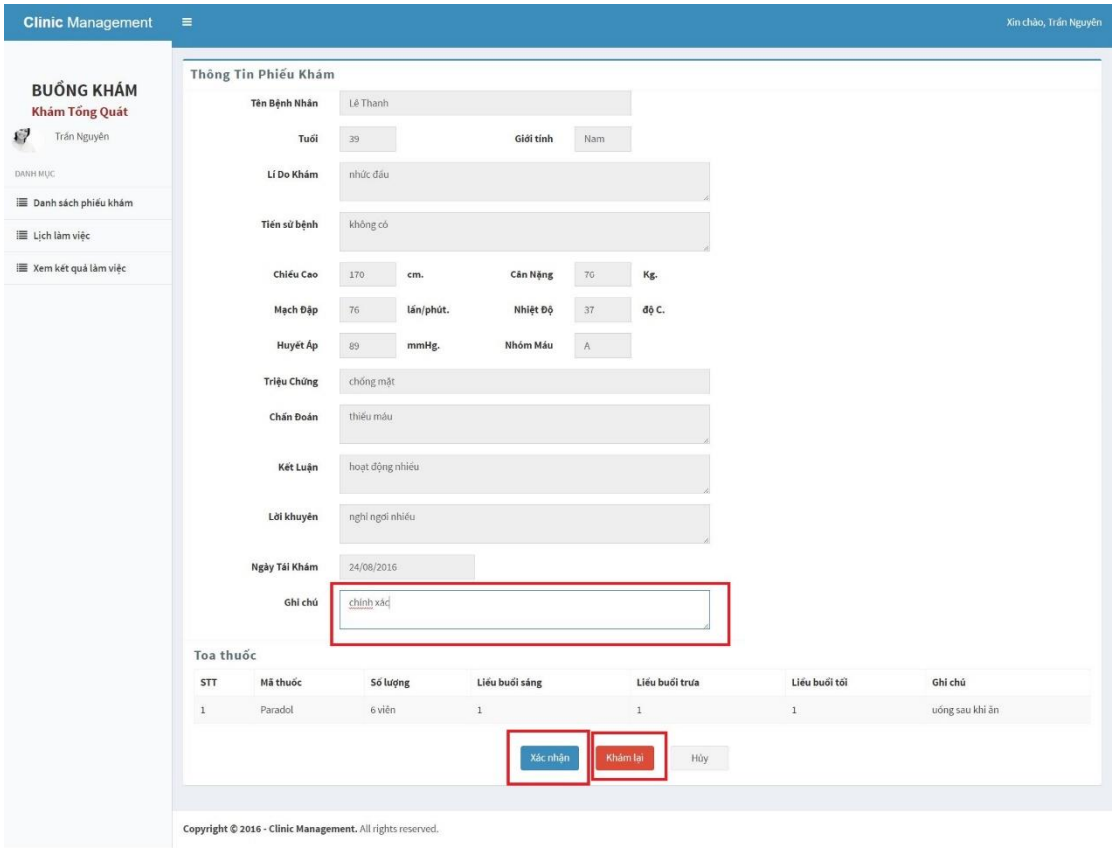


6.2.2.5.3 UC005-03 How to confirm medical history

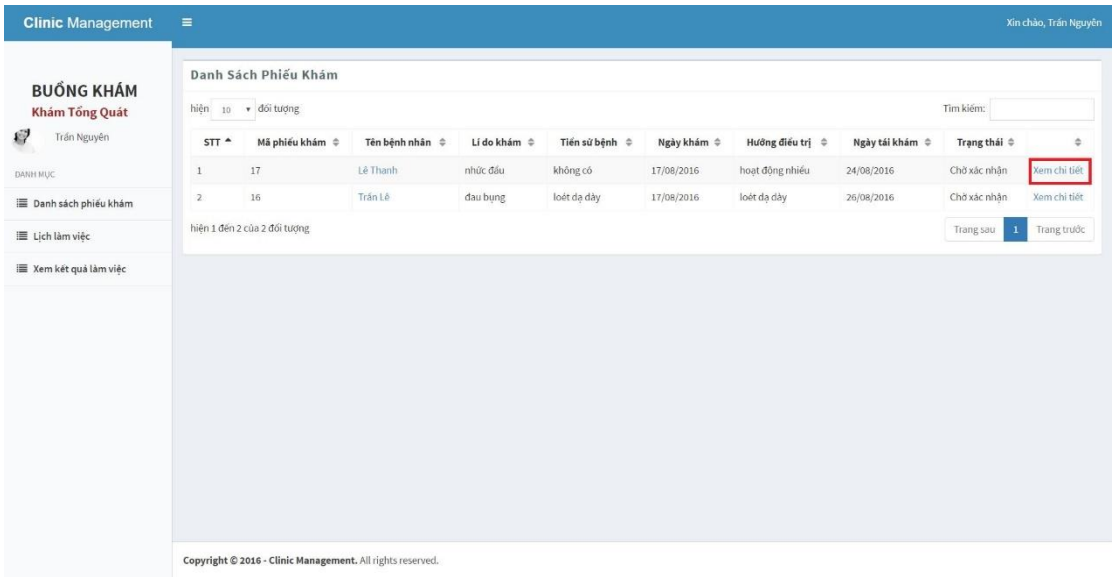
- Case 1:
  - In patient information page click “Xem nội dung phiếu khám”.



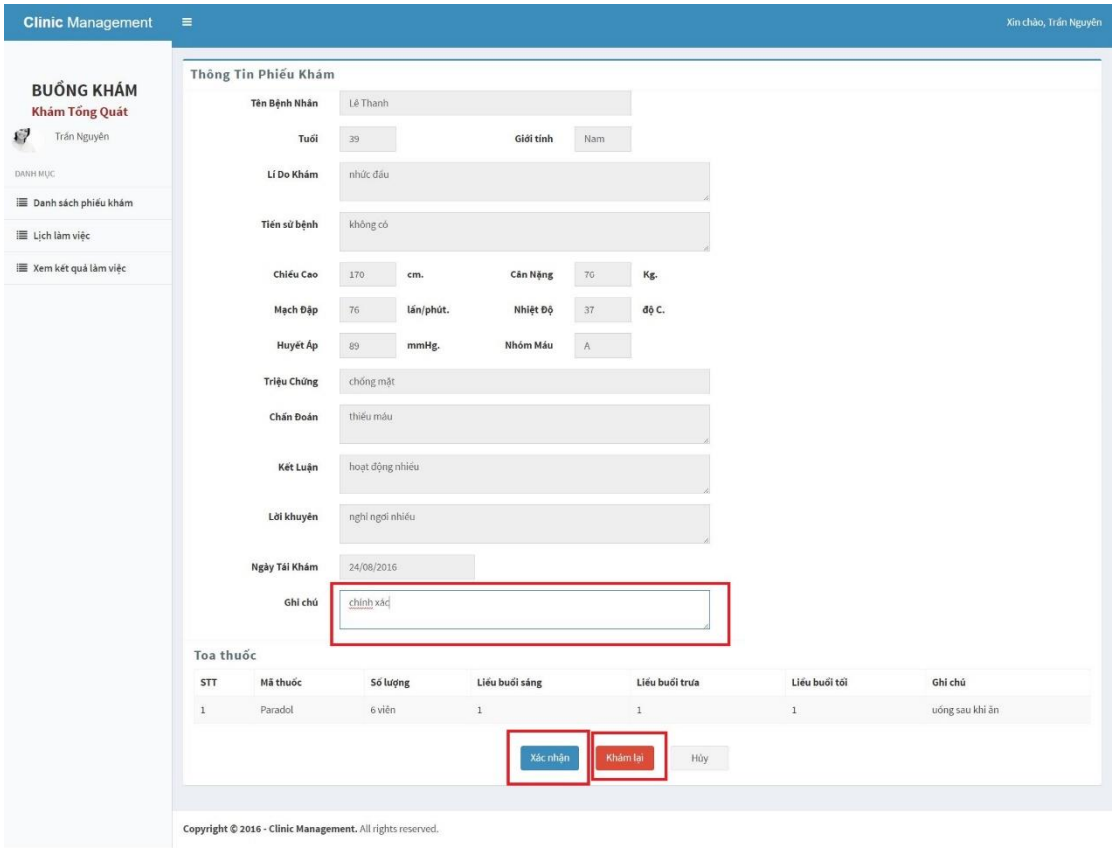
  - Input note field then clicks “Xác nhận” if medical history is exactly opposite click “Khám lại”



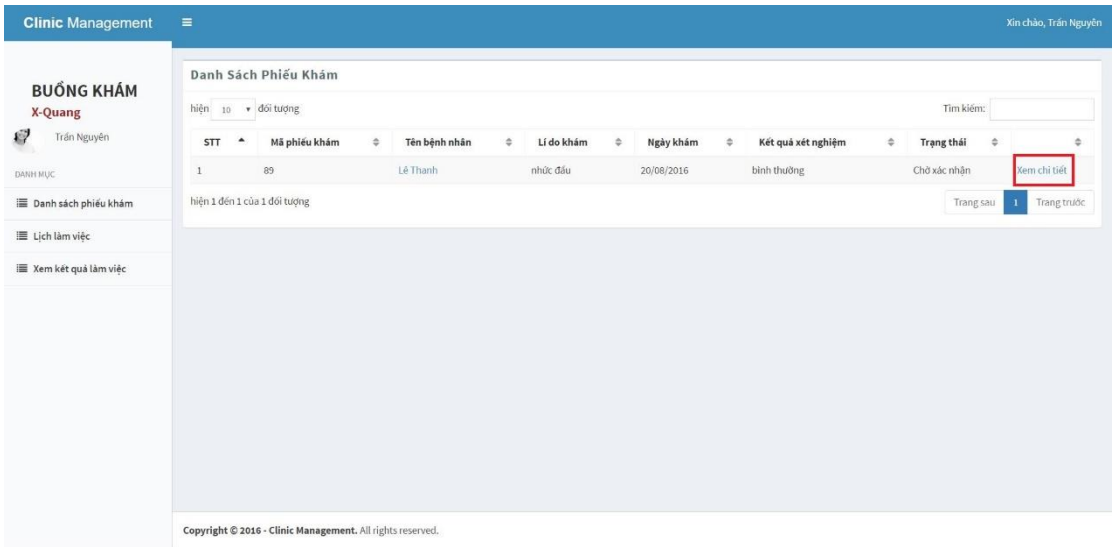
- Case 2:
  - In view medical history list page click “Xem chi tiết”.



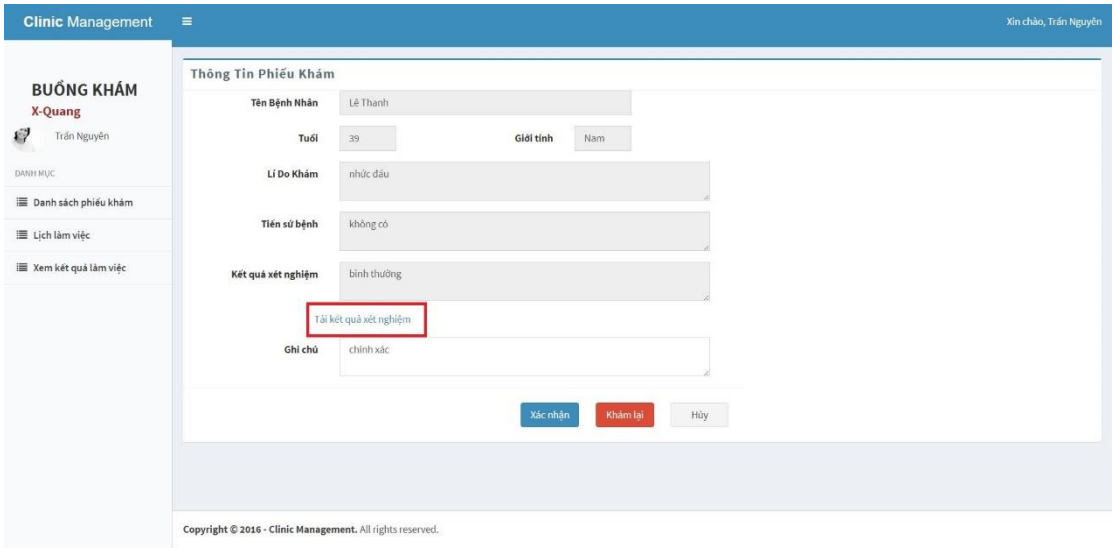
  - Input note field then clicks “Xác nhận” if medical history is exactly opposite or click “Khám lại” if wrong information.



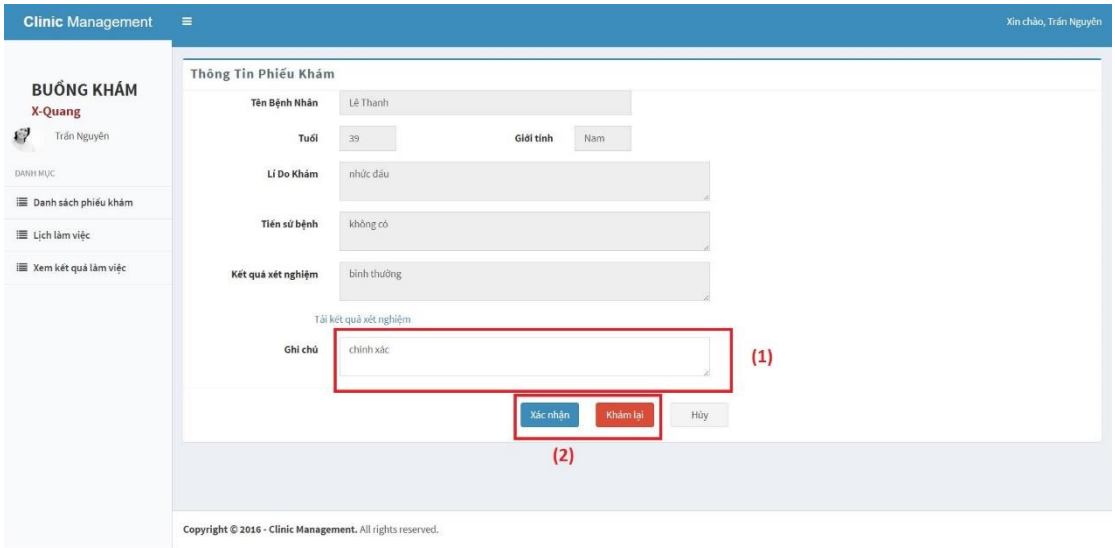
- Case 3:
  - In view medical history list page click “Xem chi tiết”.



  - Click “ Tải kết quả xét nghiệm” to view examination result

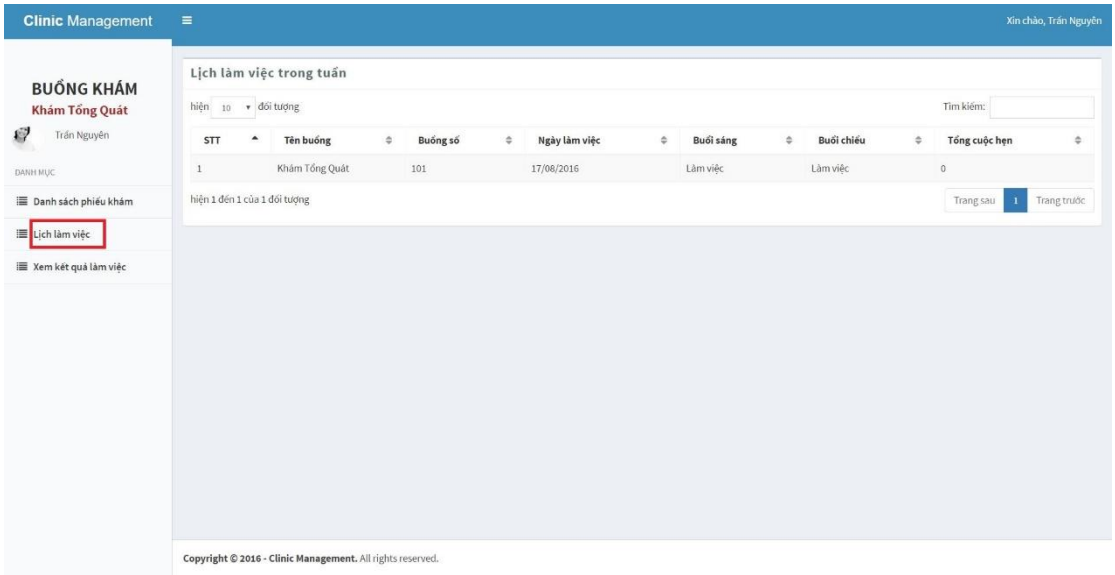


- Input note field then clicks “Xác nhận” if medical history is exactly opposite or click “Khám lại” if wrong information.



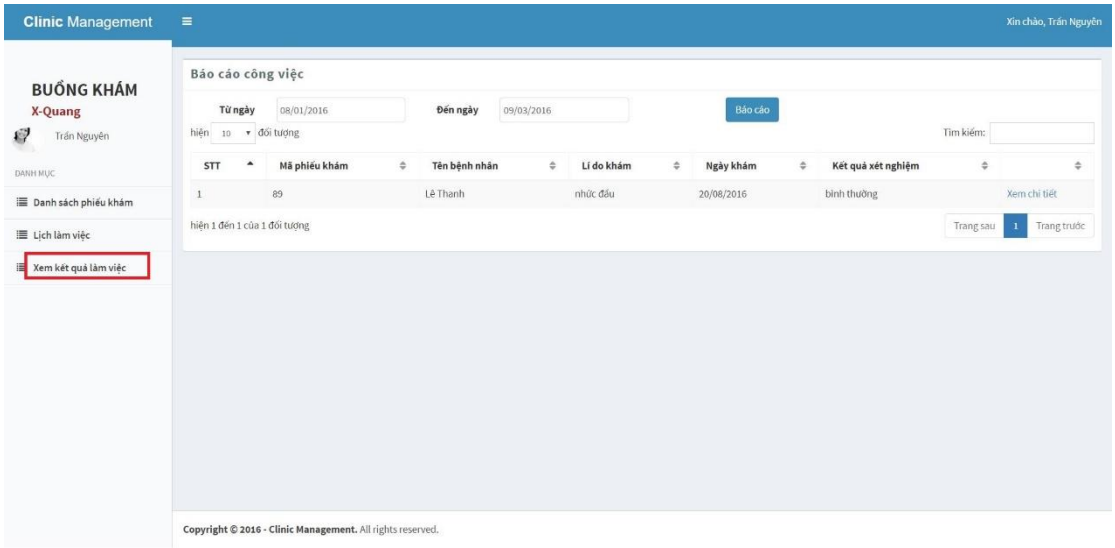
6.2.2.5.4 UC005-04 How to view doctor's working schedule

- In doctor's home page, click "Lịch làm việc".

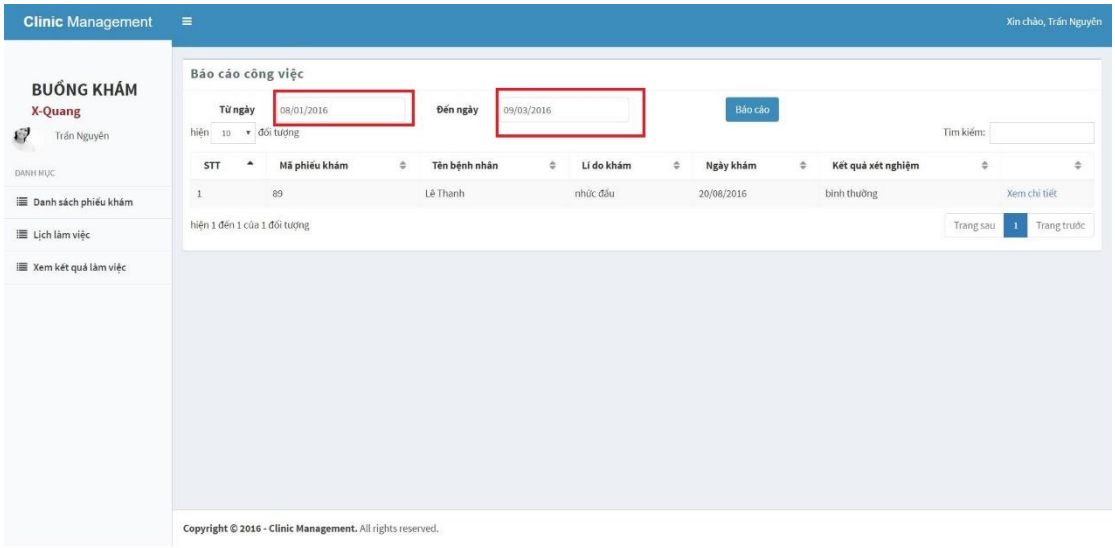


6.2.2.5.5 UC005-05 How to view Productivity

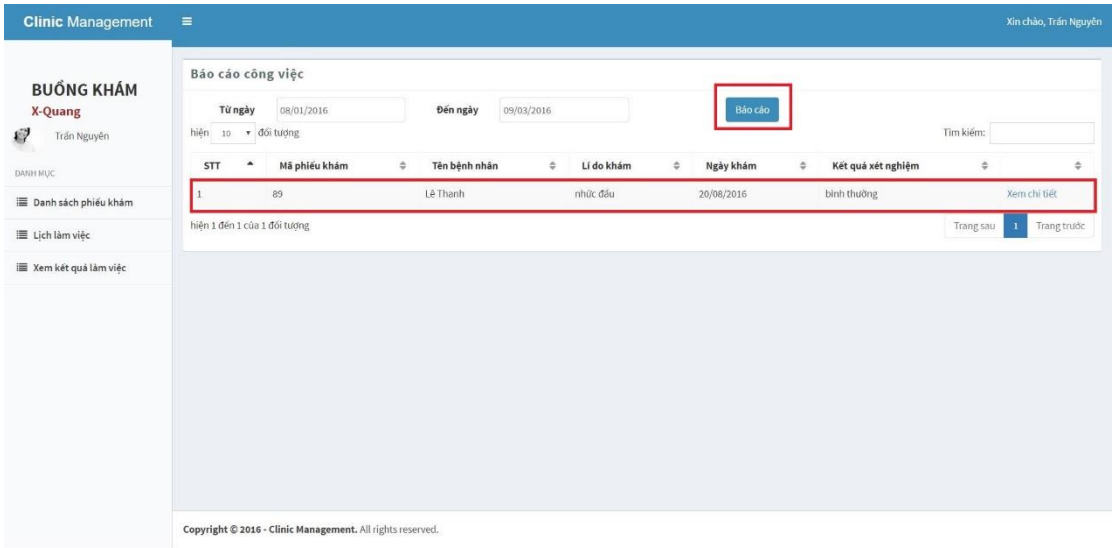
- In doctor's home page, click "Xem kết quả làm việc".



- Choose time

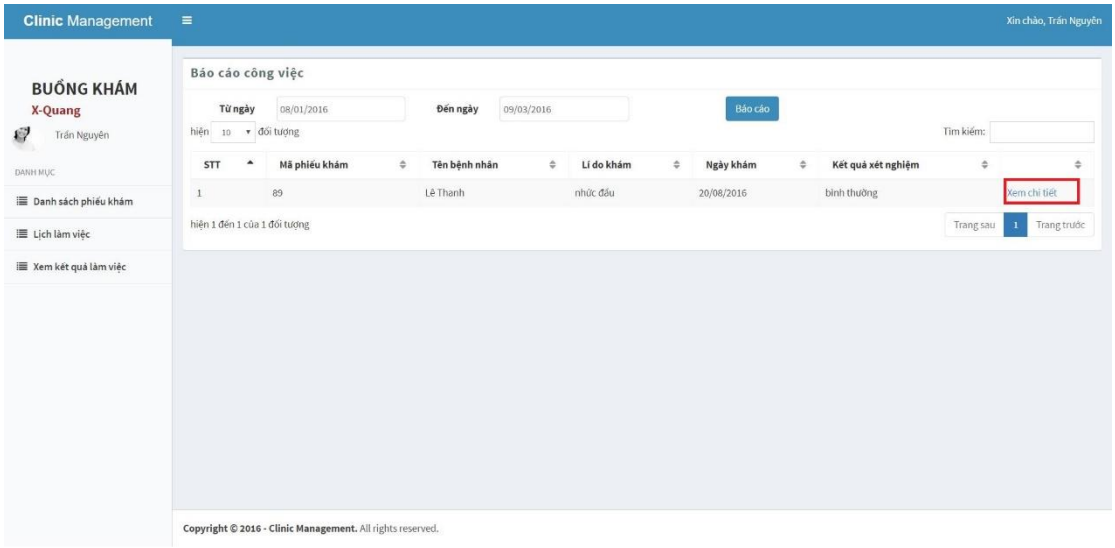


- Click “Báo cáo” to view productivity result

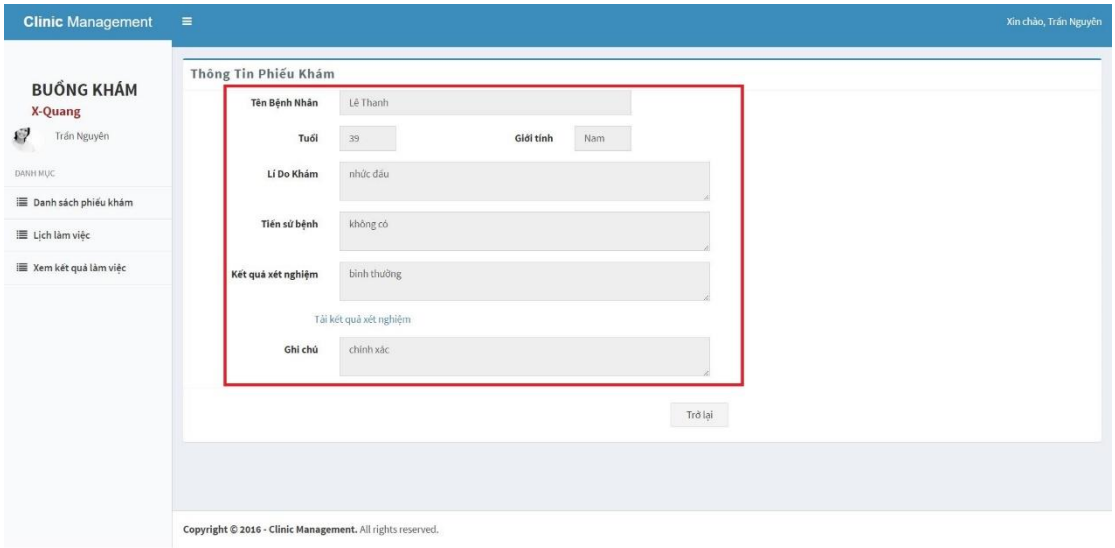


6.2.2.5.6 UC005-06 How to view medical history detail

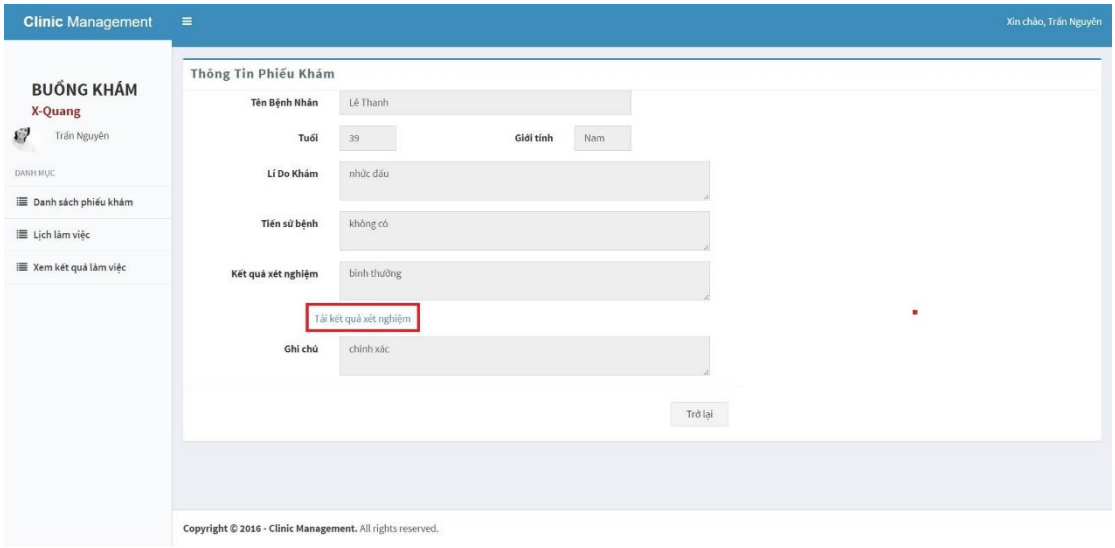
- In productivity page. Click “Xem chi tiết”.



- View medical history information



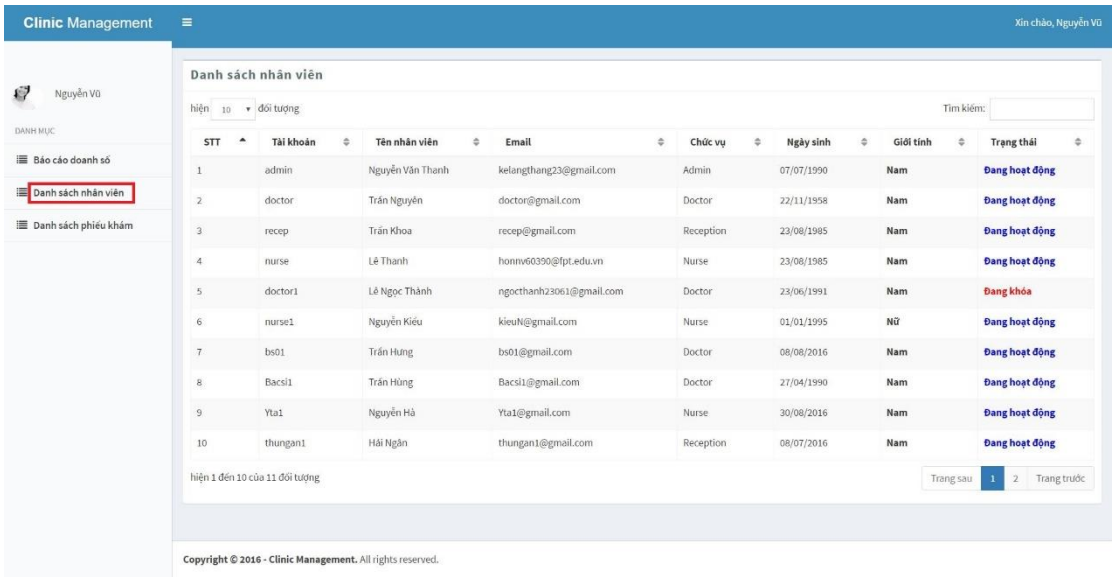
- Click “Tải kết quả xét nghiệm” to view examination result



6.2.2.6 UC006- Manager Management

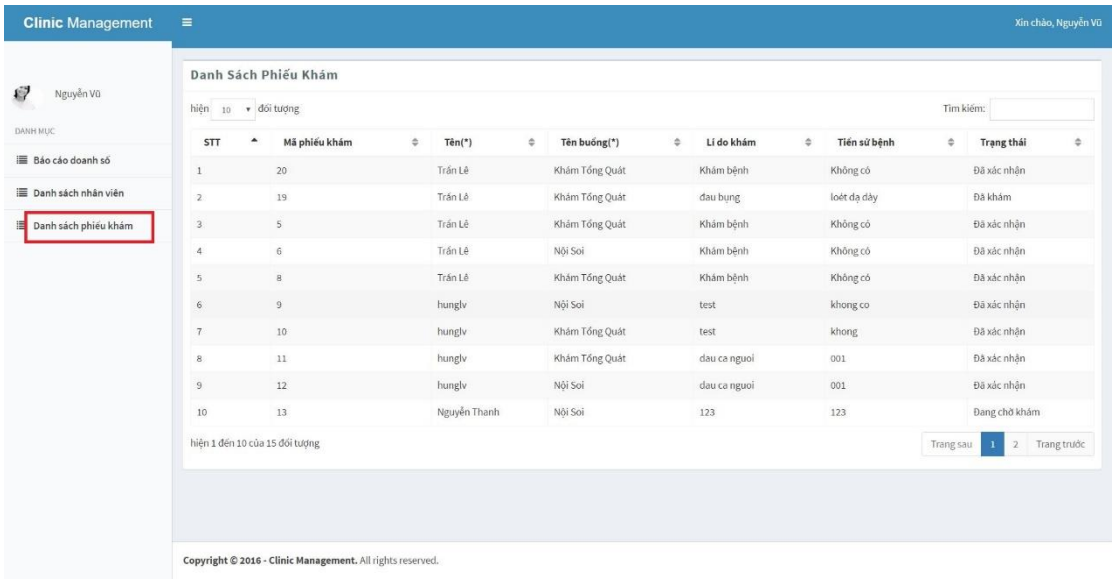
6.2.2.6.1 UC006-01 How to view Employee list

- After login successful, Click “Danh sách nhân viên”.



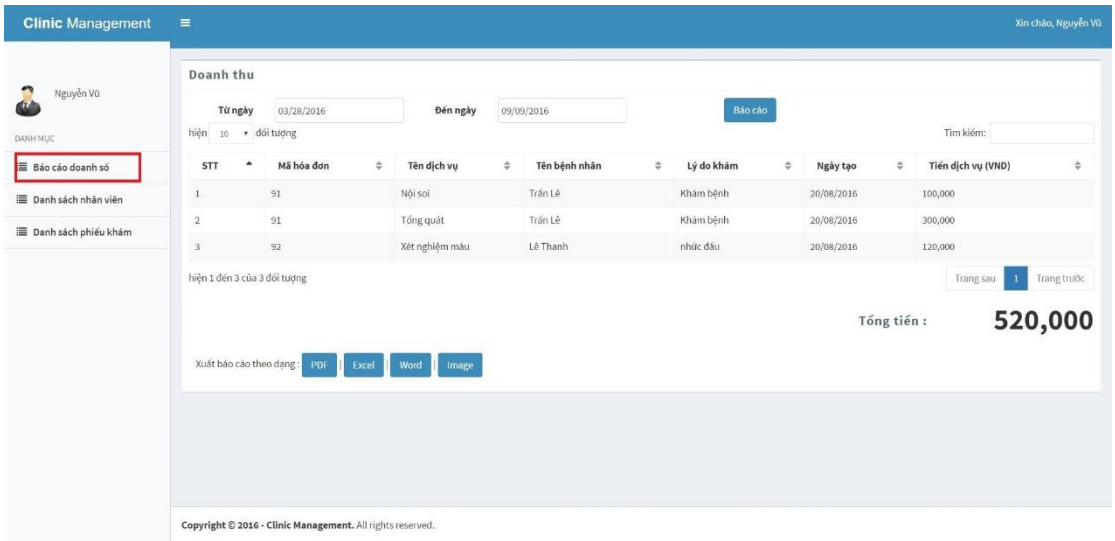
6.2.2.6.2 UC006-02 How to view medical history list

- In manager's home page, click "Danh sách phiếu khám".

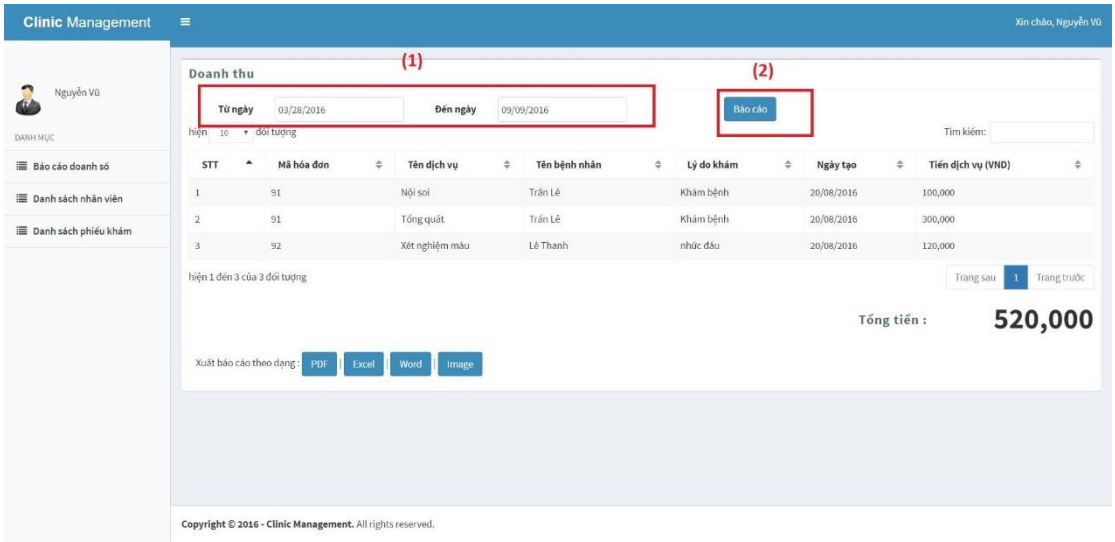


6.2.2.6.3 UC006-03 How to view revenue report

- In manager's home page, click "Báo cáo doanh số".

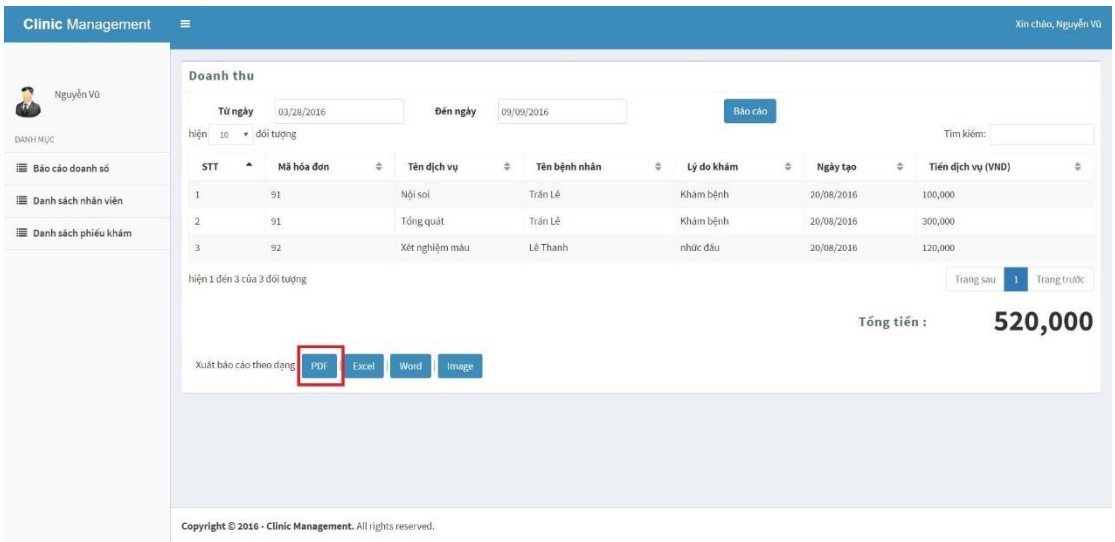


- Case 1: input time field then click "Theo ngày" to view by day.

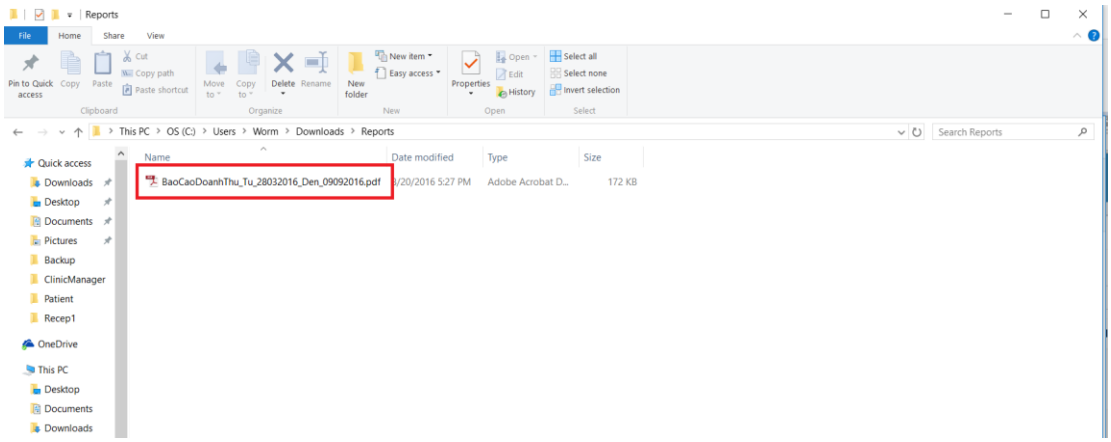


6.2.2.6.4 UC006-04 How to export revenue report

- In revenue report page, click “PDF”, “Excel”, “Word” or “Image” to choose format.
  - Case 1: By PDF format.



    - Export report file

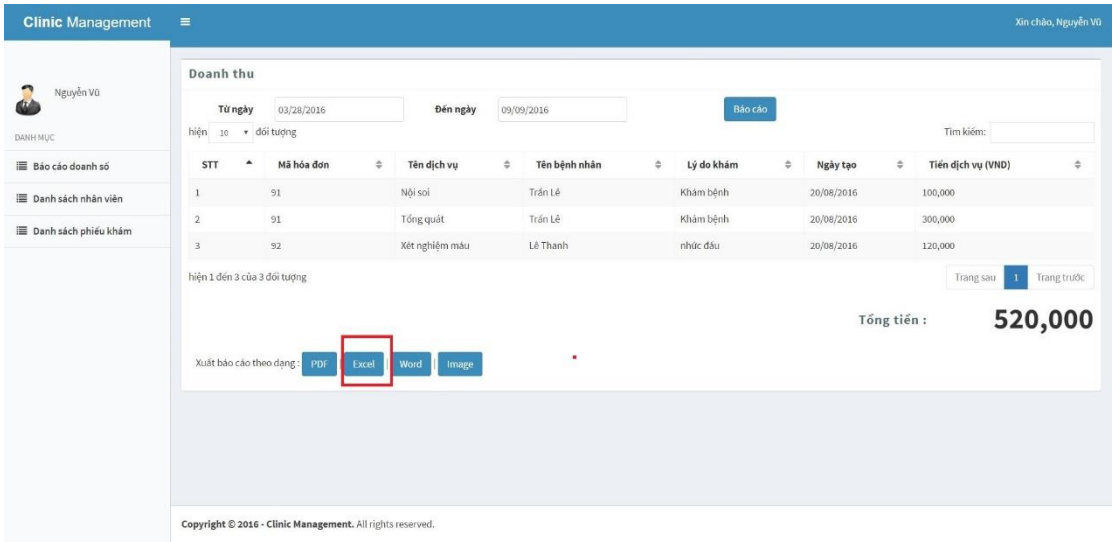


- File content

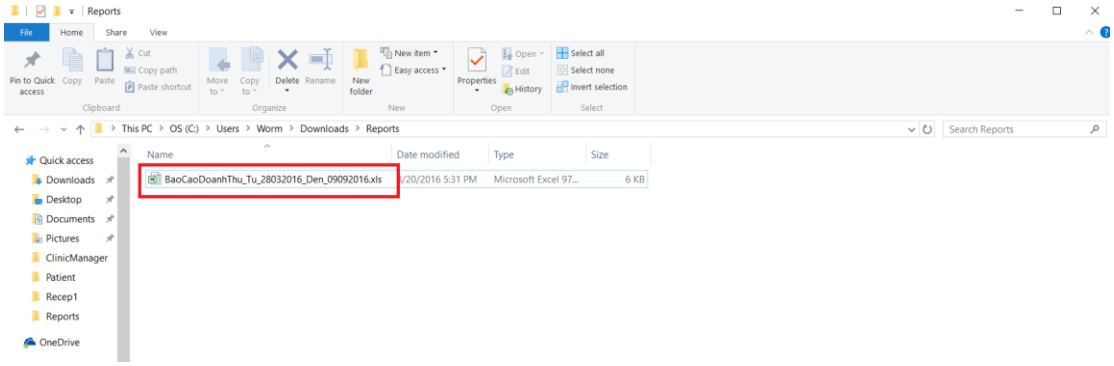
Báo cáo doanh số các dịch vụ khám

STT	Mã Hóa Đơn	Tên Dịch vụ	Tên Bệnh Nhân	Ghi chú	Ngày Tạo	Tiền Dịch Vụ
1	91	Nội soi	Trần Lê	Khám bệnh	8/20/2016 12:00:00 AM	100000
2	91	Tổng quát	Trần Lê	Khám bệnh	8/20/2016 12:00:00 AM	300000
3	92	Xét nghiệm máu	Lê Thanh	nhức đầu	8/20/2016 12:00:00 AM	120000
					Tổng	520000

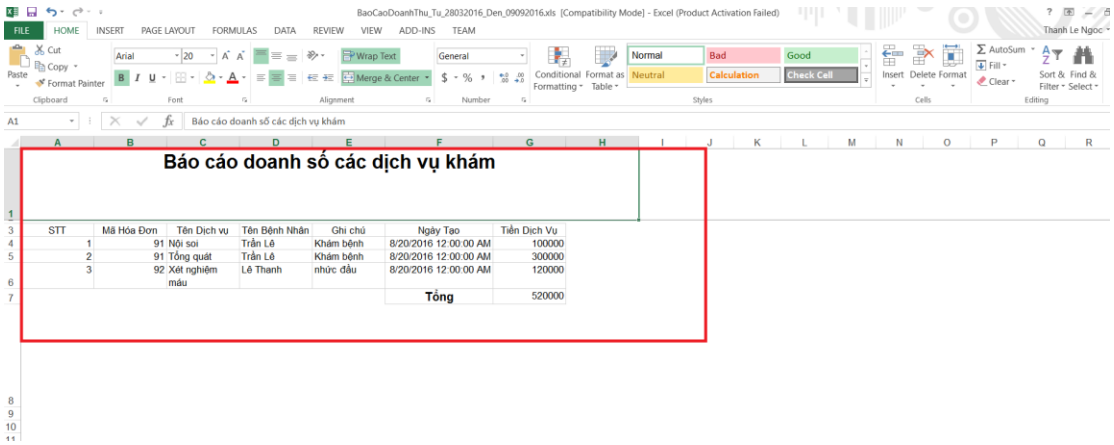
- Case 2: By Excel format.



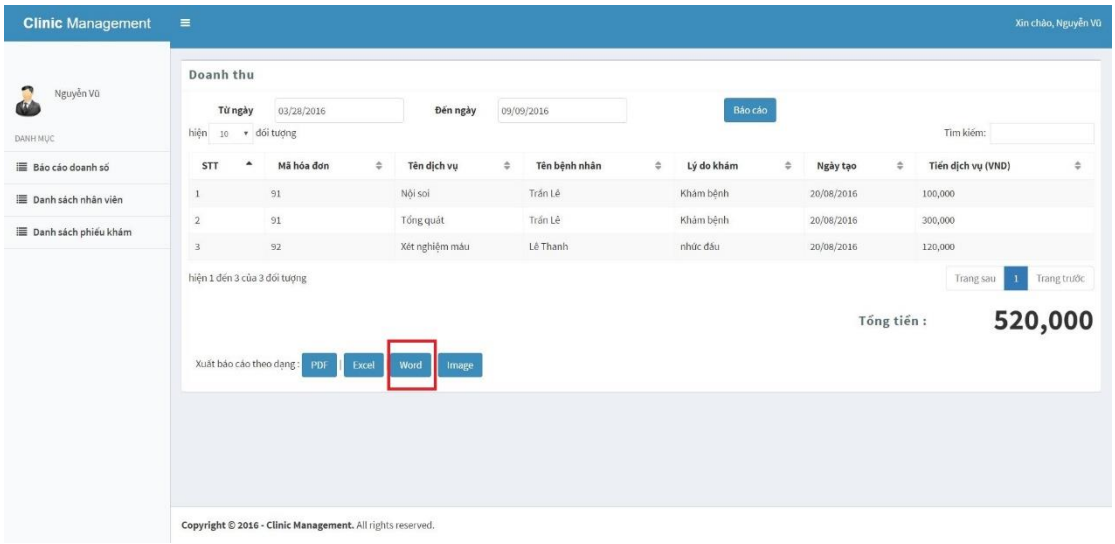
- Export report file



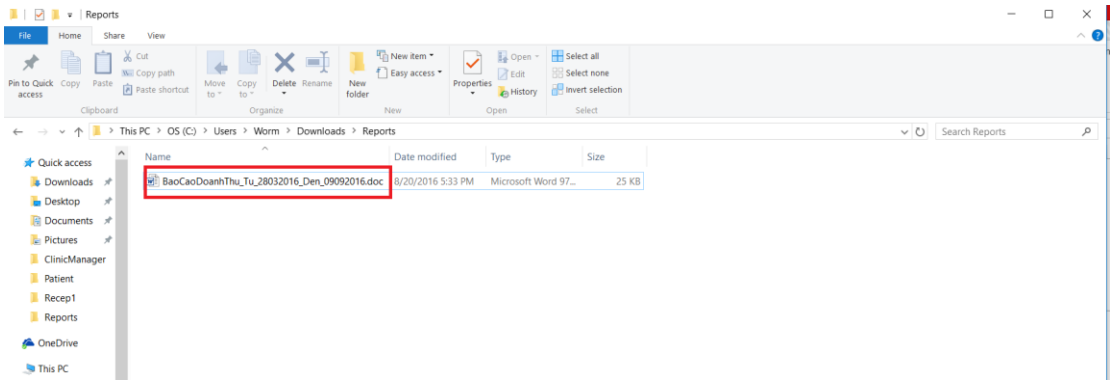
- File content



- Case 3: By Word format.



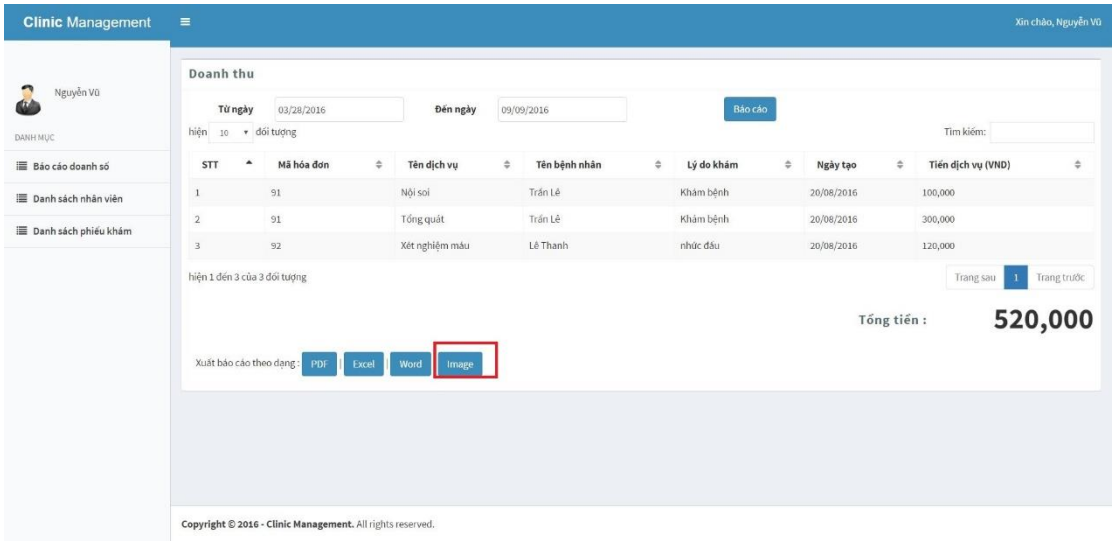
- Export report file



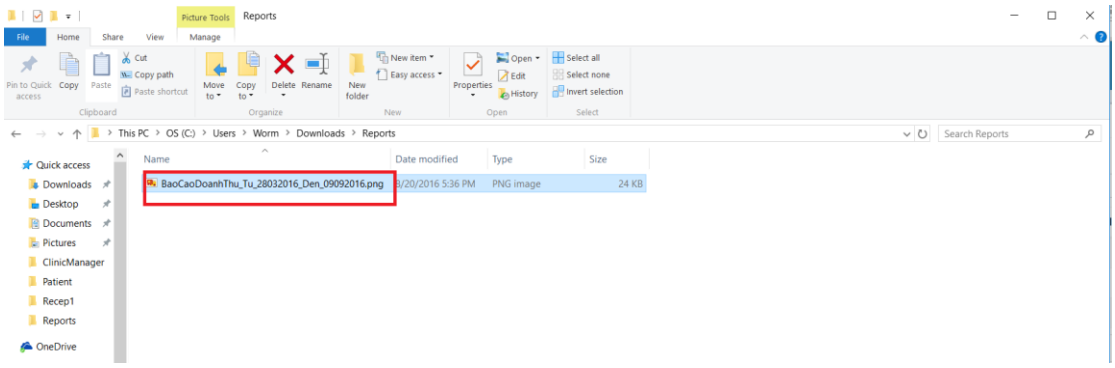
- File content

STT	Mã Hóa Đơn	Tên Dịch vụ	Tên Bệnh Nhân	Ghi chú	Ngày Tạo	Tiền Dịch Vụ
1	91	Nội soi	Trần Lê	Khám bệnh	8/20/2016 12:00:00 AM	100000
2	91	Tổng quát	Trần Lê	Khám bệnh	8/20/2016 12:00:00 AM	300000
3	92	Xét nghiệm máu	Lê Thanh	nhức đầu	8/20/2016 12:00:00 AM	120000
					Tổng	520000

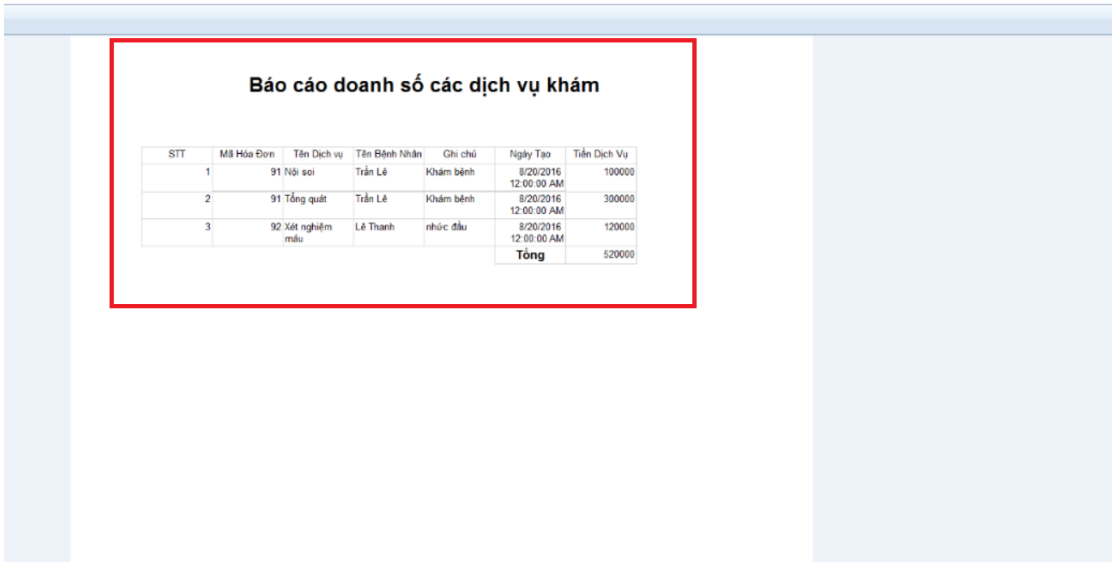
- Case 4: By Image format.



- Export report file



- File content



Báo cáo doanh số các dịch vụ khám

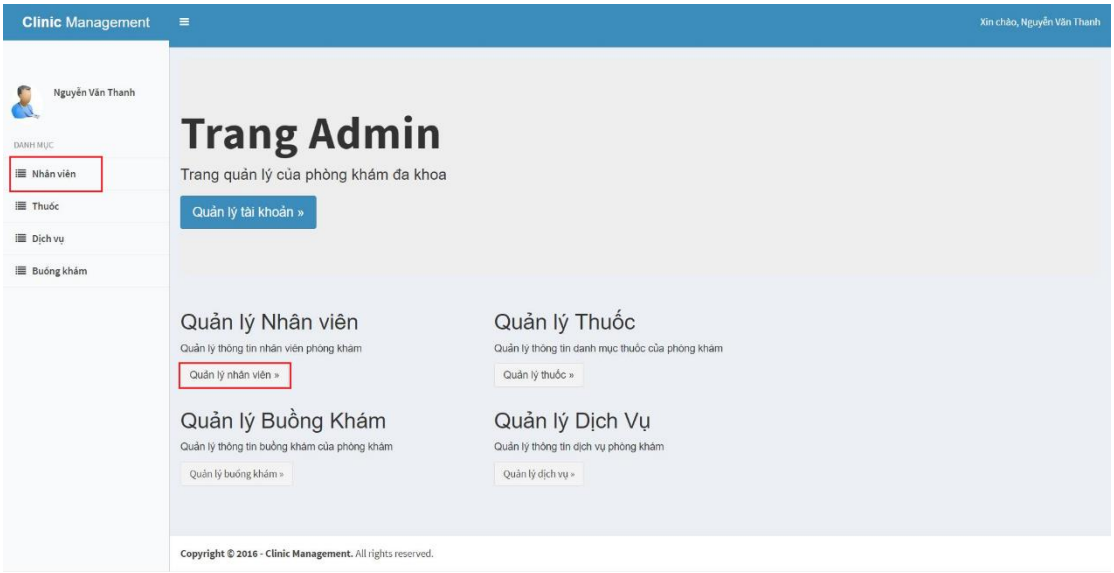
STT	Mã Hóa Đơn	Tên Dịch vụ	Tên Bệnh Nhân	Ghi chú	Ngày Tạo	Tiền Dịch Vụ
1	91	Nội soi	Trần Lê	Khám bệnh	8/20/2016 12:00:00 AM	100000
2	91	Tổng quát	Trần Lê	Khám bệnh	8/20/2016 12:00:00 AM	300000
3	92	Xét nghiệm máu	Lê Thanh	nhức đầu	8/20/2016 12:00:00 AM	120000
					Tổng	520000

6.2.2.7 UC007- Administrator Management

6.2.2.7.1 UC007-01 How to view staff list

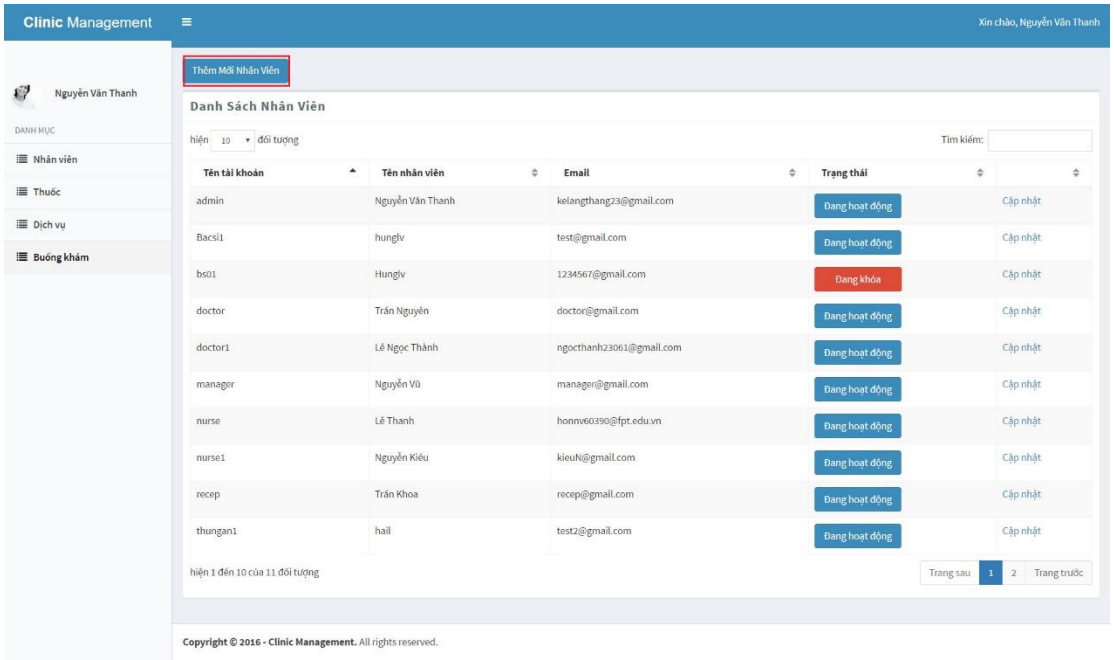
- After login successful, Click “Nhân viên” or “Quản lý nhân viên”.

-

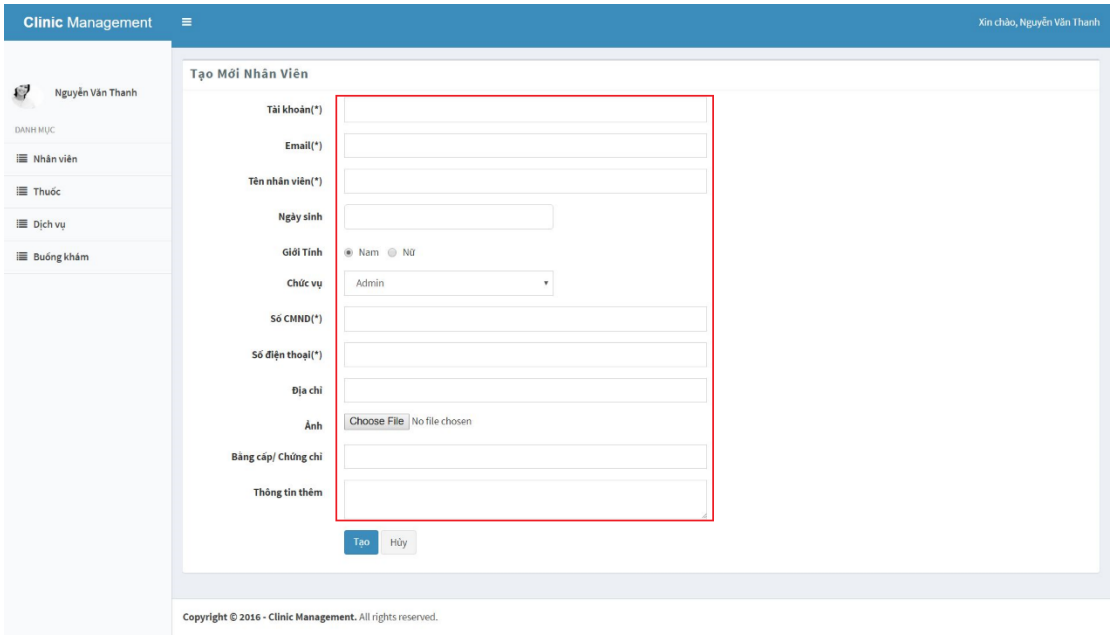


6.2.2.7.2 UC007-02 How to create a new staff

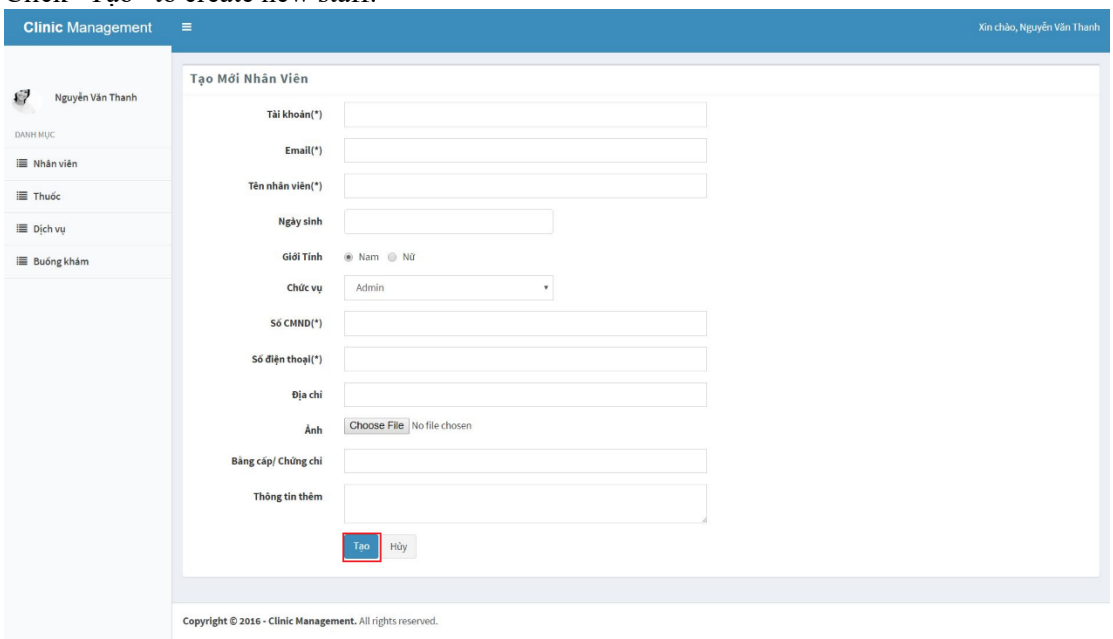
- In view staff list, click “Thêm Mới Nhân viên”



- Input staff’s information.

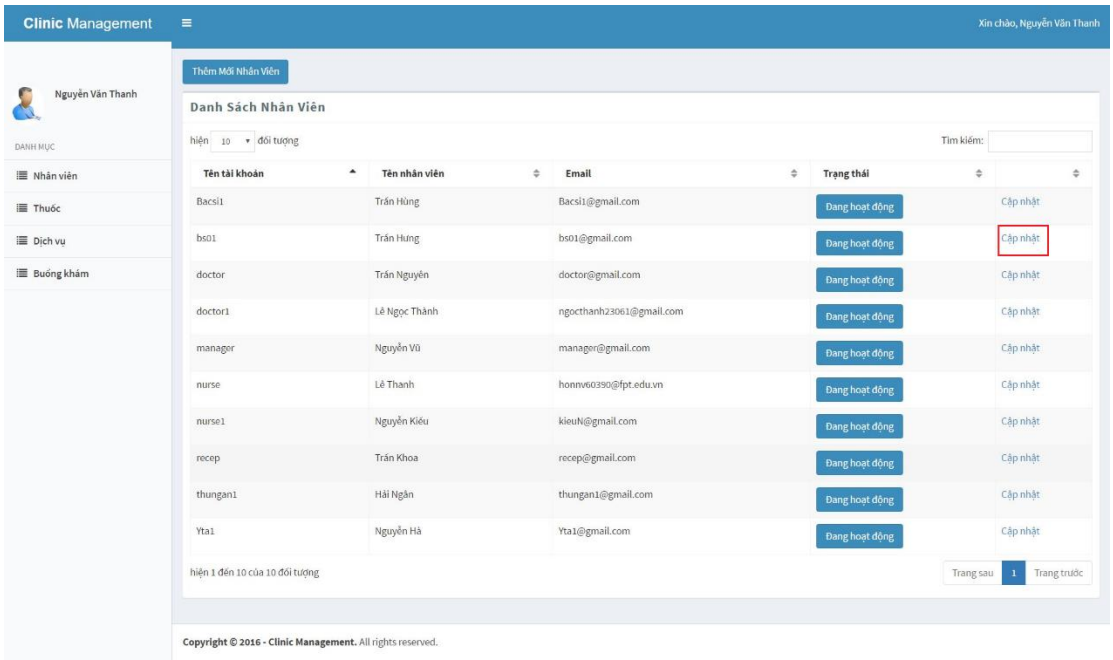


- Click "Tạo" to create new staff.

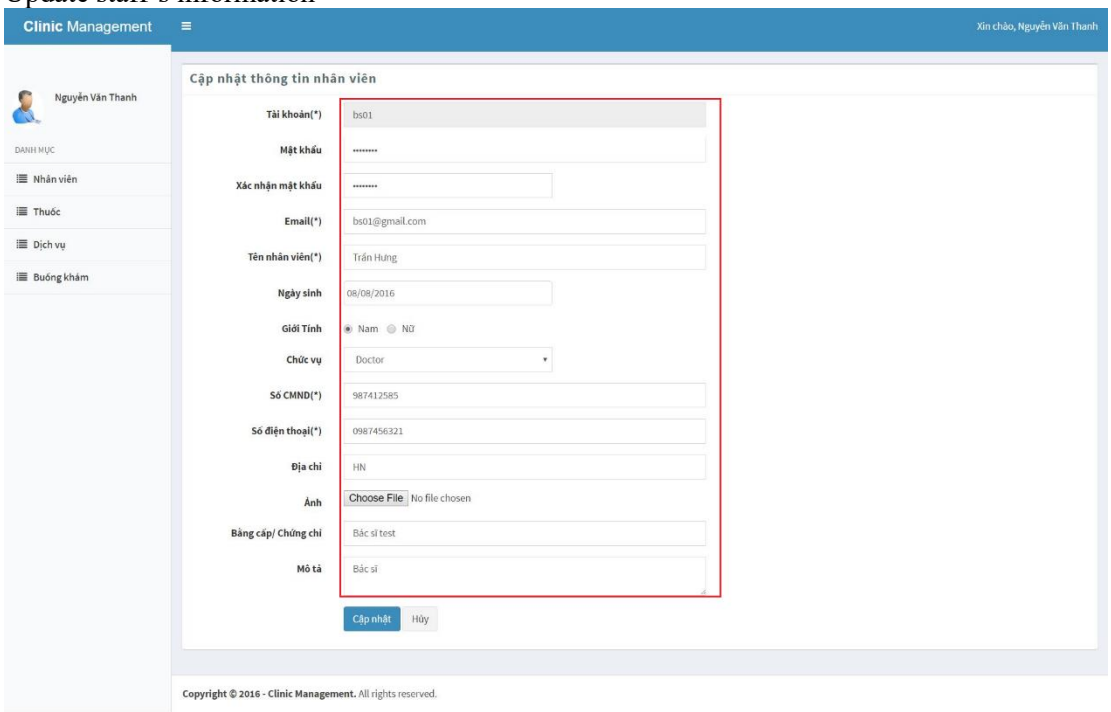


6.2.2.7.3 UC007-03 How to update a staff

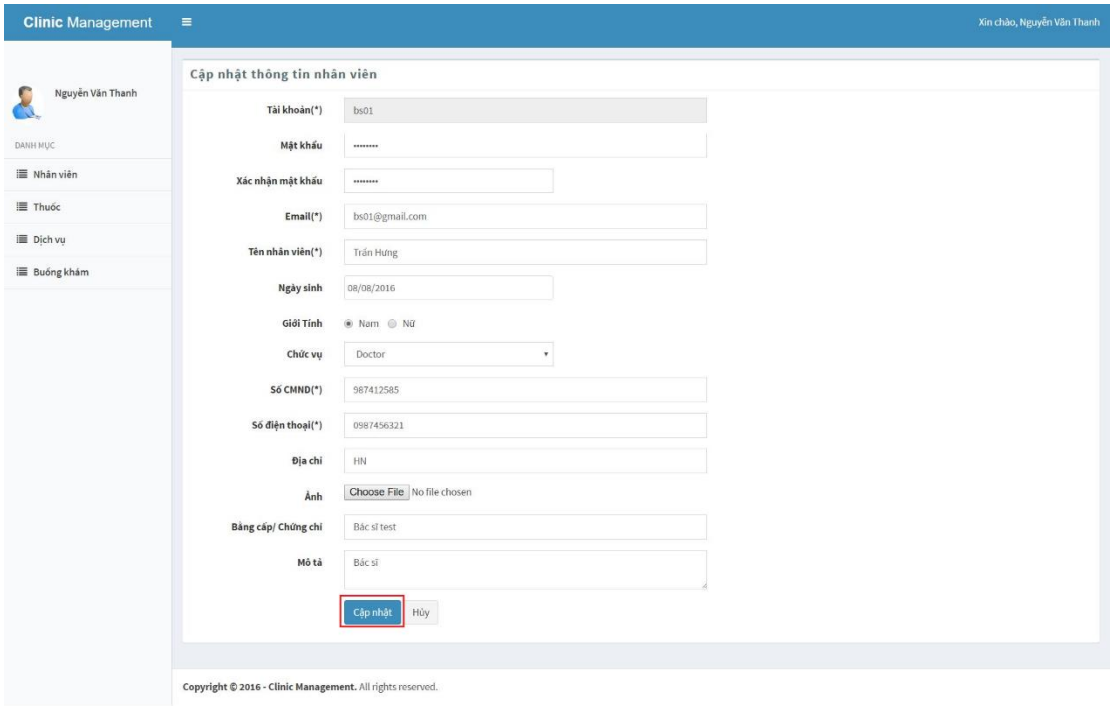
- In view staff list, click "Cập nhật" at staff you want to update.



- Update staff's information

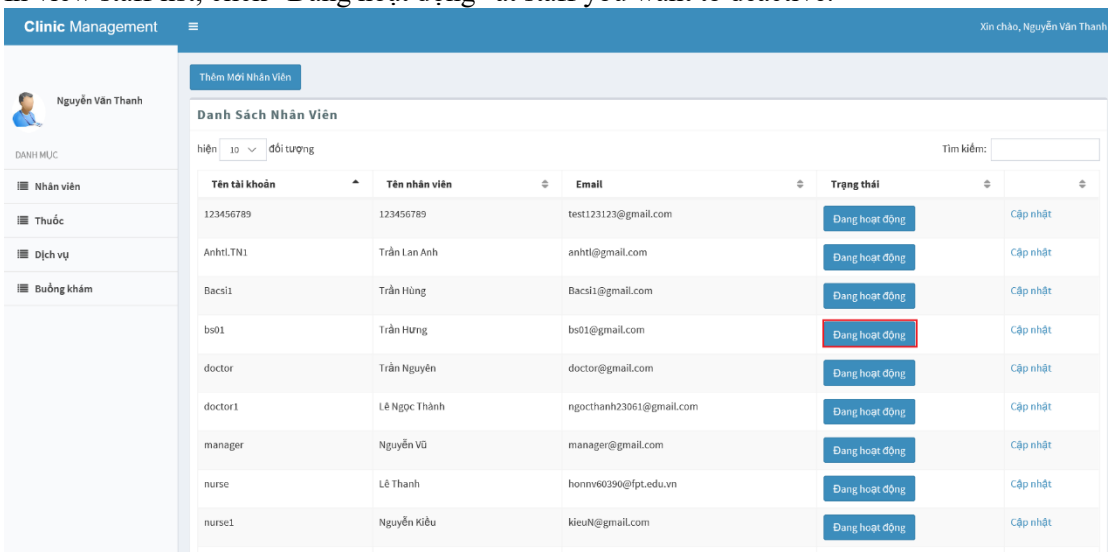


- Click "Cập nhật" to update

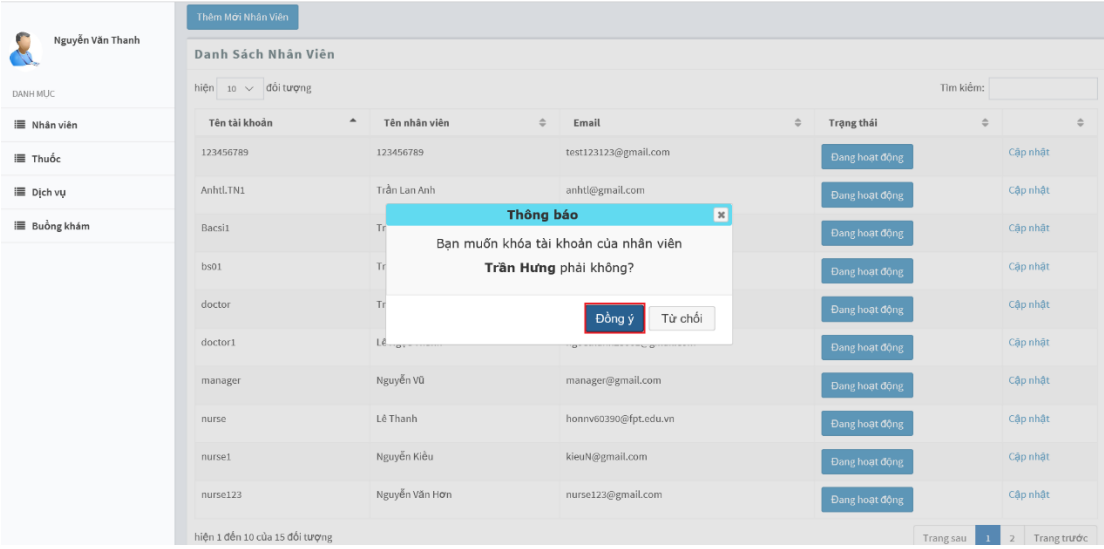


6.2.2.7.4 UC007-04 How to deactive a staff

- In view staff list, click "Đang hoạt động" at staff you want to deactive.

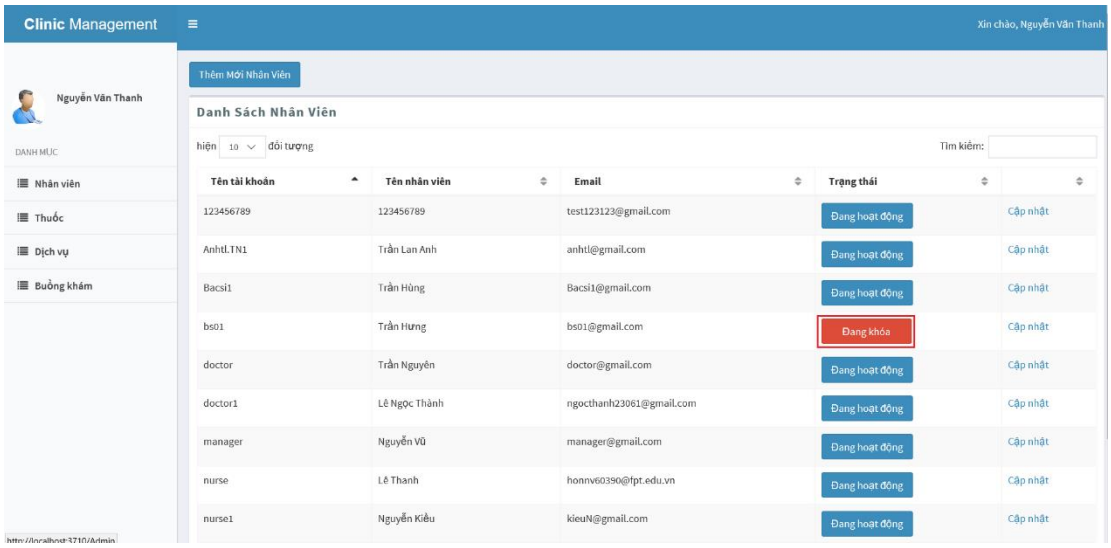


- Click "OK" to deactive a staff when dialog is showed.

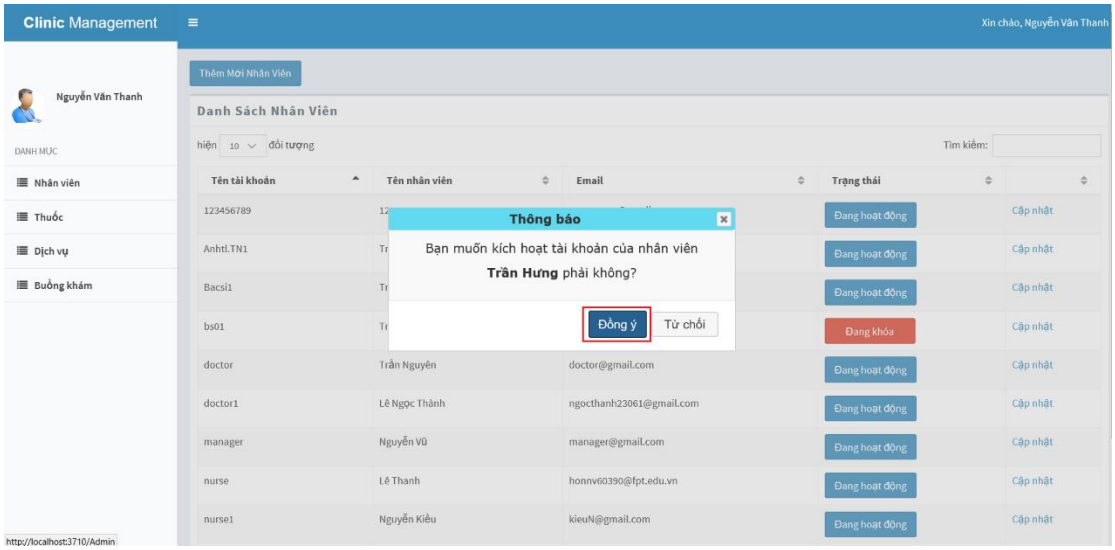


6.2.2.7.5 UC007-05 How to active a staff

- In view staff list, click "Đang khóa" at staff you want to active.

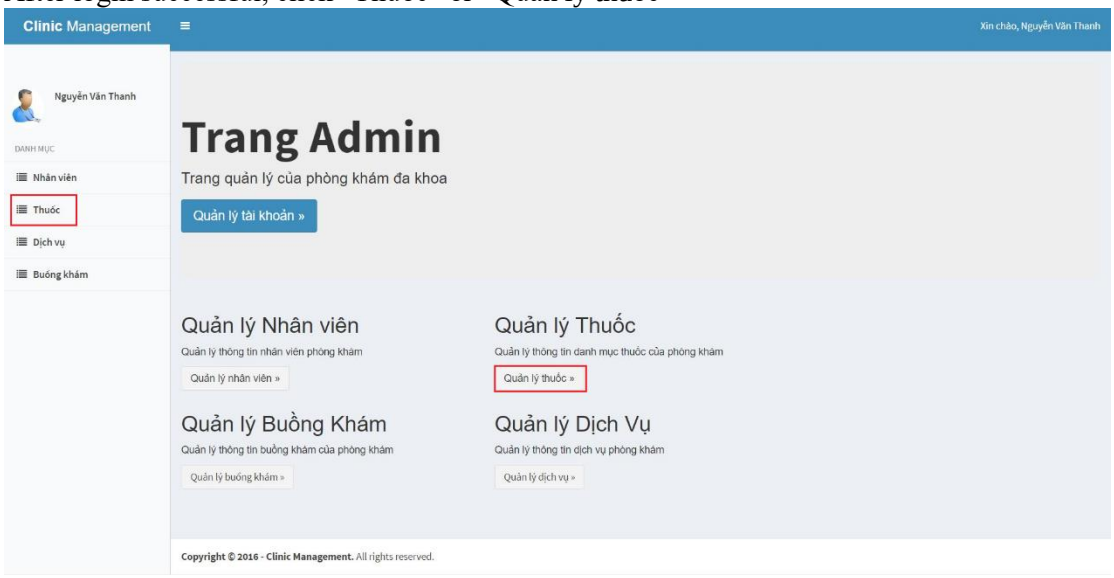


- Click "OK" to active a staff when dialog is showed.



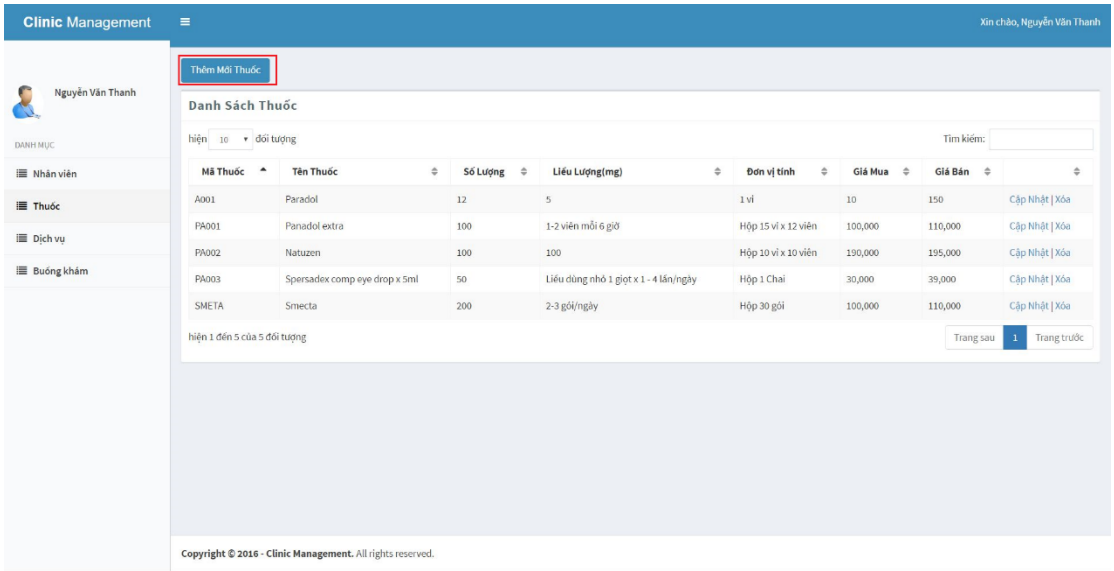
6.2.2.7.6 UC007-05 View Medicine List

- After login successful, click “Thuốc” or “Quản lý thuốc”

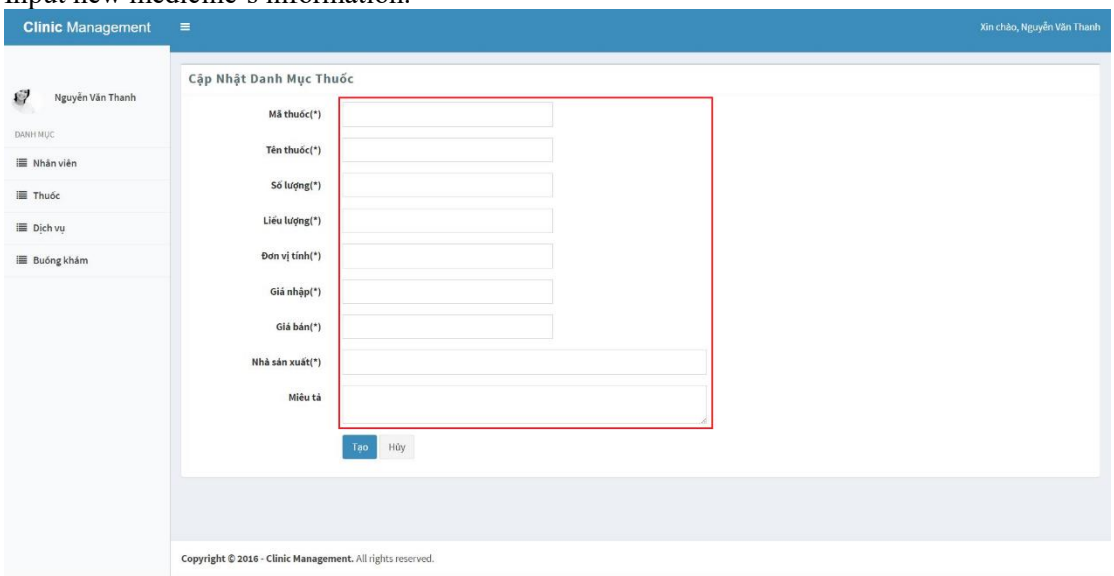


6.2.2.7.7 UC007-07 How to create a new medicine

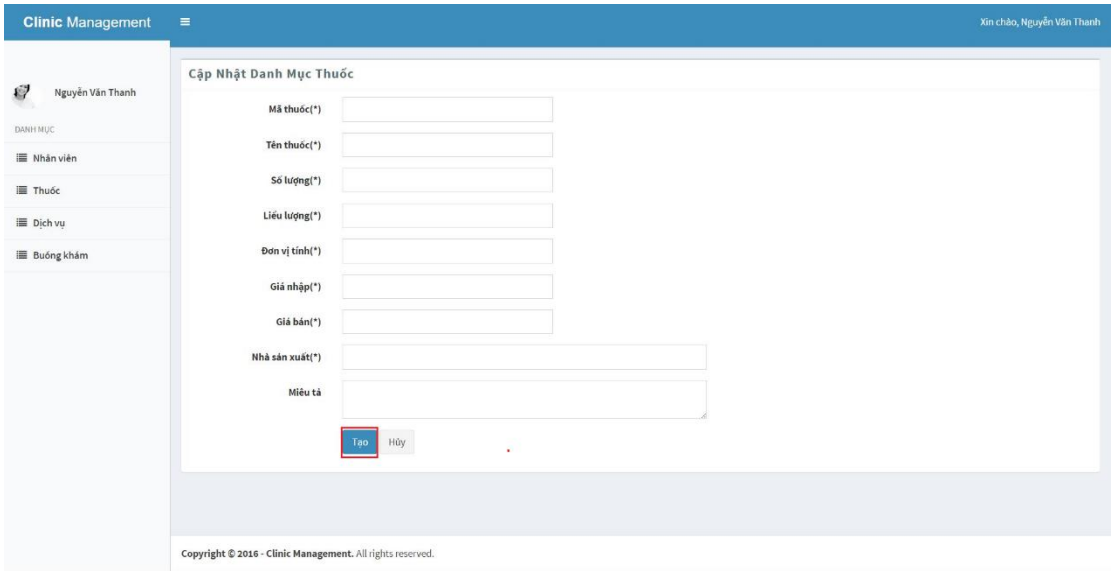
- In view medicine list, click “Thêm Mới Thuốc”.



- Input new medicine's information.

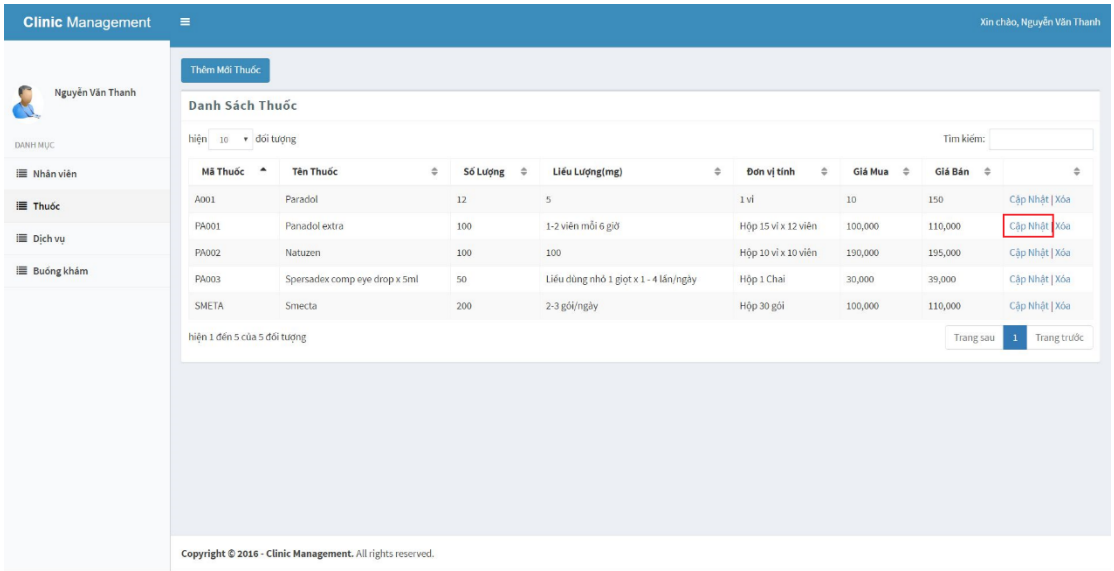


- Click "Tạo" to create new medicine.

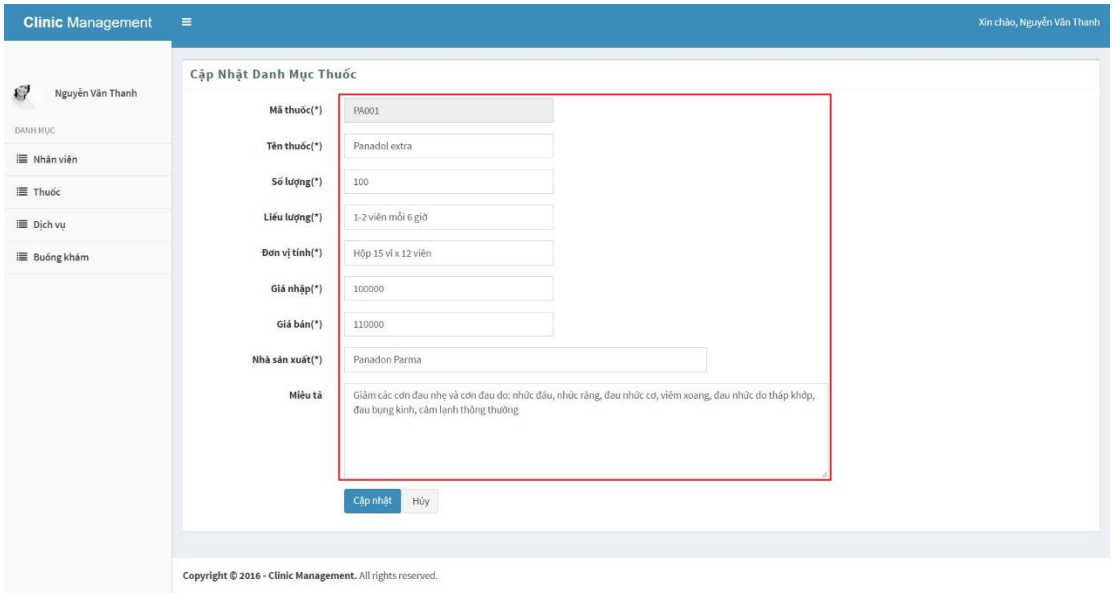


6.2.2.7.8 UC007-08 How to update medicine

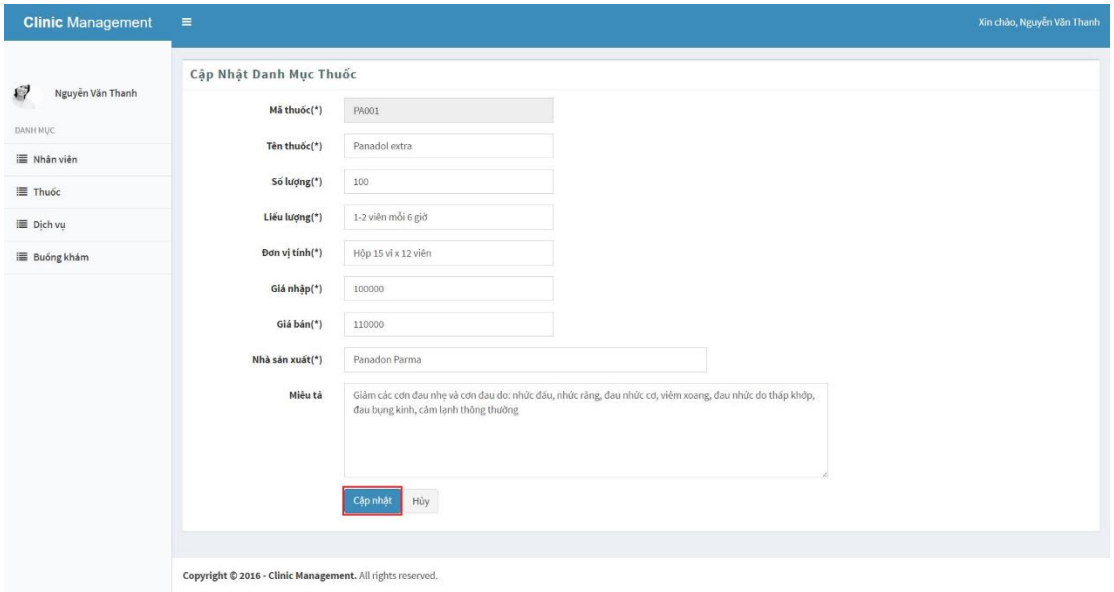
- In view staff list, click "Cập nhật" at medicine you want to update.



- Update medicine's information

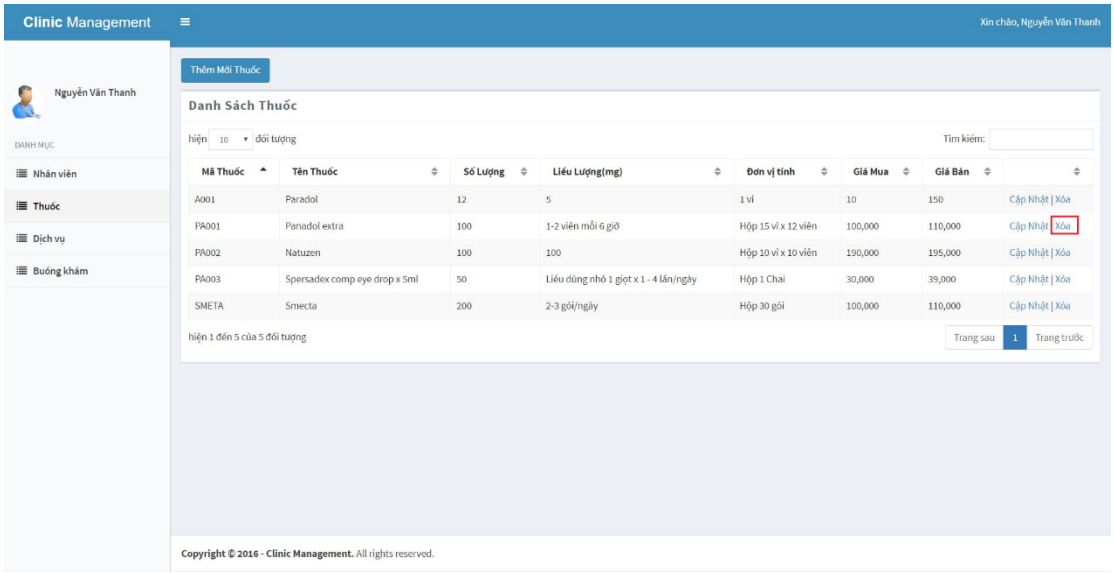


- Click "Cập nhật" to update medicine's information

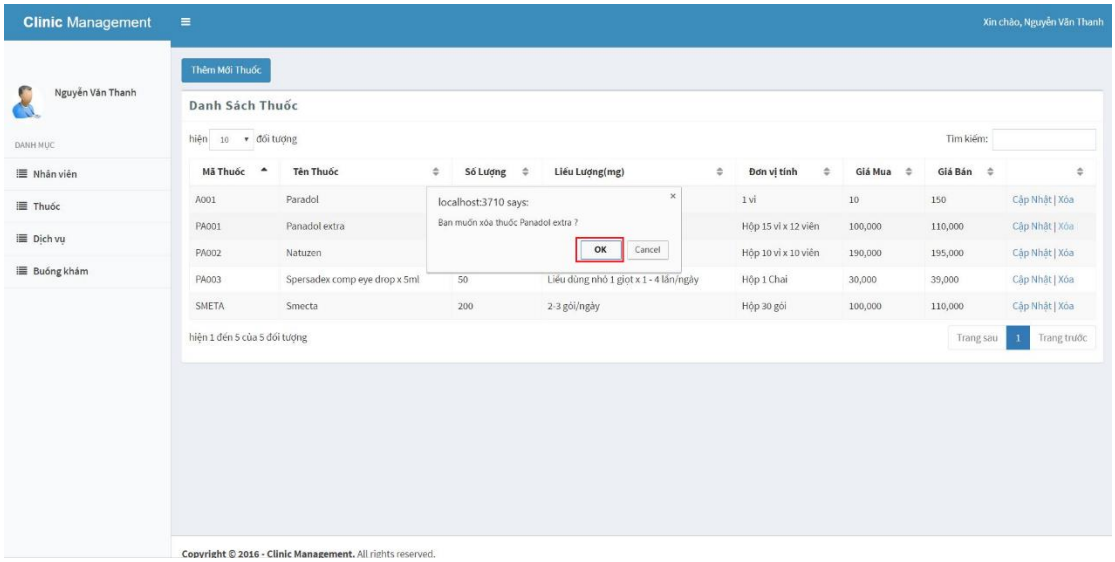


6.2.2.7.9 UC007-08 How to delete a medicine

- In view medical list, click "Xóa" at medicine you want to delete.

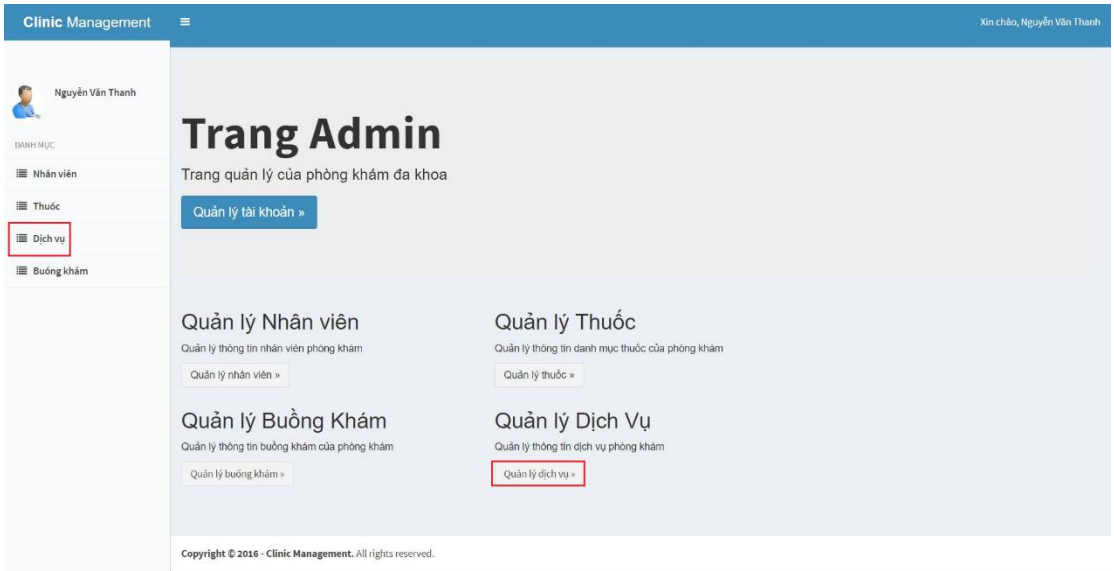


- Click “OK” to delete medicine when dialog is showed.



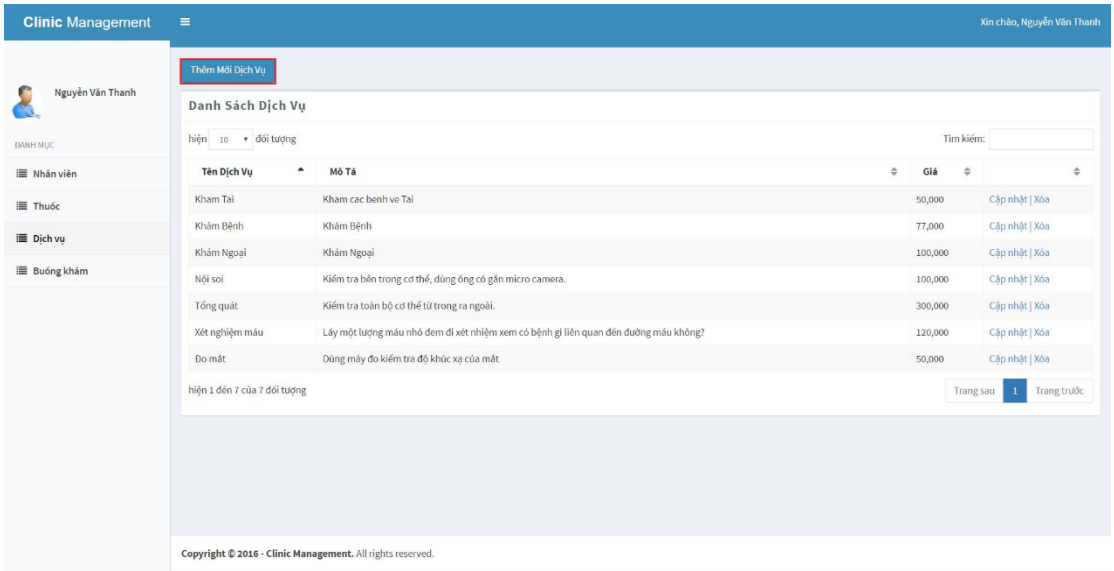
6.2.2.7.10 UC007-10 How to view service list

- After login successful, click “Dịch vụ” or “Quản lý dịch vụ”

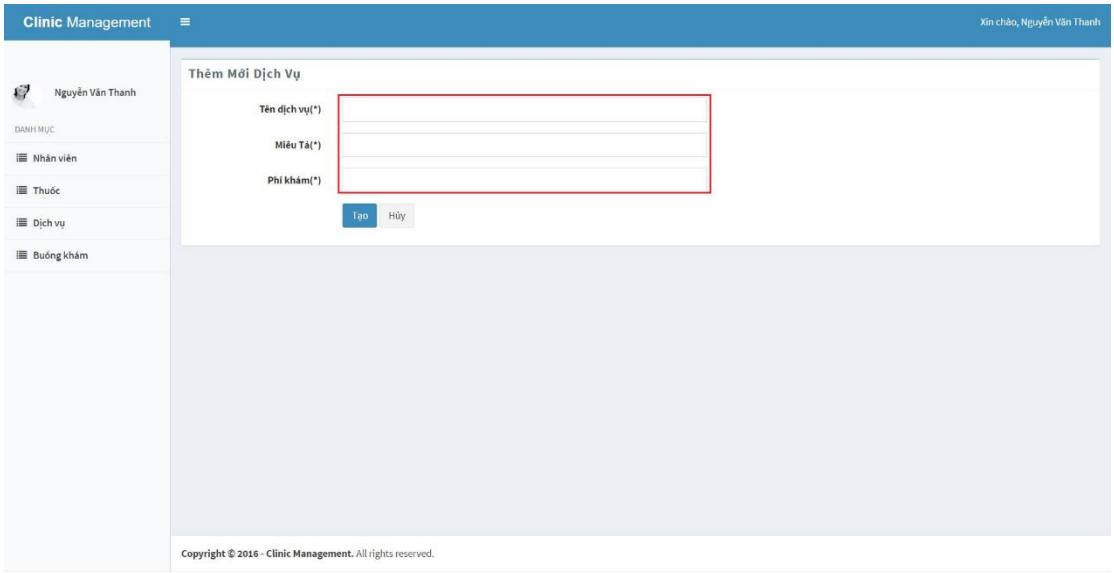


6.2.2.7.11 UC007-11 How to create a new service

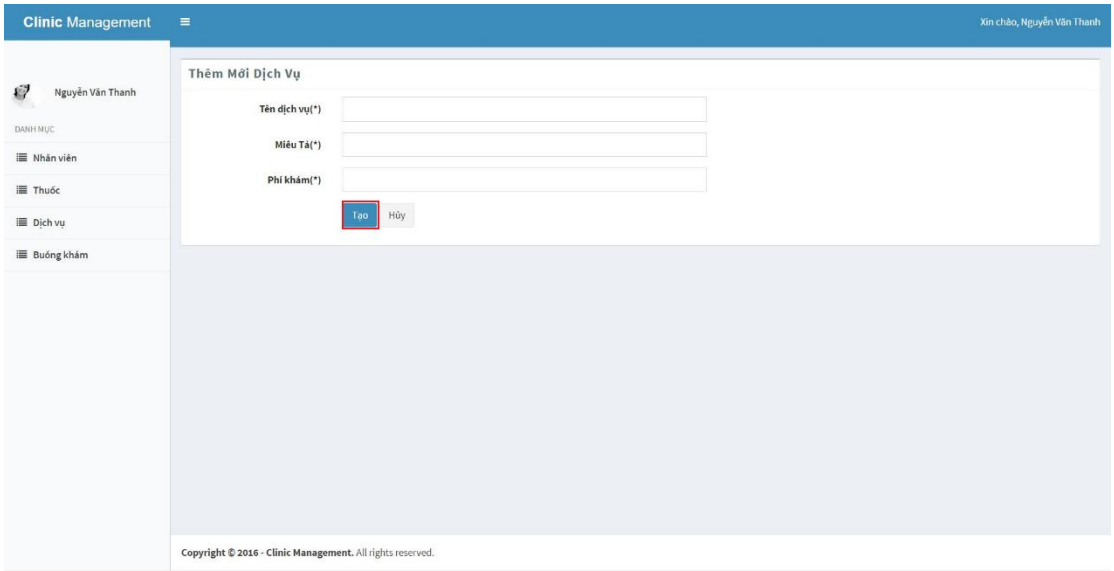
- In view service list, click “Thêm Mới Dịch vụ”.



- Input new service’s information.

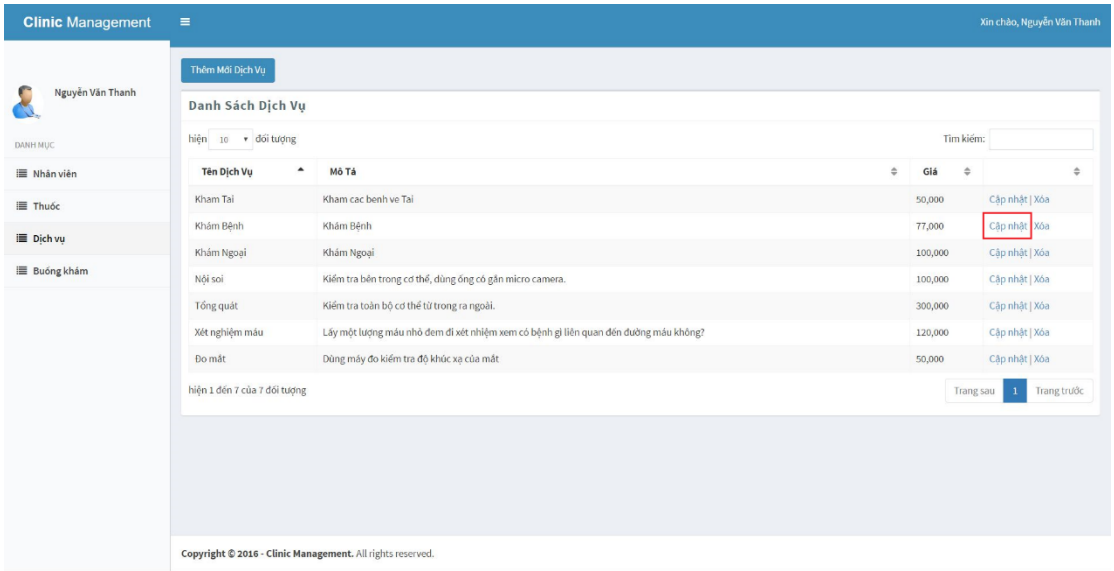


- Click “Tạo” to create new service.

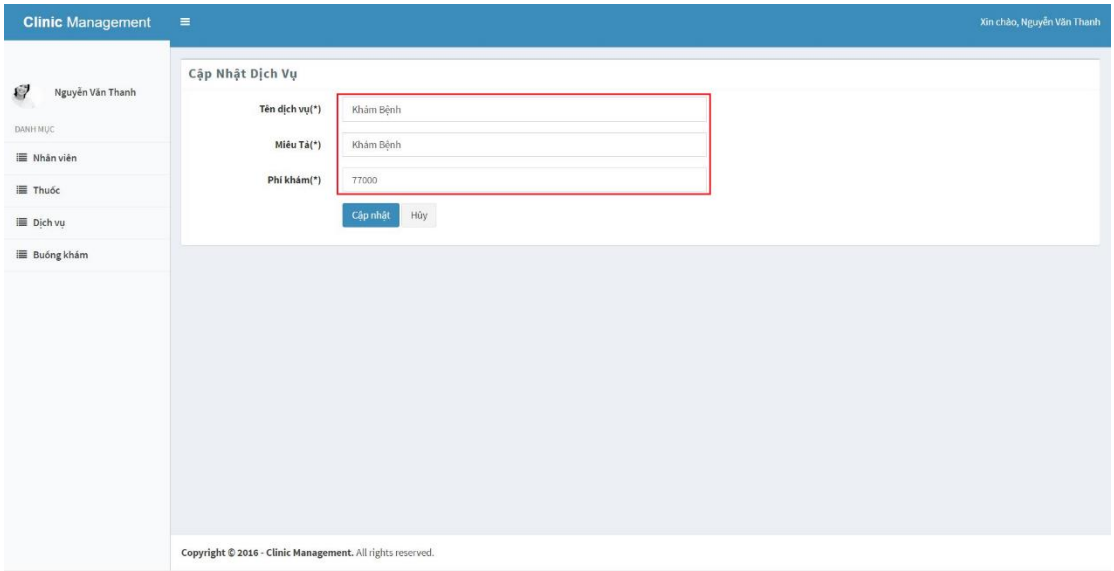


6.2.2.7.12 UC007-12 How to update a service

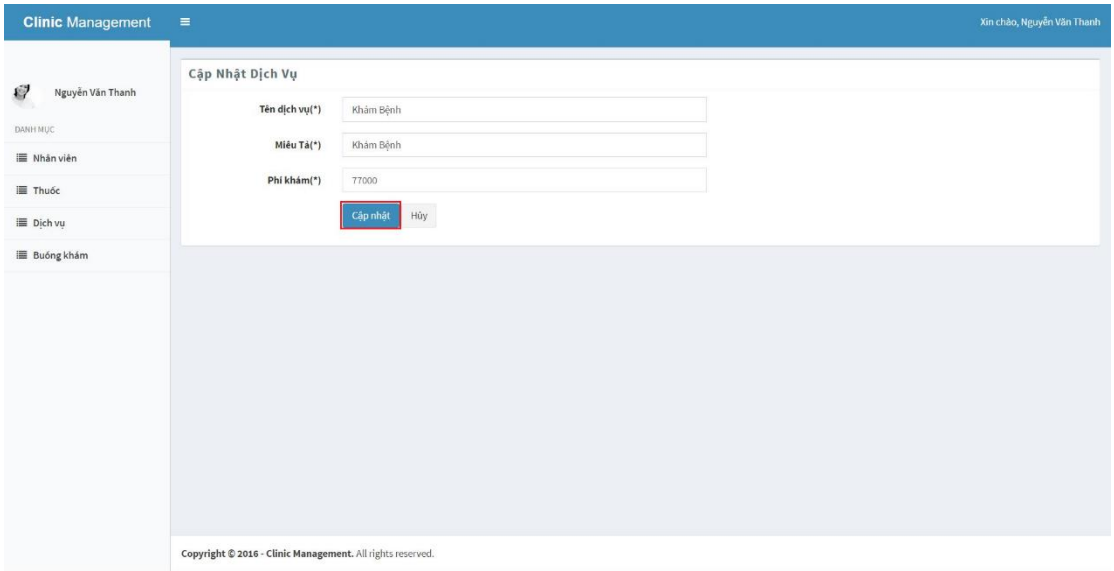
- In view service list, click “Cập nhật” at service you want to update.



- Update service's information.

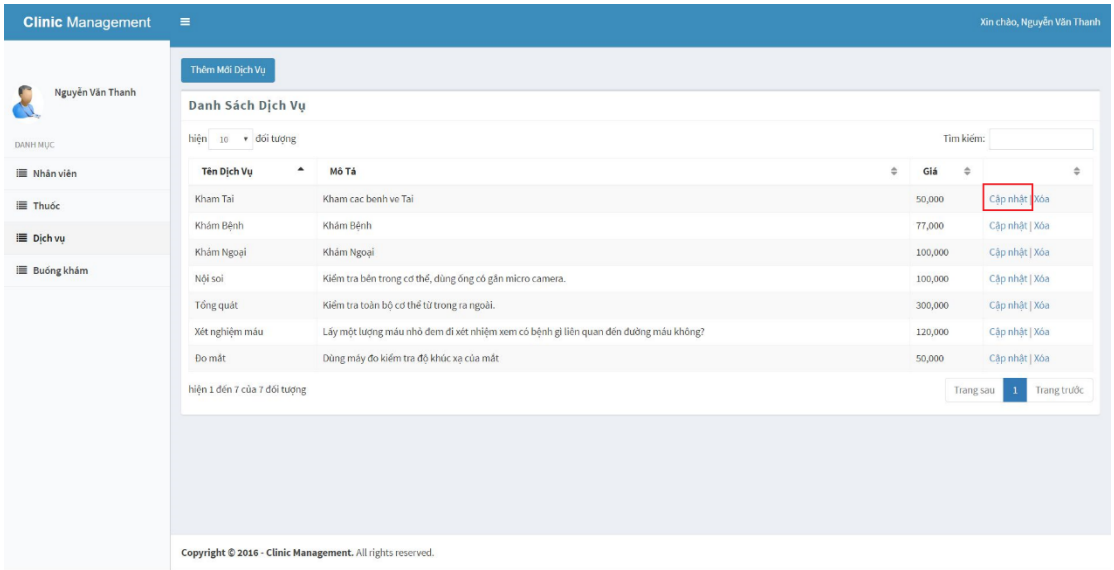


- Click "Cập nhật" to update service's information.

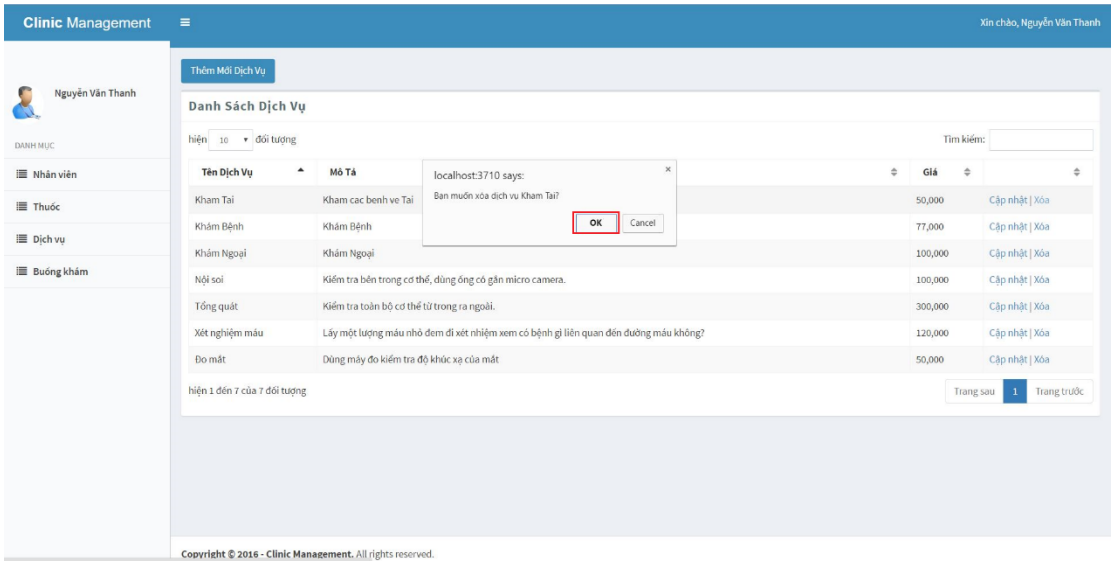


6.2.2.7.13 UC007-13 How to delete a service

- In view staff list, click “Xóa” at service you want to delete.

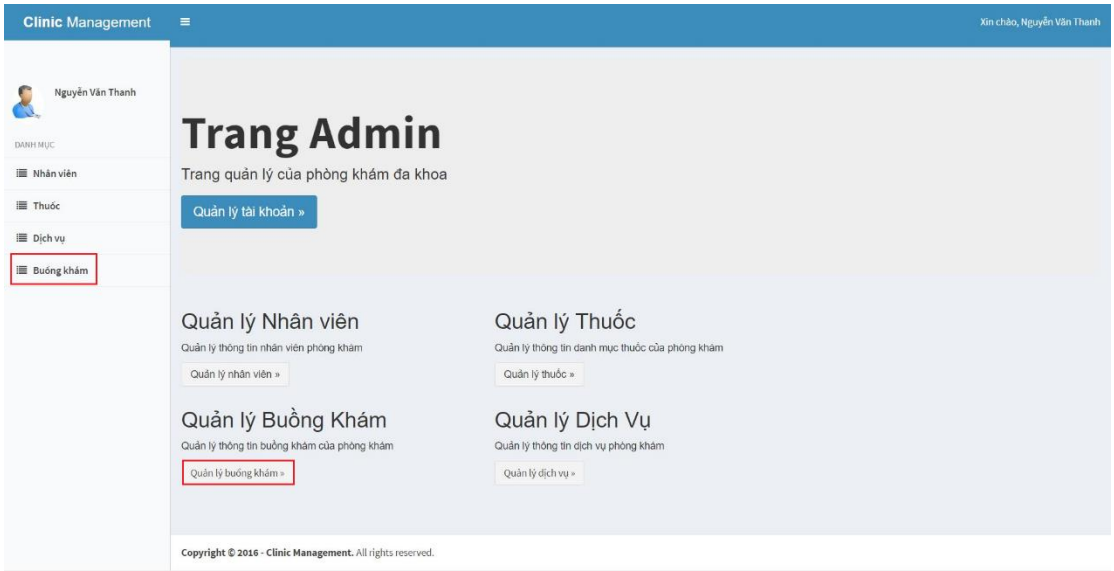


- Click “OK” to delete service when dialog is showed.



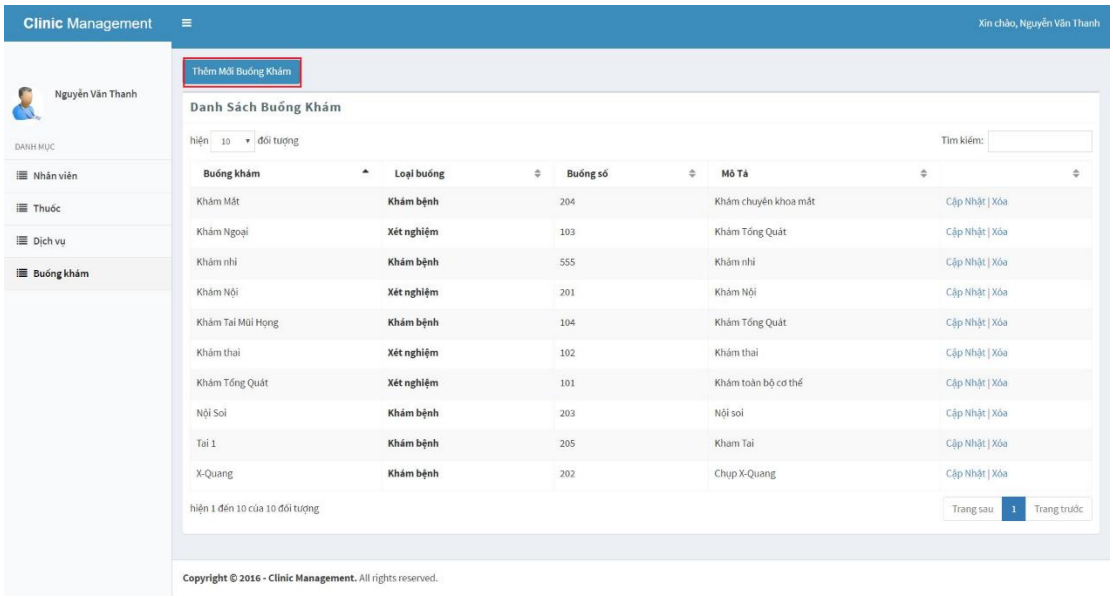
6.2.2.7.14 UC007-14 How to view room list

- After login successful, click “Buồng khám” or “Quản lý buồng khám”

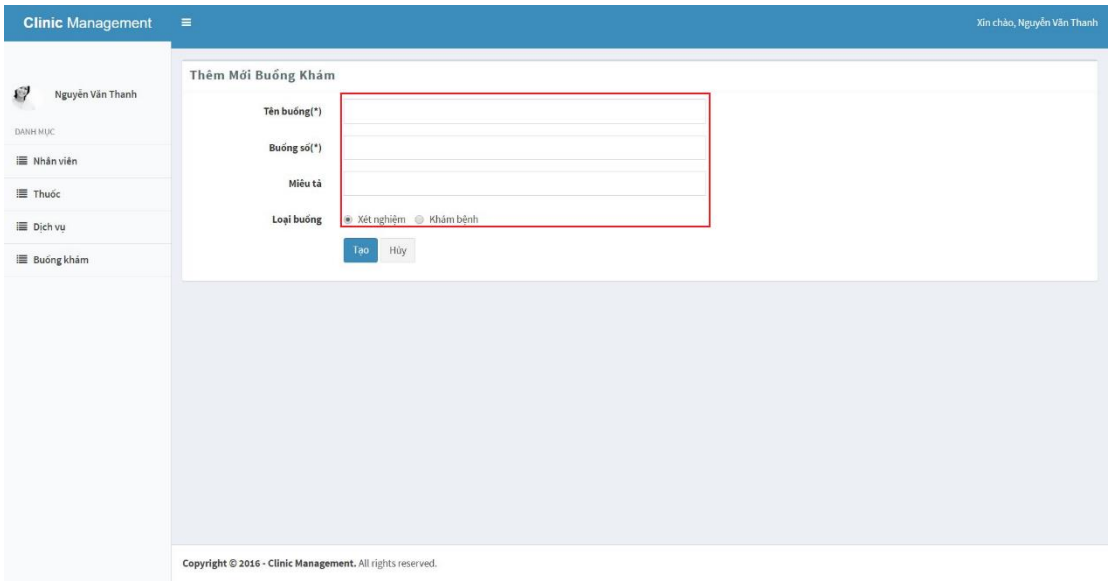


6.2.2.7.15 UC007-15 How to create a new room

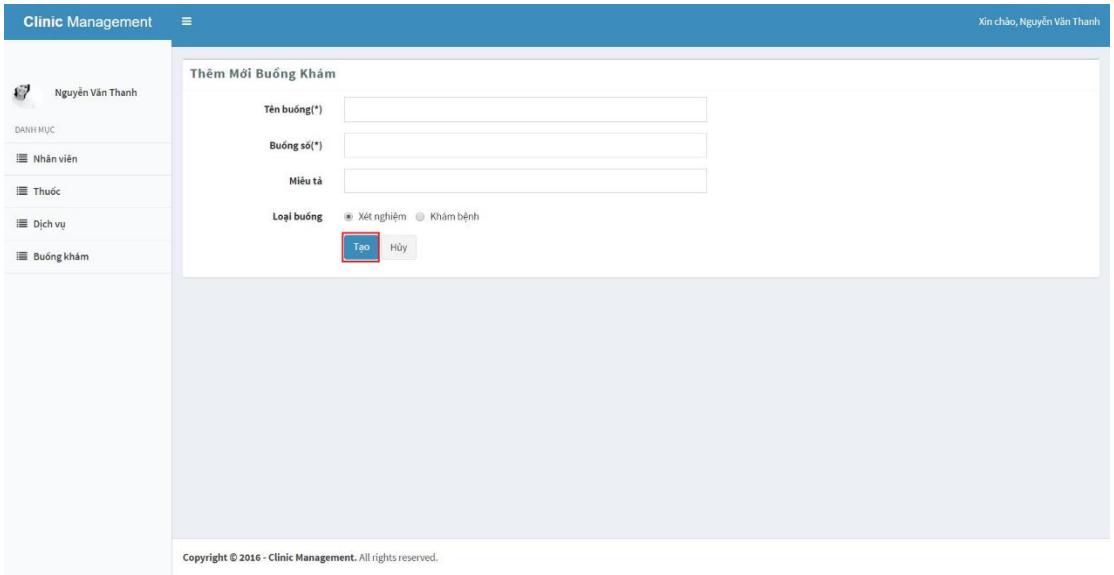
- In view room list, click “Thêm Mới Buồng Khám”.



- Input new room's information.

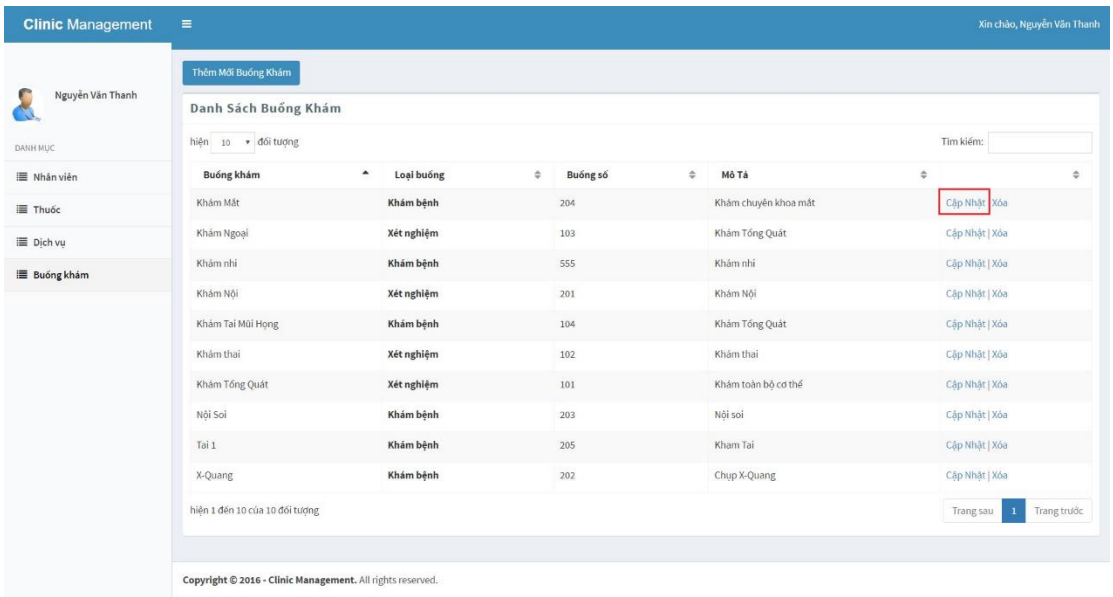


- Click "Tạo" to create a new room.

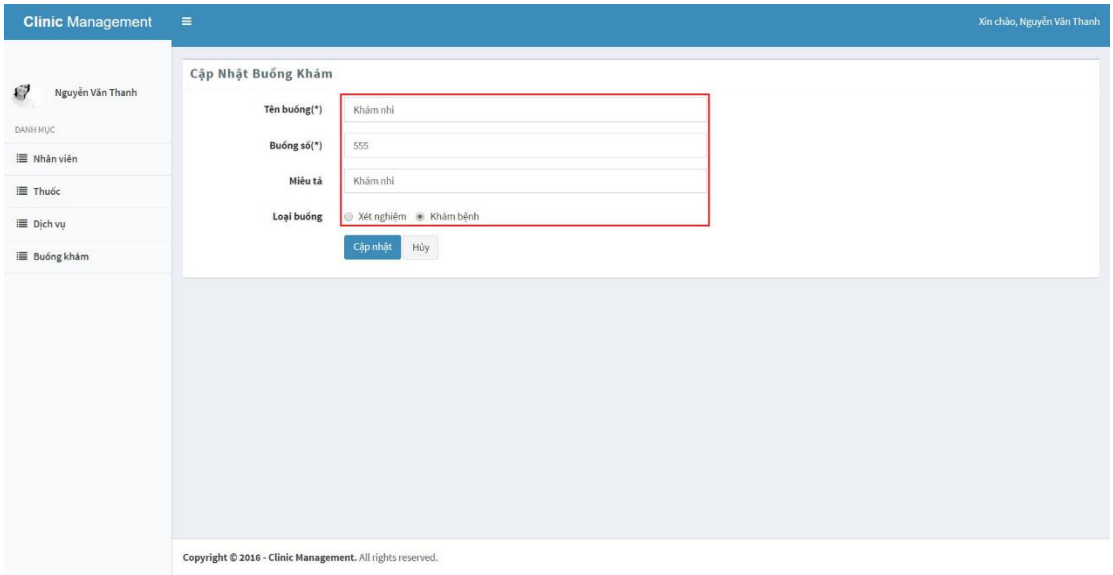


6.2.2.7.16 UC007-16 How to update a room

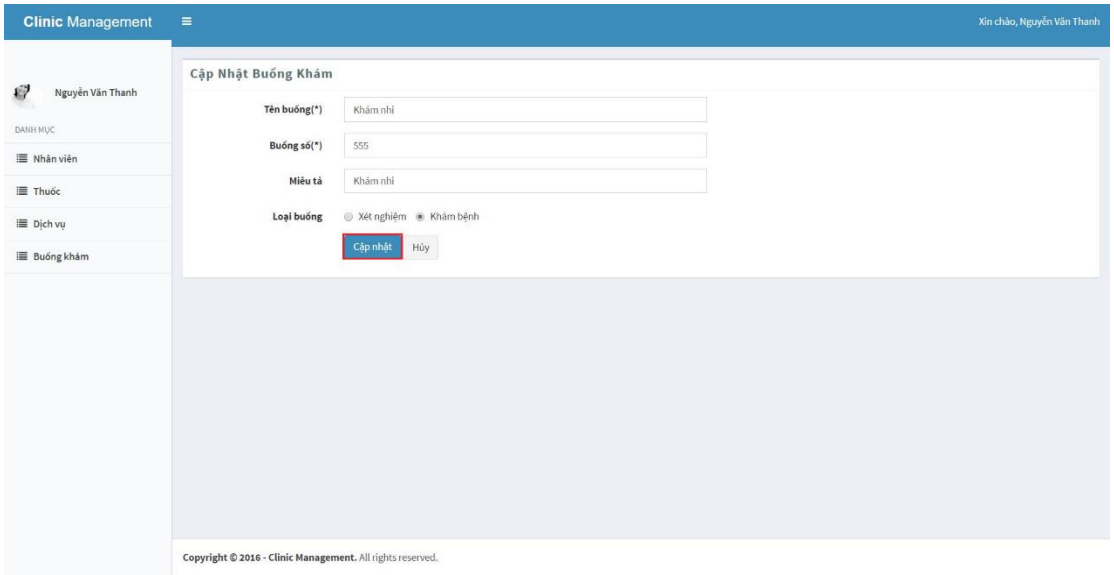
- In view room list, click "Cập nhật" at room you want to update.



- Update room's information

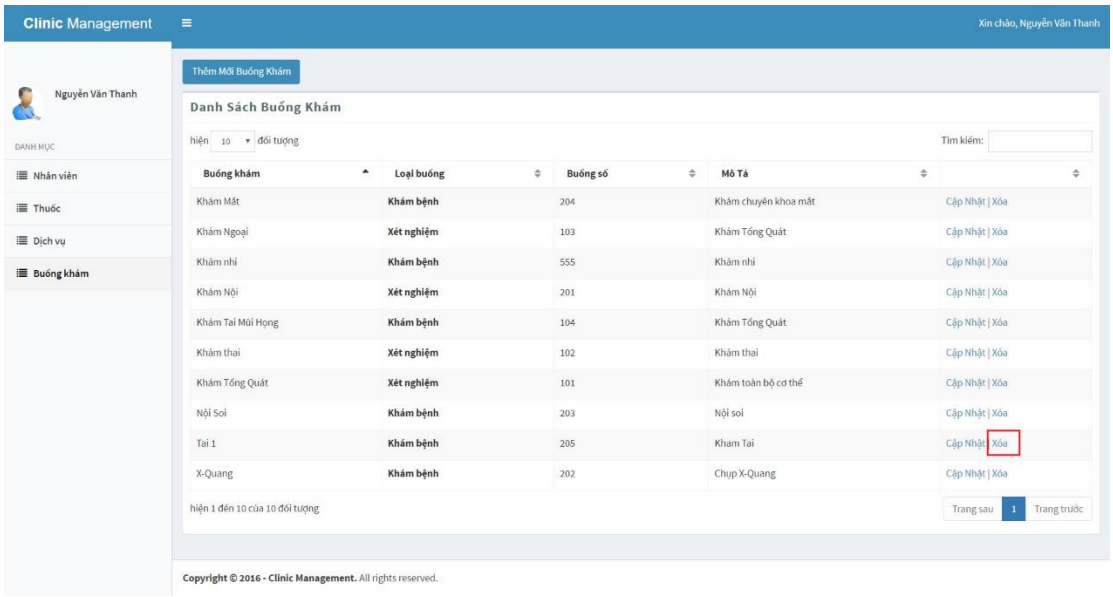


- Click "Cập nhật" to update room's information

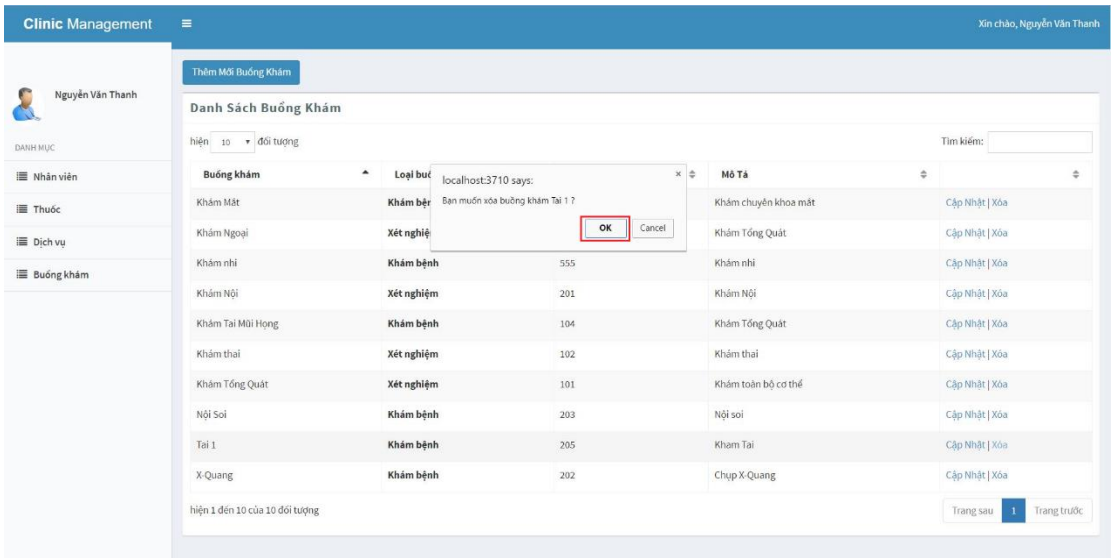


6.2.2.7.17 UC007-17 How to delete a room

- In view room list, click "Xóa" at room you want to delete.



- Click “OK” to delete room when dialog is showed



6.3 Project result report

6.3.1 Product Judging

6.3.1.1 Advantages of CM

The idea of the CM is to develop a website for a Clinic. It decrease the number of paper will store, process when patient comes to clinic.

- Staff in clinic likes: receptions, nurses and doctors can work more effective, easier and simpler way.
- Manager can know about the revenue easier.
- Patient can setup an appointment online. It helps them save a lot of time.

6.3.1.2 Current limitations of CM

Some limitations still exist:

- Don't manage about medicine store
- Only support in PC.

6.3.1.3 Expectation in future

- Manage about medicine store.
- Support in smartphone and tablets

6.3.2 Project Summary

Project Title		Clinic Management	
Project Supervisor		Nguyễn Văn Sang	
Members			
1	Project Manager	Phạm Khương Duy	duypk60195@fpt.edu.vn
2	Project Technical Leader	Nguyễn Văn Hơn	honnv60390@fpt.edu.vn
3	Developer	Lê Ngọc Thành	thanhlnse60620@fpt.edu.vn
4	Tester	Lê Văn Hùng	hunglv60041@fpt.edu.vn
Main objective		Develop a website for a clinic to help user can book an appointment, help staff can manage the clinic.	

Purpose	Staff in clinic can work more effective, easier and simpler	
Items	**Plan**	**Actual**
Releases Date	23/08/2016	24/08/2016
Releases version	1.0	1.0
Days	77	78
Test cases	250 test cases	293 test cases
Defects	50	57
Document pages	>200	> 350 (include appendix)
Lines of code	N/A	Approximately 5.000

6.3.3 Lessons Learnt

- Before the capstone project, we lack of knowledge about MVC5 and C# language. Now, we have more experience how to create a MVC 5 website, face with the problems and bugs when develop.
- We also improved a lot of skill:
  - Firstly, about technical, we know how to develop application with MVC5 and C# language, how to do merge code between team member, control project's document and how to do test for a project.
  - Secondly, about soft skills, we know how to work together efficiently, how to avoid conflict between team members and brainstorm to have solutions to a problem. Besides, we can improve research and self-study skill.
  - Finally, we have more knowledge about the project's development process. We know how to manage form the beginning to the end of project, how to get requirements, how to create SRS, design document and test document. It will be helpful for our job.
- Through this capstone project, we have more experiences in risk and issues management:
  - About technical:
    - Some members don't know how to search information or ask for support. We have to guide each order to work more efficiently.
  - About human resources:
    - Some members are lazy for a while; they cannot finish their work before deadline or cannot do their tasks so we define detail schedules, and often reminding each other.
    - Some member lack of project's information and communication so we have make a lot of meeting to explain and support each other.

    - Team member must report what tasks they finished or not and project manager has to define schedule according to members' capability.
  - About missing deadline:
    - Source code has problem when we merge code between team member and member cannot check.
    - We need to support each other when coding.
- When anticipate in working in group we have faced many conflicts such as all team members are stress, making argument when brainstorming ideas. But finally, we learn more lessons about talking and listen to each other, analysis situation, making right decision.