



TRƯỜNG ĐẠI HỌC FPT

Capstone Project Document

FIRST AID

FIRST AID		
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Project code	FAVN	

Acknowledgements

We would like to thank Mr. Nguyen Van Sang, our supervisor, for his encouragement and assistance at various stages of the project. We also acknowledge and are grateful for his instruction of technique and teamwork in an official project as well.

We would also like to thank Emergency Center 115 Ha Noi for their expertise in reviewing specific content areas. Their welcome to a friendly and professional working environment did help us to complete the project successfully.

Eventually, we highly appreciate all the support as well as inspiring from our friends and family in the time of the project.

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1 INTRODUCTION

1.1 Purpose

This document is created as the introduction for project First Aid – our Capstone Project at FPT University. In this document, we will describe the initial idea for our project, overview some existing systems, describe our expected system as well as to give some critical assumptions, constraints and potential risks. Moreover, this document also shows opportunities that it offers to users.

1.2 Acronyms and Definitions

Acronym & Abbreviation	Definition
FA	First Aid
FU	FPT University
Q&A	Question and Answer

Table 1-1: Definitions and Acronyms

1.3 Abstract

In daily life, illness or injury can occur suddenly. There are many situations that require first aid to stop the situation becoming worse, even save lives and reduce injuries. The first aid does not necessarily require complicated techniques or special knowledge. However, not many people in Vietnam have sufficient knowledge and necessary skills enough for the aid. There are a lot of specific training materials in hard and soft copies, but its disadvantage is hard to comply with the right method of first aid immediately without visual information. There are also other mobile applications for first aid on the market but they have barriers for users such as language and the lack of effective interaction.

In addition, the supports emergency system of Hanoi 115 emergency center in particular and almost provinces of Vietnam in general have currently limitations. The receiving of information from the victim to call is done by pen and paper; dispatchers of the 115 center contact to the emergency team via phone or walkie-talkie. The victim's location is determinate via their description. There have many cases in which the victim describes wrong location or the driver goes in wrong way that leads to cause wasted-time and the critical status of victim's life.

With the expectations of helping people to cope with the limitations that mentioned above, we propose to build an application that can provide users with simple instructions on first aid and a dispatch ambulance system for the Hanoi 115 emergency center.

1.4 Literature Review

Nowadays, there are some first aid applications on the market. However, according our research, these applications are not really useful for Vietnamese people. In this section, we are focusing on the three top rating applications which are considered as our rivals.

1.4.1 Cẩm nang sơ cứu

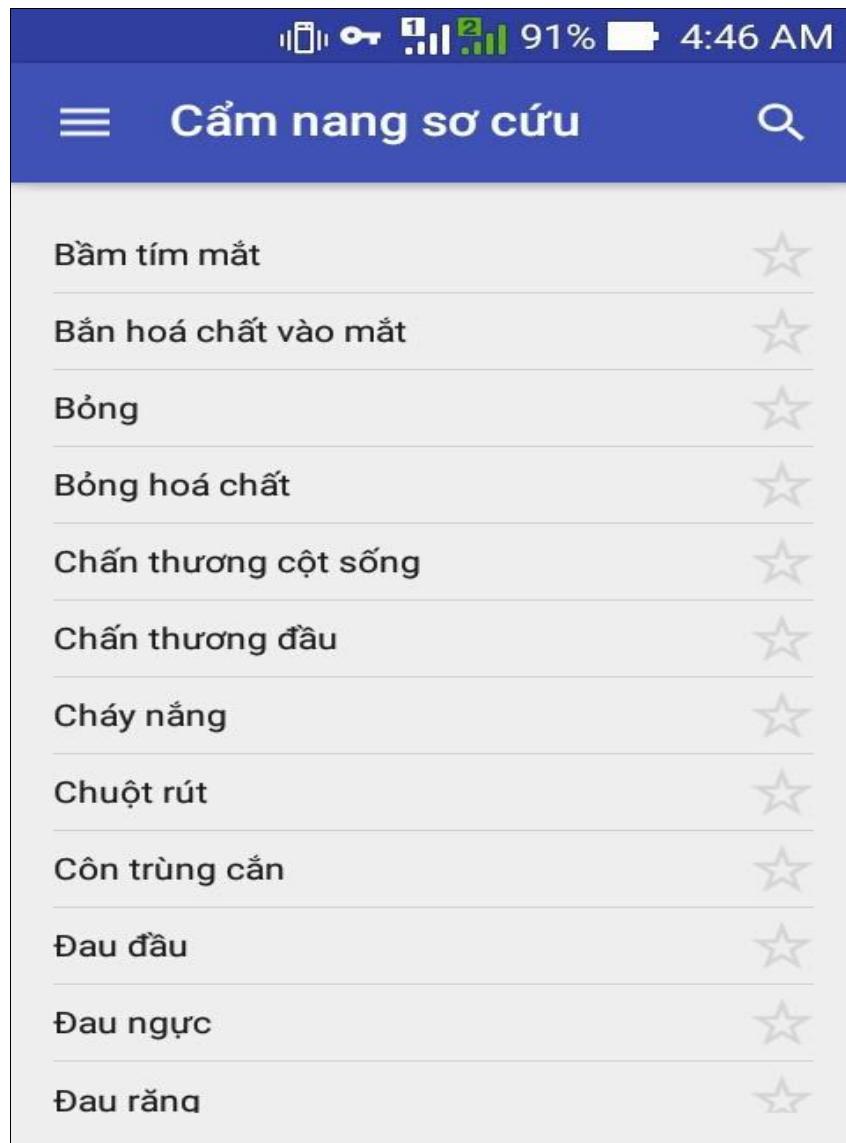


Figure 1-1: App Cẩm nang sơ cứu

“Cẩm nang sơ cứu” is the only topdownload application that provides knowledge about first aid instructions that developed on the Android platform for the Vietnamese.

- **Advantages:**

- Has Vietnamese language: “Cẩm nang sơ cứu” was developed by Vietnamese developers so this application has Vietnamese language, easy to use for Vietnamese users.
- A lot of first aid guide: Comparing to the vietnam’s applications, the instructions of first aid in this application covers many medical fields such as insect bites, cramps...
- The searching function: Because this application has lots of first aid guidelines, so the searching function is quite useful to help users easily to search for the appropriate guidance in case of emergency.

- **Disadvantages:**

- Lack of visualization: The structure of the application has not been arranged logically, first aid guidelines are not sorted into groups, sometimes confusing for users.
- Instructions are difficult to follow: The contents of the first aid instructions are sketchy, the illustrations as well as the guide's step is not really useful.

1.4.2 Hướng dẫn sơ cứu



Figure 1-2: App Hướng dẫn sơ cứu

“Hướng dẫn sơ cứu” is the top application that provides knowledge about first aid instructions that developed on the iOS platform for the Vietnamese.

- **Advantages:**

- Has Vietnamese language: “Hướng dẫn sơ cứu” was developed by Vietnamese developers so this application has Vietnamese language, easy to use for Vietnamese users.
- First aid methods are grouped by topics: The method of first aid instructions are reassembled according to topic, quite intuitive and logical.

- **Disadvantages:**

- A few first aid guide: The first aid instructions are not many, the contents of the first aid manual as the first aid steps, the illustrations are quite sketchy or may not have.
- Without searching function: The functions are quite sketchy, moreover this application does not have “Search” function so difficult to look up to application guide.

1.4.3 First Aid

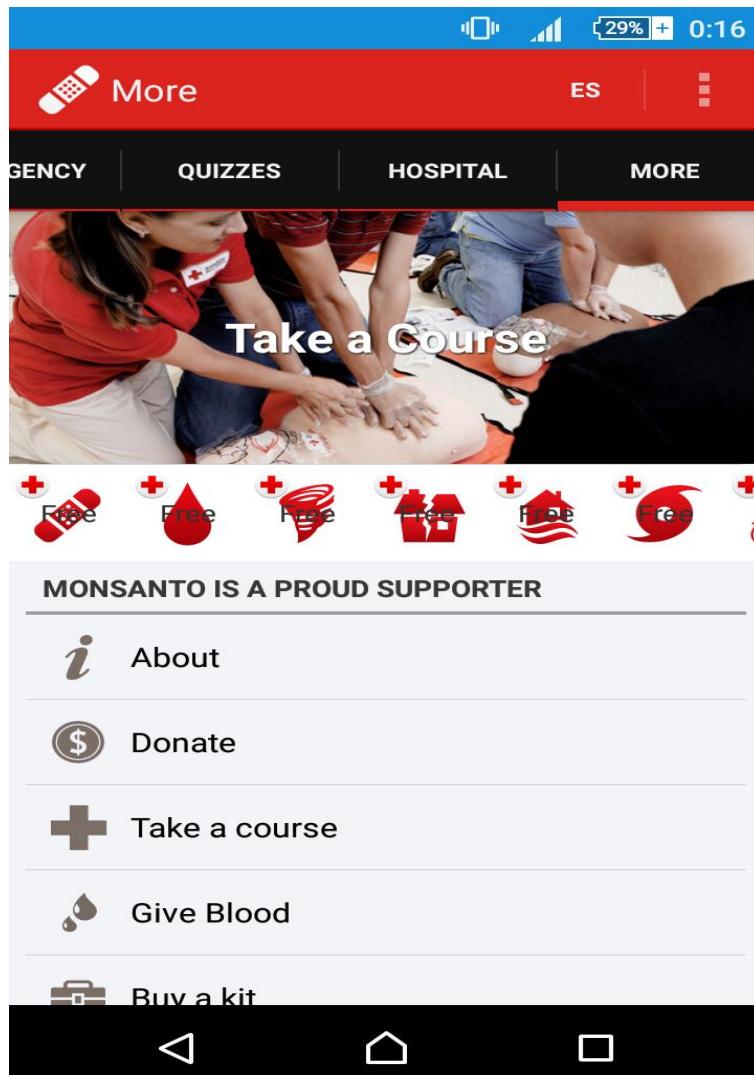


Figure 1-2: App First Aid

First Aid is the biggest application for first aid guide created by American Red Cross, users can look up and learn about first aid, watch videos, take quizzes.

- **Advantages:**

- Simple step-by-step instructions guide you through everyday first aid scenarios.
- Fully integrated with 9-1-1 so you can call EMS from the app at any time.
- Videos and animations make learning first aid fun and easy.

- Preloaded content means you have instant access to all safety information at any time, even without reception or an Internet connection.
- First Aid has friendly interface, clear instructions.
- **Disadvantages:**
 - Just have English and Spanish language.
 - It is not popular in Vietnam.
 - Without searching function.

1.5 Proposal

1.5.1 The idea

With the aim of providing the best supported health service for Vietnamese people, we want to develop an application that allows users can look up and perform first aid guide and selectively synthesized under step by step format in the easiest way. This application also supports users to search medical facilities around their location. Besides we also want to develop an emergency switchboard system for Hanoi 115 emergency center. It means that this system can connect to aid applications through SOS calling with reducing talking time as well as providing maximum necessary information. In addition, the system also has admin/expert application for managing, automatic functions connected to software on an ambulance in order to shorten the time to contact and distance traveled; functional navigation map and directions to emergency help achieve maximum efficiency.

1.5.2 The objective

This project is the Capstone Project in FPT University studying program.

The project is responsible for all team members. So, we have to complete all requests from teachers and the university. In terms of IT expertise, by implementing of the project, we expect to be able to learn how to develop a project, how to manage the project, how to communicate better among members in groups, how to control the time, how to implement effective teamwork. Moreover, besides the knowledge of IT learnt from school, we want to study deeply new technologies, new techniques for serving the process of implementation of the project. Therefore, we believe that this project is a great opportunity for us to enhance the skills and knowledge. This also makes our CV better after graduation from FPT University. This is also an opportunity for us to demonstrate our competence with employers.

In term of social-meaning, with First Aid projects, we will support the best health service for people that need the help in aid issues. Via this application users can have better understanding about aid and the importance of first aid. Beyond that, the community will have good software that can help them protect their lives and health more safely. Also, for Hanoi 115 Emergency Center, we want to build for them an automatic ambulance coordination system to resolve their current problems, to improve the quality of medical management.

1.5.3 Brief description about system

The First Aid system includes “First Aid” mobile application and “Ambulance” application developed on the Android platform, an emergency switchboard system for Hanoi 115 center and data management system developed on the web platform. The most useful feature of this application is to help users easily perform first aid through step-by-step instructions. It also

provides a number of features needed for emergencies such as finding the nearest medical facility, making phone calls and sending information to the dispatch system of 115 center. It will provide the nearest ambulance to the patient automatically. The Ambulance applications can get quick tasks from the switchboard, identify the exact location of the victim on the road map and the closest to the victim. Last but not least, the data management system will give the functions of data management as well as user management, this system is called “Admin/Expert”.

The technology used to develop the First Aid: Java, Android, Bootstrap, and Laravel - PHP framework.

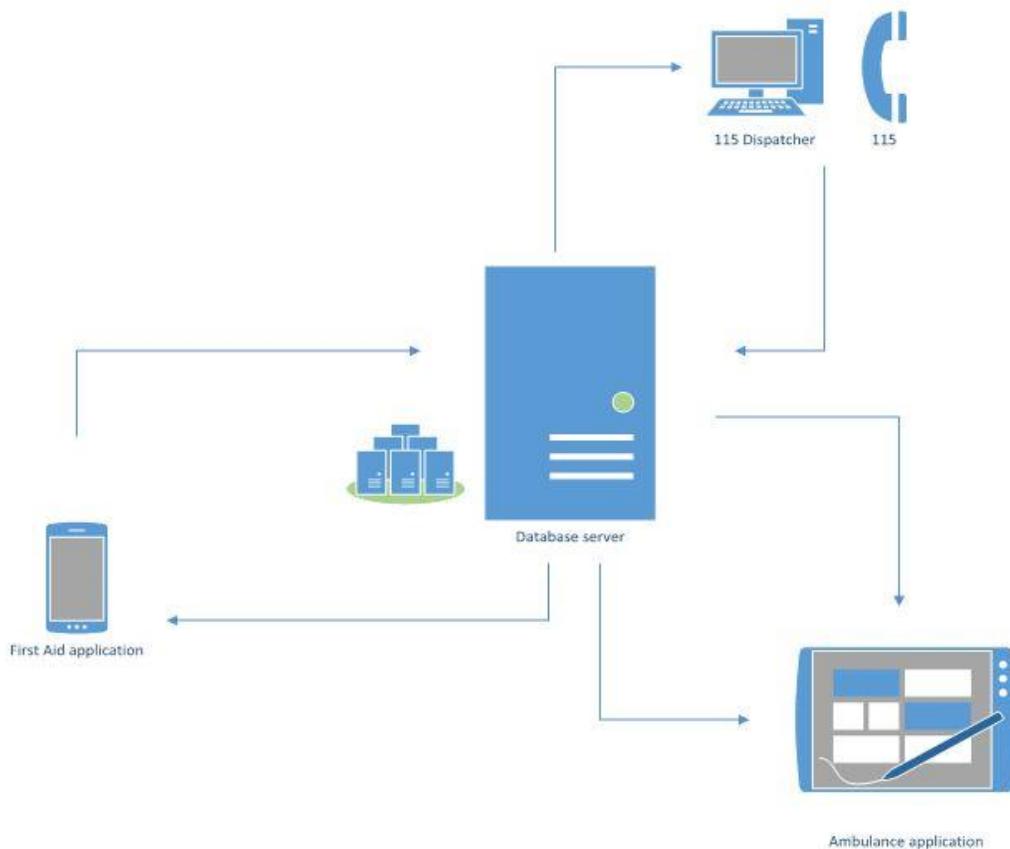


Figure 1-3: Brief descriptions diagram of First Aid

1.5.4 System features

In our system, First Aid mobile app is the most prominent application that provides you the first aid methods in concise step-by-step, easy to understand, easy to implement. It has special features such as determining your locate on a map to and supporting medical facilities within a specific radius, direct hotline to call, the location of health facilities and guide the way to there. You can also ask questions about health issues and get answers from experts. Besides the above functions, we also support interactive functions with the 115 emergency center to shorten the duration of your emergency call.

When using our app to call 115, your personal information (including phone number and your location) will be sent to the dispatch system of the 115 center (also developed by us) is called

“Dispatcher”. There are two ways to call 115 from this app. You can call 115 from the main screen of this app as well as from the instruction steps screen which is located in the list of injuries. Specially, if you call from the instruction steps screen, your symptom will also be sent to the switchboard, the dispatcher can rely on this information to give the right emergency advice to your case. From that information, the dispatcher can conduct an ambulance to pick you up by car automatic functions of our system. The ambulance pick you up will be the car that is nearest to your location.

The ambulance will also have a software is called “Ambulance” application can show your location and directs to it through the electric map. It helps to reduce the wrong direction cases. The ambulance status is also constantly updated, the dispatcher can fully know the location of it and its ready status or not in order to manage the most effectively.

In addition, the features of the user comments are used to communicate with the administrator. Data management features allow administrators to manipulate and manage data such as database of First Aid applications, opinions of users. User management features allow administrators to manage the account dispatcher, ambulance staff and medical experts.

1.5.4.1 First aid application features

- **List of injuries:** List of common injuries will be displayed in main screen when users launch in First Aid application
- **Instruction steps of injury:** Instructions steps first aid of an injury will be shown when users tap on an injury’s name.
- **Searching:** Users search the related keywords of injury and results will be displayed in the screen.
- **Reading steps of instructions:** Read steps of instructions for users. Users can perform first aid and listen to steps of instructions at the same time.
- **Call 115:** This feature will help users to call 115. In an emergency that need to call 115, this feature can send to operator the user information including phone numbers and coordinates.
- **Current location:** Users can get their exact location via the map. In case there is no exact address, the users can get the nearest locations.
- **Finding nearby health facilities:** Users can find list of the nearest health facilities and see address, distance, phone number, and directions to the health facilities.
- **Learning:** Information about instructions of each injury will be explained more clearly than the instruction steps first aid in emergency screen. This feature will help users to have more knowledge about first aid in injury situations.
- **FAQs:** Users can see FAQs about an injury and send questions about injuries
- **More:** This feature is a collection of some other popular features for users :
 - Send feedback.
 - View first aid course.
 - Sharing.

1.5.4.2 Ambulance application features

- **Login/Logout:** Ambulance staff need to login to use the account. The staff account can be given by administrators.

- **Notify task:** Ambulance staff can receive the task automatically from the coordinator without making a phone call or using walkie-talkie like traditional way.
- **Location of caller:** Ambulance staff will determine the caller's location exactly and know the shortest way from the location of ambulance to the location of caller.
- **Report to Dispatcher:** Ambulance can report to dispatcher after picking up victim to hospital.
- **Status:** Ambulance will report to dispatcher about the ambulance status of implementing task or not.

1.5.4.3 Dispatcher application features

- **Login/Logout:** Dispatcher need to login to use the account. Dispatcher's account is given by administrator.
- **Dispatch ambulance:** Dispatcher receives information from users including their status and their coordinates, then dispatcher will dispatch the ambulance to the victim's location. The system will automatically choose the nearest available ambulance.
- **Show direction from ambulance to caller:** dispatcher will know the nearest way from ambulance's location to victim's location and follow ambulance's moving.
- **View ambulance information:** Dispatcher can know about the available of ambulance .
- **Cancel emergency case:** In case the victim doesn't need ambulance, dispatcher can cancel task.

1.5.4.4 Admin/Expert Application

- **User management:** Admin can create new account for dispatcher, ambulance staff and health expert, update, delete and search account.
- **Data Management:** Medical expert can delete, update, or add new information about first aid.
- **Users' questions management:** Admin and expert will receive notifications when there are comments or questions from users and answer them.

1.6 Benefits from Project

1.6.1 For our group

After developing and implementing this project, our group will get some benefits:

- Have more experiences of software project management how to manage plan, time, member and risk.
- Have more knowledge and skills about HTML/CSS, Android and PHP programming.
- Know how to communicate with team members and how to make teamwork more effective.
- If this application is approved, we will get a good mark in Capstone Project. It makes our grade better.

1.6.2 For Community

With only mobile device, users can easily search and follow the instructions of first aid in case of emergency. If it is done properly and timely, victims can minimize the damage and faster recovery. In particular, in many cases, this can save lives.

If First Aid mobile application is widespread, we hope to contribute to raise the awareness of Vietnamese people of the importance of understanding of basic aid skills. It is the way to protect people's health and life.

Besides, by proposing the construction of a coordination system and mobile applications on the central ambulance for 115, we believe that if the FA applications is applied for real, the system will solve a lot of these shortcomings and limitations to the 115 emergency center.

1.7 Critical Assumption and Constraints

- **Critical assumption:**
 - For the Technical training: we assumed web developers can study about PHP and mobile developers can train about application development for Android platform in one week. Besides, testers also have enough knowledge about software testing process.
 - For the human resources: we assumed all members have a good healthy to do their task sand meet the project plan's deadline.
- **Constraints:**
 - Time and deadline: we have to work 5 hours/day and 5 days/week to submit weekly report on time for the supervisor and finish entire project in 14 weeks.
 - Quality: We need to ensure that our product could be run well on android mobile devices with android OS version 5.0 or higher.
 - Process: We have to follow the software processing of FPT Software
 - Human resources: There are 5 members in our team, each member have to study 2 subjects (Japanese and JIT) at school.

1.8 Potential Risks

After studying about this project, we find out some problem that we may be encountered:

- Under-estimate scope and time or miss deadline because lack of experience in group working, managing and controlling work.
- Loss data, source code before uploading data to server because of careless.
- Equipment got broken because of careless or accident.
- Human resources: Team member cannot complete their works because of health reasons, key member leave team or un-cooperating on team.
- Change requirements: Requirement changed when some functions cannot be completed or some technologies is not suitable.

2 PROJECT MANAGEMENT

2.1 Introduction

2.1.1 Purpose

This part is the project management plan of First Aid Vietnam (FAVN) Project – our Capstone Project in FPT University. It is included the project overview, project organization, tools and infrastructures, schedule of this project.

2.1.2 Definitions and Acronyms

Acronym	Definition	Note
CM	Configuration Management	
FAVN	First Aid Vietnam	
DEV	Developer	
DES	Designer	
PIC	Person in charge	
PM	Project Manager	
PTL	Project Technical Leader	
PDL	Project Design Leader	
TL	Test Leader	
SRS	Software Requirement Specification	
UTC	Unit Test Case	
KLOC	Thousands of lines of code	
FAQs	Frequently asked questions	
Q&A	Question and Answer	

Table 2-1: Definitions and acronyms

2.2 Project Overview

2.2.1 Project Description

Project Code	FAVN	Contract Type	None
Customer	FPT University	2nd Customer	None
Project Level	Group	Project Rank	None
Application Type	Mobile Application and Web Application	Project Manager	Dam Huy Hung
Project Category	Development	Business Domain	Health Care

Table 2-2: Project Description

2.2.2 Scope and Purpose

2.2.2.1 Purpose

With the aim of providing the best supported health service for Vietnamese people, we want to develop an application that allows users can look up and perform first aid guide and selectively synthesized under step by step format in the easiest way. This application also supports users to search medical facilities around their location. Besides we also want to develop an emergency switchboard system for Hanoi 115 emergency center. It means that this system can connect to aid applications through SOS calling with reducing talking time as well as providing maximum necessary information. In addition, the system also has automatic functions connected to software on an ambulance in order to shorten the time to contact and distance traveled; functional navigation map and directions to emergency help achieve maximum efficiency.

2.2.2.2 Scope

This project covers all processes from planning, requirement specification, design, development, testing to quality management.

2.2.2.3 The functions of Project

These are the functions of FAVN's project:

2.2.2.3.1 First Aid Application features.

- **List of injuries:** List of common injuries will be displayed in main screen when user launch in First Aid application
- **Instruction steps of injury:** Instructions steps first aid of an injury will be shown when user tap on an injury's name.
- **Searching:** Users search the related keywords of injury and results will be displayed in the screen.
- **Reading steps of instructions:** Read steps of instructions for users. Users can perform first aid and listen to steps of instructions at the same time.
- **Call 115:** This feature will help users to call 115. In an emergency that need to call 115, this feature can send to operator the user information including phone numbers and coordinates.
- **Current location:** Users can get their exact location via the map. In case there is no exact address, the users can get the nearest locations.
- **Finding nearby health facilities:** Users can find list of the nearest health facilities and see address, distance, phone number, and directions to the health facilities.
- **Learning:** Information about instructions of each injury will be explained more clearly than the instruction steps first aid in emergency screen. This feature will help users to have more knowledge about first aid in injury situations.
- **FAQs:** Users can see FAQs about an injury and send questions about injuries
- **More:** This feature is a collection of some other popular features for users :
 - Send feedback.
 - View first aid course.
 - Sharing.

2.2.2.3.2 Ambulance Application features

- **Login/Logout:** Ambulance staff need to login to use the account. The staff account can be given by administrator.
- **Notify task:** Ambulance staff can receive the task automatically from the coordinator without making a phone call or using walkie-talkie like traditional way.
- **Location of caller:** Ambulance staff will determine the caller's location exactly and know the shortest way from the location of ambulance to the location of caller.
- **Report to Dispatcher:** Ambulance can report to dispatcher after picking up victim to hospital.
- **Status:** Ambulance will report to dispatcher about the ambulance status of implementing task or not.

2.2.2.3.3 Dispatcher Application features

- **Login/Logout:** Dispatcher need to login to use the account. Dispatcher's account is given by administrator.
- **Dispatch ambulance:** Dispatcher receives information from users including their status and their coordinates, then dispatcher will dispatch the ambulance to the victim's location. The system will automatically choose the nearest available ambulance.
- **Show direction from ambulance to caller:** dispatcher will know the nearest way from ambulance's location to victim's location and follow ambulance's moving.
- **View ambulance information:** Dispatcher can know about the available of ambulance.
- **Cancel emergency case:** In case the victim doesn't need ambulance, dispatcher can cancel task.

2.2.2.3.4 Admin/Expert Application features

- **User management:** Admin can create new account for dispatcher, ambulance staff and health expert, update, delete and search account.
- **Data Management:** Medical expert can delete, update, or add new information about first aid.
- **Users' questions management:** Admin and expert will receive notifications when there are comments or questions from users and answer them.

2.2.3 Assumptions and Constraints

No	Description	Note
Assumptions		
1	Reviewers will get one day to approve a milestone document. If no comments are received within this time period, it will be considered as approved.	External Interfaces
Constraints		

1	This project must be completed and delivered before 16/12/2016	Schedule
2	In doing project processing, PM must submit report (include 6 reports) on certain date.	Schedule
3	Project Plan and SRS Document and must be completed within 14 days since 12/09/2016 Deadline: 28/09/2016	Schedule
4	Design Document (include Architecture Design, Screen Design, Database Design) must be completed within 13 days since 26/09/2016 Deadline: 14/10/2016	Schedule
5	Integration and System Test Plan (include test plan and test case...) must be completed within 6 days since 17/10/2016 Deadline: 25/10/2016	Schedule
6	Completed coding activity and have unit test result within 28.5 days since 17/10/2016 Deadline: 24/11/2016	Schedule
8	Create report about User manual, software package and installation guide on 8 days since 25/11/2016 Deadline: 06/12/2016	Schedule
9	Complete all of document and application before finishing the project on 16/12/2016	Schedule
10	Project contains 5 members	Resource

Table 2-3: Project Description

2.2.4 Project Objectives

2.2.4.1 Standard Objectives

Metrics	Unit	Committed	Re-committed	Note
Start Date		05-09-2016		
End Date		16-12-2016		
Duration	Day	75		
Team Size	Person	5		
Billable Effort	Person-day	375		1 Person-day = 5 hours
Calendar effort	Person-day	375		1 Person-day = 5 hours
Effort Usage	%	100		1 Person-day = 5 hours

Table 2-4: Standard Objectives

Metrics	Unit	Basic for setting Goals	
		Average	
Customer Satisfaction	Point	9.5	
Leakage	Wdef/mm	5	
Effort Efficiency	%	95	
Timeliness	%	100	

Table 2-5: Standard Objectives 2

2.2.4.2 Specific Objectives

Metrics	Unit	Basic for setting Goals	
		Plan	Actual
Training technology: Java, Bootstrap, Laravel –PHP framework	Person-day	15	15
Execute group review	Person-day	5	5
Training requirements, process before coding	Person-day	5	5

Table 2-6: Specific Objectives

2.2.5 Critical Dependencies

No	Dependency	Expected delivery date	Note
1	This project must be completed and delivered to FPT University.	16/12/2016	
2	Project Plan and SRS must be completed and delivered to Supervisor.	28/09/2016	
3	User manual, Software Package and Installation Guide must be completed and delivered to Supervisor and FPT University.	06/12/2016	
4	Beside Capstone Project, Team members have to joining in Japanese class and Japanese Fundamental Exam class.	05/09/2016	

Table 2-7: Critical Dependencies

2.2.6 Project Risk

PM identifies risks in the Risk Management Plan. The document is updated to trigger each milestone, each event also. The document is updated weekly by the PM, Risk Management Plan will be notified to all of the stakeholders affected. Status of risk is reported to supervisor at Project Milestones Report.

Reference to [FAVN_Risk Management Plan_v1.0_EN.xlsx](#)

2.3 Project Development Approach

2.3.1 Project Process

Process of this project is performed follow to Software Development Process of FPT Software.

2.3.1.1 FPT Software Process Model

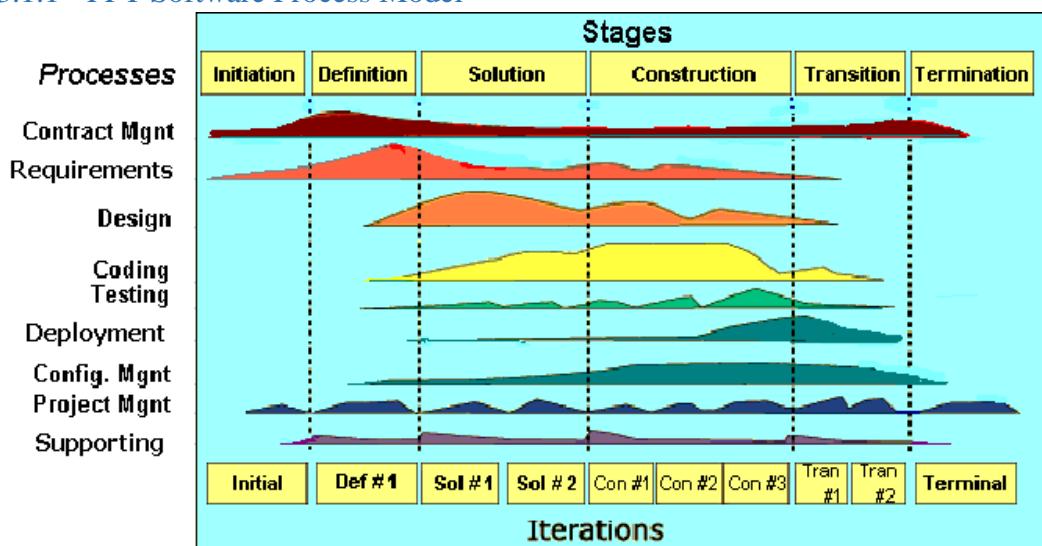


Figure 2-1: FPT Software process model

The software lifecycle is broken into *cycles*, each cycle working on a new generation of the product. The FPT Software process divides one development cycle in six consecutive *phases*:

- Table 1-1: Initiation phase
- Table 1-2: Definition phase
- Table 1-3: Solution phase
- Table 1-4: Construction phase
- Table 1-5: Transition
- Table 1-6: Termination

2.3.1.2 Project Life Cycle

Basing on FPT Software process and real-world project, we decided to divide the project into 4 phases: Initiation, Solution, Construction, and Termination:

- ❖ **Initiation Phase:** This is the explanatory phase of the project. Project objective and description is described at this stage. The purpose of this phase is to collect and understand business requirements, detail the project plan and agree upon a high level statement of work. Our primary objectives are complete project identification and project plan. After these are completed, the project is checked against the following criteria:
 - Identify business functions of the system
 - Determining the scope, conditions and limitations of the project
 - List the main functions of the system
 - List one or more suitable architecture for the system
 - Identify project risks
 - Complete Report #1, and Report #2
- ❖ **Solution Phase:** In this phase, the architecture of the system is designed. The goal is to translate requirements and specification into a technical solution to produce Technical Design.
 - Our primary objectives are complete Requirement Specification, Architecture Design and Database Design.
 - Finally, the plan must be provided (including estimates of cost and time) for the construction phase. The plan must ensure proper and accurate based on experience.
 - Complete Report #3 and Report #4
- ❖ **Construction Phase:** This is the longest phase of a project life cycle.
 - In this phase, all functions of the system will be installed. The installation will be divided into small stages, each stage of the installation a few functions. The results of each phase will be the release of the module function can be executed.
 - Construction and improvement of products until the final product is ready to deliver to the user. During this phase, all the components and other features of the application is developed and integrated into the product.
 - This phase emphasizes the resource management and control operations to optimize cost, time and quality.
 - Complete software packages and Report #5, Report #6
- ❖ **Termination Phase:** This is the final phase in the life cycle of a project.

- Their products will be deployed to the client. The feedback received during the transfer process will be recorded and put on the new functional requirements or functionality enhancements in the next version of the product.
- Phase transfer switch also includes the training system and the new system for the user.

2.3.2 Requirement Change Management

Who logs the change request?	Any team members
Who reviews the change request?	PM or who is PM assigned
Who approves the change request?	<p>PM by default. PTL if:</p> <ul style="list-style-type: none"> ▪ Changes to project scope ▪ Changes in delivery plan of project deliverables ▪ Changes to assignment for key roles (PM, PTL)

Table 2-8: Requirement Change Management

2.3.3 Quality Management

2.3.3.1 Defect Prevention Strategy

Item (Process/Product)	Strategy	Expected Benefits
Requirement missing	List up all of requirement into SRS document.	10–20% reduction in defect injection rate and about 2% improvement in productivity
Careless mistake in Design Document Format/Template wrong	After designing, QA will review Document Format base on checklist review design	Improvement in quality as overall defect removal efficiency will improve; some benefits in productivity as defects will be detected early
Use wrong template	Have a meeting to disseminate all template that is used in this project for all member	All member will use right template when do document
Coding application does not match with User Requirement.	Develop Team must study about Requirement/Design within 1 weeks since project is assigned. PM and PTL has responsibility to review task results and explain User Requirement for Develop Team	Coding Application match with User Requirement.

Table 2-9: Defect Prevention Strategy

2.3.3.2 Review Strategy

Review Item	Reviewer	Review Type	Review Method	Completion Criteria
Project Plan Project Schedule CM Plan	PM, TL, Supervisor	Group review Group review One-person review	Use checklist and Self-review	
Business analysis and requirements specification document, Use Case catalog	PM, TL, Supervisor	Group review and One-person review	Use checklist	
Design document, object model	Self-review, PM, TL Supervisor	One-person Review	Use checklist	
Stage plans	PM, TL, Supervisor	One-person review	Use checklist	
Complex/first time generated program specs incl. test cases, interactive diagrams		Group review		
Source code	Self-review, Peer review, PM, Supervisor	One-person review and Group review	Self-review and use checklist	

Table 2-10: Review Strategy

2.3.3.3 Unit Testing Strategy

Item to be Unit Tested	Unit Test Type	Unit Test Technique	Tool Used	Unit Test Completion Criteria
Source Code	White-Box Test	Using unit test case and test script	None	<ul style="list-style-type: none"> - Number of UTC/KLOC: 10 UTC/KLOC - Number defects/KLOC: 3-4 defects/KLOC - Statement coverage: 97% - Branch coverage: 100% - Path coverage: 100%

Table 2-11: Unit Testing Strategy

2.3.3.4 Integration Testing Strategy

Item to be Integration Tested	Integration Test Type	Integration Test Technique	Tool Used	Completion Criteria
Do test by flow of functions and items which have concern each other	Black-Box Test		Checklist, Boundary	- Number of UTC/KLOC: 30 - Number of defects/KLOC: 2-3

Table 2-12: Integration Testing Strategy

2.3.3.5 System Testing Strategy

Item to be System Tested	System Test Type	System Test Technique	Tool Used	Completion Criteria
Test whole system	Black-Box Test		None	-Number of UTC/KLOC: 20 -Number of defects/KLOC: 4-6

Table 2-13: System Testing Strategy

2.3.3.6 Estimates of Defects to be detected

Review/Testing Stage	Targeted No. of Defects to be detected	% of Defects to be detected	Basic for Estimation
Requirements review	10	7%	Referenced to similar project estimations
Design review	15	11%	Referenced to similar project estimations
Code review	30	22%	Referenced to similar project estimations
Unit Test	50	38%	Referenced to similar project estimations
Integration Test	15	11%	Referenced to similar project estimations
System Test	10	7%	Referenced to similar project estimations
User Acceptance Test	5	4%	Referenced to similar project estimations
Total	135	100%	

Table 2-14: Estimates of Defects

2.3.3.7 Measurements Program

Data to be collected	Purpose	PIC	When
Size: No. of KLOC	Achieve target	PM	At the end of stages
Effort: No. person-day	Monitor and controlling team member to keep plan.	Team members	Daily
Quality: No. defects detected	Managing product's quality.	Reviewer Tester	Right after the review/test
Schedule	Monitor and controlling software developing processing keep plan.	PM	Weekly and at the end of stages

Table 2-15: Measurements Program

2.4 Estimation

2.4.1 Size

This project is performed and must complete all requirements from teacher and FPT University. So size of our project is in Capstone Project limit.

2.4.2 Effort

The Effort estimation is documented in the table below:

	Initiation	Solution	Construction	Termination	Total
Effort(person/day)	70	82.5	142.5	80	375
Total % budgeted Effort Usage (%)	100	100	100	100	

Table 2-16: Effort Estimation

2.4.3 Schedule

2.4.3.1 Project Milestone & Deliverables

No	Stage	Committed Delivery date	Description of Deliverable	Delivery media
Initiation			Requirements agreed, Report 1 reviewed	
1	Develop project idea	06-09-2016	Project goals and scope defined, milestone description defined, resource committed	Commit GitHub
2	Q&A Management Sheet	21-09-2016	Criteria: Documentation reviewed	Commit GitHub
3	Submit report no.1 final	22-09-2016	Completed report no.1	Commit GitHub
4	Solution			
5	SRS	28-09-2016	Criteria: Documentation reviewed	Commit GitHub
Solution		Architecture Design	05-10-2016	
1	Screen Design	06-10-2016	Criteria: Documentation reviewed	Commit GitHub
2	Class Design	14-10-2016	Criteria: Documentation reviewed	Commit GitHub
3	Detail Data Design	12-10-2016	Criteria: Documentation reviewed	Commit GitHub
4	Submit report no.2 final	17-10-2016	Completed report no.2	Commit GitHub
5	Test Plan	05-10-2016	Completed	Commit GitHub
6	Submit Report no.3 Final	06-10-2016	Completed report no.3	Commit GitHub
7	Construction		Product developed & tested and released to supervisor, documentation reviewed.	
8	Submit Report no.4 Final	27-10-2016	Completed report no.4	Commit GitHub
9	Review Test Document	18-11-2016	Criteria: Documentation reviewed	Commit GitHub

10	Submit report no.5 Final	24-11-2016	Completed report no.5	Commit GitHub
Construction		Complete Coding and Unit Test	24-11-2016	
1	Complete Testing	18-11-2016	Completed Test	Commit GitHub
2	Submit the last document and CD source code	06-12-2016	Report no.6 Final Documents and Source Code	Commit GitHub
3	Termination		Project post-mortem is conducted, Project assets archived and released to supervisor	
4	Project Result Assessment	02-12-2016	Criteria: Completed	Commit GitHub
5	Complete Presentation Slide	06-12-2016	Criteria: Completed	Commit GitHub
6	Represent capstone project	14-12-2016	Criteria: Completed	Commit GitHub
Termination		Project Complete	16-12-2016	
1	Develop project idea	06-09-2016	Project goals and scope defined, milestone description defined, resource committed	Commit GitHub
2	Q&A Management Sheet	21-09-2016	Criteria: Documentation reviewed	Commit GitHub
3	Submit report no.1 final	22-09-2016	Completed report no.1	Commit GitHub
4	Solution			

Table 2-17: Project Milestone and Deliverables

2.4.3.2 Detail Schedule

The detail project schedule is available in file [FAVN_ProjectSchedule_v1.0_EN.mpp](#).

The Project Schedule is weekly updated by the Project Manager.

No	Activity	Start date	End date	Responsible
Defect Prevention				
1	Training coding convention PHP, Android	24-09-2016	24-09-2016	KienMT
2	Training for Q&A and tester to use checklist	15-10-2016	16-10-2016	AnNP
Quality Control				
1	Group review requirement	14-10-2016	16-10-2016	HungDH
2	Group review design	07-10-2016	09-10-2016	DungNT
3	Group review coding	22-11-2016	24-11-2016	KienMT
Project Tracking				
1	Solution: Milestone review meeting	27-10-2016	28-10-2016	HungDH
2	Construction: Milestone review meeting	06-12-2016	08-12-2016	HungDH
3	Transition: Milestone review meeting	14-12-2016	15-12-2016	HungDH
Configuration Management				
1	Baseline code	17-10-2016	20-10-2016	KienMT
2	Base line test report, test case and test plan	22-10-2016	29-10-2016	HungDH
Q&A				
1	Final Inspection: Report 1	07-09-2016	22-09-2016	AnNP
2	Final Inspection: Report 2	22-09-2016	19-10-2016	AnNP
3	Final Inspection: Report 3	20-10-2016	28-10-2016	AnNP
4	Final Inspection: Report 4	29-10-2016	25-11-2016	AnNP
5	Final Inspection: Report 5	26-11-2016	10-12-2016	AnNP
6	Final Inspection: Report 6	11-12-2016	14-12-2016	AnNP

Table 2-17: Activity Schedule

2.4.4 Resource

Specified as in the section [2.5.2 Project Team](#)

2.4.5 Infrastructure

Item	Description	Expected Availability by	Note
Development Environment			
Operating System	Windows 10 (64 bit)		
Browser	Chrome (40 or above), Cốc cốc (40 or above)		
Development language	PHP, Java		
Technology			
Development language	PHP, Java		
Database	MySQL, SQLite		
Hardware Requirement			
Hardware Configuration	2GB workspaces on server		
Equipment & Tools			
Source Version Control	GitHub	Definition stage	
Task Tracking	MS Project Professional 2013	Initiation stage	
SRS	Microsoft Office Word 2013, Microsoft Office Excel 2013, Microsoft Office Visio 2013	Initiation stage	

Table 2-18: Infrastructure

2.4.6 Training Plan

Training Area	Participants	Duration	Waiver Criteria
Technical			
PHP	KienMT	1 week	Mandatory
Android	HungDH DungNT	1 week	Mandatory
Bootstrap	KienMT		
Process			
Quality system		3 hours	If already trained
Configuration management		2 hours	If already trained for CC. For others, on-the-job training
Group review		2 hours	If already trained
Defect prevention		2 hours	Mandatory

Table 2-19: Training Plan

2.4.7 Finance

Because this project is non-business, it is a Capstone Project at FPT University. So we do not estimate about finance.

2.5 Project Organization

2.5.1 Organization Structure

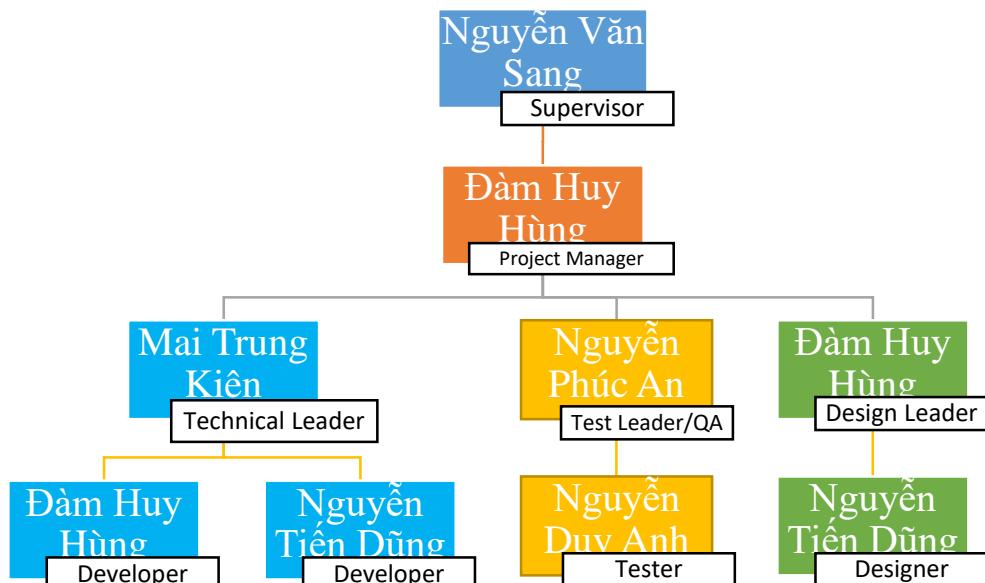


Table 2-20: Organization Structure

2.5.2 Project Team

Role	Responsibility	Full name	Effort (%)	Start date	End date
PM	Have overall responsibility of the project: - Project planning and scheduling - Task assignment and tracking processing - Review documents - Reporting to supervisor	Dam Huy Hung	50	06-09-2016	16-12-2016
PTL	PTL is responsible for the technical project execution	Mai Trung Kien	100	06-09-2016	16-12-2016
DEV	- Study technique (Android, Bootstrap, PHP) - Coding functions and modules of system. - Peer-review source code of others members	Dam Huy Hung, Nguyen Tien Dung	50	06-09-2016	16-12-2016
Designer	- Support creating screen design	Nguyen Tien Dung	50	06-09-2016	16-12-2016

Table 2-21: Project Team description

The detail of Human resource budget allocation over the whole project life is in the below table:

Role	Name	W1-Sep	W2-Sep	W3-Sep	W4-Sep	W1-Oct	W2-Oct	W3-Oct	W4-Oct	W1-Nov	W2-Nov	W4-Nov	W5-Nov	W1-Dec	W2-Dec	W3-Dec	Total (pd)
PM/PDL	Dam Huy Hung	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	75
PTL	Mai Trung Kien	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	75
DEV /DES	Nguyen Tien Dung	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	75
TL	Nguyen Phuc An	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	75
Tester	Nguyen Duy Anh	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	75
Total																	375

Table 2-22: Human Resource Budget Allocation

2.6 Communication & Reporting

Communication Type	Method/Tool	When	Information	Participants/ Responsible
Project Task Tracking				
Task scheduling	MS Project Professional 2013	Weekly		PM
Task assignment	Trello	Weekly		PM
Task status reporting	Daily Report	Daily		Project Team members
Project Meeting				
Kick-off Meeting	Face to face	Initiation stage	Project introduction; Project plan review; Risk identification; stakeholders identify.	PM, Project Team Members
Project Progress Review Meetings	Face to face	Weekly and on event	Communicate project status Communicate and resolve any open issue, risks, and changes Discuss any suggested improvement	PM, Project Team Members
Milestone Meetings	Face to face	5 days after the completion of stages: Definition, Solution & Construction	Project objective review, evaluate project performance (quality, schedule, effort), Causal analysis, update project plan for next stage	PM, Project Team Members, QA, Supervisor
Supervisor Communication and Reporting:				
Communication with Supervisor				
Transfer/Sharing of project documentation/information	TortoiseGit	When available	All project documentation and information	PM, Project Team Members, QA
Project Report	Agreed FPT Software and	5pm Monday,	Project status report, Issue requiring	PM

	FU standard format	Weekly	clarifications, escalation, if any	
Project Meetings with supervisor	Face to face	12h30 Wednesday, Weekly	As above	PM
Requirement gathering/clarification	Face to face meeting	During requirement analysis phase	As in Q&A list	PM
Review Project Plan & Project schedule	By attend project meeting	Significant changes to WO, PP and Project schedule (scope, objectives Organization, HR, major milestone, deliverables)		PM
Project Progress Review	By email and/or via Operation meeting at Group/Division level	Weekly	Project status report, Issue requiring clarifications, escalation, if any	PM
Project Milestone Review	By email and via project milestone review meeting	End of every stage	Project objective review, evaluate project performance (quality, schedule, effort), Causal analysis, update project plan for next stage	PM

Table 2-23: Communication and Reporting Plan

3 SOFTWARE REQUIREMENT

3.1 Introduction

3.1.1 Purpose

This document will provide the describing of general requirement and non-functional requirements of our FAVN system. It also describes the requirement scope of each phase in the project.

3.1.2 Definitions and Acronyms

Terms	Description
FAS	First Aid system
FAA	First Aid application
AMBA	Ambulance application
DPA	Dispatcher application
AEA	Admin/Expert application

Table 3-1: Definition and Acronyms

3.2 User Requirement Specification

3.2.1 Product Features

These are the features of First Aid system:

3.2.1.1 First Aid Application features

- **List of injuries:** List of common injuries will be displayed in main screen when user launch in First Aid application
- **Instruction steps of injury:** Instructions steps first aid of an injury will be shown when user tap on an injury's name.
- **Searching:** Users search the related keywords of injury and results will be displayed in the screen.
- **Reading steps of instructions:** Read steps of instructions for users. Users can perform first aid and listen to steps of instructions at the same time.
- **Call 115:** This feature will help users to call 115. In an emergency that need to call 115, this feature can send to operator the user information including phone numbers and coordinates.
- **Current location:** Users can get their exact location via the map. In case there is no exact address, the users can get the nearest locations.
- **Finding nearby health facilities:** Users can find list of the nearest health facilities and see address, distance, phone number, and directions to the health facilities.
- **Learning:** Information about instructions of each injury will be explained more clearly than the instruction steps first aid in emergency screen. This feature will help users to have more knowledge about first aid in injury situations.
- **FAQs:** Users can see FAQs about an injury and send questions about injuries
- **More:** This feature is a collection of some other popular features for users:
 - Send feedback
 - View first aid course
 - Sharing

3.2.1.2 Ambulance Application features

- **Login/Logout:** Ambulance staff need to login to use the account. The staff account can be given by administrator.
- **Notify task:** Ambulance staff can receive the task automatically from the coordinator without making a phone call or using walkie-talkie like traditional way.
- **Location of caller:** Ambulance staff will determine the caller's location exactly and know the shortest way from the location of ambulance to the location of caller.
- **Report to Dispatcher:** Ambulance can report to dispatcher after picking up victim to hospital.
- **Status:** Ambulance will report to dispatcher about the ambulance status of implementing task or not.

3.2.1.3 Dispatcher Application features

- **Login/Logout:** Dispatcher need to login to use the account. Dispatcher's account is given by administrator.
- **Dispatch ambulance:** Dispatcher receives information from users including their status and their coordinates, then dispatcher will dispatch the ambulance to the victim's location. The system will automatically choose the nearest available ambulance.
- **Show direction from ambulance to caller:** dispatcher will know the nearest way from ambulance's location to victim's location and follow ambulance's moving.
- **View ambulance information:** Dispatcher can know about the available of ambulance
- **Cancel emergency case:** In case the victim doesn't need ambulance, dispatcher can cancel task.

3.2.1.4 Admin/Expert Application features

- **User management:** Admin can create new account for dispatcher, ambulance staff and health expert, update, delete and search account.
- **Data Management:** Medical expert can delete, update, or add new information about first aid.
- **Users' questions management:** Admin and expert will receive notifications when there are comments or questions from users and answer them.

3.2.1.5 User characteristic

FAS has five objective users:

- **FAA user:** Users uses First Aid application in android mobile.
- **Dispatcher:** Users are offered an account by admin to use Dispatcher website.
- **Ambulance staff:** Users are offered an account by admin to use Ambulance application in tablet.
- **Expert:** Users are offered an account by admin to use First Aid website, they can manage all information about first aid and learning of emergencies, answer the question of FAA users.
- **Admin:** They can manage all information about all user types, answer the question of FAA users.

3.2.2 Functional Requirements

3.2.2.1 First Aid

Access right: First Aid application user

This function related to emergency situations, support to user can first aid injuries. FAA user can view list of injuries, view instruction steps of an injury, search injuries, read instruction steps.

3.2.2.2 Learning

Access right: First Aid application user

This function is used to learn about first aid methods clearly. FAA user can view detail explain about first aid an injury. Beside, user can view FAQs about an injury.

3.2.2.3 Location

Access right: First Aid application user, Ambulance staff

This function is used to view the current location of user. Beside, FAA user can view list of nearest health facilities and view direction to a health facility. Ambulance staff can view location of caller or victim, view direction to them.

3.2.2.4 Call

Access right: First Aid application user

This function is used to call to 115 emergency center and other health facilities when user needs help from them. If user calls to Dispatcher application of 115 center, they can send their coordinates and phone number to 115 center and that help the emergency happen fast and easily.

3.2.2.5 Send question

Access right: First Aid application user

This function is used to send questions about issues related to first aid, injuries case and medical expert will answer your question. Beside, user can send feedback about function of application to admin.

3.2.2.6 Common

Access right: Ambulance staff, dispatcher, expert and admin

This function is used to login, logout. Ambulance staff login to Ambulance application, dispatcher login to Dispatcher application and expert or admin login to administrator website, and they can do their work.

3.2.2.7 Task

Access right: Ambulance staff

This function related to the task of an ambulance. Ambulance staff can receive emergency task to dispatcher, report when they picked up caller, report when they complete task or report when ambulance car have problem.

3.2.2.8 Dispatch

Access right: Dispatcher

This function related to the jobs of a dispatcher. Dispatcher can receive emergency call to FAA user and has information from users including their status and their coordinates then dispatcher will dispatch the ambulance to the caller's location.

3.2.2.9 Manage user's account

Access right: Admin and expert

This function is used to manage user's Q&A. Admin will answer user's feedbacks about function, GUI or something related to application. Expert will answer questions about injuries and first aid.

3.2.2.10 Manage injury

Access right: Expert

This function is used to manage information about first aid and injuries situation. Expert can delete, update, or add new information about first aid.

3.2.3 Non-functional Requirement

The system has to satisfy these principles:

- **Learnable:** The user interface must be easy to learn, even at the first time looking at the screen, user may immediately understand the function of each button or icon.
- **Efficiency:** The user interface must minimize the number of steps that the system takes to complete its task.
- **Memorable:** System contains some complex screens. Therefore, interface should be easier to use each time the user interacts with it.
- **Visibility:** Important information (example: text in nodes) should be clearly visible.
- **Consistency:** Like items should always be displayed and act the same way through the entire application.
- **Easy to maintain and upgrade.**
- **Ensure data security capabilities, high performance.**
- **Scalability system.**

3.3 Software Requirements Specification

3.3.1 Overall Description

3.3.1.1 System use case

3.3.1.1.1 First Aid Application

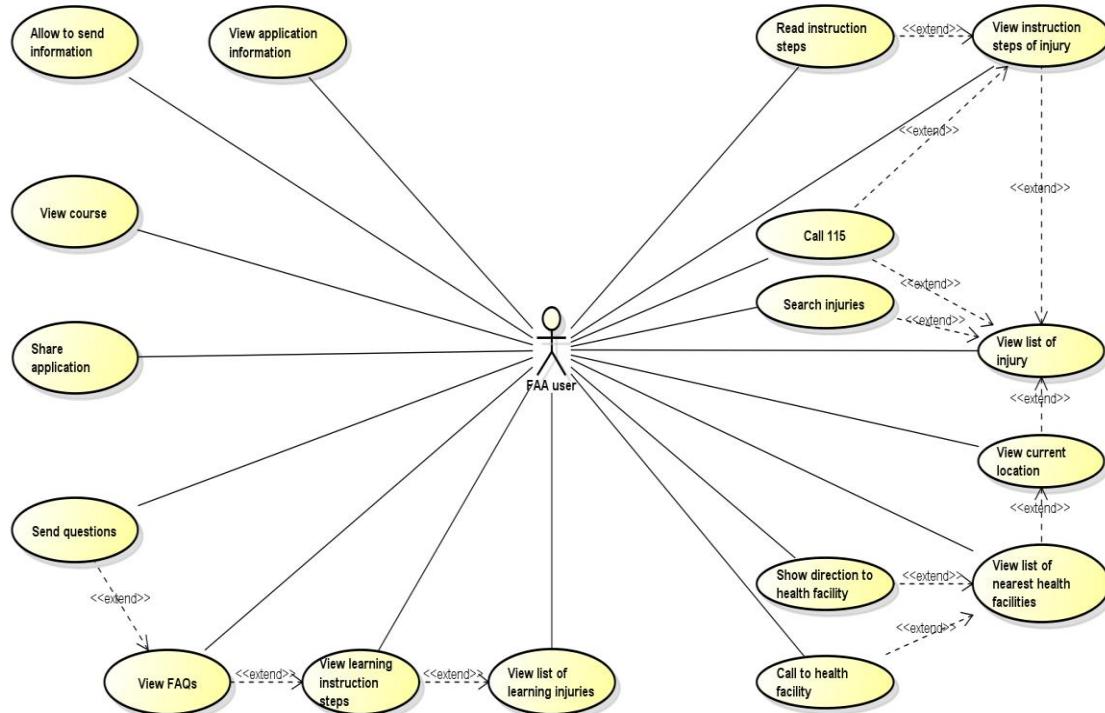


Figure 3-1: First Aid Application use case

3.3.1.1.2 Ambulance Application

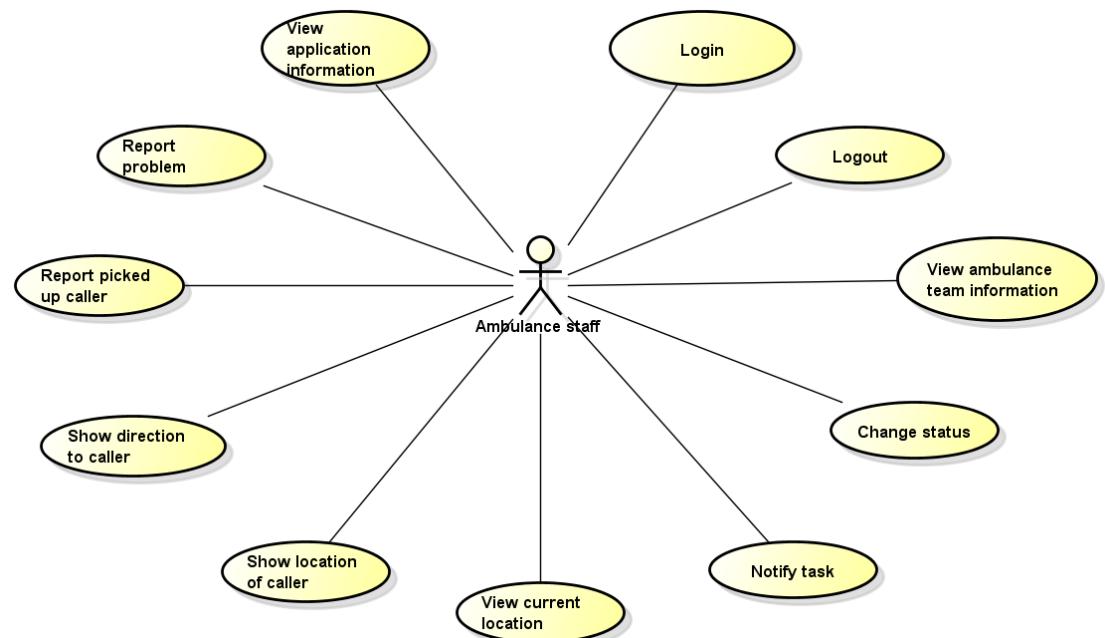


Figure 3-2: Ambulance Application use case

3.3.1.1.3 Dispatcher Application

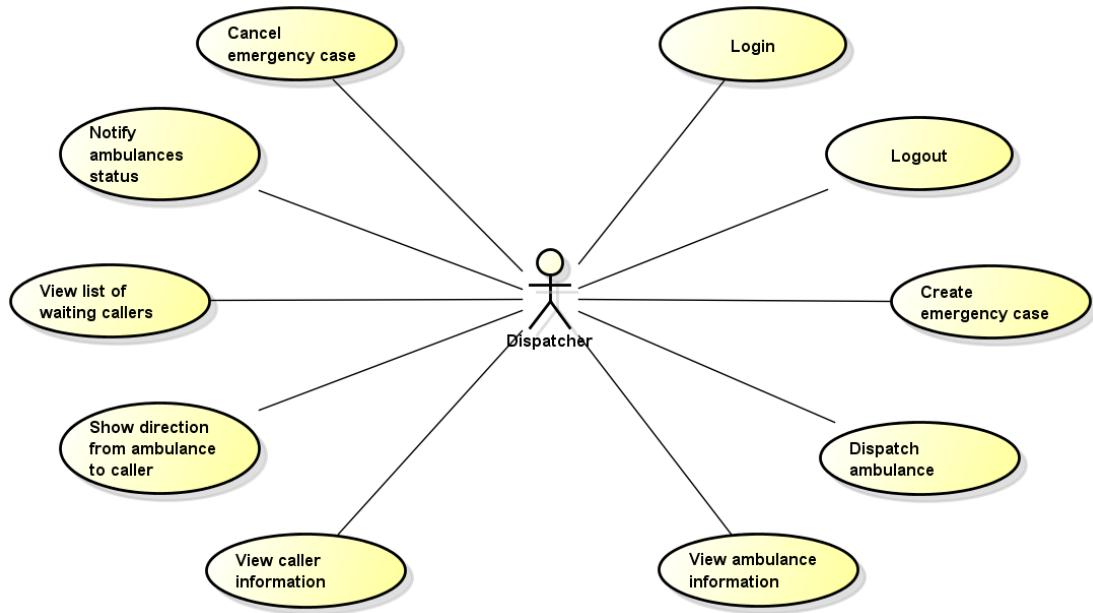


Figure 3-3: Dispatcher Application use case

3.3.1.1.4 Admin/Expert Application

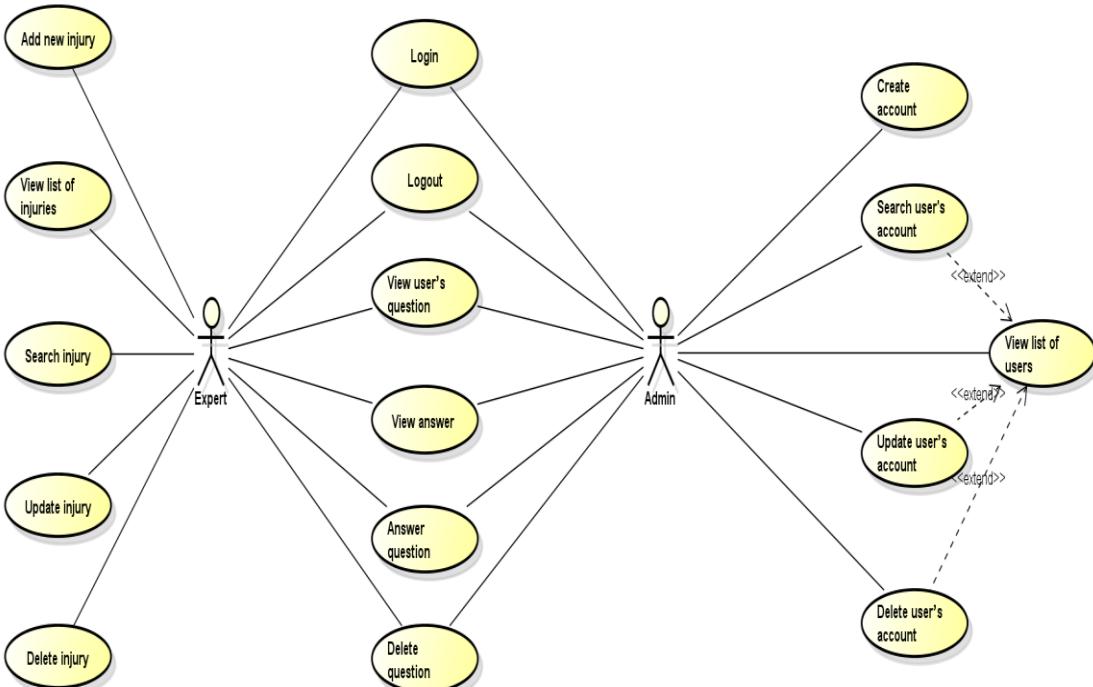


Figure 3-4: Admin/Expert Application use case

3.3.1.2 Product Features

3.3.1.2.1 First Aid Application

UC No.	Group Of Functions	Function	Glossary
First Aid Application			
UC001	Emergency	View list of injuries	
UC002		View instruction steps of injury	
UC003		Search injuries	
UC004		Call 115	
UC005		Read instruction steps	
UC006		View current location	
UC007		View list of nearest health facilities	
UC008		Show direction to health facility	
UC009		Call to health facility	
UC0010	Learning	View list of learning injuries	
UC0011		View learning instruction steps	
UC0012		View FAQs	
UC0013	More	Send questions	
UC0014		View courses	
UC0015		Share application	
UC0016	Setting	Allow to send information	
UC0017	Information	View application information	

Table 3-2: List of use cases

3.3.1.2.2 Ambulance Application

UC No.	Group Of Functions	Function	Glossary
Ambulance Application			
UC0018	Common	Login	
UC0019		Logout	
UC0020	Task	View ambulance team information	
UC0021		Change status	
UC0022		Notify task	
UC0023		View current location	
UC0024		Show location of caller	
UC0025		Show direction to caller	
UC0026		Report picked up caller	
UC0027		Report completed task	
UC0028		Report problem	
UC0029	Information	View application information	

Table 3-3: List of use cases

3.3.1.2.3 Dispatcher Application

UC No.	Group Of Functions	Function	Glossary
Dispatcher Application			
UC0030	Common	Login	
UC0031		Logout	
UC0032	Dispatch	Create emergency case	
UC0033		Dispatch ambulance	
UC0034		View ambulance information	
UC0035		View caller information	
UC0036		Show direction from ambulance to caller	
UC0037		View list of waiting callers	
UC0038		Notify ambulances status	
UC0039		Cancel emergency case	

Table 3-4: List of use cases

3.3.1.2.4 Admin/Expert Application

UC No.	Group Of Functions	Function	Glossary
Admin/Expert Application			
UC0040	Common	Login	
UC0041		Logout	
UC0042	Manage user's account	Create account	
UC0043		View list of users	
UC0044		Search user's account	
UC0045		Update user's account	
UC0046		Delete user's account	
UC0047	Manage Q&A	View user's question	
UC0048		View answer	
UC0049		Answer question	
UC0050		Delete question	
UC0051	Manage injury	Add new injury	
UC0052		View list of injuries	
UC0053		Search injury	
UC0054		Update injury	
UC0055		Delete injury	

Table 3-5: List of use cases

3.3.1.3 User Characteristics

FAS has five objective users:

- **FAA user:** Users uses First Aid application in android mobile.
- **Dispatcher:** Users are offered an account by admin to use Dispatcher website.
- **Ambulance staff:** Users are offered an account by admin to use Ambulance application in tablet.
- **Expert:** Users are offered an account by admin to use First Aid website, they can manage all information about first aid and learning of emergencies, answer the question of FAA users.
- **Admin:** They can manage all information about all user types, answer the question of FAA users.

3.3.2 Functional Specification

3.3.2.1 Business Rules

No	Description
B1	Content is limited to 500 characters
B2	Text field cannot be empty
B3	Email must contain characters '@' and '.'
B4	Displayed date is yyyy/mm/dd format

Table 3-6: Business Rules

3.3.2.2 First Application

3.3.2.2.1 Emergency Module

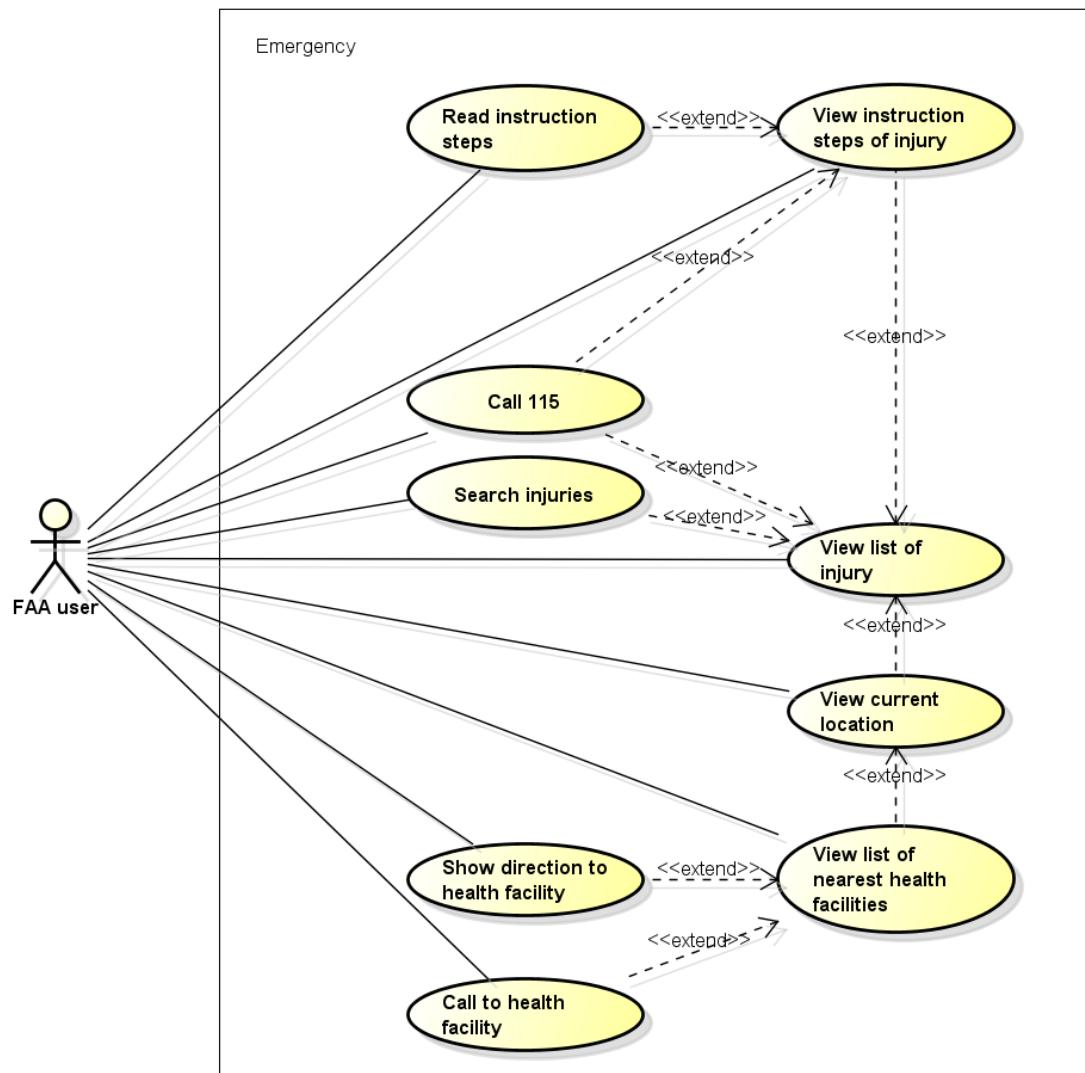


Figure 3-5: Emergency use case

3.3.2.2.1.1 UC001 - View list of injury

Use Case ID	UC001	Version	1.1		
Use Case Name	View list of injury				
Created by:	AnhND	Date Created:	24/09/2016		
Primary Actor	FAA user	Secondary Actor			
Description:	This function allows user to view all injuries need to first aid in First Aid application.				
Preconditions:	Install First Aid application				
Trigger:	User launches application				
Post conditions:	All existing injuries will be displayed in the Emergency screen.				
Normal Flow					
Step	Actor	Action			
1	FAA user	Launch application			
2	FAA	Show all existing injuries			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-7: View list injuries.

3.3.2.2.1.2 UC002 - View instruction steps of injury

Use Case ID	UC002	Version	1.1
Use Case Name	View instruction steps of injury		
Created by:	AnhND	Date Created:	24/09/2016
Primary Actor	FAA user	Secondary Actor	
Description:	This function allows user to view first aid instruction step of an injuries.		
Preconditions:	<ol style="list-style-type: none"> 1. Install First Aid application 2. User launches application 		

Trigger:	User taps on an injury in the list of injuries that displayed in the Emergency screen.	
Post conditions:	All first aid instruction step about this injury will be displayed in the Emergency screen.	
Normal Flow		
Step	Actor	Action
1	FAA user	Launch application
2	FAA user	Tap on an injury in the list
3	FAA	Show all first aid instruction step
Alternative Flows:		
AT1	At step 3 in the main flows, if user taps on Back buttons.	
Step	Actor	Action
2.1	FAA	Redirects user to Emergency screen
Exceptions: N/A		
Priority	High	
Frequency of Use:	High	
Business Rules:		
Other Information:	N/A	

Table 3-8: View instruction step on injury.**3.3.2.2.1.3 UC003 - Search injuries**

Use Case ID	UC003	Version	1.1
Use Case Name	Search injuries		
Created by:	AnhND	Date Created:	24/09/2016
Primary Actor	FAA user	Secondary Actor	
Description:	This function allows user to search an injury exits on FAA by text		
Preconditions:	1. Install First Aid application 2. User launches application		
Trigger:	User taps on Search button, enters search phrase and taps Search		
Post conditions:	All results that matched with the keyword user enters will be		

		displayed in the Emergency screen.
Normal Flow		
Step	Actor	Action
1	FAA user	Tap on Search button
2	FAA user	Enter search phrase to text box
3	FAA user	Tap Search
4	FAA	List all results that matched with the keyword user entered
Alternative Flows:		
AT1	At step 2 in the main flows, if user taps on an injury in the list under the text box.	
Step	Actor	Action
2.1	FAA	Redirects user to first aid instruction step of chosen injury.
AT2	At step 2 in the main flows, if user taps on Back button.	
Step	Actor	Action
2.1	FAA	Redirects user to Emergency screen
AT3	At step 3 in the main flows, if user taps on [x] button	
Step	Actor	Action
3.1	FAA	Redirects user to text box to enters search phrase
Exceptions: N/A		
Priority	High	
Frequency of Use:	High	
Business Rules:		
Other Information:	N/A	

Table 3-9: Search injuries.**3.3.2.2.1.4 UC004 - Call 115**

Use Case ID	UC004	Version	1.1
Use Case Name	Call 115		

Created by:	AnhND	Date Created:	24/09/2016		
Primary Actor	FAA user	Secondary Actor			
Description:	This function allows user to make emergency calls to the 115 center and send user's information if user allows.				
Preconditions:	<ol style="list-style-type: none"> 1. Install First Aid application 2. User launches application 				
Trigger:	User tap on call button in the Emergency screen or user tap on an injury to view instruction steps of injury and tap on call button that below a step.				
Post conditions:	Call to 115 center. If user allows to send information that set in Setting, FFA will send user's information (include location and phone number) to Dispatcher application.				
Normal Flow					
Step	Actor	Action			
1	FAA user	Tap on Call button/ User taps on an injury in the list of injuries then tap on Call 115 button.			
2	FAA	Call to 115 and send user's information if any.			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-10: Call 115.**3.3.2.2.1.5 UC005 - Read instruction steps**

Use Case ID	UC005	Version	1.1
Use Case Name	Read instruction steps		
Created by:	AnhND	Date Created:	24/09/2016
Primary Actor	FAA user	Secondary Actor	
Description:	This function allows user listening FAA reads an instruction step.		
Preconditions:	<ol style="list-style-type: none"> 1. Install First Aid application 2. User launches application 		

		3. User chooses an injury that want to see
Trigger:		User tap on any instruction step.
Post conditions:		Instruction step is read
		Normal Flow
Step	Actor	Action
1	FAA user	Tap on an instruction step
2	FAA	Read instruction step
Alternative Flows:		
AT1	At step 2 in main flow, if user taps again on this instruction step.	
Step	Actor	Action
2.1	FAA	Pause reading instruction step
2.2	FAA user	Tap again on this instruction step
2.3	FAA	Continue to read this instruction step
2.4	FAA user	Tap on other instruction step
2.5	FAA	Read new instruction step
		Exceptions: N/A
Priority		High
Frequency of Use:		High
Business Rules:		
Other Information:		N/A

Table 3-11: Read instruction steps.**3.3.2.2.1.6 UC006 - View current location**

Use Case ID	UC006	Version	1.1
Use Case Name	View current location		
Created by:	AnhND	Date Created:	24/09/2016
Primary Actor	FAA user	Secondary Actor	
Description:	This function allows user to locate their current location correctly.		
Preconditions:	1. Install First Aid application 2. User launches application		

Trigger:		User taps on Direct button
Post conditions:		The location of user is displayed in the Map
Normal Flow		
Step	Actor	Action
1	FAA user	Tap on Direct button
2	FAA	Displayed the location of user in the Map, include: - Latitude and Longitude - Vicinity (if has internet)
Alternative Flows:		
AT1	At step 2 in main flow, if user scrolls in the Map	
Step	Actor	Action
2.1	FAA	The Map is moved
2.2	FAA user	Tap on Locate button
2.3	FAA	Return to the current location of user
AT2	At step 2 in main flow, if user taps on Back button	
Step	Actor	Action
2.1	FAA	Redirects user to Emergency screen
Exceptions: N/A		
Priority		High
Frequency of Use:		High
Business Rules:		
Other Information:		N/A

Table 3-12: View current location.**3.3.2.2.1.7 UC007 - View list of nearest health facilities**

Use Case ID	UC007	Version	1.1
Use Case Name	View list of nearest health facilities		
Created by:	AnhND	Date Created:	24/09/2016
Primary Actor	FAA user	Secondary Actor	

Description:		This function allows user to view list of nearest health facilities from their location.
Preconditions:		<ol style="list-style-type: none"> 1. Install First Aid application 2. User launches application 3. User taps on Direct button
Trigger:		User taps on “Cơ sở y tế gần đây” button
Post conditions:		List of nearest health facilities are displayed
Normal Flow		
Step	Actor	Action
1	FAA user	<p>Tap on “Cơ sở y tế gần đây” button</p> <p>FAA</p> <p>Show table list of nearest health facilities within a radius 20km, classify in 3 tabs: - “Tất Cả” - “Bệnh Viện” - “Trạm Y Té” With “Tất Cả” is default tab Content of each tab: - Name - Address or Vicinity - Distance: from user to this health facility, sort from near to far (if has internet) - Button Call: if has phone number of health facility</p>
Alternative Flows:		
AT1	At step 2 in main flow, user taps on [x] button	
Step	Actor	Action
2.1	FAA	Redirect user to the Map
Exceptions: N/A		
Priority		High
Frequency of Use:		High
Business Rules:		
Other Information:		N/A

Table 3-13: View list of nearest health facilities.

3.3.2.2.1.8 UC008 - Show direction to health facility

Use Case ID	UC008	Version	1.1		
Use Case Name	Show direction to health facility				
Created by:	AnhND	Date Created:	24/09/2016		
Primary Actor	FAA user	Secondary Actor			
Description:	This function allows user to view the shortest direction from user's location to a health facility address				
Preconditions:	1. Install First Aid application 2. User launches application 3. Mobile has Network 4. User taps on “Cơ sở y tế gần đây” 5. User taps on any health facility				
Trigger:	User taps on any Direct button				
Post conditions:	The shortest direction from user's location to a health facility is displayed				
Normal Flow					
Step	Actor	Action			
1	FAA user	Tap on Direct button			
2	FAA	Show the shortest direction from user's location to a health facility			
Alternative Flows:					
AT1	At step 2 in main flow, if user taps on [x] button				
Step	Actor	Action			
2.1	FAA	Clear the direction			
AT2	At step 2 in main flow, if user scrolls in the Map				
Step	Actor	Action			
2.1	FAA	The Map is moved			
2.2	FAA user	Tap on health facility name			
2.3	FAA	Zoom in health facility location			
Exceptions: N/A					
Priority	High				

Frequency of Use:	High
Business Rules:	
Other Information:	N/A

Table 3-14: Show direction to health facility.**3.3.2.2.1.9 UC009 - Call to health facility**

Use Case ID	UC009	Version	1.1		
Use Case Name	Call to health facility				
Created by:	AnhND	Date Created:	24/09/2016		
Primary Actor	FAA user	Secondary Actor			
Description:	This function allows user to call to the health facility				
Preconditions:	1. Install First Aid application 2. User launches application 3. User taps on “Cơ sở y tế gần đây” 4. Health facility in the list has phone number				
Trigger:	User taps on Call button				
Post conditions:	Call to health facility				
Normal Flow					
Step	Actor	Action			
1	FAA user	Taps on Call button			
2	FAA	Call to health facility			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-15: Call to health facility.

3.3.2.2.2 Learning Module

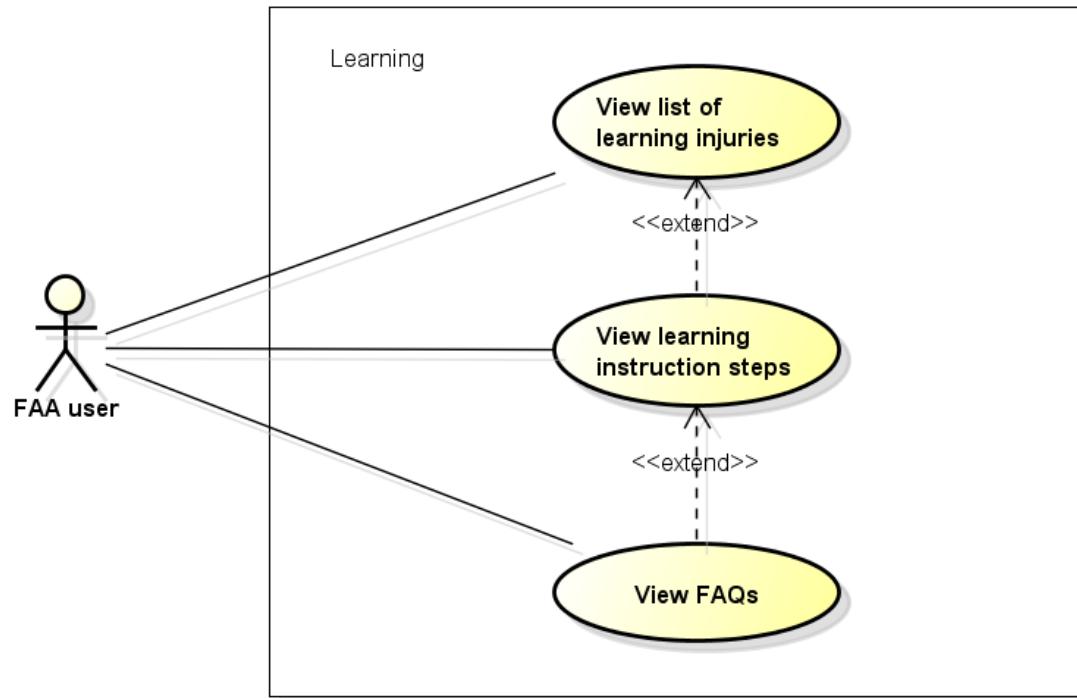


Figure 3-6: Learning use case

3.3.2.2.2.1 UC0010 - View list of learning injuries

Use Case ID	UC0010	Version	1.1
Use Case Name	View list of learning injuries		
Created by:	AnhND	Date Created:	24/09/2016
Primary Actor	FAA user	Secondary Actor	
Description:	This function allows user to view all learning about injuries		
Preconditions:	1. Install First Aid application 2. User launches application 3. User taps on menu bar		
Trigger:	User taps on “Tìm Hiểu” tab in menu bar		
Post conditions:	All learning match with all injuries in Emergency screen will be displayed in the Learning screen.		
Normal Flow			
Step	Actor	Action	
1	FAA user	Tap on “Tìm Hiểu” tab	

2	FAA	Show all learning
Alternative Flows: N/A		
Exceptions: N/A		
Priority	High	
Frequency of Use:	High	
Business Rules:		
Other Information:	N/A	

Table 3-16: View list of learning injuries.**3.3.2.2.2 UC0011 - View learning instruction steps**

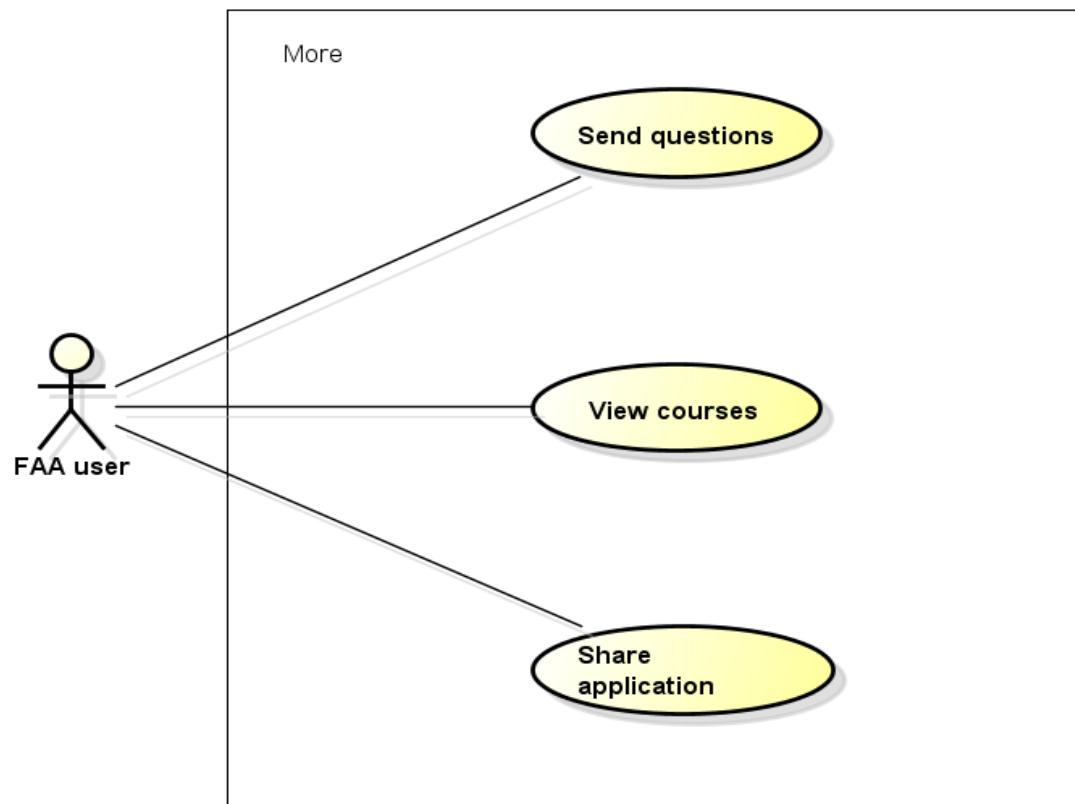
Use Case ID	UC0011	Version	1.1		
Use Case Name					
Created by:	AnhND	Date Created:	24/09/2016		
Primary Actor	FAA user	Secondary Actor			
Description:	This function allows user to view instruction step of a learning case.				
Preconditions:	<ol style="list-style-type: none"> 1. Install First Aid application 2. User launches application 3. User taps on “Tim Hiếu” tab in menu bar 				
Trigger:	User taps on a learning in the list of learning that displayed in the Learning screen.				
Post conditions:	All instruction step about this learning and detail explain will be displayed in the Learning screen.				
Normal Flow					
Step	Actor	Action			
1	FAA user	Tap on a learning in the list			
2	FAA	Show all instruction step and detail explain			
Alternative Flows:					
AT1	At step 2 in the main flows, if user taps on Back buttons.				
Step	Actor	Action			
2.1	FAA	Redirects user to Learning screen			
Exceptions: N/A					

Priority	High
Frequency of Use:	High
Business Rules:	
Other Information:	N/A

Table 3-17: View learning instruction steps.**3.3.2.2.3 UC0012 - View FAQs**

Use Case ID	UC0012	Version	1.1		
Use Case Name	View FAQs				
Created by:	AnhND	Date Created:	24/09/2016		
Primary Actor	FAA user	Secondary Actor			
Description:	This function allows user to view FAQs about an injury				
Preconditions:	<ol style="list-style-type: none"> 1. Install First Aid application 2. User launches application 3. User chooses a learning in Learning screen 				
Trigger:	User taps on “Câu hỏi thường gặp” button				
Post conditions:	FAQs about an injury is displayed in FAQs screen.				
Normal Flow					
Step	Actor	Action			
1	FAA user	Tap on “Câu hỏi thường gặp” button			
2	FAA	Show FAQs			
Alternative Flows:					
AT1	At step 2 in the main flows, if user taps on Back buttons.				
Step	Actor	Action			
2.1	FAA	Redirects user to learning instruction steps screen			
AT2	At step 2 in the main flows, if user taps on “Đặt câu hỏi cho chúng tôi” buttons.				
Step	Actor	Action			
2.1	FAA	Redirects user to “Ý kiến – Hỏi đáp” screen			
Exceptions: N/A					
Priority	High				

Frequency of Use:	High
Business Rules:	
Other Information:	N/A

Table 3-18: View FAQs.**3.3.2.2.3 More Module****Figure 3-7: More use cases****3.3.2.2.3.1 UC0013 - Send questions**

Use Case ID	UC0013	Version	1.1
Use Case Name	Send questions		
Created by:	AnhND	Date Created:	24/09/2016
Primary Actor	FAA user	Secondary Actor	
Description:	This function allows user to send questions about injuries or send feedback about application		
Preconditions:	<ol style="list-style-type: none"> 1. Install First Aid application 2. User launches application 3. User taps on “Thêm” tab in menu bar 		

Trigger:		User taps on “Ý kiến – Hỏi đáp” item
Post conditions:		“Ý kiến – Hỏi đáp” screen is displayed to users fill information and send questions.
Normal Flow		
Step	Actor	Action
1	FAA user	Taps on “Ý kiến – Hỏi đáp” item
2	FAA	Show “Ý kiến – Hỏi đáp” screen, include: - User name edit box - Email edit box - Title radio box - Content edit box
3	FAA user	Fill information to name, mail, content edit box and choose radio box
4	FAA user	Tap “Gửi” button
5	FAA	Send question
Alternative Flows:		
AT1	At step 2 in the main flows, if user taps on Back buttons.	
Step	Actor	Action
2.1	FAA	Redirects user to More screen
Exceptions:		
EC1	At step 2 in the main flows, if required edit box are not entered	
Step	Actor	Action
4.1	FAA	Notify error message “Chưa nhập tên”, “Chưa nhập mail”, “Chưa nhập nội dung”
EC2	At step 2 in the main flows, if mail text box are entered with wrong type of data	
Step	Actor	Action
4.1	FAA	Notify error message “Sai định dạng email”
Priority		High
Frequency of Use:		High

Business Rules:	B1, B2, B3		
Other Information:	N/A		

Table 3-19: Send questions.**3.3.2.2.3.2 UC0014 - View course**

Use Case ID	UC0014	Version	1.1		
Use Case Name	View course				
Created by:	AnhND	Date Created:	24/09/2016		
Primary Actor	FAA user	Secondary Actor			
Description:	This function allows user to view first aid courses are organized by the 115 Hanoi center.				
Preconditions:	<ol style="list-style-type: none"> 1. Install First Aid application 2. User launches application 3. User taps on “Thêm” tab in menu bar 				
Trigger:	User taps on “Khóa học sơ cấp cứu” item				
Post conditions:	The information about first aid courses are displayed in Courses screen.				
Normal Flow					
Step	Actor	Action			
1	FAA user	Tap on “Khóa học sơ cấp cứu” item			
2	FAA	Show the The information about first aid courses			
Alternative Flows:					
AT1	At step 2 in the main flows, if user taps on Back buttons.				
Step	Actor	Action			
2.1	FAA	Redirects user to More screen			
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-20: View course.

3.3.2.2.3.3 UC0015 - Share application

Use Case ID	UC0015	Version	1.1		
Use Case Name	Share application				
Created by:	AnhND	Date Created:	24/09/2016		
Primary Actor	FAA user	Secondary Actor			
Description:	This function allows user to share the application through third party applications.				
Preconditions:	1. Install First Aid application 2. User launches application 3. User taps on “Thêm” tab in menu bar				
Trigger:	User taps on “Chia sẻ” item				
Post conditions:	The application is shared to third party applications.				
Normal Flow					
Step	Actor	Action			
1	FAA user	Tap on “Chia sẻ” item			
2	FAA	Show list of third party applications to share: - Facebook - Message - Zalo - ...			
3	FAA user	Tap on any third party application			
4	FAA user	Tap on Post button			
5	FAA	Share FAA to this third party application			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-21: Share application.

3.3.2.2.4 Setting Module

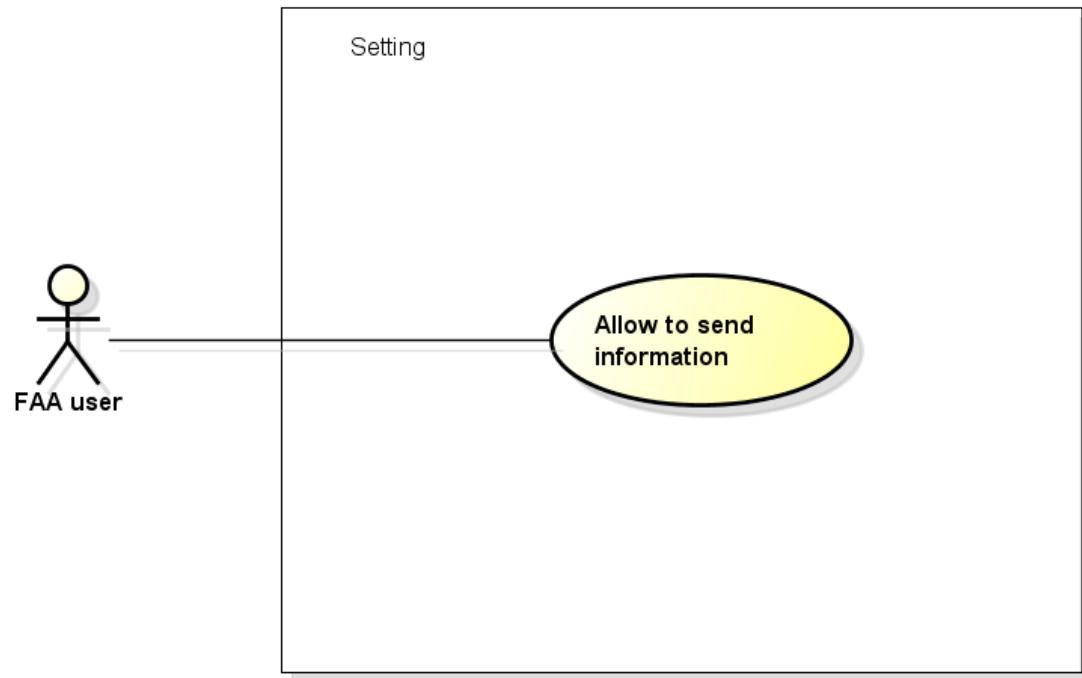


Figure 3-8: Setting use case

3.3.2.2.4.1 UC0016 - Allow to send information

Use Case ID	UC0016	Version	1.1
Use Case Name	Allow to send information		
Created by:	AnhND	Date Created:	24/09/2016
Primary Actor	FAA user	Secondary Actor	
Description:	This function allows user to choose that send or not their information include coordinates and phone number to 115 Dispatcher application.		
Preconditions:	1. Install First Aid application 2. User launches application 3. User taps on “Cài đặt” tab in menu bar		
Trigger:	1. “Đồng ý gửi” switch in “Cài đặt” tab is on 2. User enters their phone number in “Nhập số điện thoại” item and tap OK button		
Post conditions:	The user's information include coordinates and phone number will be sent when user calls 115		
Normal Flow			
Step	Actor	Action	

1	FAA user	Tap on “Nhập số điện thoại” item
2	FAA	Show “Nhập số điện thoại”
3	FAA user	Enter phone number to
4	FAA user	Tap OK button
Alternative Flows: N/A		
Exceptions: N/A		
Priority		High
Frequency of Use:		High
Business Rules:		
Other Information:		N/A

Table 3-22: Allow to send information.

3.3.2.3 Ambulance Application

3.3.2.3.1 Common Module

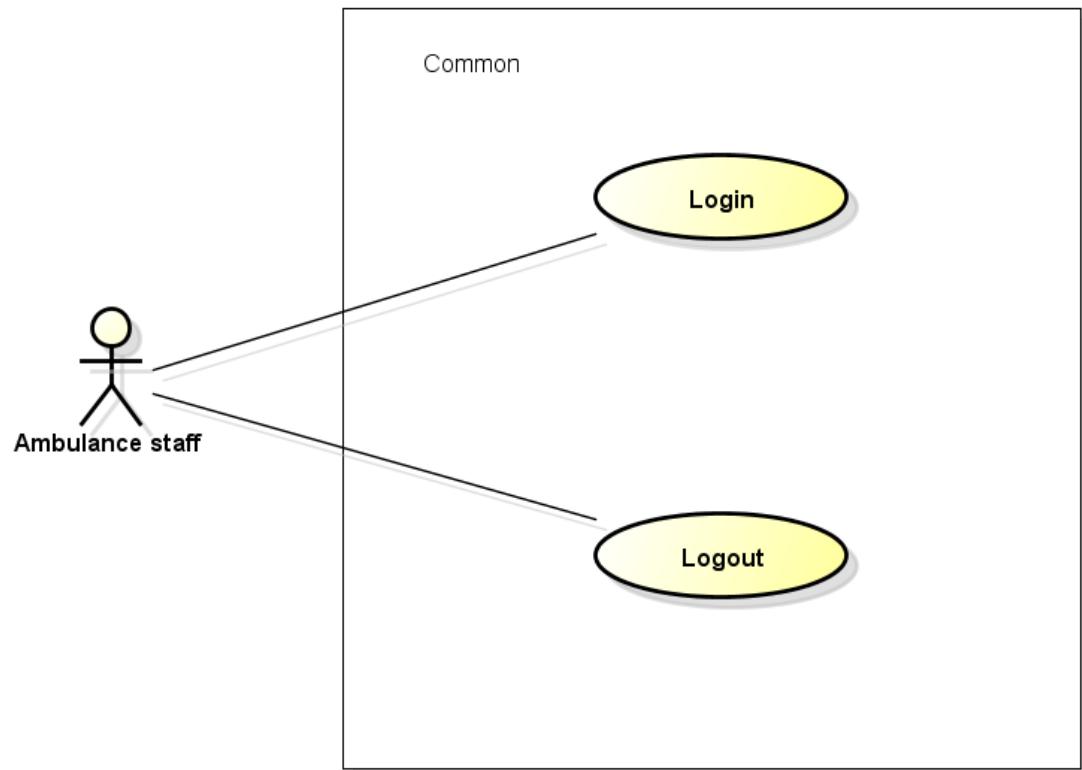


Figure 3-9: Common use case

3.3.2.3.1.1 UC0018 - Login

Use Case ID	UC0018	Version	1.1
Use Case Name	Login		
Created by:	AnhND	Date Created:	25/09/2016
Primary Actor	Ambulance staff	Secondary Actor	
Description:	This function allows ambulance staff login to Ambulance application to do tasks.		
Preconditions:	1. Install Ambulance application 2. Ambulance staff launches application 3. Mobile device has Network 4. Ambulance staff was provide an account		
Trigger:	Ambulance staff enters username and password correctly in Login screen		
Post conditions:	1. Ambulance staff login to application successful 2. Waiting screen is displayed		

Normal Flow		
Step	Actor	Action
1	Staff	Launch application
2	AMBA	Display Login screen with following fields: - User name - Password - Login button
3	Staff	Enter user name & password into User name & Password fields
4	Staff	Tap on Login button
5	AMBA	Validate the entered user name & password
6	AMBA	Display Waiting screen
Alternative Flows: N/A		
Exceptions:		
EC1	At step 3 in the main flows, if required edit box are not entered	
Step	Actor	Action
3.1	AMBA	Notify error message “Chưa nhập tên”, “Chưa nhập mật khẩu”
Priority	High	
Frequency of Use:	High	
Business Rules:	B1, B2	
Other Information:	N/A	

Table 3-23: Login

3.3.2.3.1.2 UC0019 - Logout

Use Case ID	UC0019	Version	1.1
Use Case Name	Logout		
Created by:	AnhND	Date Created:	25/09/2016
Primary Actor	Ambulance staff	Secondary Actor	
Description:	This function allows ambulance staff logout to Ambulance application		
Preconditions:	1. Install Ambulance application 2. Staff logged in to application		
Trigger:	User click Logout button in item menu		

Post conditions:		1. Log staff out from application. 2. Redirect staff to login screen
Normal Flow		
Step	Actor	Action
1	Staff	Tap on Logout button
2	AMBA	Redirect to login screen
Alternative Flows: N/A		
Exceptions: N/A		
Priority		High
Frequency of Use:		High
Business Rules:		
Other Information:		N/A

Table 3-24: Logout.

3.3.2.3.2 Task Module

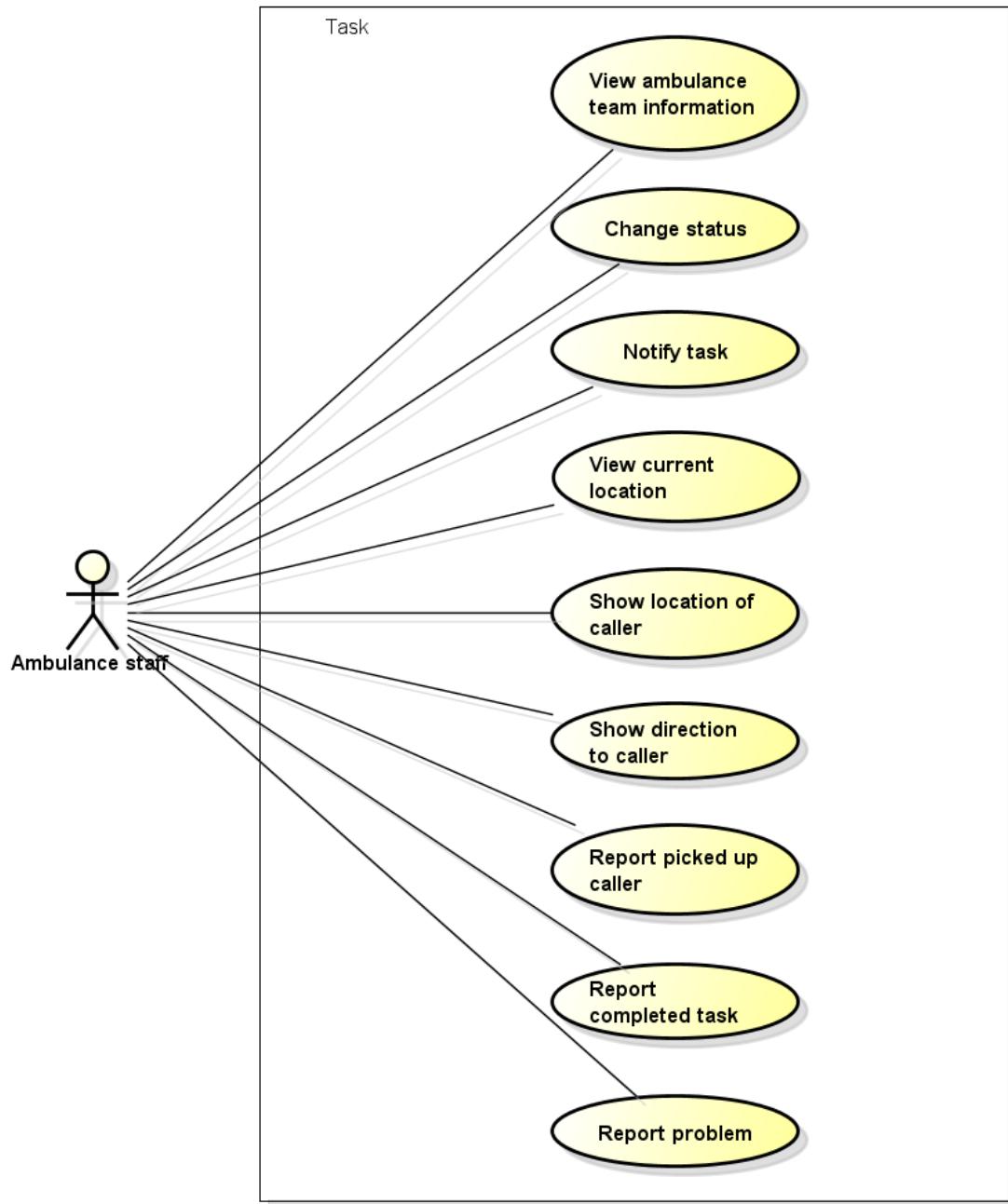


Figure 3-10: Task use case

3.3.2.3.2.1 UC0020 - View ambulance team information

Use Case ID	UC0020	Version	1.1
Use Case Name	View ambulance team information		
Created by:	AnhND	Date Created:	25/09/2016
Primary Actor	Ambulance staff	Secondary Actor	

Description:		This function allows ambulance staff to view the information of ambulance team
Preconditions:		Install Ambulance application
Trigger:		Staff logged in to application
Post conditions:		The information of ambulance team is displayed in waiting screen
Normal Flow		
Step	Actor	Action
1	Staff	Login to application
2	AMBA	Show ambulance team information
Alternative Flows: N/A		
Exceptions: N/A		
Priority		High
Frequency of Use:		High
Business Rules:		
Other Information:		N/A

Table 3-25: View ambulance team information.**3.3.2.3.2.2 UC0021 - Change status**

Use Case ID	UC0021	Version	1.1
Use Case Name	Change status		
Created by:	AnhND	Date Created:	25/09/2016
Primary Actor	Ambulance staff	Secondary Actor	
Description:	This function allows ambulance staff to change status of ambulance		
Preconditions:	1. Install Ambulance application 2. Staff logged in to application		
Trigger:	Staff taps on “Sẵn sàng” switch		
Post conditions:	Ready status is changed to Not ready status, waiting screen is dimmed and ambulance does not receive task		
Normal Flow			
Step	Actor	Action	
1	Staff	Tap on “Sẵn sàng” switch in waiting screen	

2	AMBA	Ready status is changed to Not ready status
3	AMBA	Waiting screen is dimmed
4	AMBA	Does not to receive task
Alternative Flows:		
AT1	At step 3 in the main flows, if user taps again on switch.	
Step	Actor	Action
3.1	AMBA	Not ready status is changed to Ready status
3.2	AMBA	Waiting screen lights up
3.3	AMBA	Ready to receive task
Exceptions: N/A		
Priority	High	
Frequency of Use:	High	
Business Rules:		
Other Information:	N/A	

Table 3-26: Change status.**3.3.2.3.2.3 UC0022 - Notify task**

Use Case ID	UC0022	Version	1.1
Use Case Name	Notify task		
Created by:	AnhND	Date Created:	25/09/2016
Primary Actor	Ambulance staff	Secondary Actor	
Description:	This function allows ambulance staff to receive task		
Preconditions:	1. Install Ambulance application 2. Staff logged in to application		
Trigger:	Ambulance staff receive task automatically when dispatcher click button dispatch		
Post conditions:	Notification about emergency is display on screen		
Normal Flow			
Step	Actor	Action	
1	Staff	Login to application	
2	Dispatcher	Dispatch ambulance	

3	AMBA	Show dialog notify task: - “Tù chối/Chấp nhận” button
Alternative Flows:		
AT1	At step 3 in the main flows, if staff taps on “Tù chối” button	
Step	Actor	Action
3.1	AMBA	Dialog notify task disappear
3.2	AMBA	Redirect to waiting screen and auto change status to Not ready
AT2	At step 3 in the main flows, if staff taps on “Chấp nhận” button	
Step	Actor	Action
3.1	AMBA	Redirect to Task screen
3.2	AMBA	Locate the caller's location in map and show table “Thông tin” of caller
Exceptions: N/A		
Priority	High	
Frequency of Use:	High	
Business Rules:		
Other Information:	N/A	

Table 3-27: Notify task.**3.3.2.3.2.4 UC0023 - View current location**

Use Case ID	UC0023	Version	1.1
Use Case Name	View current location		
Created by:	AnhND	Date Created:	25/09/2016
Primary Actor	Ambulance staff	Secondary Actor	
Description:	This function allows ambulance staff to locate the ambulance's location in map		
Preconditions:	1. Install Ambulance application 2. Staff accepts task		
Trigger:	Staff taps on Locate button in Task screen		
Post conditions:	The current ambulance's location is displayed in map		
Normal Flow			

Step	Actor	Action
1	Staff	Tap on Locate button
2	AMBA	Display the current location of ambulance
Alternative Flows:		
AT1	At step 2 in main flow, if staff scrolls in the Map	
Step	Actor	Action
2.1	AMBA	The Map is moved
2.2	Staff	Tap on Locate button
2.3	AMBA	Return to the current location of ambulance
Exceptions: N/A		
Priority	High	
Frequency of Use:	High	
Business Rules:		
Other Information:	N/A	

Table 3-28: View current location.**3.3.2.3.2.5 UC0024 - Show location of caller**

Use Case ID	UC0024	Version	1.1
Use Case Name	Show location of caller		
Created by:	AnhND	Date Created:	25/09/2016
Primary Actor	Ambulance staff	Secondary Actor	
Description:	This function allows ambulance staff to show the location of caller		
Preconditions:	<ol style="list-style-type: none"> 1. Install Ambulance application 2. Staff accepts task 3. Staff scrolls in the Map 		
Trigger:	Ambulance staff taps on Locate caller button		
Post conditions:	The current location of caller is located		
Normal Flow			
Step	Actor	Action	
1	Staff	Scroll in the Map	
2	Staff	Tap on Locate caller button in table “Thông tin”	

3	AMBA	Return to the current location of caller
Alternative Flows: N/A		
Exceptions: N/A		
Priority	High	
Frequency of Use:	High	
Business Rules:		
Other Information:	N/A	

Table 3-29: Show location of caller.

3.3.2.3.2.6 UC0025 - Show direction to caller

Use Case ID	UC0025	Version	1.1		
Use Case Name	Show direction to caller				
Created by:	AnhND	Date Created:	25/09/2016		
Primary Actor	Ambulance staff	Secondary Actor			
Description:	This function allows ambulance staff to see the direction to caller				
Preconditions:	1. Install Ambulance application 2. Staff accepts task				
Trigger:	Ambulance staff taps on Direct button in table “Thông tin”				
Post conditions:	The direction from ambulance to caller is displayed				
Normal Flow					
Step	Actor	Action			
1	Staff	Tap on Direct button in table “Thông tin”			
2	AMBA	Show the direction to caller			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-30: Show direction to caller.

3.3.2.3.2.7 UC0026 - Report picked up caller

Use Case ID	UC0026	Version	1.1		
Use Case Name	Report picked up caller				
Created by:	AnhND	Date Created:	25/09/2016		
Primary Actor	Ambulance staff	Secondary Actor			
Description:	This function allows ambulance staff to report when picked up caller to dispatcher				
Preconditions:	1. Install Ambulance application 2. Staff accepts task				
Trigger:	Ambulance staff taps on Picked up button in table “Thông tin”				
Post conditions:	Dialog confirm to picked up caller is displayed and send report to dispatcher				
Normal Flow					
Step	Actor	Action			
1	Staff	Tap on Pickup button in table “Thông tin”			
2	AMBA	Show dialog confirm to picked up caller: - “Hủy/Ok” button			
3	Staff	Tap on Ok button			
4	AMBA	Dialog confirm is disappeared and send report to dispatcher			
Alternative Flows:					
AT1	At step 2 in main flow, if staff taps on “Hủy” button				
Step	Actor	Action			
2.1	AMBA	Dialog confirm is disappeared and not send report to dispatcher			
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-31: Report picked up caller.

3.3.2.3.2.8 UC0027 - Report completed task

Use Case ID	UC0027	Version	1.1		
Use Case Name	Report completed task				
Created by:	AnhND	Date Created:	25/09/2016		
Primary Actor	Ambulance staff	Secondary Actor			
Description:	This function allows ambulance staff to report when completed task to dispatcher				
Preconditions:	1. Install Ambulance application 2. Staff accepts task				
Trigger:	Ambulance staff taps on “Kết thúc” button				
Post conditions:	Dialog “Kết thúc nhiệm vụ” is displayed				
Normal Flow					
Step	Actor	Action			
1	Staff	Tap on “Kết thúc” button			
2	AMBA	Show dialog “Kết thúc nhiệm vụ”, content includes: - Checkbox: “Sẵn sàng làm nhiệm vụ tiếp theo”, default checked - No / Yes button			
Alternative Flows:					
AT1	At step 2 in main flow, if staff unchecks and taps on Yes button				
Step	Actor	Action			
2.1	AMBA	Redirect to waiting screen, auto Not Ready status, waiting screen is dimmed			
AT2	At step 2 in main flow, if staff checks and taps on Yes button				
Step	Actor	Action			
2.1	AMBA	Redirect to waiting screen, auto Ready status, waiting screen lights up			
AT3	At step 2 in main flow, if staff taps on No button				
Step	Actor	Action			
2.1	AMBA	Dialog “Kết thúc nhiệm vụ” is disappeared, task is continued			
Exceptions: N/A					
Priority		High			

Frequency of Use:	High
Business Rules:	
Other Information:	N/A

Table 3-32: Report completed task.**3.3.2.3.2.9 UC0028 - Report problem**

Use Case ID	UC0028	Version	1.1		
Use Case Name	Report problem				
Created by:	AnhND	Date Created:	25/09/2016		
Primary Actor	Ambulance staff	Secondary Actor			
Description:	This function allows ambulance staff to report that they have problem to dispatcher				
Preconditions:	1. Install Ambulance application 2. Staff accepts task				
Trigger:	Ambulance staff taps on “Báo sự cố” button				
Post conditions:	Make a call to the hotline of dispatcher				
Normal Flow					
Step	Actor	Action			
1	Staff	Tap on “Báo sự cố” button			
2	AMBA	Call to the hotline of dispatcher			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-33: Report problem.

3.3.2.3.3 Information Module.

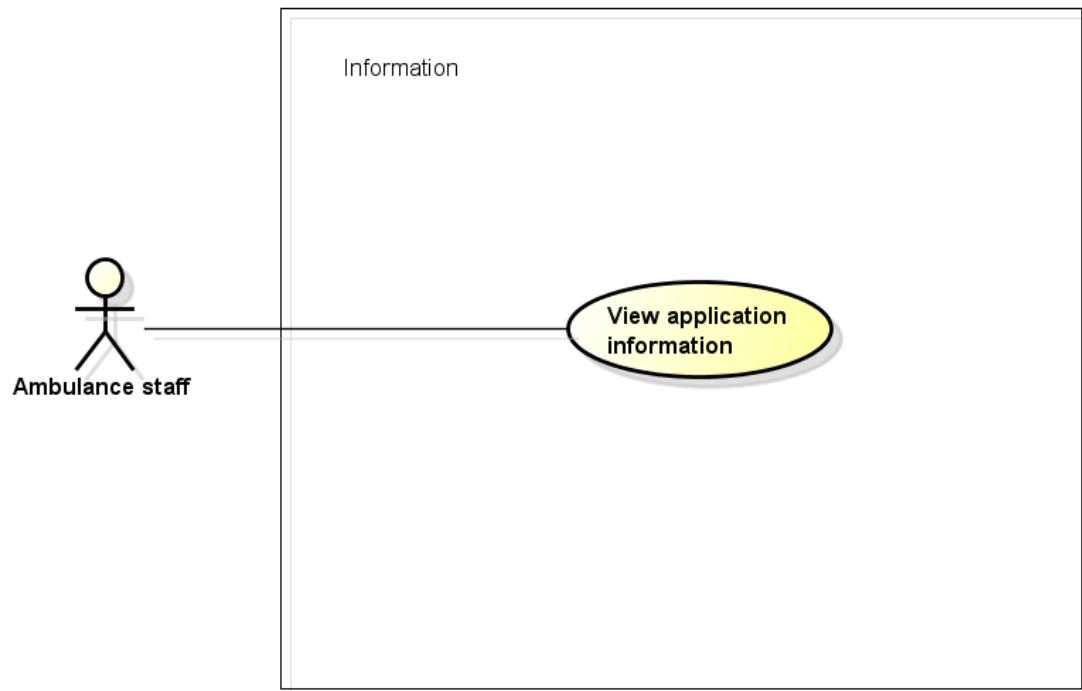


Figure 3-11: Information use case

3.3.2.3.3.1 UC0029 - View application information

Use Case ID	UC0029	Version	1.1
Use Case Name	View application information		
Created by:	AnhND	Date Created:	25/09/2016
Primary Actor	Ambulance staff	Secondary Actor	
Description:	This function allows ambulance staff to view the application information include terms of use, version of app, member of develop team.		
Preconditions:	1. Install Ambulance application 2. Ambulance staff launches application		
Trigger:	Ambulance staff taps on “Thông tin phần mềm” item in item menu		
Post conditions:	All information about AMBA will be displayed on information screen		
Normal Flow			
Step	Actor	Action	
1	Staff	Tap on “Thông tin phần mềm” item in item menu	
2	AMBA	Show information about AMBA include:	

		<ul style="list-style-type: none">- Terms of use- Version- Develop team
Alternative Flows: N/A		
Exceptions: N/A		
Priority		High
Frequency of Use:		High
Business Rules:		
Other Information:	N/A	

Table 3-34: View application information.

3.3.2.4 Dispatcher Application

3.3.2.4.1 Common Module

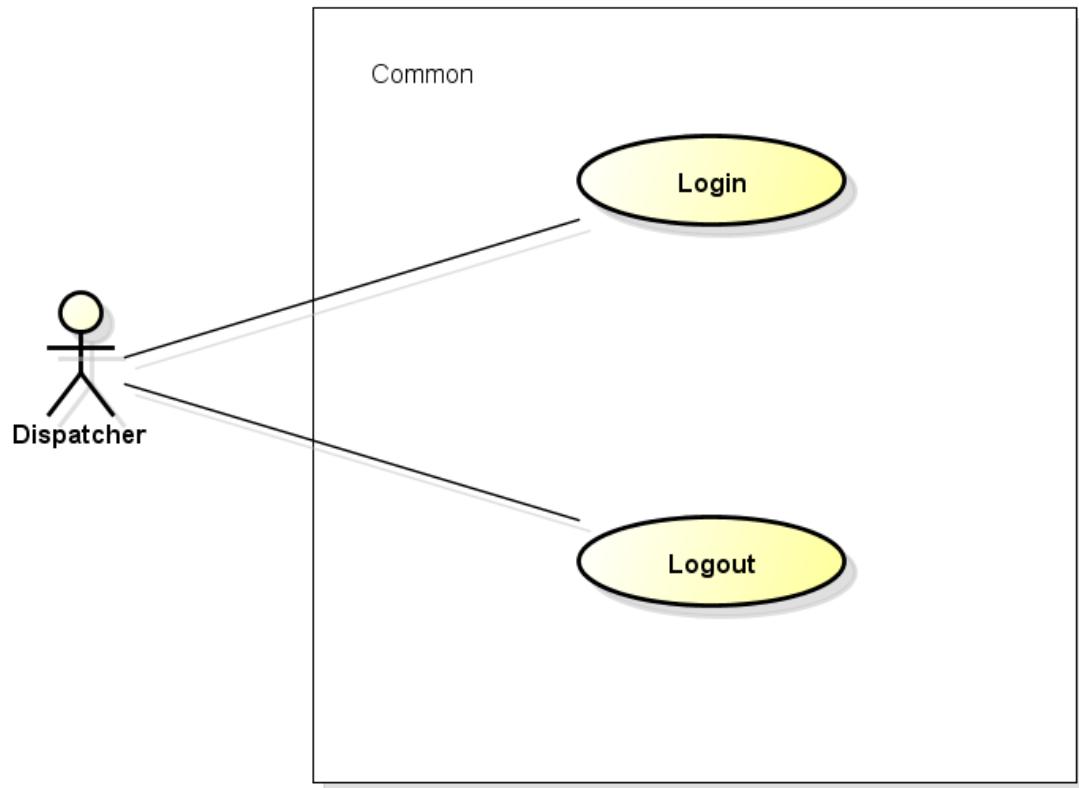


Figure 3-12: Common use case

3.3.2.4.1.1 UC0030 - Login

Use Case ID	UC0030	Version	1.1
Use Case Name	Login		
Created by:	AnhND	Date Created:	26/09/2016
Primary Actor	Dispatcher	Secondary Actor	
Description:	This function allows dispatcher login to Dispatcher web application to do tasks.		
Preconditions:	1. Dispatcher web app is available 2. Dispatcher access Dispatcher web site 3. Dispatcher was provide an account		
Trigger:	Dispatcher enters username and password correctly in Login page		
Post conditions:	1. Dispatcher login to web application successful 2. Main screen is displayed		
Normal Flow			

Step	Actor	Action
1	Dispatcher	Access to Dispatcher web site
2	DPA	Display Login page with following fields: - User name - Password - Login button
3	Dispatcher	Enter user name & password into User name & Password fields
4	Dispatcher	Tap on Login button
5	DPA	Validate the entered user name & password
6	DPA	Display main screen, order from left to right: - “Điều phối” sidebar - Map - “Trường hợp khẩn cấp” sidebar, include: + “Đội cứu thương” tab + “Đang đợi” tab
Alternative Flows: N/A		
Exceptions: N/A		
EC1	At step 3 in the main flows, if required text box are not entered	
Step	Actor	Action
3.1	DPA	Notify error message “Chưa nhập tên” or “Chưa nhập mật khẩu”
EC2	At step 3 in the main flows, if user entered wrong User name or Password	
Step	Actor	Action
3.1	DPA	Notify error message “Nhập sai tên” or “Nhập sai mật khẩu”
Priority	High	
Frequency of Use:	High	
Business Rules:	B1, B2	
Other Information:	N/A	

Table 3-35: Login.**3.3.2.4.1.2 UC0031 - Logout**

Use Case ID	UC0031	Version	1.1
Use Case Name	Logout		
Created by:	AnhND	Date Created:	26/09/2016

Primary Actor	Dispatcher	Secondary Actor			
Description:	This function allows dispatcher logout to web site				
Preconditions:	1. Dispatcher web app is available 2. Dispatcher access Dispatcher web site 3. Dispatcher logged in to web site				
Trigger:	Dispatcher click Logout button in item menu				
Post conditions:	1. Log dispatcher out from web site. 2. Redirect dispatcher to login page.				
Normal Flow					
Step	Actor	Action			
1	Dispatcher	Tap on Logout button			
2	DPA	Redirect to login page			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-36: Logout.

3.3.2.4.2 Dispatch Module

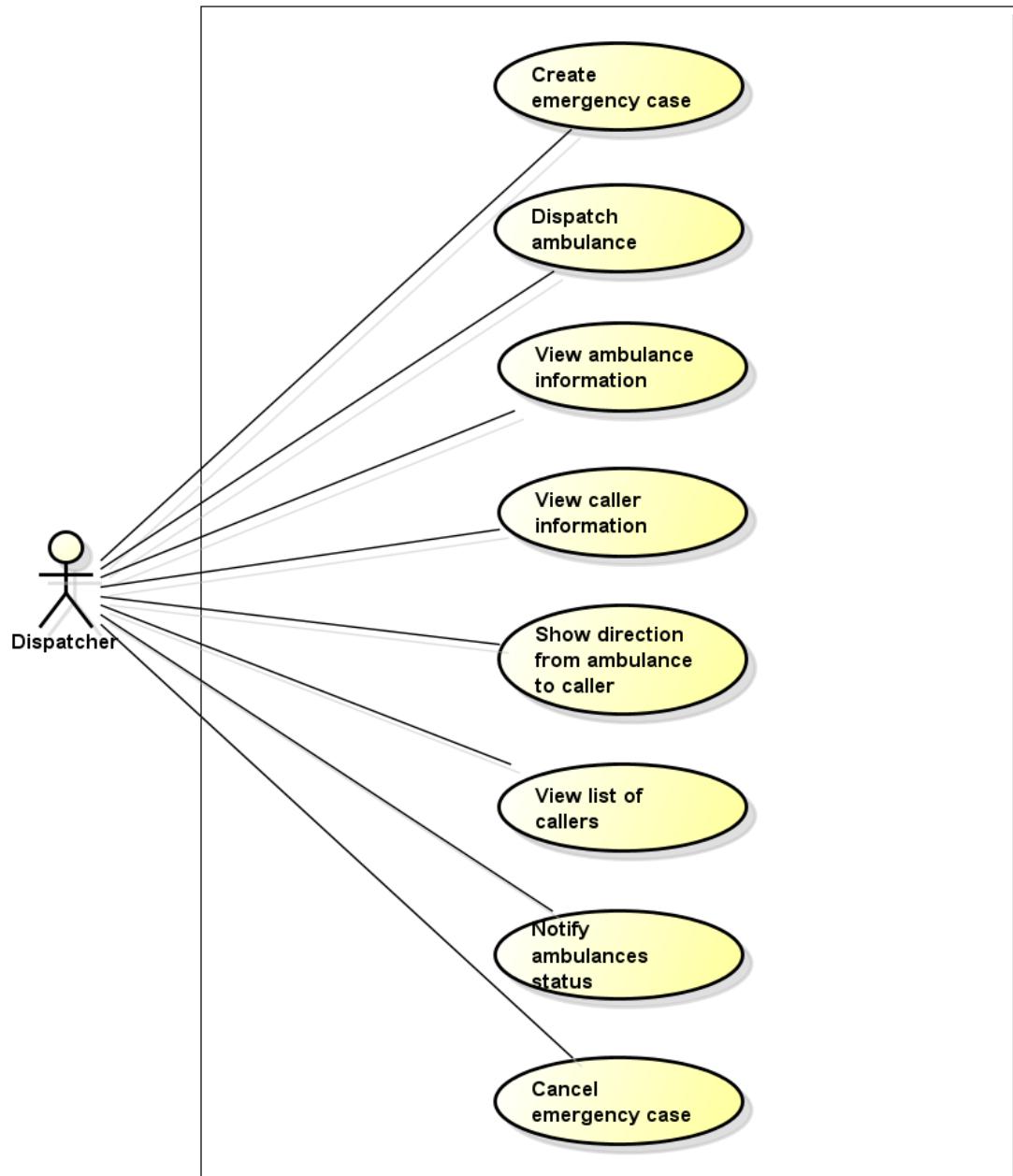


Figure 3-13: Dispatch use case

3.3.2.4.2.1 UC0032 - Create emergency case

Use Case ID	UC0032	Version	1.1
Use Case Name	Create emergency case		
Created by:	AnhND	Date Created:	26/09/2016
Primary Actor	Dispatcher	Secondary Actor	
Description:	This function allows dispatcher create an emergency case need to		

ambulance		
Preconditions:	1. Dispatcher web app is available 2. Dispatcher access Dispatcher web site 3. Dispatcher logged in to web site	
Trigger:	Dispatcher receives an emergency call from user uses First Aid application and has their information include coordinates and phone number.	
Post conditions:	User's information is entered in “Điều phổi”	
Normal Flow		
Step	Actor	Action
1	Dispatcher	Receive an emergency call from FAA user
2	DPA	Fill coordinates and phone number to “Điều phổi”
3	Dispatcher	Enter victim's status
Alternative Flows: N/A		
Exceptions: N/A		
Priority	High	
Frequency of Use:	High	
Business Rules:		
Other Information:	N/A	

Table 3-37: Create emergency case.**3.3.2.4.2.2 UC0033 - Dispatch ambulance**

Use Case ID	UC0033	Version	1.1
Use Case Name	Dispatch ambulance		
Created by:	AnhND	Date Created:	26/09/2016
Primary Actor	Dispatcher	Secondary Actor	
Description:	This function allows dispatcher to dispatch an ambulance for emergency case		
Preconditions:	1. Dispatcher web app is available 2. Dispatcher access Dispatcher web site 3. Dispatcher logged in to web site 4. Created an emergency case		
Trigger:	Dispatcher clicks on “Điều phổi xe” button		

Post conditions:		Dispatcher system will automatically choose the nearest available ambulance and dispatch to caller
Normal Flow		
Step	Actor	Action
1	Dispatcher	Click on “Điều phổi xe” button
2	DPA	Send notify task to the nearest available ambulance
Alternative Flows: N/A		
Exceptions: N/A		
Priority		High
Frequency of Use:		High
Business Rules:		
Other Information:		N/A

Table 3-38: Dispatch ambulance.**3.3.2.4.2.3 UC0034 - View ambulance information**

Use Case ID	UC0034	Version	1.1
Use Case Name	View ambulance information		
Created by:	AnhND	Date Created:	26/09/2016
Primary Actor	Dispatcher	Secondary Actor	
Description:	This function allows dispatcher to view the information of ambulance team include name, current location and status.		
Preconditions:	1. Dispatcher web app is available 2. Dispatcher access Dispatcher web site		
Trigger:	Dispatcher logged in to web site		
Post conditions:	The information of ambulance team is displayed in “Đội cứu thương” tab in “Trường hợp khẩn cấp” sidebar		
Normal Flow			
Step	Actor	Action	
1	Dispatcher	Login to web site	
2	DPA	Show the information of ambulance team in “Đội cứu thương” tab	
Alternative Flows: N/A			

Exceptions: N/A	
Priority	High
Frequency of Use:	High
Business Rules:	
Other Information:	N/A

Table 3-39: View ambulance information.**3.3.2.4.2.4 UC0035 - View caller information**

Use Case ID	UC0035	Version	1.1		
Use Case Name	View caller information				
Created by:	AnhND	Date Created:	26/09/2016		
Primary Actor	Dispatcher	Secondary Actor			
Description:	This function allows dispatcher to view the information of caller include phone number, injury status, location when they called.				
Preconditions:	<ol style="list-style-type: none"> Dispatcher web app is available Dispatcher access Dispatcher web site Dispatcher logged in to web site At least one emergency case is pending ambulance 				
Trigger:	Dispatcher clicks on an emergency case is displayed in map				
Post conditions:	The information of caller is filled to text box in “Điều phổi” sidebar				
Normal Flow					
Step	Actor	Action			
1	Dispatcher	Click on an emergency case in map			
2	DPA	Fill the information of caller to text box in “Điều phổi” sidebar			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-40: View caller information.

3.3.2.4.2.5 UC0036 - Show direction from ambulance to caller

Use Case ID	UC0036	Version	1.1		
Use Case Name	Show direction from ambulance to caller				
Created by:	AnhND	Date Created:	26/09/2016		
Primary Actor	Dispatcher	Secondary Actor			
Description:	This function allows dispatcher to show the direction from dispatched ambulance to caller				
Preconditions:	1. Dispatcher web app is available 2. Dispatcher access Dispatcher web site 3. Dispatcher logged in to web site 4. At least one emergency case is pending ambulance				
Trigger:	Dispatcher clicks on an busy ambulance in “Đội cứu thương” tab				
Post conditions:	The direction from this dispatched ambulance to caller is displayed				
Version					
Version	Version	Version			
1	Dispatcher	Clicks on an busy ambulance in “Đội cứu thương” tab			
2	DPA	Show the direction from this ambulance to caller			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-41: Show direction from ambulance to caller.

3.3.2.4.2.6 UC0037 - View list of waiting callers

Use Case ID	UC0037	Version	1.1
Use Case Name	View list of waiting callers		
Created by:	AnhND	Date Created:	26/09/2016
Primary Actor	Dispatcher	Secondary Actor	
Description:	This function allows dispatcher to view list of waiting callers		

Preconditions:	1. Dispatcher web app is available 2. Dispatcher access Dispatcher web site 3. Dispatcher logged in to web site	
Trigger:	All ambulance team is busy	
Post conditions:	Dispatcher clicks on “Đang đợi” tab in “Trường hợp khẩn cấp” sidebar	
Normal Flow		
Step	Actor	Action
1	Dispatcher	Clicks on “Đang đợi” tab
2	DPA	Show callers is waiting for ambulance
Alternative Flows: N/A		
Exceptions: N/A		
Priority	High	
Frequency of Use:	High	
Business Rules:		
Other Information:	N/A	

Table 3-42: View list of waiting callers.

3.3.2.4.2.7 UC0038 - Notify ambulances status

Use Case ID	UC0038	Version	1.1
Use Case Name	Notify ambulances status		
Created by:	AnhND	Date Created:	26/09/2016
Primary Actor	Dispatcher	Secondary Actor	
Description:	This function allows dispatcher receives notify when an ambulance change status		
Preconditions:	1. Dispatcher web app is available 2. Dispatcher access Dispatcher web site 3. Dispatcher logged in to web site		
Trigger:	An ambulance report their status for dispatcher		
Post conditions:	Dispatcher receives notify in main screen		
Normal Flow			
Step	Actor	Action	

1	Staff	Report or change status
2	DPA	Show notify about status in main screen
Alternative Flows: N/A		
Exceptions: N/A		
Priority		High
Frequency of Use:		High
Business Rules:		
Other Information:		N/A

Table 3-43: Notify ambulances status.**3.3.2.4.2.8 UC0039 - Cancel emergency case**

Use Case ID	UC0039	Version	1.1		
Use Case Name	Cancel emergency case				
Created by:	AnhND	Date Created:	26/09/2016		
Primary Actor	Dispatcher	Secondary Actor			
Description:	This function allows dispatcher cancel an emergency case when the caller doesn't need ambulance				
Preconditions:	<ol style="list-style-type: none"> Dispatcher web app is available Dispatcher access Dispatcher web site Dispatcher logged in to web site 				
Trigger:	Dispatcher clicks on caller who doesn't need ambulance and click "Hủy"				
Post conditions:	The emergency case is canceled				
Normal Flow					
Step	Actor	Action			
1	Dispatcher	Clicks on caller			
2	DPA	Fill the information of caller to text box in "Điều phối" sidebar			
3	Dispatcher	Click "Hủy"			
4	DPA	Cancel emergency case			
Alternative Flows: N/A					
Exceptions: N/A					

Priority	High
Frequency of Use:	High
Business Rules:	
Other Information:	N/A

Table 3-44: Cancel emergency case.

3.3.2.5 Admin/Expert Application

3.3.2.5.1 Common Module

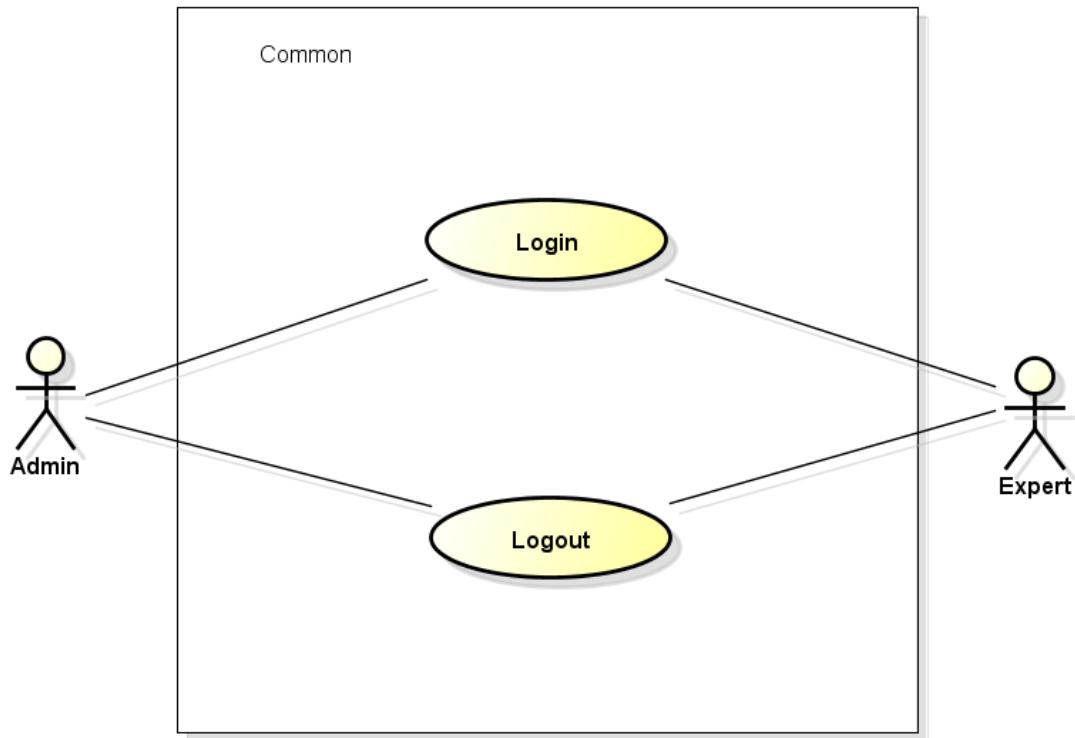


Figure 3-14: Common use case

3.3.2.5.1.1 UC0040 - Login

Use Case ID	UC0040	Version	1.1
Use Case Name	Login		
Created by:	AnhND	Date Created:	27/09/2016
Primary Actor	Admin/Expert	Secondary Actor	
Description:	This function allows admin or expert login to Admin/Expert web application to do tasks.		
Preconditions:	1. Admin/Expert web app is available 2. Admin or expert access Admin/Expert web site 3. Expert was provide an account		
Trigger:	Admin/Expert enters username and password correctly in Login page		
Post conditions:	1. Admin or expert login to web application successful 2. Main screen is displayed		
Normal Flow			

Step	Actor	Action
1	Admin/Expert	Access to Admin/Expert web site
2	AEA	Display Login page with following fields: - User name - Password - Login button
3	Admin/Expert	Enter user name & password into User name & Password fields
4	Admin/Expert	Tap on Login button
5	AEA	Validate the entered user name & password
6	AEA	Display main screen
Alternative Flows: N/A		
Exceptions: N/A		
EC1	At step 3 in the main flows, if required text box are not entered	
Step	Actor	Action
3.1	AEA	Notify error message “Chưa nhập tên” or “Chưa nhập mật khẩu”
EC2	At step 3 in the main flows, if user entered wrong User name or Password	
Step	Actor	Action
3.1	AEA	Notify error message “Nhập sai tên” or “Nhập sai mật khẩu”
Priority	High	
Frequency of Use:	High	
Business Rules:	B1, B2	
Other Information:	N/A	

Table 3-45: Login.**3.3.2.5.1.2 UC0041 - Logout**

Use Case ID	UC0041	Version	1.1
Use Case Name	Logout		
Created by:	AnhND	Date Created:	27/09/2016
Primary Actor	Admin/Expert	Secondary Actor	
Description:	This function allows Admin or expert logout to web site		

Preconditions:	1. Admin/Expert web app is available 2. Admin or expert access Admin/Expert web site 3. Expert was provide an account	
Trigger:	Admin or expert click Logout button in item menu	
Post conditions:	1. Log Admin or expert out from web site. 2. Redirect Admin or expert to login page.	
Normal Flow		
Step	Actor	Action
1	Admin or expert	Tap on Logout button
2	AEA	Redirect to login page
Alternative Flows: N/A		
Exceptions: N/A		
Priority	High	
Frequency of Use:	High	
Business Rules:		
Other Information:	N/A	

Table 3-46: Logout.

3.3.2.5.2 Manage user's account Module

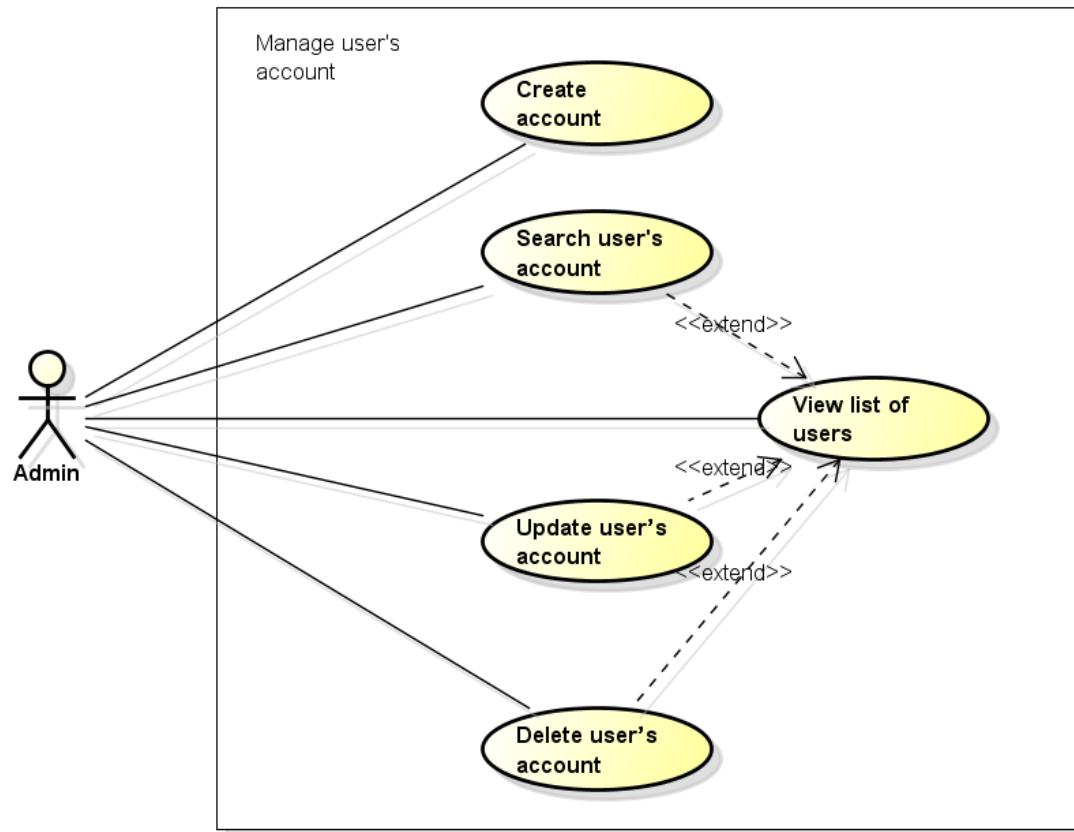


Figure 3-15: Manage user's account use cases

3.3.2.5.2.1 UC0042 - Create account

Use Case ID	UC0042	Version	1.1
Use Case Name	Create account		
Created by:	AnhND	Date Created:	27/09/2016
Primary Actor	Admin	Secondary Actor	
Description:	This function allows admin to create user's account		
Preconditions:	1. Admin/Expert web app is available 2. Admin access Admin/Expert web site 3. Admin clicks on “Thêm người dùng” page		
Trigger:	Admin clicks on “Thêm người dùng” button		
Post conditions:	New user's account is created		
Normal Flow			
Step	Actor	Action	
1	Admin	Click on “Thêm người dùng” page	

2	AEA	“Thêm người dùng” page is displayed
3	Admin	Enter all information about user: - Name - Role - Phone number - Address - User name - Password
4	Admin	Click on “Thêm người dùng” button
Alternative Flows: N/A		
Exceptions: N/A		
Priority	High	
Frequency of Use:	High	
Business Rules:	B1, B2, B3	
Other Information:	N/A	

Table 3-47: Create account.**3.3.2.5.2.2 UC0043 - View list of users**

Use Case ID	UC0043	Version	1.1
Use Case Name	View list of users		
Created by:	AnhND	Date Created:	27/09/2016
Primary Actor	Admin	Secondary Actor	
Description:	This function allows admin to view list of users in the system		
Preconditions:	1. Admin/Expert web app is available 2. Admin access Admin/Expert web site		
Trigger:	Admin clicks on “Người dùng” tab in sidebar left		
Post conditions:	List of all users is displayed in main screen		
Normal Flow			
Step	Actor	Action	
1	Admin	Click on “Người dùng” tab	
2	AEA	Show list of all users	
Alternative Flows: N/A			

Exceptions: N/A	
Priority	High
Frequency of Use:	High
Business Rules:	
Other Information:	N/A

Table 3-48: View list of users.**3.3.2.5.2.3 UC0044 - Search user's account**

Use Case ID	UC0044	Version	1.1		
Use Case Name	Search user's account				
Created by:	AnhND	Date Created:	27/09/2016		
Primary Actor	Admin	Secondary Actor			
Description:	This function allows admin to search user's account in the system				
Preconditions:	1. Admin/Expert web app is available 2. Admin access Admin/Expert web site				
Trigger:	Admin enters key word in search box and clicks on “Tìm Kiếm” button				
Post conditions:	All results that matched with the keyword admin enters will be displayed				
Normal Flow					
Step	Actor	Action			
1	Admin	Enter key word in search box			
2	Admin	Click on “Tim Kiếm” button			
3	AEA	Show all results that matched with the keyword			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-49: Search user's account.

3.3.2.5.2.4 UC0045 - Update user's account

Use Case ID	UC0045	Version	1.1		
Use Case Name	Update user's account				
Created by:	AnhND	Date Created:	27/09/2016		
Primary Actor	Admin	Secondary Actor			
Description:	This function allows admin to update information of user's account				
Preconditions:	1. Admin/Expert web app is available 2. Admin access Admin/Expert web site 3. Admin clicks on “Người dùng” tab				
Trigger:	Admin clicks on Edit button, changes information and clicks Ok				
Post conditions:	The information of user has been changed				
Normal Flow					
Step	Actor	Action			
1	Admin	Clicks on “Người dùng” tab			
2	AEA	Show List of all users			
3	Admin	Admin clicks on Edit button			
4	AEA	Show update page			
5	Admin	Change information			
6	Admin	Click Ok button			
7	AEA	Update information of users			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:	B1, B2, B3				
Other Information:	N/A				

Table 3-50: Update user's account.

3.3.2.5.2.5 UC0046 - Delete user's account

Use Case ID	UC0046	Version	1.1
Use Case Name	Delete user's account		

Created by:	AnhND	Date Created:	27/09/2016		
Primary Actor	Admin	Secondary Actor			
Description:	This function allows admin to delete user's account				
Preconditions:	1. Admin/Expert web app is available 2. Admin access Admin/Expert web site 3. Admin clicks on “Người dùng” tab				
Trigger:	Admin clicks on Delete button				
Post conditions:	Admin clicks on Ok button				
Normal Flow					
Step	Actor	Action			
1	Admin	Click on “Người dùng” tab			
2	AEA	Show List of all users			
3	Admin	Click on Delete button			
4	AEA	Show dialog “Bạn có muốn xóa người dùng này”			
5	Admin	Click on Ok			
6	AEA	Delete user's account			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-51: Delete user's account.

3.3.2.5.3 Manage Q&A Module

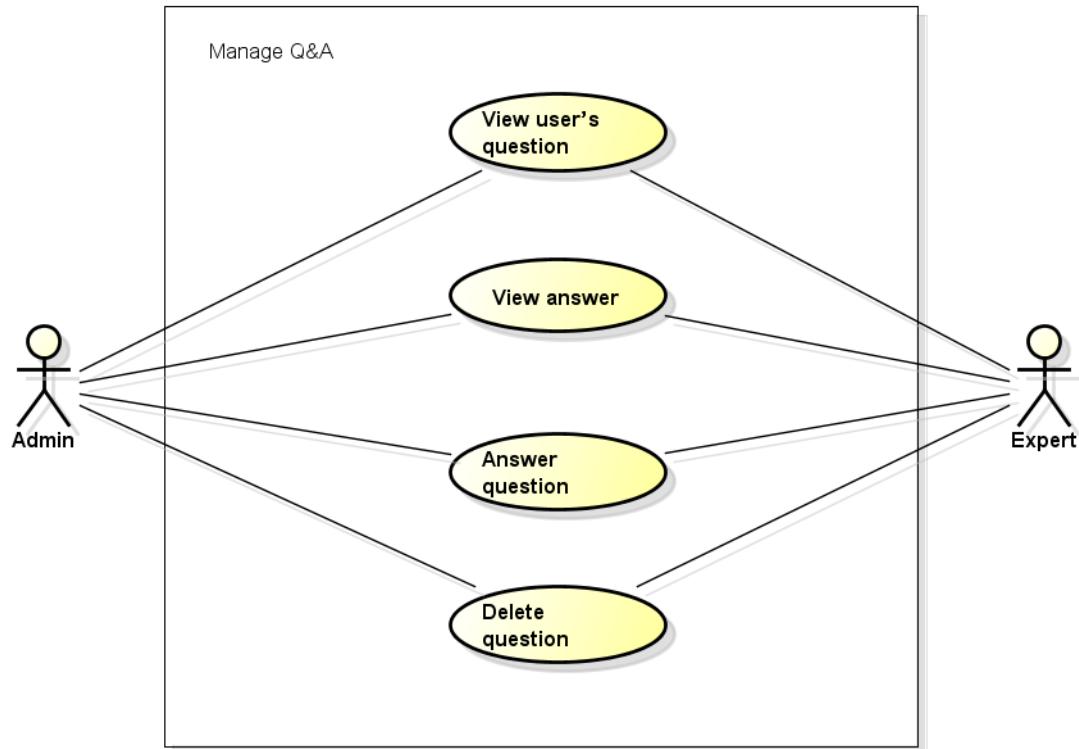


Figure 3-16: Manage Q&A use cases

3.3.2.5.3.1 UC0047 - View user's question

Use Case ID	UC0047	Version	1.1
Use Case Name	View user's question		
Created by:	AnhND	Date Created:	27/09/2016
Primary Actor	Admin/Expert	Secondary Actor	
Description:	This function allows admin or expert to view all user's question and feedback		
Preconditions:	1. Admin/Expert web app is available 2. Admin or expert access Admin/Expert web site 3. Expert was provide an account		
Trigger:	Admin or expert clicks on “Hỏi đáp/Ý kiến” tab		
Post conditions:	Show all question and feedback of users		
Normal Flow			
Step	Actor	Action	
1	Admin or expert	Click on “Hỏi đáp/Ý kiến” tab	

2	AEA	Show all question and feedback
Alternative Flows: N/A		
Exceptions: N/A		
Priority		High
Frequency of Use:		High
Business Rules:		B1, B2
Other Information:		N/A

Table 3-52: View user's question.**3.3.2.5.3.2 UC0048 - View answer**

Use Case ID	UC0048	Version	1.1		
Use Case Name	View answer				
Created by:	AnhND	Date Created:	27/09/2016		
Primary Actor	Admin/Expert	Secondary Actor			
Description:	This function allows admin or expert to view answer of other admin or expert				
Preconditions:	<ol style="list-style-type: none"> 1. Admin/Expert web app is available 2. Admin or expert access Admin/Expert web site 3. Expert was provide an account 4. Admin or expert clicks on “Hỏi đáp/Y kiến” tab 				
Trigger:	Admin or expert clicks on an old question or feedback				
Post conditions:	View answer of this question.				
Normal Flow					
Step	Actor	Action			
1	Admin or expert	Click on “Hỏi đáp/Y kiến” tab			
2	AEA	Show all question and feedback			
3	Admin or expert	Click on an old question or feedback			
4	AEA	Show answer of this question			
Alternative Flows: N/A					
Exceptions: N/A					

Priority	High
Frequency of Use:	High
Business Rules:	
Other Information:	N/A

Table 3-53: View answer.**3.3.2.5.3.3 UC0049 - Answer question**

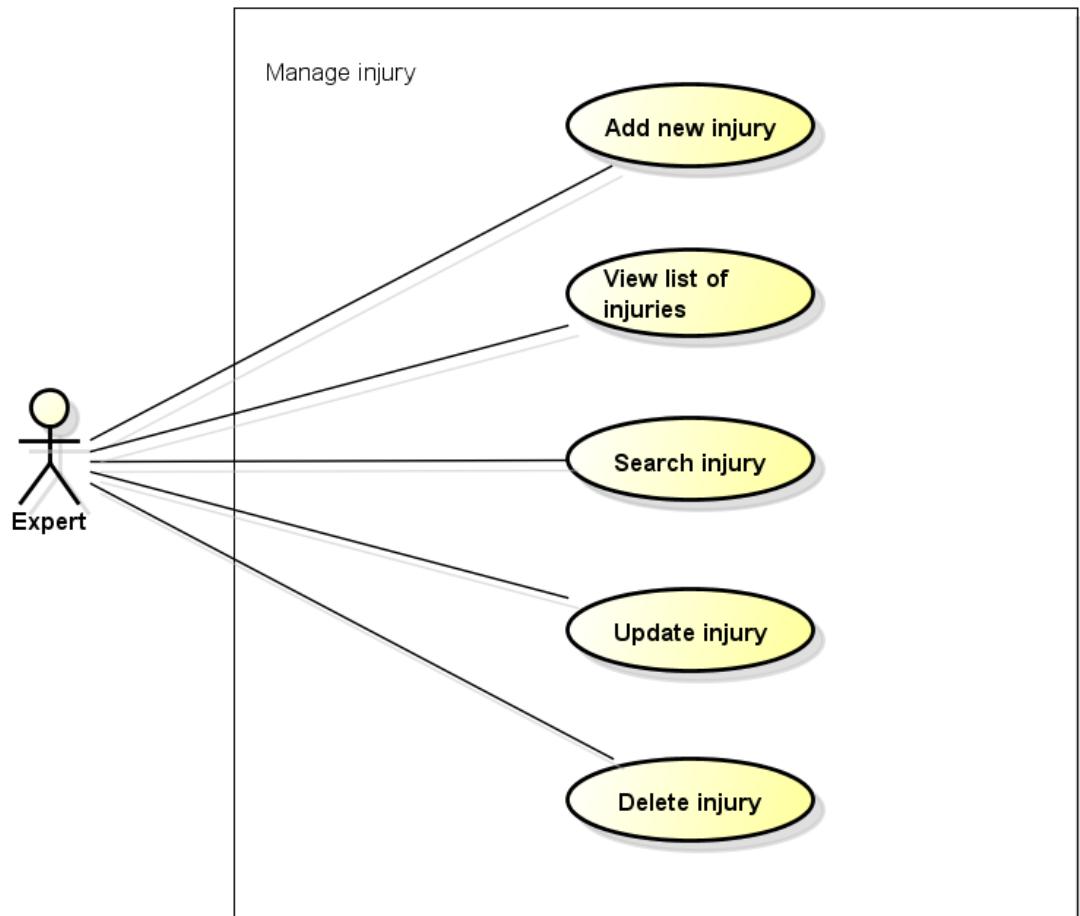
Use Case ID	UC0049	Version	1.1
Use Case Name	Answer question		
Created by:	AnhND	Date Created:	27/09/2016
Primary Actor	Admin/Expert	Secondary Actor	
Description:	This function allows admin or expert to view answer of other admin or expert		
Preconditions:	1. Admin/Expert web app is available 2. Admin or expert access Admin/Expert web site 3. Expert was provide an account 4. Admin or expert clicks on “Hỏi đáp/Ý kiến” tab 5. Admin or expert clicks on an question or feedback		
Trigger:	Enter content of answer to textbox and click “Trả lời”		
Post conditions:	The answer is sent to user		
Normal Flow			
Step	Actor	Action	
1	Admin or expert	Click on “Hỏi đáp/Ý kiến” tab	
2	AEA	Show all question and feedback	
3	Admin or expert	Click on an question or feedback	
4	AEA	Show answer page of this question	
5	Admin or expert	Enter content of answer to textbox and	
6	Admin or expert	Click “Trả lời” button	
7	AEA	Send the answer to user	

Alternative Flows: N/A	
Exceptions: N/A	
Priority	High
Frequency of Use:	High
Business Rules:	B1, B2
Other Information:	N/A

Table 3-54: Answer question.**3.3.2.5.3.4 UC0050 - Delete question**

Use Case ID	UC0050	Version	1.1		
Use Case Name	Delete question				
Created by:	AnhND	Date Created:	27/09/2016		
Primary Actor	Admin/Expert	Secondary Actor			
Description:	This function allows admin or expert to view answer of other admin or expert				
Preconditions:	<ol style="list-style-type: none"> 1. Admin/Expert web app is available 2. Admin or expert access Admin/Expert web site 3. Expert was provide an account 4. Admin or expert clicks on “Hỏi đáp/Ý kiến” tab 5. Admin or expert clicks on an question or feedback 				
Trigger:	Admin or expert clicks on Delete button and clicks Ok				
Post conditions:	An answer is deleted				
Normal Flow					
Step	Actor	Action			
1	Admin or expert	Click on an question or feedback			
2	Admin or expert	Click on Delete button			
3	AEA	Delete question			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				

Frequency of Use:	High
Business Rules:	
Other Information:	N/A

Table 3-55: Delete question.**3.3.2.5.4 Manage injury Module****Figure 3-17: Manage injury use cases****3.3.2.5.4.1 UC0051 - Add new injury**

Use Case ID	UC0051	Version	1.1
Use Case Name	Add new injury		
Created by:	AnhND	Date Created:	27/09/2016
Primary Actor	Expert	Secondary Actor	
Description:	This function allows expert to add new injury for FAA		
Preconditions:	1. Admin/Expert web app is available 2. Expert access Admin/Expert web site		

		3. Expert was provide an account
Trigger:		Expert click on “Chấn thương” tab
Post conditions:		Expert click on “Thêm Chấn thương” button
Normal Flow		
Step	Actor	Action
1	Expert	Click on “Chấn thương” tab
2	AEA	“Chấn thương” page is displayed
3	Expert	Enter all information about an injury
4	Expert	Click on “Thêm chấn thương” button
5	AEA	Create new injury
Alternative Flows: N/A		
Exceptions: N/A		
Priority		High
Frequency of Use:		High
Business Rules:		B1, B2
Other Information:		N/A

Table 3-56: Add new injury.**3.3.2.5.4.2 UC0052 - View list of injuries**

Use Case ID	UC0052	Version	1.1
Use Case Name	View list of injuries		
Created by:	AnhND	Date Created:	27/09/2016
Primary Actor	Expert	Secondary Actor	
Description:	This function allows to view list of injuries in FAA		
Preconditions:	1. Admin/Expert web app is available 2. Expert access Admin/Expert web site 3. Expert was provide an account		
Trigger:	Expert clicks on “Chấn thương” tab		
Post conditions:	List of all injuries is displayed		
Normal Flow			
Step	Actor	Action	

1	Expert	Click on “Chấn thương” tab
2	AEA	Show all injuries
Alternative Flows: N/A		
Exceptions: N/A		
Priority		High
Frequency of Use:		High
Business Rules:		
Other Information:		N/A

Table 3-57: View list of injuries.**3.3.2.5.4.3 UC0053 - Search injury**

Use Case ID	UC0053	Version	1.1		
Use Case Name	Search injury				
Created by:	AnhND	Date Created:	27/09/2016		
Primary Actor	Expert	Secondary Actor			
Description:	This function allows expert to search an injury				
Preconditions:	<ol style="list-style-type: none"> 1. Admin/Expert web app is available 2. Expert access Admin/Expert web site 3. Expert was provide an account 4. Expert clicks on “Chấn thương” tab 				
Trigger:	Expert enters key word in search box and clicks on “Tìm Kiếm” button				
Post conditions:	All results that matched with the keyword admin enters will be displayed				
Normal Flow					
Step	Actor	Action			
1	Expert	Enter key word in search box			
2	Expert	Clicks on “Tìm Kiếm” button			
3	AEA	Show all results that matched with the keyword			
Alternative Flows: N/A					
Exceptions: N/A					
Priority		High			

Frequency of Use:	High
Business Rules:	
Other Information:	N/A

Table 3-58: Search injury.**3.3.2.5.4.4 UC0054 - Update injury**

Use Case ID	UC0054	Version	1.1		
Use Case Name	Update injury				
Created by:	AnhND	Date Created:	27/09/2016		
Primary Actor	Expert	Secondary Actor			
Description:	This function allows update information about an injury				
Preconditions:	1. Admin/Expert web app is available 2. Expert access Admin/Expert web site 3. Expert was provide an account 4. Expert clicks on “Chấn thương” tab				
Trigger:	Expert clicks on Edit button, changes information and clicks Ok				
Post conditions:	The information of an injury has been changed				
Normal Flow					
Step	Actor	Action			
1	Expert	Clicks on “Chấn thương” tab			
2	AEA	Show list of all injury			
3	Expert	Expert clicks on Edit button			
4	AEA	Show update page			
5	Expert	Change information			
6	Expert	Click Ok button			
7	AEA	Update information of an injury			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:	B1, B2				

Other Information:	N/A
--------------------	-----

Table 3-59: Update injury.**3.3.2.5.4.5 UC0055 - Delete injury**

Use Case ID	UC0055	Version	1.1		
Use Case Name	Delete injury				
Created by:	AnhND	Date Created:	27/09/2016		
Primary Actor	Expert	Secondary Actor			
Description:	This function allows				
Preconditions:	1. Admin/Expert web app is available 2. Expert access Admin/Expert web site 3. Expert was provide an account 4. Expert clicks on “Chấn thương” tab				
Trigger:	Expert clicks on Delete button and clicks Ok				
Post conditions:	An injury is deleted				
Normal Flow					
Step	Actor	Action			
1	Expert	Click on Delete button			
2	Expert	Click Ok			
3	AEA	Delete an injury			
Alternative Flows: N/A					
Exceptions: N/A					
Priority	High				
Frequency of Use:	High				
Business Rules:					
Other Information:	N/A				

Table 3-60: Delete injury.**3.3.3 Non-Functional Specification****3.3.3.1 Reliability**

- Mean time between failures: The mean time between each failure is expected to be about 480 hours of using.

- The maximum bugs per function are 2 bugs/a function when user uses software within 2 months. The average number of bugs in the software during system testing is about to be around 1 bugs/KLOC.
- The database must be backed up daily and can be recovered if necessary

3.3.3.2 Performance Requirements

3.3.3.2.1 Availability

The application must be available 95% of time. Users can access to it everywhere from their Web browser with internet connection.

3.3.3.2.2 Response time

In term of response time, waiting time of processing will be 2 to 5 seconds; time to process any functions will not exceed 7 seconds.

3.3.3.3 Maintainability

- **Coding standards and naming conventions:**
 - Output of the project must include coding standards and naming conventions documentations. Implementation code must be easy to maintain.
 - If some components are reused, the documentations of those components must also be included.
- **Design:**
 - The design of the system must be loosely coupled that chances on some module will not affect others.
- **Logging:**
 - All the errors should be logged, supporting for bug fixing and maintenance.
 - All strange or sensitive situations should also be logged.
- **Mean time to repair:**
 - Immediately when Administrator finds out problem or website is attacked/ hacked by someone. Average 1 day.

3.3.3.4 Usability

- Usability Requirements support the following from the perspective of its primary users: **Efficiency of use:** user can complete each function in less than 12 actions
- **Intuitiveness:** User can understand approximately 90% help/ error messages

3.3.3.5 Security Requirements

In order to avoid unwanted access by strangers, the security implemented in various ways:

- **User authorize:** Ambulance, Dispatcher and administrator must log in to use the functions and web services.
- **Manage Data Layer:** Only Administrator can modify database system.

3.3.3.6 Hardware/Software Requirements

- **Hardware requirement:**
 - **Server:** Ubuntu 16.04, Apache2.
 - **Client:** PC/Laptop (window 7, window 8)
- **Software requirements:**
 - Web browser (Chrome 40.0, Cốc cốc 40.0) with internet connection.
 - Android 5.0 or higher.

4 SOFTWARE DESIGN

4.1 Introduction

4.1.1 Purpose

This chapter is design document to guide the development team of what the system's architect, how to implement functions.

This section includes four main parts:

- Architecture Design.
- Detail Design.
- Database design.
- Screen design.

4.1.2 Definitions, Acronyms, Abbreviations

Acronym	Definition	Note
FAVN	First Aid Vietnam	
FAA	First Aid Application	
MVC	Model view control	
REST	Representational state transfer	
API	Application Programming Interface	
Faq	Frequently Asked Questions	

Table 4-1: Definitions and Acronyms

4.2 Architecture design

4.2.1 Choice of Architecture Design

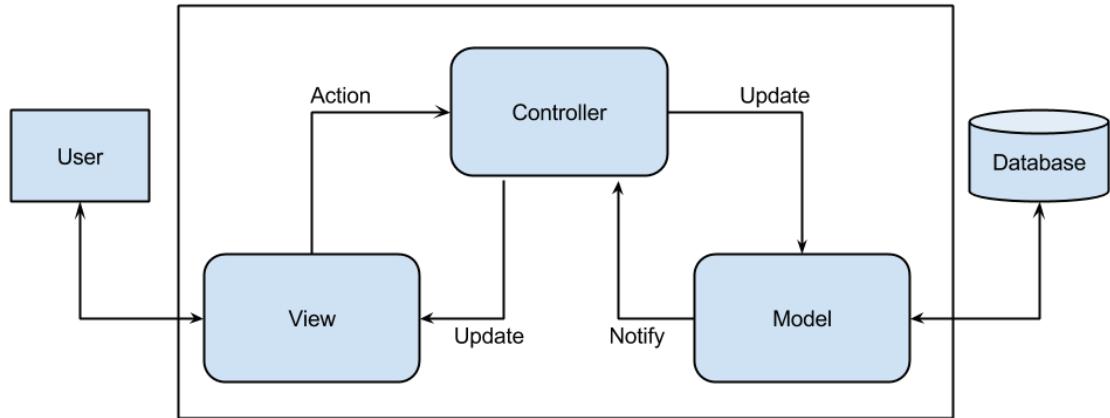
4.2.1.1 MVC Model

The purpose of FAVN is developing a system of first aid supporting and other emergency features. The system of FAVN is structured based on MVC combined with layered architecture.

4.2.1.1.1 MVC Model Overview

The model-view-controller or MVC is software architecture commonly used for creating web or software applications. In other words, it's a structure for applications to follow in order to ensure efficiency and consistency.

The Model-View-Controller (MVC) architectural pattern separates an application into three main components: the model, the view, and the controller. The model consists of application data, business rules, logic and functions. A view can be any output representation of data. The controller mediates input, converting it to commands for the model or view.

**Figure 4-1: MVC Model**

More detail about each component is divided by the MVC pattern:

- **Model:** Model represents an object carrying data. It can also have logic to update controller if its data changes.
- **View:** View represents the visualization of the data that model contains.
- **Controller:** Controller acts on both model and view. It controls the data flow into model object and updates the view whenever data changes. It keeps view and model separate.

4.2.1.1.2 Advantages and disadvantages of MVC Model

- **Advantages:**
 - **Faster development process:** MVC supports rapid and parallel development.
 - **Ability to provide multiple views:** In the MVC Model, you can create multiple views for a model.
 - **Support for asynchronous technique:** MVC also supports asynchronous technique, which helps developers to develop an application that loads very fast.
 - **Modification does not affect the entire model:** Modification does not affect the entire model because model part does not depend on the views part.
 - **MVC model returns the data without formatting:** MVC pattern returns data without applying any formatting so the same components can be used and called for use with any interface.
- **Disadvantages:**
 - **Time consuming in small project development process:** for small projects that apply MVC model caused cumbersome.
 - **Increased complexity.**
 - **Not suitable for agent-oriented applications:** such as interactive mobile and robotics applications.
 - **Data model change expensive:** multiple pairs of controllers and views based on the same data model.
 - **Knowledge on multiple technologies is required.**

4.2.1.1.3 The reasons for choosing MVC Model

- MVC makes parts of system can be developed individually and simultaneously to reduce developing time.
- It is good support for application built by project team has many developers and designers but still managed application features.
- Better support for test-driven development.
- Tools is useful and documentary source is large makes MVC is easy to develop.
- FAVN system is not complete system, now. We built the system that towards extensibility and maintainability in the future.

4.2.1.2 Android

4.2.1.2.1 Android Overview

Android is an open source and Linux-based Operating System for mobile devices such as smartphones and tablet computers. Android was developed by the Open Handset Alliance, led by Google, and other companies.

Android offers a unified approach to application development for mobile devices which means developers need only develop for Android, and their applications should be able to run on different devices powered by Android.

4.2.1.2.2 Advantages and disadvantages of Android platform

- **Advantages**
 - Open source.
 - Larger developer and community reach.
 - Increased marketing.
 - Inter app integration.
 - Reduced cost of development.
 - Higher success ratio.
 - Rich development environment.
- **Disadvantages**
 - Multitude of devices to take care of, and not just different screen sizes, but different resolutions too. This makes the app design, as well as UI development much harder.
 - Quality of apps on the Play Store is much worse than those on the App Store. This is primarily because of Apple's stringent review policies. They do not allow low quality apps to be published.

4.2.1.2.3 The reasons for choosing Android platform

- Most people uses android handheld devices especially android phone.
- Android is a powerful operating system and supports great features.
- There are many plugins, resources and documents which support creating an android application.

4.2.1.3 Laravel

4.2.1.3.1 Laravel Overview

Laravel is referred to as a “full stack” framework because it handles everything from web serving to database management right down to HTML generation. A vertically integrated web development environment can provide a better experience for the developer.

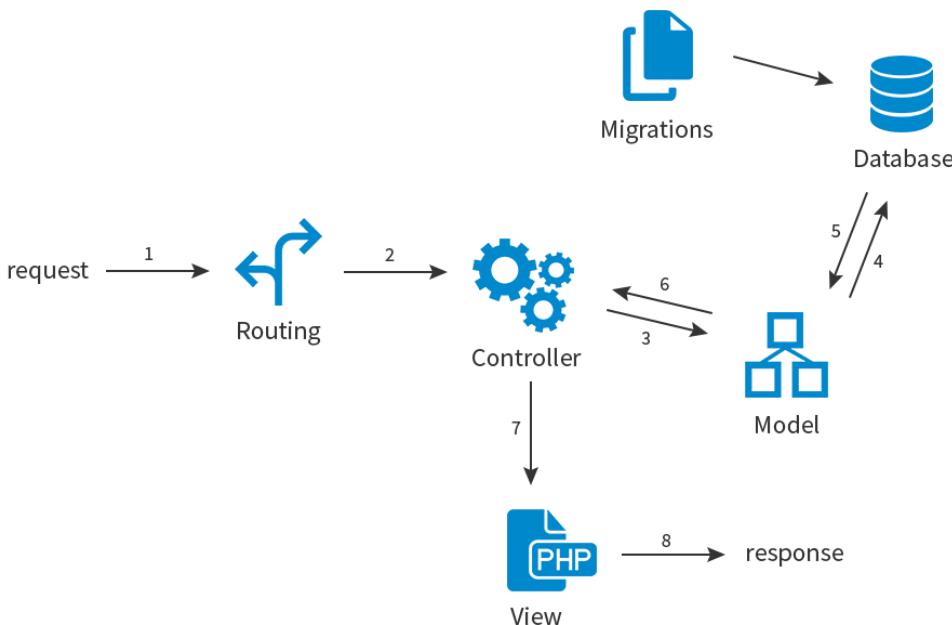


Figure 4-2: Laravel Architecture

❖ Features:

- Bundles provide a modular packaging system, with bundled features already available for easy addition to applications. Furthermore, Laravel uses Composer as a dependency manager to add framework-agnostic and Laravel-specific PHP packages available from the Packagist repository.
- Eloquent ORM (object-relational mapping) is an advanced PHP implementation of the active record pattern, providing at the same time internal methods for enforcing constraints on the relationships between database objects. Following the active record pattern, Eloquent ORM presents database tables as classes, with their object instances tied to single table rows.
- Query builder, provides a more direct database access alternative to the Eloquent ORM. Instead of requiring SQL queries to be written directly, Laravel's query builder provides a set of classes and methods capable of building queries programmatically. It also allows selectable caching of the results of executed queries.
- Application logic is an integral part of developed applications, implemented either by using controllers or as part of the route declarations.
- Reverse routing defines a relationship between the links and routes, making it possible for later changes to routes to be automatically propagated into relevant links.
- Restful controllers provide an optional way for separating the logic behind serving HTTP GET and POST requests.

- Class auto loading provides automated loading of PHP classes without the need for manual maintenance of inclusion paths.
- View composers serve as customizable logical code units that can be executed when a view is loaded.
- Blade templating engine combines one or more templates with a data model to produce resulting views.
- Migrations provide a version control system for database schemas, making it possible to associate changes in the applications codebase and required changes in the database layout.
- Unit testing is provided as an integral part of Laravel.
- Automatic pagination simplifies the task of implementing pagination, replacing the usual manual implementation approaches with automated methods integrated into Laravel.
- Form request is a feature of Laravel 5 that serves as the base for form input validation by internally binding event listeners, resulting in automated invoking of the form validation methods and generation of the actual form.

4.2.1.3.2 Advantages and disadvantages of Laravel

- **Advantages:**
 - It uses a blade template engine to speed up compiling tasks, and users can include latest features so easily.
 - “Bundled modularity” enables code reusing without much hassle.
 - An outstanding Artisan CLI comprising advanced tools to do tasks, and migrations.
 - Splendid documentation, and an added feature of reverse routing.
- **Disadvantages:**
 - Amateur developers face problems while extending codes and classes.
 - Many methods included in the reverse routing are complex.

4.2.1.3.3 The reason for choosing Laravel

- **Open Source:** It is a free open-source PHP web application framework which has easy process of building complex and large web applications with code maintainability. Provide a more fluid user experience akin to a desktop application.
- **MVC Architecture Support:** It follows the MVC pattern, ensuring the transparency between logic and presentation.
- **Libraries and configuration:** It supports many development environments and adjusts itself based on the appropriate platform where app is running.

4.2.2 Architecture Representation

We follow MVC architecture to implement the FAVN system.

4.2.2.1 First Aid Application

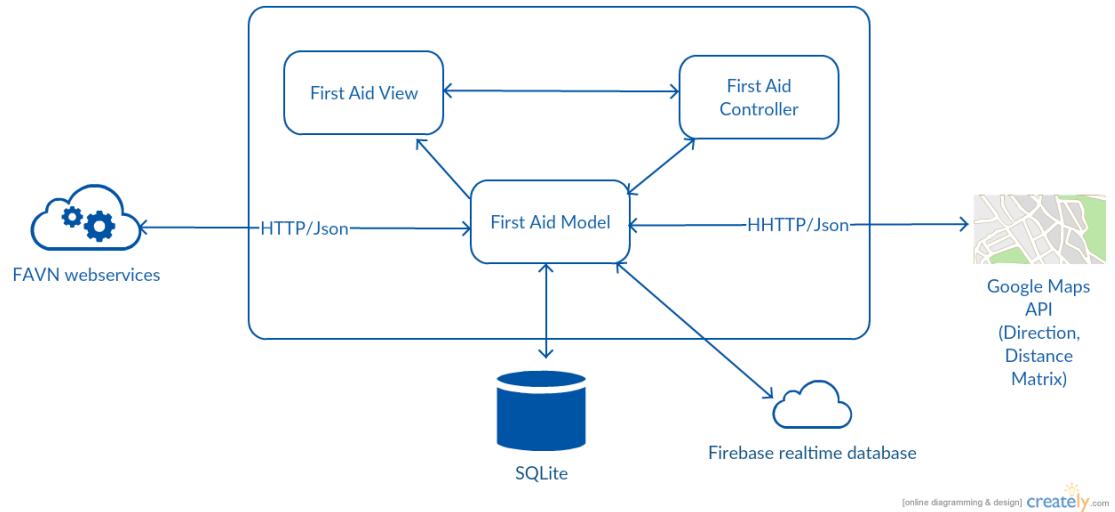


Figure 4-3: First Aid Application System Overview

Model is data layer, responsible for managing the business logic and handling web service or database API.

View is UI layer, a visualization of the data from the Model.

Controller is logic layer, gets notified of the user's behavior and updates the Model as needed.

4.2.2.2 Ambulance Application

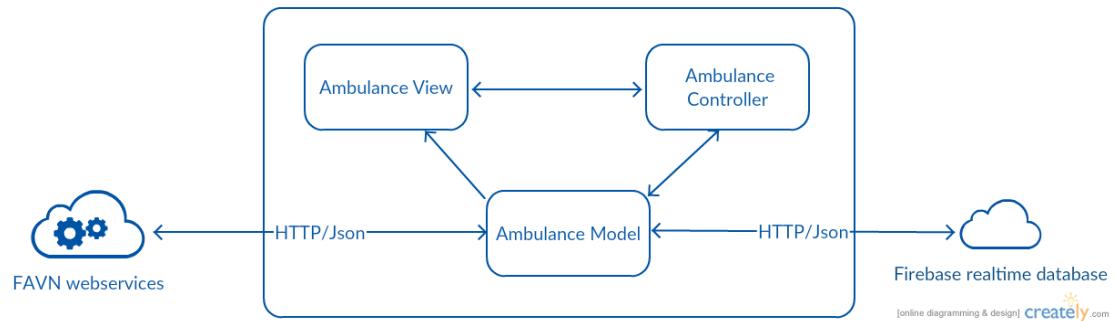


Figure 4-4: Ambulance Application System Overview

Similar to the First Aid Application's architecture, we also use MVC architecture for Ambulance application development.

4.2.2.3 Dispatcher Application

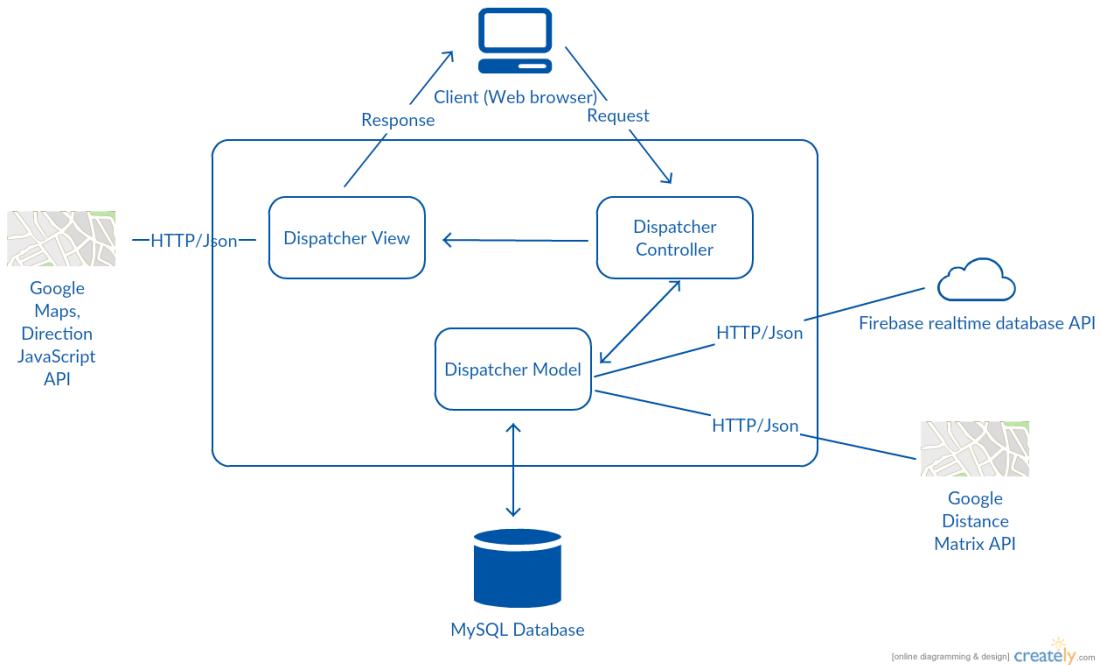


Figure 4-5: Dispatcher Application System Overview

Model is where the application's data objects are stored. A model object is in charge of encapsulating application state and one object could be related to other objects establishing a one-to-one or one-to-many relationship. The model object does not talk directly to a View, instead is made available to a controller, which accesses it when needed. When a model changes, typically it will notify its observers that a change has occurred.

View is what is presented to the users and how users interact with the system. The view is expected to render the model in a meaningful way to the user. In Dispatcher website, the view is made with .blade.php file including css, JavaScript or jQuery, it sends user gestures to controller and allows controller to select view.

Controller is the decision maker and the glue between the model and view; it handles user actions and gestures, and responds to user events. For example, in case a dispatcher needs to dispatch a car to a caller, when the dispatcher clicks “caller phone number” list item to create a new caller, the controller for that action is invoked. The controller will get an instant object of caller with data from database through caller model. The controller will then return view with that caller object to display, so that dispatcher can view the caller information.

4.2.2.4 Admin/Expert Application

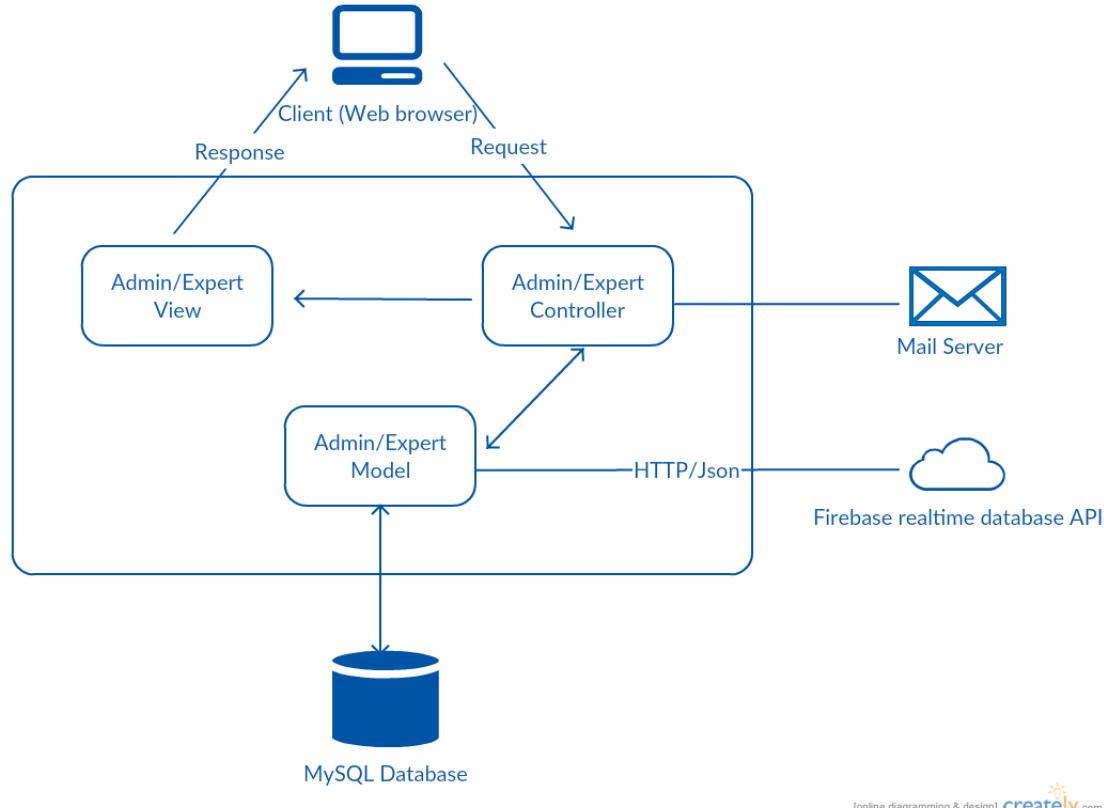


Figure 4-6: Admin/Expert Application System Overview

Similar to the Dispatcher Application's architecture, we also use MVC architecture for Admin/Expert application development.

4.2.3 Architectural Goals and Constraints

❖ Availability:

- The According to common sense. We expect the system to be available 95% FAVN time. In case of necessity, users just install the application and setting up network to use the emergency services.

❖ Maintainability:

- Coding standards and naming conventions:
 - Output of the project must include coding standards and naming conventions documentations. Implementation code must be easy to maintain.
 - All code must be clearly commented, including class, method documentations.
 - If some components are reused, the documentations of those components must also be included.
- Design:
 - The design of the system must be loosely coupled that changes on some module will not affect others.

- Logging:
 - All the errors should be logged, supporting for bug fixing and maintenance.
 - All strange or sensitive situations should also be logged.
- ❖ Usability:
 - Intuitiveness: all help/error messages are simple to understand; user can know exactly how to do each feature after one time using it.
- ❖ Capacity and scalability:
 - Throughput, storage and growth requirements.

4.2.4 Logical View

4.2.4.1 Overview

Logical view is a logical way of view of elements in FAVN system as well as the relationships between them. It includes Package diagram and Class diagram. Package diagram describes the organization of packages and elements. Class Diagram provides an overview of the target system by describing the objects and classes inside the system and the relationships between them. It provides a wide variety of usages; from modeling the domain-specific data structure to detailed design of the target system.

- **Controller contain the interface between:**
 - Associated models
 - Associated views
 - The input devices (e.g., keyboard, pointing device, time).
 - Send commands to the model to update the model's state.
- **Model is:**
 - the domain-specific software simulation
 - Or implementation of the application's central structure.
- **View:**
 - deal with everything graphical:
 - Requests data from their model
 - Display the data.
- **Repository:**
 - Create queries to DB.
 - Process data.
 - Return to controller.

4.2.4.2 Architecturally Significant Design Packages

4.2.4.2.1 First Aid Application

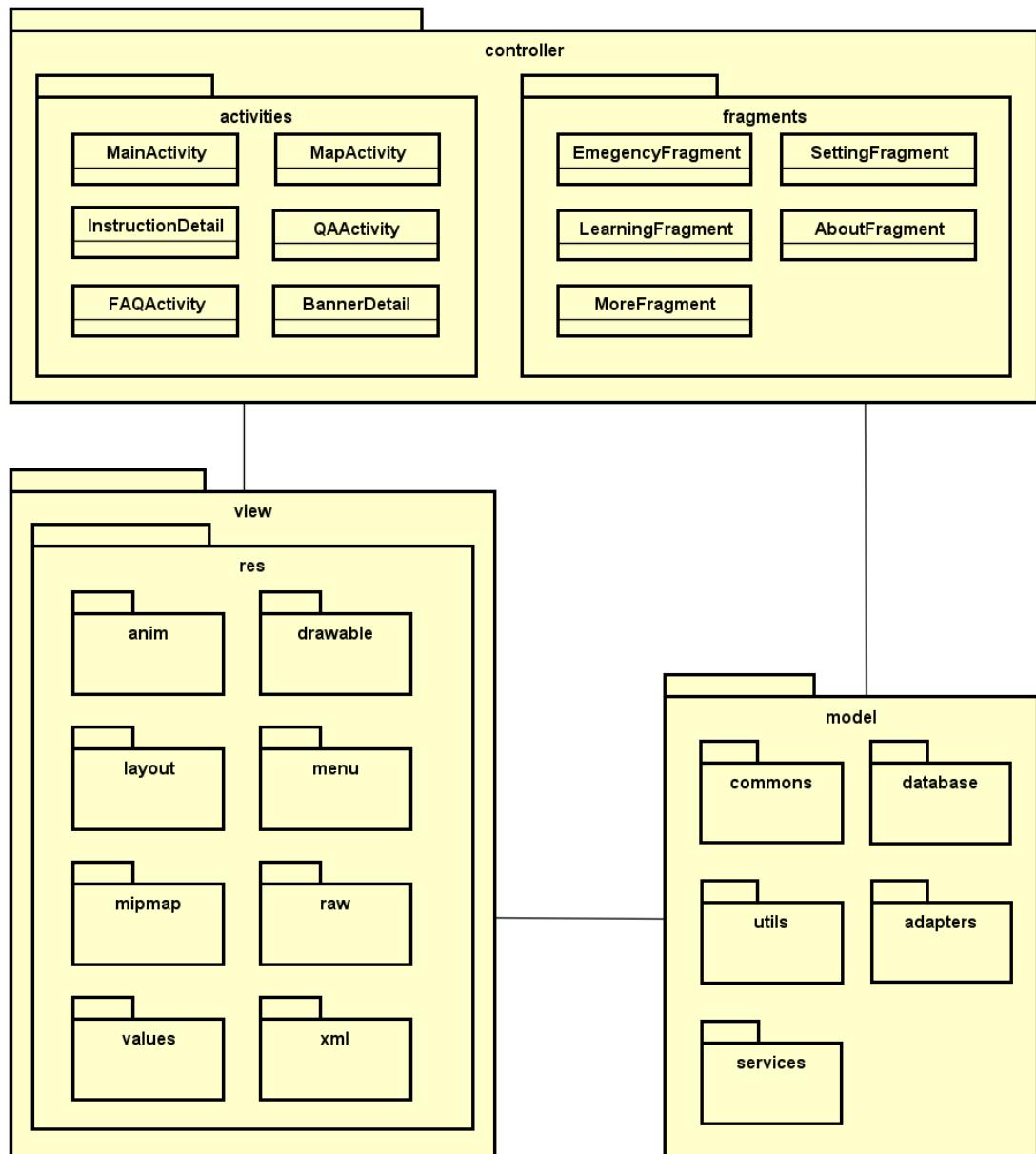


Figure 4-7: First Aid Application Package Diagram

❖ Model:

No	Model class	Role
1	commons	Description entity of common's class in sourcecode
2	databases	Description entity of database's class in sourcecode
3	utils	Description entity of util's class in sourcecode

4	adapters	Description entity of adapter's class in sourcecode
5	services	Description entity of service's class in sourcecode

Table 4-2: First Aid Application Model list**❖ Controller:**

No	Controller class	Role
1	MainActivity	Performs actions functions: emergency, learning, more, setting, about.
2	MapActivity	Performs actions functions: map, search health facilities, direction.
3	InstructionDetail	Performs actions functions: view detail, view faq
4	QAActivity	Performs actions function send question
5	FAQActivity	Performs actions function view list faq of an injury
6	CourseActivity	Performs actions function view information of courses
7	EmergencyFragment	Performs actions functions: view injuries, call 115, search, show map
8	LearningFragment	Performs actions functions: view learning injuries, view courses
9	MoreFragment	Performs actions functions: share, send question, view courses
10	SettingFragment	Performs actions function allow to send information
11	AboutFragment	Performs actions function view information of application

Table 4-3: First Aid Application Controller list**❖ View:**

Include many .xml file

4.2.4.2.2 Ambulance Application

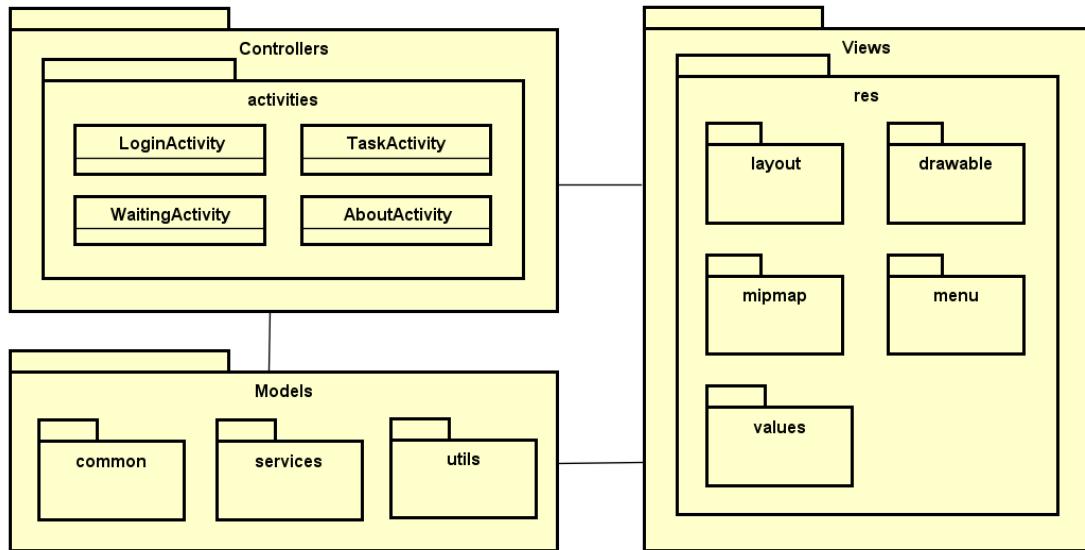


Figure 4-8: Ambulance Application Package Diagram

❖ Model:

No	Model class	Role
6	common	Description entity of common's class in sourcecode
7	services	Description entity of service's class in sourcecode
8	utils	Description entity of util's class in sourcecode

Table 4-4: Ambulance Application Model list

❖ Controller:

No	Controller class	Role
12	LoginActivity	Performs actions function login to application
13	TaskActivity	Performs actions functions: view caller's information, view caller's location, direct to caller, close task.
14	WaitingActivity	Performs actions functions: change status, accept/decline task, logout, view information of application
15	AboutActivity	View information of application

Table 4-5: Ambulance Application Controller list

❖ View:

Include many .xml file

4.2.4.2.3 Dispatcher Application

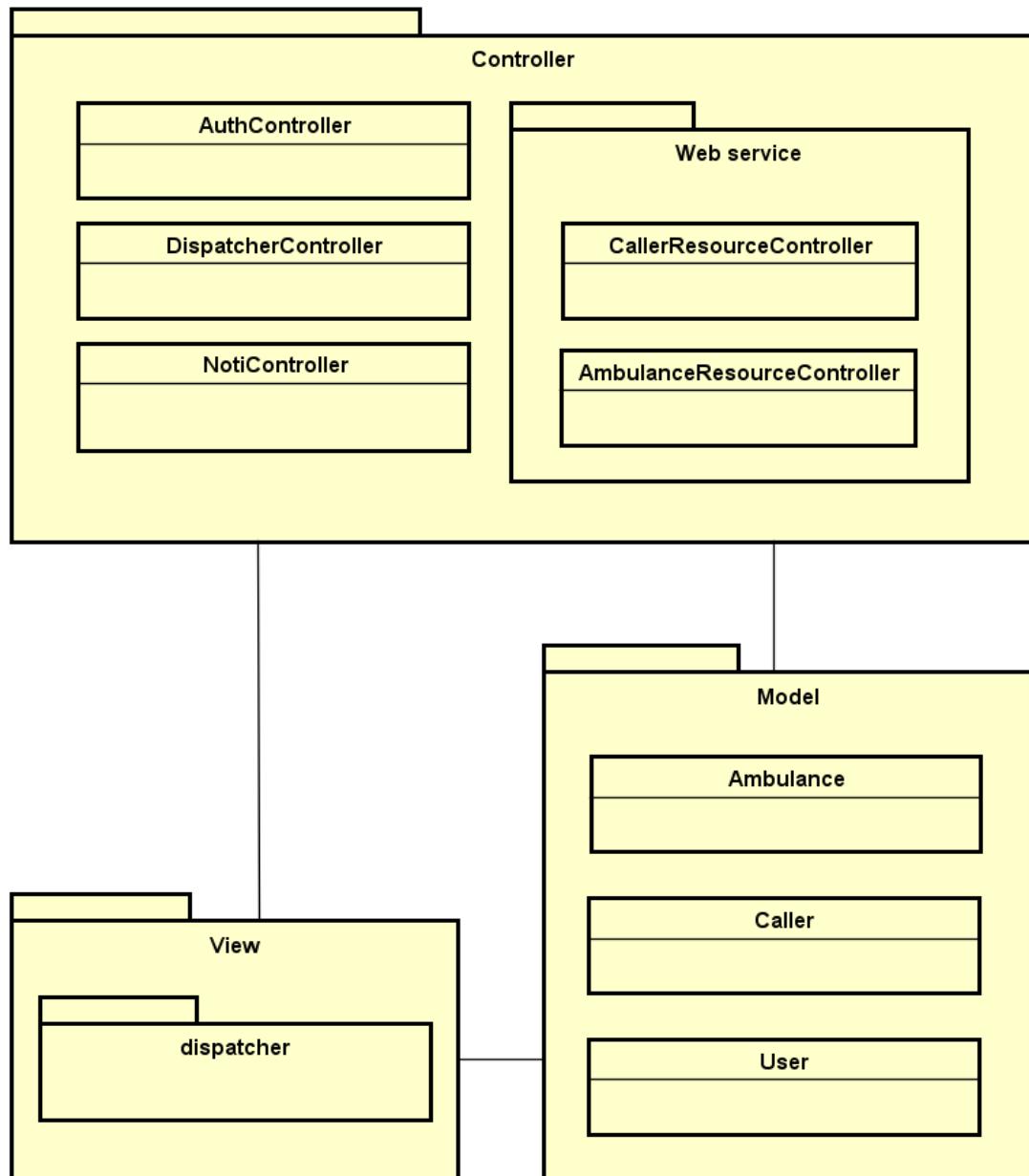


Figure 4-9: Dispatcher Application Package Diagram

❖ **Model:**

No	Model class	Role
9	Ambulance	Description entity of Ambulance in database
10	Caller	Description entity of Caller in database
11	User	Description entity of User in database

Table 4-6: Dispatcher Application Model list

❖ **Controller:**

No	Controller class	Role
16	AuthController	Receive request login, logout from client. Call method login, logout. Respond login view and login, logout status.
17	DispatcherController	Receive request to dispatch ambulance for a caller from client (dispatcher). Call methods to handle match an ambulance with a caller. Respond data back to Dispatcher view.
18	NotiController	Receive request to push notification between ambulance, caller and dispatcher. Handle request and return data.
19	CallerResourceController	RESTful controller that handles basic functionality for Caller table. (Create, read, update and delete records).
20	AmbulanceResourceController	RESTful controller that handles basic functionality for Ambulance table. (Create, read, update and delete records).

Table 4-7: Dispatcher Application Controller list

❖ **View:**

Include many .blade.php file

4.2.4.2.4 Admin/Expert Application

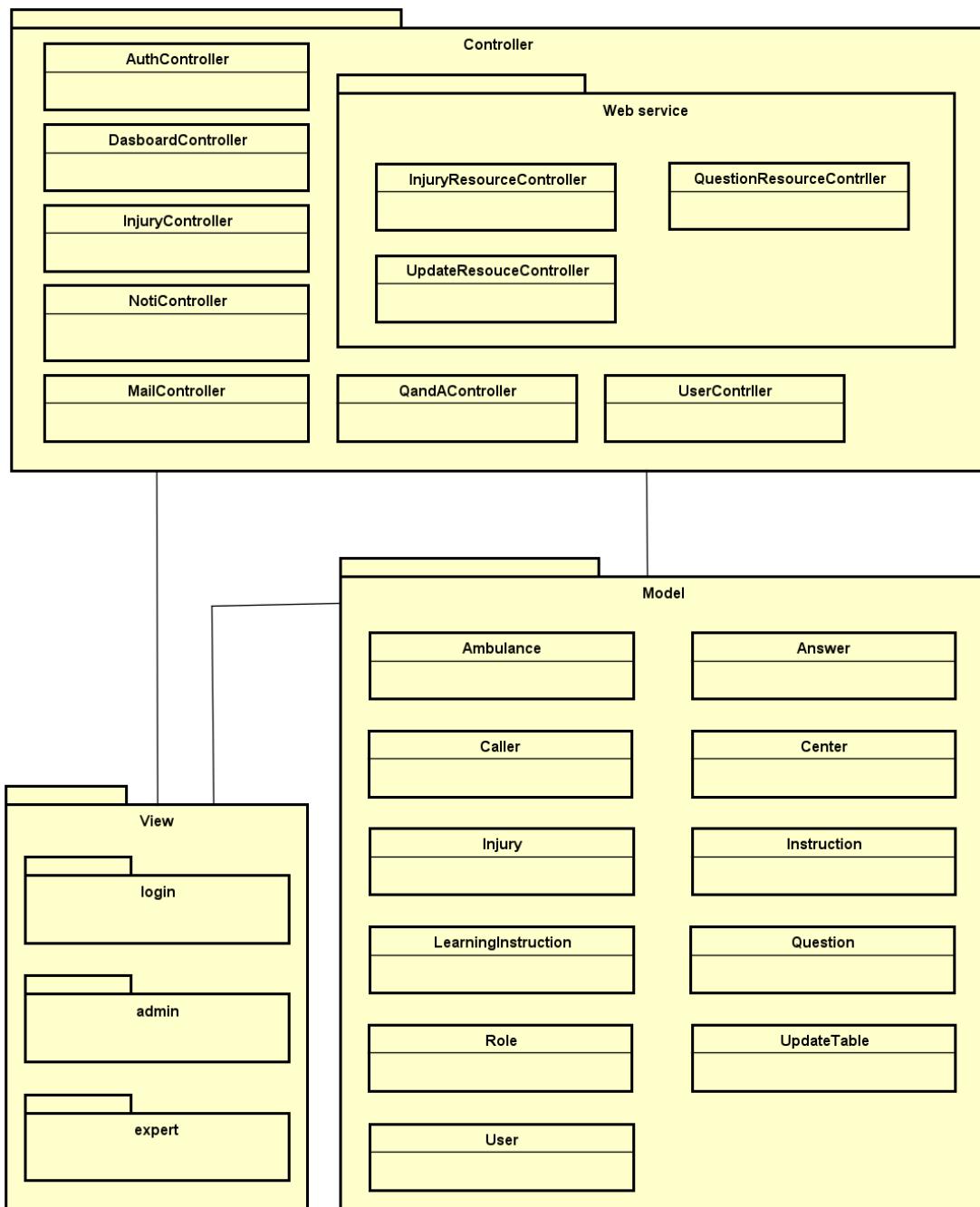


Figure 4-10: Admin/Expert Application Package Diagram

❖ **Model:**

No	Model class	Role
1	Ambulance	Description entity of Ambulance in database
2	Answer	Description entity of Answer in database

3	Caller	Description entity of Caller in database
4	Center	Description entity of Center in database
5	Injury	Description entity of Injury in database
6	Instruction	Description entity of Instruction in database
7	LearningInstruction	Description entity of Learning Instruction in database
8	Question	Description entity of Question in database
9	Role	Description entity of Role in database
10	UpdateTable	Description entity of Update Table in database
11	User	Description entity of User in database

Table 4-8: Admin/Expert Application Model list**❖ Controller:**

No	Controller class	Role
1	AuthController	Receive request login, logout from client. Call method login, logout. Respond login view and login, logout status.
2	DasboardController	Receive request to show common information. Call methods to handle. Respond data back to view.
3	InjuryController	Receive request to show, insert, delete, update, search injuries. Hander request and return data.
4	NotiController	Receive request to push notification between ambulance, caller and dispatcher. Hander request and return data.
5	MailController	Receive request to send mail from admin/expert to Fist Aid user. Call methods to handle send mail. Respond data back to view.
6	QandAController	Receive request to show, reply or delete questions from Fist Aid user. Call methods to handle. Respond data back to view.
7	UserContrller	Receive request to show, insert, delete or update users. Call methods to handle. Respond data

		back to view.
8	InjuryResourceController	RESTful controller that handles basic functionality for Injury table. (Create, read, update and delete records).
9	UpdateResourceController	RESTful controller that handles basic functionality for Update table. (Create, read, update and delete records).
10	QuestionResourceController	RESTful controller that handles basic functionality for Question table. (Create, read, update and delete records).

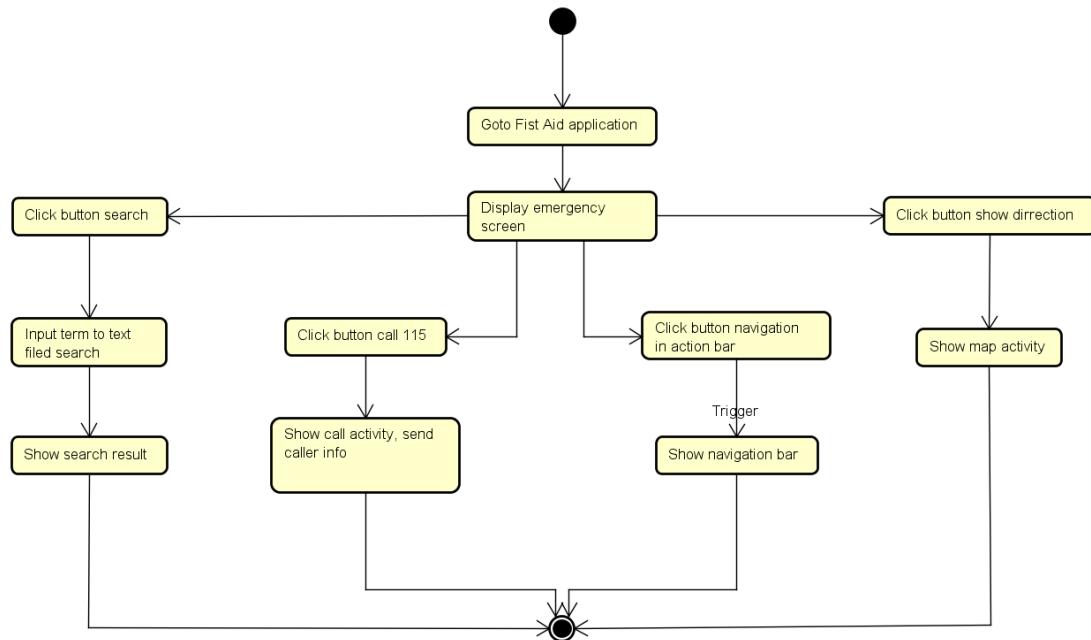
Table 4-9: Admin/Expert Application Controller list

❖ **View:**

Include many .blade.php file

4.2.5 Process view

4.2.5.1 First Aid Application

**Table 4-10: First Aid State Machine**

4.2.5.2 Ambulance Application

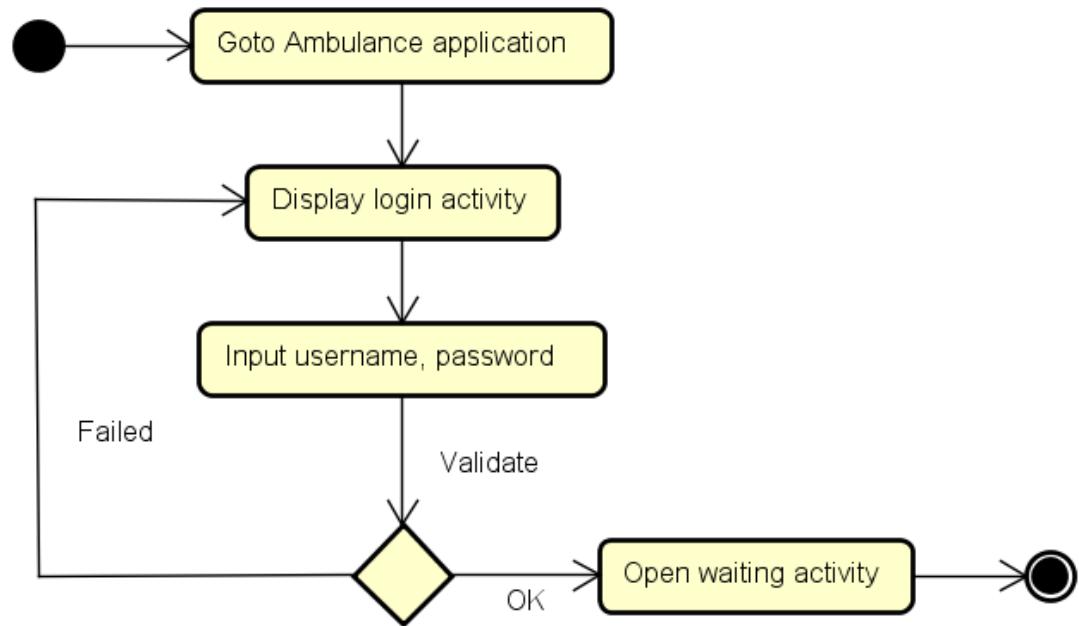


Table 4-11: Login State Machine

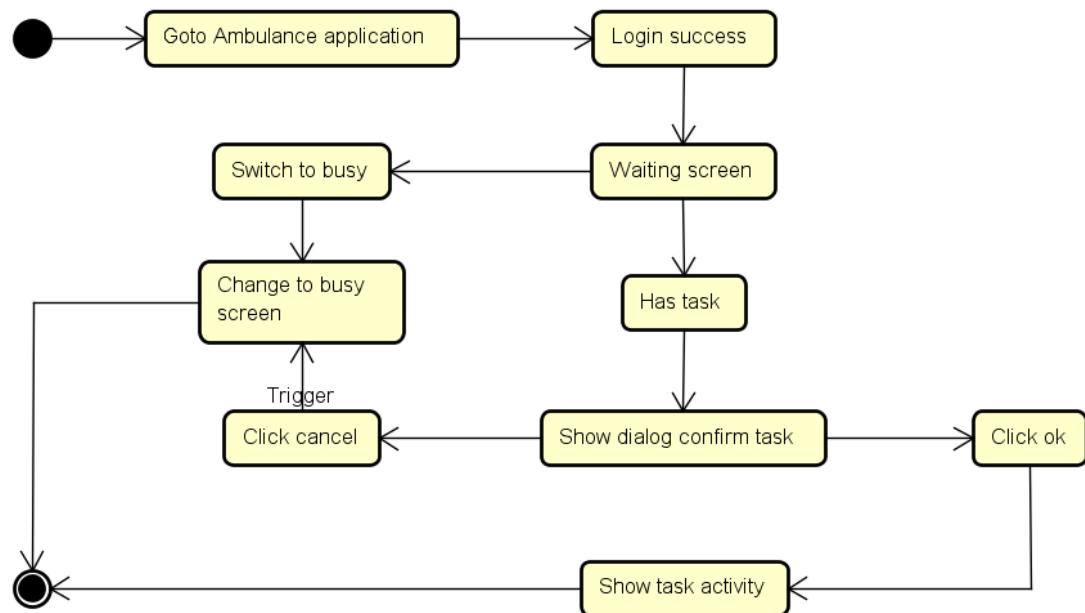
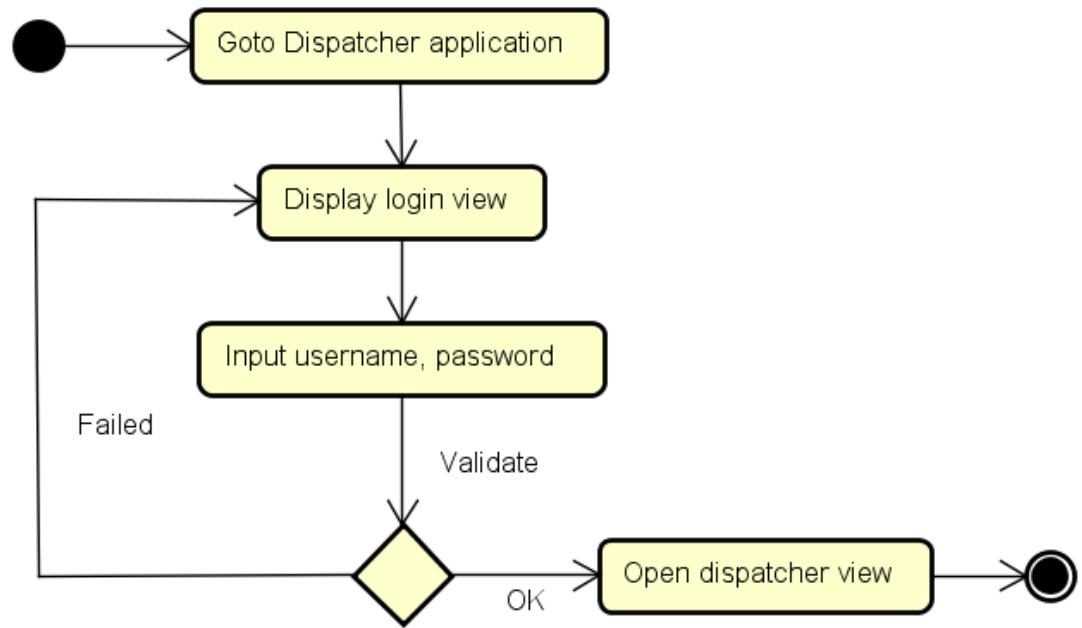


Table 4-12: Main State Machine

4.2.5.3 Dispatcher Application

**Table 4-13: Login State Machine**

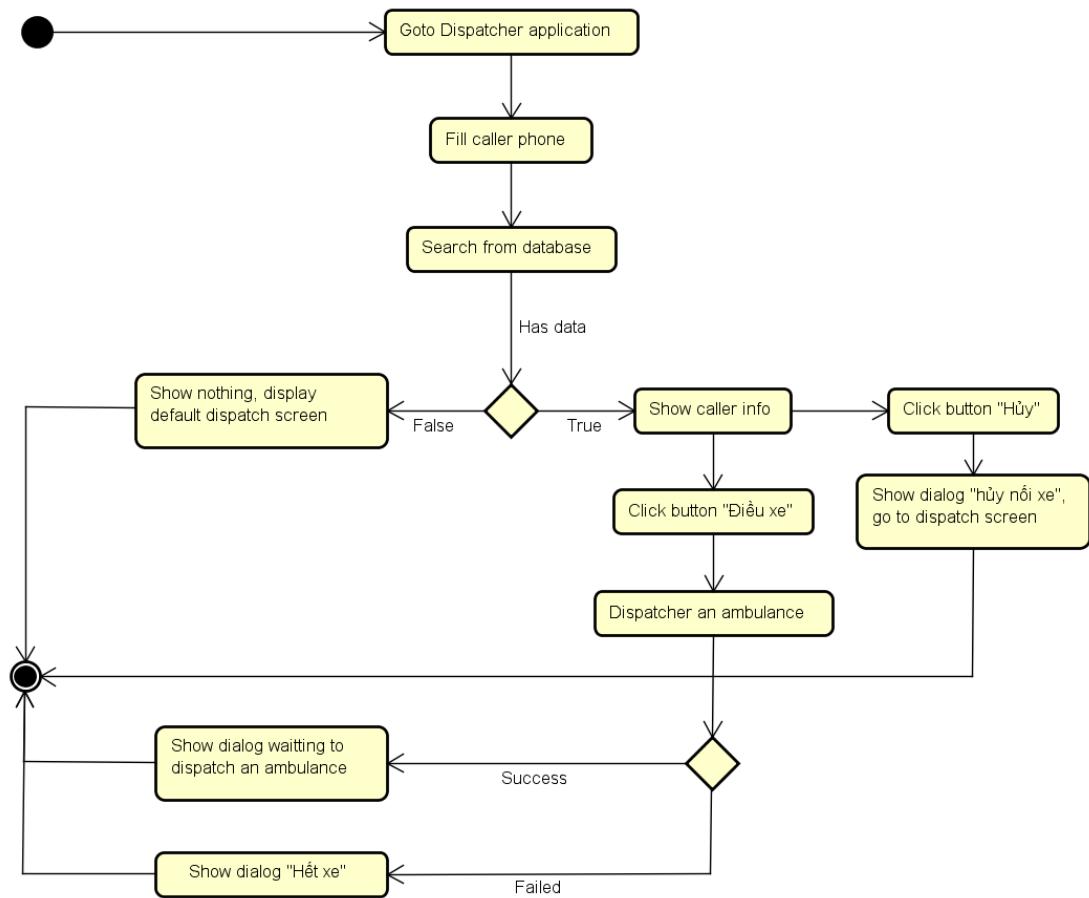
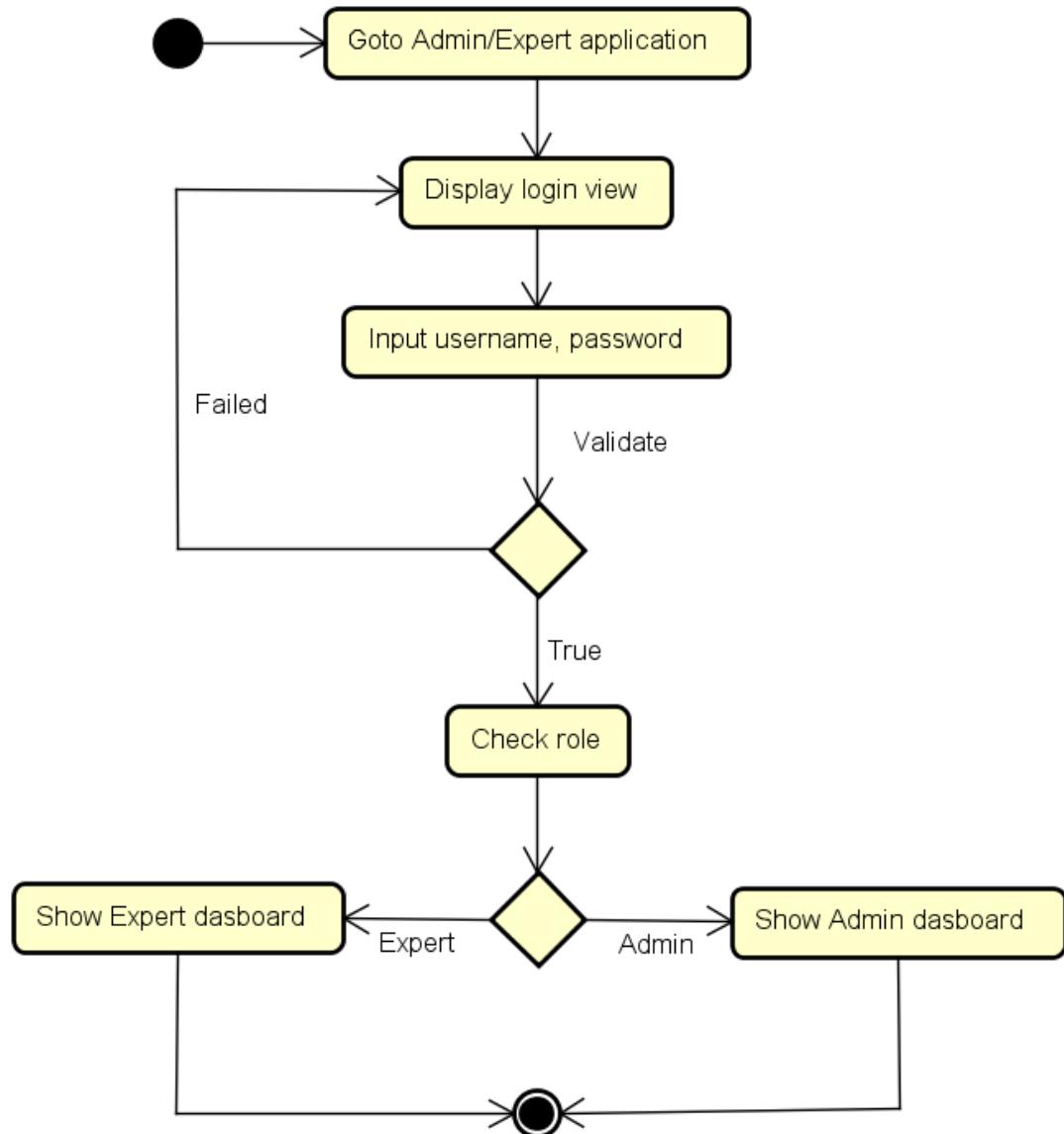


Table 4-14: Main State Machine

4.2.5.4 Admin Application

**Table 4-15: Admin/Expert Application State Machine**

4.2.6 Deployment View

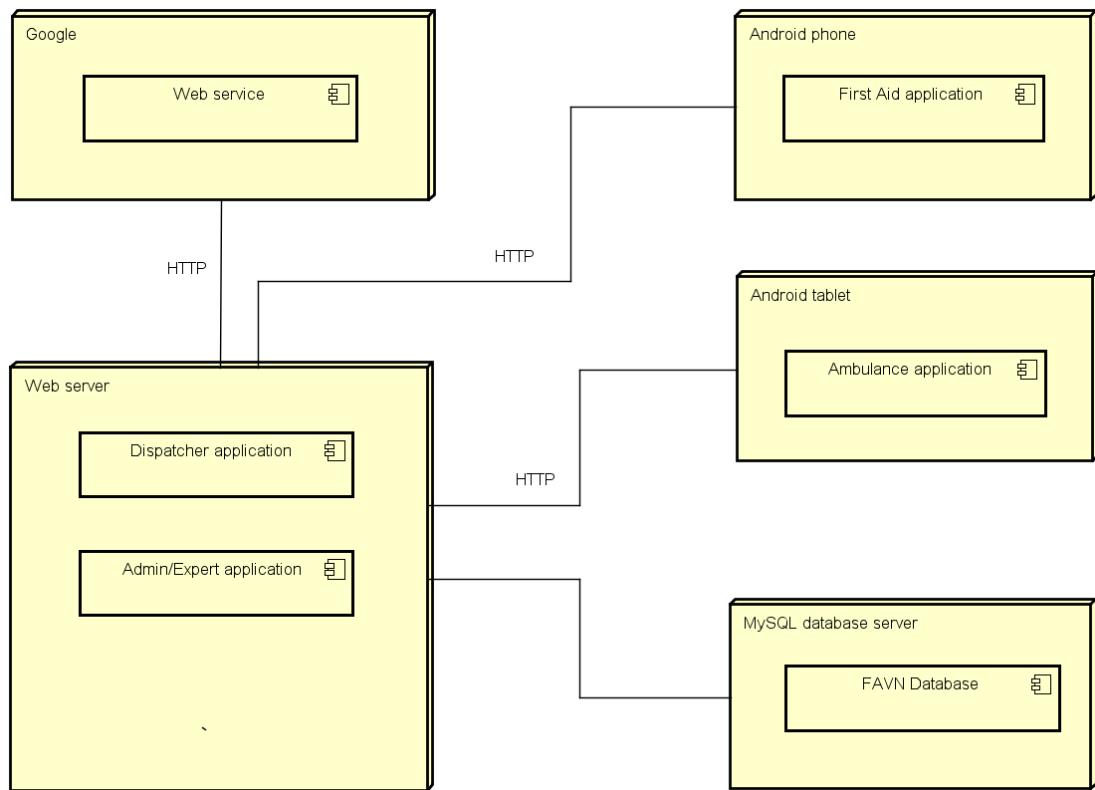


Table 4-16: FAVN System Deployment View

4.3 Detail Design

4.3.1 Package

4.3.1.1 Package Diagram

4.3.1.1.1 First Aid Application

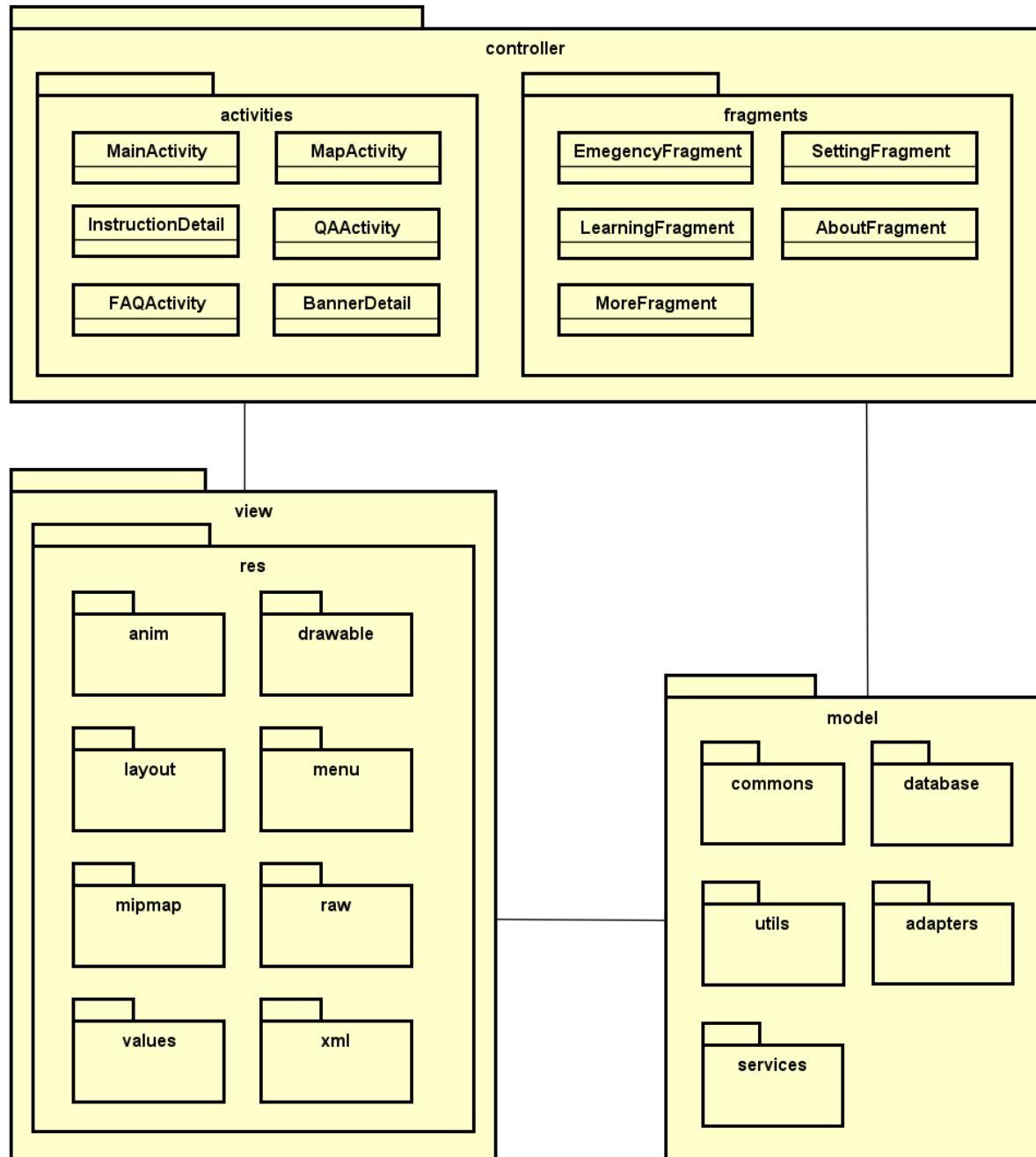


Figure 4-11: First Aid Application Package Diagram

4.3.1.1.2 Ambulance Application

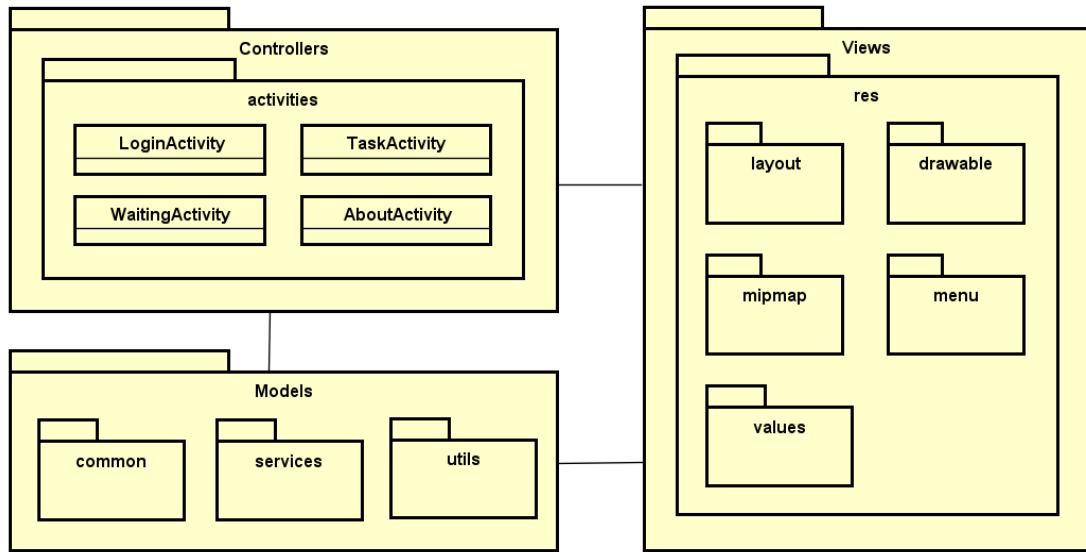


Figure 4-12: Ambulance Application Package Diagram

4.3.1.1.3 Dispatcher Application

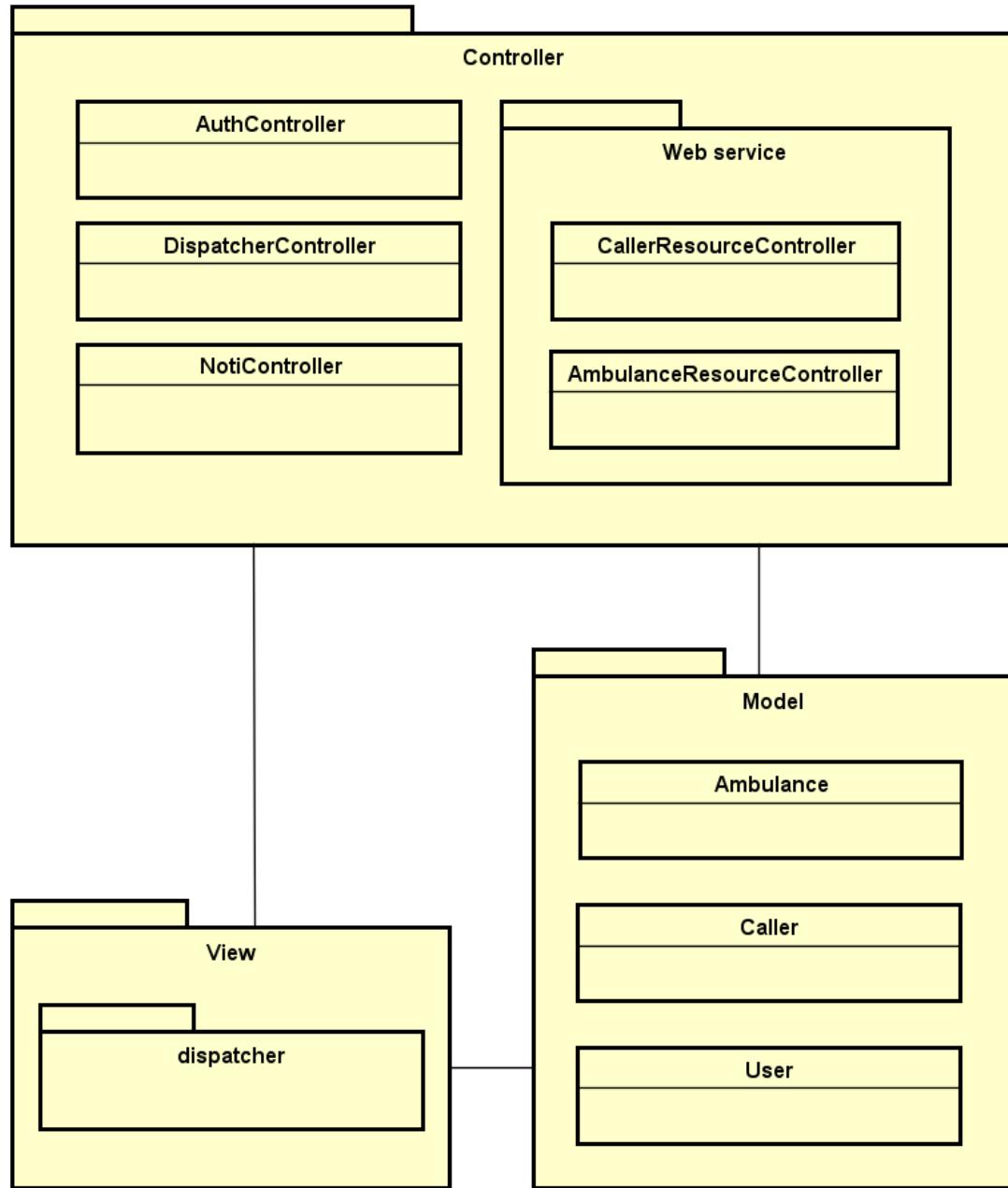


Figure 4-13: Dispatcher Application Package Diagram

4.3.1.1.4 Admin/Expertm Application

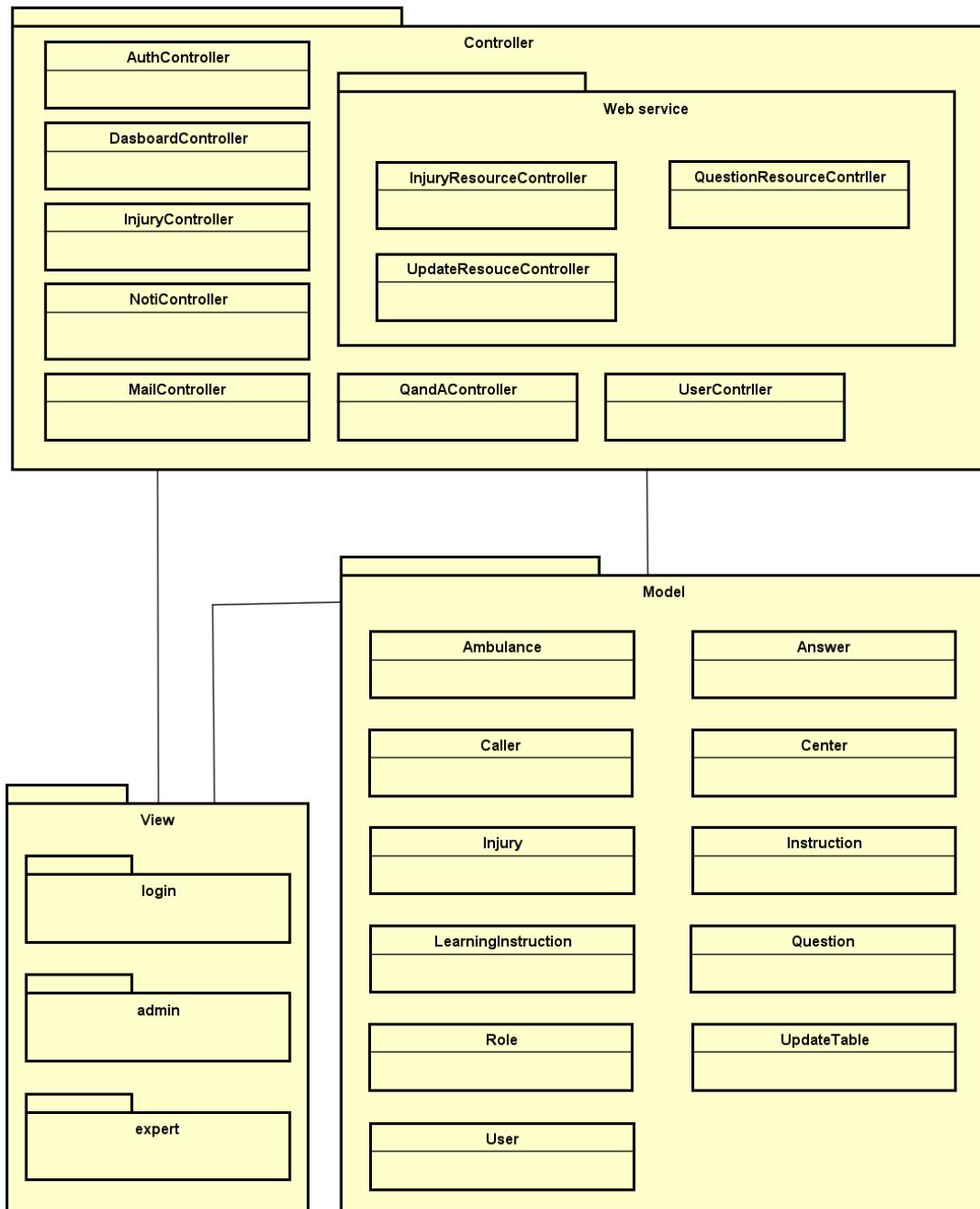


Figure 4-14: Admin/Expert Application Package Diagram

4.3.2 Function

4.3.2.1 First Aid Application

4.3.2.1.1 Emergency

4.3.2.1.1.1 Class Diagram

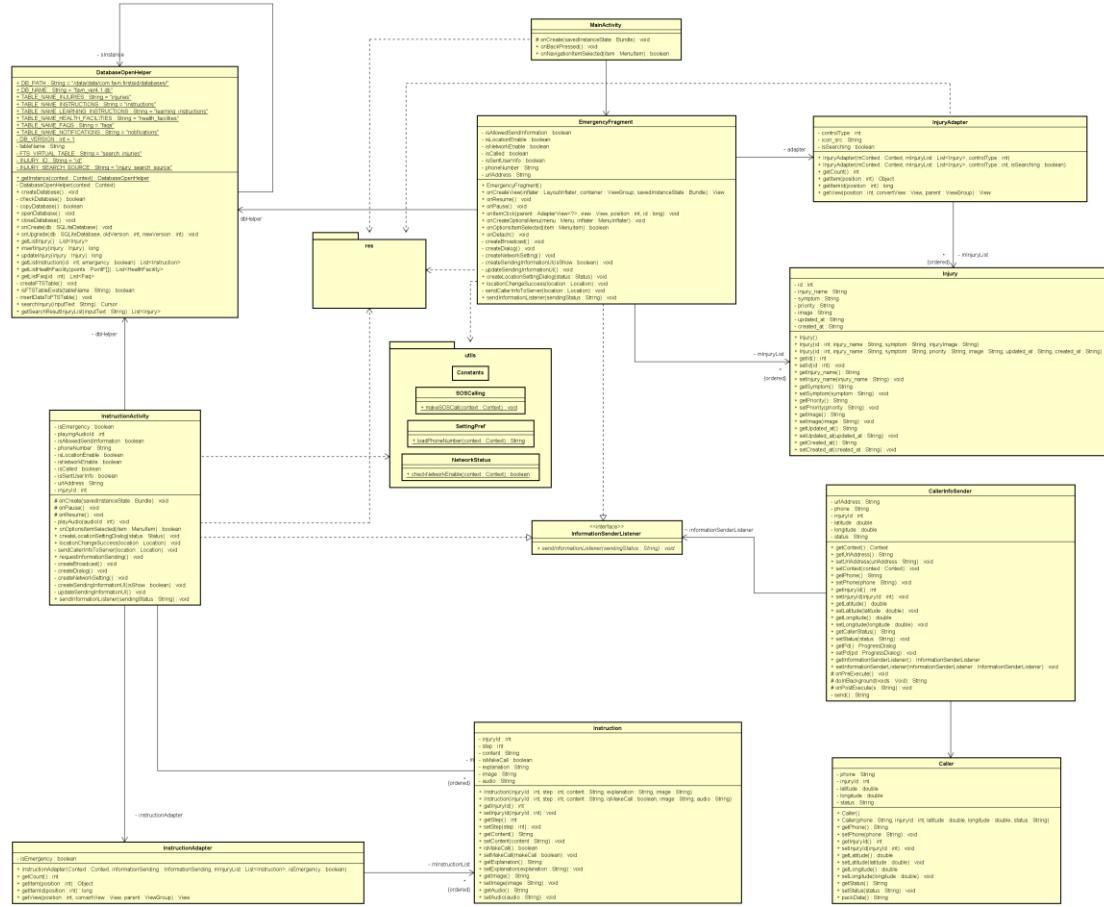


Figure 4-15: Emergency class diagram for UC 1-5

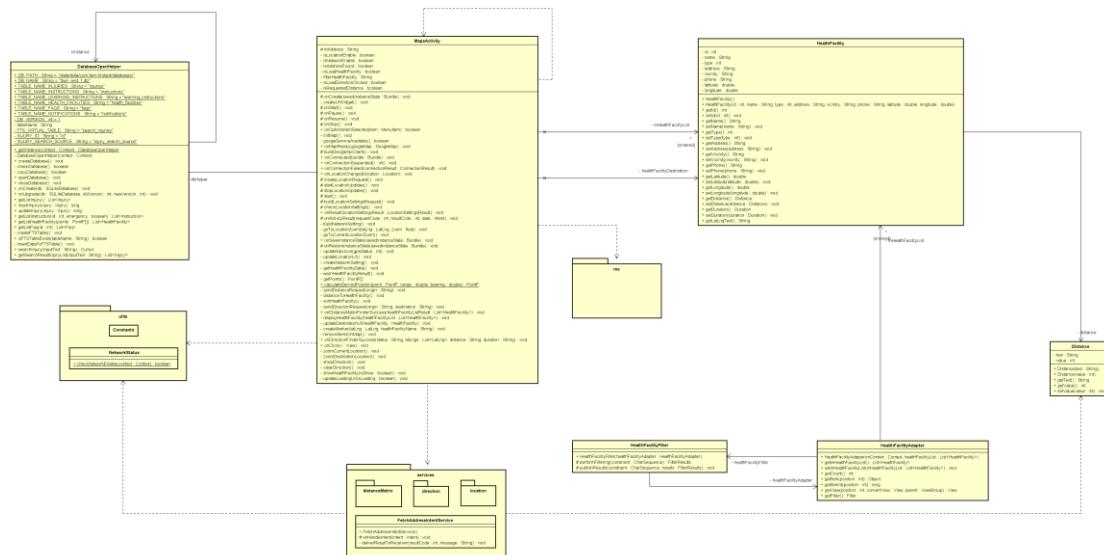


Figure 4-16: Emergency class diagram for UC 6-9

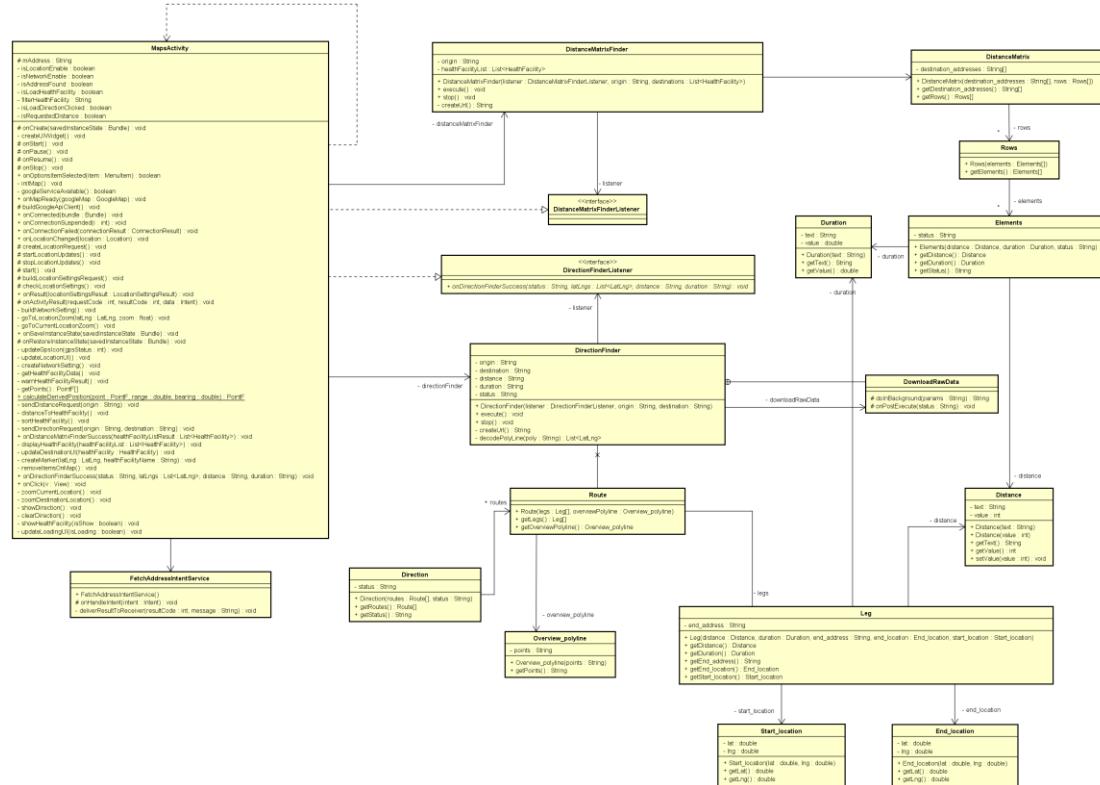


Figure 4-17: Class diagram for getting distance matrix and direction

4.3.2.1.1.2 Sequence Diagram

4.3.2.1.1.2.1 View list of injuries

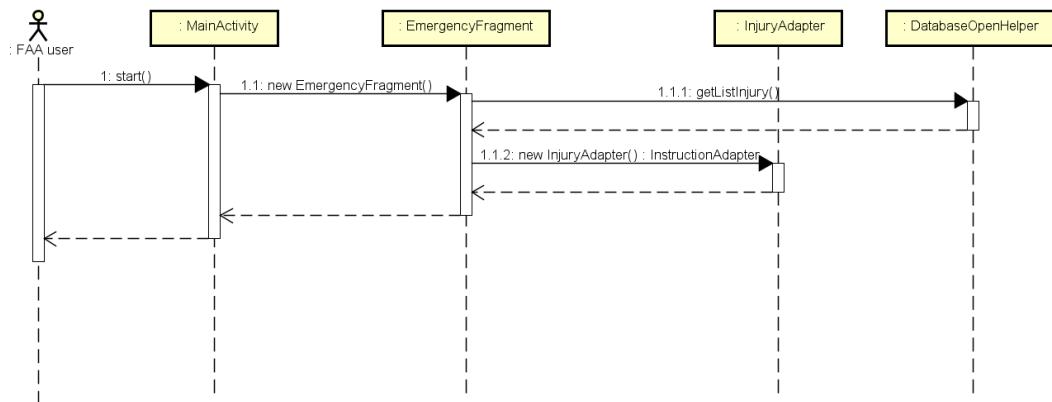


Figure 4-18: View list of injuries sequence diagram

4.3.2.1.1.2.2 View instruction steps of injury

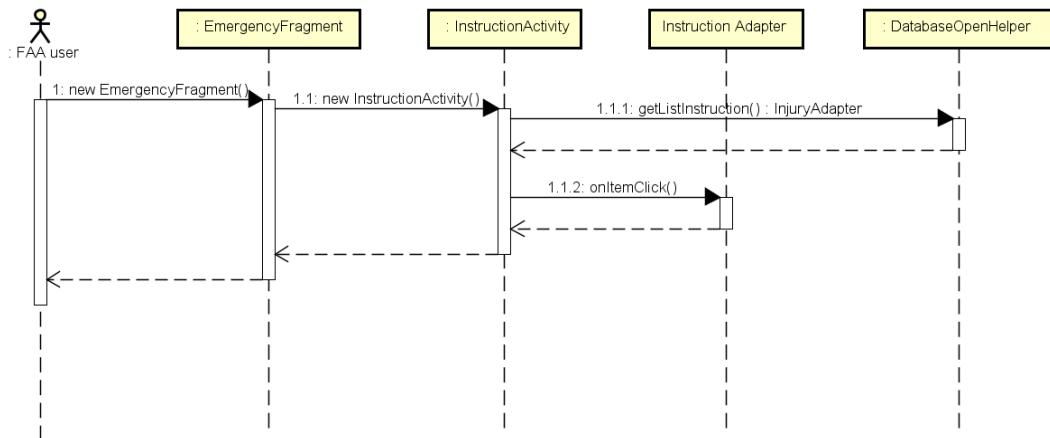


Figure 4-19: View instruction steps of injury sequence diagram

4.3.2.1.1.2.3 Search injuries

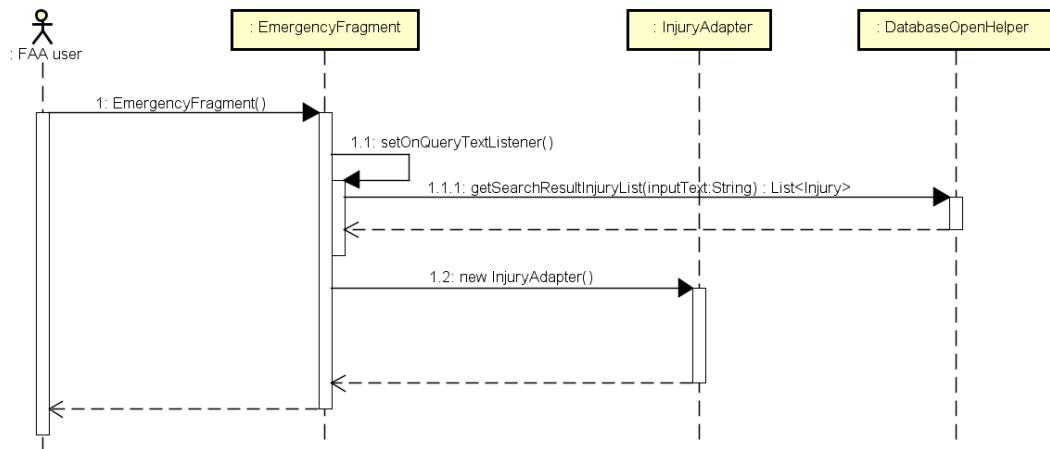


Figure 4-20: Search injuries sequence diagram

4.3.2.1.1.2.4 Call 115

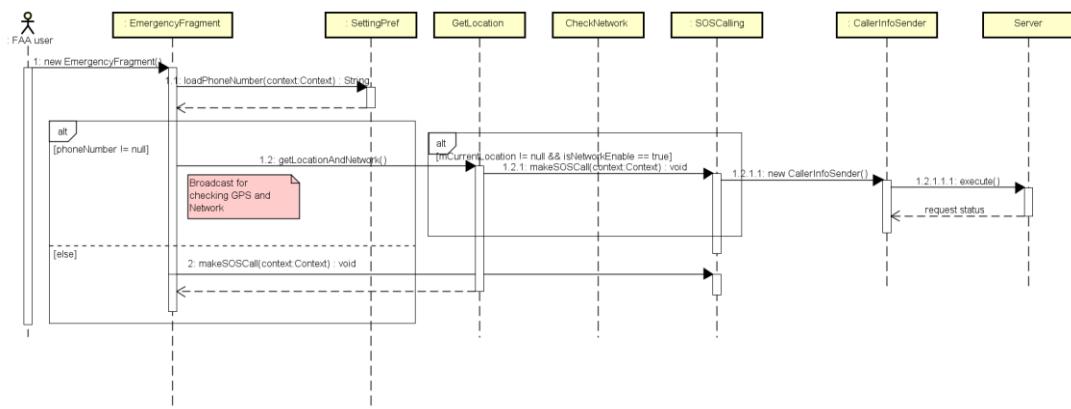


Figure 4-21: Call 115 sequence diagram

Broadcast is Refer to Sequence diagram for checking GPS and Network

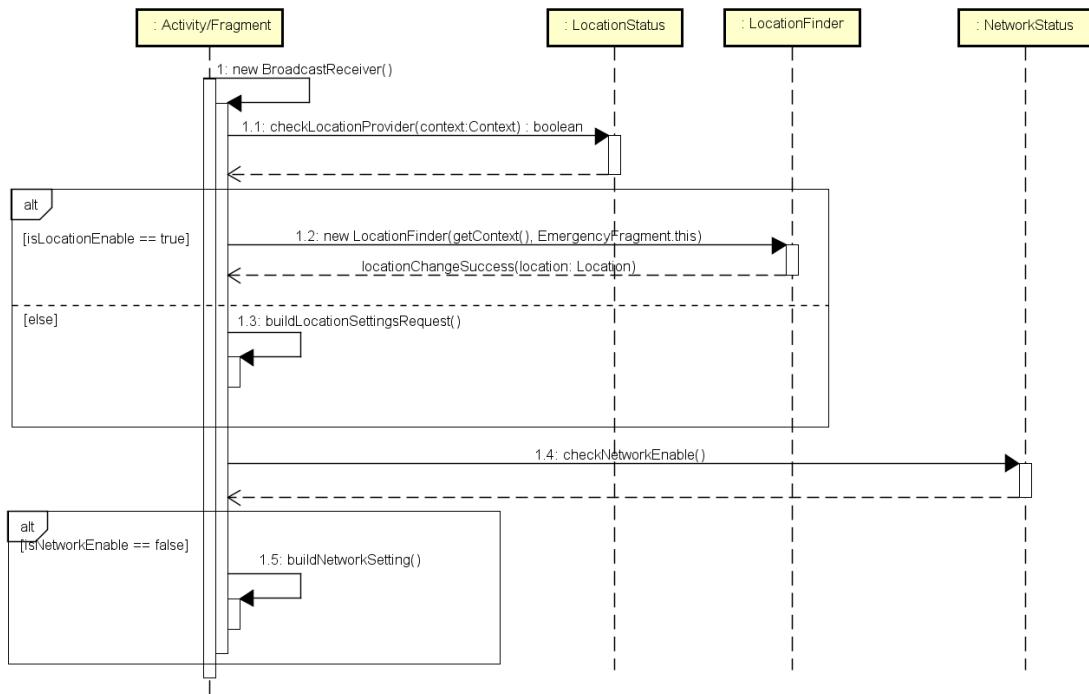


Figure 4-22: Sequence diagram for checking GPS and Network

4.3.2.1.1.2.5 Read instruction steps

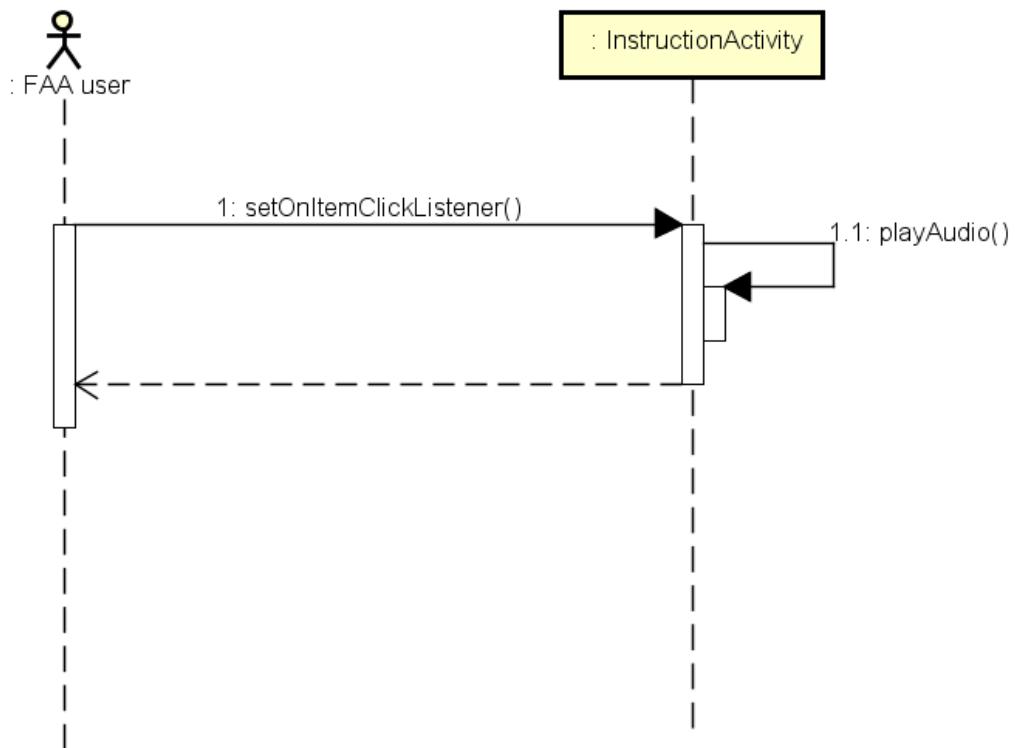


Figure 4-23: Read instruction steps sequence diagram

4.3.2.1.1.2.6 View current location

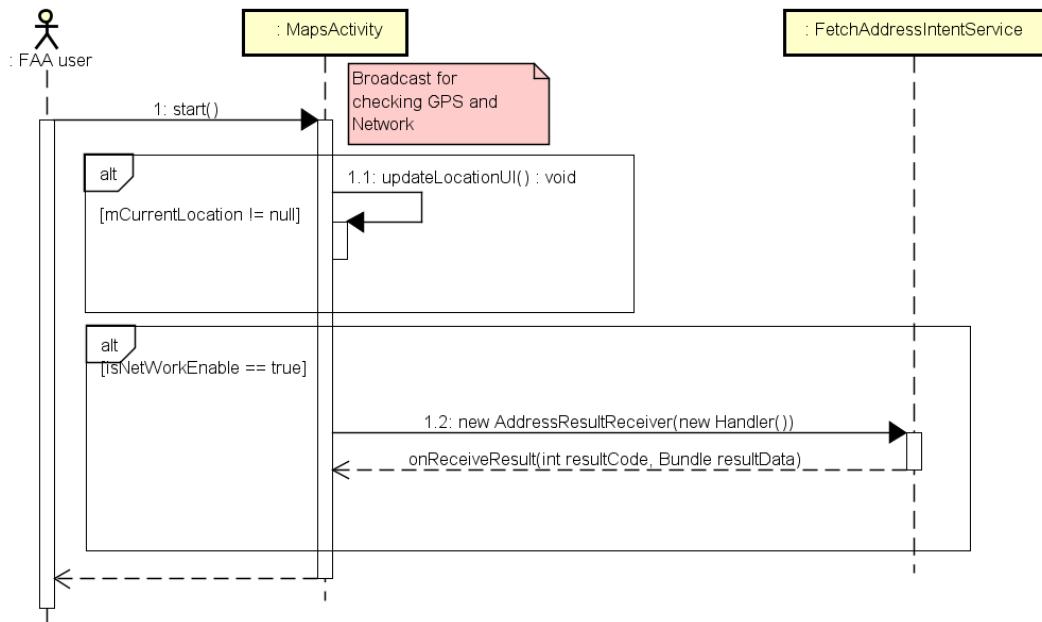


Figure 4-24: View current location

Broadcast is Refer to Sequence diagram for checking GPS and Network

4.3.2.1.1.2.7 View list of nearest health facilities

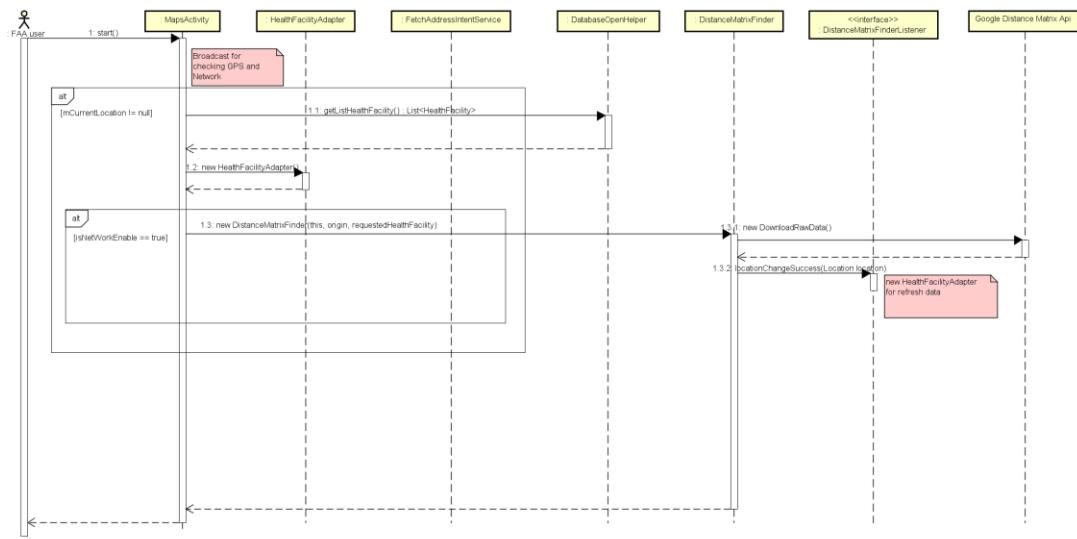


Figure 4-25: View list of nearest health facilities

Broadcast is Refer to Sequence diagram for checking GPS and Network

4.3.2.1.1.2.8 Show direction to health facility

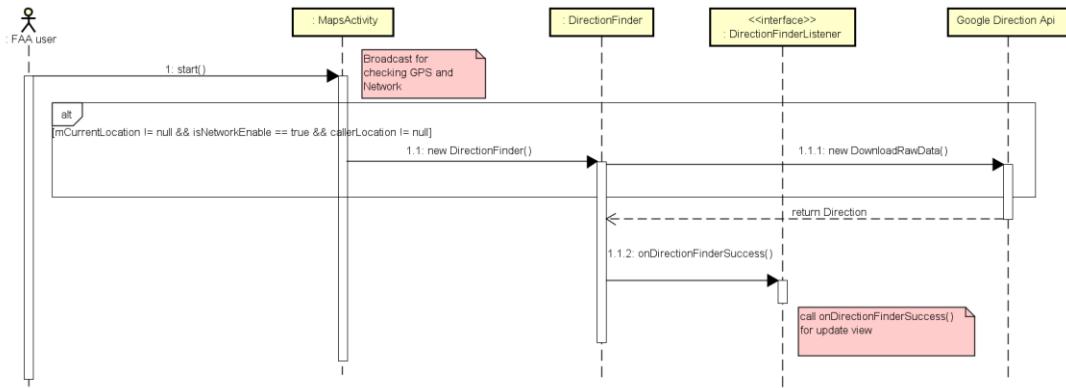


Figure 4-26: Show direction to health facility

Broadcast is Refer to Sequence diagram for checking GPS and Network

4.3.2.1.1.2.9 Call to health facility

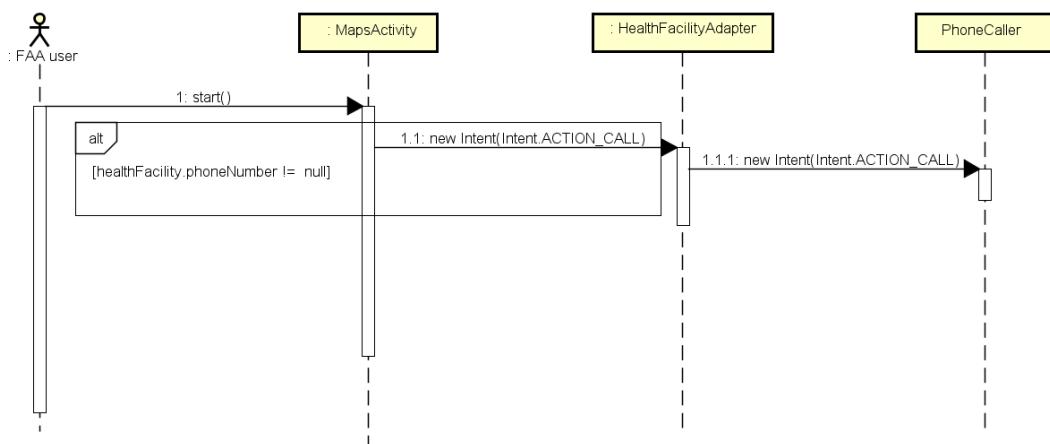


Figure 4-27: Call to health facility

4.3.2.1.2 Learning

4.3.2.1.2.1 Class Diagram

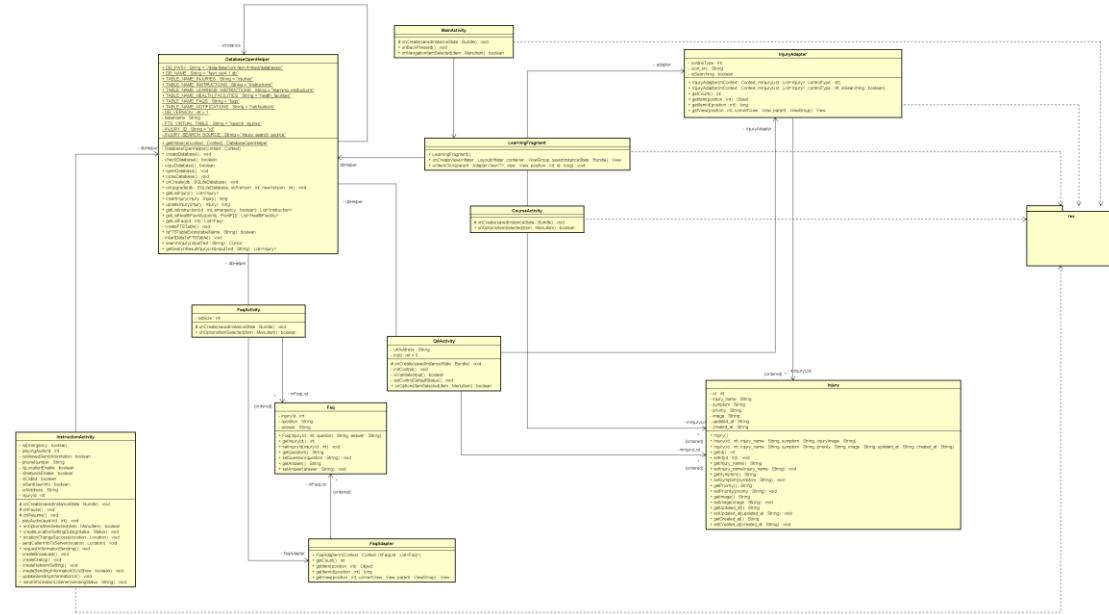


Figure 4-28: Learning class diagram

4.3.2.1.2.2 Sequence Diagram

4.3.2.1.2.2.1 View list of learning injuries

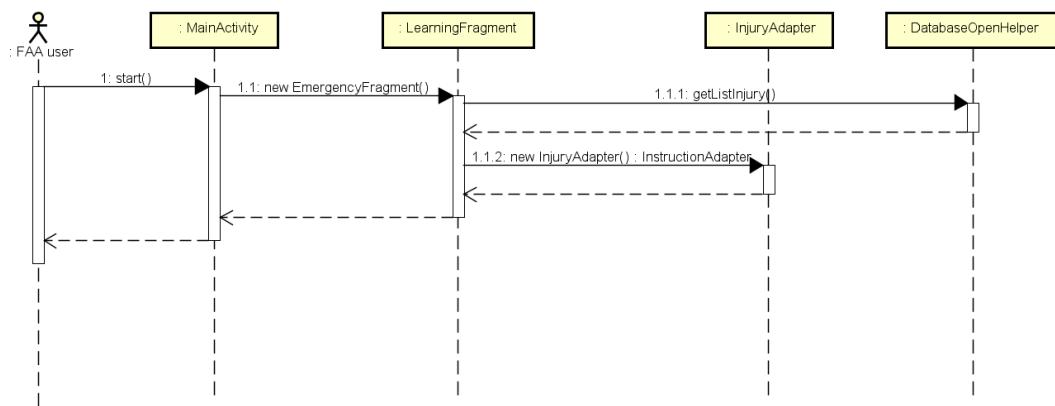


Figure 4-29: View list of learning injuries

4.3.2.1.2.2.2 View learning instruction steps

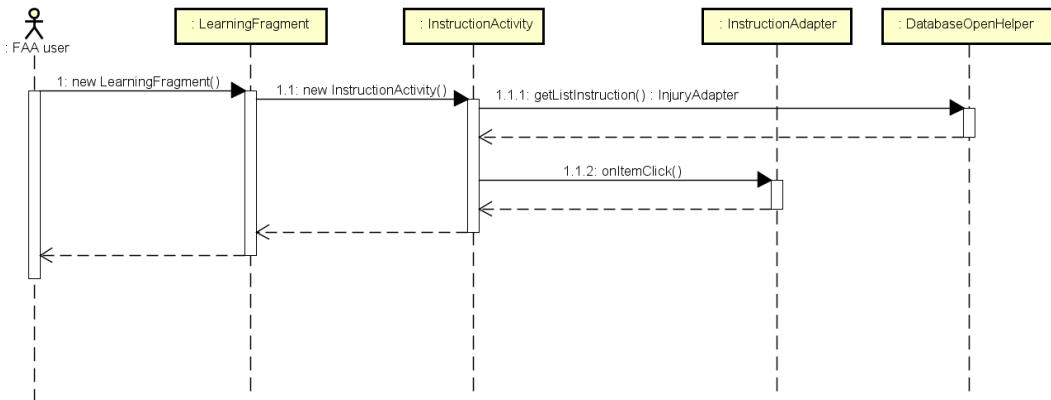


Figure 4-30: View learning instruction steps

4.3.2.1.2.2.3 View FAQs

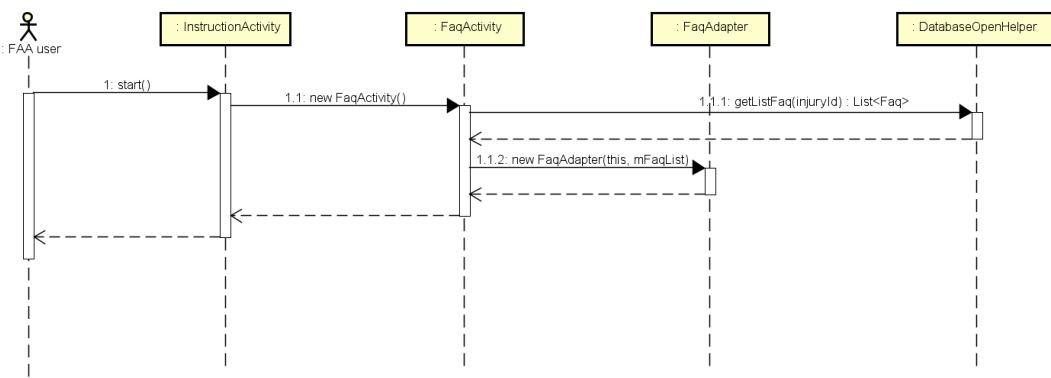


Figure 4-31: View FAQs

4.3.2.1.3 More

4.3.2.1.3.1 Class Diagram

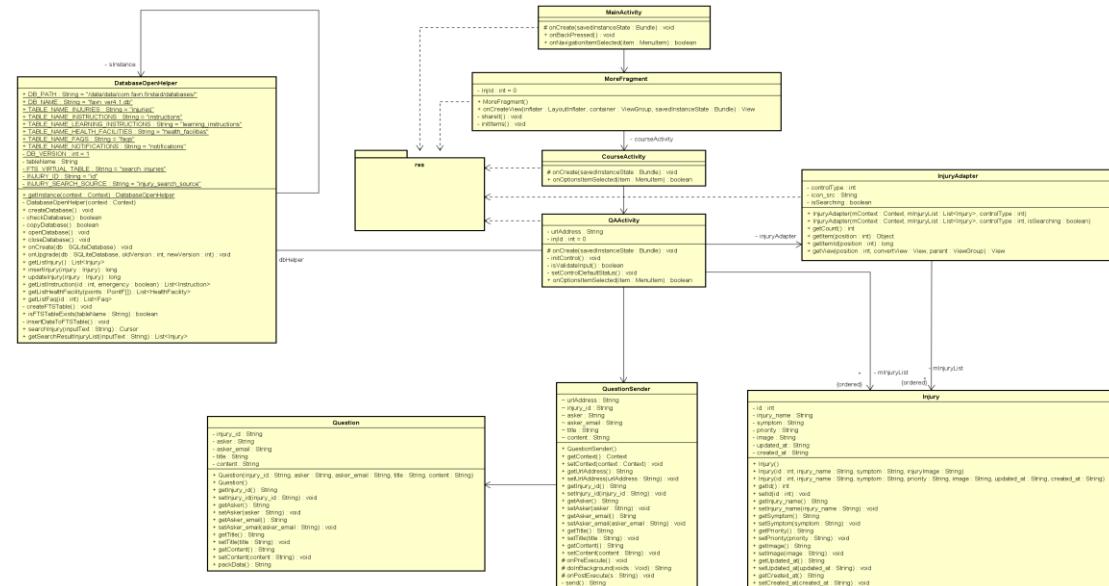


Figure 4-32: Learning class diagram

4.3.2.1.3.2 Sequence Diagram

4.3.2.1.3.2.1 Send questions

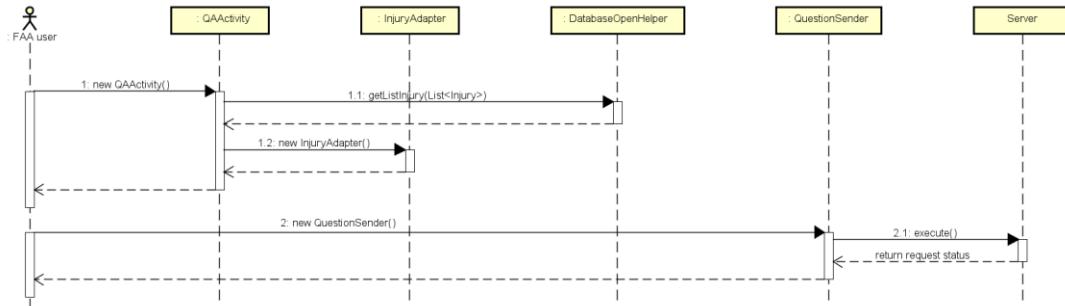


Figure 4-33: Send questions

4.3.2.1.3.2.2 View course

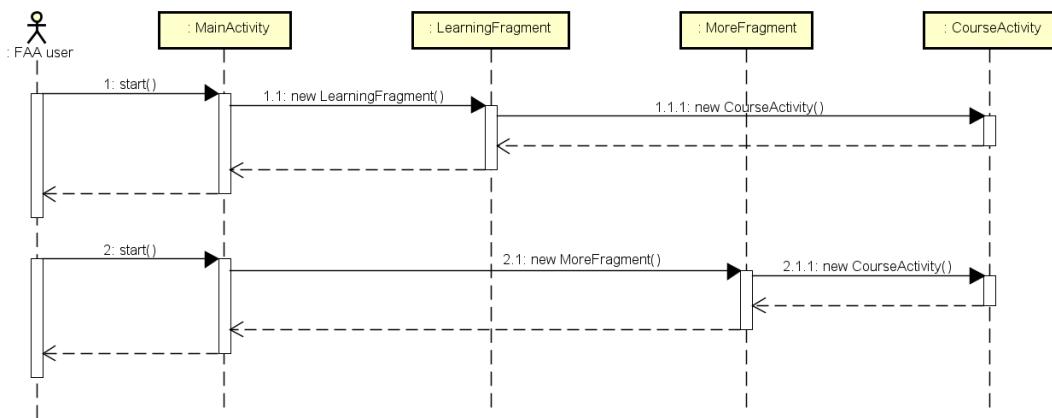


Figure 4-34: View courses

4.3.2.1.3.2.3 Share application

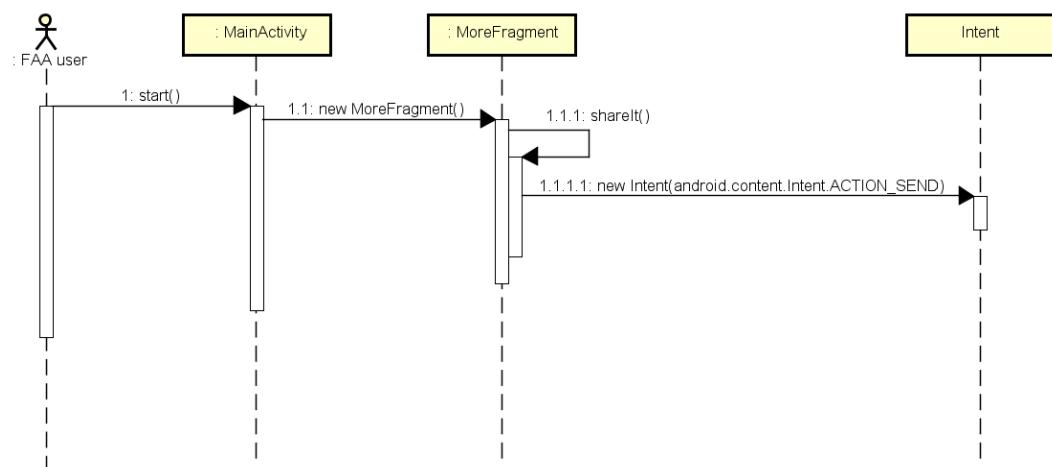


Figure 4-35: Share application

4.3.2.1.4 Setting

4.3.2.1.4.1 Class Diagram

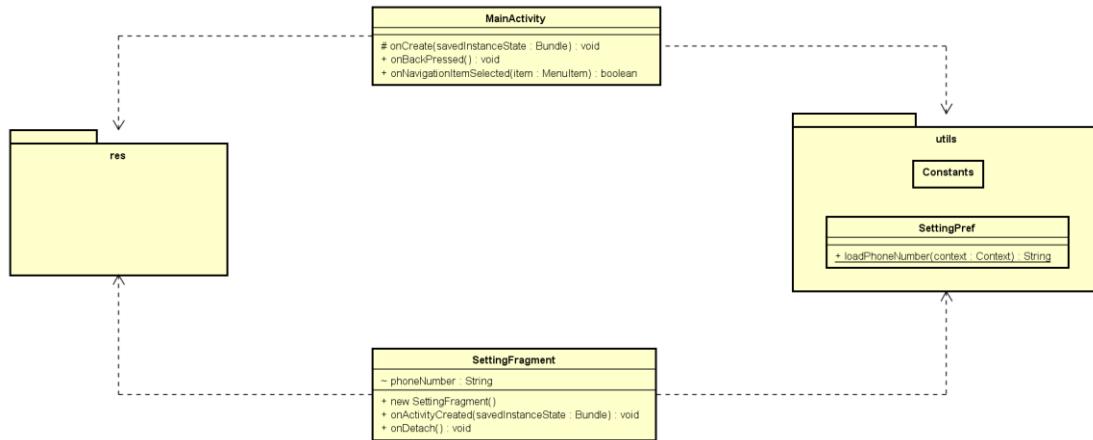


Figure 4-36: Setting class diagram

4.3.2.1.4.2 Sequence Diagram

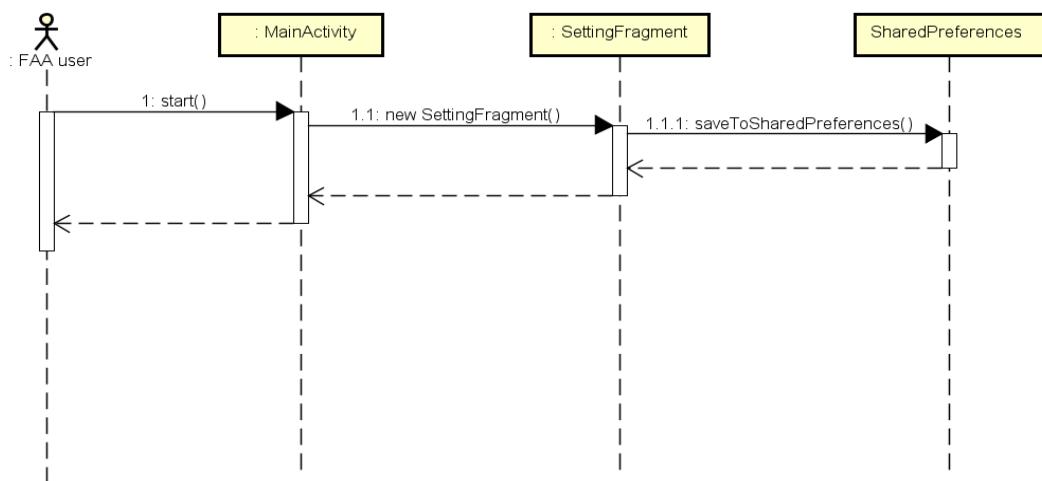


Figure 4-37: Setting sequence diagram

4.3.2.1.5 Information

4.3.2.1.5.1 Class Diagram

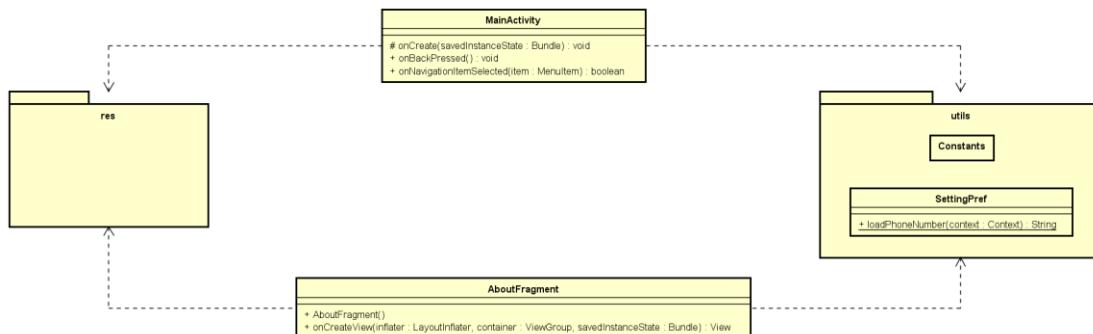


Figure 4-38: Information class diagram

4.3.2.1.5.2 Sequence Diagram

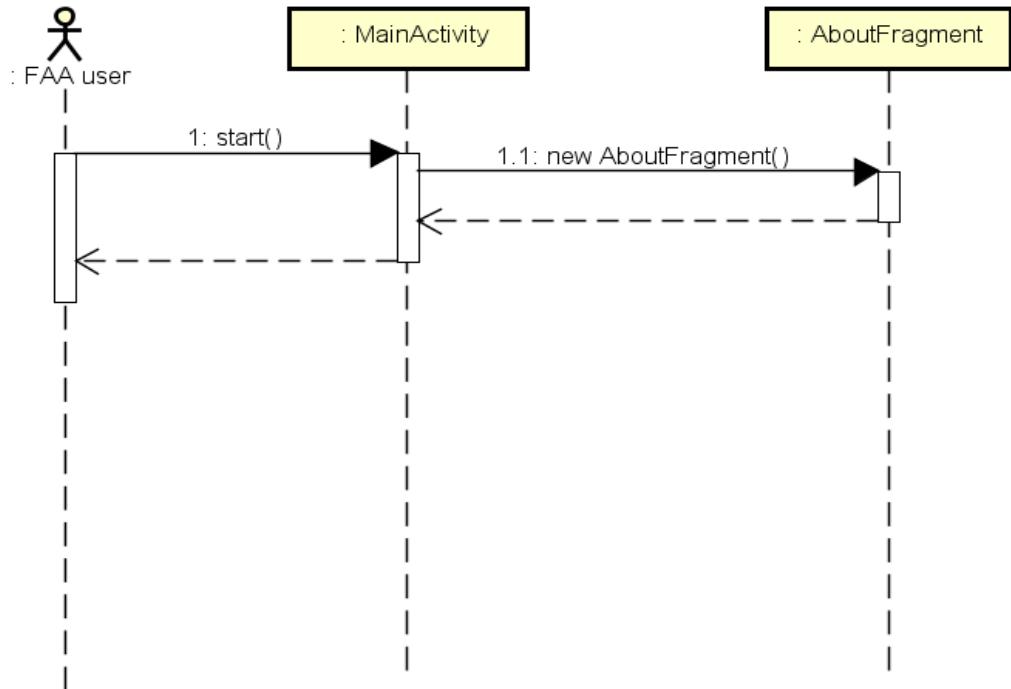


Figure 4-39: View application information

4.3.2.2 Ambulance Application

4.3.2.2.1 Common

4.3.2.2.1.1 Class Diagram

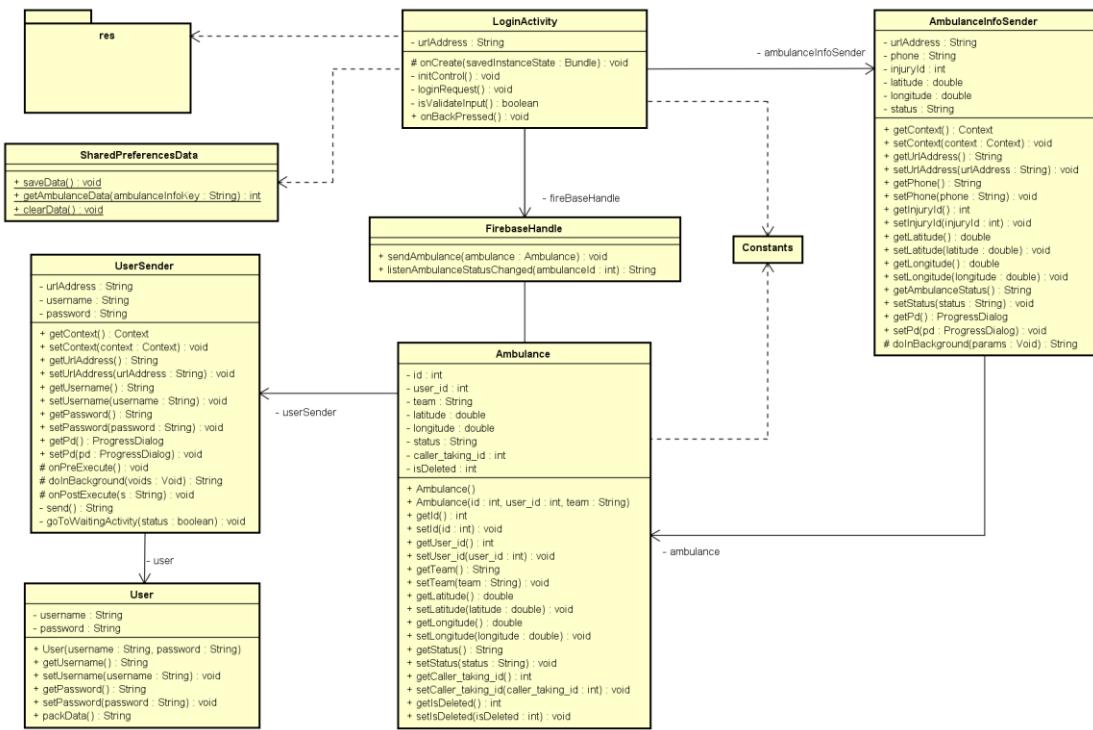


Figure 4-40: Common class diagram

4.3.2.2.1.2 Sequence Diagram

4.3.2.2.1.2.1 Login Sequence diagram

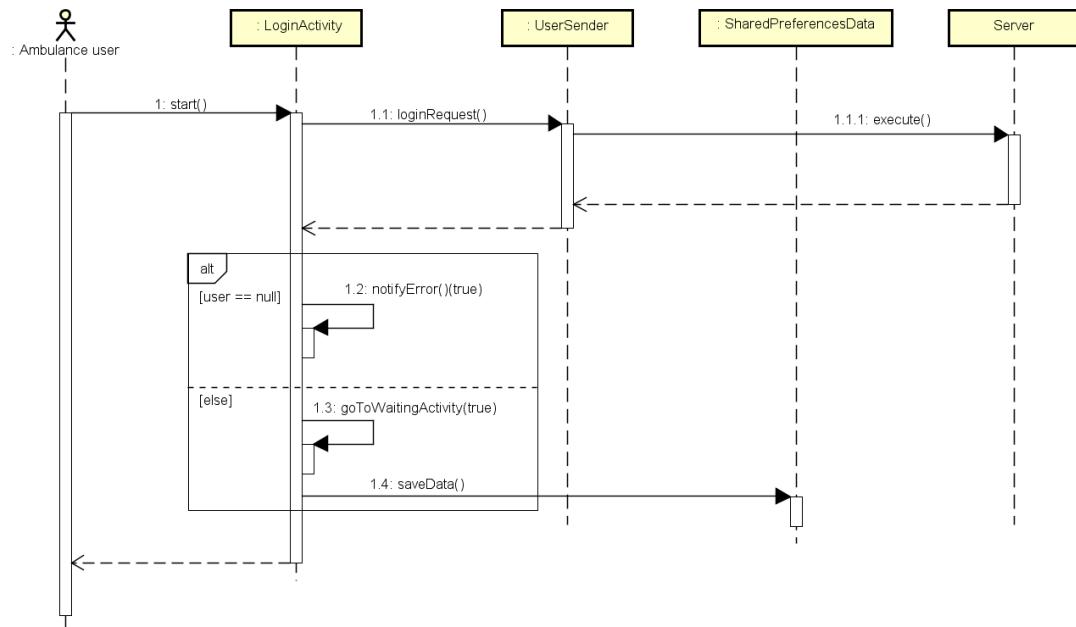


Figure 4-41: Login sequence diagram

4.3.2.2.1.2.2 Logout Sequence diagram

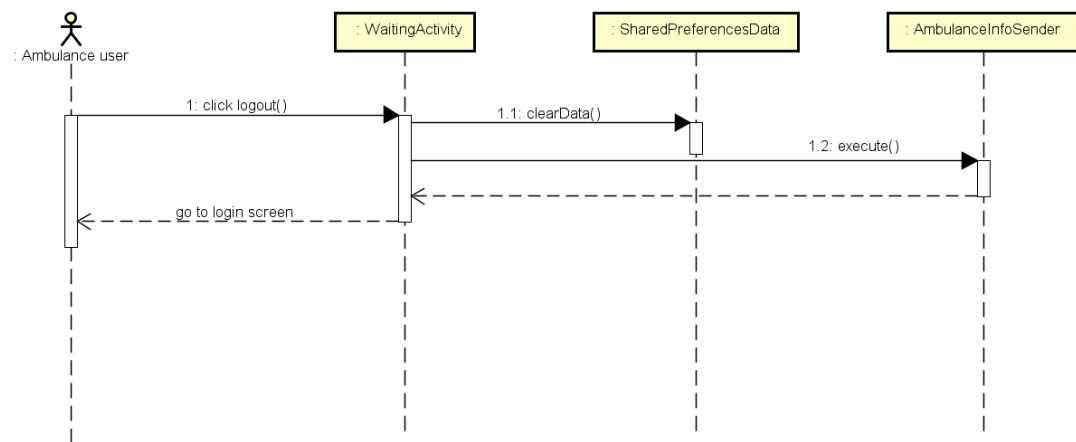


Figure 4-42: Logout sequence diagram

4.3.2.2.2 Task

4.3.2.2.2.1 Class Diagram

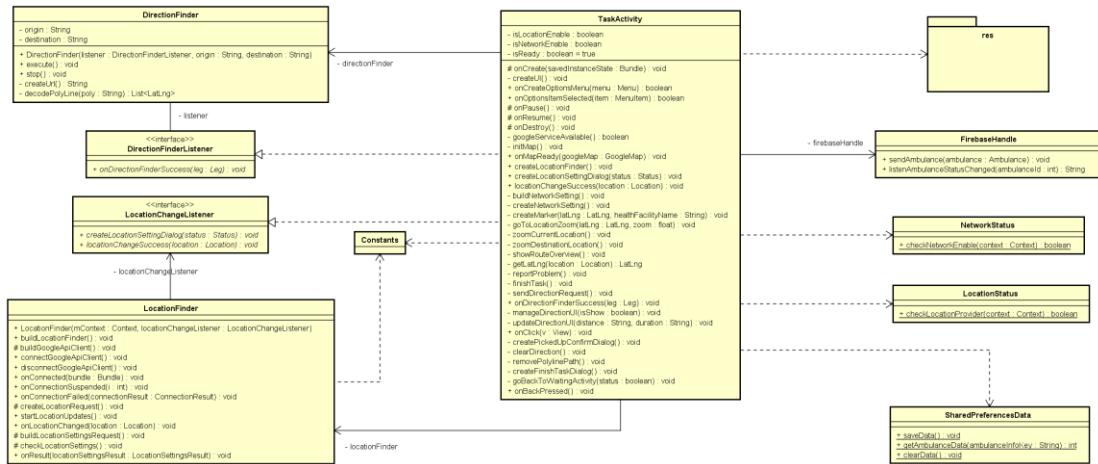
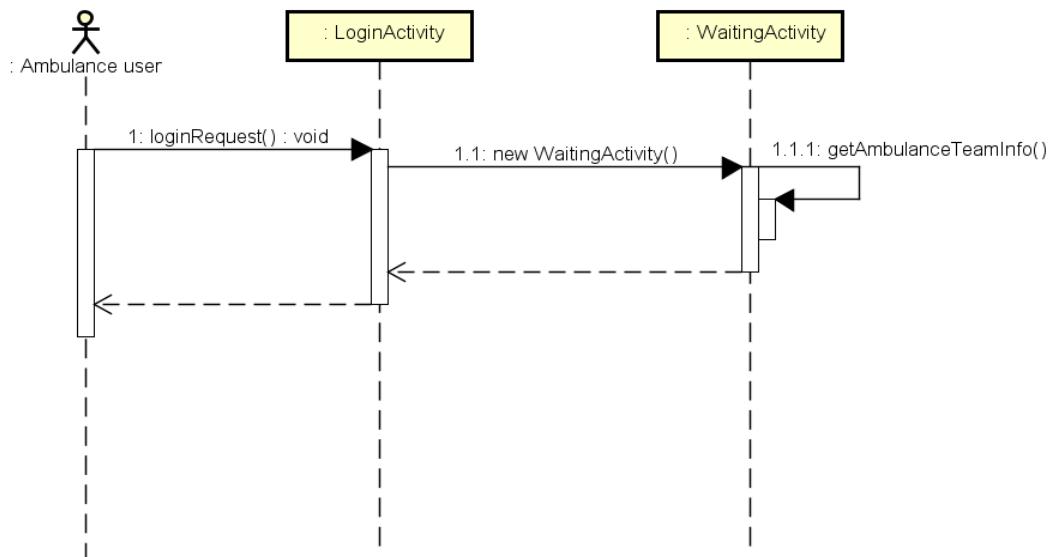


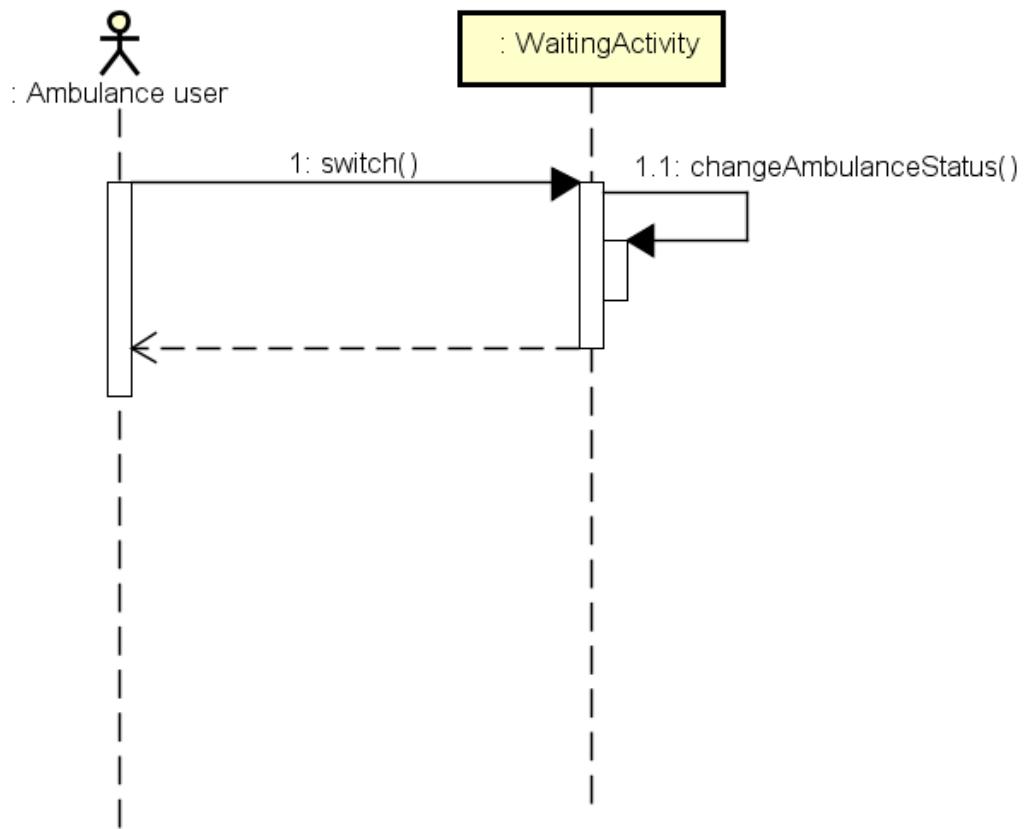
Figure 4-43: Task class diagram

4.3.2.2.2.2 Sequence Diagram

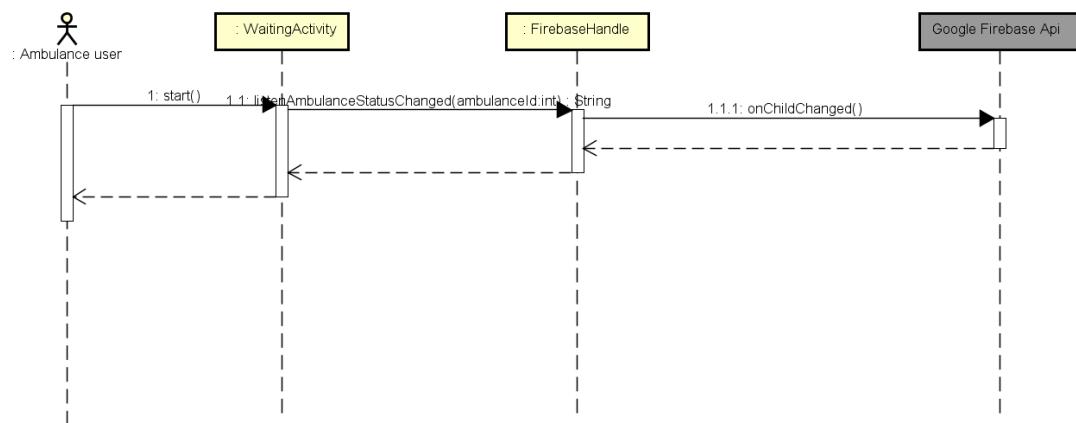
4.3.2.2.2.1 View ambulance team information sequence diagram



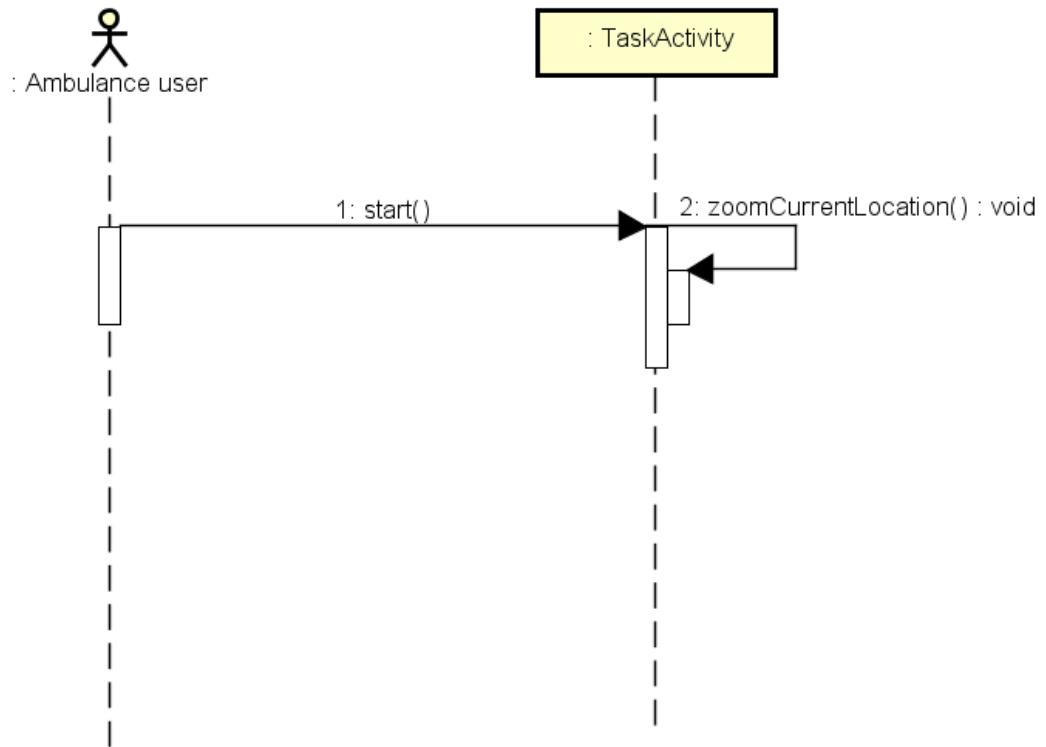
4.3.2.2.2.2 Change status sequence diagram



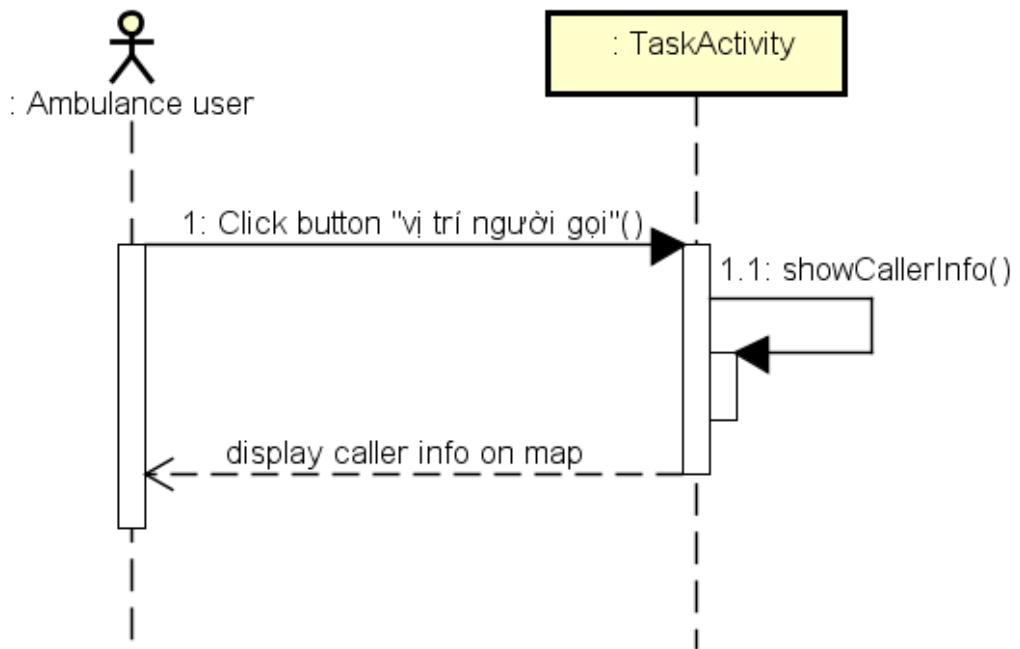
4.3.2.2.2.3 Notify task sequence diagram



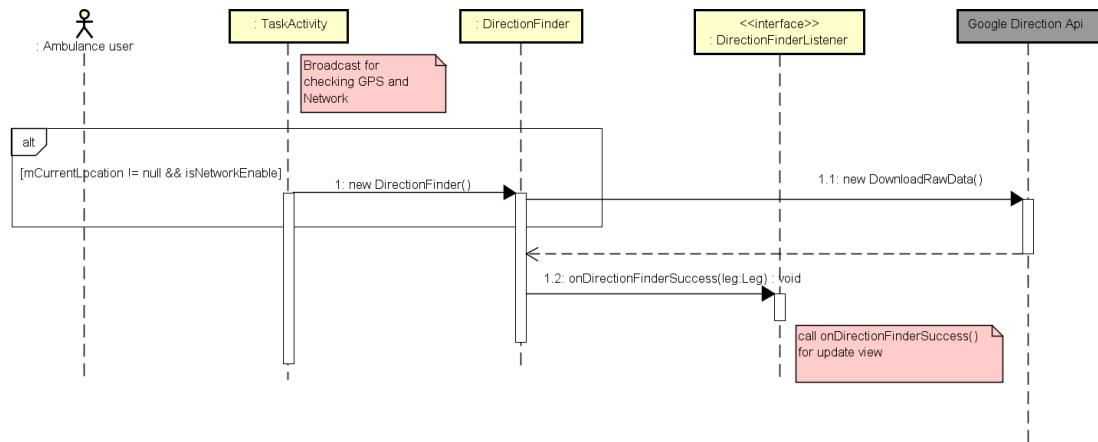
4.3.2.2.2.4 View current location sequence diagram



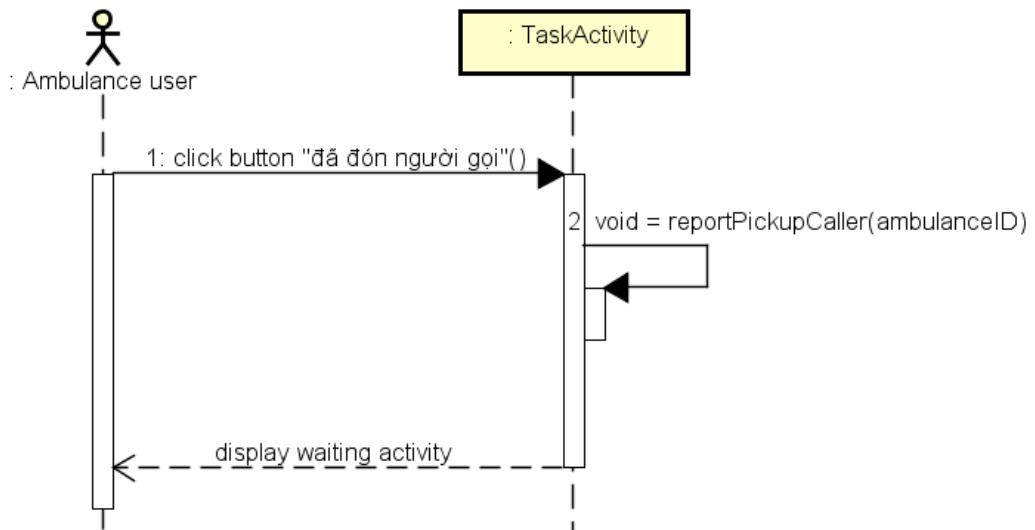
4.3.2.2.2.5 Show location of caller sequence diagram



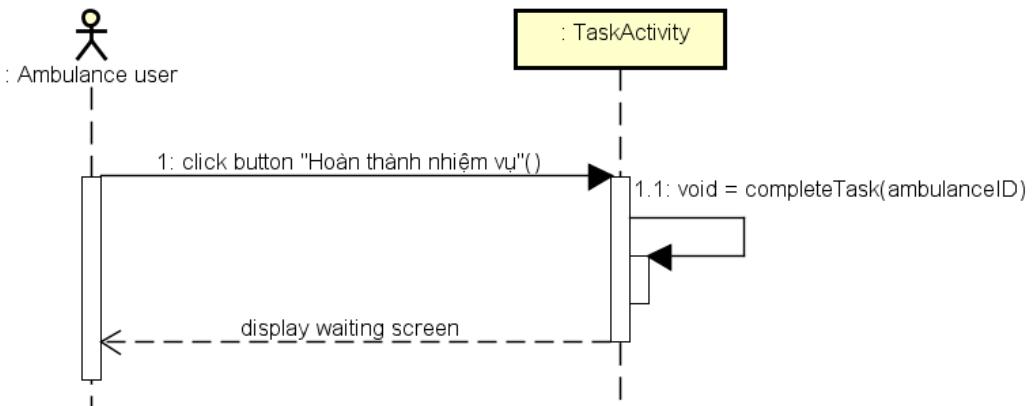
4.3.2.2.2.6 Show direction to caller sequence diagram



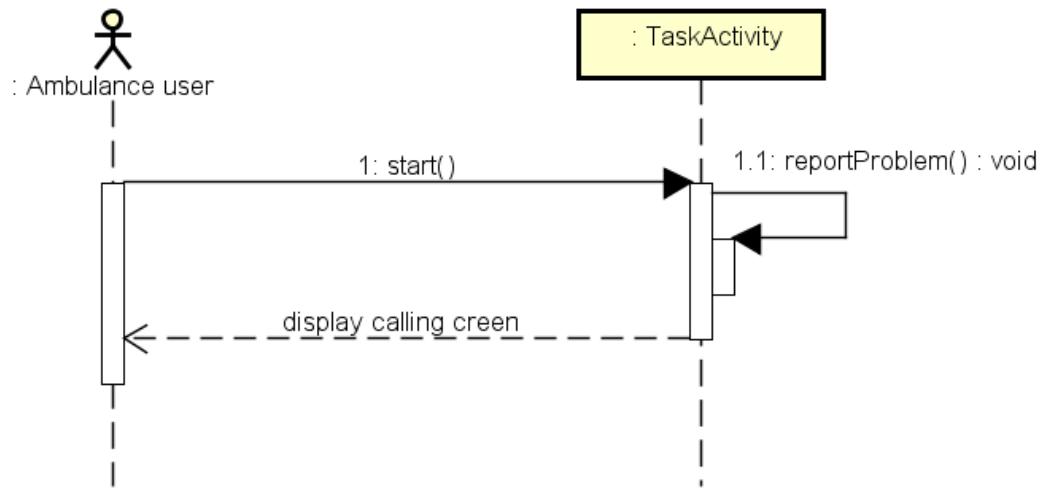
4.3.2.2.2.7 Report picked up victim sequence diagram



4.3.2.2.2.8 Report completed task sequence diagram

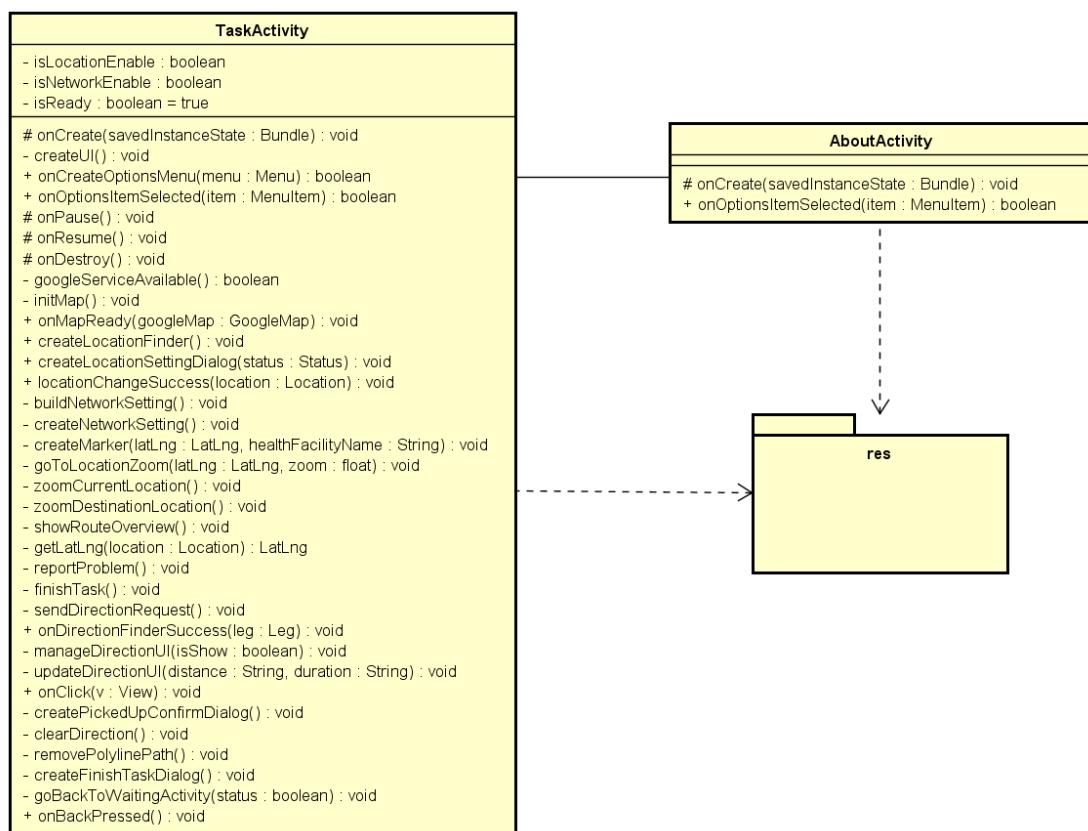


4.3.2.2.2.9 Report problem sequence diagram



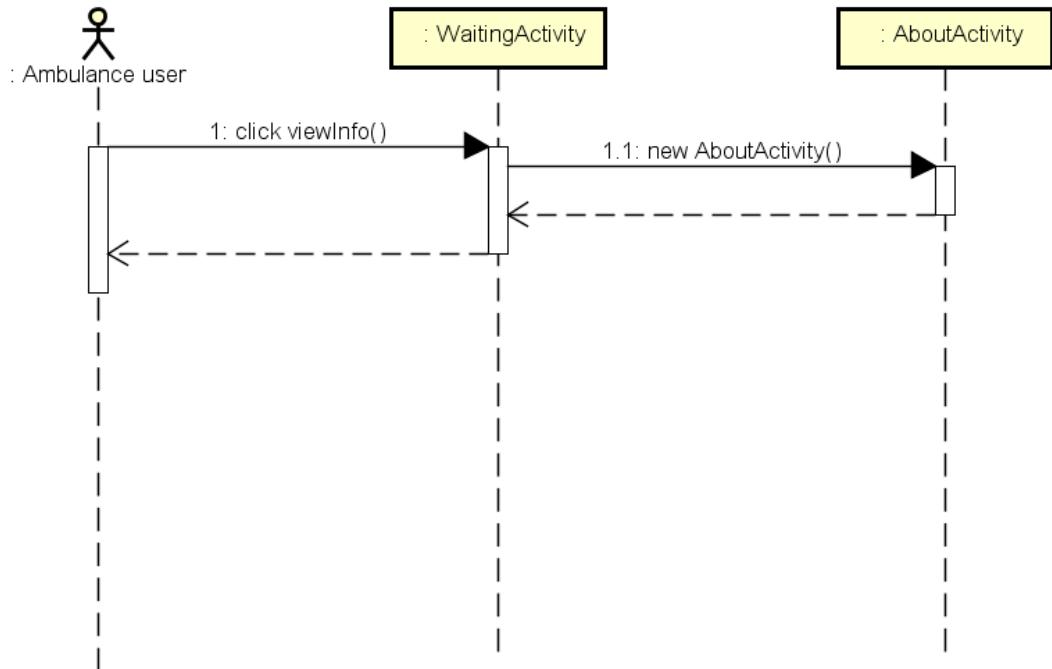
4.3.2.3 Information

4.3.2.3.1 Class Diagram



4.3.2.2.3.2 Sequence Diagram

4.3.2.2.3.2.1 View application information sequence diagram



4.3.2.3 Dispatcher Application

4.3.2.3.1 Common

4.3.2.3.1.1 Class diagram

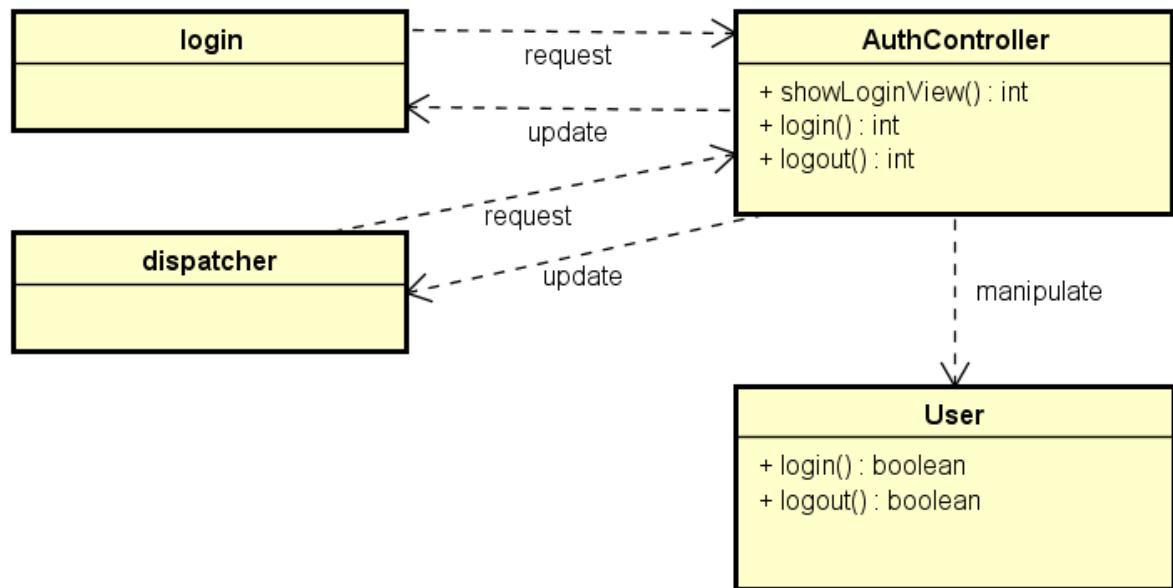


Figure 4-44: Common Class Diagram

4.3.2.3.1.2 Sequence diagram

Refer to 3.4.1.2 of this document with classes above to handle sequence

4.3.2.3.2 Create emergency case

4.3.2.3.2.1 Class diagram

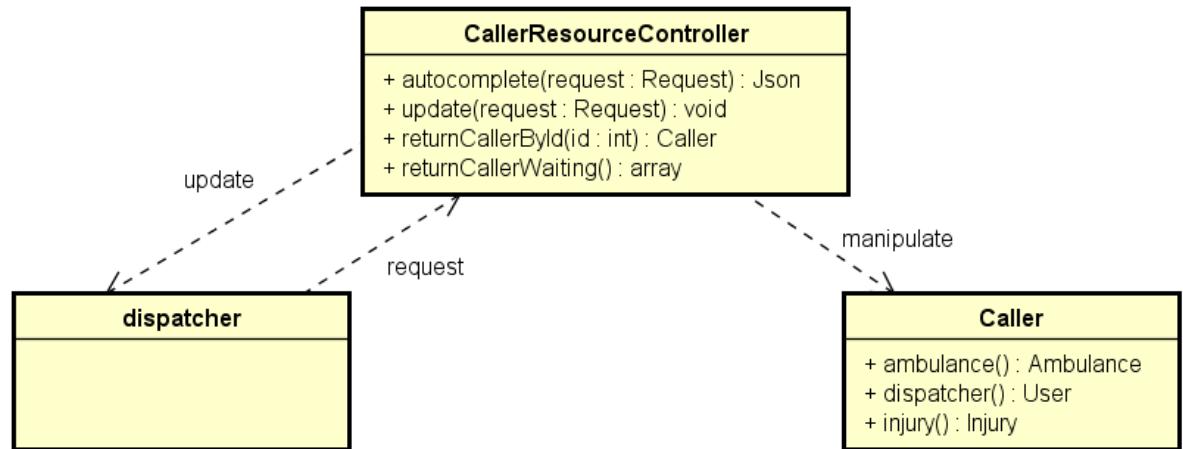


Figure 4-45: Create Emergency Case Class Diagram

4.3.2.3.2.2 Sequence diagram

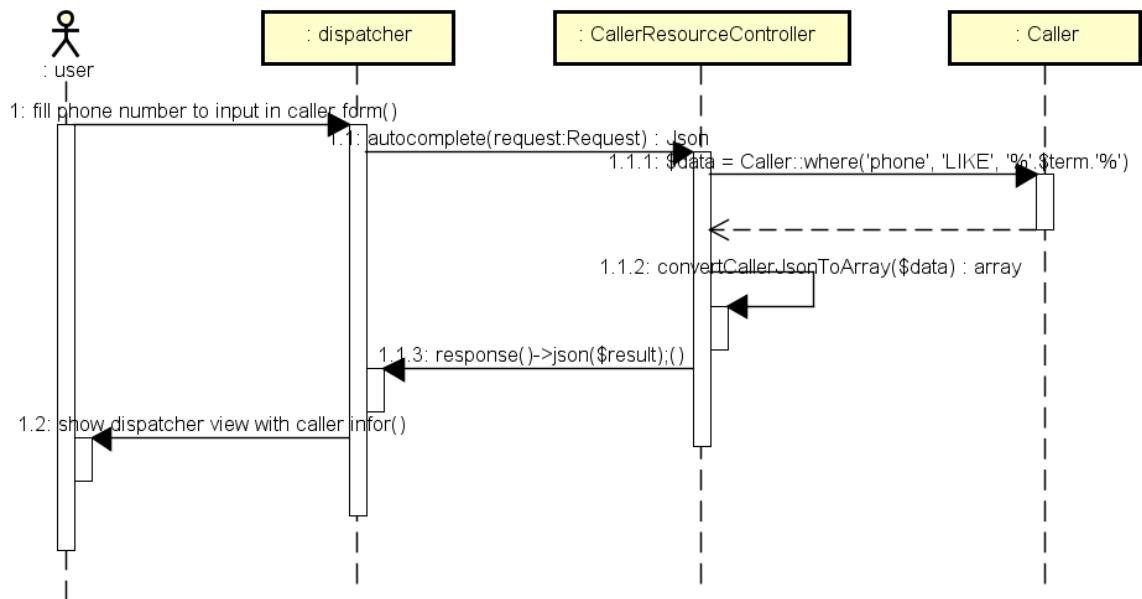


Figure 4-46: Create Emergency Case Sequence Diagram

4.3.2.3.1 Dispatch ambulance

4.3.2.3.1.1 Class diagram

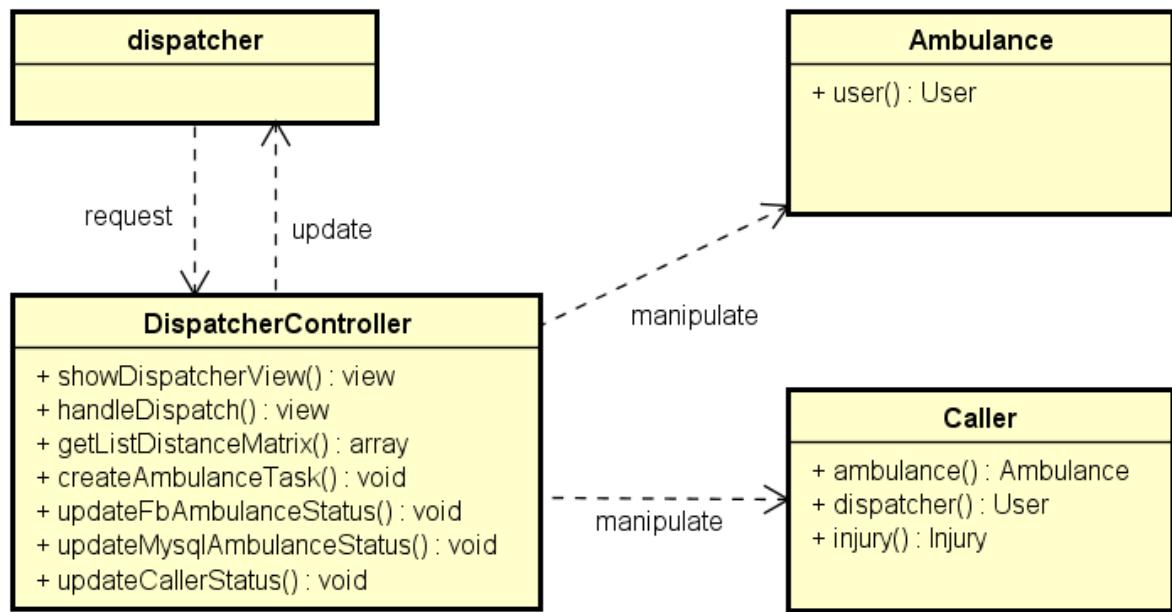


Figure 4-47: Dispatch Ambulance Class Diagram

4.3.2.3.1.2 Sequence diagram

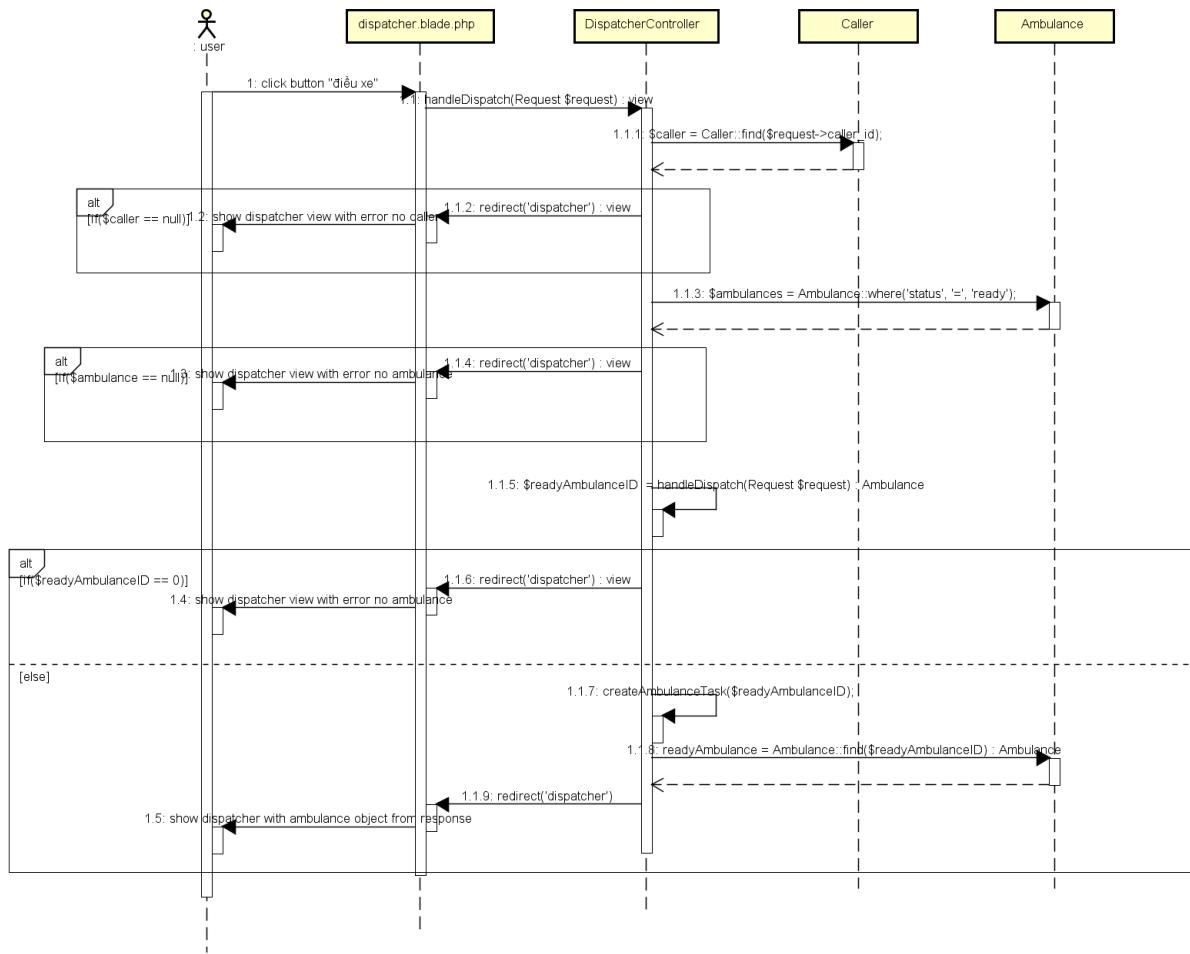


Figure 4-48: Dispatch Ambulance Class Diagram

4.3.2.3.2 View ambulance information

4.3.2.3.2.1 Class diagram

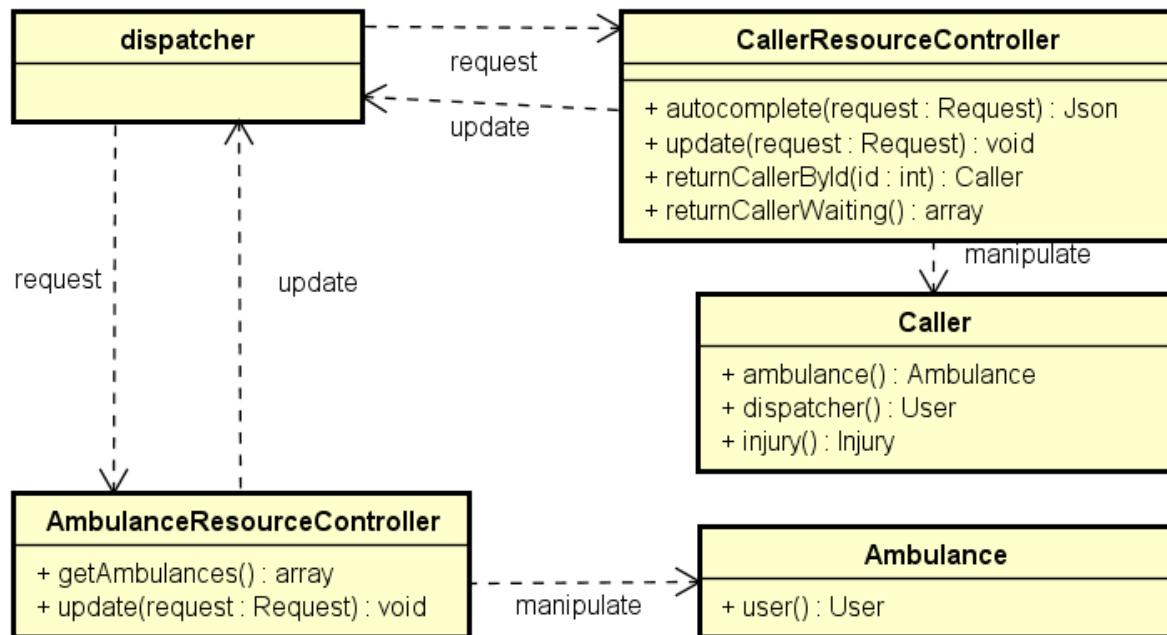


Figure 4-49: View Ambulance Information Class Diagram

4.3.2.3.2.2 Sequence diagram

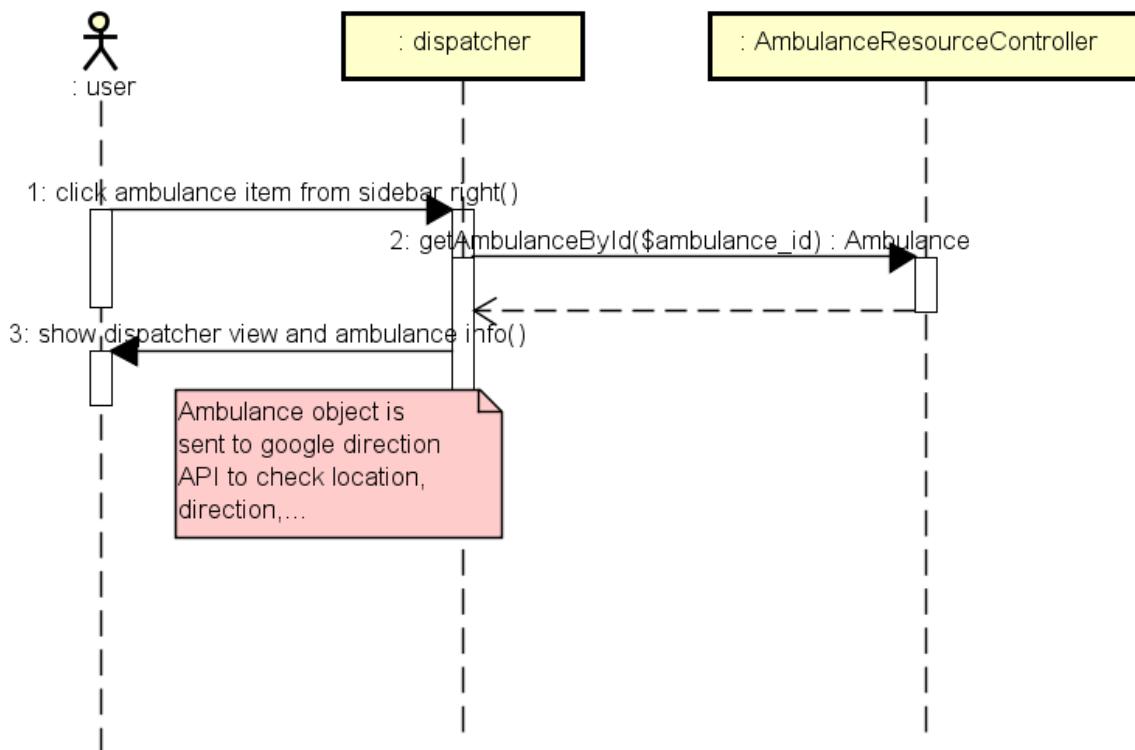
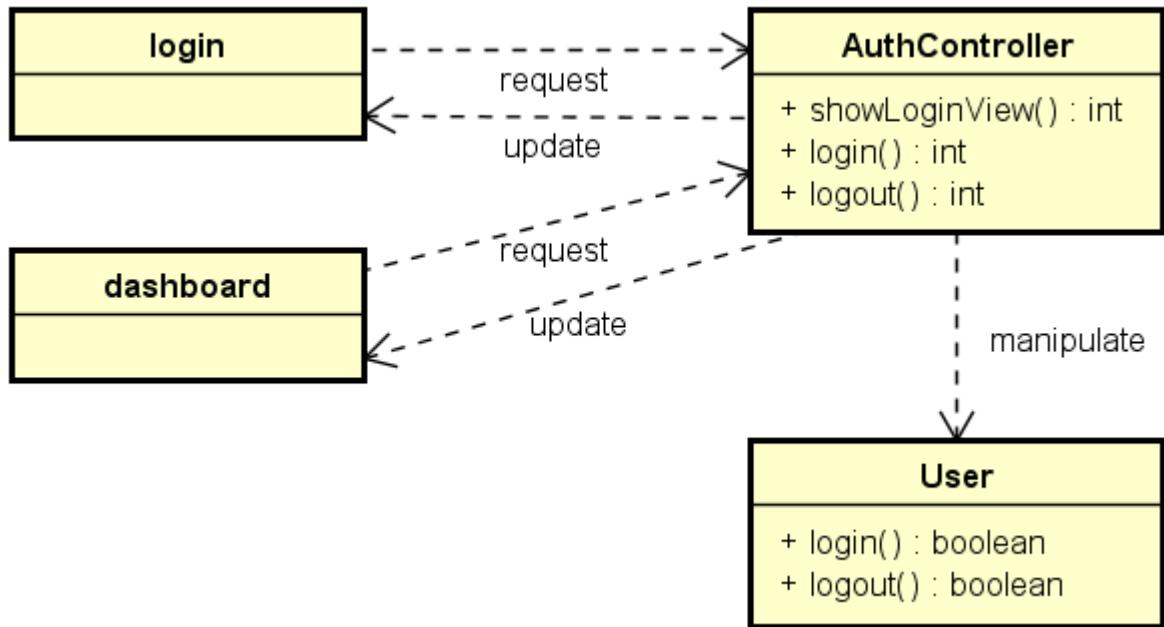


Figure 4-50: View Ambulance Information Sequence Diagram

4.3.2.4 Admin/Expert Application

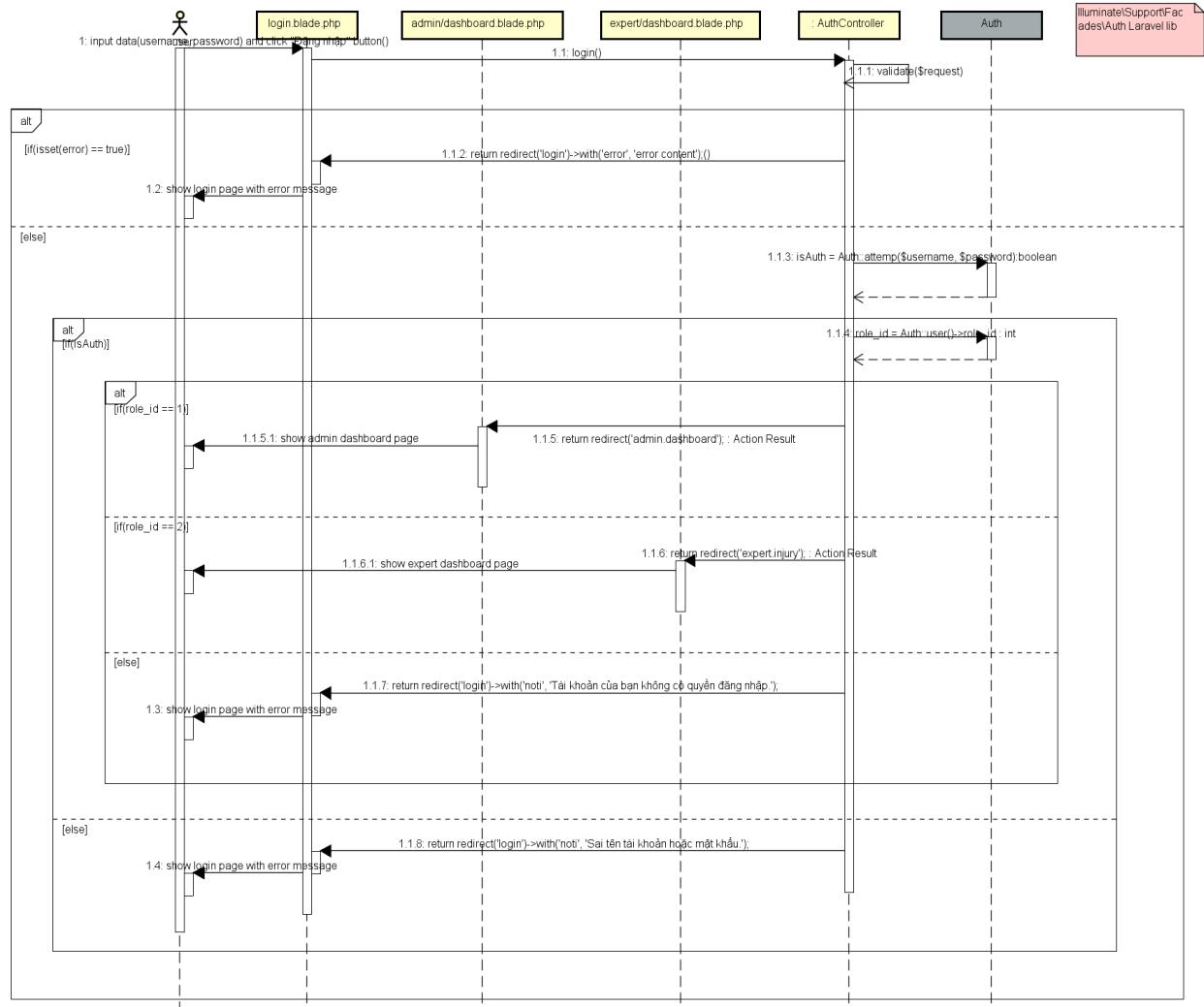
4.3.2.4.1 Common

4.3.2.4.1.1 Class diagram



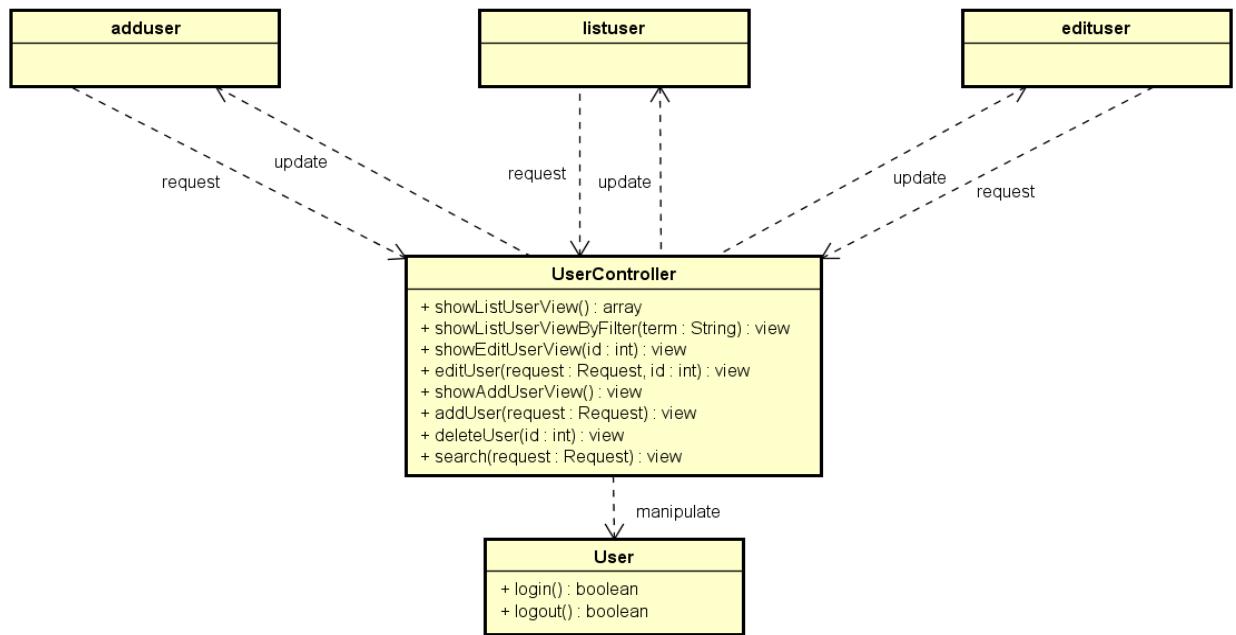
4.3.2.4.1.2 Sequence diagram

4.3.2.4.1.2.1 Login



4.3.2.4.2 Manage user's account

4.3.2.4.2.1 Class diagram

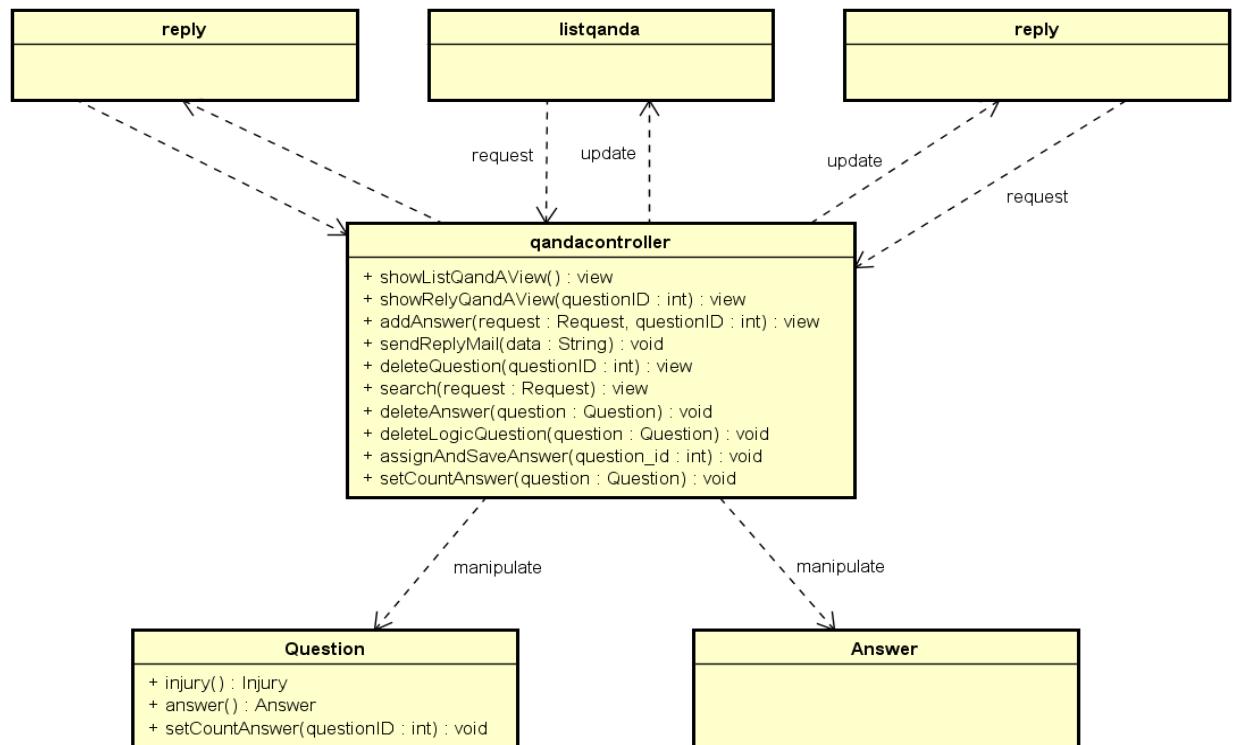


4.3.2.4.2.2 Sequence diagram

Refer to 3.4.4.2 of this document with classes above to handle sequence .

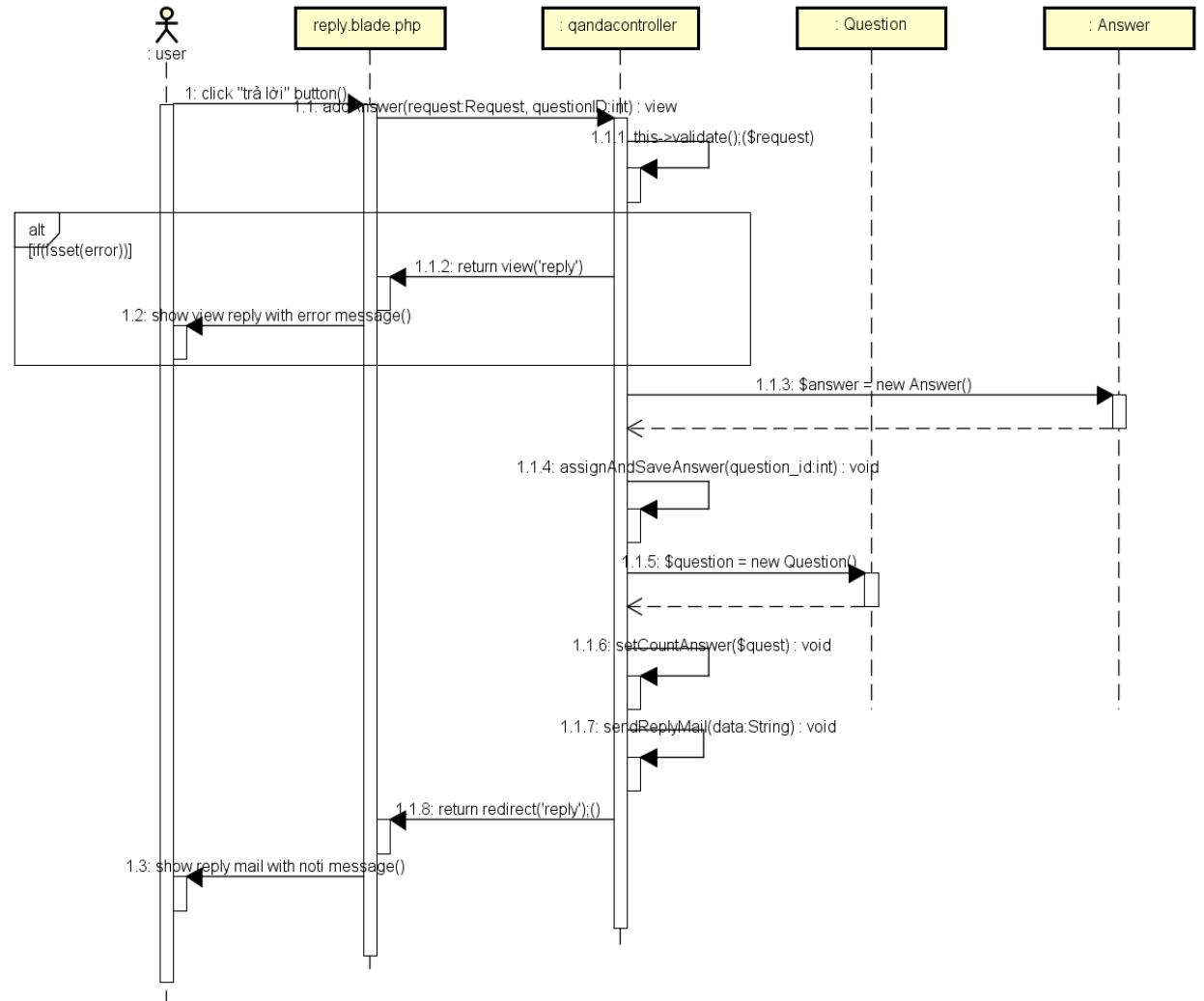
4.3.2.4.3 Manage Q&A

4.3.2.4.3.1 Class diagram

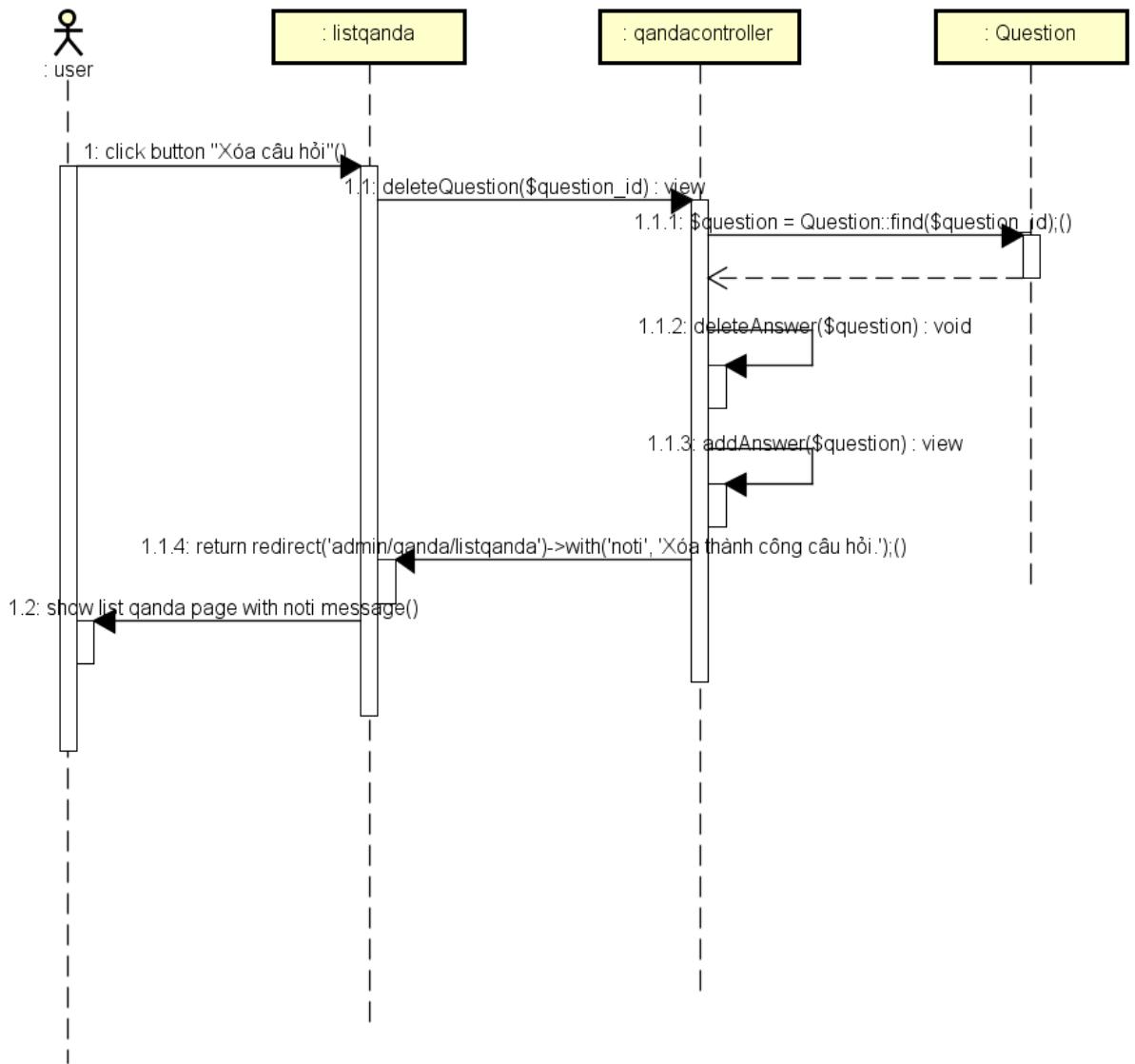


4.3.2.4.3.2 Sequence diagram

4.3.2.4.3.2.1 Answer question

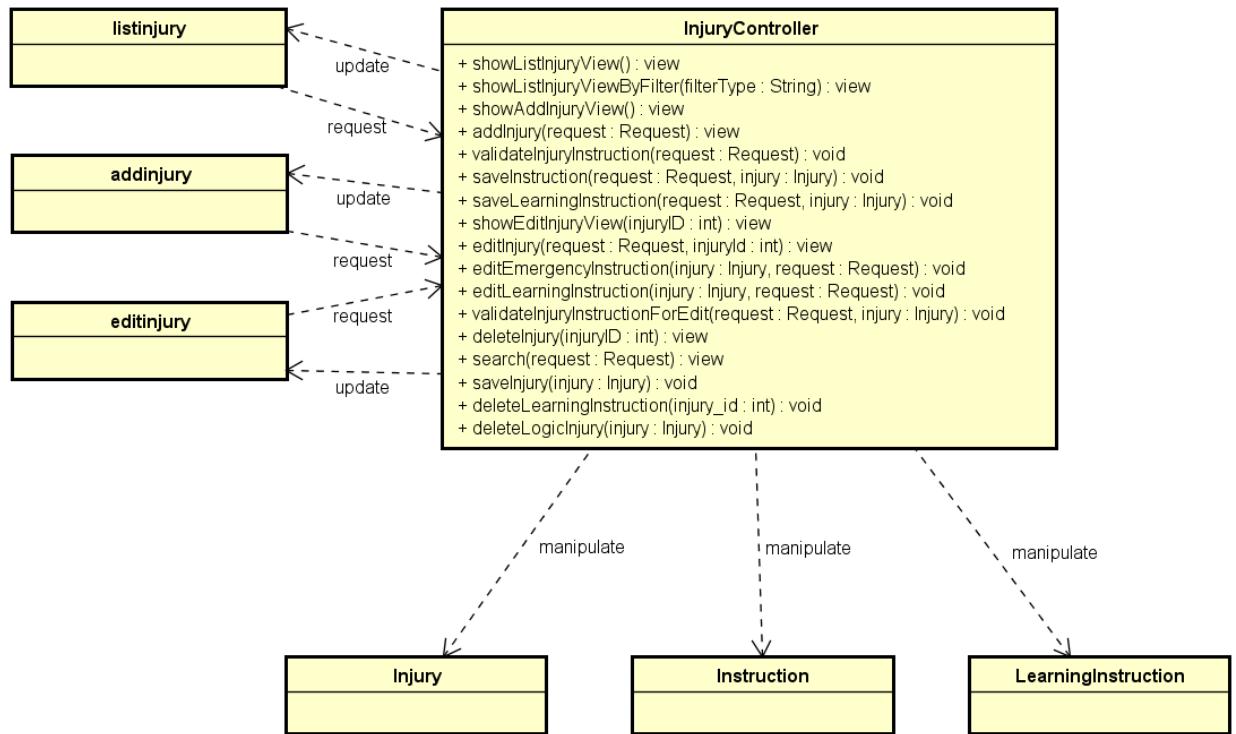


4.3.2.4.3.2.2 Delete question



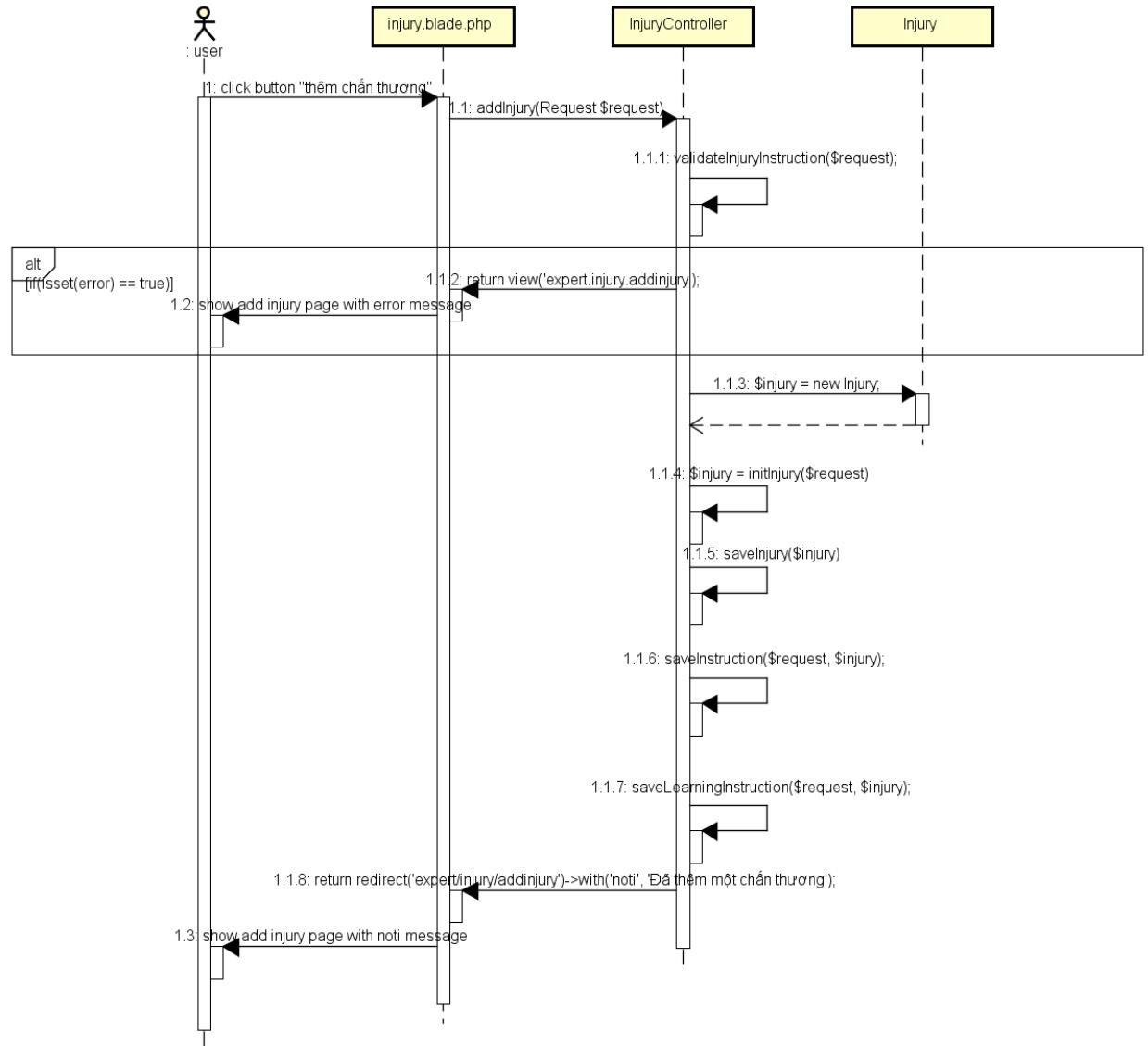
4.3.2.4.4 Manage injury

4.3.2.4.4.1 Class diagram

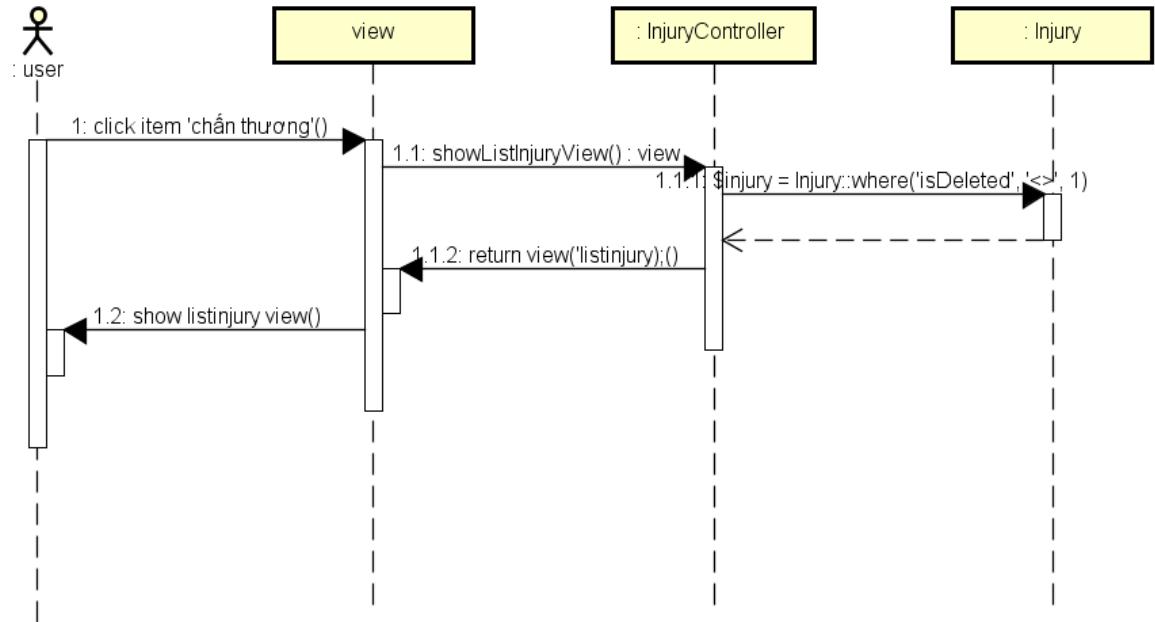


4.3.2.4.4.2 Sequence diagram

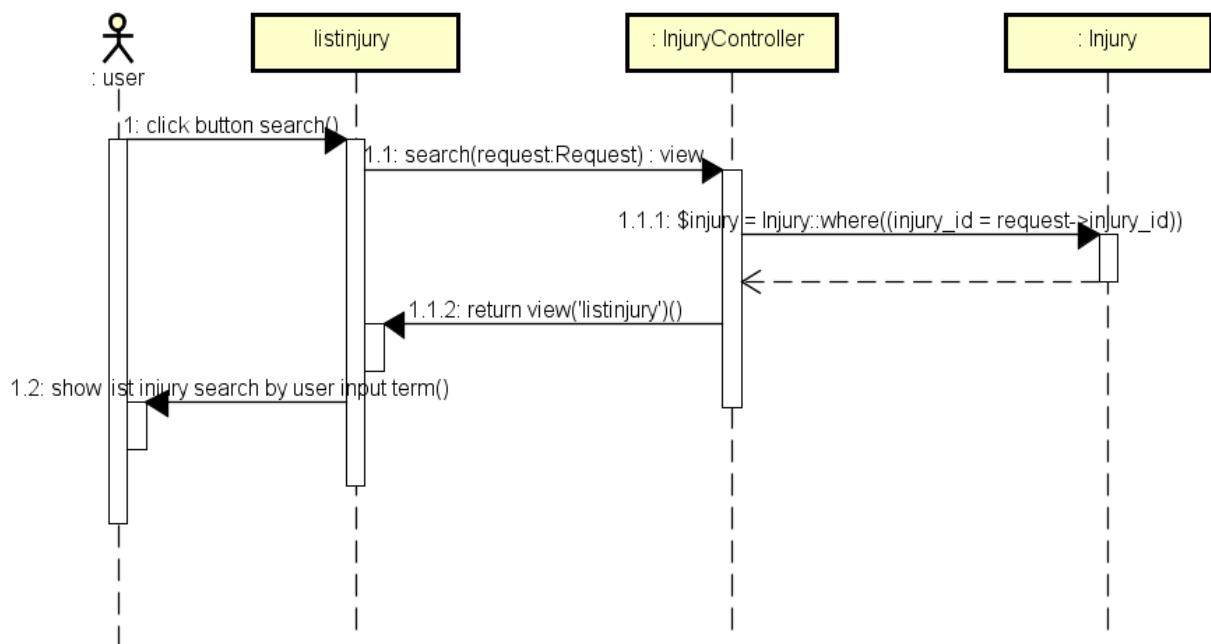
4.3.2.4.4.2.1 Add new injury



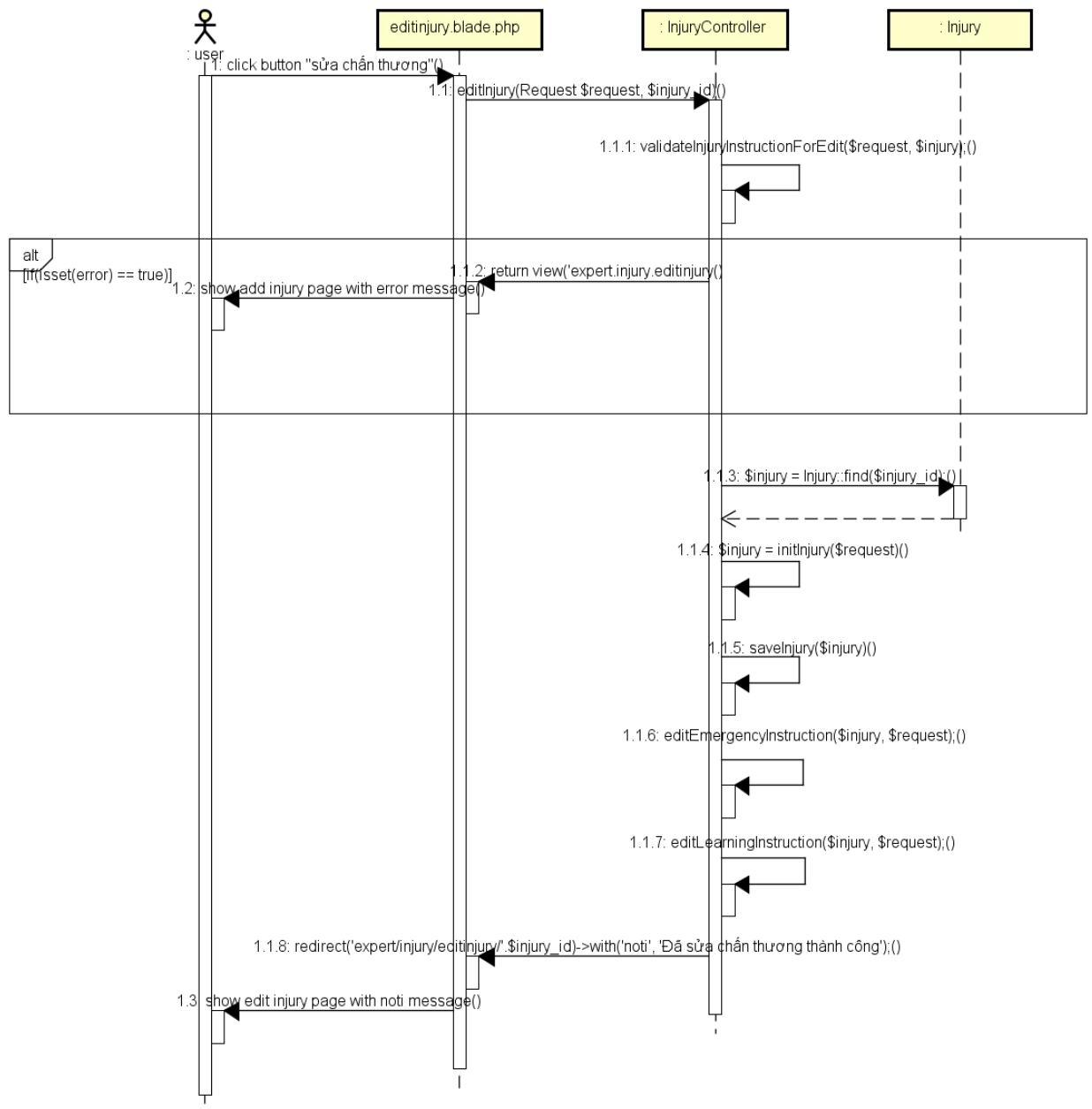
4.3.2.4.4.2.2 View list of injuries



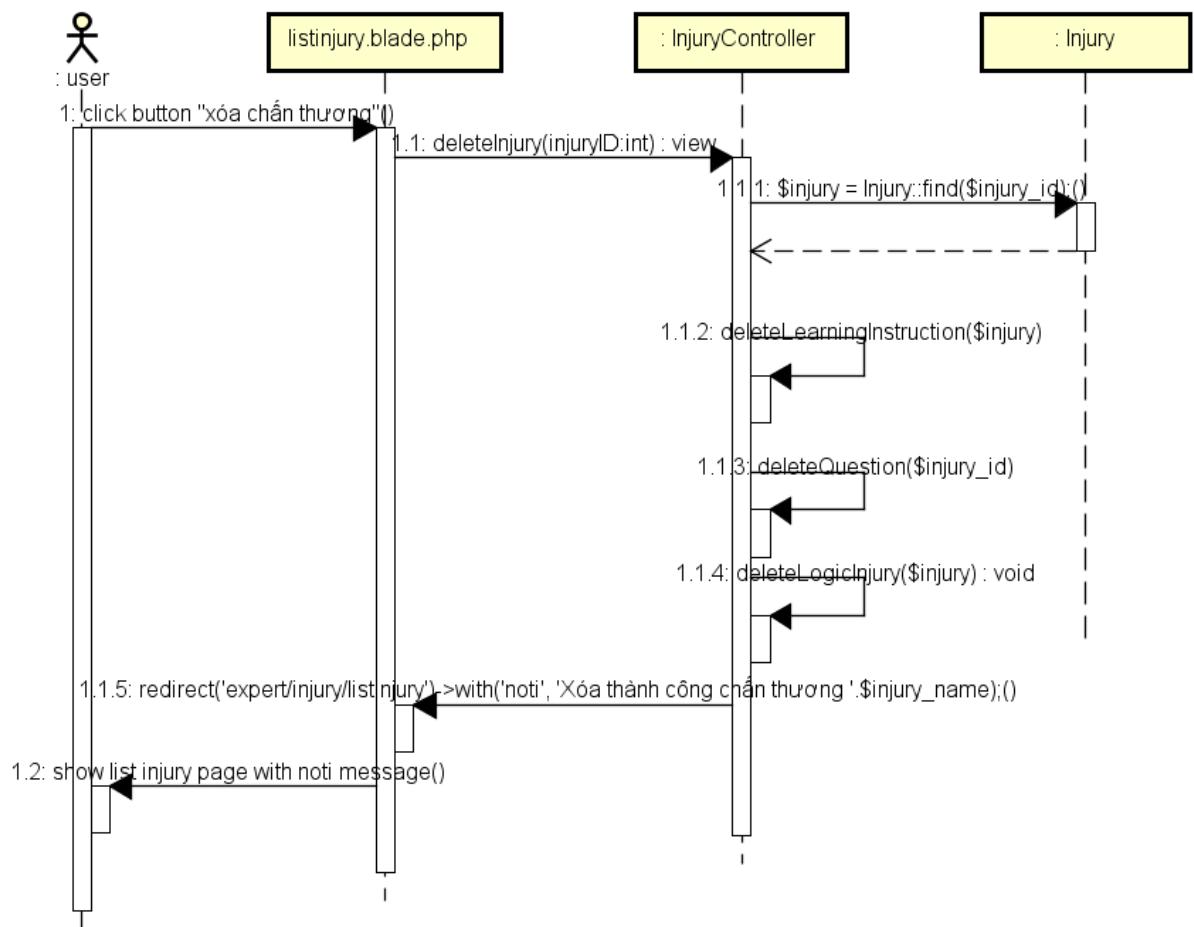
4.3.2.4.4.2.3 Search injury



4.3.2.4.4.2.4 Update injury



4.3.2.4.4.2.5 Delete injury



4.4 Data design

4.4.1 Entity Relationship Diagram

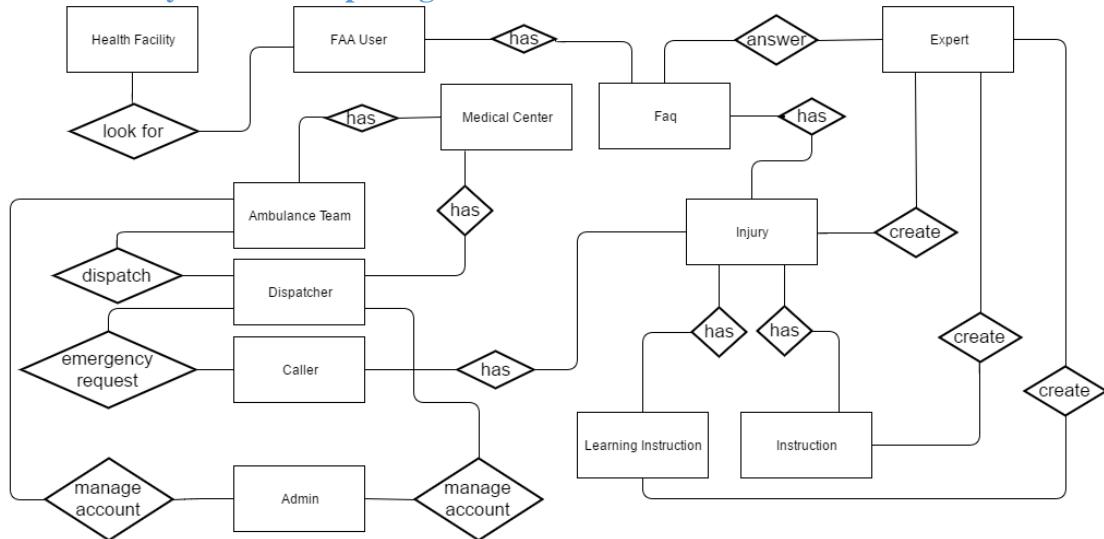


Figure 4-51: Entity Relationship Diagram

4.4.1.1 Entity description

No	Entity	Description
1	Admin	An Admin who manage all registered user
2	FAA User	A FAA User who using FA application
3	Dispatcher	A Dispatcher who using Dispatcher web
4	Caller	A Caller who calls 115
5	Ambulance Team	An Ambulance Team who control a ambulance car
6	Medical Center	A Medical Center which 115 center in the different city
7	Faq	A Faq which question of user for a injury
8	Injury	An Injury which
9	Instruction	An Instruction which content of a emergency situation
10	Learning Instructions	A Learning Instruction which content of a learning information
11	Health Facility	A Health Facility which hospital or medicine center
12	Expert	An Expert who answers the questions of user

Table 4-17: Entity description

4.4.1.2 Relationship

No	Relation	Properties	From	To	Description
1	Has	None	Medical Center	Ambulance Team	A medical center has many ambulance
2	Look for	None	FAA User	Health Facility	A FAA's user looks for many health facility
3	Has	None	Injury	Faq	An Injury has many faq or not
4	Answer	None	Expert	Faq	An expert can answers many faq
5	Has	None	Medical Center	Dispatcher	A medical center has many dispatchers
6	Dispatch	None	Dispatcher	Ambulance Team	A dispatcher dispatchs many ambulances
7	Emergency Request	None	Caller	Dispatcher	A caller has emergency request for dispatcher
8	Has	None	FAA User	Faq	A FAA's user creates many faqs or not, a faq created by 1 or many FAA's user s
9	Has	None	Caller	Injury	A caller has many injuries or not
10	Has	None	Injury	Instruction	An injury has many instructions
11	Has	None	Injury	Learning Instruction	An injury has many learn informations
12	Manage Account	None	Admin	Ambulance Team	Admin manages many ambulance team's account
13	Manage	None	Admin	Dispatcher	Admin manages many

	Account				dispatcher's account
14	Create	None	Expert	Instruction	An expert creates many instruction
15	Create	None	Expert	Learning Instruction	An expert creates many learning instruction
16	Create	None	Expert	Injury	An expert creates many injuries

Table 4-18: Relationship description

4.4.2 Table Diagram

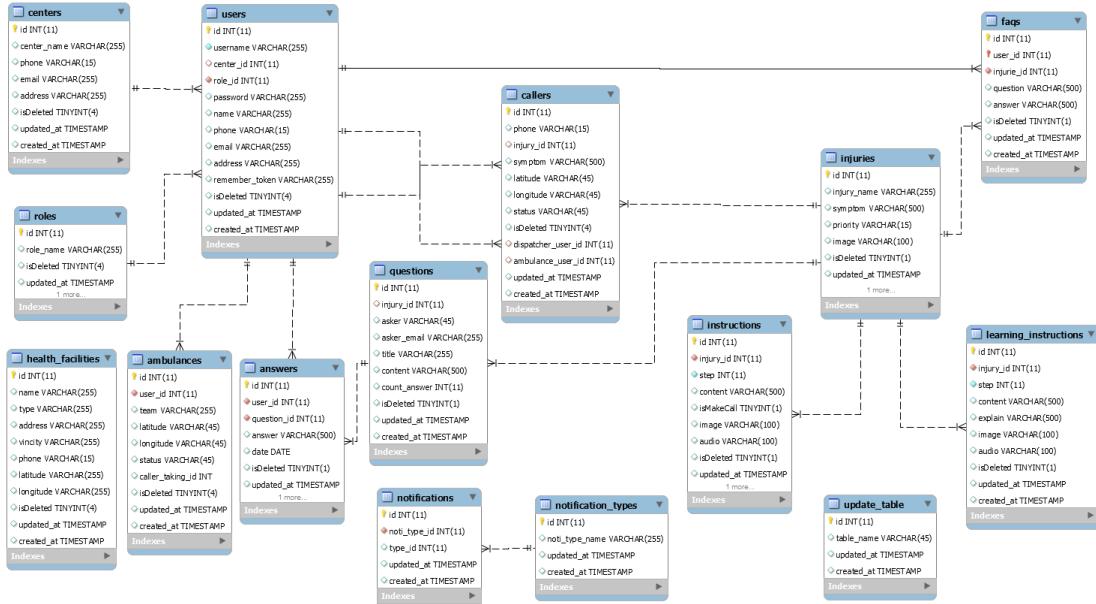


Figure 4-52: Table Diagram

4.4.2.1 Users table

No	Field Name	Type	Allow Null	Description
1	id	int	No	User's ID
2	username	varchar	No	User's name
3	center_id	varchar		User's password
4	role_id	int		User's centerID
5	password	int	No	User's roleID
6	name	varchar		User's real name

7	phone	varchar		User's phone number
8	email	varchar		User's email address
9	address	varchar		User's address
10	remember_token	varchar		User's
11	isDeleted	int		User's delete status
12	updated_at	TIMESTA MP		User's updated time
13	created_at	TIMESTA MP		User's created time

Table 4-19: User table**4.4.2.2 Ambulances table**

No	Field Name	Type	Allow Null	Description
1	id	int	No	Ambulance's ID
2	user_id	int	No	Ambulance's userID
3	team	varchar		Ambulance's team
4	latitude	varchar		Ambulance's latitude
5	longitude	varchar		Ambulance's longitude
6	status	varchar		Ambulance's status
7	caller_taking_id	int	No	Ambulance's caller taking id
8	isDeleted	int		Ambulance's delete status
9	updated_at	TIMESTAMP		Ambulance's updated time
10	created_at	TIMESTAMP		Ambulance's created time

Table 4-20: Ambulances table

4.4.2.3 HealthFacilities table

No	Field Name	Type	Allow Null	Description
1	id	int	No	HealthFacility's ID
2	name	varchar		HealthFacility's name
3	type	int		HealthFacility's type
4	address	int		HealthFacility's address
5	vincity	varchar		HealthFacility's vincity
6	phone	varchar		HealthFacility's phone number
7	latitude	varchar		HealthFacility's latitude
8	longitude	varchar		HealthFacility's longitude
9	isDeleted	int		HealthFacility's delete status
10	updated_at	TIMESTAMP		HealthFacility's updated time
11	created_at	TIMESTAMP		HealthFacility's created time

Table 4-21: HealthFacilities table

4.4.2.4 Faqs table

No	Field Name	Type	Allow Null	Description
1	id	int	No	Faq's ID
2	user_id	int	No	Faq's userID
3	injurie_id	int	No	Faq's injuryID
4	question	varchar		Faq's question
5	answer	varchar		Faq's answer
6	isDeleted	int		Faq's delete status
7	updated_at	TIMESTAMP		Faq's updated time

8	created_at	TIMESTAMP		Faq's created time
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Table 4-22: Faqs table**4.4.2.5 Roles table**

No	Field Name	Type	Allow Null	Description
1	id	int	No	Role's ID
2	role_name	varchar		Role's name
3	isDeleted	int		Role's delete status
4	updated_at	TIMESTAMP		Role's updated time
5	created_at	TIMESTAMP		Role's created time

Table 4-23: Roles table**4.4.2.6 Centers table**

No	Field Name	Type	Allow Null	Description
1	id	int	No	Center's ID
2	center_name	varchar		Center's name
3	phone	varchar		Center's phone number
4	email	varchar		Center's email address
5	address	varchar		Center's address
6	isDeleted	int		Center's delete status
7	updated_at	TIMESTAMP		Center's updated time
8	created_at	TIMESTAMP		Center's created time

Table 4-24: Centers table

4.4.2.7 ReportProject table

No	Field Name	Type	Allow Null	Description
1	ReportID	int	No	Report 's ID
2	ProjectID	int	No	Report 's project id
3	ReporterID	int	No	Report 's user id, who report project
4	Subject	String		Report 's subject
5	ReportContent	String		Report 's report content
6	ReportedDate	datetime		Report 's report date
7	Status	String		Report's status

Table 4-25: ReportPost table

4.4.2.8 Injuries table

No	Field Name	Type	Allow Null	Description
1	id	int	No	Injury's ID
2	injury_name	varchar		Injury's name
3	symptom	varchar		Injury's symptom
4	priority	varchar		Injury's priority
5	image	varchar		Injury's image
6	isDeleted	int		Injury's delete status
7	updated_at	TIMES TAMP		Injury's updated time
8	created_at	TIMES TAMP		Injury's created time

Table 4-26: Injuries table

4.4.2.9 Answers table

No	Field Name	Type	Allow Null	Description
1	id	int	No	Answer's ID
2	user_id	int	No	Answer's userID
3	question_id	int	No	Answer's questionID
4	answer	varchar		Answer's answer
5	date	Date		Answer's date
6	isDeleted	int		Answer's delete status
7	updated_at	TIMESTAMP		Answer's updated time
8	created_at	TIMESTAMP		Answer's created time

Table 4-27: Answers table

4.4.2.10 Questions table

No	Field Name	Type	Allow Null	Description
1	question_id	int	No	Question's ID
2	injury_id	int		Question's injuryID
3	asker	varchar		Question's asker name
4	asker_email	varchar		Question's asker email address
5	title	varchar		Question's title
6	content	varchar		Question's content
7	count_answer	int		Question's countAnswer
8	isDeleted	int		Question's delete status
9	updated_at	TIMESTAMP		Question's updated time
10	created_at	TIMESTAMP		Question's created time

		AMP		
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Table 4-28: Questions table**4.4.2.11 Update table**

No	Field Name	Type	Allow Null	Description
1	id	int		Update's ID
2	table_name	varchar		Update's table name
3	updated_at	TIMESTAMP		Update's updated time
4	created_at	TIMESTAMP		Update's created time

Table 4-29: Update table**4.4.2.12 Notifications table**

No	Field Name	Type	Allow Null	Description
1	id	int	No	Notification's ID
2	noti_type_id	int	No	Notification's notification type ID
3	type_id	int		Notification's typeID
4	updated_at	TIMESTAMP		Notification's updated time
5	created_at	TIMESTAMP		Notification's created time

Table 4-30: Notifications table**4.4.2.13 Callers table**

No	Field Name	Type	Allow Null	Description
1	id	int	No	Caller's ID
2	injury_id	int		Caller's injuryID
3	phone	varchar		Caller's phone number

4	symptom	varchar		Caller's symptom
5	latitude	varchar		Caller's latitude
6	longitude	varchar		Caller's longitude
7	status	varchar		Caller's status
8	dispatcher_user_id	int		Caller's dispatcher user ID
9	ambulance_user_id	int		Caller's ambulance user ID
10	isDeleted	int		Caller's delete status
11	updated_at	TIMESTAMP		Caller's updated time
12	created_at	TIMESTAMP		Caller's created time

Table 4-31: Callers table**4.4.2.14 Instructions table**

No	Field Name	Type	Allow Null	Description
1	id	int	No	Instruction's ID
2	injury_id	int	No	Instruction's injuryID
3	step	int	No	Instruction's step
4	content	varchar		Instruction's content
5	isMakeCall	int		Instruction's make call status
6	image	varchar		Instruction's image
7	audio	varchar		Instruction's audio
8	isDeleted	int		Instruction's delete status
9	updated_at	TIMESTAMP		Instruction's updated time
10	created_at	TIMESTAMP		Instruction's created time

Table 4-32: Instructions table

4.4.2.15 LearningInstructions table

No	Field Name	Type	Allow Null	Description
1	id	int	No	LearningInstruction's ID
2	injury_id	int	No	LearningInstruction's injury ID
3	step	int	No	LearningInstruction's step
4	content	varchar		LearningInstruction's content
5	explain	varchar		LearningInstruction's explain
6	image	varchar		LearningInstruction's image
7	audio	varchar		LearningInstruction's audio
8	isDeleted	int		LearningInstruction's delete status
9	updated_at	TIMESTAMP		LearningInstruction's updated time

Table 4-33: LearningInstructions table

4.4.2.16 NotificationTypes table

No	Field Name	Type	Allow Null	Description
1	id	int	No	NotificationType's ID
2	noti_type_name	varchar		NotificationType's name
3	updated_at	TIMESTAMP		NotificationType's updated time
4	created_at	TIMESTAMP		NotificationType's created time

Table 4-34: NotificationTypes table

4.5 Screen Design

4.5.1 First Aid

4.5.1.1 Screen flow

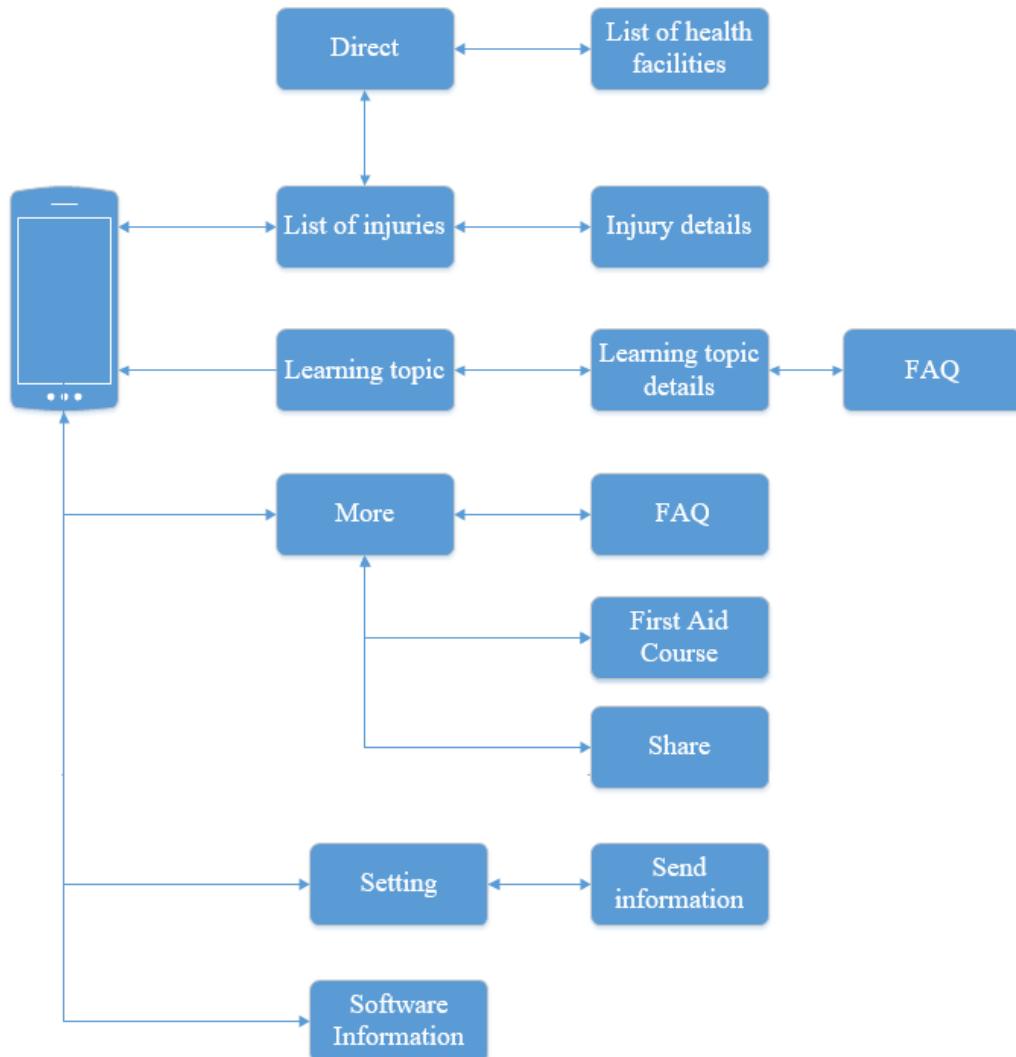


Figure 4-53: First Aid screen flow

4.5.1.2 Emergency Screen



Figure 4-54: Emergency Screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Menu Bar	Menu	Button	Tap on	Y		Show list of screen
2	Search	Tìm Kiêm	Icon	Tap on	Y		Show textbox to input characters
3	Call	Gọi	Icon	Tap on	Y		Auto dialing 115
4	Direct	Chỉ đường	Icon	Tap on	Y		Move to screen Direct.
5	List of injuries	Danh sách các trường hợp khẩn cấp	List		Y		Show list of emergency.

Table 4-35: Emergency Screen

4.5.1.2.1 Emergency Details



Figure 4-55: Emergency Details

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Back button	Nút quay lại	Button		Tap on	Y	
2	Call 115	Gọi 115	Button		Tap on	Y	

Table 4-36: Emergency Details

4.5.1.2.2 Direct screen



Figure 4-56: Direct screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Current location	Vị trí hiện tại	Button	Tap on	Y		Focus to current location
2	Nearly health facilities	Cơ sở y tế gần đây	Button	Tap on	Y		Show the list of 20 nearest health facilities
2	Back button	Nút quay lại	Button	Tap on	Y		Back to the previous screen
3	Current location	Vị trí hiện tại	Button	Tap on	Y		Focus to current location

Table 4-37: Direct screen

4.5.1.2.3 List of health facilities screen

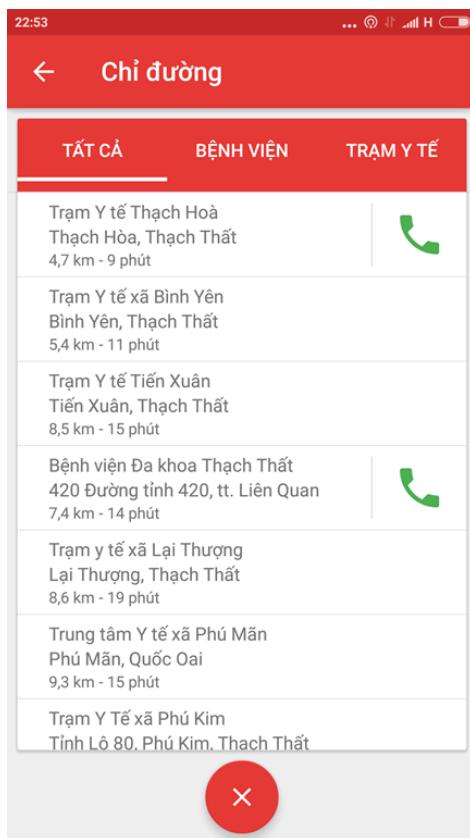


Figure 4-57: List of health facilities screen

No	Field name	Field name in Vietnamese	Type	Require	Manda	Max- Length	Description
1	List of health facilities	Danh sách các cơ sở y tế	List		Y		List health facilities
2	Close	Tắt	Button	Tap on	Y		Turn off the list of health facilities
3	Hospital	Bệnh viện	Button	Tap on	Y		Show list of hospitals
4	Medicine Center	Trạm Y Tế	Button	Tap on	Y		Show list of medicine center

Table 4-38: List of health facilities screen

4.5.1.3 Learning Screen



Figure 4-58: Learning Screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	List of learning topic	Danh sách các chủ đề tìm hiểu	List		Y		Display list of learning topic
2	First Aid Course	Các khóa học sơ cứu	Image link	Tap on	Y		Show the list of First Aid Course

Table 4-39: Learning Screen

4.5.1.3.1 Learning topic details screen



Figure 4-59: Learning topic details screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Back Button	Nút quay lại	Button	Tap on	Y		Back to Learning screen
2	Step	Bước làm	Button	Tap on			Read the content of step
3	FAQ	Câu hỏi thường gặp	Button	Tap on	Y		Show the list of FAQ

Table 4-40: Learning topic details screen

4.5.1.3.2 FAQ screen



Figure 4-60: FAQ screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Back button	Nút quay lại	Button	Tap on	Y		Back to Learning Topic Details screen
2	List of question and answers	Danh sách các câu hỏi và câu trả lời	List		Y		Show list of FAQ
3	Button Ask a question	Đặt câu hỏi cho chúng tôi	Button	Tap on	Y		Move to screen to send the questions.

Table 4-41: FAQ screen

4.5.1.3.3 Send question screen

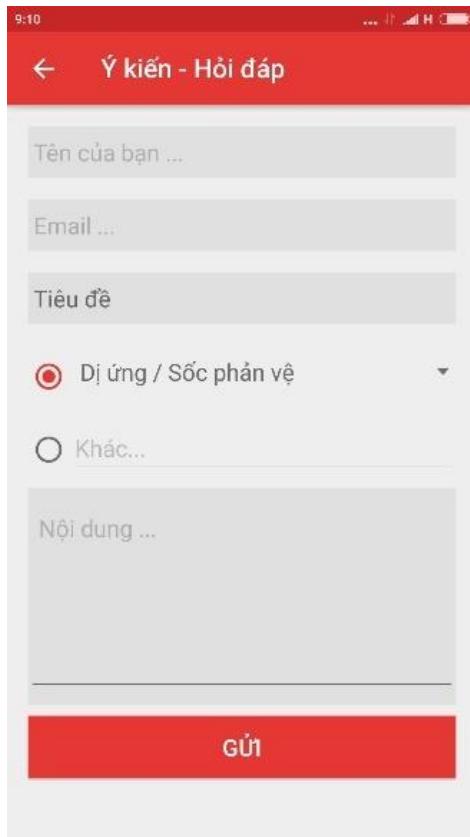


Figure 4-61: Send question screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Your name	Tên của bạn	Textfield	Tap on	Y		Display text
2	Email	Thư điện tử	Textfield	Tap on	Y		Display text
3	Title	Tiêu đề	Button	Tap on	Y		Display title
4	Content	Nội dung	Textfield	Tap on	Y		Display text
5	Send	Gửi	Button	Tap on			Send question to system
6	Back	Quay lại	Button	Tap on	Y		Back to previous screen

Table 4-42: Send question screen

4.5.1.4 More Screen

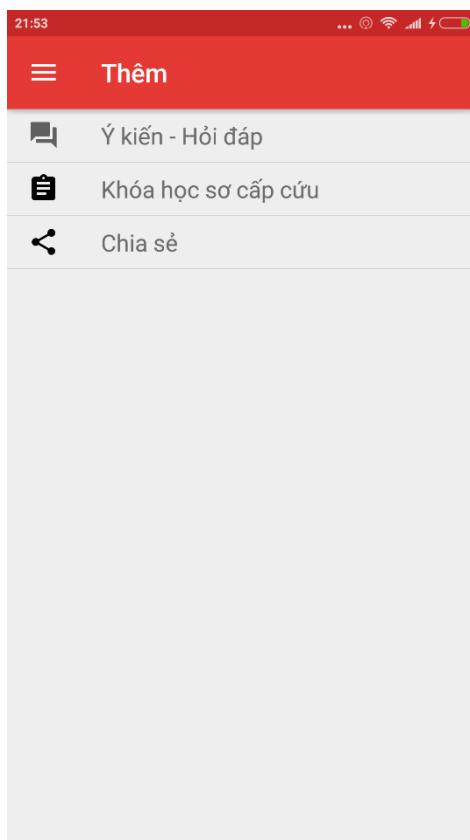


Figure 4-62: More screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	FAQ	Ý Kiến – Hỏi Đáp	Button		Y		Move to FAQ screen
2	First Aid Courses	Các khóa học sơ cứu	Button		Y		Move to list of First Aid Courses
3	Share	Chia sẻ	Label		Y		Share application on communication social network

Table 4-43: More screen

4.5.1.4.1 Send question screen

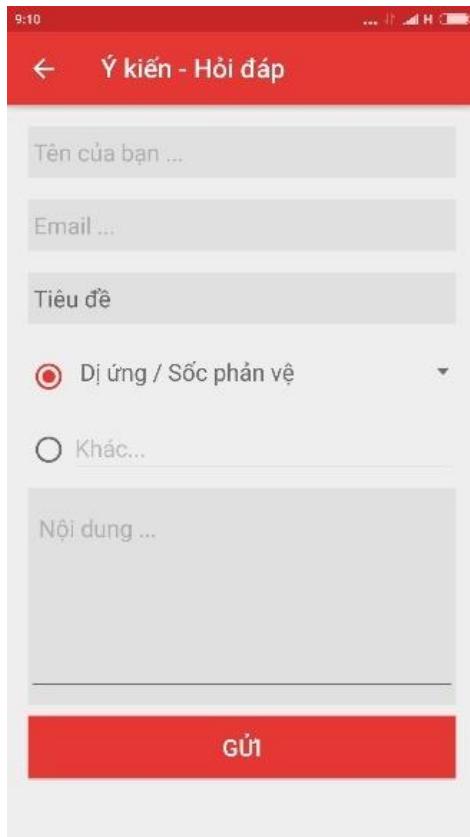


Figure 4-63: Send question screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Your name	Tên của bạn	Textfield	Tap on	Y		Display text
2	Email	Thư điện tử	Textfield	Tap on	Y		Display text
3	Title	Tiêu đề	Button	Tap on	Y		Display title
4	Content	Nội dung	Textfield	Tap on	Y		Display text
5	Send	Gửi	Button	Tap on	Y		Send question to system
6	Back	Quay lại	Button	Tap on	Y		Back to previous screen

Table 4-44: Send question screen

4.5.1.4.2 First Aid Courses screen

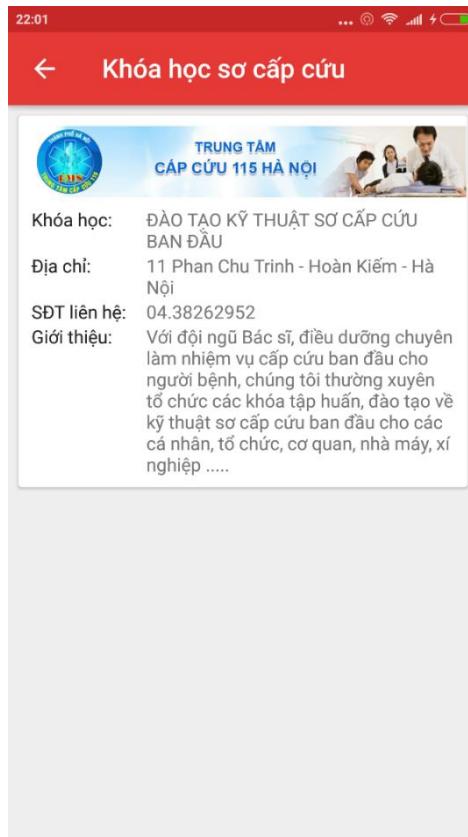


Figure 4-64: First Aid Courses screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	List of First Aid Courses	Danh sách khóa học sơ cứu	Card view		Y		Display text

Table 4-45: First Aid Courses screen

4.5.1.5 Software information screen

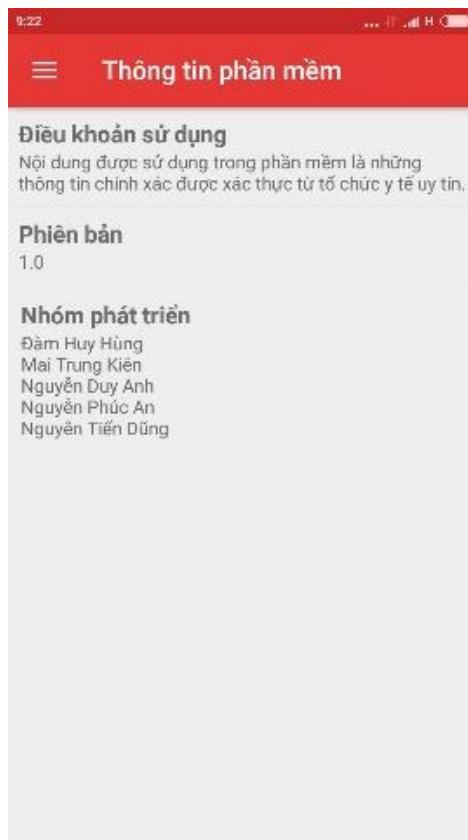


Figure 4-65: Software information screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Term of use	Điều khoản sử dụng	Card view		Y		Show term of use
2	Version	Phiên bản	Card view		Y		Show the version of software
3	Name of developers	Tên nhà phát triển	Card view		Y		Show the name of developers.

Table 4-46: Software information screen

4.5.2 Ambulance

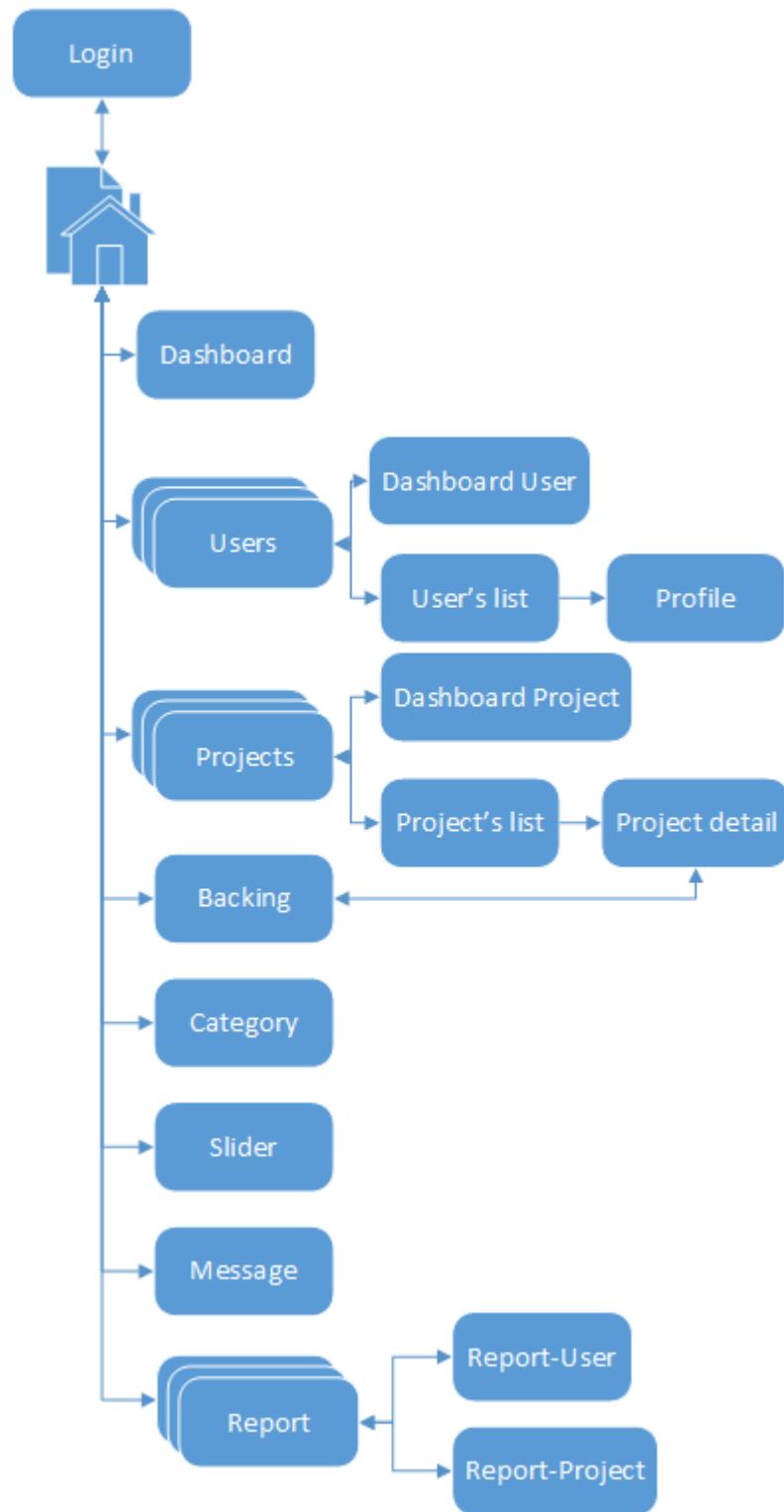


Figure 4-66: Admin screen flow

4.5.2.1 Screen flow

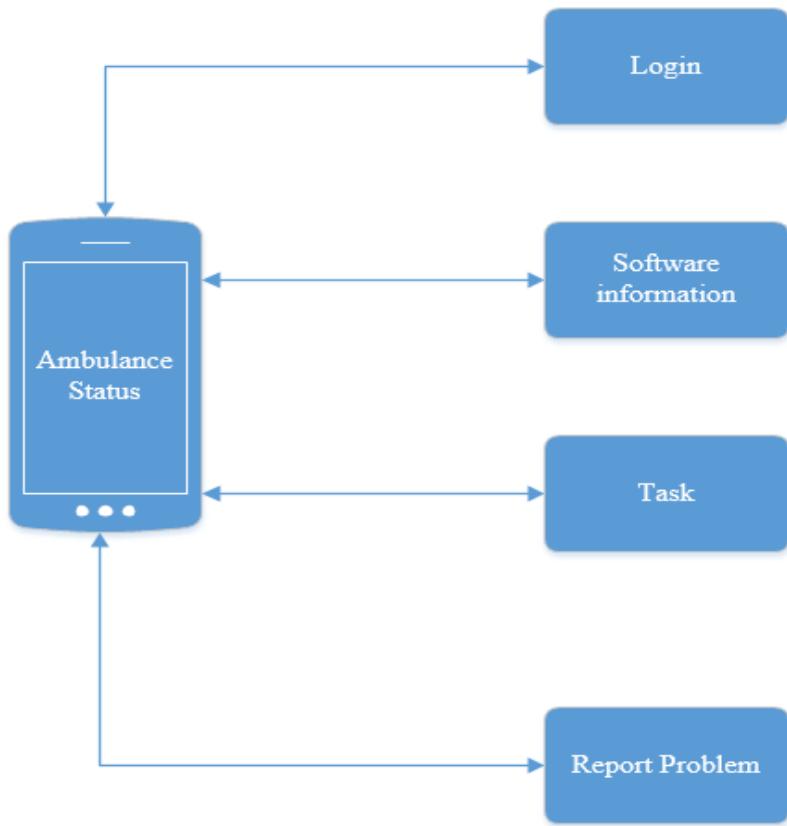


Figure 4-67: Ambulance screen flow

4.5.2.2 Login screen

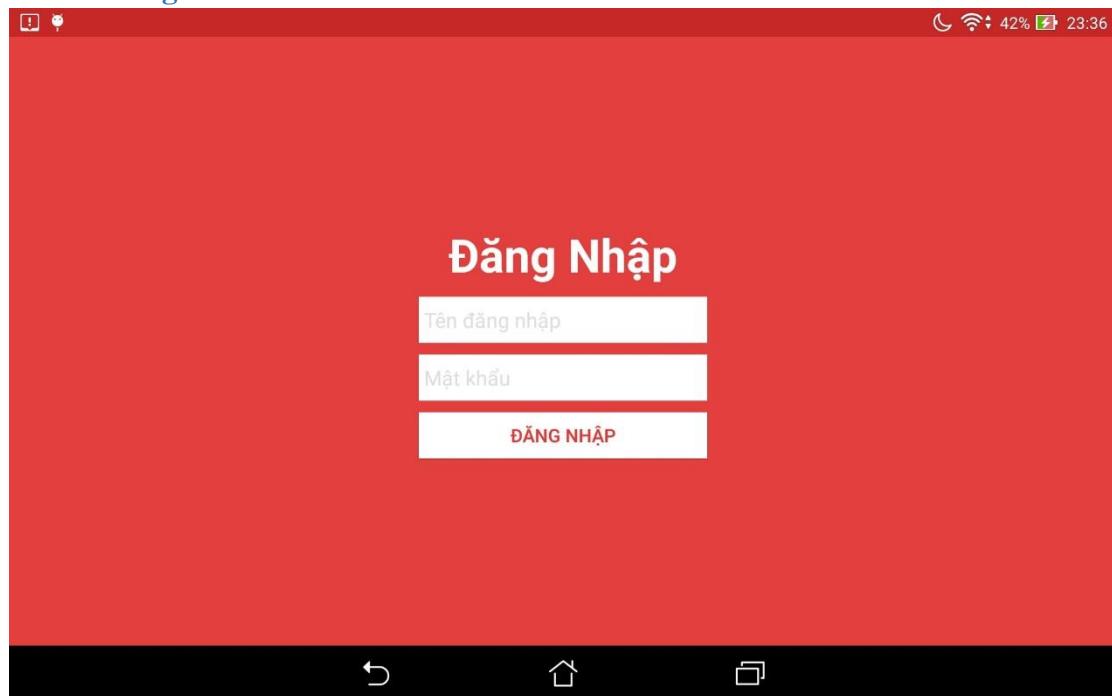


Figure 4-68: Login screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Login	Đăng Nhập	Button	Click on	Y		Login
2	User name	Tên đăng nhập	Textfield	Click on	Y		Fill the user name
3	Password	Mật Khẩu	Textfield	Click on	Y		Fill the password

Table 4-47: Login screen

4.5.2.3 Waiting screen

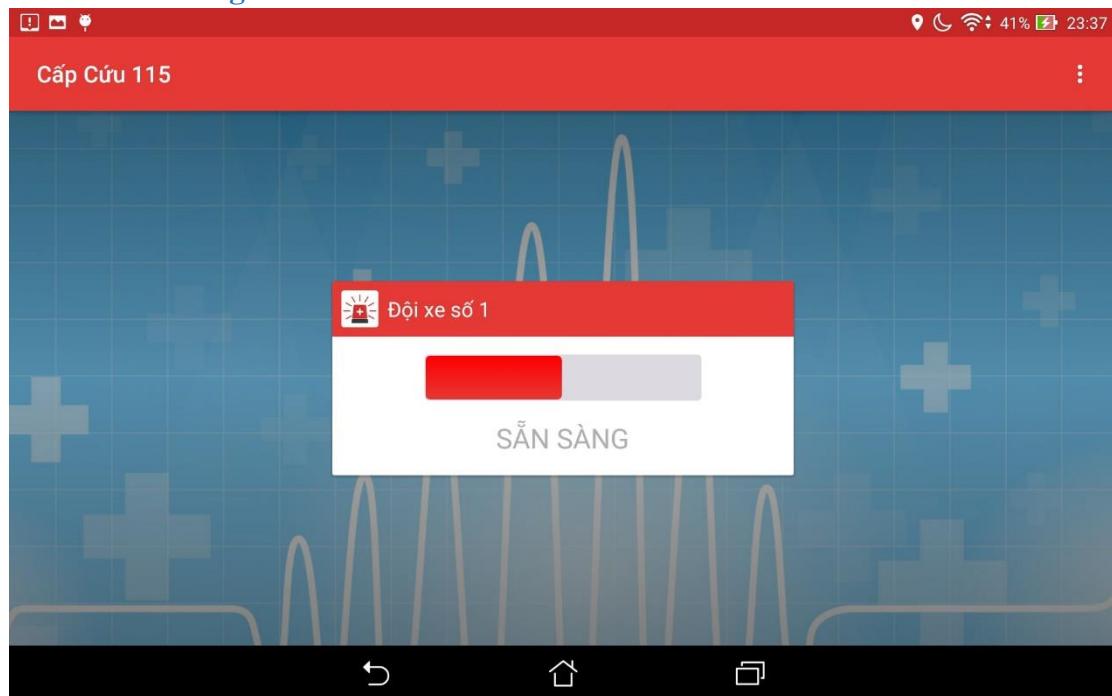


Figure 4-69: Waiting Screen

No	Field name	Field name in Vietnamese	Type	Require	Man-datory	Max-Length	Description
1	Ready to take the task	Sẵn sàng nhận nhiệm vụ	Switch	Tap on	Y		Show the status of user ready to take the task or not
2	Menu	Tùy Chọn	Drop down list	Tap on	Y		Show two button [Đăng Xuất] and [Thông tin phần mềm]

Table 4-48: Waiting Screen

4.5.2.4 Task screen

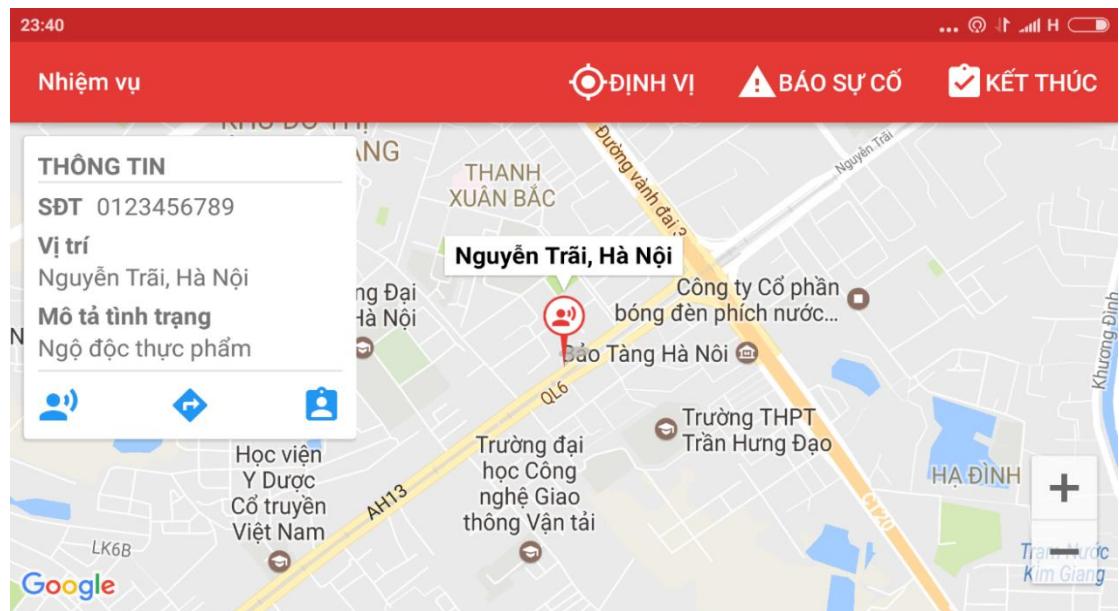


Figure 4-70: Task screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Task	Nhiệm vụ	Label		Y		Name of screen
2	Locate	Định vị	Icon	Tap on	Y		Locate position of ambulance team
3	Information board	Bảng thông tin	Text		Y		Show the information of victims
4	Victim current position	Vị trí hiện tại của nạn nhân	Icon	Tap on	Y		Location position of victim
5	Direct	Chỉ Đường	Icon	Tap on	Y		Show the direct from ambulance team to the victim, include distance
6	Report problem	Báo Cáo Sự Cố	Icon	Tap on	Y		Call the center to report problem
7	Finish	Kết thúc	Icon	Tap on	Y		Report that

							mission completed or cancel
--	--	--	--	--	--	--	-----------------------------

Table 4-49: Task screen

4.5.3 Dispatcher

4.5.3.1 Screen flow

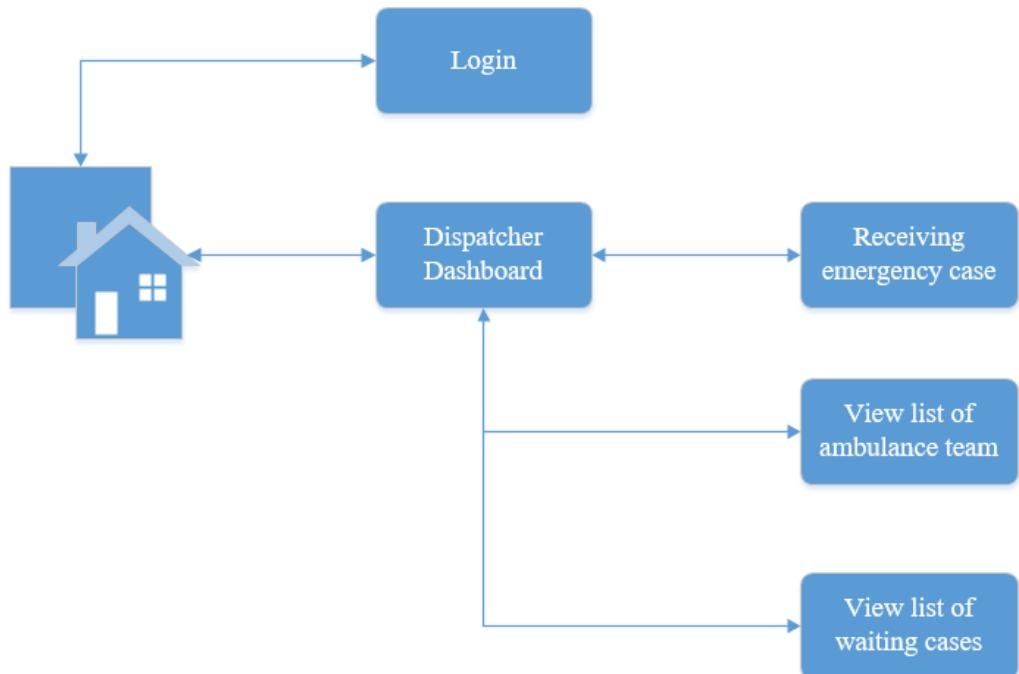


Figure 4-71: Dispatcher screen flow

4.5.3.2 Login screen

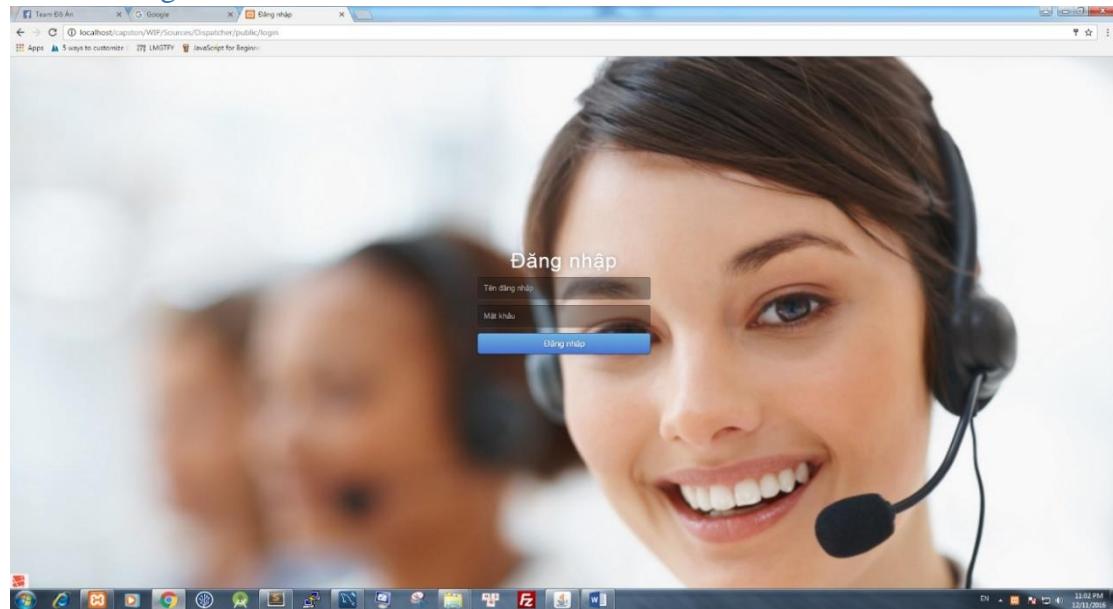


Figure 4-72: Login screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Login	Đăng Nhập	Button	Click on	Y		Login to the dispatcher dashboard page
2	User name	Tên đăng nhập	Textfiled	Click on	Y		Fill the user name
3	Password	Mật Khẩu	Textfiled	Click on	Y		Fill the password

Table 4-50: Login screen

4.5.3.3 Dispatcher's Dashboard

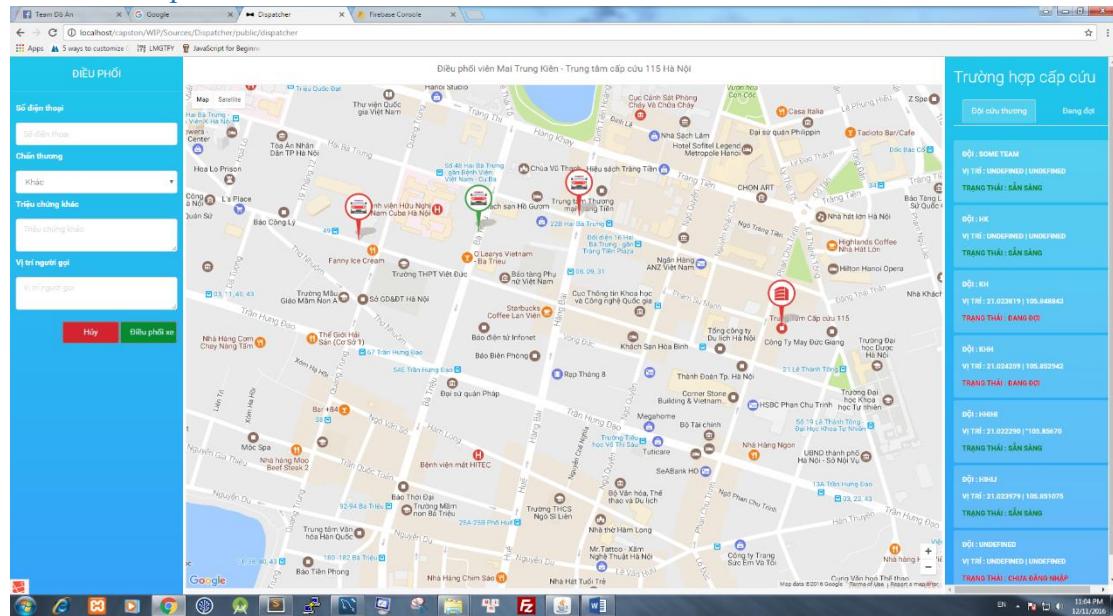


Figure 4-73: Dispatcher's Dashboard

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Phone number	Số Điện Thoại	Text field	Click on	Phone number	Số Điện Thoại	Text field
2	Injury	Chấn Thương	Drop down list	Click on	Injury	Chấn Thương	Dropdown list
3	Caller's Position	Vị trí người gọi	Text field	Click on	Caller's Position	Vị trí người gọi	Text field
4	Other injuries	Chấn Thương khác	Text field	Click on	Other injuries	Chấn Thương khác	Text field
5	Dispatch	Điều phái xe	Button	Click on	Dispatch	Điều phái xe	Button
6	Cancel	Hủy	Button	Click on	Cancel	Hủy	Button
7	Ambulance Team	Đội cứu thương	Button	Click on	Ambulance Team	Đội cứu thương	Button
8	Waiting	Đang đợi	Button	Click on	Waiting	Đang đợi	Button

Table 4-51: Dispatcher's Dashboard

4.5.4 Admin

4.5.4.1 Screen flow

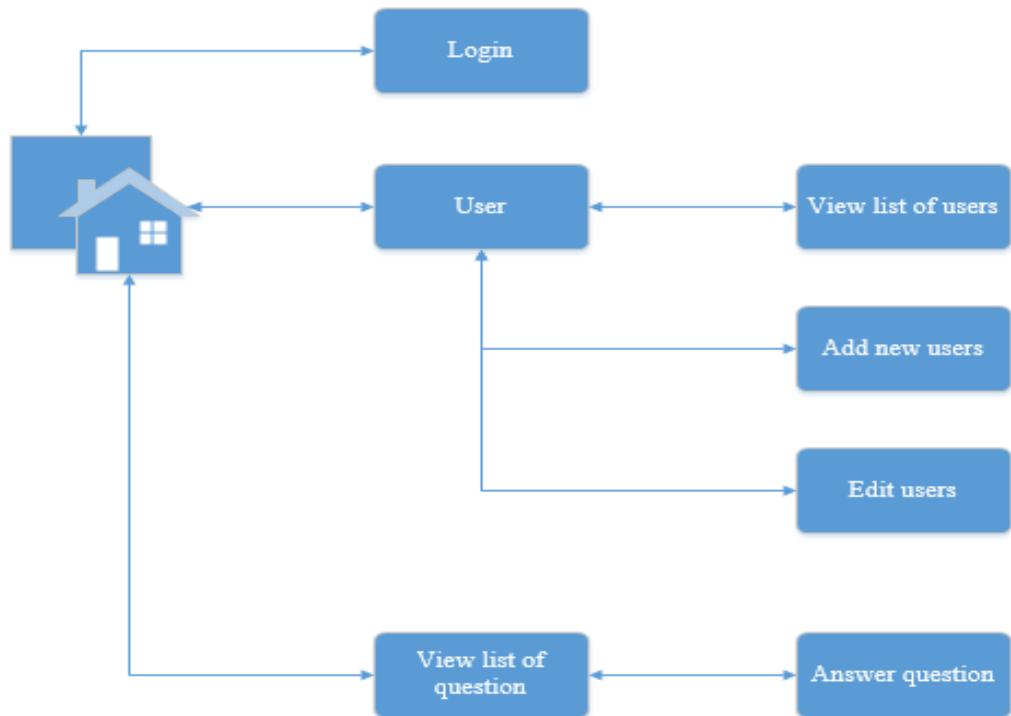


Figure 4-74: Admin screen flow

4.5.4.2 Login screen

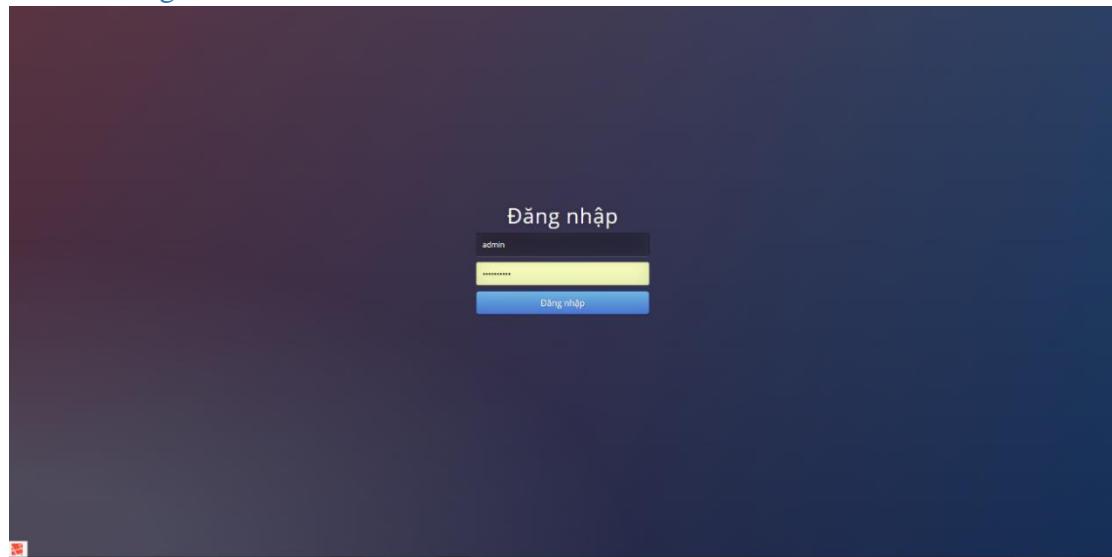


Figure 4-75: Login screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Login	Đăng Nhập	Button	Click on	Y		Login to the admin dashboard page
2	User name	Tên đăng nhập	Textfield	Click on	Y		Fill the user name
3	Password	Mật Khẩu	Textfield	Click on	Y		Fill the password

Table 4-52: Login screen

4.5.4.3 Manage user account

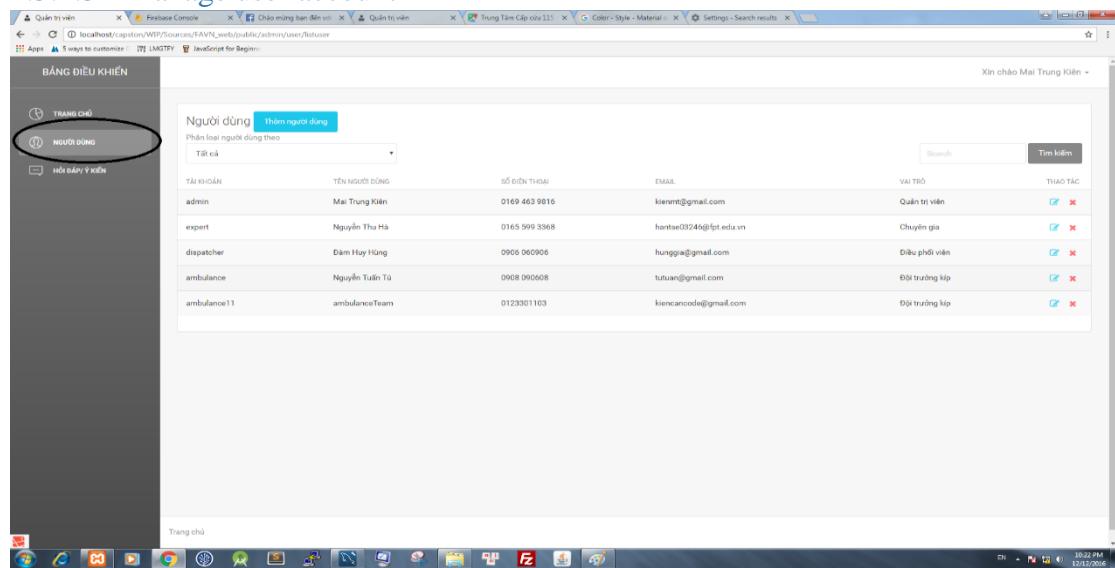


Figure 4-76: Manage user account screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	Add new user	Thêm người dùng	Button	Click on	Y		Move to add new user page
2	Edit	Sửa người dùng	Icon	Click on	Y		Move to edit user page
3	Delete	Xóa người dùng	Icon	Click on	Y		Delete user
4	User Classification	Phân loại người dùng	Drop down list	Click on	Y		Classification user by role
5	Search textbox	Ô tìm kiếm	Text box	Click on	Y		Input characters to search users
6	Search button	Nút tìm kiếm	Button	Click on	Y		Search users

Table 4-53: Manage user account screen

4.5.4.3.1 Add user screen

Figure 4-77: Add user screen

No	Field name	Field name in Vietnamese	Type	Require	Mandatory	Max-Length	Description
1	User name	Tên người dùng	Textfield	Click on	Y		Fill name of user
2	Role	Vai trò	Drop down list	Click on	Y		Select role of user
3	Center	Trung Tâm	Drop down list	Click on	Y		Select center
4	Team	Đội	Textfield	Click on	Y		Fill name of ambulance team
5	Phone number	Số Điện Thoại	Textfield	Click on	Y		Fill phone number of user
6	Email	Thư điện tử	Text field	Click on	Y		Fill email of user
7	Address	Địa chỉ	Text field	Click on	Y		Fill address of user
8	Login name	Tên đăng nhập	Text field	Click on	Y		Fill login name of user
9	Password	Mật Khẩu	Text field	Click on	Y		Fill password of user
10	Add new user	Thêm người dùng	Button	Click on	Y		Add new user
11	Reset	Làm mới	Button	Click on	Y		Reset all text field

Table 4-54: Add user screen

4.5.4.3.2 Edit user screen

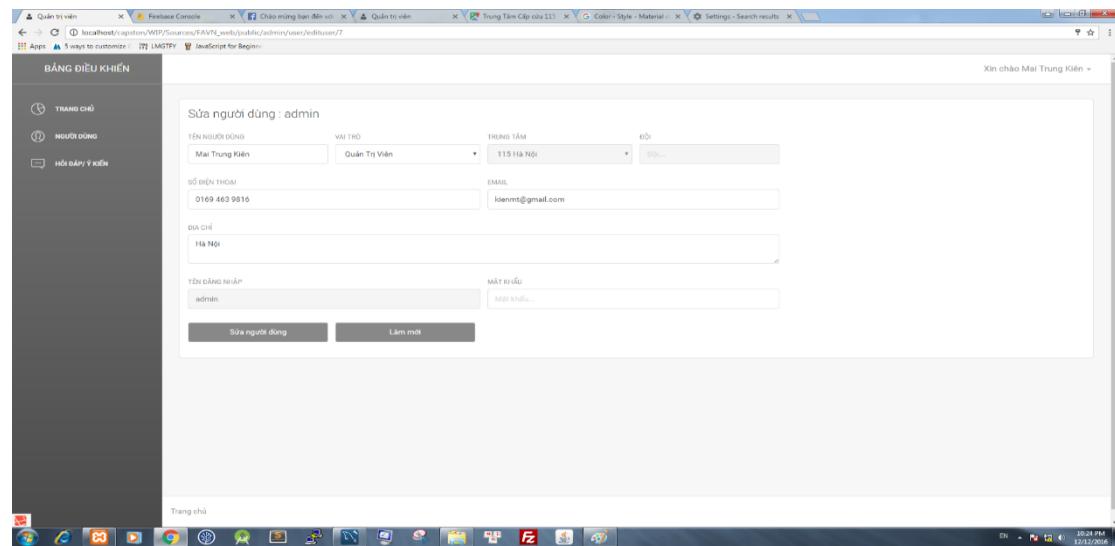


Figure 4-78: Edit user screen

No	Field name	Field name in Vietnamese	Type	Require	Man dator y	Max- Length	Description
1	User name	Tên người dùng	Textfield	Click on	Y		Edit name of user
2	Role	Vai trò	Drop down list	Click on	Y		Select role of user
3	Center	Trung Tâm	Drop down list	Click on	Y		Select center
4	Team	Đội	Textfield	Click on	Y		Edit name of ambulance team
5	Phone number	Số Điện Thoại	Textfield	Click on	Y		Edit phone number of user
6	Email	Thư điện tử	Text field	Click on	Y		Edit email of user
7	Address	Địa chỉ	Text field	Click on	Y		Edit address of user
8	Login name	Tên đăng nhập	Text field	Click on	Y		Edit login name of user
9	Password	Mật Khẩu	Text field	Click on	Y		Edit password of user
10	Add new user	Thêm người dùng	Button	Click on	Y		Add new user
11	Reset	Làm mới	Button	Click on	Y		Reset all text field

Table 4-55: Edit user screen

4.5.4.4 QA screen

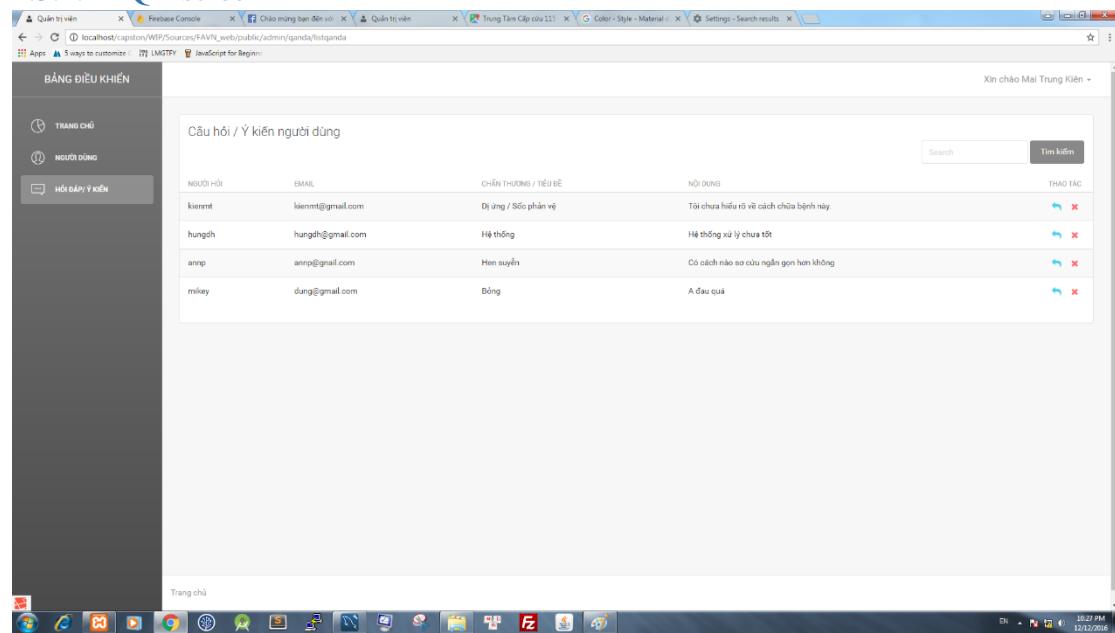


Figure 4-79: QA screen

No	Field name	Field name in Vietnamese	Type	Require	Man-datory	Max-Length	Description
1	Answer Question	Trả lời câu hỏi	Icon	Click on	Y		Move to edit answer question page
2	Delete	Xóa câu hỏi	Icon	Click on	Y		Delete question
3	Search textbox	Ô tìm kiếm	Textbox	Click on	Y		Input characters to search users
4	Search button	Nút tìm kiếm	Button	Click on	Y		Search question

Figure 4-80: QA screen

5 SOFTWARE TESTING

5.1 Introduction

5.1.1 Purpose

This is the comprehensive test plan of the FAVN project. The purpose of this chapter describes scopes of test and activities which need to be taken during test process of project. It addresses the following items: Scopes of Testing, Requirements for Testing, Test Strategy, Test Resources, Test Environment, Test Milestones and Deliverables.

5.1.2 Definitions and Acronyms

This section describes the definitions, terms, and acronyms that are used in software requirements specification.

Acronym	Definition	Note
FAVN	First Aid Vietnam	
UT	Unit Test	
GUI	Graphic User Interface	

Table 5-1: Definitions and Acronyms

5.1.3 Scope of testing

- FAVN will be tested by 4 phases:

Phase 1: Unit testing

- Unit testing will be done by developers
- Developers use White Box Testing technique to do
- When executing unit testing, if any bugs are found, developers have to log bug on “Defect Log Management” file and fix it until it is correct.

Rule for filling test result:

Test result pass	Pass
Test result fail	Fail
Do not test	Untested
Cannot test	N/A (Not available)

Phase 2: Integration testing

- After finishing component testing, integration testing will be performed by testers.
- Material are integration test cases, high- level design

- Do test by flow of functions and items which have relation.
- When executing integration testing, if any bugs are found, testers have to log on “Defect Log Management” file and assign to developer fix it and redo this process until it is correct.

Rule for filling test result:

Test result pass	Pass
Test result fail	Fail
Do not test	Untested
Cannot test	N/A (Not available)

Phase 3: System testing

- After finishing integration testing and developers collect all functions and items, testers will be performed system testing, it means doing test whole system.
- Material area system test case, SRS
- If any bugs are found, developers have to fix and testers will verify them. System test is ended only when test cases are passed and no bug is found.

Rule for filling test result:

Test result pass	Pass
Test result fail	Fail
Do not test	Untested
Cannot test	N/A (Not available)

Phase 4: Acceptance testing

- Base on customer/user requirement specification, system is tested again, for ensure there is not lacking or mistake any requirement.
- If there is any problem, developers have to fix/update and tester will verify them.
- Acceptance testing is ended only when whole system met requirement specification.

5.1.4 Constraints

- There are only 2 testers and tester don't have experience in testing.
- Time of Testing is short.
- Have a lot of environments should be tested: Android 4.4.2 and above... and more browsers: Cốc cốc, IE, Chrome ... But Test team cannot cover all

5.2 Test plan

5.2.1 Test type

5.2.1.1 Function Testing

- Functional testing is a type of software testing whereby the system is tested against the functional require specifications.
- Functions are tested by feeding them input and examining the output. Functional testing ensure that the requirements are properly satisfied by the website and mobile application. This type of testing is not concerned with how processing occurs, but rather, with the results of processing.
- During functional testing, Black Box Testing technique is used in which the internal logic of the system being tested is not known to the tester.

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:	Executing each use case, use-case flow, or function, using valid and invalid data, to verify the following: <ul style="list-style-type: none"> - 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:	<ul style="list-style-type: none"> - 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 Test coverage > 97% Stop when testing becomes unproductive

Table 5-2: Function Testing

5.2.1.2 User Interface Testing

GUI testing is the process of ensuring proper functionality of the GUI for a given web and making sure it conforms to its written specifications.

GUI testing evaluates design elements such as layout, colors, fonts, font sizes, labels, text boxes, text formatting, captions, buttons, lists, icons, links, content and more.

Test Objective:	Verify the following: <ul style="list-style-type: none"> - 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) - Window objects and characteristics, such as menus, size, position, state, and focus conform to standards.
Technique:	Create or modify tests for each window to verify proper navigation and object states for each application window and objects.
Completion Criteria:	Each window successfully verified to remain consistent with benchmark version or within acceptable standard
Special Considerations:	Not all properties for custom and third party objects can be accessed.

Table 5-3: GUI Testing

5.2.2 Test stages

Clearly state the stage in which the test will be executed. Identified below are the stages in which common test are executed

Type of Tests	Stage of Test			
	Unit	Integration	System	Acceptance
Function Testing	X	X	X	X
User Interface Testing	X		X	X

Table 5-4: Test stages

5.2.3 Test model

FAVN follows V-Model process:

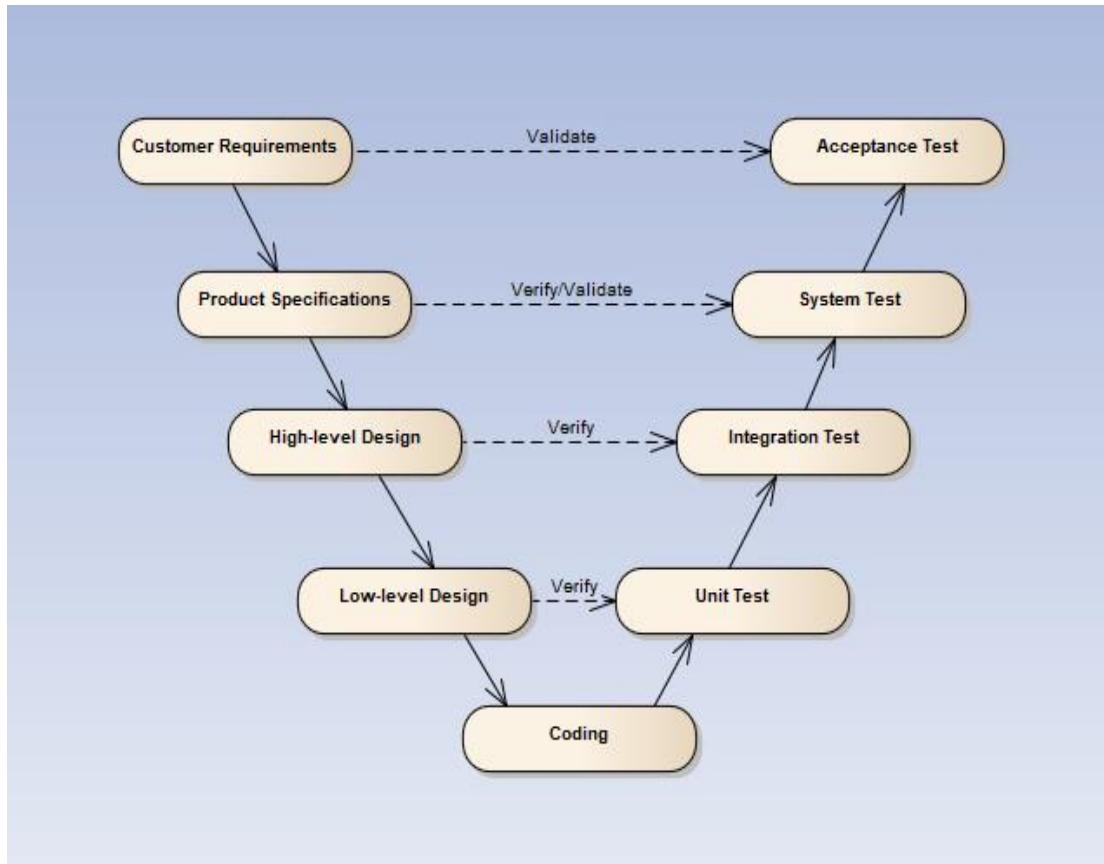


Table 5-5: V-model process

Testing progress is divided to 4 phases include: Unit test, Integration test, System test and Acceptance test

- Unit test:
 - Unit testing is used to verify a single minimal unit of source code. The purpose of unit testing is to isolate the smallest testable parts of FAVN and verify that they function properly in isolation.
 - Unit testing is the first level of testing and is perform prior to component testing
 - Unit testing will be done by developer.
- Integration test:
 - Integration testing is a level of the software testing process where individual units or component are combined and tested as a group.
 - The purpose is to expose faults in the interaction between integrated units.

- Integration testing is performed after component testing
- Integration testing will be done by tester
- System test:
 - System Testing is a level of the software testing process where a complete, integrated system is tested
 - The purpose is to evaluate the system's compliance with the specified requirements
 - System testing is performed after integration testing
 - System testing will be done by tester
- Acceptance test:
 - Acceptance testing is performed after system testing
 - Acceptance testing will be performed by the test leader and team leader.
- The acceptance test will be done for a period of 1 weeks after completion of the system test process.

5.2.4 Acceptance test criteria.

- Criteria for Unit test of Development team, for Test team accepts to start testing:
 - Number of TC/KLOC: 10TC/KLOC
 - Number defects/KLOC: 3-4 defects/KLOC
 - Statement coverage: 100%
 - Branch coverage: 100%
 - Path coverage: 100%
- Criteria for Integration test:
 - Number of TC/KLOC: 30 TC/KLOC
 - Number defects/KLOC: 2-3 defects/KLOC
- Criteria for System test:
 - Number of TC/KLOC: 20 TC/KLOC
 - Number defects/KLOC: 4-6 defects/KLOC
- Criteria for Acceptance test:
 - Number defects/KLOC: 1-2 defects/KLOC

5.2.5 Resources

5.2.5.1 Human resource

Worker/Doer	Role	Specific Responsibilities/Comments
AnNP	Test Leader	<ul style="list-style-type: none"> - Manage Test Resource and assign test tasks. - Create and review Test Plan. - Create and review Test Case. - Execute test. - Create and review Test Report - Ensures the overall success of the test cycles - Coordinate weekly meetings and will communicate the testing status to the project team
AnhND	Tester	<ul style="list-style-type: none"> - Create and review Test Case. - Execute test. - Create Test view points - Create and review Test Report - Responsible for performing the actual system testing

Table 5-6: Human resource

5.2.5.2 Test Environment

5.2.5.2.1 Hardware

Name	Purpose	Detail
Laptop Dell	Device for create and execute test	Window 10 Education core i5
Laptop Dell	Device for create and execute test	Window 10 professional core i7
Sony Xperia Z3 compact	Device for create and execute test	Android 5.0.1
MI Note 3	Device for create and execute test	Android 5.0.2

Table 5-7: Hardware

5.2.5.2.2 Software

Name	Purpose	Detail
Test Plan	Managing test	Microsoft Word 2016
Test case	Executing test	Microsoft Excel 2016

Test report, Test checklist	Tracking test	Microsoft Excel 2016
Chrome, CocCoc	Executing test	Chrome 35.0, CocCoc 35.0

Table 5-8: Software**5.2.5.2.3 Infrastructure**

Name	Purpose	Detail	Vendor/In-house	Version
FAVN_Defect Log Management_v1.0_EN	Tracking bug during testing time	Microsoft Excel 2016	FPT-University	v1.0
Test Effort	Effort execute test	Microsoft Excel 2016	FPT-University	v1.0

Table 5-9: Infrastructure**5.2.6 Test milestones**

Milestone Task	Effort (pd)	Start Date	End Date
Create Test Plan	2 days	29/09/2016	03/10/2016
Review & update TP	2 days	3/10/2016	05/10/2016
Unit Test Cases	19 days	19/10/2016	15/11/2016
Review & update Unit TC	19 days	19/10/2016	15/11/2016
Create Integration Test case	4 days	17/10/2016	25/10/2016
Review & Update Integration TC	2 days	21/10/2016	25/10/2016
Create System Test case	4 days	17/10/2016	25/10/2016
Review & Update System TC	2 days	21/10/2016	25/10/2016
Execute UT test phase 1	19 days	19/10/2016	15/11/2016
Execute UT test phase 2	19 days	19/10/2016	15/11/2016
Execute Integration test phase 1	2 days	8/11/2016	10/11/2016
Execute Integration test phase 2	1 days	15/11/2016	16/11/2016
Execute System test phase 1	2 days	10/11/2016	14/11/2016
Execute System test phase 2	1 days	16/11/2016	17/11/2016

Table 5-10: Test milestones**5.2.7 Deliverables**

No	Deliverables	Responsibilities	Delivered Date
1	Test Plan	English	6/10/2016

2	Integration Test case	English	24/11/2016
3	System Test case	English	24/11/2016
4	Defect Log Management	English	26/11/2016
5	Test report	English	24/11/2016

Table 5-11:Deliverables

5.3 Test case

Refer to:

- Dispatcher_Integration-Test-Case_v1.0_EN.xlsx
- Ambulance_Integration Test Case_v1.0_EN.xlsx
- FA_Integration-Test-Case_v1.0_EN.xlsx
- Admin/Expert_Integration-Test-Case_v1.0_EN.xlsx
- FAVN_System-Test-Case_v1.0_EN.xlsx
- FAVN_UnitTestCase_FirstAidApplication_v1.0.xlsx

5.4 Test Report

5.4.1 Test report

No	Module Code	Round 1		Round 2		Final
		Pass	Fail	Pass	Fail	
1	Unit Test	61	0	61	0	61
2	Integration Test	1090	40	1134	0	1134
3	System Test	59	0	65	0	65
	Total	1209	40	1260	0	1260

Table 5-12: Test Report

5.4.2 Defect report

Defects	Logged	%Closed	%Invalid	%Open
Critical	0	0%	0%	0%
High	10	0%	0%	0%
Medium	10	100%	0%	0%
Low	20	100%	0%	0%
Total	40	100%	0%	0%

Table 5-13: Defect report

6 USER MANUAL

6.1 Introduction

6.1.1 Purpose

This document contains guidelines step by step to deploy FAVN system. This user's manual has been developed to help users better understand the requirements that may apply to use this system by providing them simple step by step tutorials. This manual is intended to help make system's functions more accessible and their associated requirements more understandable to users.

6.1.2 Environment

Following are the software required to start the First Aid system:

For First Aid Application and Ambulance Application:

Operating System: Android 5.0 or higher.

Database: SQLite

For Dispatcher Application and Admin/Expert Application:

Operating System: Windows 7, Windows 8, Windows 10

Browsers: Cốc cốc 40, Chrome 44 or higher

Database: MySQL

6.2 Installation Guideline

6.2.1 Install First Aid Application

Step 1: Go to web browser on smart phone (ex: Chrome)



Figure 6-1: First Aid step 1

Step 2: Go to url: <https://www.mediafire.com/file/5kt341rkmbg4a8r/FA.apk>

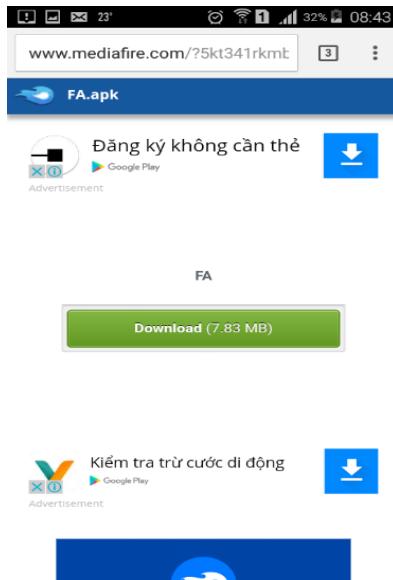


Figure 6-2: First Aid step 2

Step 3: Tap on Download button to download file FA.apk and run

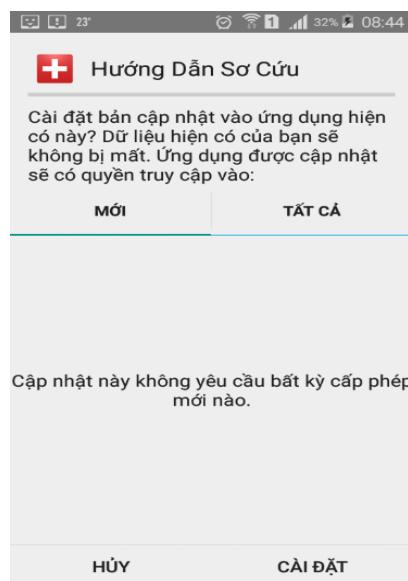


Figure 6-3: First Aid step 3

Step 4: Finally, tap on First Aid icon to run application

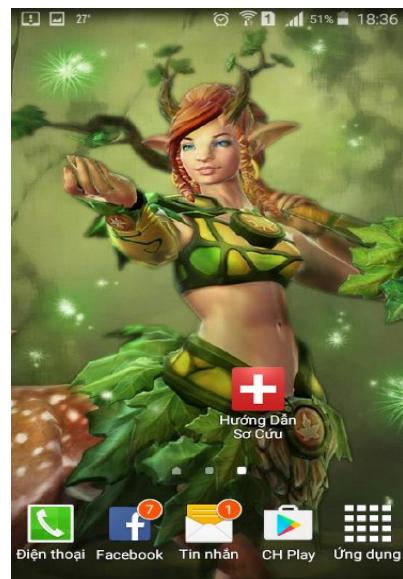
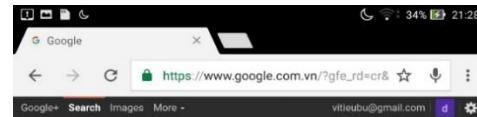


Figure 6-4: First Aid step 4

6.2.2 Install Ambulance Application

Step 1: Go to web browser on tablet (ex: Chrome)



Google.com.vn offered in: Tiếng Việt Français 中文 (繁體)

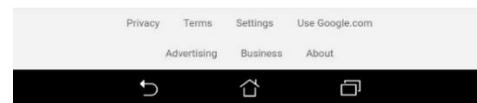


Figure 6-5: Ambulance step 1

Step 2: Go to url <https://www.mediafire.com/file/ww2jnon8q8j80mj/ambulance.apk>

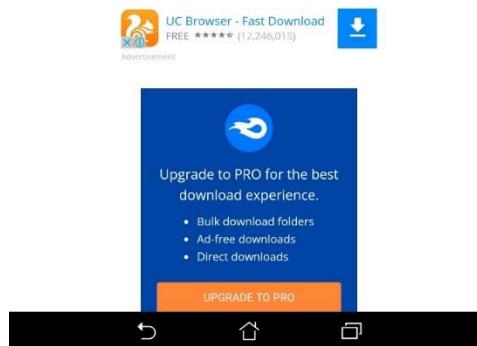
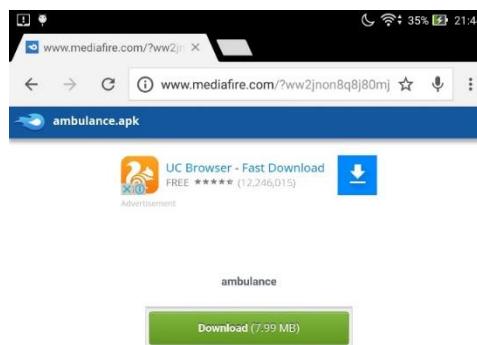


Figure 6-6: Ambulance step 2

Step 3: Tap on Download button to download file ambulance.apk and run

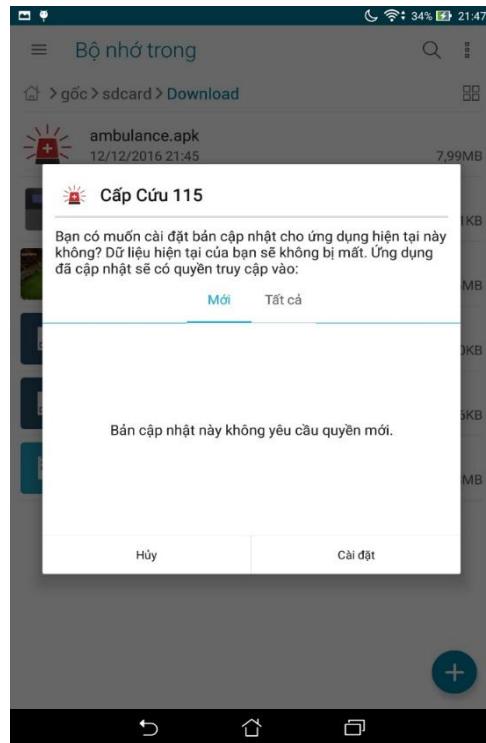


Figure 6-7: Ambulance step 3

Step 4: Finally, tap on Ambulance icon to run application



Figure 6-8: Ambulance step 4

6.2.3 Install Dispatcher Application

In this guideline we install dispatcher Laravel application on Ubuntu 16.04.

6.2.3.1 Setup environment

- Step 1: Install PHP 5.6

```
$ sudo apt-get install python-software-properties  
$ sudo add-apt-repository ppa:ondrej/php  
$ sudo apt-get update  
$ sudo apt-get install -y php5.6 php5.6-mcrypt php5.6-gd
```

- Step 2: Install Apache2

```
$ apt-get install apache2 libapache2-mod-php5
```

- Step 3: Install MySQL

```
$ apt-get install mysql-server php5.6-mysql
```

- Step 4: Install phpMyAdmin

```
$ sudo apt-get update  
$ sudo apt-get install phpmyadmin php-mbstring php-gettext
```

- Step 5: Install Composer

```
$ curl -sS https://getcomposer.org/installer | php  
$ sudo mv composer.phar /usr/local/bin/composer  
$ sudo chmod +x /usr/local/bin/composer
```

6.2.3.2 Install application

-Step 1: Clone source code from github directory

```
$ cd /var/www
$ git clone https://github.com/favn/dispatcher.git
```

-Step 2: Use composer to install all dependencies required for Laravel framework.

```
$ cd /var/www/dispatcher
$ sudo composer install
```

-Step 3: Set proper permissions on files.

```
$ chown -R www-data.www-data /var/www/dispatcher
$ chmod -R 755 /var/www/laravel
$ chmod -R 777 /var/www/laravel/app/storage
```

-Step 4: Create Apache VirtualHost

```
$ vim /etc/apache2/sites-available/dispatcher.rtsvietnam.com.conf
```

```
<VirtualHost *:80>

    ServerName dispatcher.rtsvietnam.com
    DocumentRoot /var/www/dispatcher/public

    <Directory />
        Options FollowSymLinks
        AllowOverride None
    </Directory>
    <Directory /var/www/laravel>
        AllowOverride All
    </Directory>

    ErrorLog ${APACHE_LOG_DIR}/error.log
    LogLevel warn
    CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>
```

FAVN_Final Report_v1.0

6.2.3.3 Database configuration

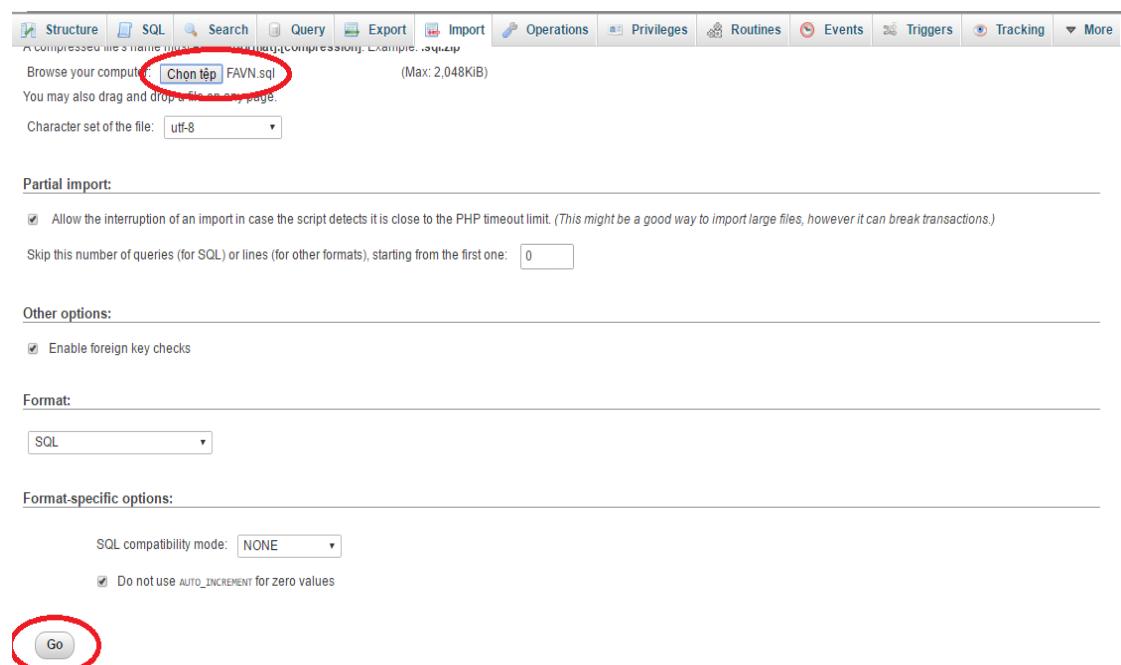
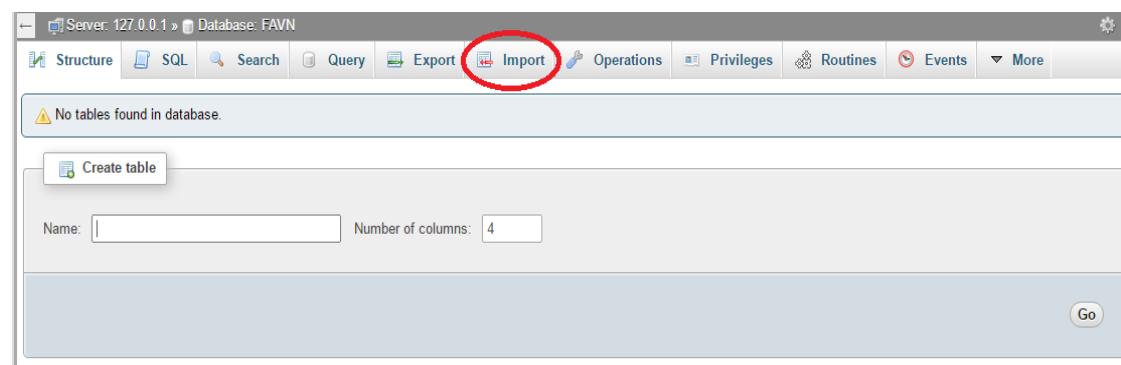
- Step1 : Create FAVN database



Databases



- Step 2: Import FAVN database



FAVN_Final Report_v1.0



- Step 3: Setting .ENV file

```
1 APP_ENV=local
2 APP_KEY=base64:IxcrMaIQz36ayN0Q2nx1wlC/u3Re+axVvUXqhXakI=
3 APP_DEBUG=true
4 APP_LOG_LEVEL=debug
5 APP_URL=http://localhost
6
7 DB_CONNECTION=mysql
8 DB_HOST=127.0.0.1
9 DB_PORT=3306
10 DB_DATABASE=FAVN
11 DB_USERNAME=root
12 DB_PASSWORD=root
13
14 BROADCAST_DRIVER=log
15 CACHE_DRIVER=file
16 SESSION_DRIVER=file
17 QUEUE_DRIVER=sync
18
19 REDIS_HOST=127.0.0.1
20 REDIS_PASSWORD=null
21 REDIS_PORT=6379
22
23 MAIL_DRIVER=smtp
24 MAIL_HOST=smtp.gmail.com
25 MAIL_PORT=587
26 MAIL_USERNAME=favn.firstaid@gmail.com
27 MAIL_PASSWORD=odnomgojqgcccgb1
28 MAIL_ENCRYPTION=tls
29
30 PUSHER_APP_ID=
31 PUSHER_KEY=
32 PUSHER_SECRET=
```

6.2.4 Install Admin/Expert Application

6.2.4.1 Setup environment

Refer to 2.3.1 of this document.

6.2.4.2 Install application

- Step 1: Clone source code from github directory

```
$ cd /var/www
$ git clone https://github.com/favn/admin.git
```

- Step 2: Use composer to install all dependencies required for Laravel framework.

```
$ cd /var/www/admin-composer
$ sudo composer install
```

- Step 3: Set proper permissions on files.

```
$ chown -R www-data.www-data /var/www/admin
$ chmod -R 755 /var/www/laravel
$ chmod -R 777 /var/www/laravel/app/storage
```

- Step 4: Create Apache VirtualHost

```
$ vim /etc/apache2/sites-available/admin.rtsvietnam.com.conf
```

```
<VirtualHost *:80>

    ServerName admin.rtsvietnam.com
    DocumentRoot /var/www/admin/public

    <Directory />
        Options FollowSymLinks
        AllowOverride None
    </Directory>
    <Directory /var/www/laravel>
        AllowOverride All
    </Directory>

    ErrorLog ${APACHE_LOG_DIR}/error.log
    LogLevel warn
    CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>
```

6.2.4.3 Database configuration

Refer to 2.3.3 of this document.

6.3 User Guideline

6.3.1 First Aid

This is the first screen which user will see. From this screen the user can go to every screen they want to use features.

To use this application, the users do the steps below:

Step 1: Download and install application

Step 2: Launch application



Figure 6-9 Emergency screen

6.3.1.1 Emergency Details

To see the details of emergency, users do the steps below:

Step 1: Launch application

Step 2: Tap on one random emergency case

Step 3: Screen displayed the details of emergency case



Figure 6-10 Emergency details screen

6.3.1.2 Search emergency case

To search emergency case, the users do the steps below:

Step 1: Launch application

Step 2: Click on button search of “Hướng dẫn sơ cứu” screen



Figure 6-11: Search icon

Step 3: Input the characters you want to search in textfield

Step 4: Screen display the result



Figure 6-12: Search result screen

6.3.1.3 Call 115

To use Call 115 function on this application, the users do the steps below:

Step 1: In “Khẩn Cấp” screen, tap on icon “Call”



Figure 6-13 Icon Call

Step 2: Call 115 screen is displayed

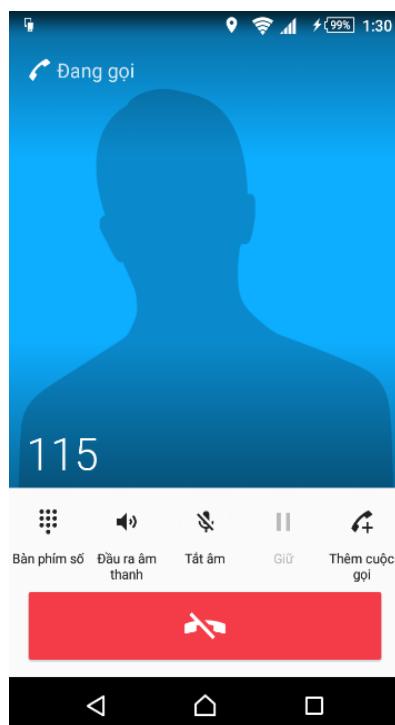


Figure 6-14: Call 115 screen

6.3.1.4 Direct

In this function, user can know about current position, 20 nearest health facilities, direct from current position to selected health facility.

Step 1: Launch Application

Step 2: Click on icon direct



Figure 6-15 Icon Direct

Step 3: Screen displayed map and current position, tap on button “Cơ sở y tế gần đây” to see the list of nearest health facilities



Figure 6-16 Direct screen

Step 4: Select one of health facilities list (figure 2-9) , then tap on button direct (figure 2-10)

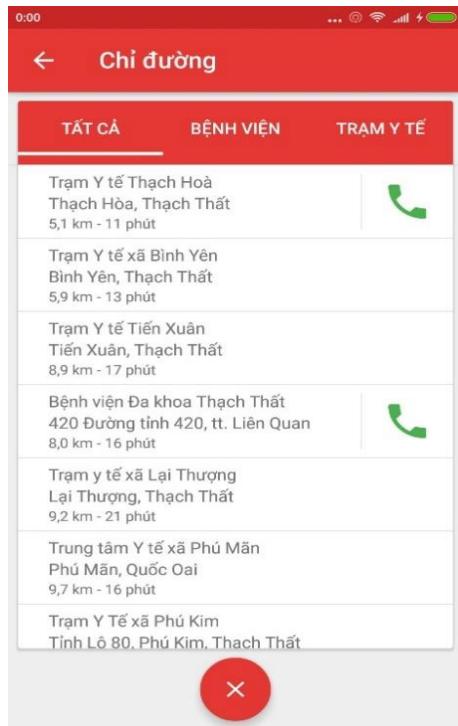


Figure 6-17: List of health facilities

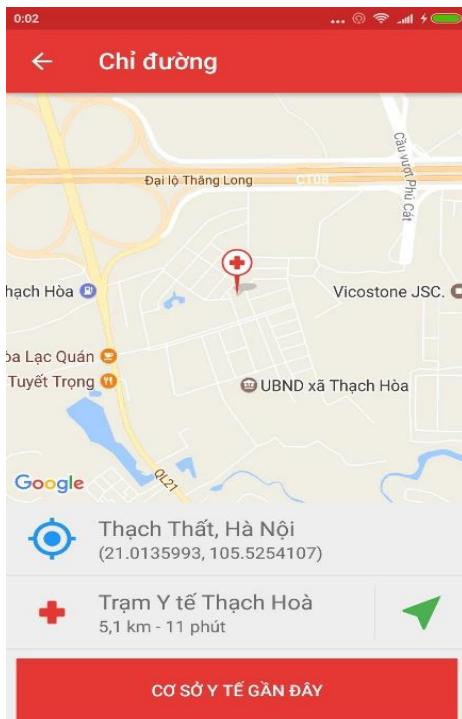


Figure 6-18: Button Direct

Step 5: Tap on button direct, screen show the direct from current position to the selected health facility

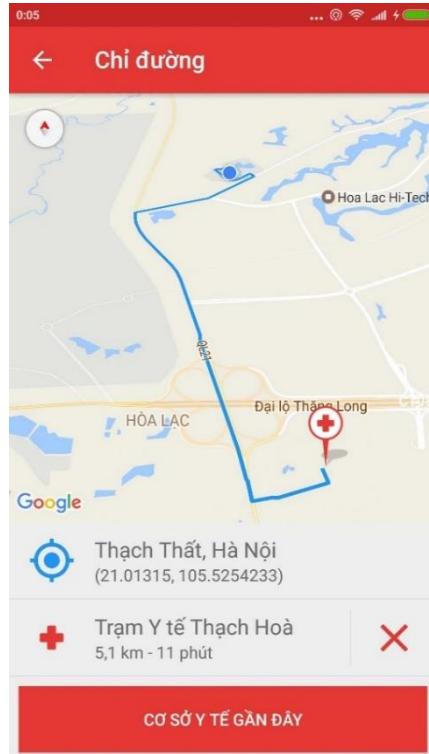


Figure 6-19: Direct from current position to the emegency case

6.3.1.5 Learning

In this screen, users can view the detail of learning topic, view the list of “câu hỏi thường gặp”, can send the question to the system. To use those feature, user do as step belows:

Step 1: Launch application

Step 2: Tap on icon Menu



Figure 6-20: Icon menu

Step 3: Tap on icon Tìm Hiểu

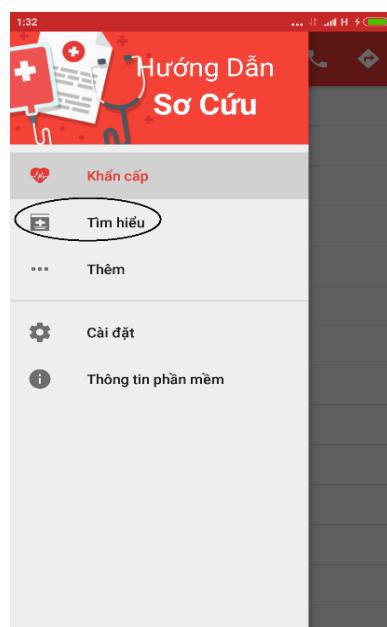


Figure 6-21: Learning Icon

Step 4: Screen displayed list of learning topic



Figure 6-22: Learning screen

Step 5: Tap on random topic

Step 6: Screen displayed details of selected topic

Step 7 : Tap on button “Câu hỏi thường gặp” to view the list of FAQ



Figure 6-23: FAQ button

Step 8: Screen displayed list of FAQ

Step 9: Tap on button “ Đặt câu hỏi cho chúng tôi” to send question to system



Figure 6-24: Send question button

Step 10: Fill all field and tap on button “ Gửi”

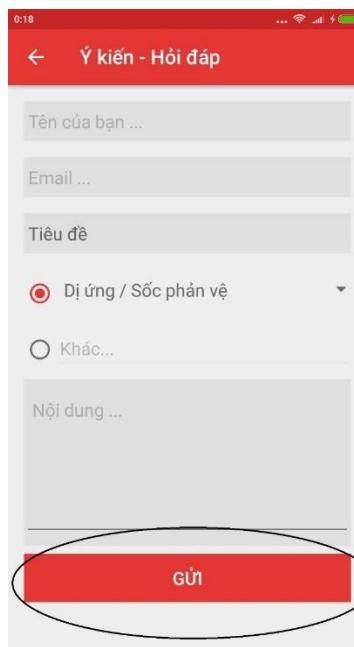


Figure 6-25: Send button

6.3.1.6 Setting

In this screen, you can setting to send or not send your location and phone number. To use features in this function, users do the steps below:

Step 1: Launch app

Step 2: Tap on icon Menu and select Setting

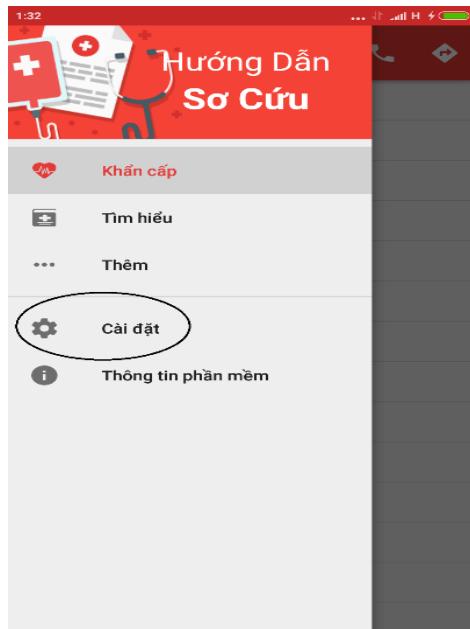


Figure 6-26: Setting icon

Step 3: If you want to send information, tap on button “Đồng Ý Gửi” (anh)

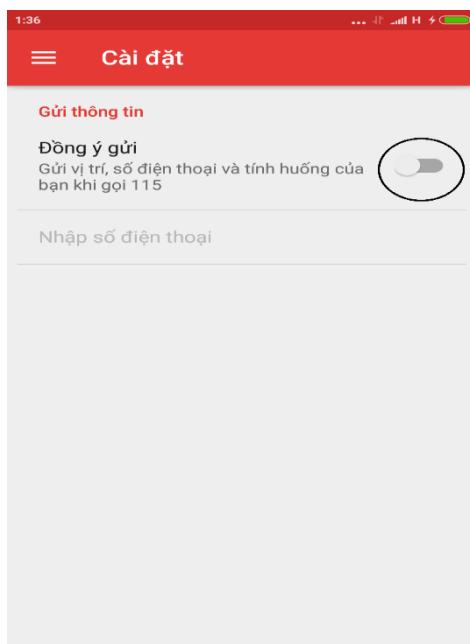


Figure 6-27: Allow to send information switch

Step 4: Tap on “Nhập số điện thoại” to input your phone number

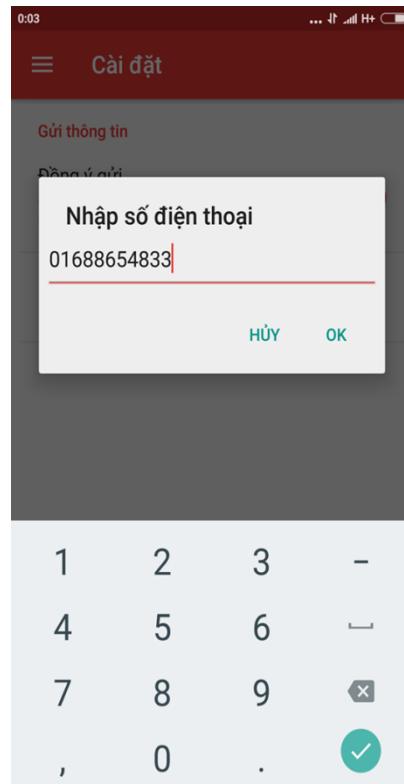


Figure 6-28: Fill phone number dialog

Step 5: Tap on button OK, your phone number displayed on the screen

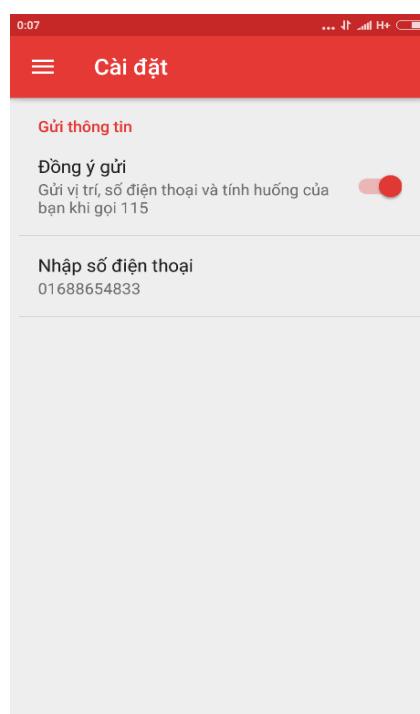


Figure 6-29: Phone number display on screen

6.3.1.7 Software information

In this screen, you can view the information of software like version, term of use, information of developers.

Step 1: Launch application.

Step 2: Tap on icon Menu then select “Thông Tin Phần Mềm”.

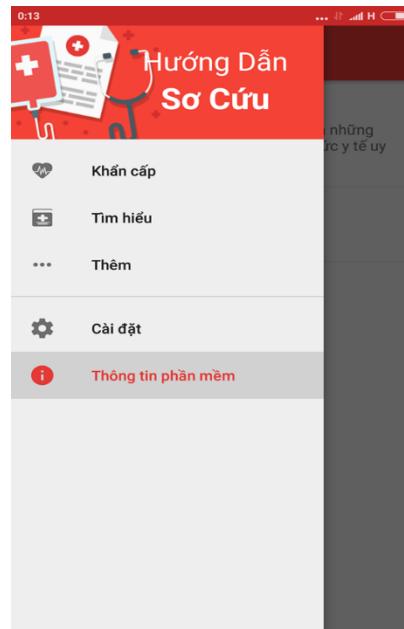


Figure 6-30: Software information icon

Step 3: Screen displayed information of software.

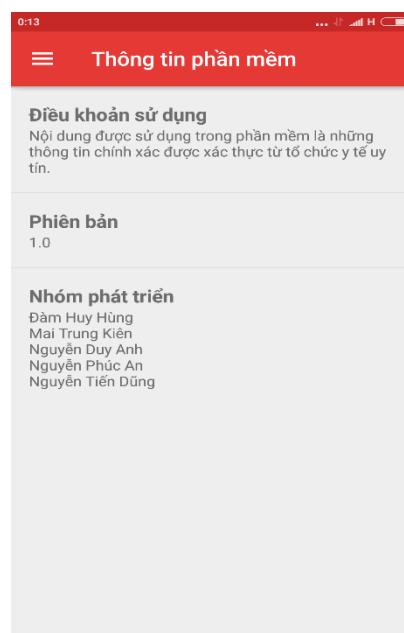


Figure 6-31: Software information screen

6.3.2 Ambulance

6.3.2.1 Login

This is the first screen which user will see. From this screen the user can go to every screen they want to use features.

Step 1: Download and install application

Step 2: Launch application and login

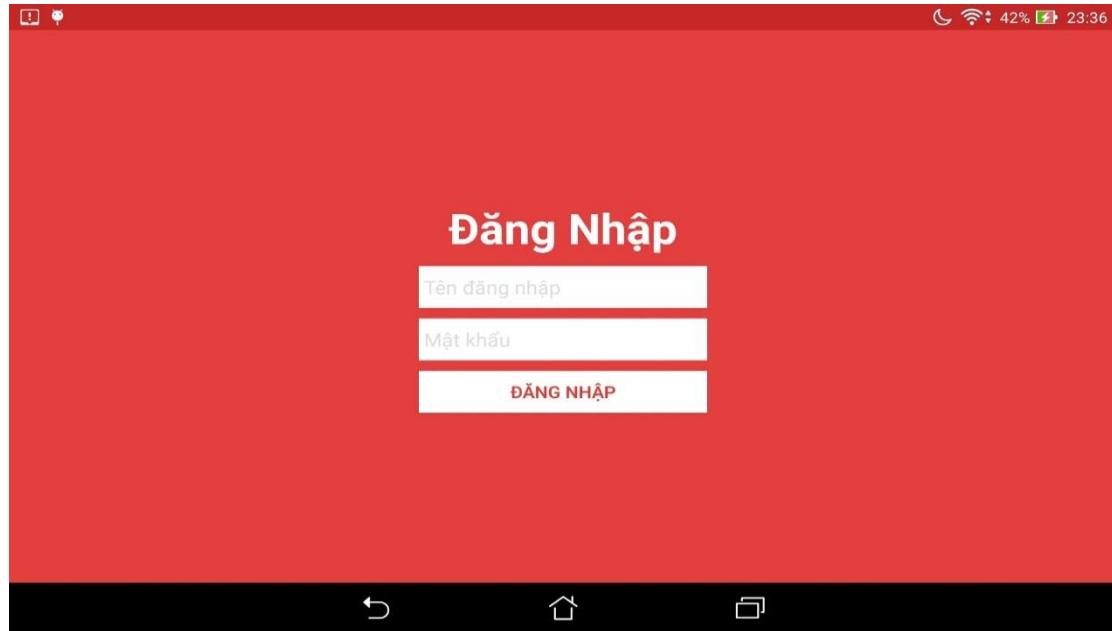


Figure 6-32: Login screen

6.3.2.2 Logout

To logout application users follow these steps:

Step 1: Tap the icon on the left side of the screen [Menu]

Step 2: Tap on button “ Đăng Xuất”

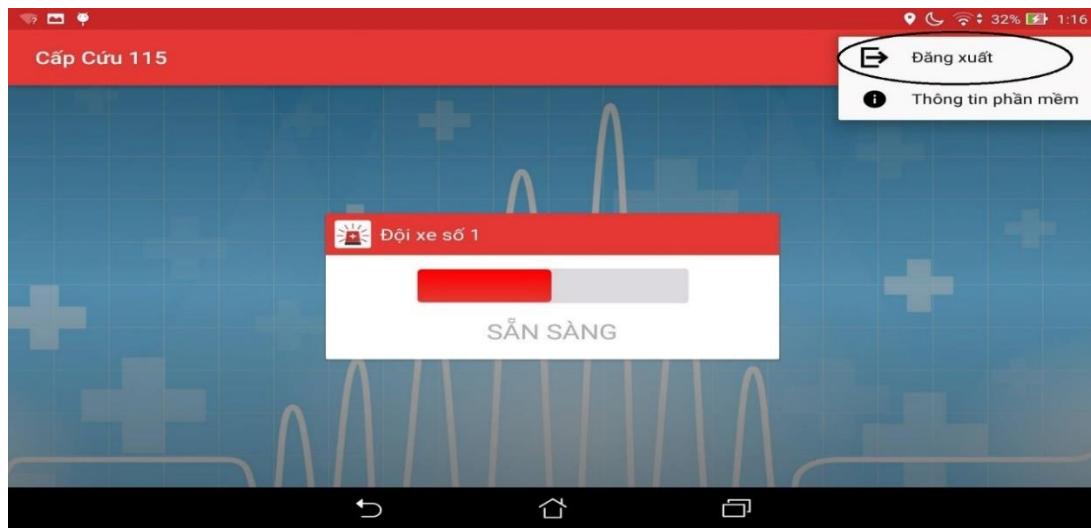


Figure 6-33: Logout button

6.3.2.3 Ready/Not ready to take the task

Users depending on their current state can decide to take the task or not

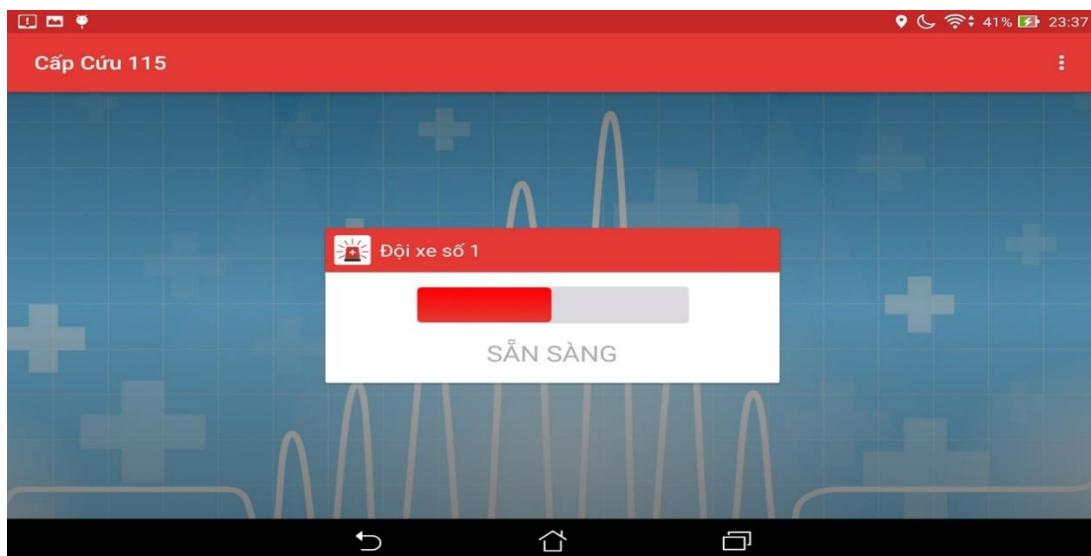


Figure 6-34: Ambulance status

6.3.2.4 Software information

To see the information about this application, the users do the steps below: (ảnh)

Step 1: Tap on menu icon at the top right at screen

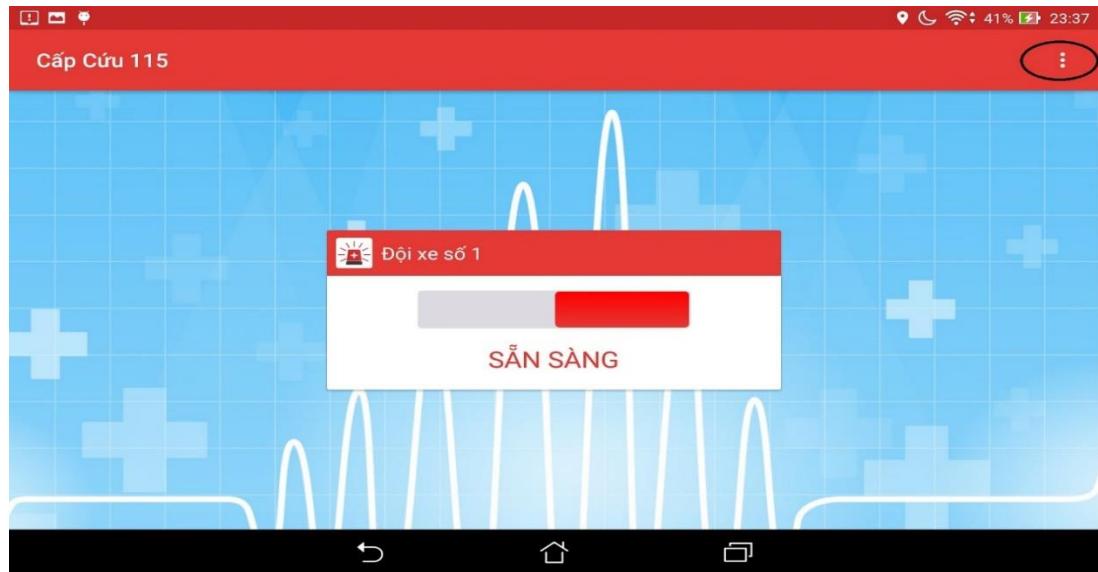


Figure 6-35: Menu Icon

Step 2: Tap on button software information

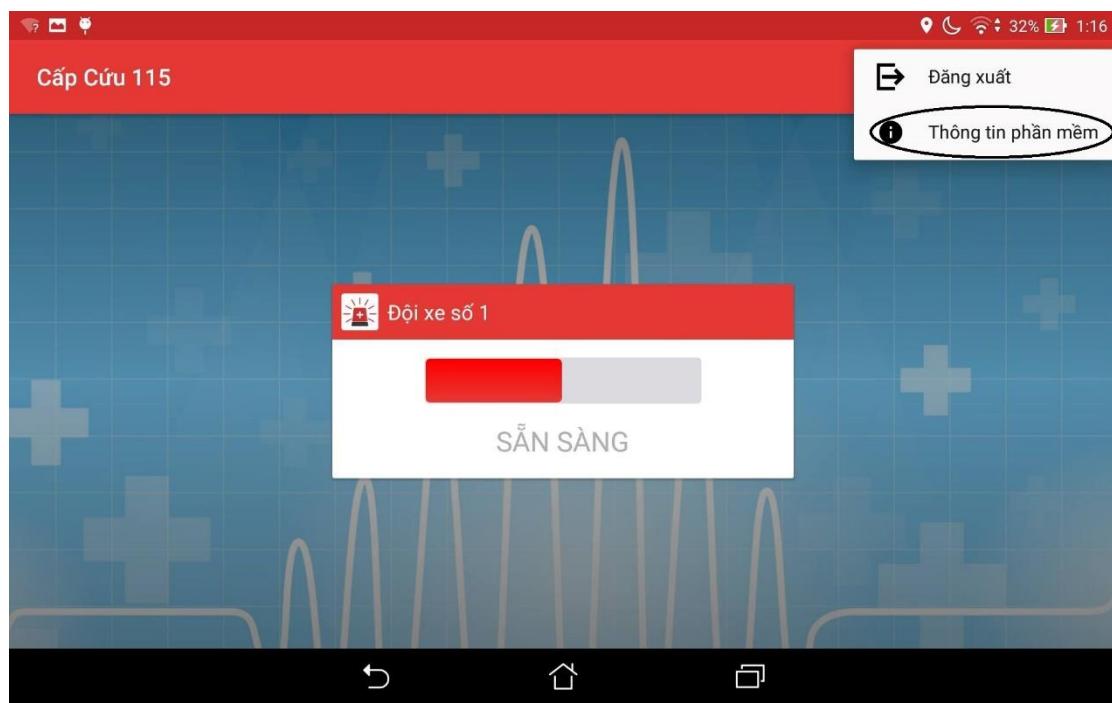


Figure 6-36: Software information button

Step 3: Move to software information screen

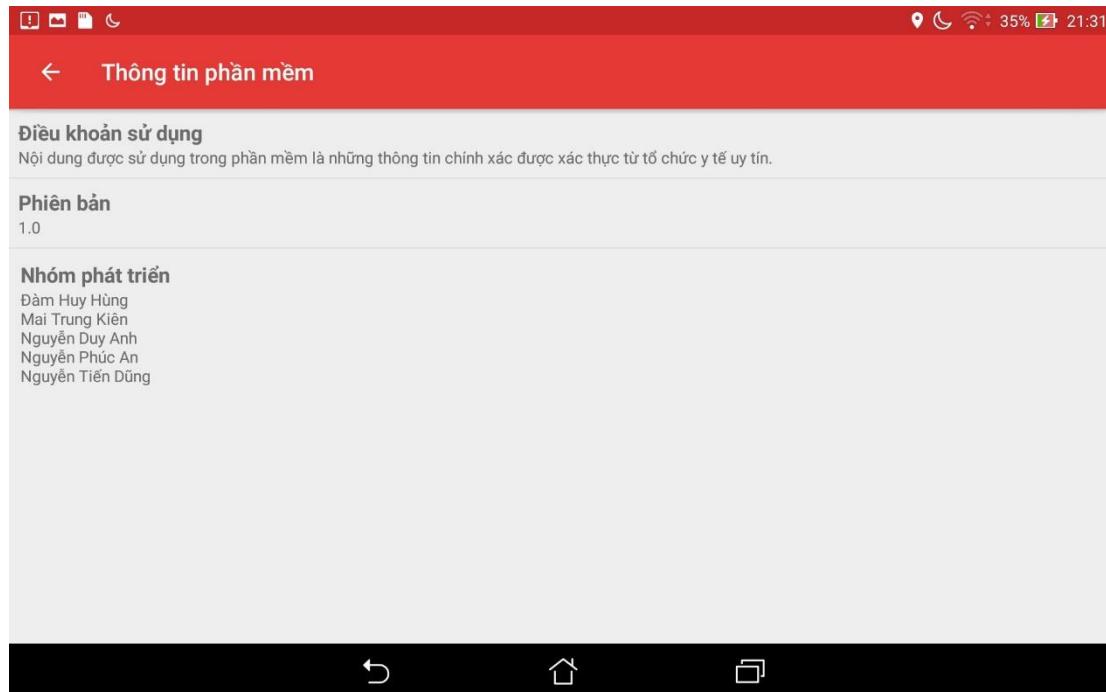


Figure 6-37: Software information screen

6.3.2.5 Locate

When users want to locate current location, do the steps below:

Step 1: Login the application and take the task

Step 2: Tap on button “Định Vị”

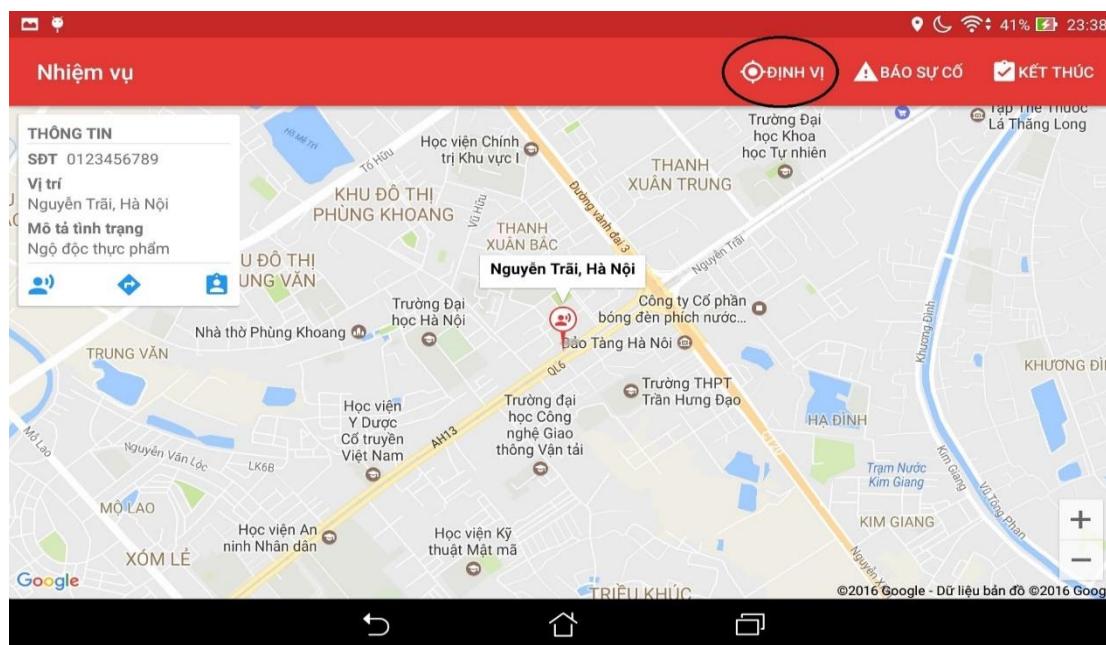


Figure 6-38: Locate ambulance position's button

When users want to locate current location of victims, do the steps below:

Step 1: Login the application and take the task

Step 2: Tap on icon victim

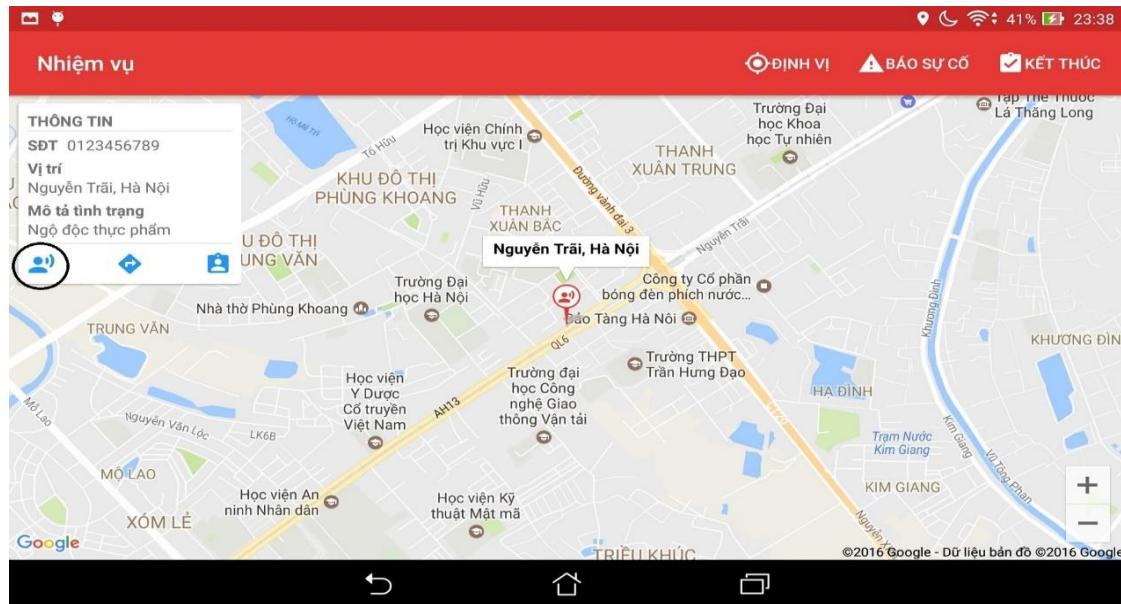


Figure 6-39: Locate victim's position button

6.3.2.6 Direct

When users want to view direct from ambulance to the victim position, do the steps below:

Step 1 : Tap on button direct, screen will show the direct

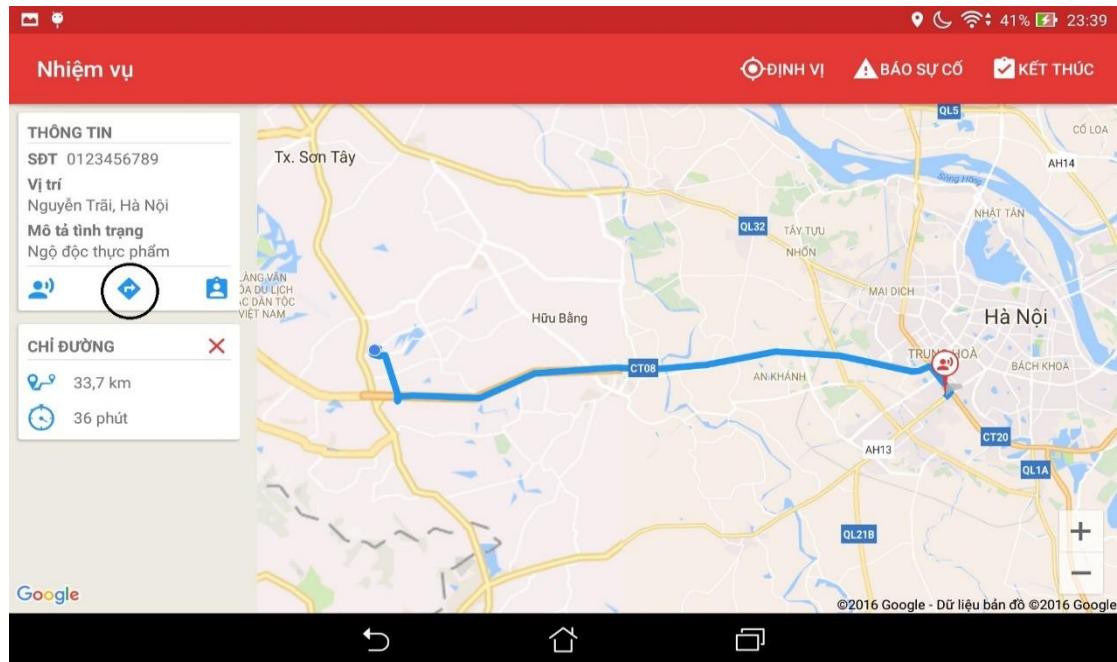


Figure 6-40: Direct button

6.3.2.7 Picked up victim

When picked up victim, report to the center by the steps below:

Step 1 : Tap on button pick up

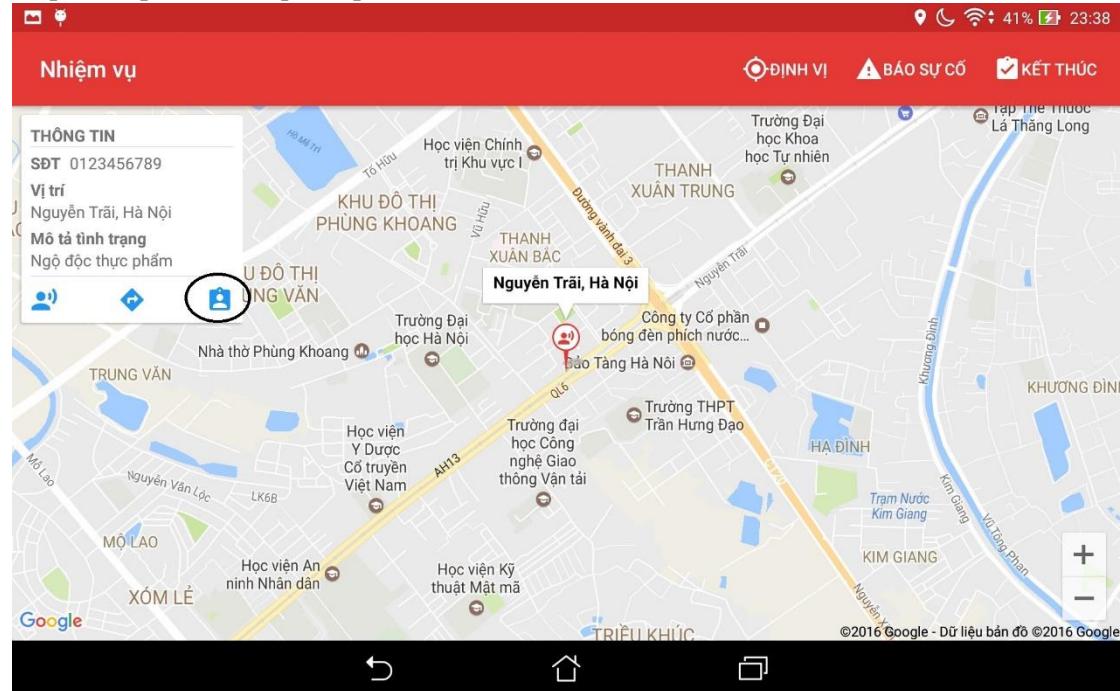


Figure 6-41: Picked up victim button

6.3.2.8 Report problem

When users have problem, to report to dispatcher, users do the step below:

Step 1: Tap on button “Báo cáo sự cố”

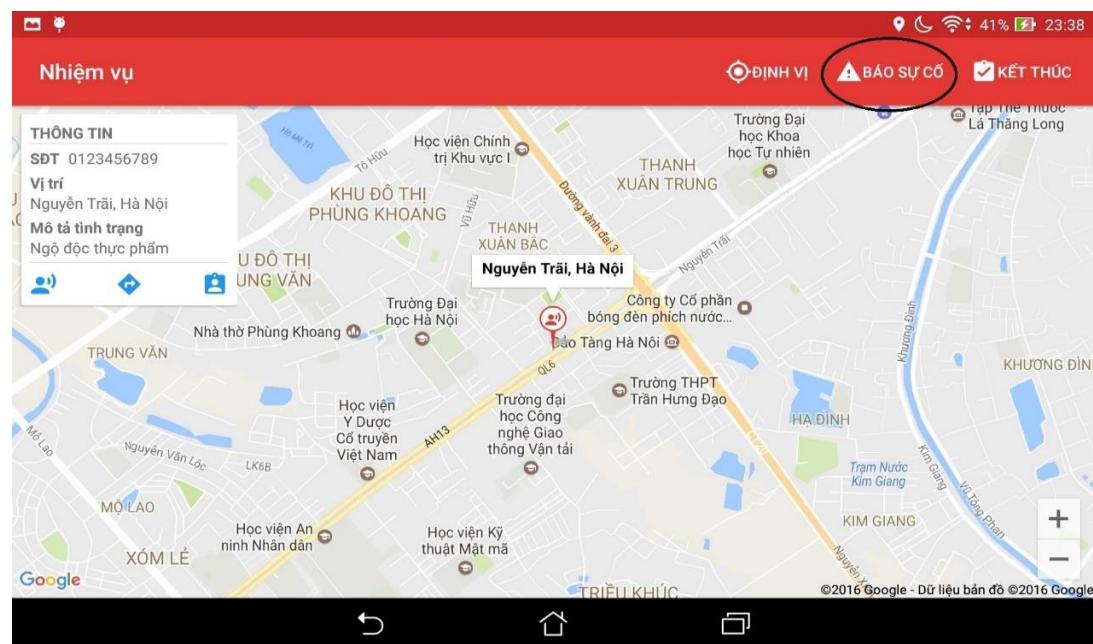


Figure 6-42: Picked up victim button

6.3.2.9 Finish the mission

When users want to finish their mission, do the step bellows:

Step 1: Tap on the button Finish

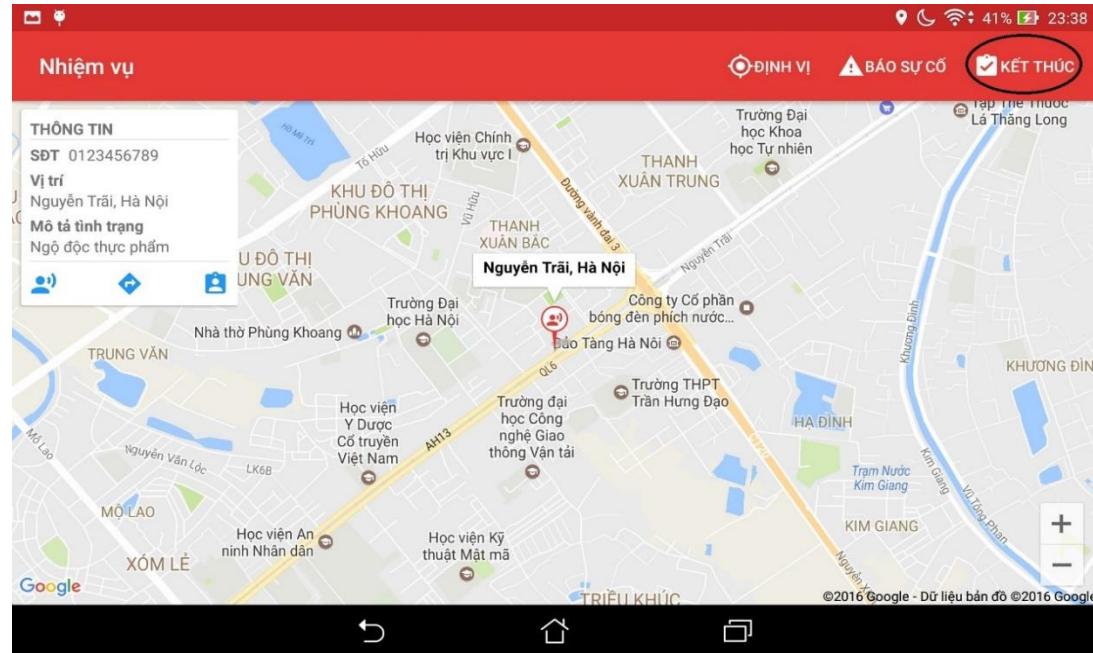


Figure 6-43: Finish button

6.3.3 Admin

In this web application, registered users can add new users with role, edit information of users, delete users, view information of users, classify users by role, search users.

6.3.3.1 Login

To use features of this web application, users follow the steps belows :

Step 1: Open browser and enter to the address bar: <http://admin.rtsvietnam.com/>

Login page is displayed

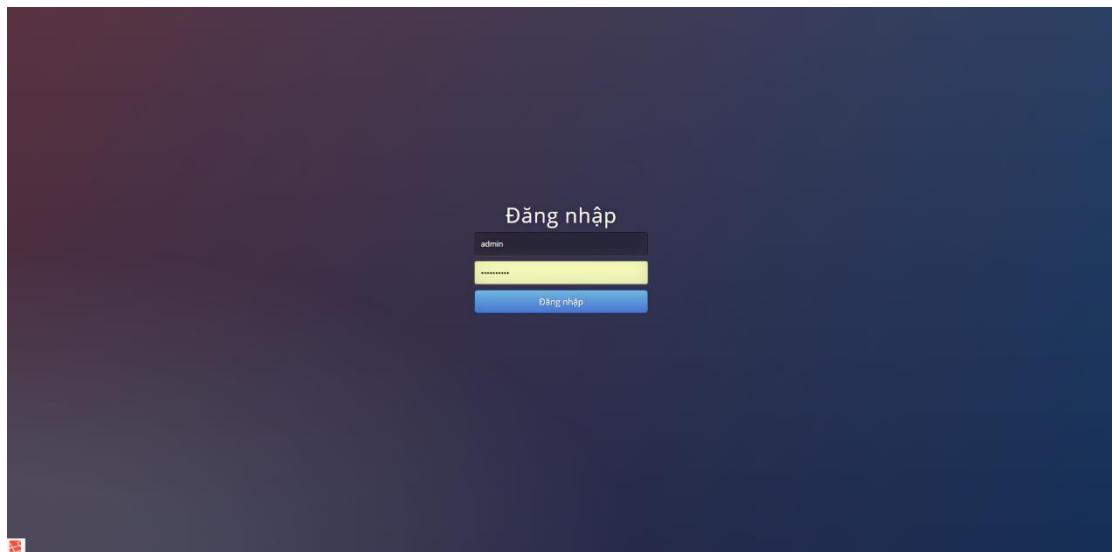


Figure 6-44: Admin login page

Step 2: Login with the administration account. Users will go to the Home page. In this page, registered users can go to all of other page.

Thống kê cuộc gọi				
THỐNG KÊ Cuộc gọi: 10 Đã nối xe: 5 Không nối được xe: 3 Cuộc gọi mục đích khác: 2				
SỐ ĐIỆN THOẠI	CHẨN THƯỜNG	THỜI GIAN GỌI	TÌNH TRẠNG	THAO TÁC
0908 113 555	Gãy chân	8:39 PM - 12/12/2016	Đã được nối xe	
0305 110 239	Bóng nặng	8:39 PM - 12/12/2016	Hủy nối xe	
0906 113 555	Gãy chân	8:39 PM - 12/12/2016	Đã được nối xe	
0123 252 213	Đau rát thừa	8:39 PM - 12/12/2016	Đã được nối xe	
0906 113 555	Hen suyễn	8:39 PM - 12/12/2016	Đã được nối xe	

Figure 6-45: Admin dashboard

6.3.3.2 Logout

Step 1: On the Home page, click on name of users at the top right of page, then click button “Logout”

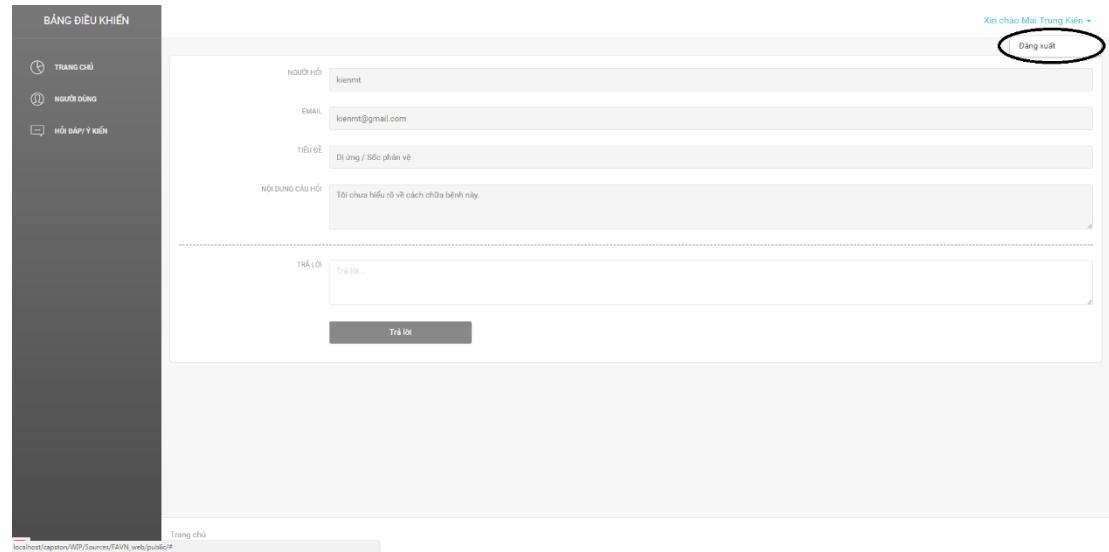


Figure 6-46: Logout button

Step 2: Users will go to the login page

6.3.3.3 Add new users

To add new users, user do the steps belows:

Step 1: Click on button Users on the menu bar at the left of page

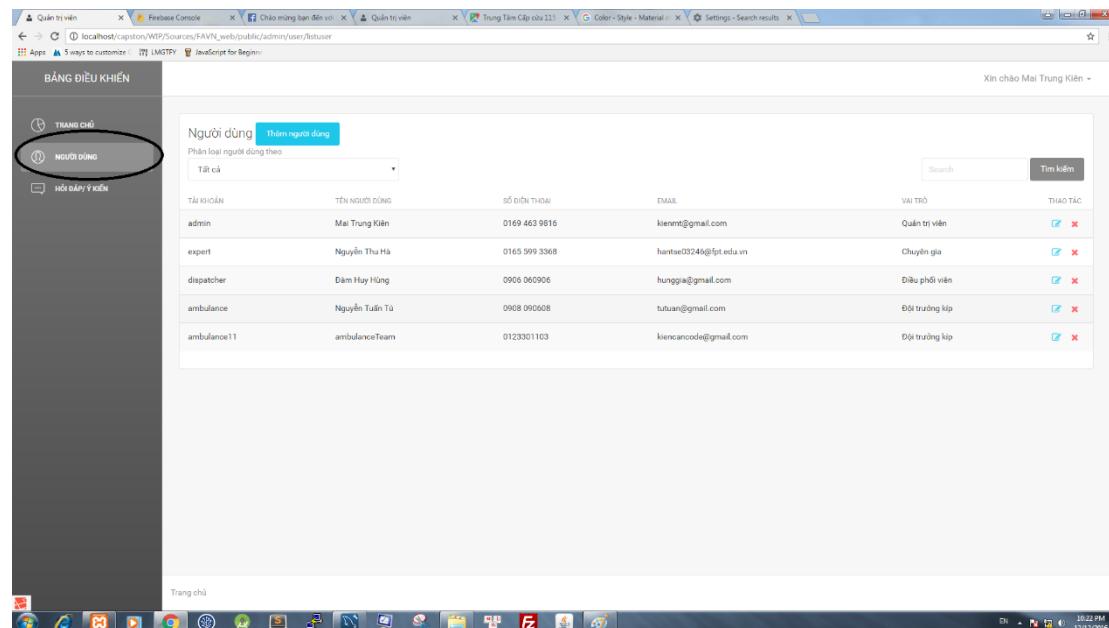


Figure 6-47: User button

Step 2: Click on button Add New Users

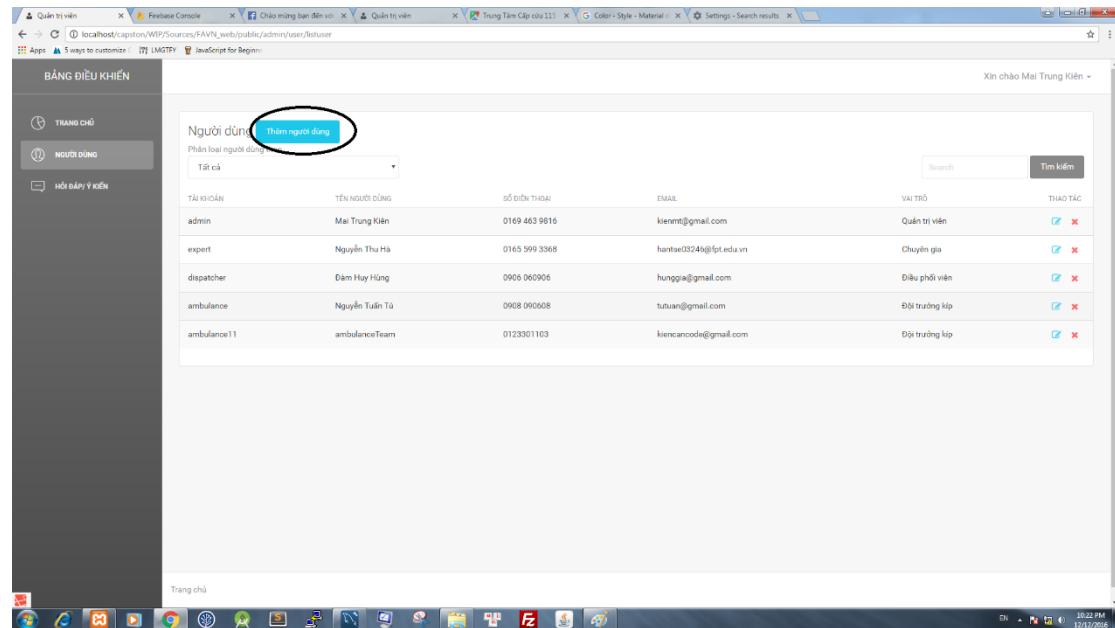


Figure 6-48: User button

Step 3: Users wil go to the add new users page

Step 4: Fill validate data on all textfield, then click button Add new user, page will go to the page users, and display messege: “Add new users successfull”

To reset data all of all field, click on button reset all field will be default

6.3.3.4 Classify users by role

To classify users by role, user do the step below:

Step 1: Click on button Users on the menu bar at the left of page

Step 2: Click on the dropdown list belows label “Classify users by” and choose a role

Step 3: Page will display the list of users classify by role

6.3.3.5 Search users

To search users, user do the step below:

Step 1: Click on search textbox

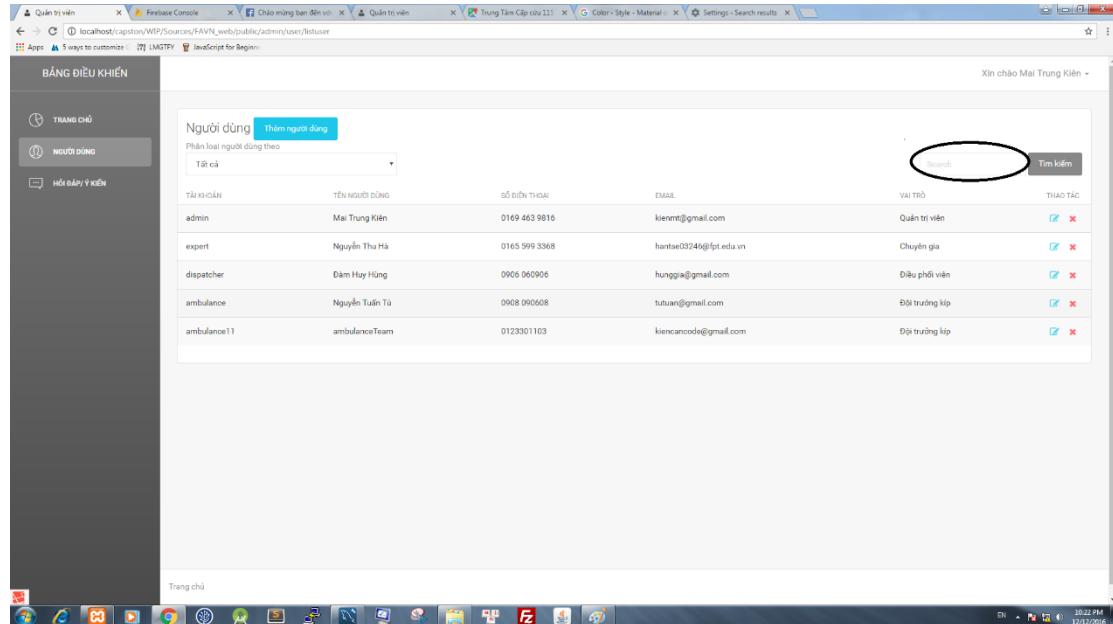


Figure 6-49: Search Textbox

Step 2: Input characters then click on button search

Step 3: Page will display the list of result

6.3.3.6 Edit users information

To edit users information, users do the step below:

Step 1: Click on icon Edit page will go to the edit users page

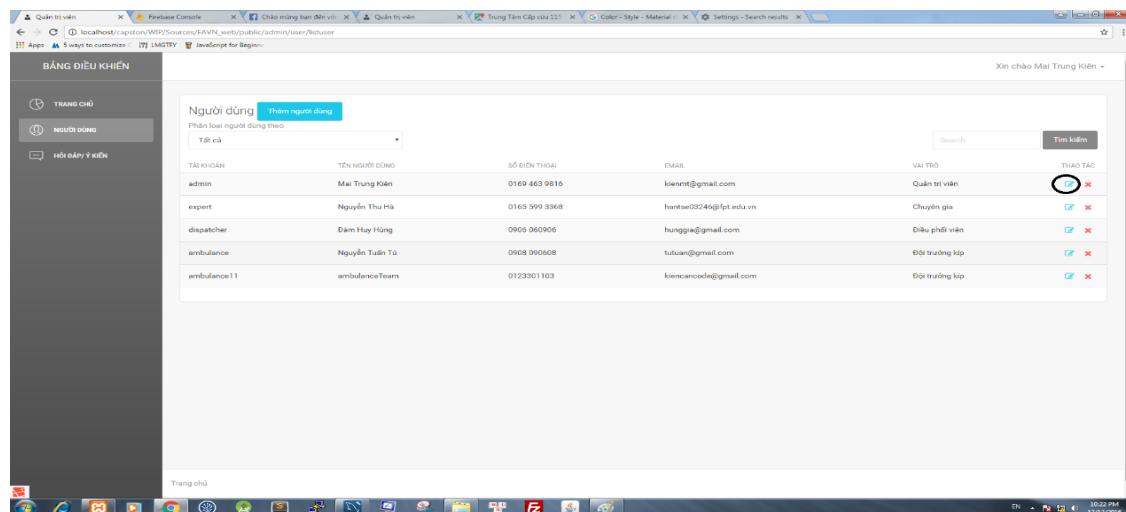


Figure 6-50: Edit Icon

Step 2: Edit information of users

Step 3: Click on button Edit, page will display message : “Chỉnh sửa thông tin thành công”

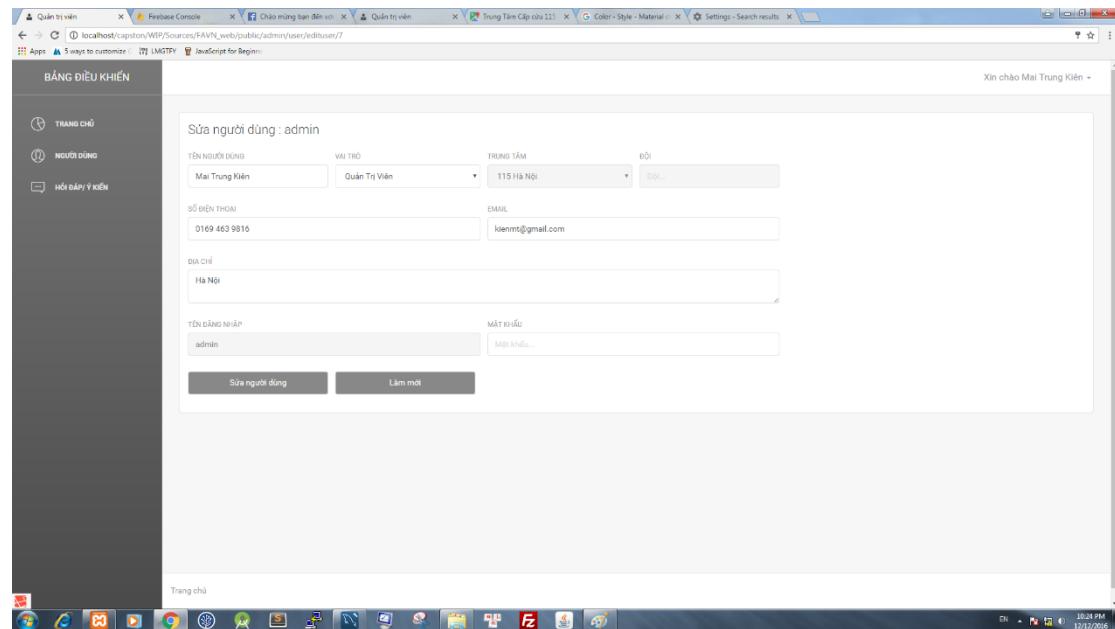


Figure 6-51: Edit screen

To reset data all of all field, click on button reset (đặt), all field will be default

6.3.3.7 Delete users

To delete users, user do the step belows:

Step 1: Click on icon delete users, a confirm dialog will display

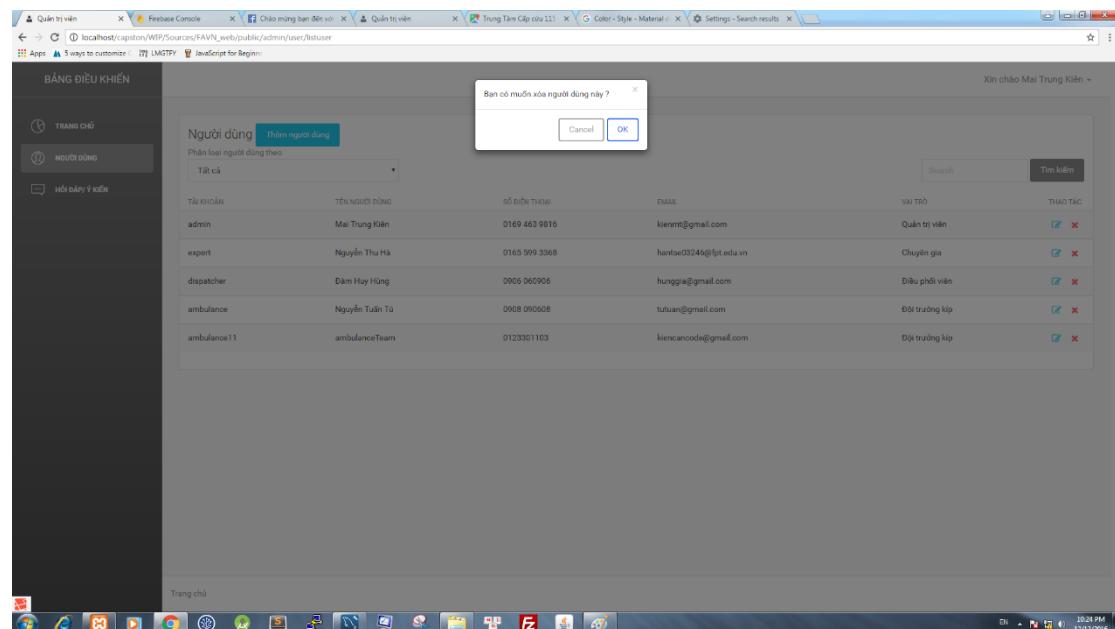


Figure 6-52: Confirm delete user dialog

Step 2: Click on button OK, users will be deleted

6.3.3.8 Question – Answers.

To use this feature, user do the step belows:

6.3.3.8.1 Answer the question

Step 1: Click on button “Question- Answers “ on the menu bar at the left of screen

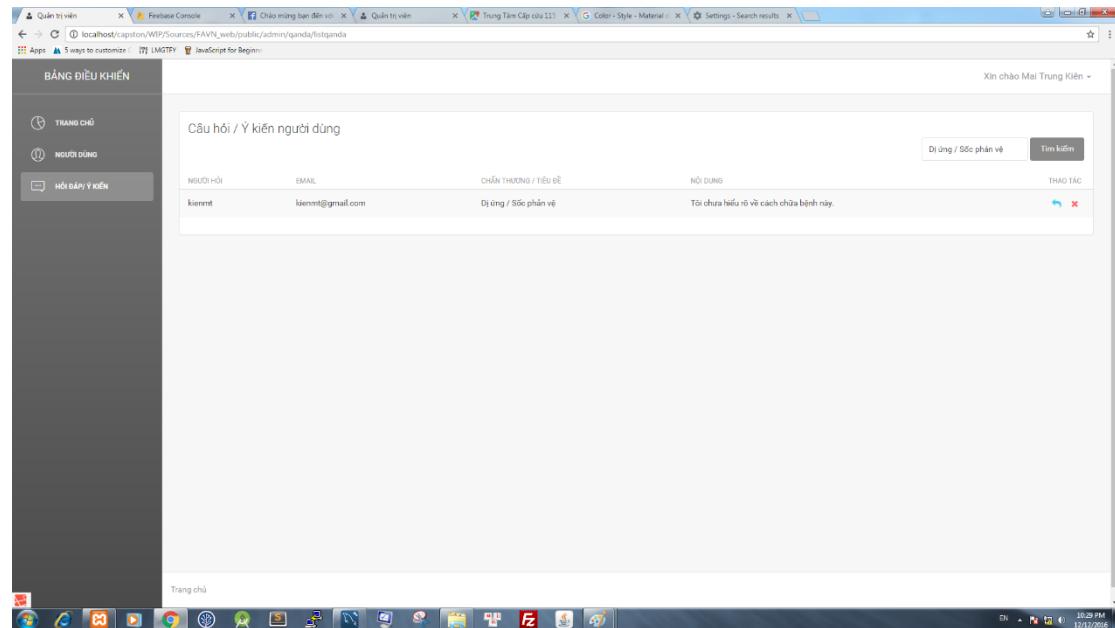


Figure 6-53: Question-Answer screen

Step 2: Page will go to the page “Question-Answers”, show the list of question

Step 3: Click on icon answers to answers the question, page will be move to answer question

Step 4: After fill all field, click on button send

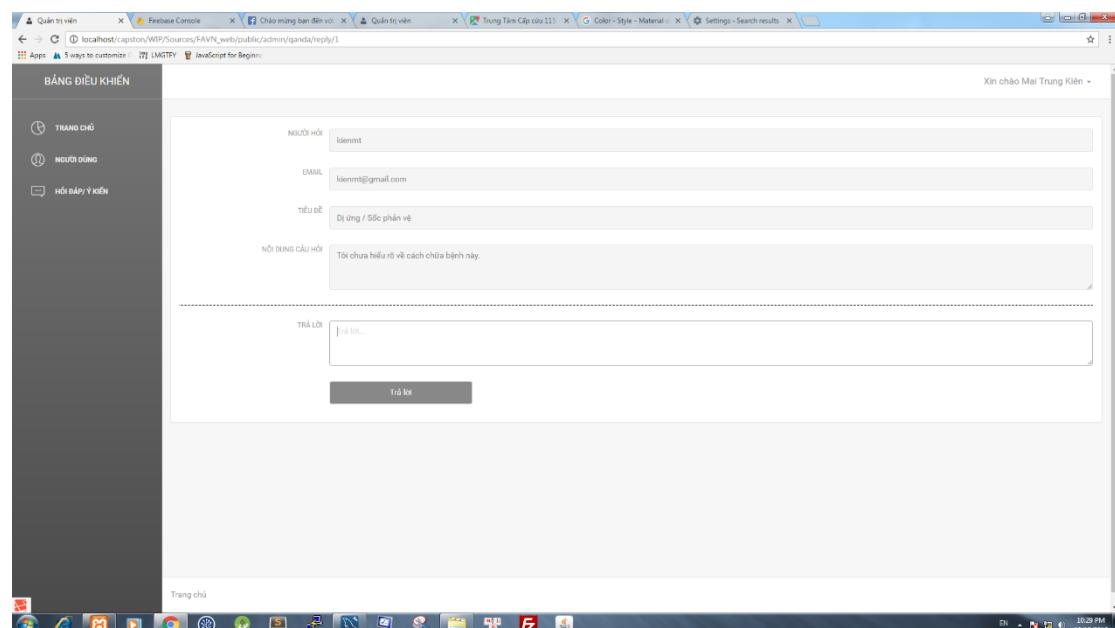


Figure 6-54: Answer screen

6.3.3.8.2 Delete the question

Step 1: Click on button “Question- Answers “ on the menu bar at the left of screen

Step 2: Page will go to the page “Question-Answers”, show the list of question

Step 3: Click on icon delete, a confirm dialog will be display

Step 4: Click on button OK, Question will be deleted

6.3.4 Dispatcher

In this web application, registered users can receive emergency cases, view the list of ambulance with their information like status, position. Moreover, registered users can dispatch ambulance to the emergency case, manage ambulance team.

6.3.4.1 Login

To use features of this web application, users follow the steps belows :

Step 1: Open browser and enter to the address bar: <http://dispatcher.rtsvietnam.com/>.

Login page is displayed

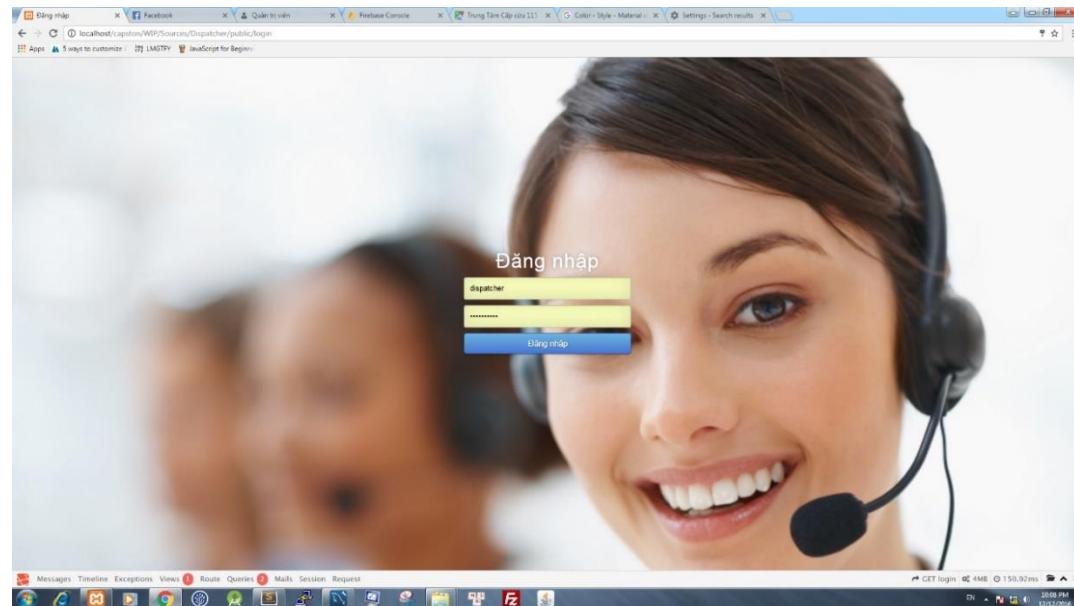


Figure 6-55: Answer screen

Step 2: Login with the dispatcher account. Users will go to the Home page. In this page, registered users can go to all of other page.

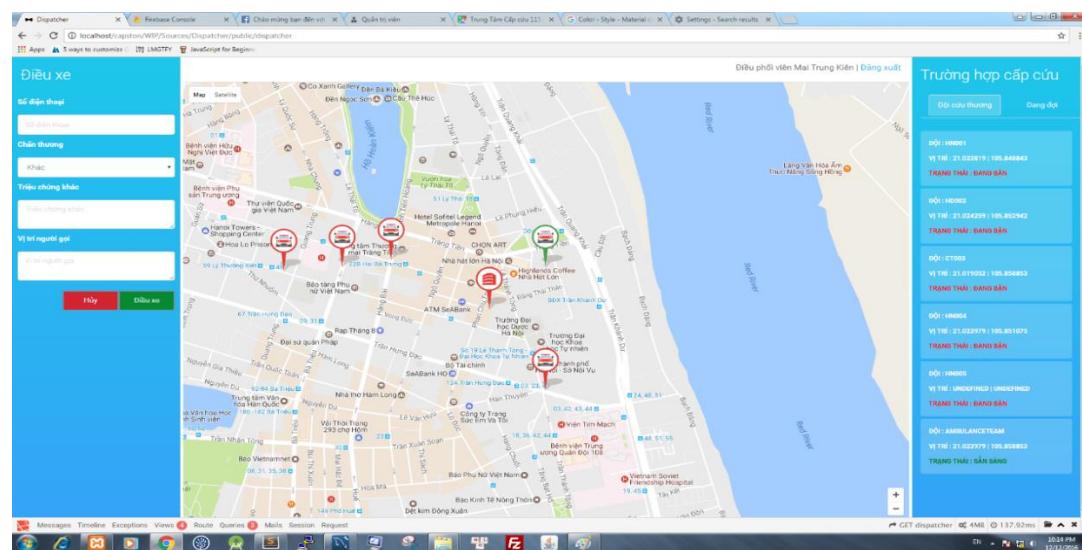


Figure 6-56: Dispatcher screen

6.3.4.2 Log out

To use this features, user do the steps below:

Step 1: Click on button “Đăng Xuất”

Step 2: Click on button “OK”

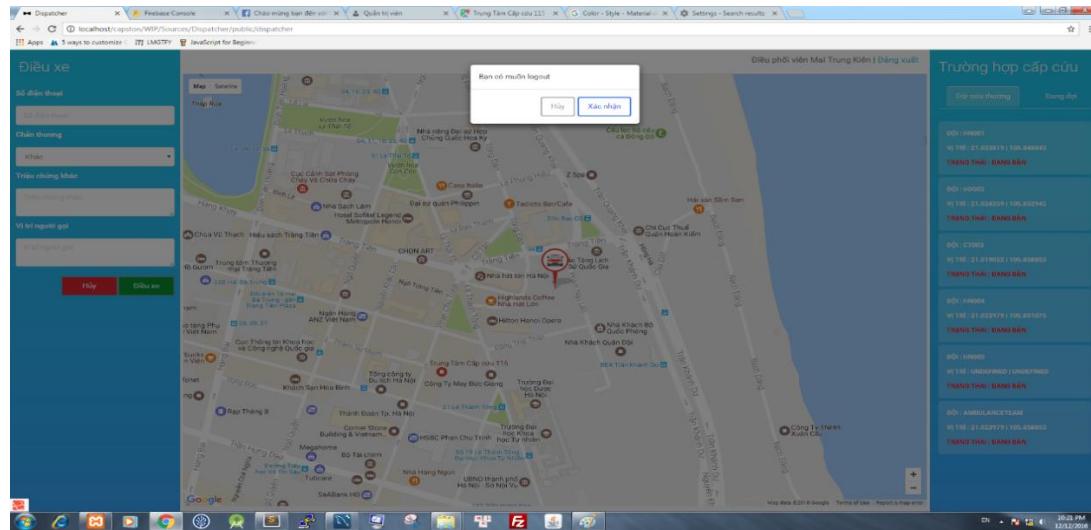


Figure 6-57: Confirm Logout Dialog

6.3.4.3 Receive emergency case

To use this features, user do the steps below:

Step 1: Login with the dispatcher account.

Step 2 : When dispatcher receive an emegency case, fill all information in the corresponding fields

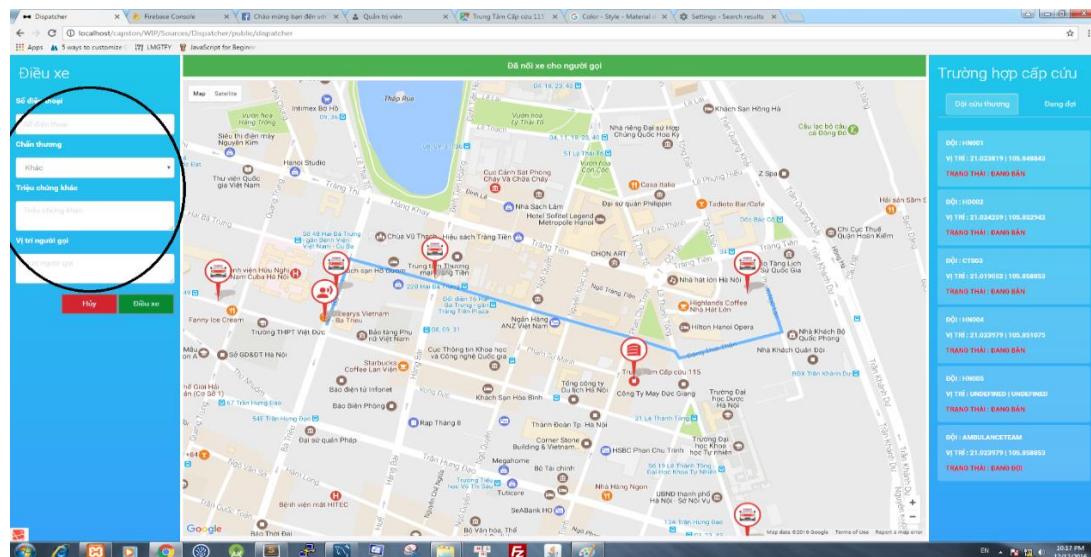


Figure 6-58: Caller form

Step 3: Click button “Điều phói”, ambulance will be dispatched, in the case of unavailable ambulance the notification "Đã hết xe" will be shown on the screen

6.3.4.4 Because of the problem, have cancel ambulance

If the dispatcher setups an ambulance, but on the way to perform the tasks, the ambulance gets problem and can not do continuously the tasks, the dispatcher use this function

Step 1: Click on the ambulance having trouble

Step 2: Information of emergency cases will be shown on the left screen

Step 3: Press the Hủy button, the confirm by click on button OK an emergency case will be canceled.

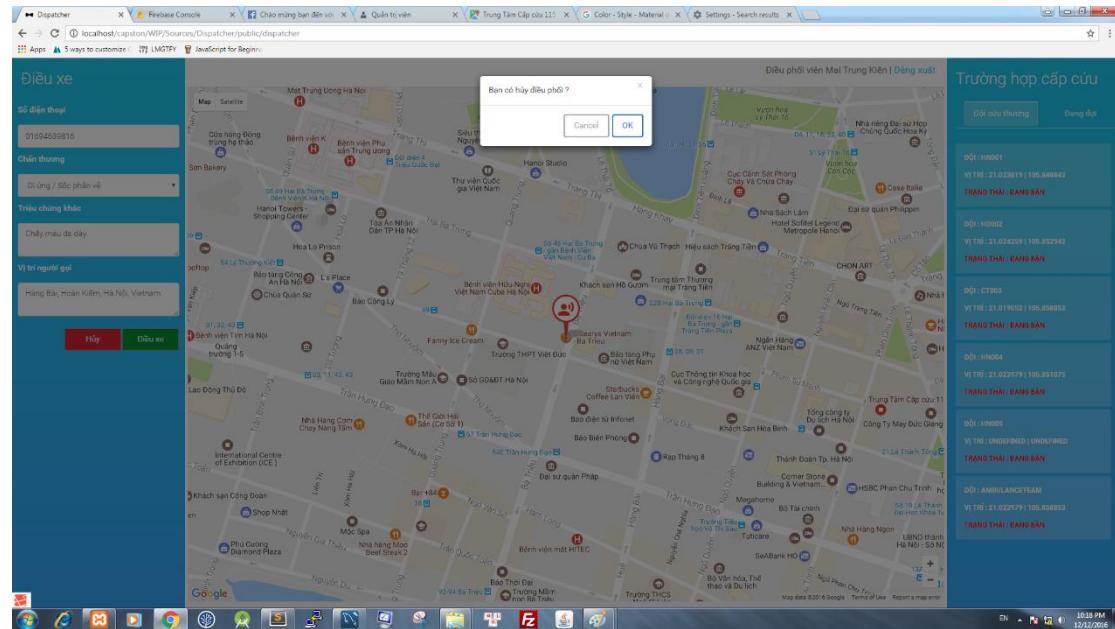


Figure 6-59: Confirm Cancel dialog

7 PROJECT RESULT REPORT

7.1 Product Judging

7.1.1 Advantage of First Aid system

The idea of First Aid project is to develop a system including First Aid Application, Ambulance Application, Dispatcher Application and Admin/Expert Application to support and guide the implementation of first aid and emergency assistance. We want to equip you with knowledge to protect yourself and others.

As the goals that we have set before started project, the First Aid system has been developed in right direction. And what it provides to users is listed below:

- **First Aid user:** Can perform instructions, easy to understand, easy to do. Call 115 and look for nearest health facility.
- **Ambulance user:** Can see victim's information, their location and direction to them.
- **Dispatcher:** Victim assistance quickly with automated systems, can manage ambulance.
- **Admin/Expert:** Admin can manage users account, projects in system. Expert can answer questions of First Aid users.

7.1.2 Current Limitations

- The system only supports look for health facility in Hanoi area.
- Application not support multi-language.
- Application only supports for Android.

7.1.3 Expectation in Future

- Support multi-language to tourists also can use our application.
- Support look for all health facility in Vietnam.
- App for Window Phone and IOS.

7.2 Project Summary

Project Title		FIRST AID	
Project Supervisor		Nguyễn Văn Sang	
Committers (5)			
1	Project Manager	Đàm Huy Hùng	hungdhse03431@fpt.edu.vn
2	Team member	Mai Trung Kiên	kienmtse02994@fpt.edu.vn
3	Team member	Nguyễn Tiến Dũng	dungntse03272@fpt.edu.vn
4	Team member	Nguyễn Duy Anh	anhnd01525@fpt.edu.vn
5	Team member	Nguyễn Phúc An	annpse03118@fpt.edu.vn
Main objective		Develop an application on smartphone to instruct how to do in emergency first aid situations: Content is simple, easy to understand and implement; Support to find hospitals nearby. Develop a supported emergency system conveniently, fastly.	
Purpose		Provide a health support system.	
Source Repository		https://github.com/sangnvus/201609JS03.git	
		Plan	Actual
Start Date		05/09/2016	05/09/2016
End Date		16/12/2016	22/12/2016
Releases version		1.0	1.0
Duration		75	75
Effort (person-day)		375	375
Test cases		1200	1260
Defects		100-150	66
Document pages		~ 1000 pages	~ 800 pages
Lines of code (PHP)		~ 8000	~ 6000
Lines of code (HTML)		~ 8000	~ 7000
Lines of code (Android)		~ 10000	~ 12000
LOC (Total)		~ 26000	~ 25000

Table 7-1: Project summary

Knowledge:

- Work process to develop a project.
- Putting the learned knowledge into practice.
- Improve skills: teamwork, leader-ship, research and self-study, plan and manage time.
- Technical: Android, PHP, laravel, firebase, SQLite, MySQL, HTML5 & CSS3.
- Tools: Android Studio, GitHub, SourceTree, Office tools, Just In Mind, Trello, XAMPP...

7.3 Lesson Learnt

- Discover the strengths and weaknesses of the members, assign the right people to achieve maximum work efficiency
- Learning many new technologies: android, PHP ...
- Understand the process of implementing a project
- Team work skills are fullest, members actively exchange and share to have a uniform results

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