



FPT UNIVERSITY

Capstone Project Document

Sales Management System for Major Education

GSP21SE12	
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Definition and Acronyms

Acronym	Definition
<i>Business Definition</i> ¹	
ME	<ul style="list-style-type: none"> - Full form: Major Education - Definition: Name of our customer. Major Education is an educational organization which provides services (courses, programs, foreign English teachers lending) to other schools in Ho Chi Minh City.
	This software is used by 4 roles of users: “Administration”, “Sales Manager”, “Sales Supervisor”, “Salesman”.
Admin	<ul style="list-style-type: none"> - Full form: Administrator - Definition: This is a person who inputs and modifies raw data of all users and schools in the system. Admin will not dip into the business process.
Sales Manager	“Sales Manager” is someone who is responsible for leading and guiding a team of sales people in an organization. They set sales goals & quotas, build a sales plan, analyze data, assign sales training and sales territories, mentor the members of his/her sales team and are involved in the hiring and firing process. ²
Sales Supervisor	“Sales Supervisor” supervises and coordinates the daily activities of sales representatives engaged in promoting and selling a product. ³
Salesman / Salesmen	This is a person whose fundamental job is to sell a product/service ⁴ . In ME’s case, Salesmen are people who approach the target schools to introduce and sells ME’s services.
Schools	<p>“School” refers to all schools from primary to high school, in Ho Chi Minh City. They are the target partners of the ME.</p> <p>A school has a “school status”, which really means the segment of customer that ME divide for easier in their business process.</p> <p>Now, ME divides schools into 4 statuses: “Chưa hợp tác”, “Đang hợp tác”, “Ngưng hợp tác” and “Tiềm năng”.</p>
Tiềm năng	<p>“Tiềm năng” is a special group in the school status. Schools which are considered as “Tiềm năng” really are “Chưa hợp tác”. There are three cases of schools can be considered as “Tiềm năng”:</p> <ul style="list-style-type: none"> • A school was approached this year but could not sign a contract because they are collaborating with other partners. • A school which has close-nit relationship with ME or with one of the ME’s Salesman. • A school with high possibility to sign a contract with ME.
Target Schools	“Target Schools” refers to a sub list of Schools. Every school year, a number of schools will be picked to be targets and the mission of Salesmen is to take

¹ This *Definition and Acronyms* table focuses mainly on the definitions of the terms we used in our project scope, which strictly related to our business rules and user requirements of Sales Department of the Major Education.

Therefore, in this document, some terms may be different than the common knowledge.

² Source: <https://www.careerexplorer.com/careers/sales-manager/>.

³ Source: <https://www.salary.com/research/job-description/benchmark/sales-supervisor-job-description>.

⁴ Source: <https://www.businessmanagementideas.com/marketing/sales-person/sales-person/21207>.

	business trips to those schools in this list, for a specific purpose, to gain a specific result.
Tasks	<p>“Tasks” refers to a list of mission that a Salesman need to do in the period of time.</p> <p>Each task aims to one target school, with a corresponding purpose (will be list below) based on the current school’s status.</p> <p>A task has start date, end date (also is called “duration”), salesman who takes responsibility for and a task status.</p> <p>There are 3 task statuses: “Ongoing”, “Successful”, “Failed”.</p>
Purposes	<p>“Purposes” is reason why a salesman need to take the task.</p> <p>There are 5 purposes: “Sales mới”, “Theo dõi”, “Chăm sóc”, “Tái ký hợp đồng”, “Ký mới hợp đồng”</p>
PIC	<ul style="list-style-type: none"> - Full form: Person in charge - Definition: <p>“PIC” refers to a person (in ME’s case, it is Salesman) who takes responsibility for a task.</p>
Timeline	<p>“Timeline” refers to a list of events in chronological order.</p> <p>There are two types of timeline in this project, one is for school, one is for task.</p> <ul style="list-style-type: none"> • School’s timeline: Contains list of tasks belongs to this school, ordered by school year. • Task’s timeline: Displays the sales process of the Salesman, starts from the task’s start date (usually the date on which a task is assigned) and ends with a services or when this task is marked as completed. <p>During the period of start date and end date, there is a list of daily reports related to this task.</p>
Reports	<p>“Reports” refers to daily reports of Salesmen. Every day they go for a business trip to the target schools, they need to submit a report to record the result of the meeting that day.</p> <p>For easier to Salesmen/Sales Supervisor/Sales Manager to tracking the progress of the task, all reports of a task are displayed in task’s timeline (as mentioned above).</p>
Services	<p>“Services” here refers to list of products/services that ME has already signed successfully with the customer (target school in the task).</p> <p>Recently, ME are providing four services to customers:</p> <p>SEL (Social and Emotional Learning – soft skills program), ESL (English program with foreign English teachers), Math & Science and STEAM.</p> <p>A service includes the service type, price floor, collaboration duration, number of classes applying this services, average number of students per class,...</p> <p>It is like a small note copy the main content of the signed contract.</p> <p>The Sales Manager based on the services as well as data analyze from the service to decide whether approve or reject that service. The approval or rejection is only meaning to evaluate KPI and performance of Salesmen, it does not mean that the contract will be canceled if Manager reject this.</p>
Evaluation Criteria	<p>“Evaluation Criteria” refers to a table of standard values to measure whether a service meets the required values or not.</p> <p>The reason of this evaluation is to help the Sales Manager make decisions about a service should be approved or not.</p>

	<p>This table includes five criteria:</p> <ul style="list-style-type: none"> • Price floor of the service. This price floor is different depends on service types and school levels. • Number of periods which that service is taught. • Number of classes in school applying the service. • Average number of students in the applied classes. • Validation period (duration) of the service. It is the amount of time (by months) that a service is taken effective.
KPI	<ul style="list-style-type: none"> - Full form: Key Performance Indicator - Definition: “KPIs” are the critical (key) indicators of progress toward an intended result⁵. A KPI is a result measured for a specific person based on a certain formula.
Criteria	<p>“Criteria” is an objective or a thing that is used for measurement something (in this case, “criteria” is used to measure KPI). Each criteria often goes with a “target value” (a desired value the KPI need to meet) and a “weight” (how important is that criteria? It is calculated by the percentage it accounts for in range of 0-100%).</p>
KPI Group	<p>“KPI Group” is a set of criteria (including “target value” and “weight”) to be able to apply to measure the KPI of a group of people. In case of ME, they used to measure KPI of Salesmen.</p>
Work Plan	<p>“Work Plans” refers to a personal schedule that each person in the Sales Department makes a plan for themselves. In a work plan, each item is “Personal activity”.</p>

Table 1. Definition and Acronyms

⁵ Source: <https://kpi.org/KPI-Basics>.

I. Project Introduction

1. Overview

1.1 Project Information

- Project name: Sales Management System for Major Education
- Project code: SMSME
- Group name: GSP21SE12
- Software type: Web Application

1.2 Project Team

a. Supervisor

Full Name	Email	Phone Number	Title
Lai Duc Hung	HungLD5@fe.edu.vn	0976.710.580	Instructor

Table 2. Project Team - Supervisor

b. Team Members

Full Name	Email	Mobile	Role
Pham Thi Ngoc Ha	HaPTNSE130460@fpt.edu.vn	0946.753.053	Leader
Le Gia Nguyen	NguyenLGSE63042@fpt.edu.vn	0984.272.299	Member
Nguyen Hoang Gia	GiaNHSE63203@fpt.edu.vn	0799.651.670	Member
Vu Thien Phu (dropped)	PhuVTSE63268@fpt.edu.vn	0946.056.921	Member

Table 3. Project Team - Team Members

2. Product Background

Major Education is an educational organization that collaborates with primary schools, secondary schools or high schools in Ho Chi Minh City, in the fields of English, STEM or Abacus Master. All schools in Ho Chi Minh City are considered as Major Education's customers/partners. Every school year (from May to September), salesmen from Major Education go to the target schools to introduce and sell their programs.

Currently, the Sales Department of Major Education processes all their works manually, from reports collecting, work-plan planning, salesmen managing and tasks managing, based on free software such as Microsoft Excel, Google Sheet and shared files via Google Drive cloud.

Therefore, they expect a software that can help them, for both salesmen and sales managers, to automate the existing manual workflow. Simultaneously, through this application, sales managers will be able to see the overall picture of the company's business process, to know how many schools are cooperating as well as the school's state.

3. Existing Systems

Nowadays, there are a variety of applications that provide CRM (Customer Relationship Management) solutions for businesses. Major Education suggests our team refer to those softwares to visualize the concept and main features of the future product.

3.1 CRMViet

CRMViet is a system that provides comprehensive solutions related to CRM for small and medium-sized enterprises (SME) in Vietnam.

Link:

- Web application: <https://crmviet.vn/>.
- Mobile application:
 - Android: <https://play.google.com/store/apps/details?id=vn.altalab.app.crmvietpack>.
 - iOS: <https://apps.apple.com/us/app/crmviet/id1197961185>.

System analysis:

- a) Roles:
 - Administrator
 - Manager
 - Staff
 - ... (customized roles depends on each company)
- b) Platforms:
 - Web app
 - Mobile app
- c) Main features:
 - Manage customers
 - Support sales and marketing automation
 - Manage workflow, tasks, job reminders,...
 - Integrated multi-channel
 - ...
- d) Pros:
 - A complete and powerful application
 - Fulfill all needs of the Major's Sales Department
- e) Cons:
 - Many redundant features
 - Price is expensive

3.2 GetFly

GetFly is a system that provides comprehensive solutions related to CRM for small and medium-sized enterprises (SME) in Vietnam.

Link:

- Web application: <https://getfly.vn/>.
- Mobile application:
 - Android: <https://play.google.com/store/apps/details?id=com.getflyvn.crm>.
 - iOS: <https://apps.apple.com/us/app/getflyvn/id1490060413>.

System analysis:

- a) Roles:
 - Administrator
 - Manager
 - Staff
 - ... (customized roles depends on each company)
- b) Platforms:
 - Web app

- Mobile app

c) Main features:

- Manage customers
- Support marketing automation (via SMS, email, or social network)
- Manage departments, sales team,...
- Manage workflow, tasks, KPIs,...
- Integrate modules extension
- ...

d) Pros:

- A complete and powerful application
- User-friendly UI
- Fulfill all needs of the Major's Sales Department

e) Cons:

- Overpowered, many redundant features
- Require monthly payment

3.3 EasyEdu

EasyEdu is a system to manage all activities of many departments in an educational organization, especially for language centers. EasyEdu provides solutions for managing finances, expenses, marketing, human resources, class attendance reports, CRM,...

Link:

- Web application: <https://easyedu.vn/>.
- Mobile application:
 - Android:
Teacher: <https://play.google.com/store/apps/details?id=com.easyedu.manager&hl=vi>.
Parent/Student:
<https://play.google.com/store/apps/details?id=com.easyedu.customer&hl=vi> .
 - iOS:
Teacher: <https://apps.apple.com/vn/app/easy-manager/id1495280190?l=vi>.
Parent/Student: <https://apps.apple.com/vn/app/easy-edu/id1472824752?l=vi>.

System analysis:

a) Roles:

- Administrator
- Staff
- Teacher
- Parent/Student

b) Platforms:

- Web app (for all roles)
- Mobile app (one for Teacher and one for Parent/Student)

c) Main features:

- Manage finances, expenses, marketing campaigns, SMS/chats...
- Manage human resources, departments, agencies,...
- Manage customer relationship
- Manage courses, classes, attendances,...
- Manage tasks, schedules,...
- Provide an online learning platform

d) Pros:

- A complete and powerful application
- Good UI

e) Cons:

- Overpowered and too complicated for what the customer (Sales Department of Major Education) really need
- Is a B2C system (one side is the language center, one side is parent/student)
- Require payment (monthly or annually)

4. Business Opportunity

Although the current CRM applications in the market can partially meet the requirements of the business, Major Education still has to pay for many redundant features, which they rarely or would not use. That is why Major Education requests this Sales Management System to specify for their business model. The model of software that we are building is only used for staffs in the Sales Department of Major Education and is not public commercially to the current market. As this Sales Management Software would innovate and improve the effectiveness of Major Education's manual workflow, so it would save employees' time and effort to complete their daily tasks as usual.

However, in fact, due to the time and developer team's experience limitation, we could not cover for the whole Major Education's sales process yet some features would be upgraded in the next versions of this software.

5. Software Product Vision

The target users that SMSME aims to are salesmen and sales managers of the Sales Department of Major Education.

For salesmen, this software would help them manage their work-plan as well as their tasks easier and more visually, submit daily reports more directly and they can also monitor other salesmen's works.

For sales managers, they would not have to collect and analyse all salesmen's reports manually. Now they can supervise salesmen or search for reports more easily. Moreover, they can see the overall picture of the company's business process, including what schools are lead customers, who are the most effective salesmen.

6. Project Scope & Limitations

6.1 Major Features

There are four roles in this system, which includes the following major features:

- FE-01: Administrator can manage user accounts (view, create, edit, remove).
- FE-02: Administrator can manage all schools (view, create, edit, remove).
- FE-03: Sales Manager and Sales Supervisor can manage all tasks (view, create, edit, remove, assign).
- FE-04: Salesman can view his/her own assigned tasks.
- FE-05: Salesman can manage own daily reports (create, edit, remove) and view all reports.
- FE-06: Sales Manager and Sales Supervisor can comment on other's reports.
- FE-07: Salesman can submit services of his/her assigned schools.
- FE-08: Sales Manager can approve or reject submitted services.
- FE-09: Sales Manager can evaluate Salesmen and manage Salesman's KPI (create, disable).
- FE-10: Sales Manager, Sales Supervisor and Salesman can manage own work-plan (create, edit, remove personal activities) and view work-plan of each other.

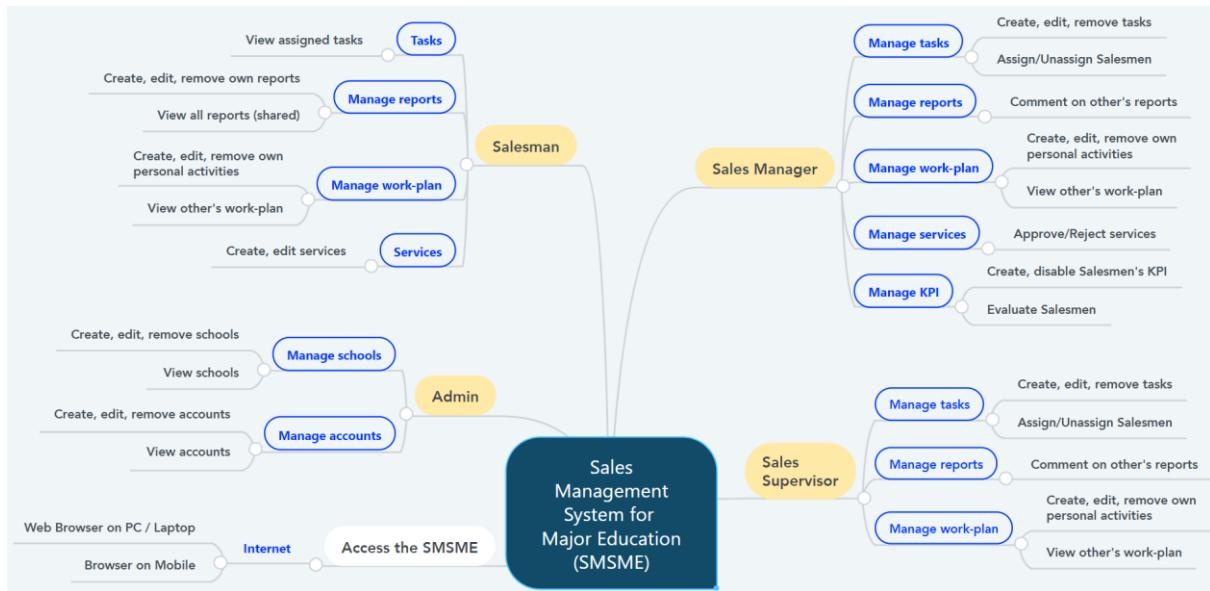


Figure 1. Major Features

6.2 Limitations & Exclusions

- LI-1: The SMSME has not supported versions for Mobile application yet. SMSME now is a responsive Web application.
- LI-2: The SMSME does not support communication channel with customers.
- LI-3: The SMSME has not supported feature “Manage Salesmen” or “Manage team” yet.
- LI-4: The SMSME shall be used only for the Sales Department of the Major Education.

II. Project Management Plan

1. Overview

1.1 WBS & Estimation

#	WBS Item	Complexity	Est. Effort (man-days)
1	<i>Initiating</i>		14
1.1	Meet customers at Viet Anh School (Major Education)	Simple	1
1.2	Gain requirements	Medium	3
1.3	Write “Current System Description”	Medium	4
1.4	Confirm “Current System Description” with customers	Simple	1
1.5	Write Report 1 (Introduction)	Medium	4
1.6	Collect stakeholders’ contact information	Simple	1
2	<i>Planning</i>		17
2.1	Discuss project scope with development team	Simple	3
2.2	Estimate time to finish the project	Simple	1
2.3	Discuss project’s limitations and risks	Simple	2
2.4	Discuss model to use for project management	Simple	2
2.5	Create project plan & work breakdown structure (WBS)	Simple	3
2.6	Assign roles in this project for each team member	Medium	1
2.7	Write Report 2 (Project Management)	Medium	5
3	<i>Executing</i>		294
3.1	Analysis		41
3.1.1	Analyze users’ requirements: • Identify stakeholders • Identify user roles in this system • Identify needs and activities of each role	Complex	9
3.1.2	Analyze materials that Major provided • Analyze Major current working process (7 steps) • Analyze Excel files (including sample data of tasks, assignment, daily reports,...)	Medium	4
3.1.3	Research business definitions	Simple	2
3.1.4	Use free trial of CRM applications (CRMViet, EasyEdu,...)	Simple	3
3.1.5	Create Use case Diagram	Complex	8
3.1.6	Write Report 3 (Software Requirement Specification – SRS)	Complex	15

3.2	Designing		34
3.2.1	Create Entity Relationship Diagram (ERD)	Medium	6
3.2.2	Create Database Diagram	Simple	3
3.2.3	Create Class Diagram	Medium	4
3.2.4	Create Architecture Diagram	Medium	3
3.2.5	Standardize provided Excel files	Simple	3
3.2.6	Write Report 4 (Software Design Document – SDD)	Complex	15
3.3	Prototyping		27
3.3.1	Draw draft major screens on paper	Simple	6
3.3.2	Create prototype for role Admin	Simple	3
3.3.3	Create prototype for role Salesman	Medium	9
3.3.4	Create prototype for role Sales Supervisor	Medium	6
3.3.5	Create prototype for role Sales Manager	Medium	3
3.4	Implementing		153
3.4.1	Install coding environment (Eclipse, Visual Studio Code)	Simple	2
3.4.2	Identify coding conventions (Front-end & Back-end)	Medium	2
3.4.3	Implement “Admin” module – Iteration 1		
3.4.3.1	Update SRS and SDD (Iteration 1)	Medium	9
3.4.3.2	Create test plan and test cases (Iteration 1)	Medium	6
3.4.3.3	Code and perform unit test (Iteration 1)	Complex	9
3.4.3.4	Deploy package 1	Simple	3
3.4.4	Implement “Salesman” module – Iteration 2		
3.4.4.1	Update SRS and SDD (Iteration 2)	Medium	12
3.4.4.2	Create test plan and test cases (Iteration 2)	Medium	6
3.4.4.3	Code and perform unit test (Iteration 2)	Complex	15
3.4.4.4	Execute integration test and system test (Iteration 2)	Medium	6
3.4.4.5	Deploy package 2	Simple	1
3.4.5	Implement “Sales Supervisor” module – Iteration 3		
3.4.5.1	Update SRS and SDD (Iteration 3)	Medium	12
3.4.5.2	Create test plan and test cases (Iteration 3)	Medium	6

3.4.5.3	Code and perform unit test (Iteration 3)	Complex	15
3.4.5.4	Execute integration test and system test (Iteration 3)	Medium	9
3.4.5.5	Deploy package 3	Simple	1
3.4.6	Implement “Sales Manager” module – Iteration 4		
3.4.6.1	Update SRS and SDD (Iteration 4)	Medium	12
3.4.6.2	Create test plan and test cases (Iteration 4)	Medium	6
3.4.6.3	Code and perform unit test (Iteration 4)	Complex	9
3.4.6.4	Execute integration test and system test (Iteration 4)	Medium	9
3.4.6.5	Deploy package 4 (product version Alpha)	Simple	3
3.5	Testing		30
3.5.1	Fix bugs and retest	Medium	12
3.5.2	Get feedback from customers after acceptance test	Medium	8
3.5.3	Deploy full package (product version Beta)	Simple	4
3.5.4	Write Report 5 (Testing)	Medium	6
3.6	Support		9
3.6.1	Write Report 6 (User Guides)	Medium	6
3.6.2	Train customers (end-users) how to use this application	Simple	3
4	Monitoring and Controlling		9
4.1	Evaluate project’s code quality	Complex	Cannot estimate due to SCRUM model
4.2	Refractor/Optimize code (optional)	Complex	
4.3	Tracking project’s progress, scope and risks	Medium	
4.4	Write Report 7 (Final Project Report)	Complex	9
5	Closing		18
5.1	Create final presentation	Simple	6
5.2	Practice Thesis presentation	Medium	9
5.3	Present at Capstone Project Defense	Complex	3
Total Estimated Effort (man-days)			352

Table 4. Work Breakdown Structure & Estimation

1.2 Project Objectives

To create utility, practical and friendly sales management application for Sales Department of Major Education.

#	Quality Stage	No. of Defects	% of Defect	Notes
1	Initiating	2	8.7%	<ul style="list-style-type: none"> Gain sufficient and useful information for requirement analysis in the next stage. All team members must understand clearly customer's situation and demands.
2	Planning	1	4.3%	Project plan must be attainable, time-bound and specific.
3	Analysis	4	17.4%	Confirm SRS (functional requirements, non-functional requirements, business rules) with the customers before moving to "Implementing" stage.
4	Designing	4	17.4%	<ul style="list-style-type: none"> Design Use Cases Diagram, ERD and Database based on result of stage 3 (Analysis). Review carefully with the Instructor before moving to the next stages.
5	Prototyping	3	13.2%	Design and confirm with customers all screens of all roles before move to "Implementing" stage.
6	Implementing	4	17.4%	<ul style="list-style-type: none"> Strictly follow the general coding convention. All team members need to update code regularly.
7	Testing	2	8.7%	<ul style="list-style-type: none"> Each developer applies unit test before merge code with each other. Both Front-end code and Back-end code need to be tested carefully before deploying to the Server. Have Acceptance test (β-test) in the customer-side, in real business environment.
8	Support	1	4.3%	Project team needs to provide User Guide documents, and also spend time in real business environment to support to the customers at the beginning of the deployment.
9	Monitoring & Controlling	1	4.3%	<ul style="list-style-type: none"> Not only Team Leader needs to track the progress of other team members.

				<ul style="list-style-type: none"> Using version control to keep track of the changes in stages “Designing”, “Prototyping” and “Implementing”. Applying SCRUM model.
10	Closing	1	4.3%	All team members need to join slide designing and prepare thoroughly for the final presentation.
Total		23	100%	

Table 5. Project Objectives

1.3 Project Risks

#	Risk Description	Impact	Possibility	Response Plans
I	Requirement risks			
1	Development team misunderstands or uncards customer requirements	High	High	Meet customers regularly to confirm our thoughts or do not hesitate to ask customers via Zalo group chat.
2	Customers do not clear about their requirements	High	Medium	Create prototypes or suggest our solutions to customers and confirm with them what features they want to use.
3	Unexpected scope change	Medium	Low	If new feature is justifiable and time remaining is enough, development team will implement that feature. If not, team need to deal with customers to implement that feature in the next version.
II	Techical risks			
4	Lack of technical knowledge or poor coding skills	High	Medium	<ul style="list-style-type: none"> Enhance self-research. Exchange knowledge with other team members or other teams.
5	Poor code quality	Medium	Medium	Strictly follow code convention, carry out acceptance test to ensure quality source code.
III	Human risks			
6	Restricted in direct meeting and communication due to Covid-19	High	High	<ul style="list-style-type: none"> Team can use online meeting platforms (Google Meet, Zoom,...) or send resources via email. Team can deploy live demo on Ngrok for customers using.
7	Conflicts between team members	High	High	Team need a meeting, all members share uncomfortable things.
8	Over deadline	High	High	<ul style="list-style-type: none"> Each member has to report their working progress daily.

				<ul style="list-style-type: none"> • Team members need to support each other to finish tasks in time.
9	Lack of real experiences	Low	High	Ask instructor or customer Exchange knowledge with other team members or other teams.

Table 6. Project Risks

2. Management Approach

The project management model our team chose to manage and implement in this project is Agile methodology, for more specific, is SCRUM framework.

2.1 Project Process

We chose Scrum framework because of the following reasons:

- As we are making real product for a real company, we need to satisfy the customers first by early deliverables.
- Scrum requires regular meeting and communication, so development team will closely follow user's requirements, reduce deviation.
- Scrum welcome changes, even during the developing process.
- Scrum allows us to divide work into small sprints, which will deliver module package each sprint, so we can easily manage bugs, fix bugs faster and reduce risks.

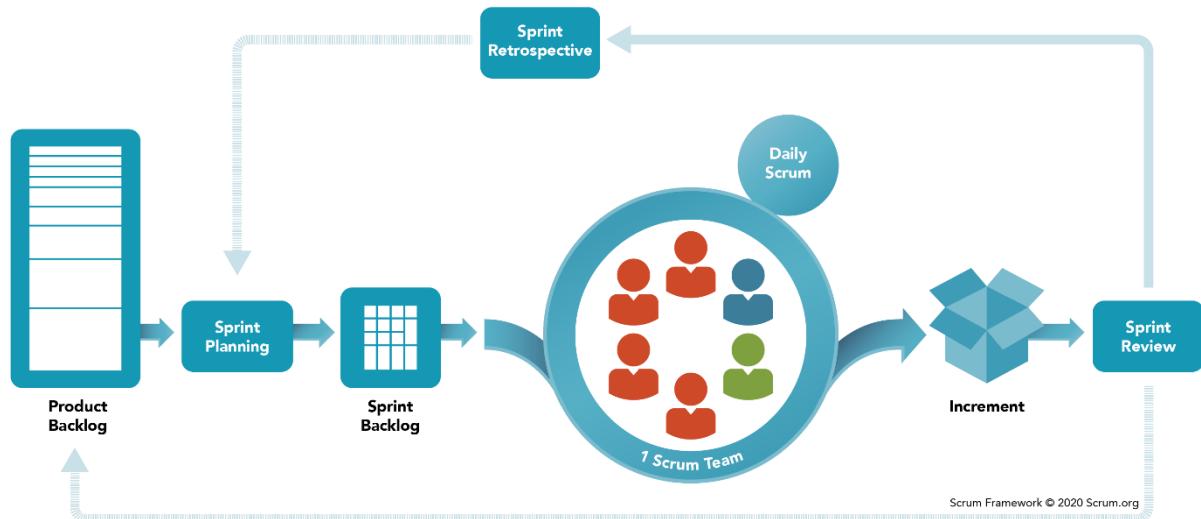


Figure 2. SCRUM Framework

Reference: <https://www.scrum.org/resources/what-is-scrum>

Product backlog and Sprint backlog can be seen at <http://bit.ly/salesmgt-backlog>.

2.2 Quality Management

To enhance the quality, the team have to:

- Follow all code conventions and ensure clean code.
- Refer to and study similar working applications in the market.
- Ensure all team members clearly understand user requirements and prototype.

2.3 Training Plan

Training Area	Participants	When, Duration	Waiver Criteria

Java Spring Boot	All team members	Week 3 rd	Mandatory
HTML, CSS, Javascript (ES6)	All team members	Week 1 st	Mandatory
SCSS	All team members	Week 1 st	Optional
ReactJS	All team members	Week 3 rd	Mandatory
UML 2.0 conventions	All team members	Week 2 nd	Mandatory
Git, GitHub	All team members	Week 1 st	Mandatory

Table 7. Training Plan

3. Master Schedule

#	Deliverable	Due Date	Deliverable Scope
1	Project Introduction (Report 1)	Week 2	
2	Project Plan (Report 2)	Week 2	Work Breakdown Structure (WBS)
3	SRS (Report 3)	Week 4	Use case Diagram and Specification, non-functional requirements, screen flow and description
4	Design (Report 4)	Week 6	Architecture Diagram, Detailed Design, ERD, Database Diagram, Prototypes
5	Code Package 1: module “Admin” (Front-end)	Week 8	Codes & Unit test cases
6	Code Package 2: module “Salesman” (Front-end)	Week 10	Codes & Unit test, System test cases
7	Code Package 3: module “Sales Supervisor” (Front-end)	Week 12	Codes & Unit test, System test test cases
8	Code Package 4: module “Sales Manager” (Front-end)	Week 12	Codes & Unit test, System test test cases
9	Code Package 1 (Back-end)	Week 8	Codes & Unit test cases
10	Code Package 2 (Back-end)	Week 10	Codes & Unit test, System test test cases

11	UAT Package	Week 14	Code, System test reports
12	Final Package	Week 15	Final codes & documents, User guides

Table 8. Master Schedule

4. Project Organization

4.1 Team & Structures

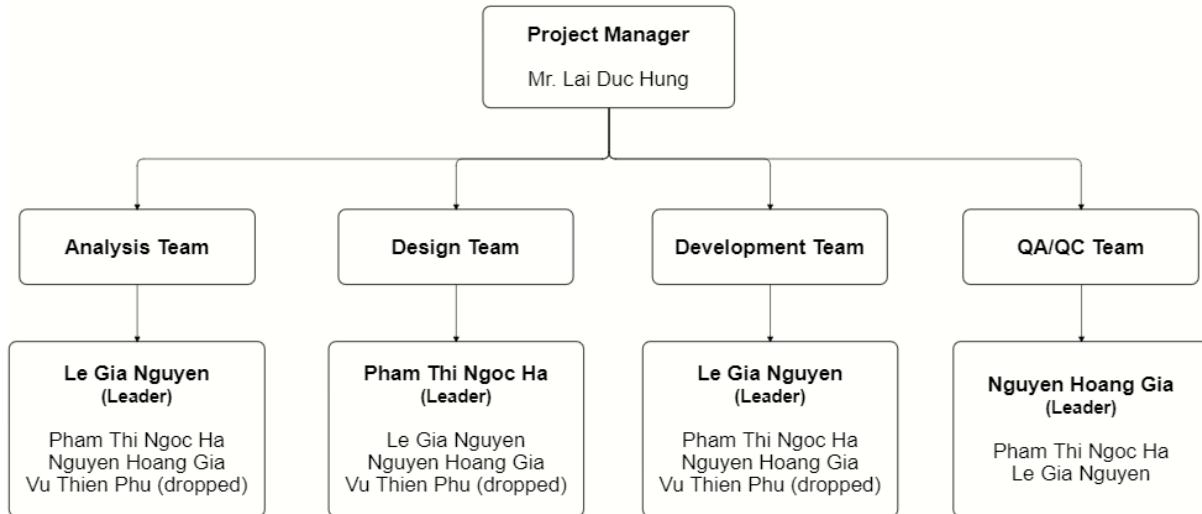


Figure 3. Team & Structures

4.2 Roles & Responsibilities

Role	Responsibility
Project Manager	<ul style="list-style-type: none"> - Be a bridge between Major Education and FPTU development team in the initial stage of the project. - Give guidance, review deliverables during project time.
Analysis Leader	<ul style="list-style-type: none"> - Communicate with the customers to get requirements. - Analyse customer's requirements and business then explain to team members. - Generate use cases and diagrams in Software Design Description (SDD). - Review and adjust project's documents made by analysis members.
Analysis Member	<ul style="list-style-type: none"> - Communicate with customers to get requirements. - Analyze customer's requirements and business. - Draw software diagrams (use cases diagram, ERD,...) and write documents (SRS, SDD).
Design Leader	<ul style="list-style-type: none"> - Design prototypes for website layouts. - Assign tasks for team members.
Design Member	<ul style="list-style-type: none"> - Design prototypes for tasks assigned by the Design Leader. - Review draft prototypes of Design Leader. - Review prototypes of each other.

Technical Leader	<ul style="list-style-type: none"> - Study and decide architecture and technologies using in the project. - Assign tasks for development team members. - Track the work progress of the project. - Review member's code and fix errors.
Developer	<ul style="list-style-type: none"> - Implement code for tasks assigned by the Technical Leader. - Implement unit test.
Test Leader	<ul style="list-style-type: none"> - Write test cases and test plan for the project. - Assign tasks for team members. - Review test results of team members and make test strategy. - Implement the system test. - Collect and Analyze customer's comments at phase UAT.
Test Member	Write test cases and test modules as tasks assigned by the Test Leader.

Table 9. Roles & Responsibilities

5. Project Communication

5.1 Communication Plan

Communication Item	Who/ Target	Purpose	When, Frequency	Type, Tool, Method(s)
First meeting	Project supervisor, Project team, Major team (customers)	Introduce the project	Once	Meeting
Weekly meeting	Project supervisor, Project team	Review project status	Weekly	Meeting
Meeting minute reports	Project supervisor, Project team	Inform supervisor and team members about weekly meeting contents	Weekly	Document file Submit via email

Table 10. Communication Plan

5.2 External Interface

a. FU Contacts

Function	Contact Person (name, position)	Contact address (email, telephone)	Responsibility
Supervisor	Lai Duc Hung Instructor	HungLD5@fe.edu.vn 0976.710.580	<ul style="list-style-type: none"> - Provide document templates. - Give instruction to project team. - Review deliverables. - Supervise project status.

Table 11. FU Contacts

b. Customer Contacts

Function	Contact Person (name, position)	Contact address (email, telephone)	Responsibility
Customer Representor	Pham Duy Tien Sales Supervisor	duytien@truongvietanh.com 0963.281.235	- Give and describe requirements. - Review deliverables of the development team.
Coordinator	Tran Thi Xuan Tuyen Account Manager	xuantuyen@truongvietanh.com 0938.137.949	Introduce project and related person in charge of this project
Supporter	Le Quy Mai Huyen Vice president	huyen@truongvietanh.com 0984.388.988	Support to connect between Major team and development team.

Table 12. Customer Contacts

6. Configuration Management

6.1 Tools & Infrastructures

Programming languages	Java (Java EE 11), Javascript (ES6)
Framework	Spring Boot, MaterialUI
Library	ReactJS, Syncfusion
API	RESTful API, Postman, Swagger
DBMS	MySQL
IDEs/Editors	Eclipse, Visual Studio Code
UML tools	StarUML, LucidChart, draw.io, Cacoo
Version Control	git (GitHub)
Deployment server	Amazon Web Services (EC2, RDS)
Cloud Services	Firebase Storage (store images) Firebase Realtime Database (store notifications)
Project management tool	Google Sheet (Google Drive)

Table 13. Tools & Infrastructures

6.2 Document Management

We create a shared GitHub account only used only for this project, all team members can access to this account.

In this account, we create a repository for storing all materials related to documents, including 7 reports, requirements analysis, Major's files, UML diagrams of SDD and weekly meeting minutes.

Link: <https://github.com/salesmgt/documentation>.

6.3 Source Code Management

In the shared GitHub account mentioned in part 6.2, we create one repository for prototype, one for front-end codes and one for back-end codes.

Because this project is built for the real company so we shall not share the repositories of front-end and back-end source codes in this document.

Link: <https://github.com/salesmgt/prototype>.

III. Software Requirement Specification

1. Overall Description

1.1 Product Overview

The Sales Management System for Major Education is a new software system that replaces the current manual working processes of the Sales Department of Major Education.

The working processes includes managing tasks and their related materials (daily reports, services), collecting daily reports, and planning work-plan.

The system context diagram below demonstrates the human components (actors) that interacted with SMSME for release 1.0.

The SMSME is expected to automate the existing manual workflow of Major Education and increase the working productivity of Major's staffs by giving motivation between them.



Figure 4. System Context Diagram

1.2 Business Rules

ID	Rule Definition
BR-01	This system is only used for Sales Department of the Major Education. Public users shall not use this system.
BR-02	Users shall not register an account. Only Administrators (Admin) can create new accounts for users.
BR-03	Users shall reset their forgotten password. When users send request to reset their forgotten password, the system automatically generates a verification code and sends that code to user's email.
BR-04	Admin shall create new accounts for users but not including the password. Password is automatically generated by the system and sent to user's email.
BR-05	Users (all roles) can view and edit their profile, including email, phone number, address, avatar and password. Users shall not edit username, full name, birthday, gender and working status ("active"/"inactive") (also shall not view "working status").

BR-06	When an employee quits his/her job or moves to another department, Admin shall changes his/her “working status” from “active” to “inactive”.
BR-07	Users whose “working status” is “inactive” shall not log into the system.
BR-08	Admin shall edit user’s phone number, gender, birthday, roles, and working status. Admin shall not edit username and email of the existed accounts.
BR-09	Admin manage the raw data of all accounts and schools in the system. Admin shall not create or edit fields related to business process of the sales.
BR-10	Only Admin shall create new schools. Sales Managers and Sales Supervisors can view list of all schools and their details but shall not create.
BR-11	Sales Managers and Sales Supervisors shall create lists of tasks. The initial list of tasks has not had PIC and start date yet. The initial list of tasks is required to have purpose. After the creation, task has not started yet. Task only starts after being assign. So assigned date plays a role as start date.
BR-12	Sales Managers and Sales Supervisors can modify (create, remove, edit or assign) lists of tasks.
BR-13	Sales Managers and Sales Supervisors shall not modify (create, remove, edit or assign) lists of tasks in the past.
BR-14	Sales Managers and Sales Supervisors shall assign or unassigned Salesmen to tasks. The assigned person is called “PIC” (person in charge).
BR-15	Each task shall be assigned to only one PIC at a time. A task can be assigned many times to different PIC.
BR-16	An assigned task can be unassigned.
BR-17	If Sales Managers want to change the PIC of a task, they need to unassign the current PIC first before assigning a new PIC.
BR-18	Sales Managers and Sales Supervisors shall not remove tasks which have been assigning or having reports or being in the service’s duration.
BR-19	Only Sales Managers and Sales Supervisors can view list of all tasks. Salesmen can only view list of their own assigned tasks.
BR-20	Business trips to each target school have different purposes, depends on the school status. Below is list of purposes for each school status: <ul style="list-style-type: none"> • School status “Chưa hợp tác” and “Tiềm năng”: “Sales mới”. • School status “Đang hợp tác”: “Chăm sóc”, “Tái ký hợp đồng”, “Ký mới hợp đồng”. • School status “Ngưng hợp tác”: does not have any purpose.
BR-21	Salesmen shall visit target schools of their assigned tasks. After every business trip to the target schools, Salesmen shall submit a daily report.
BR-22	Salesmen shall successfully meet school’s representatives (principals) of at least 3 new target schools every working day.
BR-23	Salesmen shall not create reports for a date in the past or the future. The reported date is the current date.
BR-24	List of all reports is shared, so any Salesmen, Sales Managers or Sales Supervisors can view it.
BR-25	Sales Managers and Sales Supervisors can comment on other Salesmen’s, Sales Supervisors’ or Sales Managers’ reports, and shall not comment on their own reports.

BR-26	When Sales Managers comment on reports, notifications shall be sent to the corresponding users.
BR-27	Sales Managers and Sales Supervisors shall only edit or remove comments in the current school year.
BR-28	The users can only edit or remove their own reports and in the current school year.
BR-29	The users shall not edit or remove the reports which were commented.
BR-30	After a business trip to the target schools, if the users collect some information that is different from the existed school's details, the users can only edit data related to the school's representative. The other school's data, user needs to inform to the Admin to edit them.
BR-31	A task may have one or multiple services.
BR-32	The PIC shall only create, edit and view the services of their assigned schools.
BR-33	When PIC create new services, notifications shall be sent to the Sales Managers.
BR-34	Only Sales Managers shall view all services of all tasks. However, Sales Managers shall not edit the services of others' tasks.
BR-35	Each Salesman, Sales Manager and Sales Supervisor has his/her own work-plan. Salesmen can search to view work-plan of other Salesmen but shall not view work-plan of Sales Supervisors or Sales Managers. Sales Manager and Sales Supervisor can view work-plan of all users. An item in work-plan is called "personal activity".
BR-36	The users shall not modify (create, edit or remove personal activities) work-plan of the others.
BR-37	A personal activity has three statuses: "pending" (not started yet or in progress), "completed" and "failed". When the users create a personal activity, the default status shall be "pending".
BR-38	Any personal activity has end time. When the current time reaches end time, if users have not marked that personal activity as completed, the default status shall be changed into "failed"; otherwise, the status shall be "completed".
BR-39	Sales Managers and Sales Supervisors supervise Salesmen via daily reports and work-plan.
BR-40	The PIC shall not edit the services content after Sales Manager approve or reject them.
BR-41	A service has three statuses: "Pending", "Approved" and "Rejected". After submitting, the default status is "Pending".
BR-42	Sales Managers shall approve or reject the services. After approval or rejection, Salesmen's tasks' status changes from "Ongoing" to "Successful" or "Failed".

Table 14. Business Rules

2. User Requirements

2.1 Overview

a. Use Case Diagram

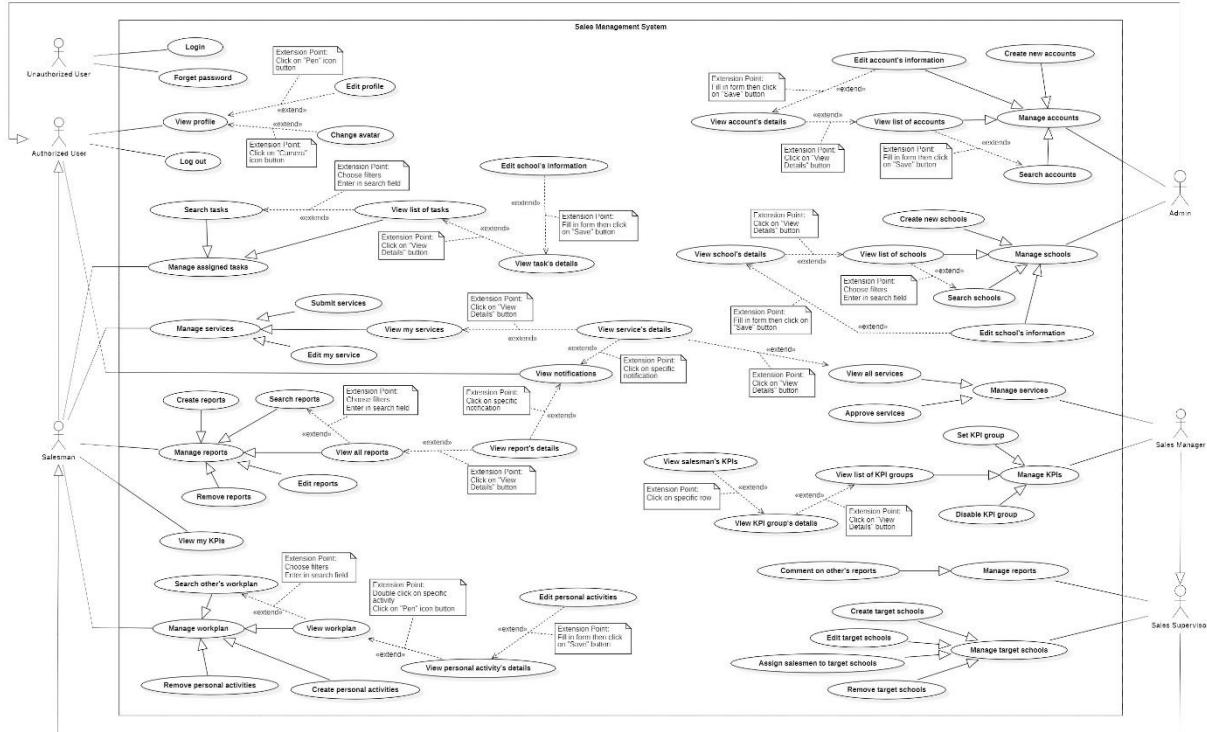


Figure 5. Use case Overview

b. System Actors

#	Actor	Description
1	Unauthorized User	The people who have not logged into the system yet.
2	Authorized User	The people who have logged into the system with the account (Administrator, Salesman, Sales Manager). All functions of this user are general functions that a normal user can do without considering the role.
3	Administrator	The Administrators manage data of all accounts and all schools in the system.
4	Salesman	<ul style="list-style-type: none"> The Salesmen have business trips to target schools for many purposes, such as introducing and selling Major Education's programs to target schools for cooperation. Salesmen shall create services of his/her own assigned tasks.
5	Sales Supervisor	<ul style="list-style-type: none"> Sales Supervisor manages target schools and supervises salesmen's reports and work-plans. Sales Supervisor is not allow to view services of others'.
6	Sales Manager	<ul style="list-style-type: none"> Sales Manager manages target schools and supervises salesmen's reports and work-plans. Sales Manager shall view all services of all Salesmen.

Table 15. System Actors

c. Use Cases List

ID	Use Case	Primary Actors	Secondary Actors
<u>UC-01</u>	Login	Unauthorized User	
<u>UC-02</u>	Forget password	Unauthorized User	
<u>UC-03</u>	View Profile	Authorized User, Salesman, Sales Supervisor, Sales Manager, Administrator	
<u>UC-04</u>	Edit Profile	Authorized User, Salesman, Sales Supervisor, Sales Manager, Administrator	
<u>UC-05</u>	Change avatar	Authorized User, Salesman, Sales Supervisor, Sales Manager, Administrator	
<u>UC-06</u>	Log out	Authorized User, Salesman, Sales Supervisor, Sales Manager, Administrator	
<u>UC-07</u>	View notifications	Authorized User, Salesman, Sales Supervisor, Sales Manager, Administrator	
	<i>Manage accounts</i>		
<u>UC-08</u>	Create new accounts	Administrator	
<u>UC-09</u>	Search accounts	Administrator	
<u>UC-10</u>	View list of accounts	Administrator	
<u>UC-11</u>	View account's details	Administrator	
<u>UC-12</u>	Edit account's information	Administrator	
	<i>Manage schools</i>		
<u>UC-13</u>	Create new schools	Administrator	
<u>UC-14</u>	Search schools	Administrator	
<u>UC-15</u>	View list of schools	Administrator	
<u>UC-16</u>	View school's details	Administrator	
<u>UC-17</u>	Edit school's information	Administrator	
	<i>Manage tasks</i>		
<u>UC-18</u>	Search tasks	Salesman, Sales Supervisor, Sales Manager	
<u>UC-19</u>	View list of tasks	Salesman, Sales Supervisor, Sales Manager	
<u>UC-20</u>	View task's details	Salesman,	

		Sales Supervisor, Sales Manager	
<u>UC-21</u>	Edit school's information	Salesman	
<i>Manage services</i>			
<u>UC-22</u>	Create services	Salesman	
<u>UC-23</u>	View my services	Salesman	
<u>UC-24</u>	View service's details	Salesman	
<u>UC-25</u>	Edit my services	Salesman	
<i>Manage reports</i>			
<u>UC-26</u>	Create reports	Salesman	
<u>UC-27</u>	Search reports	Salesman	
<u>UC-28</u>	View all reports	Salesman	
<u>UC-29</u>	View report's details	Salesman	
<u>UC-30</u>	Edit reports	Salesman	
<u>UC-31</u>	Remove reports	Salesman	
<i>Manage work-plan</i>			
<u>UC-32</u>	Create personal activities	Salesman, Sales Supervisor, Sales Manager	
<u>UC-33</u>	Search other's work-plan	Salesman, Sales Supervisor, Sales Manager	
<u>UC-34</u>	View work-plan	Salesman, Sales Supervisor, Sales Manager	
<u>UC-35</u>	View personal activity's details	Salesman, Sales Supervisor, Sales Manager	
<u>UC-36</u>	Edit personal activities	Salesman, Sales Supervisor, Sales Manager	
<u>UC-37</u>	Remove personal activities	Salesman, Sales Supervisor, Sales Manager	
<i>Manage tasks</i>			
<u>UC-38</u>	Create tasks	Sales Supervisor, Sales Manager	
<u>UC-39</u>	Edit tasks	Sales Supervisor, Sales Manager	
<u>UC-40</u>	Assign salesmen to tasks	Sales Supervisor, Sales Manager	
<u>UC-41</u>	Remove tasks	Sales Supervisor, Sales Manager	
<i>Manage reports</i>			
<u>UC-42</u>	Comment on salesmen's reports	Sales Supervisor, Sales Manager	
<i>Manage Services</i>			
<u>UC-43</u>	View all services	Sales Manager	
<u>UC-44</u>	Approve services	Sales Manager	

	Manage KPIs		
<u>UC-45</u>	Set KPI group	Sales Manager	
<u>UC-46</u>	Disable KPI group	Sales Manager	
UC-47	View list of KPI groups	Sales Manager	
UC-48	View KPI group's details	Sales Manager	
UC-49	View salesman's KPIs	Sales Manager	
<u>UC-50</u>	View my KPIs	Salesman	

Table 16. Use Cases List

2.2 <<Unauthorized User>> Overview Use Case

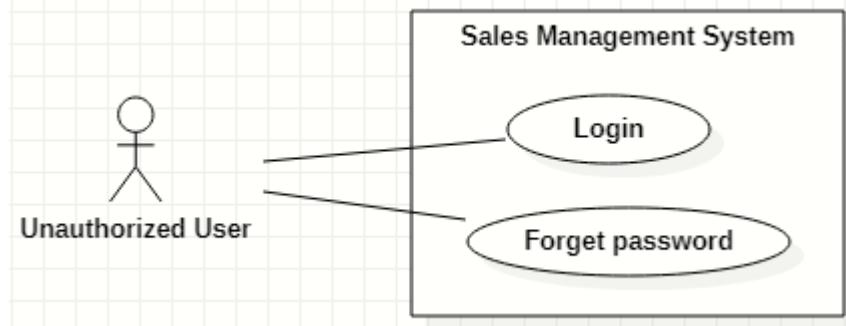


Figure 6. <<Unauthorized User>> Overview Use Case

a. Login

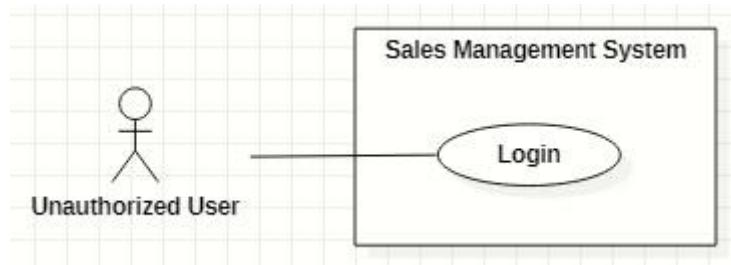


Figure 7. <<Unauthorized User>> Login

ID and Name:	UC-01 Login		
Created By:	GiaNH	Date Created:	05/02/2021
Primary Actor:	Unauthorized User	Secondary Actors:	N/A
Description:	This use case allows the user to log into the system to use the services of the system.		
Trigger:	The user clicks on the “Login” button on the Login screen.		
Preconditions:	PRE-1. The user has to own an account with a username and password. PRE-2. The user has not logged into the system yet.		
Post-conditions:	POST-1. The user successfully logs into the system, and be redirected to the Home screen.		
Normal Flow:	Step	Actor Action	System Response
	1	The user opens the login view in web browsers.	The system requires identifying information from the user: <ul style="list-style-type: none">• “Username”: text input, required.• “Password”: text input, required.
	2	The user inputs into the “username” and “password” fields on Login form.	[Exception 1]

	3	The user clicks on “Login” button.	The system allows the user to access into and redirects to the corresponding Home screen (based on the role of user). [Exception 2] [Exception 3]
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The user inputs invalid format content into the “username” and “password” fields.	The system shows the error message: “Invalid username or password”.
	2	The user inputs the wrong username or password.	The system shows the error message: “Wrong username or password”.
	3	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> • BR-01, BR-07 • The required information are username, password. • The username must be 8 – 30 characters length and must not include special characters. • The password must be 8 – 30 characters length and must be hashed encrypted. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 17. <<Unauthorized User>> Login

b. Forget password



Figure 8. <<Unauthorized User>> Forget password

ID and Name:	UC-02 Forget password		
Created By:	HaPTN	Date Created:	12/04/2021
Primary Actor:	Unauthorized User	Secondary Actors:	N/A
Description:	This use case allows the user to reset their forgotten password.		
Trigger:	The user clicks on “Forgot password?” link on the Login screen.		
Preconditions:	PRE-1. The user has to own an account with a username and password. PRE-2. The user has not logged into the system yet.		
Post-conditions:	POST-1. The user’s password has been updated in the database. POST-2. The user is redirected to Login screen.		
	Step	Actor Action	System Response

Normal Flow:	1	The user clicks on “Forgotten password?” link on the Login screen in Web browsers.	The system redirects to “Reset your password” screen which requires user to input: <ul style="list-style-type: none"> “Username”: text input, required. “Email”: text input, required. “Send me verification code”: button.
	2	The user inputs into the “username” and “email” fields on “Reset your password” form.	[Exception 1]
	3	The user clicks on “Send me verification code” button.	The system sends a verification code via email that user has just provided. [Exception 2] [Exception 3]
	4		The system redirects to “Enter verification code” screen which have: <ul style="list-style-type: none"> “Verification code”: text input. “Continue”: button.
	5	On “Enter verification code” form, the user inputs into the “verification code” then clicks on “Continue” button.	The system redirects to “Enter new password” screen which have: <ul style="list-style-type: none"> “New password”: text input, required. “Re-new password”: text input, required. “Save”: button. [Exception 3] [Exception 4]
	6	The user inputs into the “new password” and “re-new password” fields on “Enter new password”.	[Exception 5]
	7	The user clicks on “Save” button.	The system shows the successful message: “Password has been changed successfully”, then redirects to the “Login” screen [Exception 3]
	Alternative Flows:	N/A	
Exceptions:	No	Cause	System Response
	1	The user inputs invalid format content into the “username” and “email” fields.	The system shows the error message: “Invalid username or email”.
	2	The username or email in form do not match to fields “username” and “user_email” in the database.	The system shows the error message: “Wrong username or email”.

	3	The user's device does not connect to the Internet or the server has internal error.	The system shows the error message: "Connection Failed or Internal Error".
	4	The user inputs wrong verification code.	The system shows the error message: "Please check your verification code and try again.".
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> BR-03 The "new password" and "re-new password" must be 8 – 30 characters length and must be hashed encrypted. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 18. <<Unauthorized User>> Forget password

2.3 <<Authorized User>> Overview Use Case

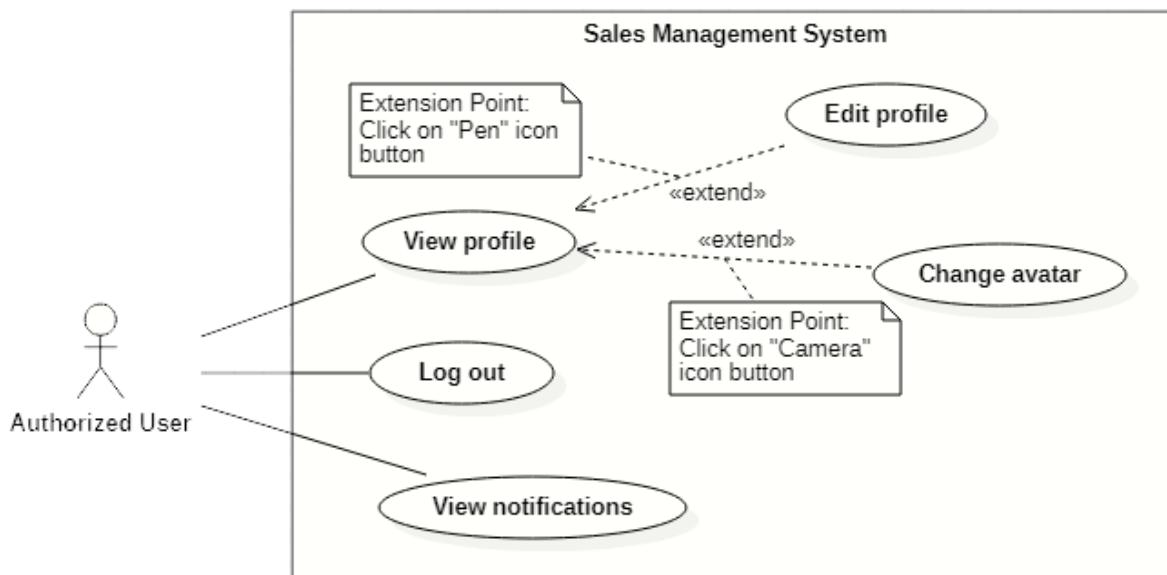


Figure 9. <<Authorized User>> Overview Use Case

a. View profile

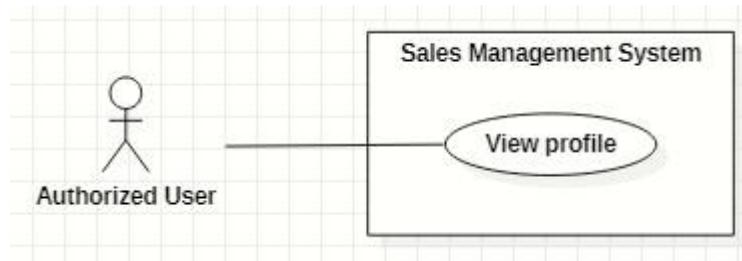


Figure 10. <<Authorized User>> View profile

ID and Name:	UC-03 View profile		
Created By:	GiaNH	Date Created:	05/02/2021
Primary Actor:	Authorized User	Secondary Actors:	N/A

Description:	This use case allows the user to view his/her profile.		
Trigger:	The user selects “Profile” command in the options menu under the user avatar (at the top right corner of the screen).		
Preconditions:	PRE-1. The user has been logged into the system.		
Post-conditions:	POST-1. The user’s information is displayed in details as a form.		
Normal Flow:	Step	Actor Action	System Response
	1	The user clicks on the avatar on the right corner of the topbar.	The system redirects to the “Profile” screen. The detail information of the user is displayed on the screen. [Exception 1]
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	BR-05		
Other Information:	N/A		
Assumptions:	N/A		

Table 19. <>Authorized User>> View profile

b. Edit profile

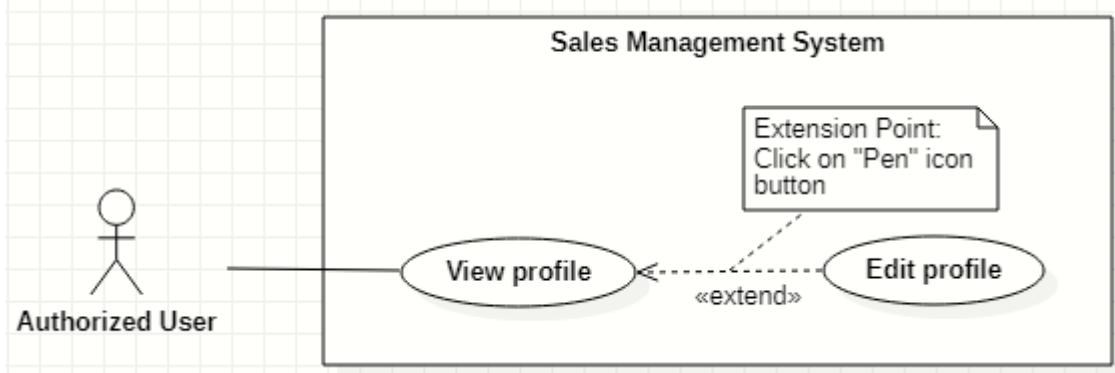


Figure 11. <>Authorized User>> Edit profile

ID and Name:	UC-04 Edit profile		
Created By:	GiaNH	Date Created:	05/02/2021
Primary Actor:	Authorized User	Secondary Actors:	N/A
Description:	This use case allows the user to edit his/her profile.		
Trigger:	The user clicks on “Pen” icon button.		
Preconditions:	PRE-1. The user has been logged into the system. PRE-2. The user is at the “Profile” screen.		
Post-conditions:	POST-1. The user’s information is edited in the system.		
Normal Flow:	Step	Actor Action	System Response
	1	On Profile screen, the user clicks on “Pen” icon button at the right of the	At the selected row, the system opens the collapsed div to show the text field with the following format:

		information row that he/she wants to edit. [Alternative 1]	<ul style="list-style-type: none"> “Password”: text. “Address”: text. “Email”: text. “Birthdate”: date. “IsMale”: two radio buttons, required, only select one. “Phone” text. “Avatar”: image.
	2	The user inputs the information into the selected text field.	[Exception 1] [Exception 2] [Exception 3]
	3	The user selects “Save” button. [Exception 4]	The system shows the successful message: “Updated Successfully”. [Exception 5]
Alternative Flows:		Step	Actor Action
		1	<p>The user selects “Pen” icon button at “Password” line.</p> <p>The system shows the accordion that contains following information:</p> <ul style="list-style-type: none"> “Current Password”: text, required. “New Password”: text, required. “Confirm New Password”: text, required. <p><i>Continue to step 2 of Normal Flow.</i></p>
Exceptions:		No	Cause
		1	The user inputs invalid format content into fields.
		2	The user inputs the wrong old password.
		3	The user inputs the confirm-new password that does not match to new password.
		4	The user selects “Cancel” button to cancel updating.
		5	The user’s device does not connect to the Internet or the server has internal error.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> BR-05 All fields related to “password” must be 8 – 30 characters length and must be hashed encrypted. Fields that could be edited are: password, email, phone number, address and avatar. Phone must be in format “/(84 0[3 5 7 8 9])+([0-9]{8})\b/g” and have max length is 10 (when starts with 0) or 11 (when starts with 84). <p>(Resources: https://www.regextester.com/106725)</p>		

	<ul style="list-style-type: none"> Fields which are not allowed users to edit are: username, fullname, birthdate and isMale.
Other Information:	N/A
Assumptions:	N/A

Table 20. <<Authorized User>> Edit profile

c. Change avatar

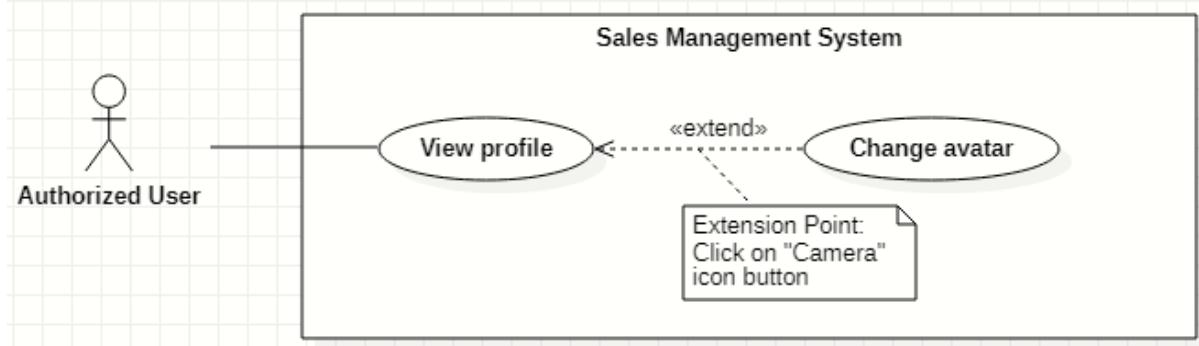


Figure 12. <<Authorized User>> Change avatar

ID and Name:	UC-05 Change avatar														
Created By:	HaPTN	Date Created:	12/04/2021												
Primary Actor:	Authorized User	Secondary Actors:	N/A												
Description:	This use case allows the user to update his/her profile avatar.														
Trigger:	The user clicks on "Camera" icon button next to the avatar.														
Preconditions:	PRE-1. The user has been logged into the system. PRE-2. The user is at the "Profile" screen.														
Post-conditions:	POST-1. The user's new avatar is edited in the system.														
Normal Flow:	<table border="1"> <thead> <tr> <th>Step</th> <th>Actor Action</th> <th>System Response</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>On Profile screen, the user clicks on "Camera" icon button next to the avatar image.</td> <td>The system opens the Windows Explorer dialog for user to upload an image.</td> </tr> <tr> <td>2</td> <td>The user chooses an image in the Windows Explorer dialog and clicks on "Open" button. [Exception 1] [Exception 2]</td> <td>The system updates avatar with the chosen image and shows the successful message: "Updated Successfully". [Exception 3]</td> </tr> </tbody> </table>	Step	Actor Action	System Response	1	On Profile screen, the user clicks on "Camera" icon button next to the avatar image.	The system opens the Windows Explorer dialog for user to upload an image.	2	The user chooses an image in the Windows Explorer dialog and clicks on "Open" button. [Exception 1] [Exception 2]	The system updates avatar with the chosen image and shows the successful message: "Updated Successfully". [Exception 3]					
Step	Actor Action	System Response													
1	On Profile screen, the user clicks on "Camera" icon button next to the avatar image.	The system opens the Windows Explorer dialog for user to upload an image.													
2	The user chooses an image in the Windows Explorer dialog and clicks on "Open" button. [Exception 1] [Exception 2]	The system updates avatar with the chosen image and shows the successful message: "Updated Successfully". [Exception 3]													
Alternative Flows:	N/A														
Exceptions:	<table border="1"> <thead> <tr> <th>No</th> <th>Cause</th> <th>System Response</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>The user chooses invalid image format.</td> <td>The system shows the error message: "Update Unsuccessful".</td> </tr> <tr> <td>2</td> <td>The user closes the Windows Explorer (by clicking on "x" button or "Cancel" button).</td> <td>The system shows the error message: "Update Unsuccessful".</td> </tr> <tr> <td>3</td> <td>The user's device does not connect to the Internet or the server has internal error.</td> <td>The system shows the error message: "Connection Failed or Internal Error".</td> </tr> </tbody> </table>	No	Cause	System Response	1	The user chooses invalid image format.	The system shows the error message: "Update Unsuccessful".	2	The user closes the Windows Explorer (by clicking on "x" button or "Cancel" button).	The system shows the error message: "Update Unsuccessful".	3	The user's device does not connect to the Internet or the server has internal error.	The system shows the error message: "Connection Failed or Internal Error".		
No	Cause	System Response													
1	The user chooses invalid image format.	The system shows the error message: "Update Unsuccessful".													
2	The user closes the Windows Explorer (by clicking on "x" button or "Cancel" button).	The system shows the error message: "Update Unsuccessful".													
3	The user's device does not connect to the Internet or the server has internal error.	The system shows the error message: "Connection Failed or Internal Error".													
Priority:	Normal														
Frequency of Use:	Usually														
Business Rules:	<ul style="list-style-type: none"> BR-05 														

	<ul style="list-style-type: none"> In the Windows Explorer dialog, the user can only choose one image at a time. The system only accepts image files in type ".png", ".jpg", ".jpeg".
Other Information:	N/A
Assumptions:	N/A

Table 21. <>Authorized User>> Change avatar

d. Logout

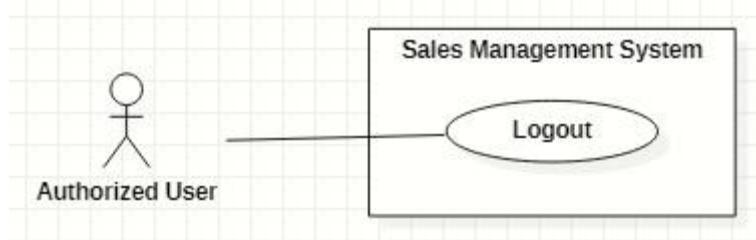


Figure 13. <>Authorized User>> Logout

ID and Name:	UC-06 Logout		
Created By:	GiaNH	Date Created:	05/02/2021
Primary Actor:	Authorized User	Secondary Actors:	N/A
Description:	This use case allows the users to log out of the system.		
Trigger:	The user clicks on “Logout” button.		
Preconditions:	PRE-1. The user has been logged into the system.		
Post-conditions:	POST-1. The user logs out the system.		
Normal Flow:	Step	Actor Action	System Response
	1	The user clicks on the “Avatar” icon button to open “Profile” screen.	The system redirects to the “Profile” screen.
	2	The user clicks on “Log out” button at the top right corner of the “Profile” screen.	The system clears cookies and access token then returns to the “Login” screen.
Alternative Flows:	N/A		
Exceptions:	N/A		
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	User's token is removed in client and the session is destroyed in server.		
Other Information:	N/A		
Assumptions:	N/A		

Table 22. <>Authorized User>> Logout

e. *View notifications*

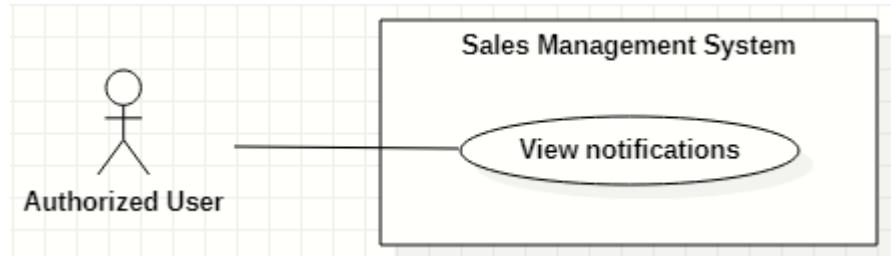


Figure 14. <<Authorized User>> View notifications

ID and Name:	UC-07 View notifications		
Created By:	HaPTN	Date Created:	12/04/2021
Primary Actor:	Authorized User	Secondary Actors:	N/A
Description:	This use case allows the users.		
Trigger:	The user clicks on “Bell” icon button (at the top right corner of the screen).		
Preconditions:	PRE-1. The user has been logged into the system.		
Post-conditions:	POST-1. The user is redirect to the corresponding screen depends on what notification he/she selects.		
Normal Flow:	Step	Actor Action	System Response
	1	The user clicks on “Bell” icon button (at the top right corner of the screen) to view list of notifications.	The system shows list of notifications in a popover, near the “Bell” icon button.
	2	The user select specific notification. [Alternative 1] [Alternative 2]	[Exception 1]
Alternative Flows:	Step	Actor Action	System Response
	1	The user clicks on notification type “report”.	The system redirects to “Report details” screen for user to view comment of supervisor/manager.
	2	The user clicks on notification type “service”.	The system redirects to “Service details” screen for user to view service’s details.
Exceptions:	No	Cause	System Response
	1	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> • BR-26 (notification type “report”) • BR-33 (notification type “service”) 		
Other Information:	N/A		
Assumptions:	N/A		

Table 23. <<Authorized User>> View notifications

2.4 <<Administrator>> Overview Use Case

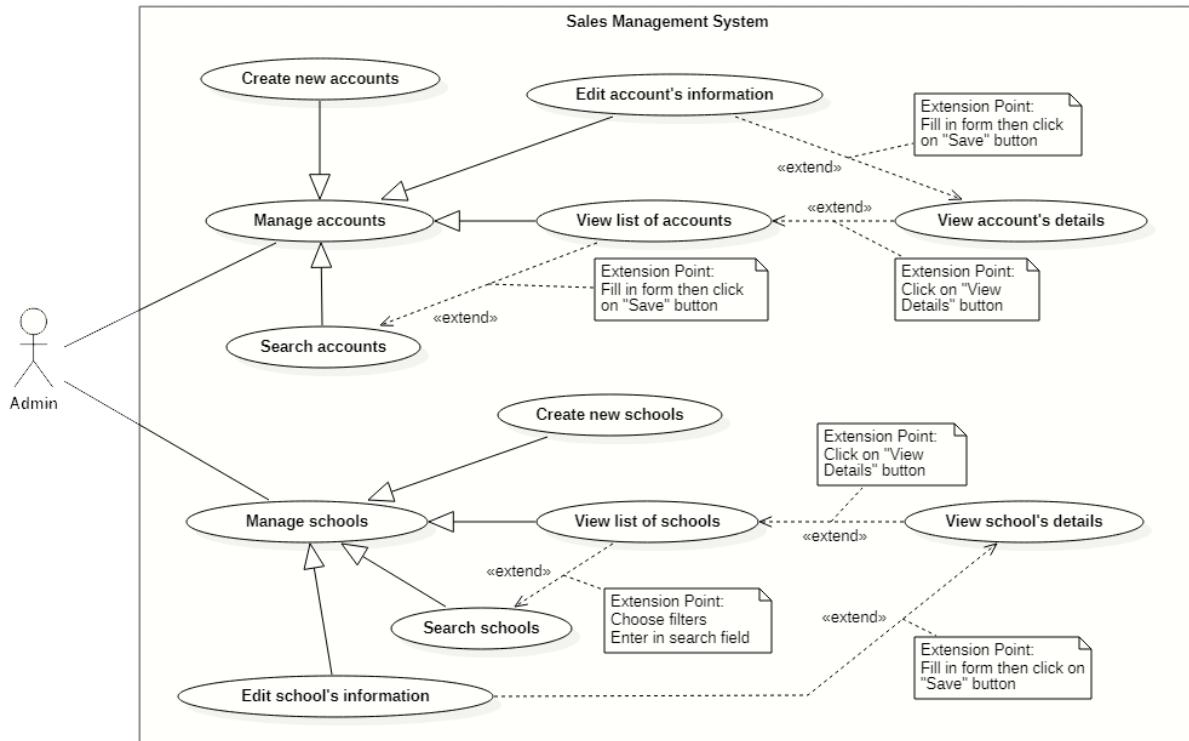


Figure 15. <<Administrator>> Overview Use Case

a. Create new accounts

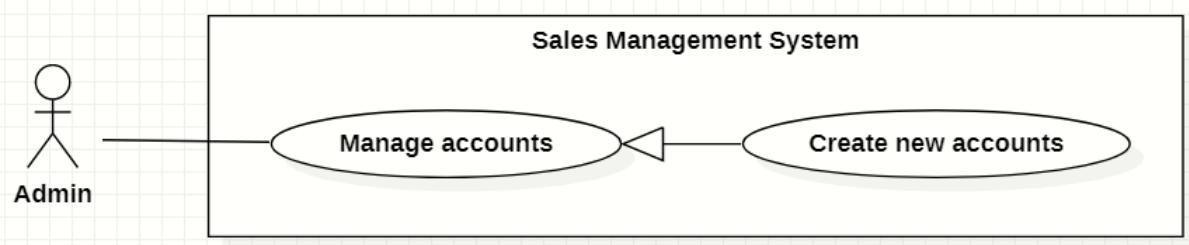


Figure 16. <<Administrator>> Create new accounts

ID and Name:	UC-08 Create new accounts		
Created By:	GiaNH	Date Created:	15/02/2021
Primary Actor:	Administrator	Secondary Actors:	N/A
Description:	This use case allows the user to create new account.		
Trigger:	The user clicks on the “Create” button in “Accounts” screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Admin. PRE-2. The user is on the “Accounts” screen.		
Post-conditions:	POST-1. The new account is added in the system.		
Normal Flow:	Step	Actor Action	System Response
	1	The user selects “Accounts” on the navigation bar (sidebar).	The system redirects the Accounts screen.
	2	The user selects on “Create” button in screen.	The system displays the “Create Account” form with the following required information:

		<ul style="list-style-type: none"> • “Username”: input text field, required. • “Role”: selections (Salesman, Sales Supervisor, Sales Manager, Admin). • “Full name”: input text field, required. • “Email”: input text field. • “Phone”: input text field, required. • “Address”: input text field. • “IsMale”: radio buttons, required. • “Birthdate”: date picker. • “Save”: button. • “Cancel”: button. 	
	3	The user inputs into required information fields. [Exception 1] [Exception 2]	
	4	The user selects on the “Save” button. [Exception 4]	
	5	The system shows the successful message: “New account has been created successfully. Please check your email to get the password.”. [Exception 3] [Exception 5]	
	6	The system sends the new user an email which contains his/her password. [Exception 3]	
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The user leaves the blank fields or inputs the invalid format content.	The system shows the error message: “Please input the valid format content”.
	2	The content that the user inputs into “Confirm password” is not matched the “Password” field.	The system show the error message: “Confirm password is not matched the password”.
	3	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
	4	The user selects “Cancel” button.	The system closes the “Create Account” view and returns the “Accounts” screen.

	5	The content that the user inputs into “username” field is duplicate in the system.	The system shows the error message: “The username has already existed”.
Priority:	High		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> • BR-04, BR-09 • The username must be 8 – 30 characters, not include special characters. • Admin does not create password for users. • Password is randomly generated by the system and is sent to the provided user’s email. • The password which is stored in the Database must be hashed encrypted by Bcript. • The email must be validated. • Phone must be in format “/(84 0[3 5 7 8 9])+([0-9]{8})\b/g” and have max length is 10 (when starts with 0) or 11 (when starts with 84). <i>(Resources: https://www.regextester.com/106725)</i> 		
Other Information:	N/A		
Assumptions:	N/A		

Table 24. <<Administrator>> Create new accounts

b. Search accounts

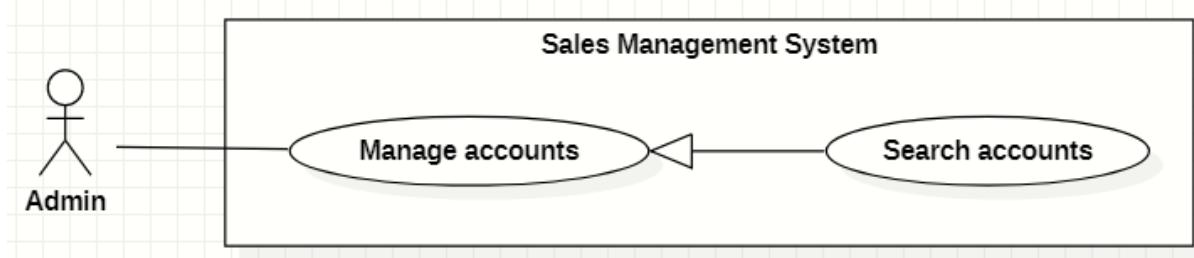


Figure 17. <<Administrator>> Search accounts

ID and Name:	UC-09 Search accounts		
Created By:	GiaNH	Date Created:	16/02/2021
Primary Actor:	Administrator	Secondary Actors:	N/A
Description:	This use case allows the users to find the accounts based on the role, status, username, phone, address,...		
Trigger:	The user selects filters or inputs in search field on the “Accounts” screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Admin. PRE-2. The user is on “Accounts” screen.		
Post-conditions:	POST-1. The list of accounts is shown.		
Normal Flow:	Step	Actor Action	System Response
	1	The user inputs in the search field or selects filters to looking for accounts.	<p>The system displays the list of accounts as the table.</p> <p>Available filters on this screen:</p> <ul style="list-style-type: none"> • “isActive”: selections (true, false)

			<ul style="list-style-type: none"> “Roles”: selections (Admin, Sales Manager, Sales Supervisor, Salesman). Search field: text field.
	2		<p>The list of Accounts is shown as a table on the Accounts screen. Table will includes these fields:</p> <ul style="list-style-type: none"> “Username”: text. “Fullname”: image (avatar) and text. “Phone”: text. “Email”: text. “Role”: Label.
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The content of search field or selecting filter that the user inputted is not matched any data in database.	The system displays “No records found” line.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> The default values of filter “Working status” is “null” The default values of filter “Role” is “All”. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 25. <<Administrator>> Search accounts

c. View list of accounts

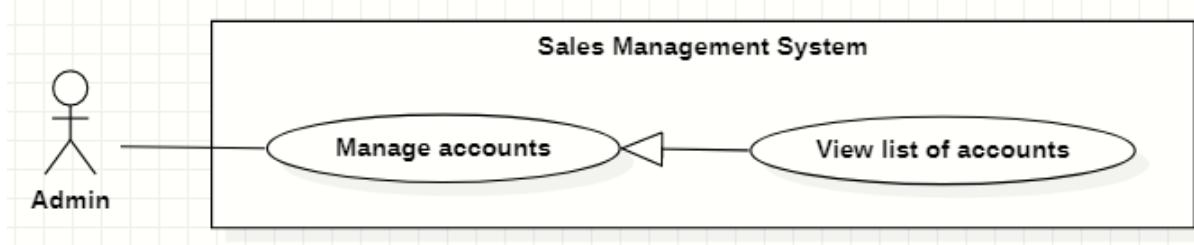


Figure 18. <<Administrator>> View list of accounts

ID and Name:	UC-10 View list of accounts		
Created By:	GiaNH	Date Created:	15/02/2021
Primary Actor:	Administrator	Secondary Actors:	N/A
Description:	This use case allows the user to view list of accounts.		
Trigger:	The user selects “Accounts” on the navigation bar (sidebar).		
Preconditions:	PRE-1. The user has been logged into the system with role Admin.		
Post-conditions:	POST-1. The list of Accounts is shown as a table on the “Accounts” screen.		
Normal Flow:	Step	Actor Action	System Response

	1	The user selects “Accounts” on the navigation bar (sidebar).	The system redirects the Accounts screen.
	2		The list of Accounts is shown as a table on the Accounts screen. Table will include these fields: <ul style="list-style-type: none">• “Username”: text.• “Full name”: image (avatar) and text.• “Phone”: text.• “Email”: text.• “Role”: Label.
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The data is null or empty in database.	The system shows “No records found” line on the table.
Priority:	Medium		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none">• The default values of filter “Working status” is “null”• The default values of filter “Role” is “All”.		
Other Information:	N/A		
Assumptions:	N/A		

Table 26. <<Administrator>> View list of accounts

d. View account's details

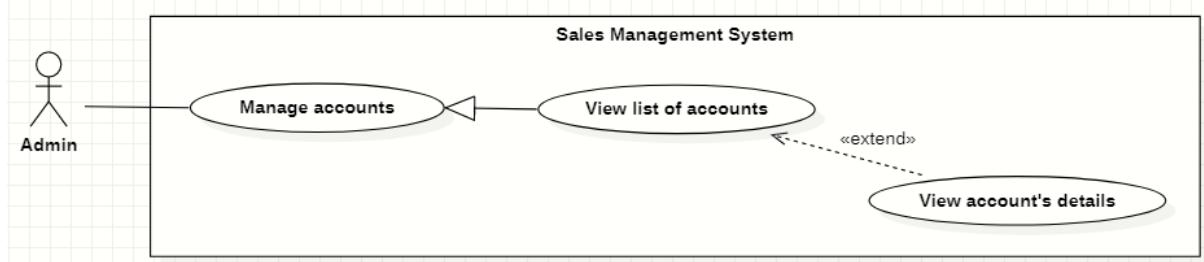


Figure 19. <<Administrator>> View account's details

ID and Name:	UC-11 View account's details		
Created By:	GiaNH	Date Created:	16/02/2021
Primary Actor:	Administrator	Secondary Actors:	N/A
Description:	This use case allows the user to view the detail information of an account.		
Trigger:	The user clicks on the “View details” command on the menu options at the end of row in table list of accounts.		
Preconditions:	PRE-1. The user has been logged into the system with role Admin. PRE-2. The user is on the “Accounts” screen.		
Post-conditions:	POST-1. The detail information of account is shown as a form.		
Normal Flow:	Step	Actor Action	System Response

	1	<p>On the “Accounts” screen, at the end of each row in the table, the user clicks on action icon button, then selects “View detail” command on the menu options.</p>	<p>The system displays “Account’s details” view, the account’s information is displayed as a form.</p> <ul style="list-style-type: none"> • “Username”: input text field, required. • “Password”: input password text field, required. • “Confirm password”: input password text field, required. • “Role”: selections (Salesman, Sales Supervisor, Sales Manager, Admin). • “Full name”: input text field, required. • “Email”: input text field. • “Phone”: input text field, required. • “IsMale”: radio buttons, required. • “Birthdate”: date picker. • “Address”: input text field. • “Save”: button, inactive.
Alternative Flows:	N/A		
Exceptions:	N/A		
Priority:	Medium		
Frequency of Use:	Usually		
Business Rules:	N/A		
Other Information:	N/A		
Assumptions:	N/A		

Table 27. <<Administrator>> View account’s details

e. Edit account’s information

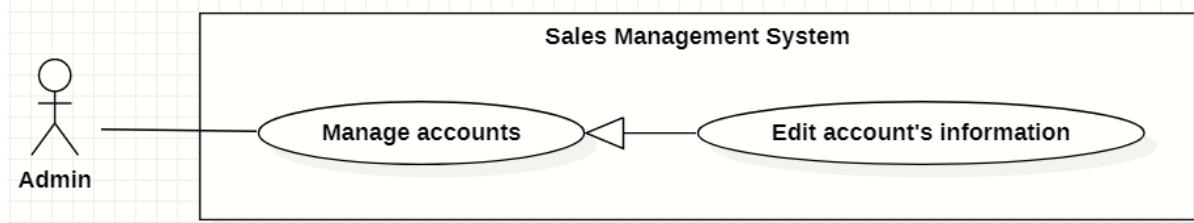


Figure 20. <<Administrator>> Edit account’s information

ID and Name:	UC-12 Edit account’s information		
Created By:	GiaNH	Date Created:	16/02/2021
Primary Actor:	Administrator	Secondary Actors:	N/A
Description:	This use case allows the users to edit the account’s information.		
Trigger:	The user edits on fields in “Account’s details” screen then clicks “Save” button.		
Preconditions:	PRE-1. The user has been logged into the system with role Admin.		

	PRE-2. The user is on the “Account’s details” screen.		
Post-conditions:	POST-1. The Account information is edited in database.		
Normal Flow:	Step	Actor Action	System Response
	1	<p>The system displays the “Account’s detail” screen as a form with the following required information:</p> <ul style="list-style-type: none"> • “Username”: text field, disabled. • “Full name”: input text field. • “Email”: input text field. • “Phone”: input text field, required. • “IsMale”: radio buttons. • “Birthdate”: date picker. • “Address”: input text field. • “Roles”: selections (Admin, Sales Manager, Sales Supervisor, Salesman). • “isActive”: toggle, required. • “Save”: button, only active when the form is dirty. 	
	2	The user edits on fields in this form.	[Exception 1]
	3	The user clicks “Save” button when finish.	The system has successful edit and displays the successful message: “Updated Successfully”. [Exception 2]
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The user inputs invalid format content into fields.	The system informs the users that the content of fields is invalid format.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Medium		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> • BR-06, BR-08, BR-09 • Phone must be in format “/(84 0[3 5 7 8 9])+([0-9]{8})\b/g” and have max length is 10 (when starts with 0) or 11 (when starts with 84). (Resources: https://www.regextester.com/106725) 		
Other Information:	N/A		

Table 28. <>Administrator>> Edit account’s information

f. Create new schools

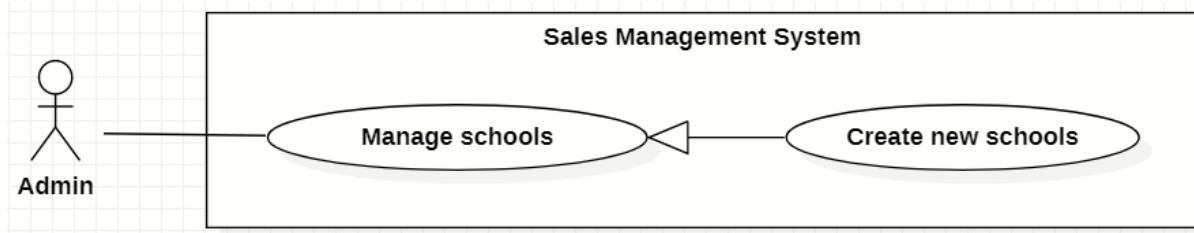


Figure 21. <<Administrator>> Create new schools

ID and Name:	UC-13 Create new schools		
Created By:	GiaNH	Date Created:	15/02/2021
Primary Actor:	Administrator	Secondary Actors:	N/A
Description:	This use case allows the user to create new school.		
Trigger:	The user clicks on the “Create” button in “Schools” screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Admin. PRE-2. The user is on the “Schools” screen.		
Post-conditions:	POST-1. The new account is added in the system.		
Normal Flow:	Step	Actor Action	System Response
	1	The user selects “Schools” on the navigation bar (sidebar).	The system redirects to the “Schools” screen.
	2	The user hovers on “Create” button in screen.	The system shows a menu list which contains two options (“Import”, “Create a school”).
	3	The user clicks on “Create a school” option in the menu list. [Alternative 1]	<p>The system displays the “Create new schools” form with the following required information:</p> <p><i>School's information:</i></p> <ul style="list-style-type: none"> • “School name”: input text field, required. • “School phone”: input text field. • “District”: selections, required. • “Address”: input text field. • “isActive”: boolean, default value is true. • “Description”: input text field. • “School type”: selections (Công lập, Ngoài công lập, Bán công), required. • “Educational level”: selections (Tiểu học, THCS, THPT), required.

			<ul style="list-style-type: none"> “School scale”: selections (Lớn, Vừa, NhỎ). “School status”: selections (Chưa hợp tác, Đang hợp tác, Ngưng hợp tác). <p><i>Representative's information:</i></p> <ul style="list-style-type: none"> “Full name”: input text field. “Email”: input text field. “Phone”: input text field. “IsMale”: radio buttons. <ul style="list-style-type: none"> “Cancel”: button. “Save”: button. 	
	4	The user inputs into information fields.	[Exception 1]	
	5	The user selects on the “Save” button. [Exception 3]	The system shows the successful message: “Create Successfully”. [Exception 2]	
	6		The system updates the table of list of schools in the “Schools” screen. [Exception 2]	
Alternative Flows:	No	Step	Actor Action	System Response
1	1	The user clicks on “Import” option in the menu list.	The system displays the “Import” dialog which contains: <ul style="list-style-type: none"> “You can download the sample template here”: text, link. “Browse”: button. <ul style="list-style-type: none"> “Cancel”: button. “Save”: button. 	
	2	The user clicks on “Browse” button to upload a file from the device. [Alternative 1.1] [Exception 4] [Exception 5] [Exception 6]	The system displays the Windows Explorer dialog for user to retrieve file in user’s device.	
	3	The user selects the file to import and chooses confirm command. [Exception 2]	The system shows the selected file’s name on the “Import” dialog.	

		4	The users clicks on “Save” button. [Alternative 1.2] [Exception 3]	The system shows the successful message: “Create Successfully”. <i>Continue to the step 6 in Normal Flow.</i>
1.1	1	1	The user clicks on “You can download the sample template <i>here</i> ” link.	The systems downloads a sample Excel file to the user’s device.
	2	2	The users add data in that Excel file and upload it.	<i>Continue to the step 2 in the Alternative Flow 1.</i>
1.2	1	1	The user clicks on “Browse” button again and chooses another file to upload.	<i>Continue to the step 3 in the Alternative Flow 1.</i>
Exceptions:		No	Cause	System Response
		1	The user leaves the blank fields or inputs the invalid format content.	The system shows the error message: “Please input the valid format content”.
		2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
		3	The user selects “Cancel” button.	The system closes the “Create School” view and returns the “Schools” screen.
		4	The user chooses invalid image format.	The system shows the error message: “Please choose the right file format”.
		5	The size of file is larger than 5MB.	The system shows the error message: “This file is too large. Please choose file with size within 5MB”.
		6	The user closes the Windows Explorer (by clicking on “x” button or “Cancel” button).	The system closes the Windows Explorer and does not shows anything errors or messages.
Priority:	High			
Frequency of Use:	Usually			
Business Rules:	<ul style="list-style-type: none"> • BR-09, BR-10 • Phone must be in format “/(84 0[3 5 7 8 9])+([0-9]{8})\b/g” and have max length is 10 (when starts with 0) or 11 (when starts with 84). (Resources: https://www.regextester.com/106725) • The system only accepts Excel files in type “.xlsx”, “.xls”, “.csv”, “.xslx” or “.xml”. • The size of file is no larger than 5MB. • In the Windows Explorer dialog, the user can only choose one file at a time. 			
Other Information:	N/A			
Assumptions:	N/A			

Table 29. <<Administrator>> Create new schools

g. Search schools

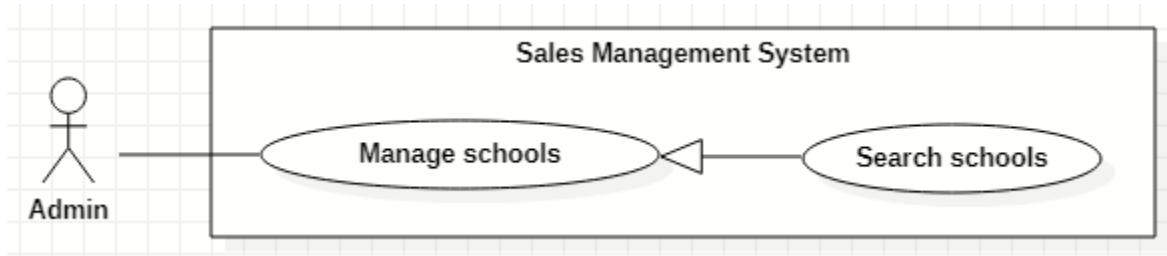


Figure 22. <<Administrator>> Search schools

ID and Name:	UC-14 Search schools		
Created By:	GiaNH	Date Created:	16/02/2021
Primary Actor:	Administrator	Secondary Actors:	N/A
Description:	This use case allows the users to find the schools based on school's name, district, school status, school educational level, school type, address,...		
Trigger:	The user selects filters or inputs in search field on the "Schools" screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Admin. PRE-2. The user is on "Schools" screen.		
Post-conditions:	POST-1. The list of schools is shown.		
Normal Flow:	Step	Actor Action	System Response
	1	The user inputs in the search field or selects filters to looking for schools.	<p>The system displays the list of accounts as the table.</p> <p>Available filters on this screen:</p> <ul style="list-style-type: none"> “Districts”: selections (24 districts in Ho Chi Minh City) “School Statuses”: selections (Chưa hợp tác, Đang hợp tác, Ngưng hợp tác). “School Types”: selections (Công lập, Ngoài công lập, Bán công). “School Levels”: selections (Tiểu học, THCS, THPT). “School Scales”: selections (Lớn, Vừa, Nhỏ). Search field: text field.
	2		<p>The list of Schools is shown as a table on the “Schools” screen.</p> <p>Table will includes these fields:</p> <ul style="list-style-type: none"> “School Name”: text. “Address”: text. “Principal”: text. “Status”: Label.
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response

	1	The content of search field or selecting filter that the user inputted is not matched any data in database.	The system displays “No records found” line.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	The default values of all filters are “All”.		
Other Information:	N/A		
Assumptions:	N/A		

Table 30. <<Administrator>> Search schools

h. View list of schools

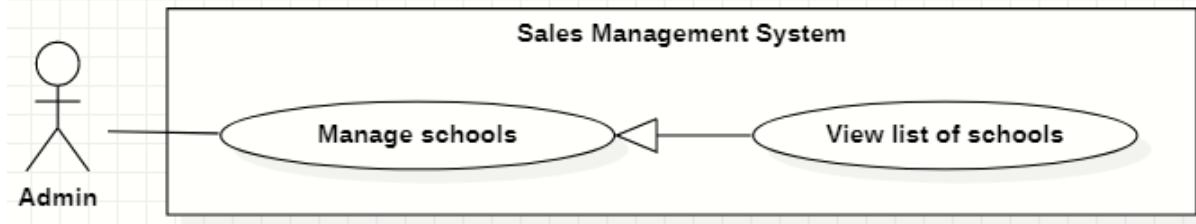


Figure 23. <<Administrator>> View list of schools

ID and Name:	UC-15 View list of schools		
Created By:	GiaNH	Date Created:	15/02/2021
Primary Actor:	Administrator	Secondary Actors:	N/A
Description:	This use case allows the user to view list of schools.		
Trigger:	The user selects “Schools” on the navigation bar (sidebar).		
Preconditions:	PRE-1. The user has been logged into the system with role Admin.		
Post-conditions:	POST-1. The list of Schools is shown as a table on the “Schools” screen.		
Normal Flow:	Step	Actor Action	System Response
	1	The user selects “Schools” on the navigation bar (sidebar).	The system redirects the “Schools” screen.
	2		The list of Schools is shown as a table on the “Schools” screen. Table will includes these fields: <ul style="list-style-type: none">• “School Name”: text.• “Address”: text.• “Principal”: text.• “Status”: Label.
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The data is null or empty in database.	The system shows “No records found” line on the table.
Priority:	Medium		
Frequency of Use:	Usually		
Business Rules:	The default values of all filters are “All”.		
Other Information:	N/A		

Assumptions:	N/A
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Table 31. <<Administrator>> View list of schools

i. *View school's details*

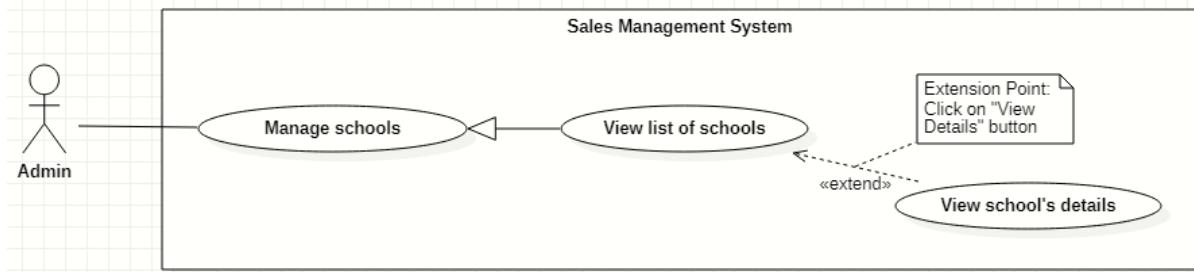


Figure 24. <<Administrator>> View school's details

ID and Name:	UC-16 View school's details		
Created By:	GiaNH	Date Created:	16/02/2021
Primary Actor:	Administrator	Secondary Actors:	N/A
Description:	This use case allows the user to view the detail information of a school.		
Trigger:	The user clicks on the "View details" command on the menu options at the end of row in table list of schools.		
Preconditions:	PRE-1. The user has been logged into the system with role Admin. PRE-2. The user is on the "Schools" screen.		
Post-conditions:	POST-1. The detail information of school is shown as a form.		
Normal Flow:	Step	Actor Action	System Response
	1	On the "Schools" screen, at the end of each row in the table, the user clicks on action icon button, then selects "View detail" command on the menu options.	<p>The system displays "School's details" view, the school's information is displayed as a form.</p> <p><i>School's information:</i></p> <ul style="list-style-type: none"> "School name": input text field, required. "School phone": input text field. "District": selections (24 districts in Ho Chi Minh City). "Address": input text field. "isActive": boolean, default value is true. "Description": input text field. "School type": selections (Công lập, Ngoài công lập, Bán công), required. "Educational level": selections (Tiểu học, THCS, THPT), required. "School scale": selections (Lớn, Vừa, Nhỏ). "School status": selections (Chưa hợp tác, Đang hợp tác, Ngưng hợp tác). <p><i>Representative's information:</i></p>

		<ul style="list-style-type: none"> “Full name”: input text field. “Email”: input text field. “Phone”: input text field. “IsMale”: radio buttons (Male, Female).
Alternative Flows:	N/A	
Exceptions:	N/A	
Priority:	Medium	
Frequency of Use:	Usually	
Business Rules:	N/A	
Other Information:	N/A	
Assumptions:	N/A	

Table 32. <>Administrator>> View school's details

j. Edit school's information

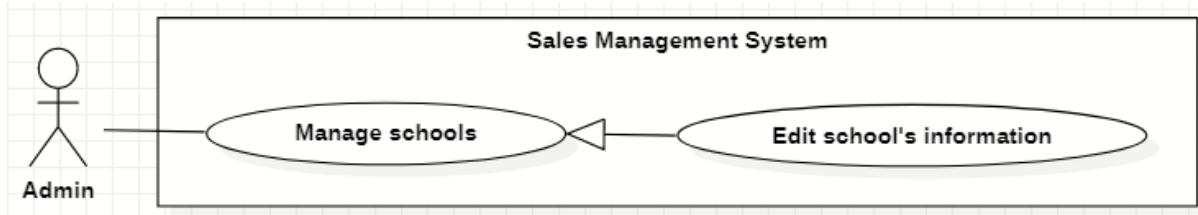


Figure 25. <>Administrator>> Edit school's information

ID and Name:	UC-17 Edit school's information		
Created By:	GiaNH	Date Created:	16/02/2021
Primary Actor:	Administrator	Secondary Actors:	N/A
Description:	This use case allows the users to edit the school's information.		
Trigger:	The user edits on fields in “School's details” screen then clicks “Save” button.		
Preconditions:	PRE-1. The user has been logged into the system with role Admin. PRE-2. The user is on the “School's details” screen.		
Post-conditions:	POST-1. The School information is edited in database.		
Normal Flow:	Step	Actor Action	System Response
	1		<p>The system displays the “School's detail” screen as a form with the following required information:</p> <p><i>School's information:</i></p> <ul style="list-style-type: none"> “School name”: input text filed, required. “School phone”: input text field. “District”: selections (24 districts in Ho Chi Minh City). “Address”: input text field. “isActive”: boolean, default value is true. “Description”: input text field.

		<ul style="list-style-type: none"> “School type”: selections (Công lập, Ngoài công lập, Bán công), required. “Educational level”: selections (Tiểu học, THCS, THPT), required. “School scale”: selections (Lớn, Vừa, Nhỏ). “School status”: selections (Chưa hợp tác, Đang hợp tác, Ngưng hợp tác). “Save”: button, only active when the form is dirty. <p><i>Representative's information:</i></p> <ul style="list-style-type: none"> “Full name”: input text field. “Email”: input text field. “Phone”: input text field. “IsMale”: radio buttons (Male, Female). “Save”: button, only active when the form is dirty. 									
	2	The user edits on fields in this form. [Exception 1]									
	3	The user clicks “Save” button when finish.									
Alternative Flows:	N/A										
Exceptions:	<table border="1"> <thead> <tr> <th>No</th><th>Cause</th><th>System Response</th></tr> </thead> <tbody> <tr> <td>1</td><td>The user inputs invalid format content into fields.</td><td>The system informs the users that the content of fields is invalid format.</td></tr> <tr> <td>2</td><td>The user's device does not connect to the Internet or the server has internal error.</td><td>The system shows the error message: “Connection Failed or Internal Error”.</td></tr> </tbody> </table>		No	Cause	System Response	1	The user inputs invalid format content into fields.	The system informs the users that the content of fields is invalid format.	2	The user's device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
No	Cause	System Response									
1	The user inputs invalid format content into fields.	The system informs the users that the content of fields is invalid format.									
2	The user's device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.									
Priority:	Medium										
Frequency of Use:	Usually										
Business Rules:	<ul style="list-style-type: none"> BR-09 Phone must be in format “/(84 0[3 5 7 8 9])+([0-9]{8})\b/g” and have max length is 10 (when starts with 0) or 11 (when starts with 84). (Resources: https://www.regextester.com/106725) 										
Other Information:	N/A										

Table 33. <>Administrator>> Edit school's information

2.5 <<Salesman>> Overview Use Case

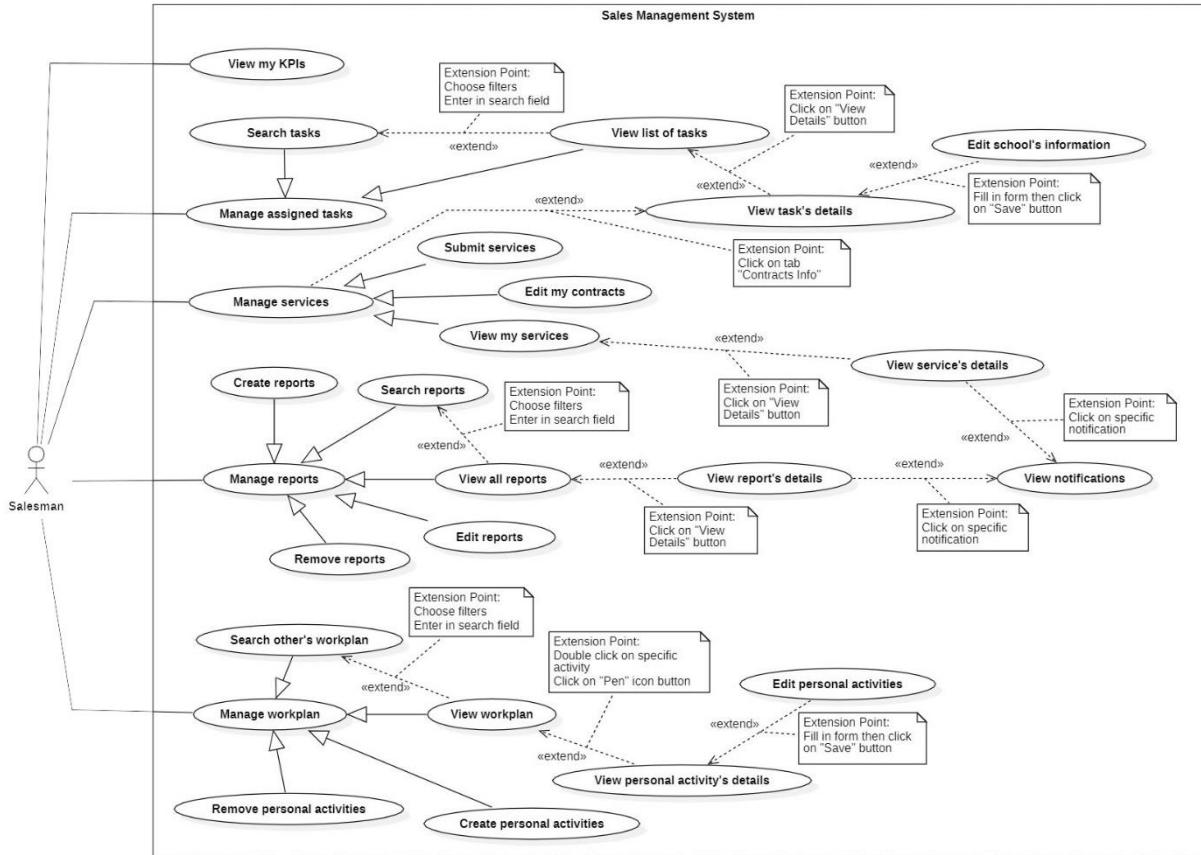


Figure 26. <<Salesman>> Overview Use Case

a. Search tasks

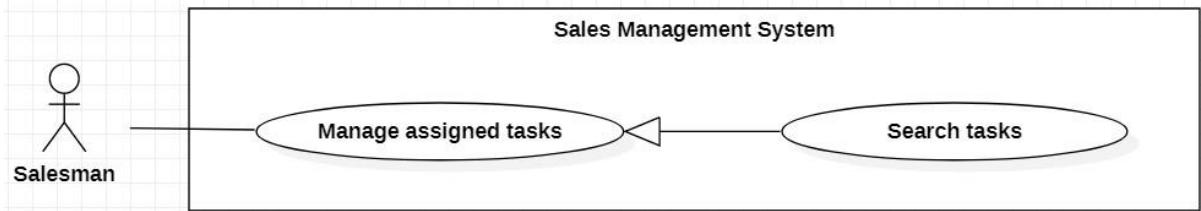


Figure 27. <<Salesman>> Search tasks

ID and Name:	UC-18 Search tasks		
Created By:	GiaNH	Date Created:	07/02/2021
Primary Actor:	Salesman, Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the users to find the tasks based on school's name, district, school status, school educational level, school type, address,...		
Trigger:	The user selects filters or inputs in search field on the "Tasks" screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the "Tasks" screen.		
Post-conditions:	POST-1. The list of tasks is shown as a table.		
Normal Flow:	Step	Actor Action	System Response

	1	The user inputs in the search field or selects filters to looking for schools.	<p>The system displays the list of accounts as the table.</p> <p>Available filters on this screen:</p> <ul style="list-style-type: none"> “Purposes”: selections (<ul style="list-style-type: none"> - Chưa hợp tác: Sales mới, Theo dõi; - Đang hợp tác: Chăm sóc, Tái ký hợp đồng, Ký mới hợp đồng; - Ngưng hợp tác) “Districts”: selections (24 districts in Ho Chi Minh City) “School Years”: selections (2020-2021, 2019-2020, 2018-2019,...). “School Types”: selections (Công lập, Ngoài công lập, Bán công). “School Levels”: selections (Tiểu học, THCS, THPT). “School Scales”: selections (Lớn, Vừa, Nhỏ). Search field: text field.
	2		<p>The system displays the list of tasks as a table.</p> <ul style="list-style-type: none"> “School Name”: text. “Principal”: text. “School Year”: text. “Purpose”: Label. <p>[Exception 1]</p> <p>[Exception 2]</p>
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The content of search field or selecting filter that The user inputted do not match any stored data in the system.	The system displays “No records found” line on the table.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> BR-19, BR-20, BR-40 The default values of all filters are “All”. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 34. <>Salesman>> Search tasks

b. View list of tasks

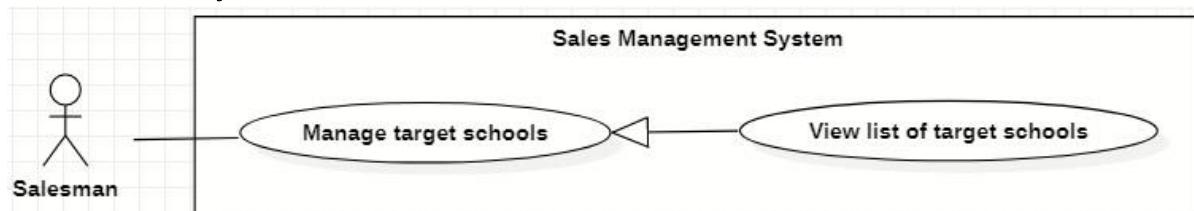


Figure 28. <<Salesman>> View list of tasks

ID and Name:	UC-19 View list of tasks		
Created By:	GiaNH	Date Created:	07/02/2021
Primary Actor:	Salesman, Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to view list of his assigned tasks.		
Trigger:	The user selects “Tasks” on the navigation bar (sidebar).		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager.		
Post-conditions:	POST-1. The list of tasks is shown as a table.		
Normal Flow:	Step	Actor Action	System Response
	1	The user selects “Tasks” on the navigation bar (sidebar).	<p>The system redirects to the “Tasks” screen and shows the tasks table with following columns:</p> <ul style="list-style-type: none"> • “School Name”: text. • “Principal”: text. • “School Year”: text. • “Purpose”: label. <p>Available filters on this screen:</p> <ul style="list-style-type: none"> • “Purposes”: selections (- Chưa hợp tác: Sales mới, Theo dõi; - Đang hợp tác: Chăm sóc, Tái ký hợp đồng, Ký mới hợp đồng; - Ngưng hợp tác) • “Districts”: selections (24 districts in Ho Chi Minh City) • “School Years”: selections (2020-2021, 2019-2020, 2018-2019,...). • “School Types”: selections (Công lập, Ngoài công lập, Bán công). • “School Levels”: selections (Tiểu học, THCS, THPT).

			<ul style="list-style-type: none"> “School Scales”: selections (Lớn, Vừa, Nhỏ). Search field: text field. <p>[Exception 1] [Exception 2]</p>
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	No stored tasks data in the system.	The system displays “No records found” line on the table.
Priority:	Normal		
	Usually		
Business Rules:	<ul style="list-style-type: none"> BR-19, BR-20, BR-40 The default values of all filters are “All”. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 35. <<Salesman>> View list of tasks

c. View task's details

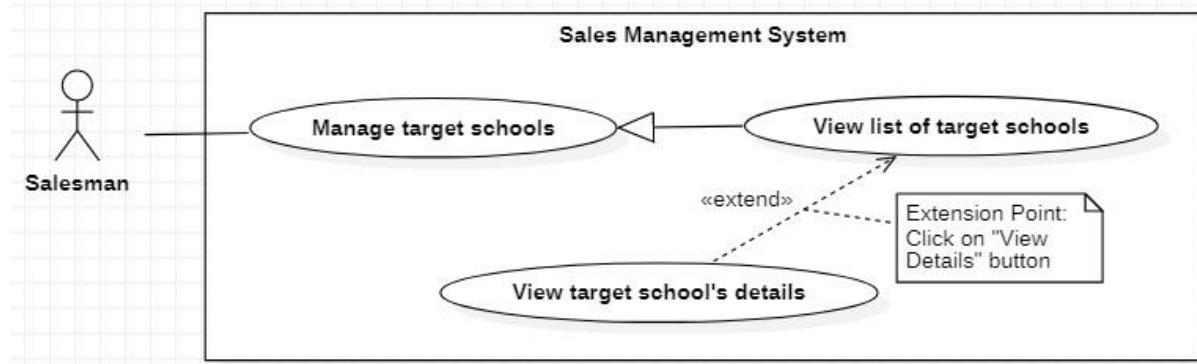


Figure 29. <<Salesman>> View task's details

ID and Name:	UC-20 View task's details		
Created By:	GiaNH	Date Created:	07/02/2021
Primary Actor:	Salesman, Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to view the detail information of the task.		
Trigger:	The user clicks on the “View details” command on the menu options at the end of row in table list of tasks.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is at the “Tasks” screen.		
Post-conditions:	POST-1. The detail information of task is shown as a form.		
Normal Flow:	Step	Actor Action	System Response

	1	<p>On the “Tasks” screen, at the end of each row in the table, the user clicks on action icon button, then selects “View detail” command on the menu options.</p>	<p>The system shows “Task’s Details” screen, which contains 3 tabs. Each tab has a form with following information:</p> <p>40> Tab “General Info”:</p> <p><i>School’s information:</i></p> <ul style="list-style-type: none"> • “School name”: input text field, required. • “School phone”: input text field. • “District”: selections (24 districts in Ho Chi Minh City). • “Address”: input text field. • “isActive”: boolean, default value is true. • “Description”: input text field. • “School type”: selections (Công lập, Ngoài công lập, Bán công), required. • “Educational level”: selections (Tiểu học, THCS, THPT), required. • “School scale”: selections (Lớn, Vừa, Nhỏ). • “School status”: selections (Chưa hợp tác, Đang hợp tác, Ngưng hợp tác). <hr/> <p><i>Representative’s information:</i></p> <ul style="list-style-type: none"> • “Full name”: input text field. • “Email”: input text field. • “Phone”: input text field. • “IsMale”: radio buttons (Male, Female). <p>2> Tab “Assign info”:</p> <p><i>Assign information:</i></p> <ul style="list-style-type: none"> • “PIC”: text. • “PIC’s phone”: text. • “PIC’s email”: text. • “Purpose”: text. • “Note”: input text field. <p>[Exception 1]</p>
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.

Priority:	Medium
Frequency of Use:	Usually
Business Rules:	<ul style="list-style-type: none"> BR-40 Services belongs to this task.
Other Information:	N/A
Assumptions:	N/A

Table 36. <<Salesman>> View task's details

d. Edit school's information

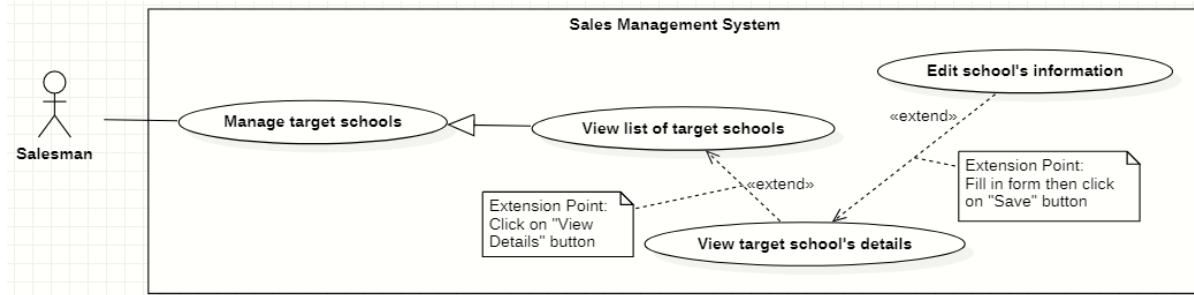


Figure 30. <<Salesman>> Edit school's information

ID and Name:	UC-21 Edit school's information		
Created By:	HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman	Secondary Actors:	N/A
Description:	This use case allows the user to view the detail information of the task.		
Trigger:	The user edits on fields in “Task’s details” screen then clicks “Save” button.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the tab “General Info” in “Task’s details” screen.		
Post-conditions:	POST-1. The detail information of task is edited in database.		
Normal Flow:	Step	Actor Action	System Response
	1	The user edits on fields in “Task’s details” screen then clicks “Save” button.	<p>The system displays the “Task’s detail” screen, on the tab “General Info”, there is a form with the following information:</p> <p><i>School’s information:</i></p> <ul style="list-style-type: none"> “School name”: input text field, read only. “School phone”: input text field, read only. “District”: selections (24 districts in Ho Chi Minh City), read only. “Address”: input text field, read only. “isActive”: boolean, read only. “Description”: input text field, read only.

		<ul style="list-style-type: none"> “School type”: selections (Công lập, Ngoài công lập, Bán công), read only. “Educational level”: selections (Tiểu học, THCS, THPT), read only. “School scale”: selections (Lớn, Vừa, Nhỏ), read only. “School status”: selections (Chưa hợp tác, Đang hợp tác, Ngưng hợp tác), read only. <p><i>Representative's information:</i></p> <ul style="list-style-type: none"> “Full name”: input text field. “Email”: input text field. “Phone”: input text field. “IsMale”: radio buttons (Male, Female). “Save”: button, only active when the form is dirty. 	
	2	The user edits on fields in this form. [Exception 1]	
	3	The user clicks “Save” button when finish.	The system edits new data in the database and displays the successful message: “Updated Successfully”. [Exception 2]
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The user inputs invalid format content into fields.	The system informs the users that the content of fields is invalid format.
	2	The user's device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Medium		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> BR-30, BR-09, BR-40 The user can only edit fields related to the school's representative: full name, IsMale, email, phone. Phone must be in format “/(84 0[3 5 7 8 9])+([0-9]{8})\b/g” and have max length is 10 (when starts with 0) or 11 (when starts with 84). (Resources: https://www.regextester.com/106725) Any school's data, the user needs to inform to the Admin and only Admin have right to edit school's information. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 37. <<Salesman>> Edit school's information

e. Create services



Figure 31 <<Salesman>> Create services

ID and Name:	UC-22 Create services																
Created By:	HaPTN	Date Created:	12/04/2021														
Primary Actor:	Salesman	Secondary Actors:	N/A														
Description:	This use case allows the user to create services of his/her assigned tasks.																
Trigger:	The user selects the "Create" button on "Services" screen.																
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the tab "Services" in "Task's details" screen.																
Post-conditions:	POST-1. A new service is created in the system.																
Normal Flow:	<table border="1"> <thead> <tr> <th>Step</th><th>Actor Action</th><th>System Response</th></tr> </thead> <tbody> <tr> <td>1</td><td>The user selects the "Create" button on "Services" screen.</td><td>The system shows "Create Service" view that contains following information fields:<ul style="list-style-type: none">• "ID": text.• "Tasks": text.• "Duration": input text field, required.• "Service": checkbox, required.• "Revenue Criteria": checkbox, required.• "Note": input text field, required.</td></tr> <tr> <td>2</td><td>The user inputs the information into the required fields. [</td><td></td></tr> <tr> <td>3</td><td>The user selects "Save" button to create a new service. [Exception 3]</td><td>The system shown the successful message: "Create Successfully". [Exception 1] [Exception 2]</td></tr> <tr> <td>4</td><td></td><td>The system updates the table of list of services in the "Services" screen. [Exception 2]</td></tr> </tbody> </table>	Step	Actor Action	System Response	1	The user selects the "Create" button on "Services" screen.	The system shows "Create Service" view that contains following information fields: <ul style="list-style-type: none">• "ID": text.• "Tasks": text.• "Duration": input text field, required.• "Service": checkbox, required.• "Revenue Criteria": checkbox, required.• "Note": input text field, required.	2	The user inputs the information into the required fields. [3	The user selects "Save" button to create a new service. [Exception 3]	The system shown the successful message: "Create Successfully". [Exception 1] [Exception 2]	4		The system updates the table of list of services in the "Services" screen. [Exception 2]	
Step	Actor Action	System Response															
1	The user selects the "Create" button on "Services" screen.	The system shows "Create Service" view that contains following information fields: <ul style="list-style-type: none">• "ID": text.• "Tasks": text.• "Duration": input text field, required.• "Service": checkbox, required.• "Revenue Criteria": checkbox, required.• "Note": input text field, required.															
2	The user inputs the information into the required fields. [
3	The user selects "Save" button to create a new service. [Exception 3]	The system shown the successful message: "Create Successfully". [Exception 1] [Exception 2]															
4		The system updates the table of list of services in the "Services" screen. [Exception 2]															
Alternative Flows:	N/A																
Exceptions:	<table border="1"> <thead> <tr> <th>No</th><th>Cause</th><th>System Response</th></tr> </thead> <tbody> <tr> <td>1</td><td>The user leaves the blank fields or inputs invalid format content.</td><td>The system shows the error message: "Please input the valid format content".</td></tr> </tbody> </table>	No	Cause	System Response	1	The user leaves the blank fields or inputs invalid format content.	The system shows the error message: "Please input the valid format content".										
No	Cause	System Response															
1	The user leaves the blank fields or inputs invalid format content.	The system shows the error message: "Please input the valid format content".															

	2	The user's device does not connect to the Internet or the server has internal error.	The system shows the error message: "Connection Failed or Internal Error".
	3	The user selects "Cancel" button.	The system closes the "Create Service" view and returns the Services screen.
Priority:	High		
Frequency of Use:	Usually		
Business Rules:	BR-31, BR-32, BR-33, BR-40		
Other Information:	N/A		
Assumptions:	N/A		

Table 38. <<Salesman>> Create services

f. View my services



Figure 32. <<Salesman>> View my services

ID and Name:	UC-23 View my services		
Created By:	HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman	Secondary Actors:	N/A
Description:	This use case allows the user to view the list of services' of his/her assigned tasks.		
Trigger:	The user selects tab "Services" in "Task's details" screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the tab "Services" in "Task's details" screen.		
Post-conditions:	POST-1. Service's list is displayed as the table in "Services" screen.		
Normal Flow:	Step	Actor Action	System Response
	1	The user selects tab "Services" in "Task's details" screen.	<p>The system displays "Services" screen, service's list is displayed as the table.</p> <ul style="list-style-type: none"> • "Tasks": text. • "Duration": text. • "Service": text. • "Revenue Criteria": text. • "Note": text.
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	No stored services data in the system.	The system displays "No records found" line on the table.

	2	The user's device does not connect to the Internet or the server has internal error.	The system shows the error message: "Connection Failed or Internal Error".
Priority:	High		
Frequency of Use:	Usually		
Business Rules:	BR-31, BR-32, BR-34, BR-40		
Other Information:	N/A		
Assumptions:	N/A		

Table 39. <<Salesman>> View my services

g. *View service's details*

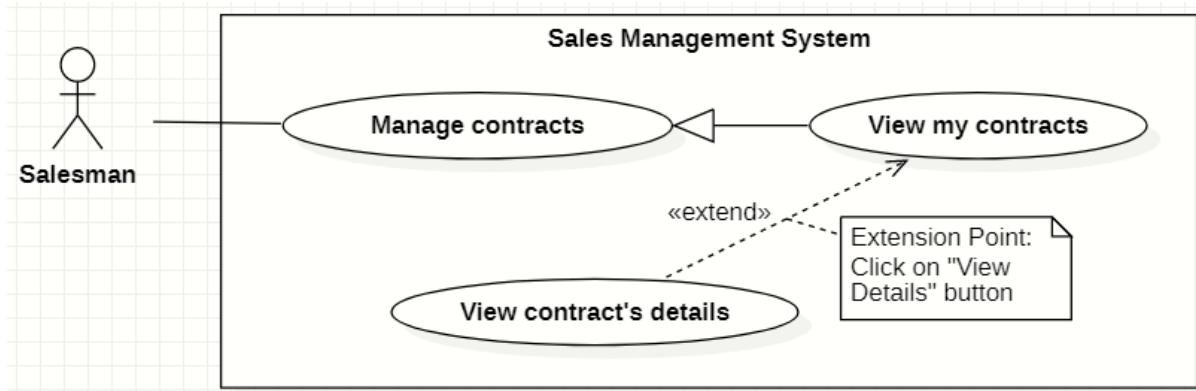


Figure 33. <<Salesman>> View service's details

ID and Name:	UC-24 View service's details		
Created By:	HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman	Secondary Actors:	N/A
Description:	This use case allows the user to view a service's details.		
Trigger:	The user selects a specific service in the list of services in tab "Services" on "Task's details" screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Sales Manager. PRE-2. The user is on the tab "Services" in "Task's details" screen.		
Post-conditions:	POST-1. Service's details is displayed as the dialog in "Services" screen.		
Normal Flow:	Step	Actor Action	System Response
	1	The user clicks on a specific service in the list of services in tab "Services" on "Task's details" screen.	<p>The system displays the "Service's details" dialog with the following information:</p> <ul style="list-style-type: none"> • "ID": text. • "Tasks": text. • "Duration": text. • "Service": text. • "Revenue Criteria": text. • "Note": text. <p>[Exception 1]</p>
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response

	1	The user's device does not connect to the Internet or the server has internal error.	The system shows the error message: "Connection Failed or Internal Error".
Priority:	Medium		
Frequency of Use:	Usually		
Business Rules:	BR-31, BR-32, BR-34, BR-40		
Other Information:	N/A		
Assumptions:	N/A		

Table 40. <<Salesman>> View service's details

h. Edit my services



Figure 34. <<Salesman>> Edit my services

ID and Name:	UC-25 Edit my services		
Created By:	HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman	Secondary Actors:	N/A
Description:	This use case allows the user to edit the information of services' of his/her assigned tasks.		
Trigger:	The user selects tab "Services" in "Task's details" screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the tab "Services" in "Task's details" screen.		
Post-conditions:	POST-1. The detail information of this service is edited in database.		
Normal Flow:	Step	Actor Action	System Response
	1	The user selects a specific row of services in "Task's details" screen.	The system displays "Service's detail" dialog which contains: <ul style="list-style-type: none"> "Tasks": text, read only. "Duration": input text field. "Service": check boxes. "Revenue Criteria": check boxes. "Note": text area. "Cancel": button. "Save": button.
	2	The user edits on fields in this form. [Exception 1]	
	3	The user clicks "Save" button when finish.	The system update new information in the database, then

			displays the successful message: "Updated Successfully". [Exception 2]
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The user inputs invalid format content into fields.	The system informs the users that the content of fields is invalid format.
	2	The user's device does not connect to the Internet or the server has internal error.	The system shows the error message: "Connection Failed or Internal Error".
Priority:	High		
Frequency of Use:	Usually		
Business Rules:	BR-31, BR-32, BR-34, BR-40		
Other Information:	N/A		
Assumptions:	N/A		

Table 41. <<Salesman>> Edit my services

i. *Create reports*



Figure 35. <<Salesman>> Create reports

ID and Name:	UC-26 Create reports		
Created By:	GiaNH	Date Created:	08/02/2021
Primary Actor:	Salesman	Secondary Actors:	N/A
Description:	This use case allows the user to create daily reports.		
Trigger:	The user selects the "Create" command on "Reports" screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the "Reports" screen.		
Post-conditions:	POST-1. A new report is created in the system.		
Normal Flow:	Step	Actor Action	System Response
	1	The user selects the "Create" button on "Reports" screen. [Alternative]	The system shows "Create Report" view that contains following information fields: <ul style="list-style-type: none">• "Tasks": input text field, required.• "Date": date, read only, default is current date.

			<ul style="list-style-type: none"> • “Result”: input text field, required. • “Description”: input text field, required. • “Positivity”: input text field. • “Difficulty”: input text field. • “Future plan”: input text field.
	2	The user inputs the information into the required fields. [Exception 1]	
	3	The user clicks on “Save” button to create a new daily report. [Alternative 1]	The system shows the successful message: “Created successfully”. [Exception 2] [Exception 3]
	4		The system updates the table of list of reports in the “Reports” screen. [Exception 2]
Alternative Flows:	Step	Actor Action	System Response
	1	The user clicks on “+” button to continue create daily report for another school.	<p>The system resets the “Create Report” form and shows the previous inputted reports in “Preview” table.</p> <p>Table contains these columns:</p> <ul style="list-style-type: none"> • “School Name”: text. • “Result”: text. • “Description”: text. <p><i>Continue to step 2 of Normal Flow.</i></p>
Exceptions:	No	Cause	System Response
	1	The user leaves the blank fields or inputs invalid format content.	The system shows the error message: “Please input the valid format content”.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
	3	The user selects “Cancel” button.	The system closes the “Create Report” view and returns the Reports screen.
Priority:	High		
Frequency of Use:	Usually		
Business Rules:	BR-21, BR-22, BR-23, BR-24, BR-40		
Other Information:	N/A		
Assumptions:	N/A		

Table 42. <>Salesman>> Create reports

j. *Search reports*



Figure 36. <<Salesman>> Search reports

ID and Name:	UC-27 Search reports		
Created By:	HaPTN	Date Created:	09/02/2021
Primary Actor:	Salesman	Secondary Actors:	N/A
Description:	This use case allows the user to find the reports based on task's name, district, PIC's name, from date to date,....		
Trigger:	The user selects on the searching command on "Reports" screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the "Reports" screen.		
Post-conditions:	POST-1. The list of reports is displayed as the table.		
Normal Flow:	Step	Actor Action	System Response
	1	The user inputs the search field or select searching filters on toolbar to find reports.	<p>The system displays the list of reports as the table.</p> <p>Available filters on this screen:</p> <ul style="list-style-type: none"> "PICs": selections (all salesmen in the Sales Department) "Districts": selections (24 districts in Ho Chi Minh City) "School Years": selections (2020-2021, 2019-2020, 2018-2019,...). "From date" – "To date": date range picker, disable future days. "School Statuses": selections (Chưa hợp tác, Đang hợp tác, Ngưng hợp tác). "Purposes": selections (- Chưa hợp tác: Sales mới, Theo dõi; - Đang hợp tác: Chăm sóc, Tái ký hợp đồng, Ký mới hợp đồng; - Ngưng hợp tác) Search field: text field.
	2		<p>The system displays the list of tasks as a table.</p> <ul style="list-style-type: none"> "Date": date.

			<ul style="list-style-type: none"> “School Name”: text. “PIC”: image (avatar) and text. “Purpose”: Label. “Result”: text. “Description”: text. <p>[Exception 1] [Exception 2]</p>
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The content of search field or selecting filter that The user inputted is not matched any stored data in the system.	The system displays “No records found” line on the table.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Medium		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> BR-20, BR-24, BR-39, BR-40 The default values of all filters are “All”. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 43. <<Salesman>> Search reports

k. View all reports



Figure 37. <<Salesman>> View all reports

ID and Name:	UC-28 View all reports		
Created By:	GiaNH	Date Created:	08/02/2021
Primary Actor:	Salesman	Secondary Actors:	N/A
Description:	This use case allows the user to view list of all daily report's of all members in Major Sales Department.		
Trigger:	The user selects “Reports” on the navigation bar (sidebar).		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager.		
Post-conditions:	POST-1. Report's list is displayed as the table in “Reports” screen.		

Normal Flow:	Step	Actor Action	System Response
	1	The user selects “Reports” on the navigation bar (sidebar).	<p>The system displays “Reports” screen, report’s list is displayed as the table.</p> <ul style="list-style-type: none"> • “Date”: date. • “School Name”: text. • “PIC”: image (avatar) and text. • “Purpose”: label. • “Result”: text. • “Description”: text. <p>Available filters on this screen:</p> <ul style="list-style-type: none"> “PICs”: selections (all salesmen in the Sales Department) • “Districts”: selections (24 districts in Ho Chi Minh City) • “School Years”: selections (2020-2021, 2019-2020, 2018-2019,...). • “From date” – “To date”: date range picker, disable future days. • “School Statuses”: selections (Chưa hợp tác, Đang hợp tác, Ngưng hợp tác). • “Purposes”: selections (<ul style="list-style-type: none"> - Chưa hợp tác: Sales mới, Theo dõi; - Đang hợp tác: Chăm sóc, Tái ký hợp đồng, Ký mới hợp đồng; - Ngưng hợp tác) • Search field: text field. <p>[Exception 1] [Exception 2]</p>
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	No stored reports data in the system.	The system displays “No records found” line on the table.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	High		
Frequency of Use:	Usually		
Business Rules:	BR-20, BR-24, BR-39, BR-40		
Other Information:	N/A		
Assumptions:	N/A		

Table 44. <<Salesman>> View all reports

I. View report's details

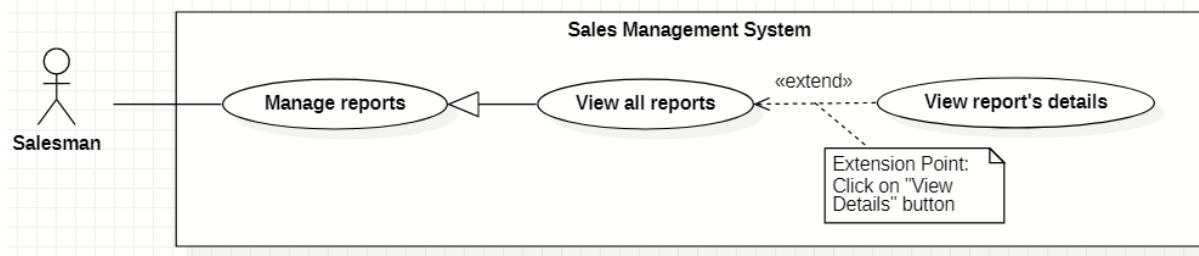


Figure 38. <<Salesman>> View report's details

ID and Name:	UC-29 View report's details		
Created By:	HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman	Secondary Actors:	N/A
Description:	This use case allows the user to view the detail information of a report.		
Trigger:	The user clicks on the “View details” command on the menu options at the end of row in table list of reports.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the “Reports” screen.		
Post-conditions:	POST-1. The detail information of report is shown as a form.		
Normal Flow:	Step	Actor Action	System Response
	1	On the “Reports” screen, at the end of each row in the table, the user clicks on action icon button, then selects “View detail” command on the menu options.	<p>The system displays “Report’s details” view, the report’s information is displayed as a form.</p> <ul style="list-style-type: none"> • “School Year”: text. • “Date”: text. • “School Name”: text. • “PIC”: image (avatar) and text. • “Purpose”: text. • “Result”: input text field, required. • “Description”: input text field, required. • “Positivity”: input text field. • “Difficulty”: input text field. • “Future plan”: input text field. • “Supervisor comment”: input text field, read only. • “Save”: button, inactive. <p>[Exception 1]</p>
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Medium		
Frequency of Use:	Usually		
Business Rules:	BR-20, BR-24, BR-39, BR-40		

Other Information:	N/A
Assumptions:	N/A

Table 45. <<Salesman>> View report's details

m. Edit reports



Figure 39. <<Salesman>> Edit reports

ID and Name:	UC-30 Edit reports		
Created By:	HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman	Secondary Actors:	N/A
Description:	This use case allows the user to edit a daily report.		
Trigger:	The user edits on fields in “Report’s details” screen then clicks “Save” button.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the “Report’s details” screen.		
Post-conditions:	POST-1. A new report is updated in the database.		
Normal Flow:	Step	Actor Action	System Response
	1	The user edits on fields in “Report’s details” screen then clicks “Save” button.	<p>The system displays “Report’s details” view, the report’s information is displayed as a form.</p> <ul style="list-style-type: none"> • “School Year”: text. • “Date”: text. • “School Name”: text. • “PIC”: image (avatar) and text. • “Purpose”: text. • “Result”: input text field, required. • “Description”: input text field, required. • “Positivity”: input text field. • “Difficulty”: input text field. • “Future plan”: input text field. • “Supervisor comment”: input text field, read only. • “Save”: button, only active when the form is dirty.
	2	The user edits on fields in this form.	

		[Exception 1]	
	3	The user clicks “Save” button when finish.	The system has successful edit and displays the successful message: “Updated Successfully”. [Exception 2]
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The user inputs invalid format content into fields.	The system informs the users that the content of fields is invalid format.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	High		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> BR-24, BR-28, BR-29, BR-30, BR-39, BR-40 The user can only edit reports which have not been commented by the supervisor or the manager. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 46. <<Salesman>> Edit reports

n. Remove reports



Figure 40. <<Salesman>> Remove reports

ID and Name:	UC-31 Remove reports		
Created By:	HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman	Secondary Actors:	N/A
Description:	This use case allows the user to remove a daily report.		
Trigger:	The user clicks on the “Remove” command on the menu options at the end of row in table list of reports.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the “Reports” screen.		
Post-conditions:	POST-1. A daily report is removed in the database.		
Normal Flow:	Step	Actor Action	System Response
	1	The user clicks on the “Remove” command on the menu options at the end of row in table list of reports.	The system shows a “Confirm Remove” dialog to alert. <ul style="list-style-type: none"> “Cancel”: button. “Remove”: button.

	2	The user clicks on “Remove” button. [Exception 1]	The system shows a successful message: “Removed successfully”, and closes the confirm dialog.
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The user selects “Cancel” button.	The system closes the “Confirm Remove” dialog and returns the Reports screen.
Business Rules:	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
	Priority: High		
Frequency of Use:	Sometimes		
Other Information:	N/A		
Assumptions:	N/A		

Table 47 <<Salesman>> Remove reports

o. Create personal activities

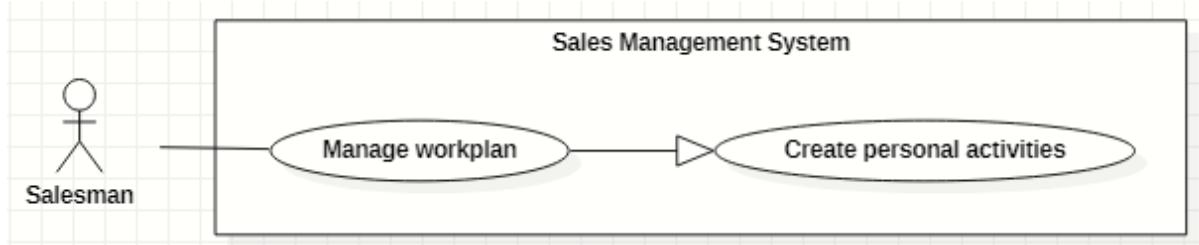


Figure 41. <<Salesman>> Create personal activities

ID and Name:	UC-32 Create personal activities		
Created By:	GiaNH, HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman, Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to create one or multiple personal activities in his/her work-plan.		
Trigger:	The user wants to create one or multiple personal activities.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the “Work-plan” screen.		
Post-conditions:	POST-1. New personal activity/personal activities is/are added in work-plan schedule.		
Normal Flow:	Step	Actor Action	System Response

	1	The user clicks on a cell and chooses “More details” button on the “Work-plan” screen. [Alternative 1]	The system displays the “Add Activity” form dialog that contains the following format fields: <ul style="list-style-type: none">“Title”: text, required.“Location”: text.“Description”: text.“Remark”: text.“Start time”: date time, required.“End time”: date time, required.“isAllDay”: check box [True-False] , default is “False”.“Repeat”: selection (Never, Daily, Weekly, Monthly, Yearly), default is “Never”.“isCompleted”: check box [True, False], defalt is False.“Cancel”: button.“Save”: button.
	2	The user inputs into the information fields. [Exception 1] [Alternative 2]	
	3	The user selects the “Save” button.	The system creates new activity in the database and update the “Work-plan” screen. [Exception 2]
Alternative Flows:	No	Step	Actor Action
	1	1	The user clicks on a cell and on the “Work-plan” screen.
	1	2	The user selects the “Save” button.
	2	1	The user selects other options (Daily, Weekly, Monthly, Yearly).
	2	2	The user selects the “Save” button.

			[Exception 2]
Exceptions:	No	Actor Action	System Response
	1	The user leaves the blank fields or inputs invalid format content into fields.	The system shows the error message: "Please input the valid format content".
	2	The user's device does not connect to the Internet or the server has internal error.	The system shows the error message: "Connection Failed or Internal Error".
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	BR-35, BR-36, BR-37, BR-38, BR-40		
Other Information:	N/A		
Assumptions:	N/A		

Table 48. <<Salesman>> Create personal activities

p. Search other's work-plan

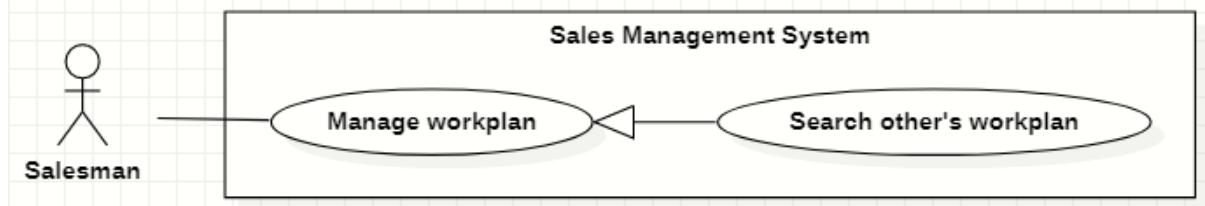


Figure 42. <<Salesman>> Search other's work-plan

ID and Name:	UC-33 Search other's work-plan		
Created By:	GiaNH, HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman, Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to search the work-plan of other users.		
Trigger:	The user input in the search field on "Work-plan" screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the "Work plan" screen.		
Post-conditions:	POST-1. The work plan schedule is displayed on the screen.		
Normal Flow:	Step	Actor Action	System Response
	1	On the "Work plan" screen, the user inputs into the search field username or full name of people he/she wants to view the work-plan.	The system provides suggestions that presents Salesman to users as they enter their search query into the search box.
	2	The user selects a Salesman item in suggestions.	The system displays "work-plan" screen. The Work-plan has the personal activity items that present as a schedule.
Alternative Flows:	N/A		
	No	Actor Action	System Response

Exceptions:	1	The content of search field or selecting filter that the user inputted is not matched any stored data in the system.	The system displays “No records found” line on the table.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> • BR-35, BR-39, BR-40 • The Sales Manager can view the Salesman’s work-plan and other Sales Manager’s work-plan. • The Salesman can only view the work-plan of other Salesman. • The user is not allowed to create/edit/remove anything in other person’s work-plan. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 49. <<Salesman>> Search other’s work-plan

q. View work-plan

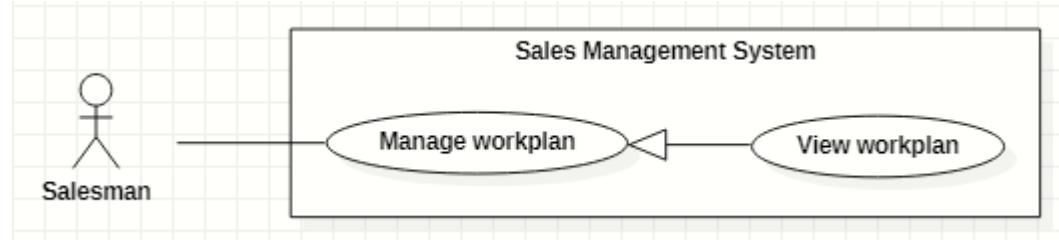


Figure 43. <<Salesman>> View work-plan

ID and Name:	UC-34 View work-plan		
Created By:	GiaNH, HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman, Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to view a whole work-plan of himself/herself or other’s.		
Trigger:	The user selects “Work-plans” on the navigation bar (sidebar).		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager.		
Post-conditions:	POST-1. The personal activities are displayed in work-plan schedule.		
Normal Flow:	Step	Actor Action	System Response
	1	The user selects “Work-plans” on the navigation bar (sidebar).	The system displays “work-plan” screen. The Work-plan has the personal activity items that present as a schedule [Exception 1]
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response

	1	The user's device does not connect to the Internet or the server has internal error.	The system shows the error message: "Connection Failed or Internal Error".
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> BR-35, BR-39, BR-40 The system displays the "Work-plan" as a week's schedule with the activity item is a cell in the schedule. The activity items have different colors to distinguish based on status. The users can view the Work-plan by Day, Week, Month. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 50. <<Salesman>> View work-plan

r. *View personal activity's details*

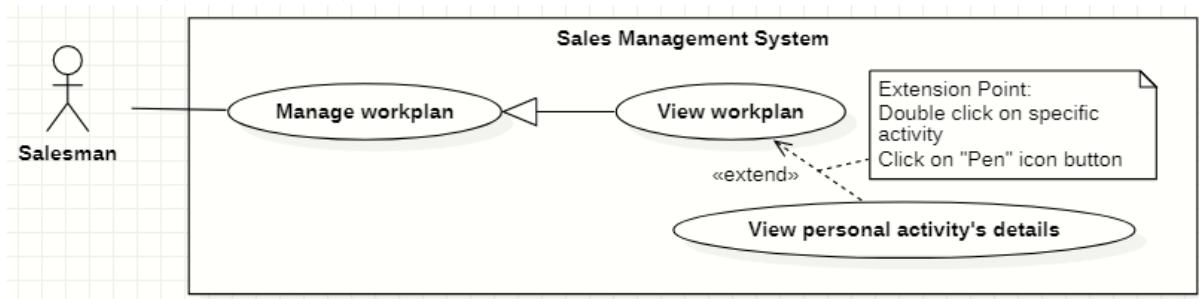


Figure 44. <<Salesman>> View personal activity's details

ID and Name:	UC-35 View personal activity's details		
Created By:	GiaNH, HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman, Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to view the detail information of personal activity.		
Trigger:	The user clicks on the personal activity item on work-plan screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2. The user is on the "Work-plan" screen.		
Post-conditions:	POST-1. The detail information of personal activity is shown as a form.		
Normal Flow:	Step	Actor Action	System Response
	1	The user clicks on an item and chooses "pen" icon button on the "Work-plan" screen. [Alternative 1]	<i>If the user is viewing his/her own work-plan:</i> The system displays the "Activity's details" form dialog that contains the following format fields: <ul style="list-style-type: none"> "Title": text, required. "Location": text. "Description": text. "Remark": text.

			<ul style="list-style-type: none"> • “Start time”: date time, required. • “End time”: date time, required. • “isAllDay”: check box [True-False] , default is “False”. • “Repeat”: selection (Never, Daily, Weekly, Monthly, Yearly), default is “Never”. • “isCompleted”: check box [True, False], defalt is False. <p>-----</p> <p><i>If the user is viewing other's work-plan:</i></p> <p>The system displays the “Activity’s details” quick dialog that contains:</p> <ul style="list-style-type: none"> • “Title”: text. • “Location”: text. • “Description”: text. • “Time”: text (including start time and end time). • “isCompleted” is displayed by different colors.
Alternative Flows:	Step	Actor Action	System Response
	1	The user double clicks on an item on the “Work-plan” screen.	<p>The system displays the “Activity’s details” quick dialog that contains the following format fields:</p> <ul style="list-style-type: none"> • “Title”: text, required. • “Location”: text. • “Description”: text. • “Time”: text (including start time and end time). • “isCompleted” is displayed by different colors.
Exceptions:	No	Actor Action	System Response
	1	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	BR-35, BR-39, BR-40		
Other Information:	N/A		
Assumptions:	N/A		

Table 51. <>Salesman>> View personal activity’s details

s. *Edit personal activities*

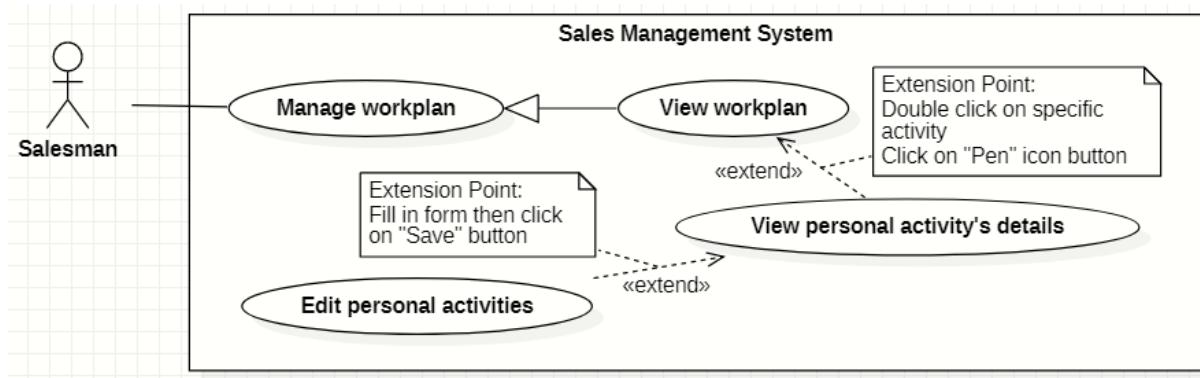


Figure 45. <<Salesman>> Edit personal activities

ID and Name:	UC-36 Edit personal activities		
Created By:	GiaNH, HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman, Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to edit personal activities in his/her work-plan.		
Trigger:	The user wants to edit one or multiple personal activities.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2.1. The user is on the “Work-plan” screen.		
Post-conditions:	POST-1. The personal activity/personal activities is/are updated in the database.		
Normal Flow:	Step	Actor Action	System Response
	1	The user clicks on an item and chooses “pen” icon button on the “Work-plan” screen. [Alternative 1]	<p>The system displays the “Edit Activity” form dialog that contains the following format fields:</p> <ul style="list-style-type: none"> • “Title”: text, required. • “Location”: text. • “Description”: text. • “Remark”: text. • “Start time”: date time, required. • “End time”: date time, required. • “isAllDay”: check box [True-False], default is “False”. • “Repeat”: selection (Never, Daily, Weekly, Monthly, Yearly), default is “Never”. • “isCompleted”: check box [True, False], default is False. • “Cancel”: button. • “Save”: button.

			<ul style="list-style-type: none"> “Delete”: button.
	2	The user inputs the new content in the fields.	
	3	The user clicks “Save” button. [Exception 1]	The system update “Work-plan” screen with new data. [Exception 2]
Alternative Flows:	Step	Actor Action	System Response
	1	The user double clicks on an item on the “Work-plan” screen.	<p>The system shows the dialog “Edit event” for the user to choose whether edit an activity or edit the entire series.</p>
	2		<p>The system displays the “Edit Activity” form dialog that contains the following format fields:</p> <ul style="list-style-type: none"> “Title”: text, required. “Location”: text. “Description”: text. “Remark”: text. “Start time”: date time, required. “End time”: date time, required. “isAllDay”: check box [True-False], default is “False”. “Repeat”: selection (Never, Daily, Weekly, Monthly, Yearly), default is “Never”. “isCompleted”: check box [True, False], default is False. “Cancel”: button. “Save”: button. “Delete”: button. <p><i>Continue to step 2 in the Normal Flow.</i></p>
Exceptions:	No	Actor Action	System Response
	1	The user selects “Cancel” button to cancel the editing.	The system discards all changes and close the “Edit Activity” dialog.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	BR-35, BR-36, BR-38, BR-39, BR-40		
Other Information:	N/A		

Assumptions:	N/A
--------------	-----

Table 52. <<Salesman>> Edit personal activities

t. Remove personal activities

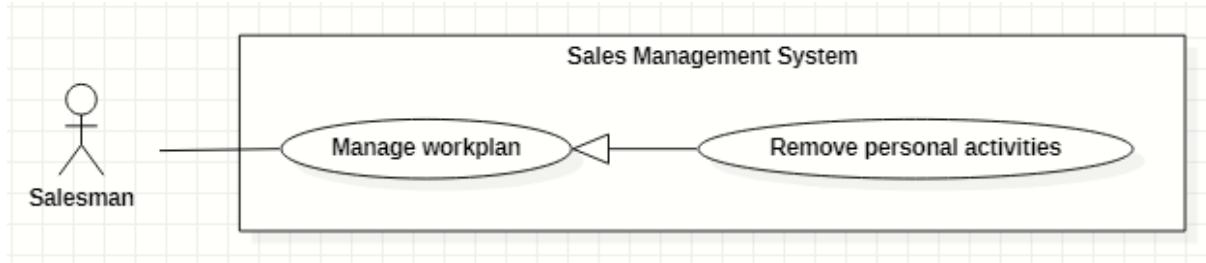


Figure 46. <<Salesman>> Remove personal activities

ID and Name:	UC-37 Remove personal activities		
Created By:	GiaNH, HaPTN	Date Created:	12/04/2021
Primary Actor:	Salesman, Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to remove personal activities in his/her work-plan.		
Trigger:	The user wants to remove one or multiple personal activities.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman, Sales Supervisor or Sales Manager. PRE-2.1. The user is on the “Work-plan” screen.		
Post-conditions:	POST-1. The personal activity/personal activities is/are removed in the database.		
Normal Flow:	Step	Actor Action	System Response
	1	On the “Work-plan” screen, the user clicks on an item and selects “Remove” icon button in the quick view pop-up. [Alternative 1]	The system shows the dialog “Delete Activity” for the user to choose whether remove an activity or remove the entire series.
	2	The user selects a button to confirm the removing. [Exception 1]	The system update “Work-plan” screen with new data. [Exception 2]
Alternative Flows:	Step	Actor Action	System Response
	1	The user double clicks on an item on the “Work-plan” screen.	<p>The system displays the “Edit Activity” form dialog that contains the following format fields:</p> <ul style="list-style-type: none"> • “Title”: text, required. • “Location”: text. • “Description”: text. • “Remark”: text. • “Start time”: date time, required. • “End time”: date time, required.

			<ul style="list-style-type: none"> “isAllDay”:check box [True- False] , default is “False”. “Repeat”: selection (Never, Daily, Weekly, Monthly, Yearly), default is “Never”. “isCompleted”: check box [True, False], default is False. “Cancel”: button. “Save”: button. “Delete”: button.
	2	The user clicks on “Delete” button. [Exception 1]	<p>The system shows confirmation dialog “Delete Activity” which includes:</p> <ul style="list-style-type: none"> “Delete”: button. “Cancel”: button.
	3	The user clicks on “Delete” button. [Exception 1]	<p>The system update “Work-plan” screen with new data. [Exception 2]</p>
Exceptions:	No	Actor Action	System Response
	1	The user selects “Cancel” button to cancel the removing.	The system returns the “Work-plan” screen.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Normal.		
Frequency of Use:	Usually		
Business Rules:	BR-35, BR-36, BR-39, BR-40		
Other Information:	N/A		
Assumptions:	N/A		

Table 53. <<Salesman>> Remove personal activities

u. *View my KPIs*

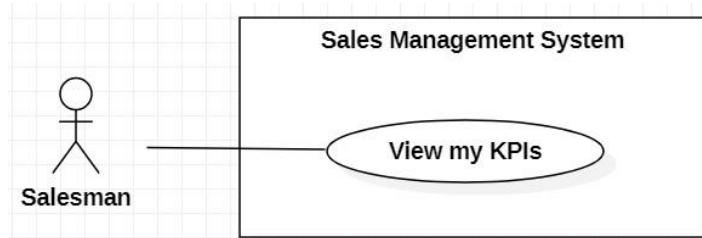


Figure 47. <<Salesman>> View my KPIs

ID and Name:	UC-50 View my KPIs		
Created By:	HaPTN	Date Created:	30/05/2021
Primary Actor:	Salesman	Secondary Actors:	N/A

Description:	This use case allows the user to view personal KPI.		
Trigger:	The user clicks on options KPI in the sidebar.		
Preconditions:	PRE-1. The user has been logged into the system with role Salesman. PRE-2.1. The user is on the “KPIs” screen.		
Post-conditions:	POST-1. The personal KPIs details are displayed on the screen.		
Normal Flow:	Step	Actor Action	System Response
	1		The system shows the table list of KPI groups that are applied for this user.
	2	The user clicks on option “View Details” at row of KPI group they want to view.	The system redirects to “KPI group’s details” screen. In this screen, on the left side, there are panels to show chart and information of the user’s KPIs. On the right side, there is a table of list of criteria and weight of each criteria. [Exception 1]
Alternative Flows:	N/A		
Exceptions:	No	Actor Action	System Response
	1	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	N/A		
Other Information:	N/A		
Assumptions:	N/A		

Table 54. <>Salesman>> View my KPIs

2.6 <<Sales Supervisor>> Overview Use Case

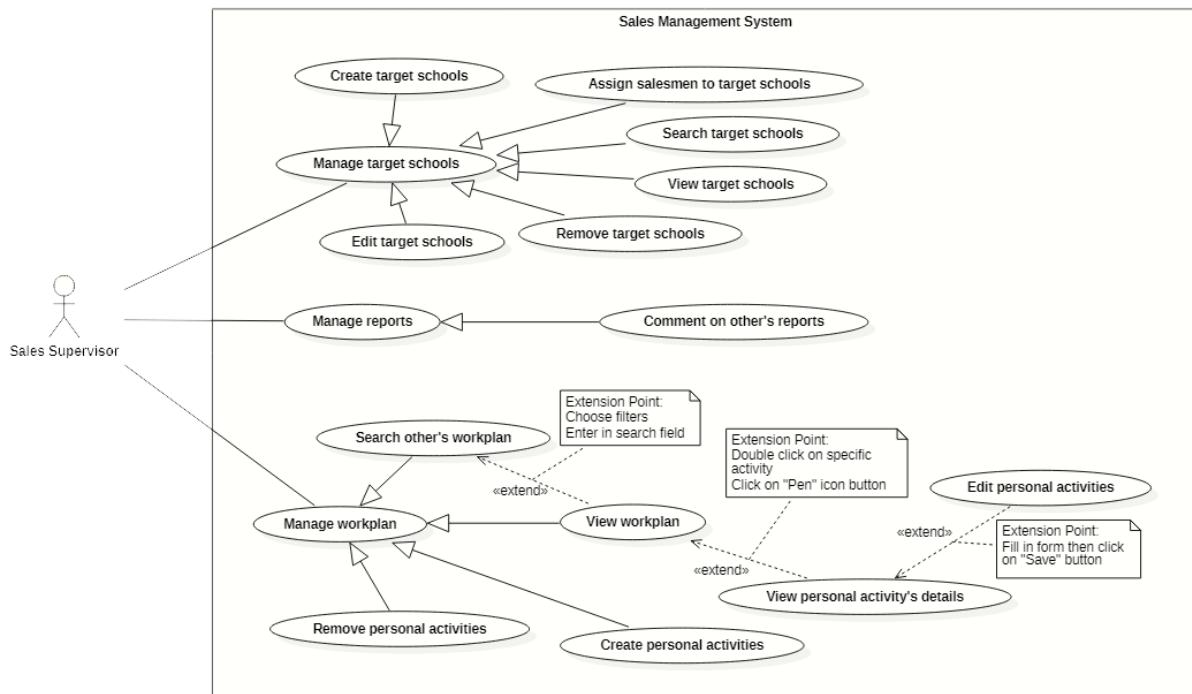


Figure 48. <<Sales Supervisor>> Overview Use Case

a. Create tasks

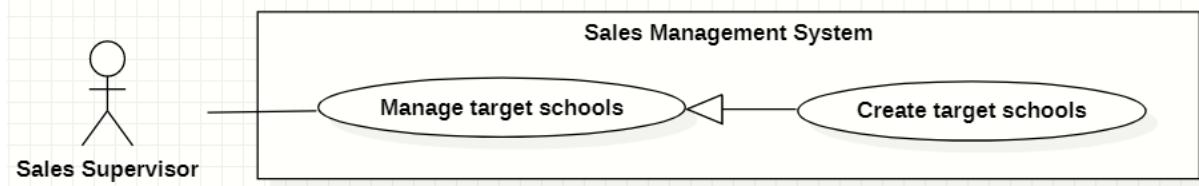


Figure 49. <<Sales Supervisor>> Create tasks

ID and Name:	UC-38 Create tasks		
Created By:	GiaNH, HaPTN	Date Created:	15/02/2021
Primary Actor:	Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to create new tasks from the list of all schools.		
Trigger:	The user clicks on the "Create" button on "Tasks" screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Sales Supervisor or Sales Manager. PRE-2. The user is on the "Tasks" screen.		
Post-conditions:	POST-1. The new tasks are created in the system.		
Normal Flow:	Step	Actor Action	System Response
	1	The user clicks on the "Create" button on "Tasks" screen.	The system displays the "Create Task" form with following information: <ul style="list-style-type: none"> ❖ 2 tabs: "Chưa hợp tác" and "Đang hợp tác" ❖ 4 filters: 3 selections for "districts", "school types", "school

		<p>levels” and 1 check box “Tiềm năng”</p> <ul style="list-style-type: none"> ❖ “Search”: input field ❖ “+”: button. ❖ A table of all schools which has the following columns: <ul style="list-style-type: none"> ● “”: checkbox. ● “School Name”: text. ● “Address”: text. ● “Principal”: text. ● “School Status”: label. 	
	2	<p>The user ticks the checkboxes and clicks on “+” button.</p> <p>The system displays the “Confirm Create Task” form with following information:</p> <ul style="list-style-type: none"> ❖ “Purpose”: selections (<ul style="list-style-type: none"> - Chưa hợp tác: Sales mới, Theo dõi; - Đang hợp tác: Chăm sóc, Tái ký hợp đồng, Ký mới hợp đồng; - Ngưng hợp tác) (value of purpose depends on value of “School Status”), required. ❖ “School Year”: text, read only. ❖ A table of selected schools ❖ “Cancel”: button. ❖ “Save”: button. 	
	3		
	2	<p>The user ticks the checkboxes and chooses “Purpose” in the selections. [Alternative 1]</p>	
	3	<p>The user selects “Save” button. [Exception 2]</p> <p>The system shows the successful message: “Created successfully”. [Exception 1]</p>	
	4	<p>The system updates the table of list of tasks in the “Tasks” screen. [Exception 1]</p>	
Alternative Flows:	Step	Actor Action	System Response
	1	The users clicks on a table row.	<p>The systems display that school’s details in the preview panel.</p> <ul style="list-style-type: none"> ● “School Name”: text. ● “School level”: text. ● “School type”: text. ● “School scale”: text. ● “School status”: text.

			<ul style="list-style-type: none"> “Address”: text. “School phone”: text. “Representative name”: text. “Representative phone”: text. “Representative email”: text. “Representative isMale”: text. “This school also be targeted in”: text, list of school year. <p><i>Continue to step 2 of Normal Flow.</i></p>
Exceptions:	No	Cause	System Response
	1	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
	2	The user selects “Cancel” button.	The system closes the “Create Tasks” form and returns to the “Tasks” screen.
Priority:	High		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> BR-11, BR-12, BR-13 Sales Supervisor/Sales Manager can only create the tasks at the current school year. 		
Other Information:	N/A		
Assumptions:	N/A		
Assumptions:	N/A		

Table 55. <<Sales Supervisor>> Create tasks

b. *Edit tasks*



Figure 50. <<Sales Supervisor>> Edit tasks

ID and Name:	UC-39 Edit tasks		
Created By:	HaPTN	Date Created:	12/04/2021
Primary Actor:	Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to edit a task.		
Trigger:	The user edits on fields in “Task’s details” screen then clicks “Save” button.		
Preconditions:	PRE-1. The user has been logged into the system with role Sales Supervisor or Sales Manager. PRE-2. The user is on the tab “Assign Info” in “Task’s details” screen.		
Post-conditions:	POST-1. The detail information of task is edited in database.		
Normal Flow:	Step	Actor Action	System Response

	1	The user edits on fields in “Task’s details” screen then clicks “Save” button.	The system displays the “Task’s detail” screen, on the tab “Assign Info”, there is a form with the following information: <ul style="list-style-type: none"> “School year”: text. “PIC”: input text field, read only. “PIC’s phone”: input text field, disabled. “PIC’s email”: input text field, disabled. “Purpose”: label. “Note”: input text field.
	2	The user edits on fields in this form. [Exception 1]	
	3	The user clicks “Save” button when finish.	The system has successful edit and displays the successful message: “Updated Successfully”. [Exception 2]
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The user inputs invalid format content into fields.	The system informs the users that the content of fields is invalid format.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> BR-12, BR-13 The user can only edit fields: note. To change PIC, the user needs to unassign the current PIC and then assign a new PIC. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 56. <<Sales Supervisor>> Edit tasks

c. Assign salesmen to tasks

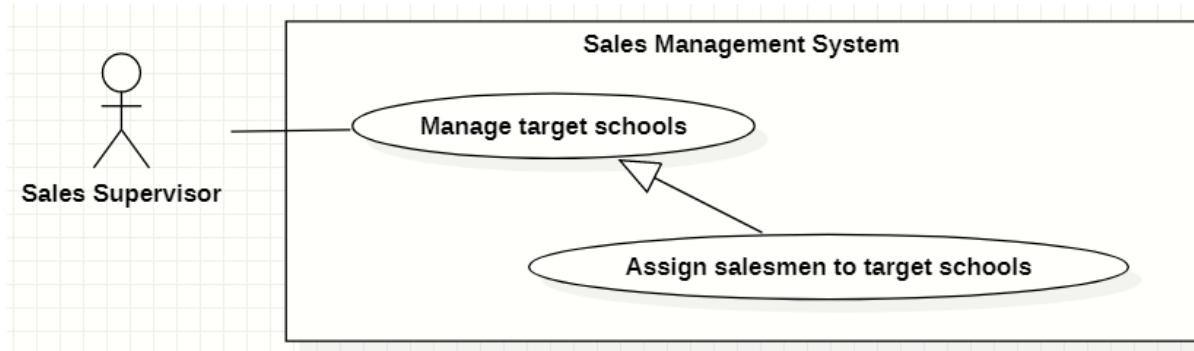


Figure 51. <<Sales Supervisor>> Assign salesmen to tasks

ID and Name:	UC-40 Assign salesmen to tasks		
Created By:	GiaNH	Date Created:	11/02/2021
Primary Actor:	Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to assign salesmen to one or multiple tasks.		
Trigger:	The user clicks on the "Assign" button in "Tasks" screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Sales Supervisor or Sales Manager. PRE-2. The user is on the "Tasks" screen.		
Post-conditions:	POST-1. The tasks are assigned to salesmen.		
Normal Flow:	Step	Actor Action	System Response
	1	The user ticks on the task rows that he/she wants to assign, then clicks on "Assign" button on the "Tasks" screen. [Exception 1] [Alternative 1]	The system displays the "Assign Salesmen" form with the following information: <ul style="list-style-type: none">▪ "PICs": input text field, required.▪ Table of tasks, which contains columns:<ul style="list-style-type: none">• "School Name": text.• "PIC": text (get value from "PICs" input text field above).• "Purpose": text.• "Note": input text field / editable table cell.▪ "Cancel": button.▪ "Save": button.
	2	The user inputs/chooses a PIC in the input text field and inputs "Note".	
	3	The user selects "Save" button. [Exception 4]	The system updates tasks' data with field "PIC", then shows the successful message: "Updated Successfully". [Exception 2] [Exception 3]
Alternative Flows:	Step	Actor Action	System Response

	1	On the “Tasks” screen, at the end of each row in the table, the user clicks on action icon button, then selects “Assign” command on the menu options.	The system displays the “Assign” form with the following information: -“Salesman”: input text field, required. - “Note”: input text field. <i>Continue step 2 of Normal Flow</i>
Exceptions:	No	Cause	System Response
	1	The user selects the tasks which have already been assigned.	The system shows an alert dialog to state that “The school [...]school name] is assigned already. If you want to assign to a new PIC, you need to unassign before assigning again.”
	2	The task has been already assigned in the same school year.	The system shows the error message: “The task has been already assigned in the same school year”.
	3	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
	4	The user selects “Cancel” button.	The system closes the “Assign” form and returns the “Task” screen.
Priority:	Usually		
Frequency of Use:	N/A		
Business Rules:	BR-12, BR-13, BR-14, BR-15, BR-16, BR-17, BR-18		
Other Information:	N/A		
Assumptions:	N/A		

Table 57. <<Sales Supervisor>> Assign salesmen to tasks

d. Remove tasks

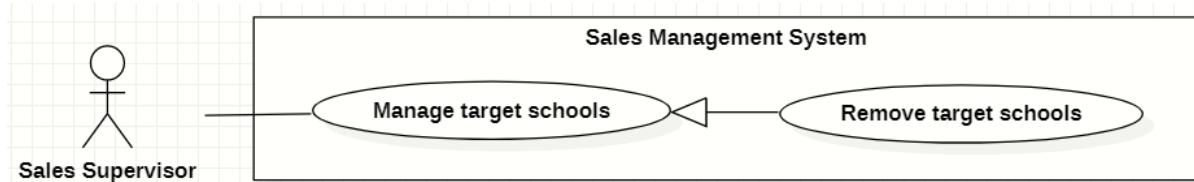


Figure 52. <<Sales Supervisor>> Remove tasks

ID and Name:	UC-41 Remove tasks		
Created By:	GiaNH	Date Created:	15/02/2021
Primary Actor:	Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to remove a task.		
Trigger:	The user clicks on the “Remove” command on the menu options at the end of row in table list of tasks.		

Preconditions:	PRE-1. The user has been logged into the system with role Sales Supervisor or Sales Manager. PRE-2. The user is on the “Tasks” screen.		
Post-conditions:	POST-1. The task is removed out of table.		
Normal Flow:	Step	Actor Action	System Response
	1	The user clicks on the “Remove” command on the menu options at the end of row in table list of tasks.	The system shows a “Confirm Remove” dialog to alert. <ul style="list-style-type: none">• “Cancel”: button.• “Remove”: button.
	2	The user clicks on “Remove” button. [Exception 1]	The system shows a successful message: “Removed successfully”, and closes the confirm dialog. [Exception 2]
Alternative Flows:	N/A		
Exceptions:	No	Cause	System Response
	1	The user clicks on “Cancel” button.	The system closes the “Confirm Remove” dialog and returns to the “Tasks” screen.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	High		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> • BR-12, BR-13, BR-18 • The user must not remove the task if: <ul style="list-style-type: none"> - This task has been being assigned. - The service(s) of this task has not expired yet. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 58. <<Sales Supervisor>> Remove tasks

e. Comment on Salesmen’s reports

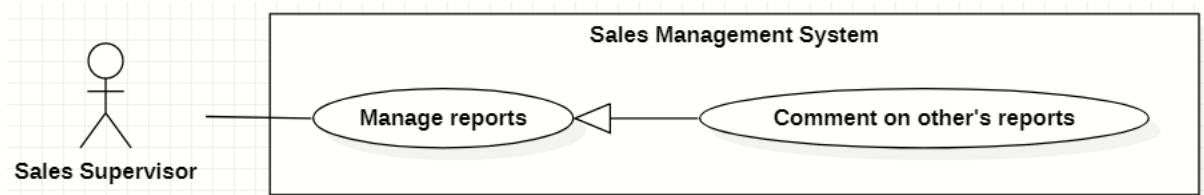


Figure 53. <<Sales Supervisor>> Comment on Salesmen’s reports

ID and Name:	UC-42 Comment on Salesmen’s reports		
Created By:	GiaNH	Date Created:	12/02/2021
Primary Actor:	Sales Supervisor, Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to comment on Salesmen’s Reports.		
Trigger:	The user clicks on the “Comment” command on the menu options at the end of row in table list of reports.		

Preconditions:	PRE-1. The user has been logged into the system with role Sales Supervisor or Sales Manager. PRE-2. The user is on the “Reports” screen.		
Post-conditions:	POST-1. The comment is added on Salesmen’s reports.		
Normal Flow:	Step	Actor Action	System Response
	1	The user clicks on the “Comment” command on the menu options at the end of row in table list of reports. [Alternative 1]	<p>The system displays “Comment on Report” dialog with the following information.</p> <ul style="list-style-type: none"> • “School Year”: text. • “Date”: text. • “School Name”: text. • “PIC”: image (avatar) and text. • “Purpose”: text. • “Result”: text. • “Description”: text. • “Positivity”: text. • “Difficulty”: text. • “Future plan”: text. • “Supervisor comment”: input text field, required. • “Cancel”: button. • “Save”: button.
	2	The user inputs his/her comment into the text field.	
	3	The user selects “Save” button. [Exception 1]	The system updates this report in the database with the new comment and closes the “Comment on Report” dialog . [Exception 2]
Alternative Flows:	Step	Actor Action	System Response
	1	On the “Reports” screen, at the end of each row in the table, the user clicks on action icon button, then selects “View detail” command on the menu options.	<p>The system displays “Report’s details” view, the report’s information is displayed as a form.</p> <ul style="list-style-type: none"> • “School Year”: text. • “Date”: text. • “School Name”: text. • “PIC”: image (avatar) and text. • “Purpose”: text. • “Result”: input text field, read only. • “Description”: input text field, read only.

		<ul style="list-style-type: none"> “Positivity”: input text field, read only. “Difficulty”: input text field, read only. “Future plan”: input text field, read only. “Supervisor comment”: input text field. “Save”: button, only active when the form is dirty. 	
	2	The user inputs his/her comment into the text field.	
	3	The user selects “Save” button. [Exception 3] [Exception 4]	
		The system updates this report in the database with the new comment and shows the successful message “Updated Successfully”. [Exception 2]	
Exceptions:	No	Cause	System Response
	1	The user clicks on “Cancel” button.	The system closes the “Comment on Report” dialog and returns to the “Reports” screen.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
	3	The user clicks on back button to go to “Reports” screen without edit anything in the form.	The system discards all changes in the form and do not update anything to the database.
	4	The user edits in the form’s fields but does not clicks on “Save” button before going back to “Reports” screen.	The system discards all changes in the form and do not update anything to the database.
Priority:	High		
Frequency of Use:	Usually		
Business Rules:	<ul style="list-style-type: none"> BR-25, BR-26, BR-27, BR-29 The user is not allowed to comment on his/her own reports. The user shall comment on reports of other Sales Managers or Sales Supervisors. 		
Other Information:	N/A		
Assumptions:	N/A		

Table 59. <<Sales Supervisor>> Comment on Salesmen’s reports

2.7 <<Sales Manager>> Overview Use Case

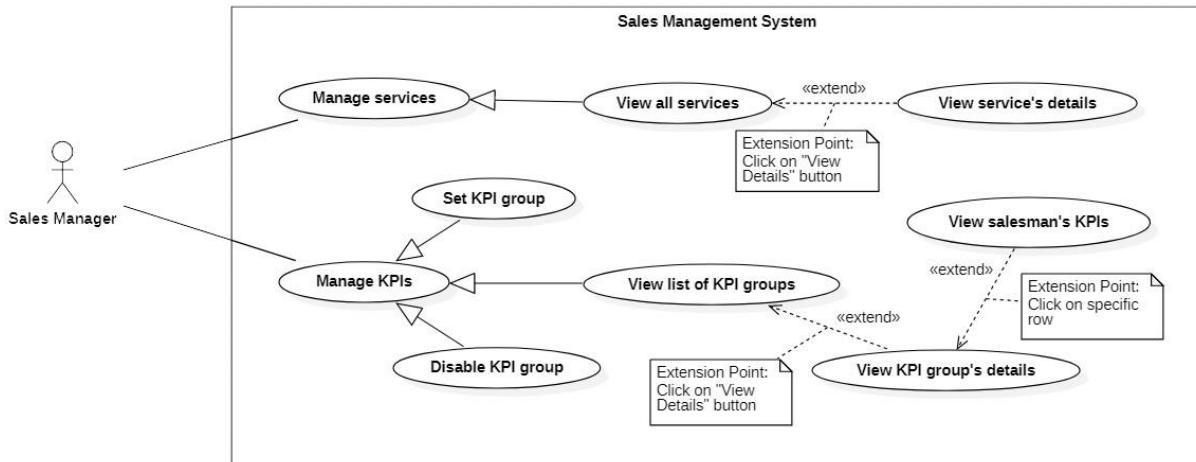


Figure 54. <<Sales Manager>> Overview Use Case

a. View all services

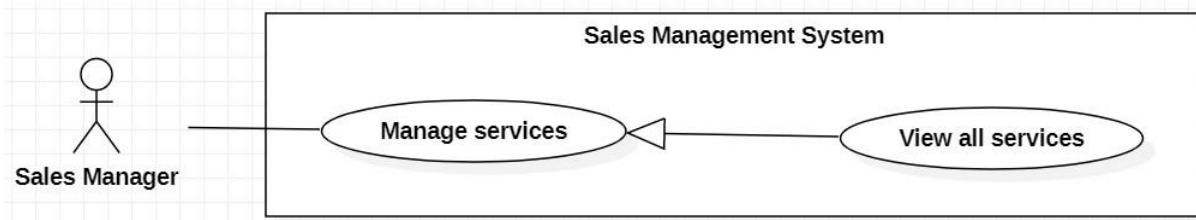


Figure 55. <<Sales Manager>> View all services

ID and Name:	UC-43 View all services		
Created By:	HaPTN	Date Created:	12/04/2021
Primary Actor:	Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to view all services of all tasks.		
Trigger:	The user selects tab "Services" in "Task's details" screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Sales Manager. PRE-2. The user is on the tab "Services" in "Task's details" screen.		
Post-conditions:	POST-1. Service's list is displayed as the table in "Services" screen.		
Normal Flow:	Step	Actor Action	System Response
	1	The user selects tab "Services" in "Task's details" screen.	<p>The system displays "Services" screen, service's list is displayed as the table.</p> <ul style="list-style-type: none"> • "ID": text. • "Tasks": text. • "Duration": text. • "Service": text. • "Revenue Criteria": text. • "Note": text. <p>[Exception 1]</p>
Alternative Flows:	N/A		
	No	Cause	System Response

Exceptions:	1	No stored services data in the system.	The system displays “No records found” line on the table.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	High		
Frequency of Use:	Usually		
Business Rules:	BR-31, BR-34		
Other Information:	N/A		
Assumptions:	N/A		
Assumptions:	N/A		

Table 60. <<Sales Manager>> View all services

b. Approve services

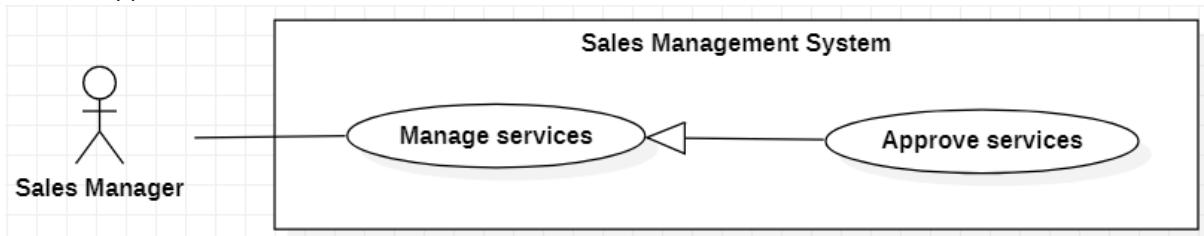


Figure 56. <<Salesman>> Approve services

ID and Name:	UC-44 Approve services		
Created By:	HaPTN	Date Created:	30/05/2021
Primary Actor:	Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to approve or reject a service.		
Trigger:	The user clicks on button “Approve” or “Reject” in “Service Details” screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Sales Manager. PRE-2.1. The user is on the “Service Details” screen.		
Post-conditions:	POST-1. The service status is change from “Pending” to “Approved” or “Rejected”.		
Normal Flow:	Step	Actor Action	System Response
	1	The user clicks on button “Approve” on the screen. [Alternative 1]	The system shows the “Confirm Approve Service” dialog to ask whether the user are sure or not to approve for this service. - “Approve”: button - “Cancel”: button
	2	The user clicks on button “Approve”. [Exception 1]	The system updates the service status from “Pending” to “Approved” and refresh the UI. [Exception 2]
Alternative Flows:	Step	Actor Action	System Response
	1	The user clicks on button “Rejected” on the screen.	The system shows the “Confirm Reject Service” dialog to ask whether the user

			are sure or not to approve for this service. - “Service type”: text, read only. - “School name”: text, read only. - “Rejected reason”: text area. - “Reject”: button - “Cancel”: button
	2	The user clicks on button “Reject”. [Exception 1]	The system updates the service status from “Pending” to “Rejected” and refresh the UI. [Exception 2]
Exceptions:	No	Actor Action	System Response
	1	The user clicks on “Cancel” button.	The system close the confirm dialog and do nothing.
	2	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	BR-41, BR-42		
Other Information:	N/A		
Assumptions:	N/A		

Table 61. <<Salesman>> Approve services

c. Set KPI group

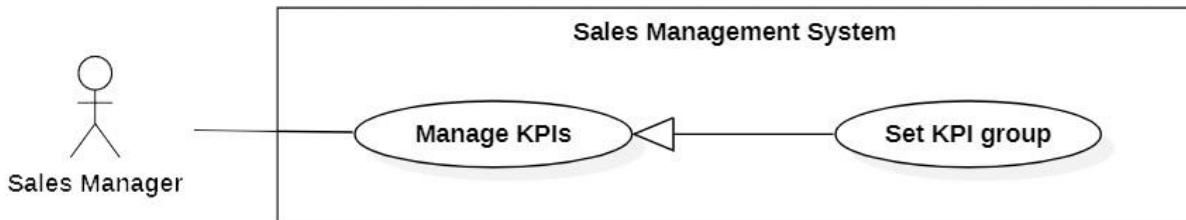


Figure 57. <<Salesman>> Set KPI group

ID and Name:	UC-45 Set KPI group		
Created By:	HaPTN	Date Created:	30/05/2021
Primary Actor:	Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to view personal KPI.		
Trigger:	The user clicks on “+” button on the “KPI” screen.		
Preconditions:	PRE-1. The user has been logged into the system with role Sales Manager. PRE-2.1. The user is on the “KPIs” screen.		
Post-conditions:	POST-1. A KPI group is create in the database.		
	Step	Actor Action	System Response

Normal Flow:	1	<p>The user clicks on “+” button on the “KPI” screen.</p>	<p>The system shows the dialog form with 3 steps.</p> <p>At “Step 1” tab:</p> <ul style="list-style-type: none"> - “Group name”: input field. - “Description”: input field. - “Criteria” input field. - “Next”: button - “Back”: button <p>At “Step 2” tab:</p> <ul style="list-style-type: none"> - A table with the following columns: <ul style="list-style-type: none"> + “Criteria name”: text, read only + “Target value”: input field + “Weight”: input field. - “Next”: button - “Back”: button <p>At “Step 3” tab:</p> <ul style="list-style-type: none"> - “Start date”: Date, input field - “End date”: Date, input field - “Salesman”: auto suggest search field - A table with the following columns: <ul style="list-style-type: none"> + “Salesman”: text + a list of targetValue and weight for each criteria. - “Finish”: button - “Back”: button
	2	<p>The user fills in all fields and clicks “Next” button.</p>	<p>The system redirect users to the next step screen.</p>
	3	<p>At “Step 3” tab, the user clicks button “Finish”.</p>	<p>The system get data from all the step screen to insert a KPI group in the Database.</p> <p>The system notify “Created successfully”.</p> <p>[Exception 1]</p>
	Alternative Flows:		
Exceptions:	No	Actor Action	System Response
	1	<p>The user’s device does not connect to the Internet or the server has internal error.</p>	<p>The system shows the error message: “Connection Failed or Internal Error”.</p>
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	N/A		
Other Information:	N/A		
Assumptions:	N/A		

Table 62. <>Salesman>> Set KPI group

d. Disable KPI group

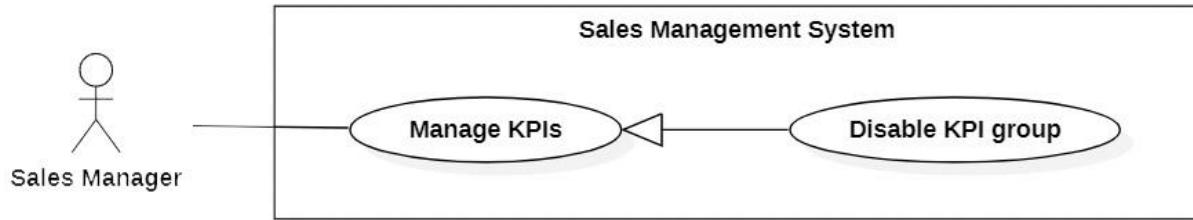


Figure 58. <<Salesman>> Disable KPI group

ID and Name:	UC-50 Disable KPI group		
Created By:	HaPTN	Date Created:	30/05/2021
Primary Actor:	Sales Manager	Secondary Actors:	N/A
Description:	This use case allows the user to disable a KPI group.		
Trigger:	The user clicks on options “Disable” at the row of KPI group.		
Preconditions:	PRE-1. The user has been logged into the system with role Sales Manager. PRE-2.1. The user is on the “KPIs” screen.		
Post-conditions:	POST-1. A KPI group is disable in the database.		
Normal Flow:	Step	Actor Action	System Response
	1	The user clicks on option “Disable” at row of KPI group in the table.	The system shows the “Confirm Disable KPI group” dialog with two buttons: - “Disable”: button - “Cancel”: button
	2	The user clicks on option “Disable” button. [Exception 2]	The system disable the KPI group in the Database and refresh the UI. [Exception 1]
Alternative Flows:	N/A		
Exceptions:	No	Actor Action	System Response
	1	The user’s device does not connect to the Internet or the server has internal error.	The system shows the error message: “Connection Failed or Internal Error”.
	2	The user clicks on option “Cancel” button.	The system close the dialog and do nothing.
Priority:	Normal		
Frequency of Use:	Usually		
Business Rules:	N/A		
Other Information:	N/A		
Assumptions:	N/A		

Table 63. <<Salesman>> Disable KPI group

3. Functional Requirements

3.1 System Functional Overview

a. Screen Flow

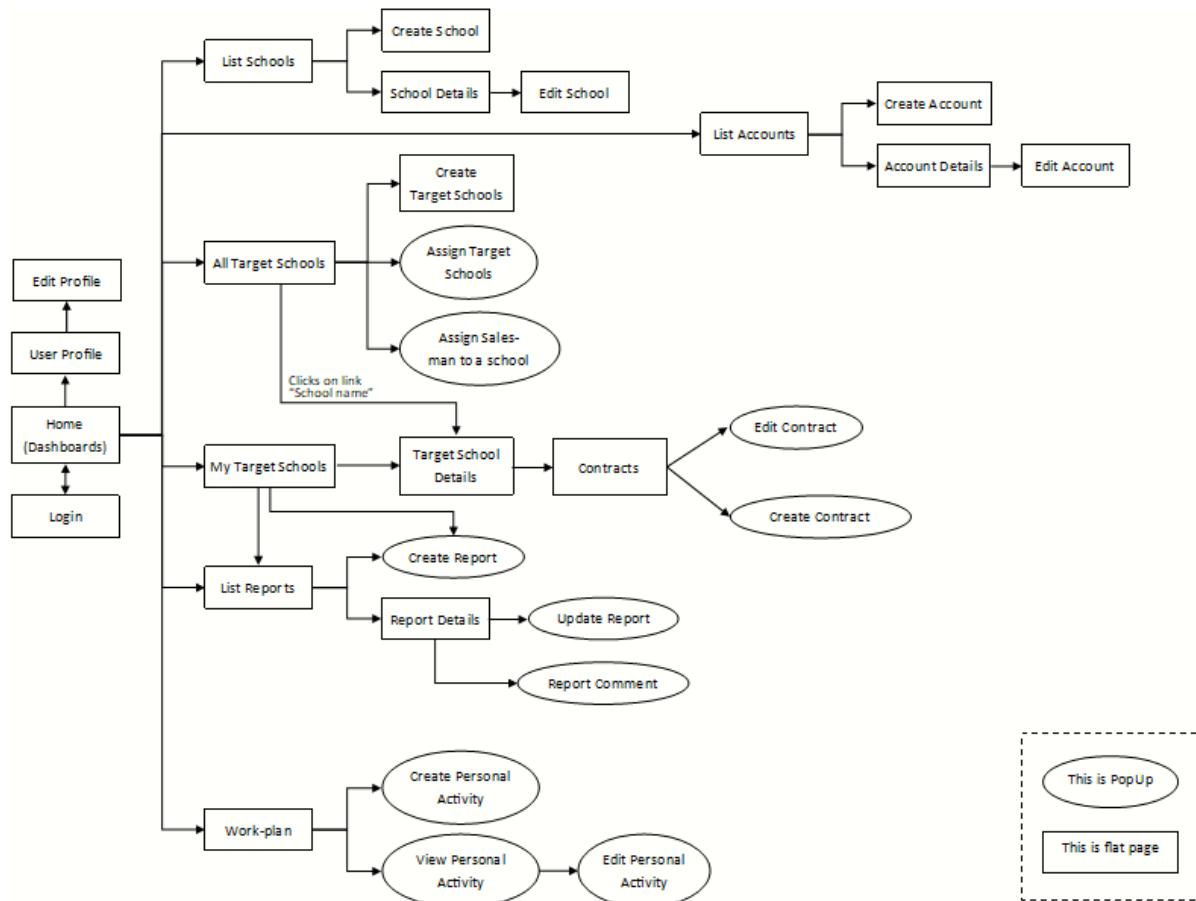


Figure 59. Screen Flow

b. Screen Details

#	Feature	Screen	Description
1	Login	Login	
2		Home (Dashboards)	
3	View Profile	User Profile	
4	Edit Profile	Edit Profile	
5	• View list of schools • Search schools	List Schools	
6	Create new schools	Create School	
7	View school's details	School Details	
8	Edit school's information	Edit School	
9	• View list of accounts • Search accounts	List Accounts	
10	Create new accounts	Create Account	
11	View account's details	Account Details	
12	Edit account's information	Edit Account	

13	View list of all tasks	All Tasks		
14	Create tasks	Create Tasks		
15	Assign Salesmen to tasks	Assign Tasks		
16	Assign Salesmen to tasks	Assign Salesman to a school		
17	<ul style="list-style-type: none"> • View list of assigned tasks • Search assigned tasks 	My Tasks		
18	View task's details	Tasks Details		
19	Edit school's information	Edit Task Info		
20	<ul style="list-style-type: none"> • View all reports • Search reports 	List Reports		
21	Create reports	Create Report		
22	View report's details	Report Details		
23	Update reports	Update Report		
24	Comment on Salesmen's reports	Report Comment		
25	<ul style="list-style-type: none"> • View my services • View all services 	Services		
26	<ul style="list-style-type: none"> • View Service's details • Edit my services 	Edit Services		
27	View Work-plan	Work-plan		
28	Create Personal Activities	Create Personal Activities		
29	View Personal Activity's details	View Personal Activity		
30	Edit Personal Activities	Edit Personal Activity		

Table 64. Screen Details

c. Screen Authorization

Screen	Salesman	Sales Supervisor	Sales Manager	Admin
Login	X	X	X	X
Dashboard	X	X	X	
View Profile	X	X	X	X
Edit Profile	X	X	X	X
List Schools				
View all schools		X	X	X
View school's details		X	X	X
Create School				X
Edit School	X	X	X	X
List Accounts				X
Create Account				X
Account Details				X
Edit Account				X
All Tasks	X	X	X	

Create Tasks		X	X	
Assign Tasks		X	X	
Assign Salesman to a school		X	X	
My Tasks	X	X	X	
Tasks Details	X	X	X	
Edit Task Info	X	X	X	
List Reports	X	X	X	
Create Report	X	X	X	
Report Details	X	X	X	
Update Report		X	X	
Report Comment		X	X	
Services	X	X	X	
Edit Services	X	X	X	
Work-plan	X	X	X	
Create Personal Activities	X	X	X	
View Personal Activity	X	X	X	
Edit Personal Activity	X	X	X	

Table 65. Screen Authorization

d. Non-Screen Functions

#	Feature	System Function	Description
1	Forget password	Send email	An email is sent to user's email to provide a verification code for resetting the forgotten password.
2	Create new account	Send email	After Admin creating a new account, an email is automatically sent to the user's email to provide password.

Table 66. Non-Screen Functions

e. Entity Relationship Diagram

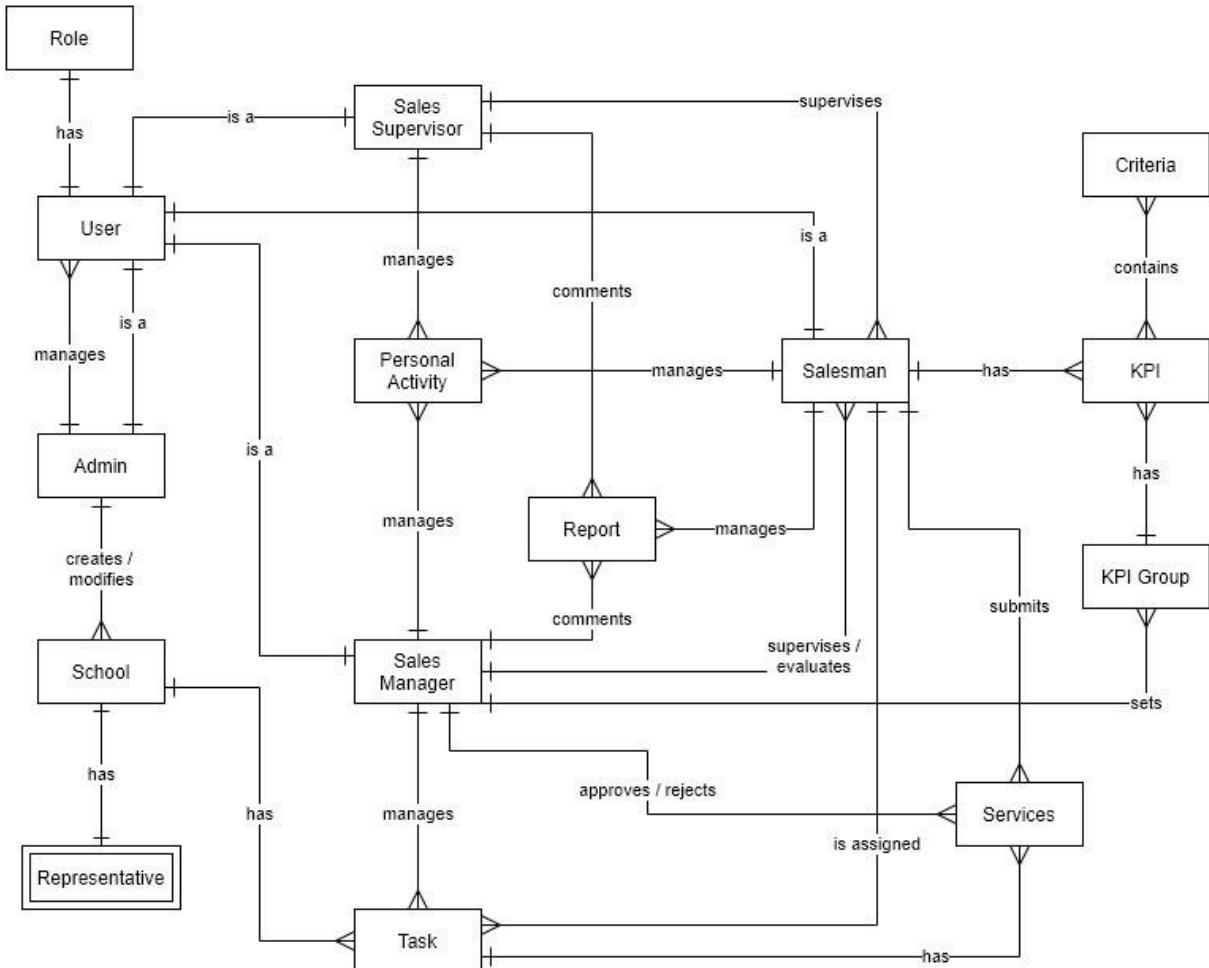


Figure 60. Entity Relationship Diagram

Entities List

#	Entity	Description
1	Admin	The Admin is an entity presenting a person who manages accounts and whole schools data of sale department. Containing information of admin (id, password, full name, phone, email, avatar, address, birthday, isMale, isActive).
2	Salesman	The Salesman is an entity presenting a person who goes to work with the assigned tasks. Containing information of Salesman (id, password, full name, phone, email, avatar, address, birthday, isMale, isActive).
3	Sales Manager	The Sales Manager is an entity presenting a person who manages and assigns the tasks to the Salesmen and also have right to view all services of all tasks. Containing information of Sales Manager (id, password, full name, phone, email, avatar, address, birthday, isMale, isActive, privateToken).
4	Sales Supervisor	The Sales Supervisor is an entity presenting a person who manages, assigns the tasks to the Salesmen. Containing information of Sales Manager (id, password, full name, phone, email, avatar, address, birthday, isMale, isActive).
5	School	The School is an entity presenting the school that was collected information and was select to become the target.

		Contain information of School (id, name, district, address, phone, scale, type, educational level, status, isActive).
6	Task	The Task is an entity presenting the target that Sales Manager creates base on Schools list and assigns to Salesmen. Containing information of School (id, purpose, school year, note, isActive).
7	Report	The Report is an entity presenting the report that Salesmen must submits to Sales Manager. Containing the report information (id, date, result, description, positivity, difficulty, futurePlan, supervisorComment).
8	Personal Activity	The Personal Activity is an entity presenting an activity that Salesmen or Sales Managers create in work-plan and execute based on that. Containing the Personal Activity information (id, title, startTime, endTime, remark, description, isCompleted).
9	Representative	The Representative is an entity presenting a person who is the representative for the school to contact. Containing information of Representative (full name, isMale, email, phone).
10	Service	The Service is an entity presenting a service between a target school and Major Education. Containing information of Service (id, duration, service, revenueCriteria, note, date).

Table 67. Entities List

4. Non-Functional Requirements

4.1 External Interfaces

UI-1: The user interfaces in general should be consistent, simple, clear, intuitive, and reminiscent.

- Some design principles will be taken into consideration:

<https://material.io/design/introduction>

UI-2: The user interfaces for the software shall be compatible with: Chrome (version 52 or above), Firefox (version 51 or above), Safari (version 10 or above) browser.

UI-3: The user interfaces should be responsive on multiple screen devices: Laptop, Tablet, and Mobile.

UI-4: The user interfaces should be clear and intuitive message for the users when there is a warning or an error.

UI-5: The user interfaces should ask the users to confirm the action when having major operating actions.

a. Software Interfaces

SI-1: This web application works with: Chrome (version 52 or above), Firefox (version 51 or above), Edge (version 14 or above), Safari (version 10 or above), or Opera (version 38 or above) browser.

b. Hardware Interfaces

HI-1: Since this system is a web application, which it shall work on Laptop, Tablet and Mobile.

HI-2: The system must run over the Internet; all the hardware shall require connect to the Internet.

c. Communications Interfaces

CI-1: The system shall communicate through HTTP protocol over the Internet.

4.2 Quality Attributes

a. Usability

- The system is designed simple, and intuitive which the users can easily manage their work.
- The default system language is English.
- The system shall take two hours of training for the users to familiar with usage.

b. Availability

- The system is available 24/7.

c. Security

- The system demands unauthorized users to log in for using the system.
- Each authentic user has a different role and scope for accessing a set of system functions.
- The password field must be obscured with special characters representing typed characters.
- The active session time for this system is two hours, after that the user shall be demanded to log in again.

d. Maintainability

- The source code should be based on a unified convention coding so that developers can easily manage.
- The system is divided into separate components and modules which giving the ability to update or scale up the system.

5. Other Requirements

5.1 Appendix1 - Messages List

#	Message code	Message Type	Content	Content
1	MSG01	In red, above the text box	Invalid username or password	<i>Wrong format or invalid entry when user logs in.</i>
2	MSG02	In red, above the text box	Wrong username or password	<i>Wrong username or password when user logs in.</i>
3	MSG03	In red, under the text box	Invalid username or email	<i>Wrong format or invalid entry when user resets forgotten password.</i>
4	MSG04	In red, under the text box	Wrong username or email	<i>Wrong username or password when user resets forgotten password.</i>
5	MSG05	In red, above the text box	Invalid password	<i>Wrong current password when user changes password.</i>
6	MSG06	In red, under the text box	Incorrect entry	<i>Wrong format or invalid entry when user updates something.</i>

7	MSG07	Toast message, green	Password has been reset successfully	<i>Reset forgotten password successfully.</i>
8	MSG08	Toast message, green	Updated Successfully	<i>Update something successfully.</i>
9	MSG09	Toast message, red	Update Unsuccessfully	<i>Update something failed.</i>
10	MSG10	Toast message, green	Create Successfully	<i>Create something successfully.</i>
11	MSG11	In line, italic, gray	No records found	<i>Table does not have data to show.</i>
12	MSG12	In line, red	Connection Failed or Internal Error	<i>Trouble with the Internet connection.</i>
13	MSG13	Dialog	The school [...] is assigned already. If you want to assign to a new PIC, you need to unassign before assigning again.	<i>The user ticks on the tasks which have already been assigned.</i>
14	MSG14	In line, red	Please choose the right file format.	<i>When the user import a file to the system.</i>

Table 68. Appendix1 - Messages List

IV. Software Design Description

1. Overall Description

1.1 Assumptions

This system is designed basing on these following assumptions:

- Web application
- ReactJS
- Spring boot
- MySQL
- 3-tier architecture

1.2 Design Constraints

This system should be complied with following items:

- The system should work on Laptop, Tablet, Mobile.
- The system must run over the Internet; all the hardware shall require connect to the Internet.
- The system shall communicate through HTTP protocol over the Internet.
- The system shall available 24/7.

2. System Architecture Design

2.1 Overall Architecture

Our system is built on three-tier architecture, which allows us to modularize the user interface, business logic, and data storage layers. As a result, we gain great flexibility, code reusable, and easy maintenance for not only developing but also implementing the system.

Overall Architecture Data Dictionary	
Name	Description
Presentation Tier	This tier provides a user interface and handles user interactions. It communicates with the application tier which provides the results to the browser.
Application Tier	This tier contains a set of rules for processing information and business logic. All communication goes through the application tier.
Data Tier	This tier comprises the database where the information processed by the application tier is stored.

Table 69. Overall Architecture Data Dictionary

2.2 System Architecture

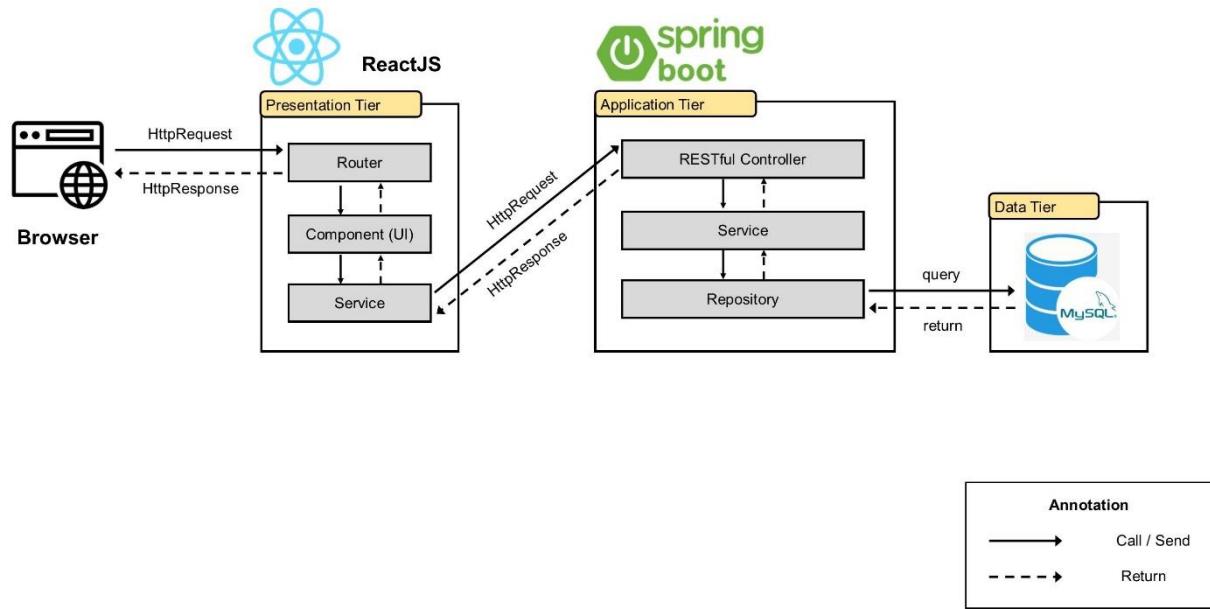


Figure 61. System Architecture

2.3 Package Diagram

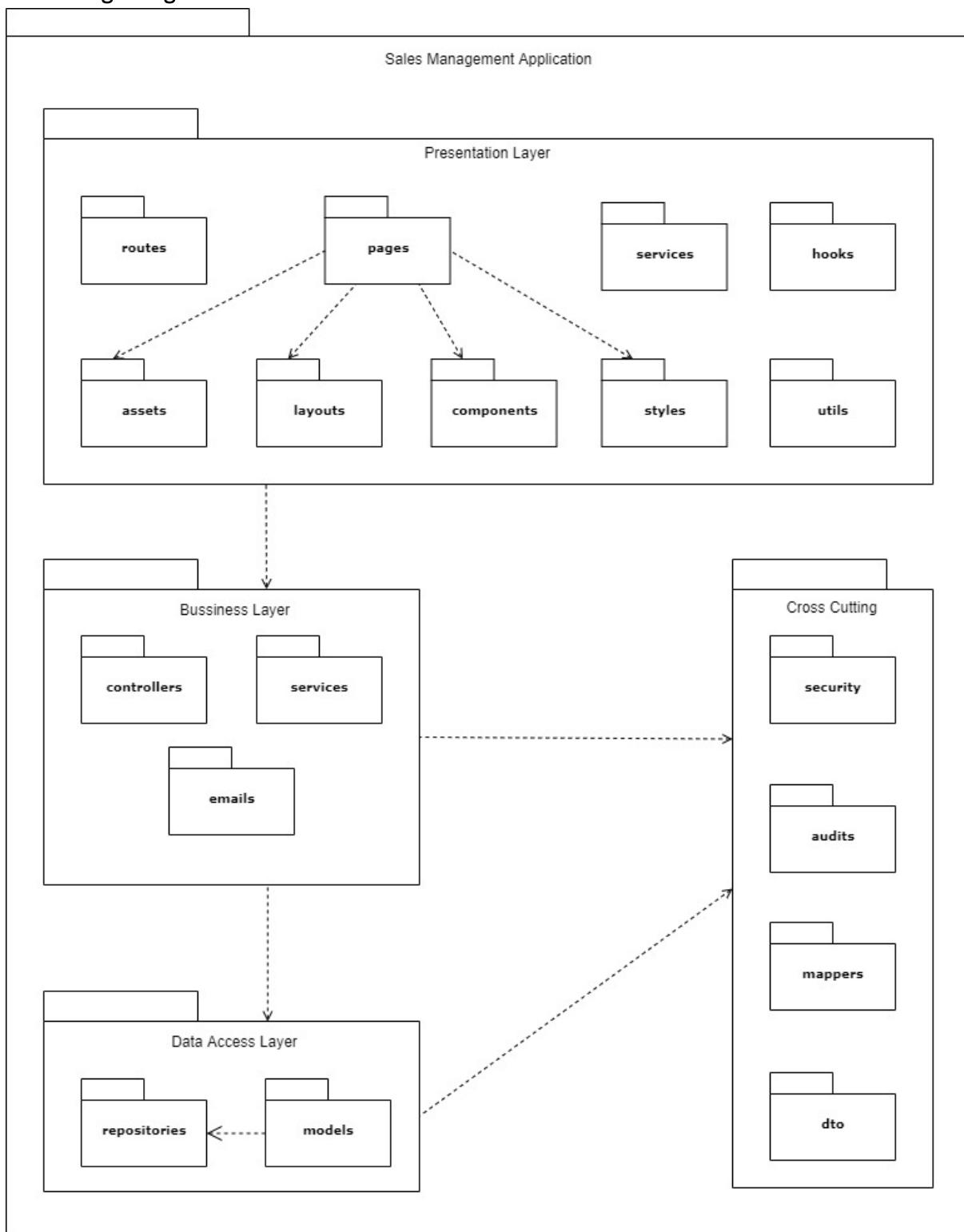


Figure 62. Package Diagram

No	Package	Description
01	routes	The package contains functions for app navigation.

02	pages	The package contains the pages of the routing.
03	services	The package contains functions to manage API.
04	hooks	The package contains custom hook functions.
05	assets	The package contains images and icons.
06	layouts	The package contains layout components for the app.
07	components	The package contains UI components that can be shared.
08	styles	The package contains global CSS, JavaScript for application-level styles.
09	utils	The package contains all the helper functions.
10	controllers	The package contains classes provide RESTful web services.
11	services	The package contains classes for business logic.
12	emails	The package contains a class provides email service.
13	repositories	The package contains classes responsible for communicating with data sources, processing queries, and returning data types requested by the Service layer.
14	models	The package contains classes that represent persisted data to the database.
15	security	The package contains classes for JWT handling, authentication, and authorization.
16	audits	The package contains classes for auditing entity objects.

17	mappers	The package contains a class to convert data between the DTO and entity objects.
18	dto	The package contains classes to aggregate and encapsulate data for transfer.

Table 70. Package Diagram Specifications

3. System Detailed Design

3.1. Class Diagram

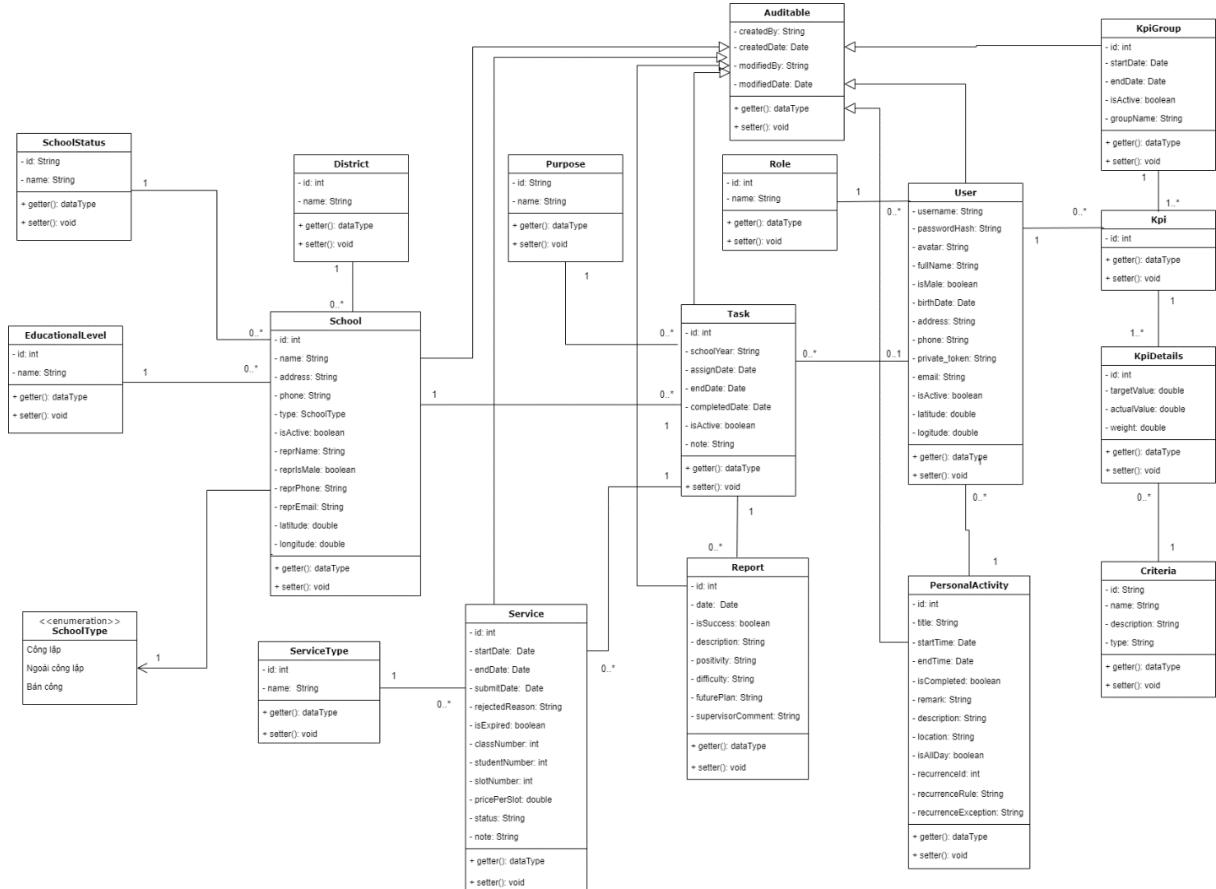


Figure 63. Class Diagram

3.2. Sequence Diagram(s)

a. <Administrator> Create new accounts

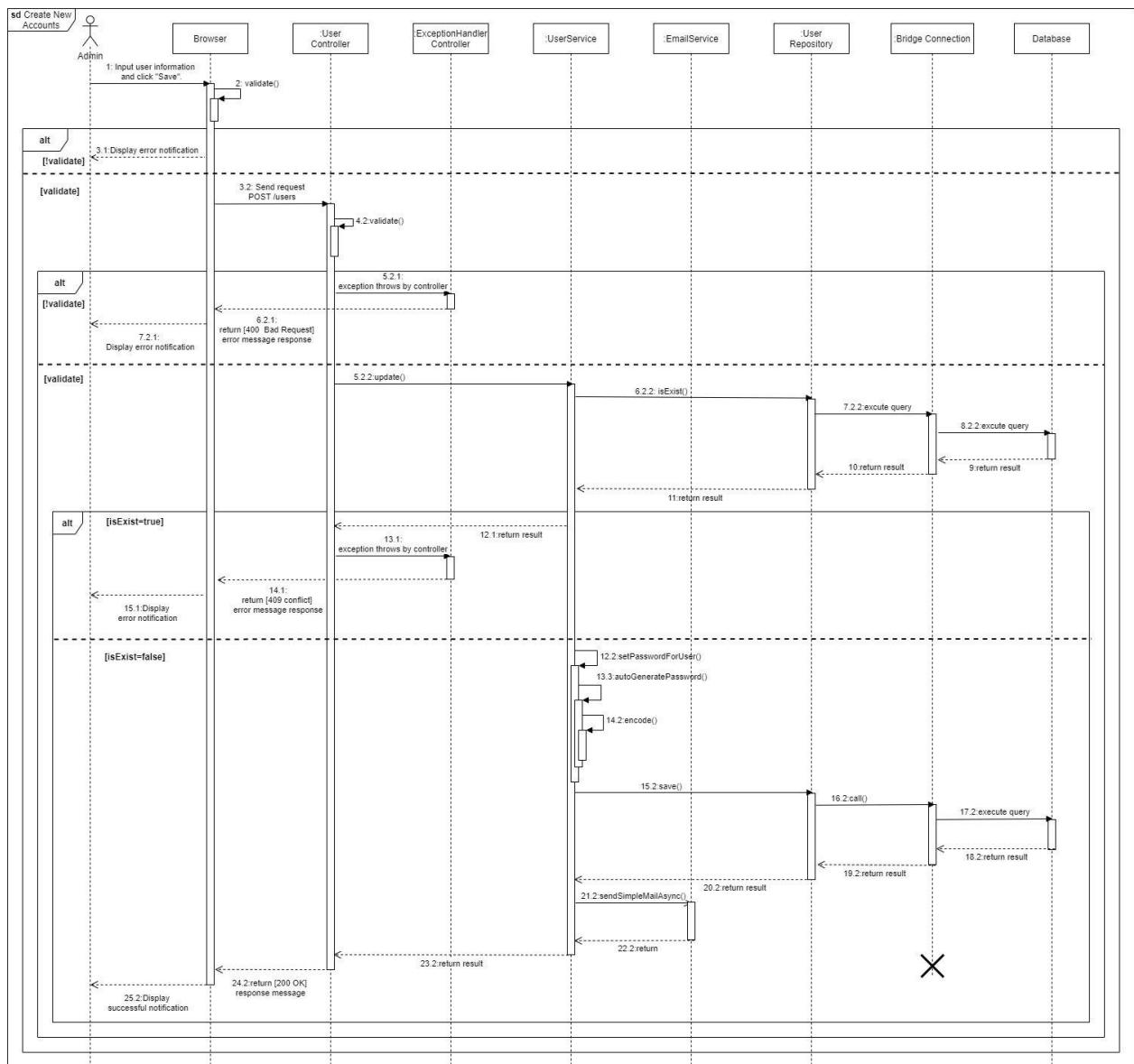


Figure 64. Create new accounts

b. <Administrator> Edit school's information

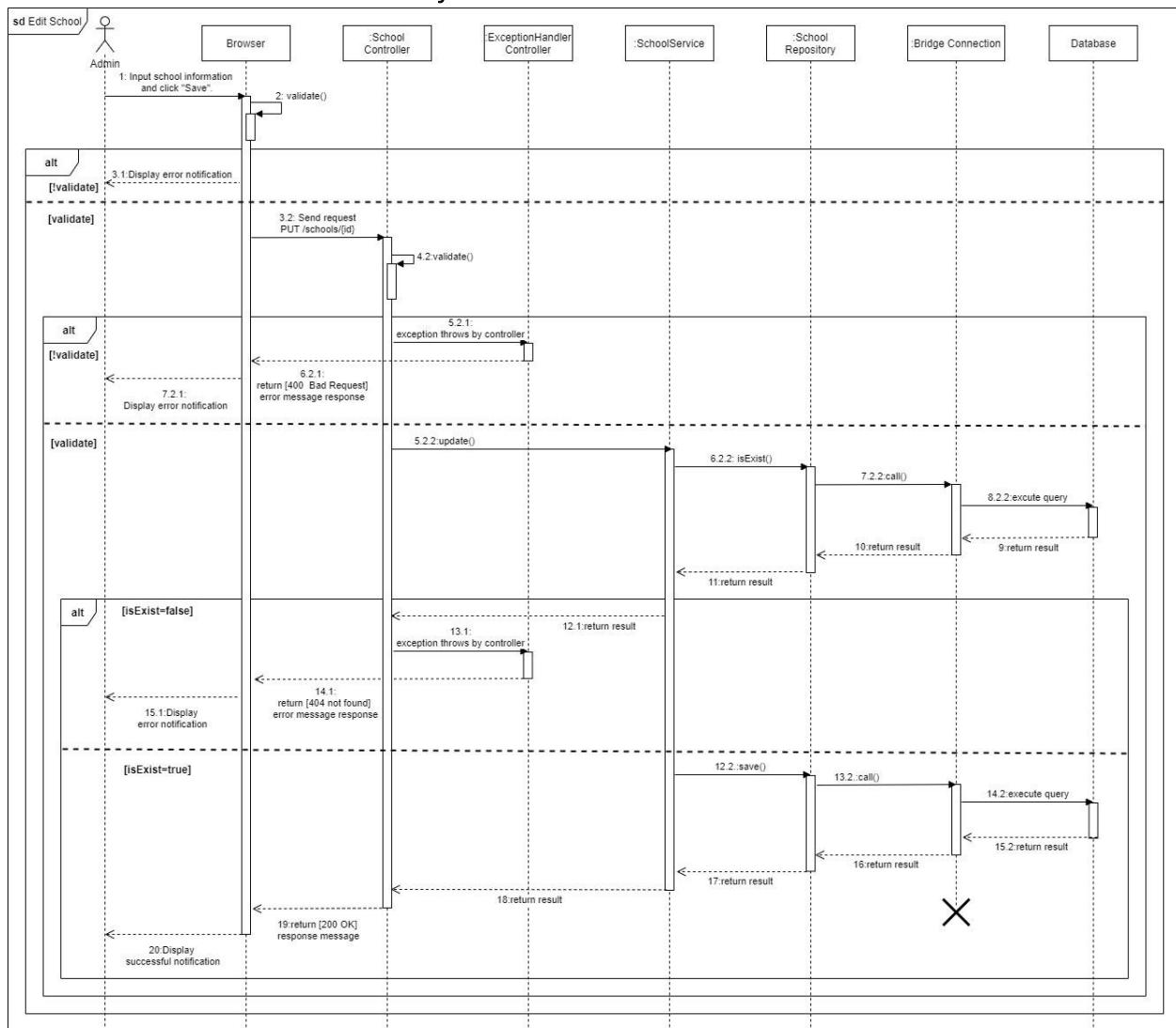


Figure 65. Edit school's information

c. <Salesman> Remove personal activities

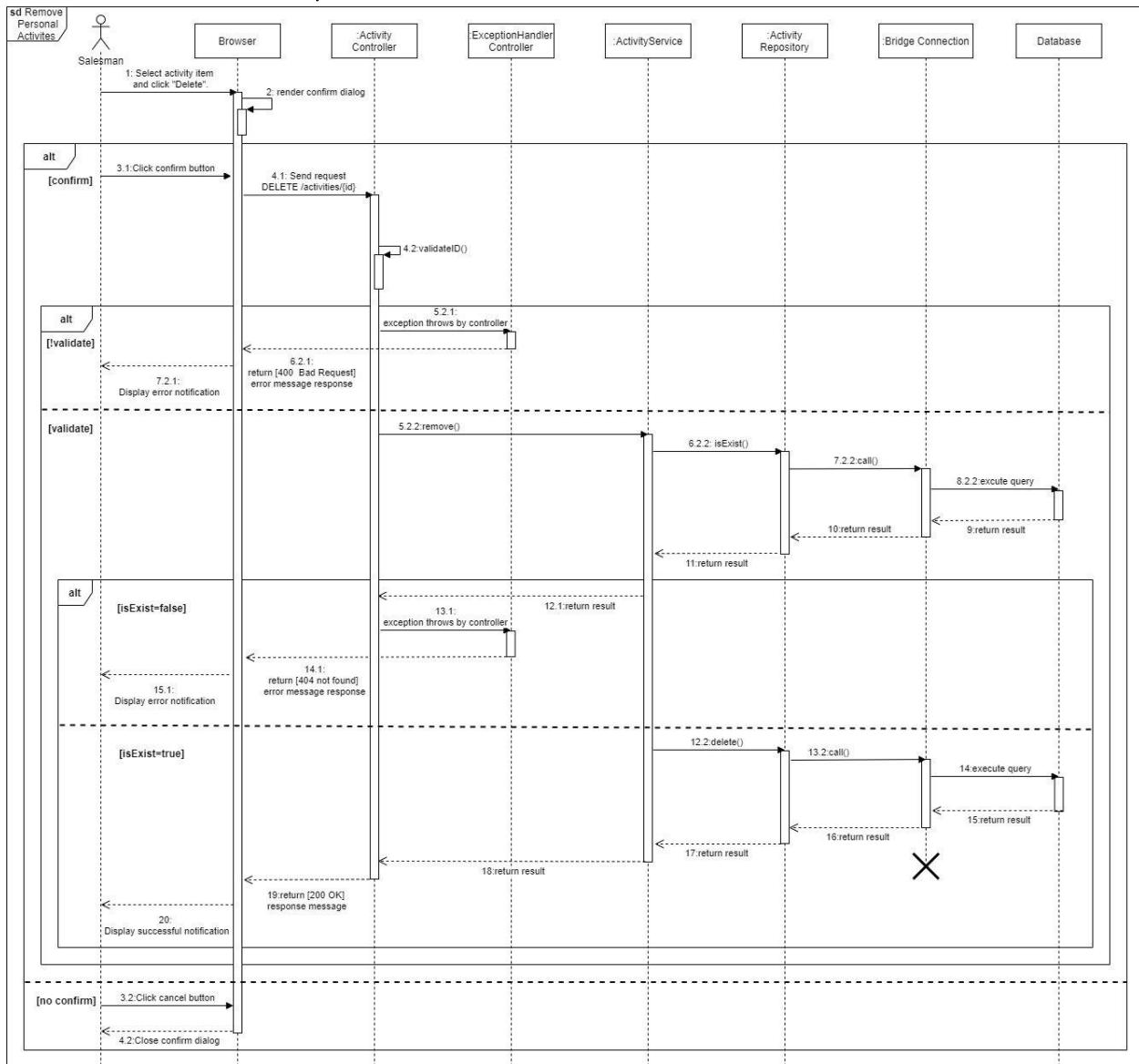


Figure 66. Remove personal activities

d. <Salesman> Edit personal activities

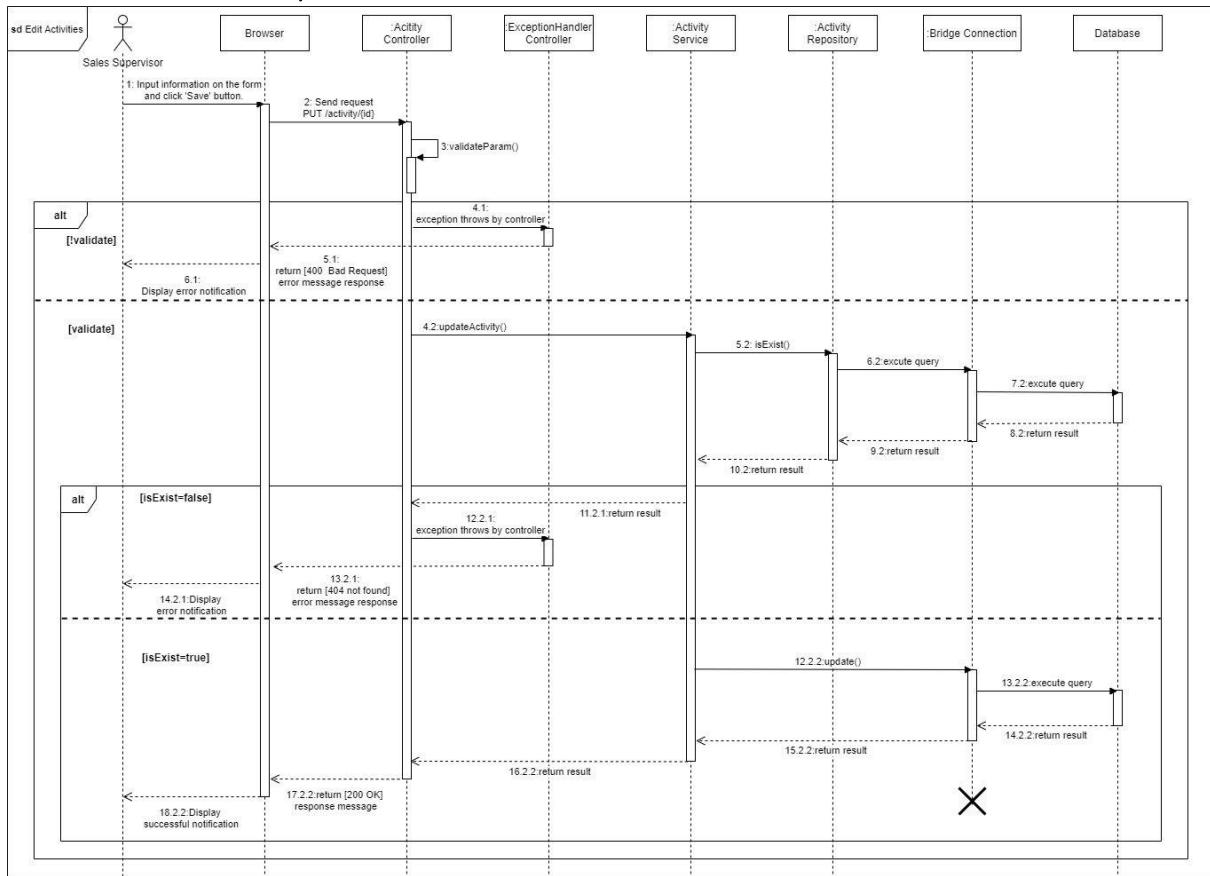


Figure 67. Edit personal activities

e. <Sales Manager> View task details

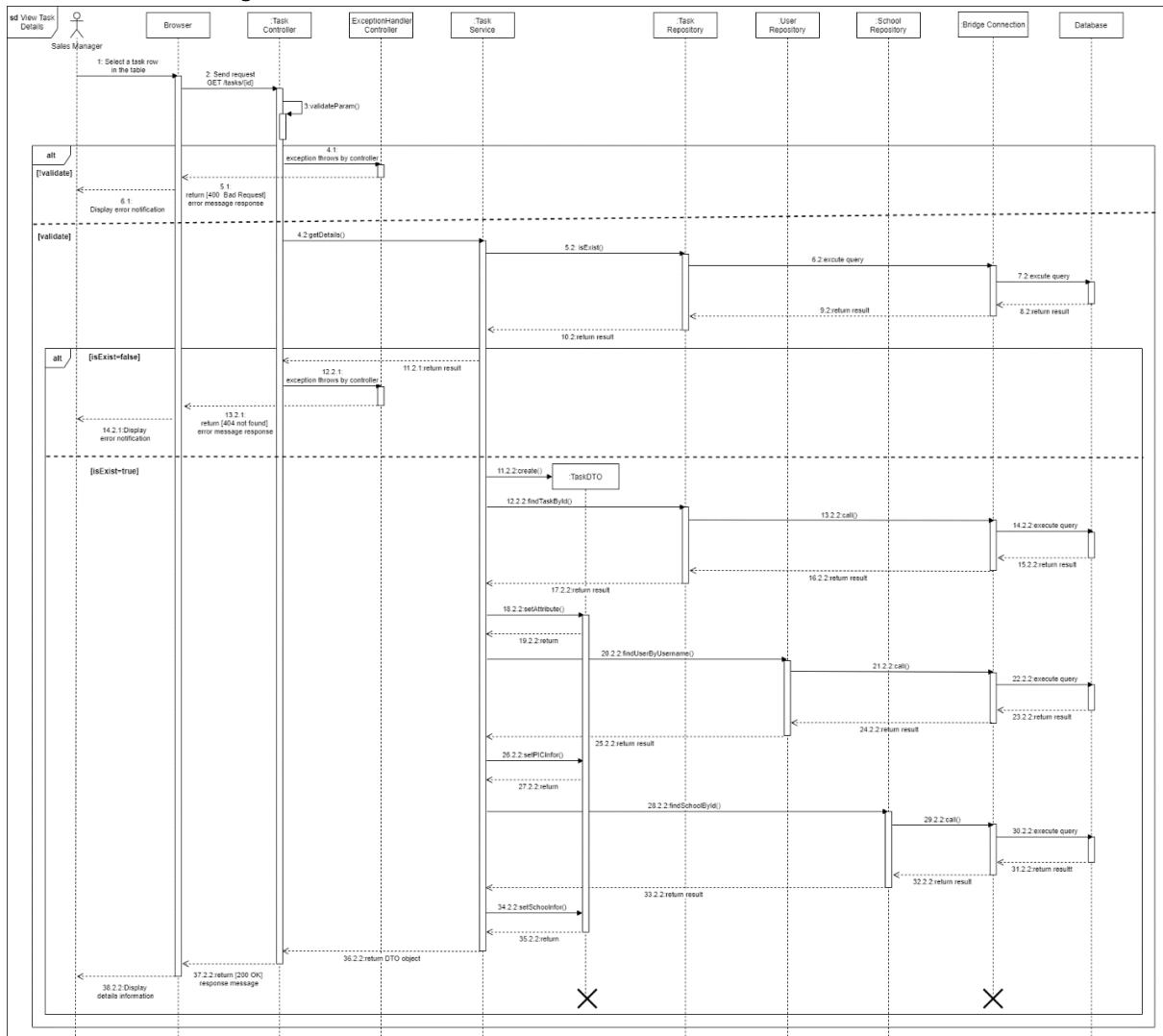


Figure 68. View task details

f. <Salesman> Remove report

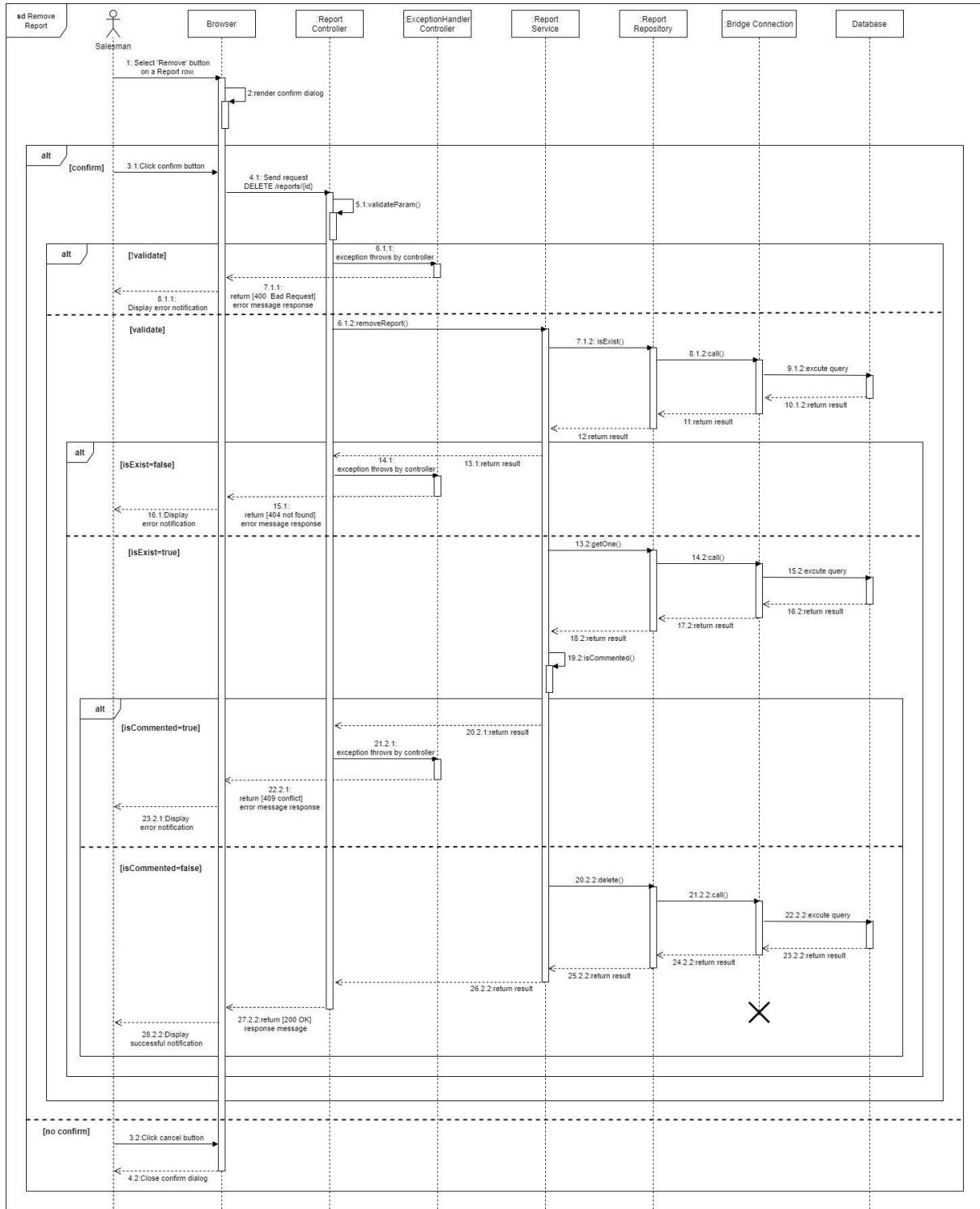


Figure 69. Remove report

g. <Salesman> Edit report

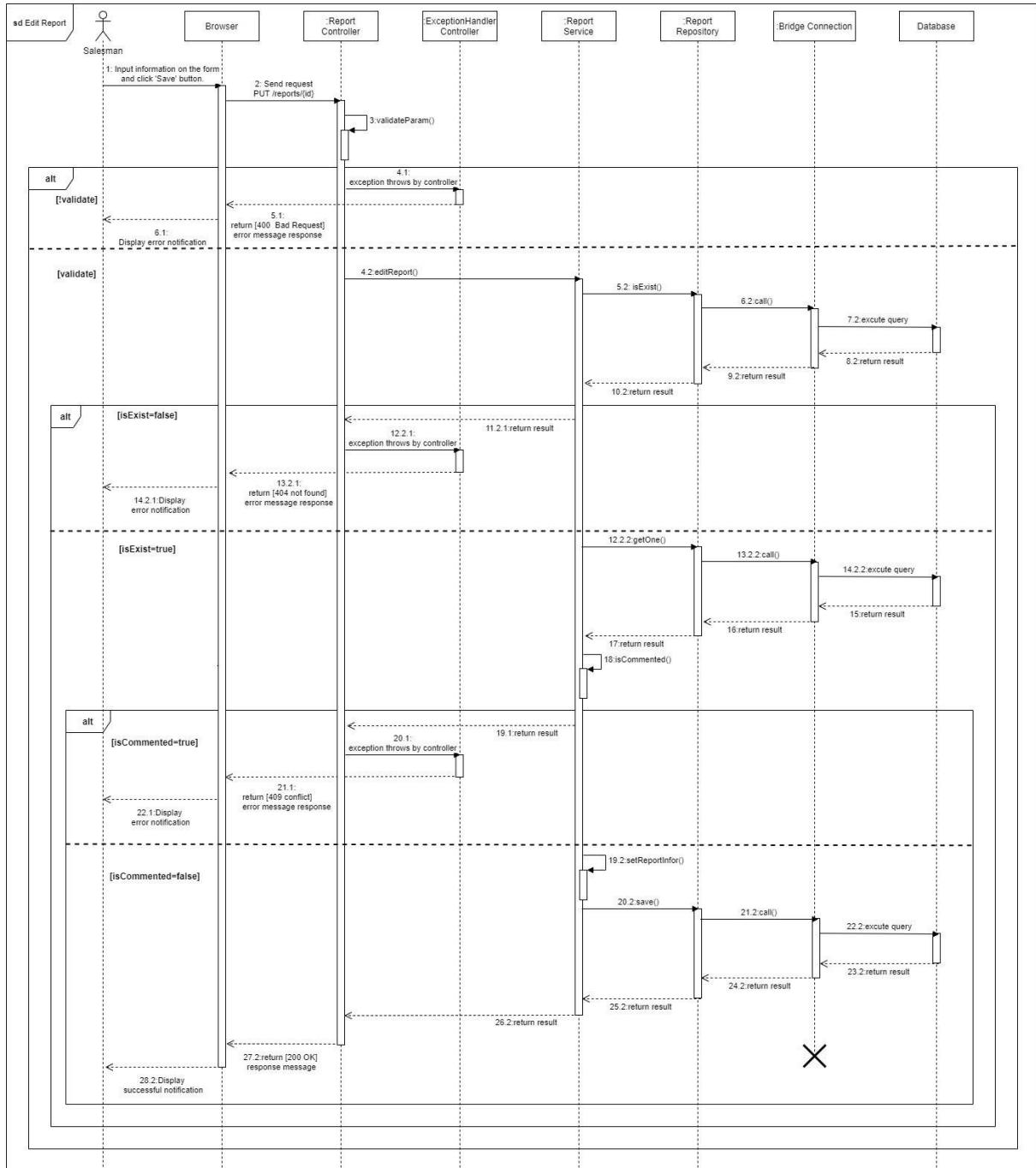


Figure 70. Edit report

3.3. Activity Diagram(s)

a. <Sales Manager> Login

Summary: This diagram shows the process by which the sales manager login to the system.

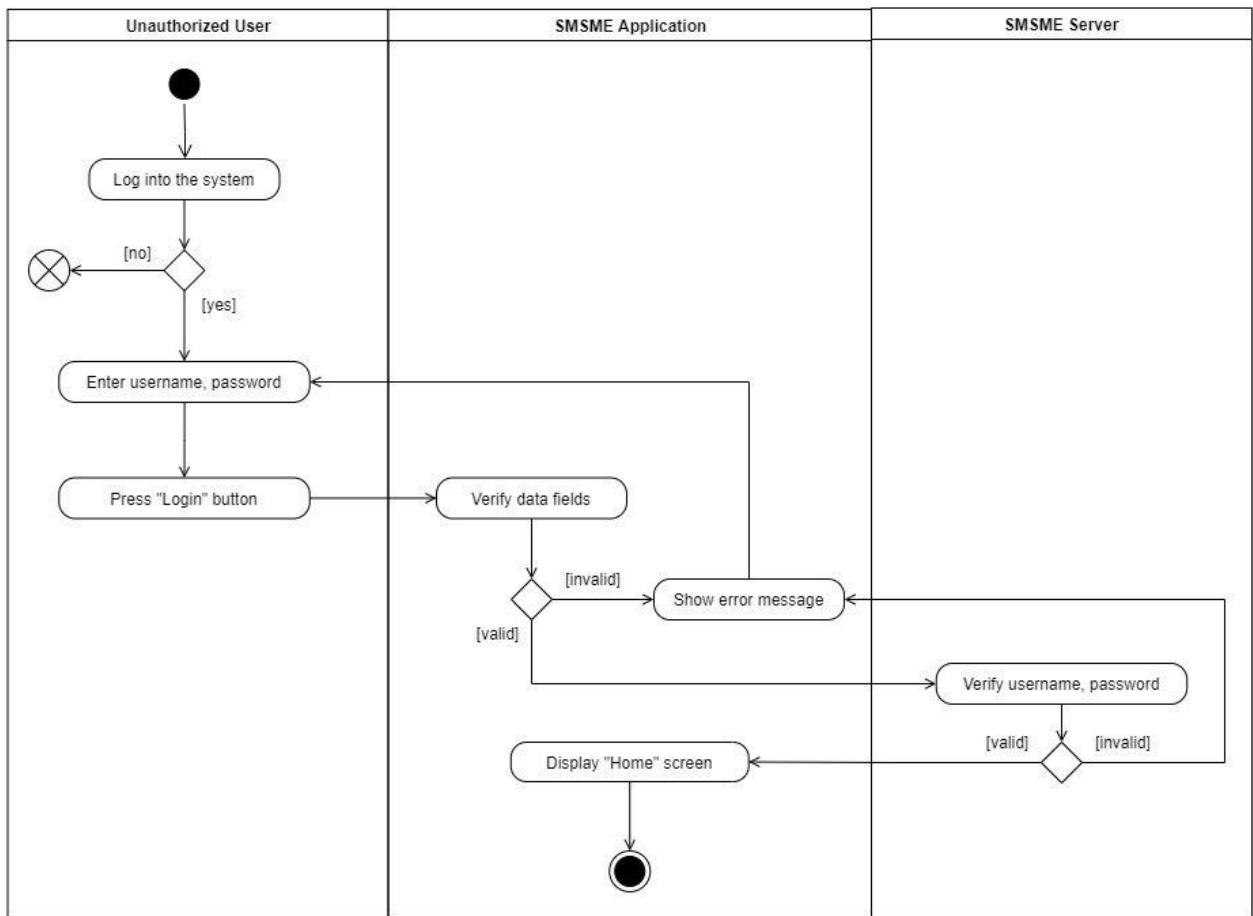


Figure 71. Login

b. <Sales Manager> Create task

Summary: This diagram shows the process by which the sales manager creates a task.

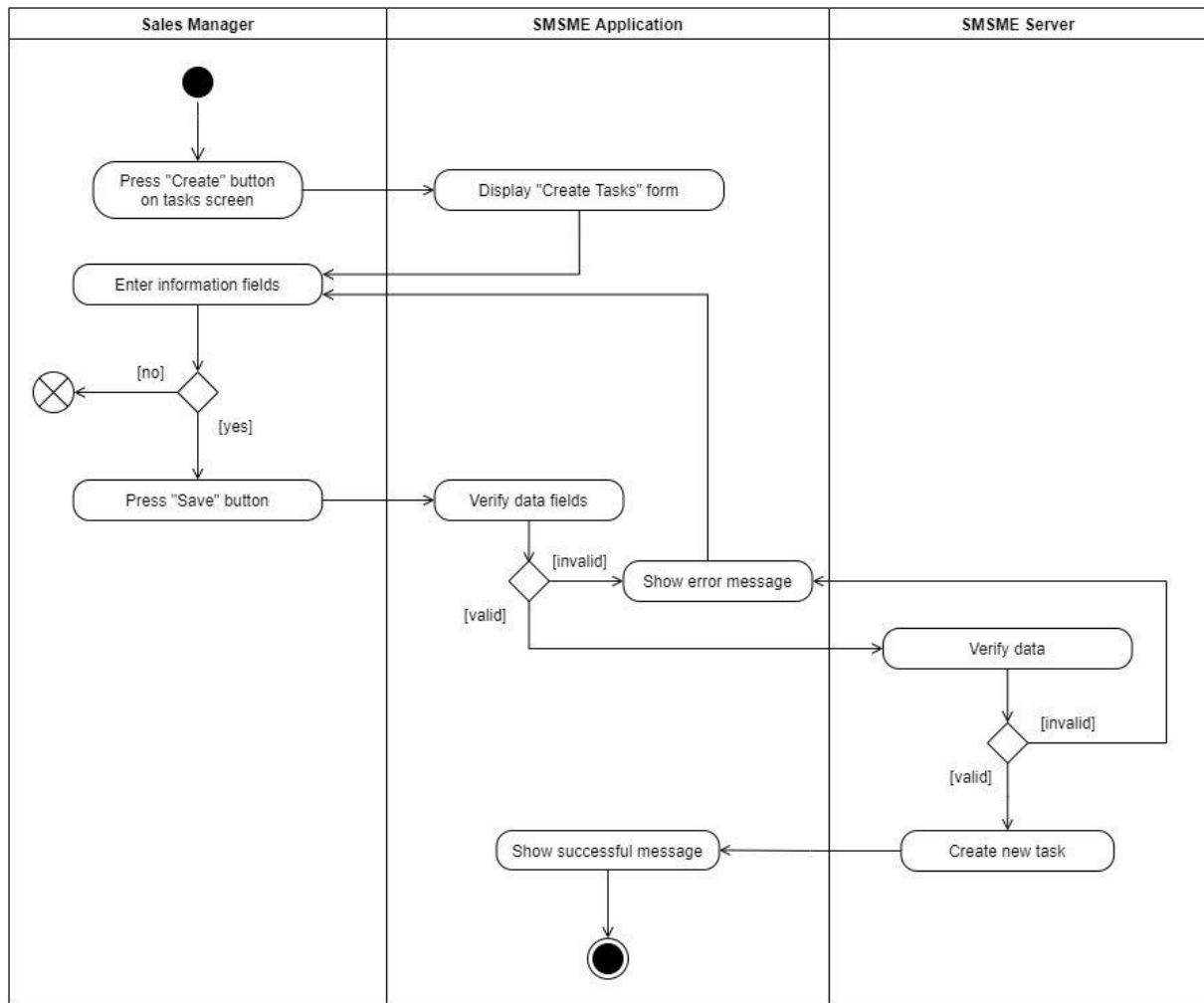


Figure 72. Create tasks

c. <Sales Manager> Update task

Summary: This diagram shows the process by which the sales manager updates a task.

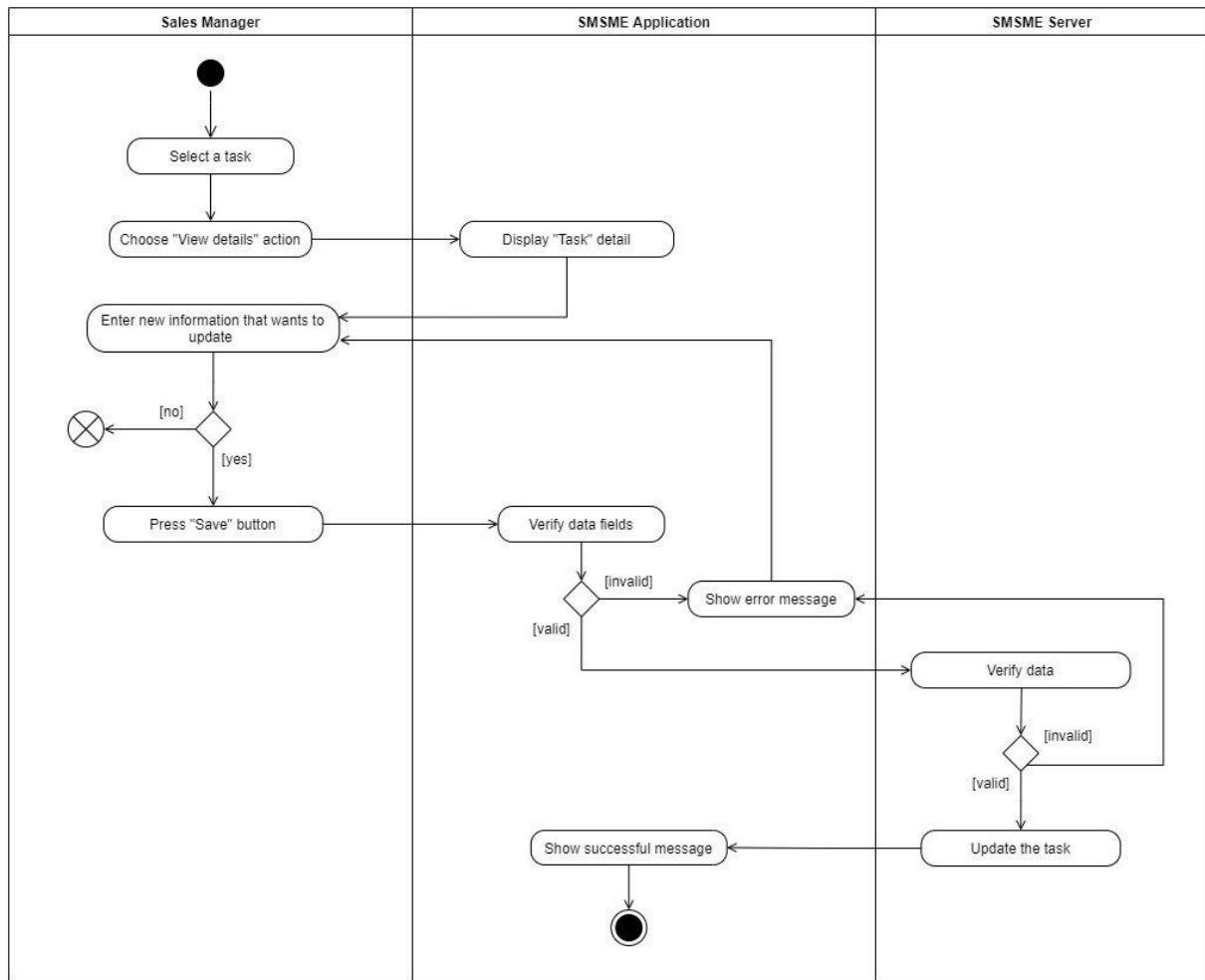


Figure 73. Update task's details

d. <Sales Manager> Remove task

Summary: This diagram shows the process by which the sales manager removes a task.

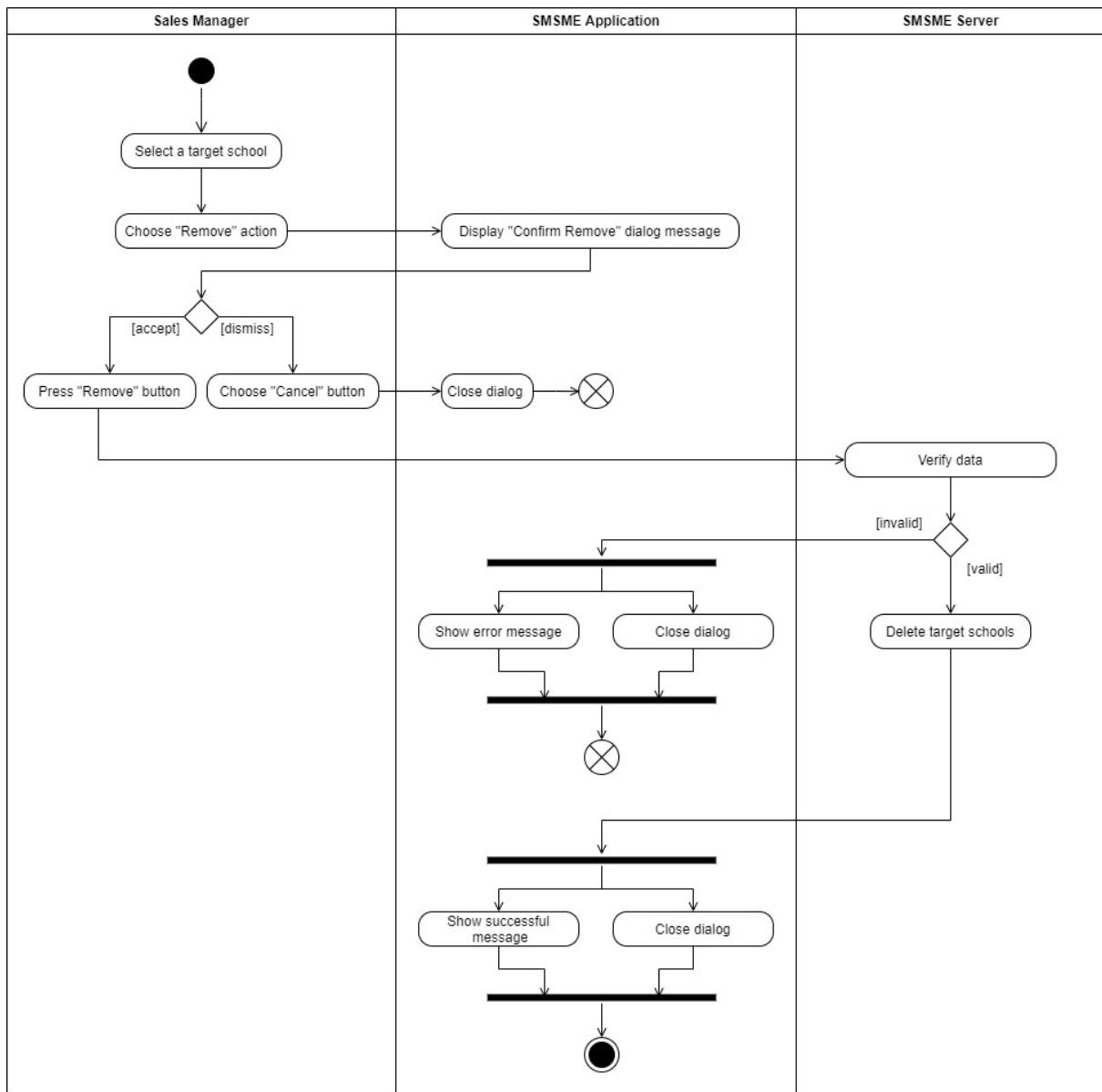


Figure 74. Remove a task

e. *<Sales Manager/Salesman> Create report*

Summary: This diagram shows the process by which the sales manager or salesman create a report.

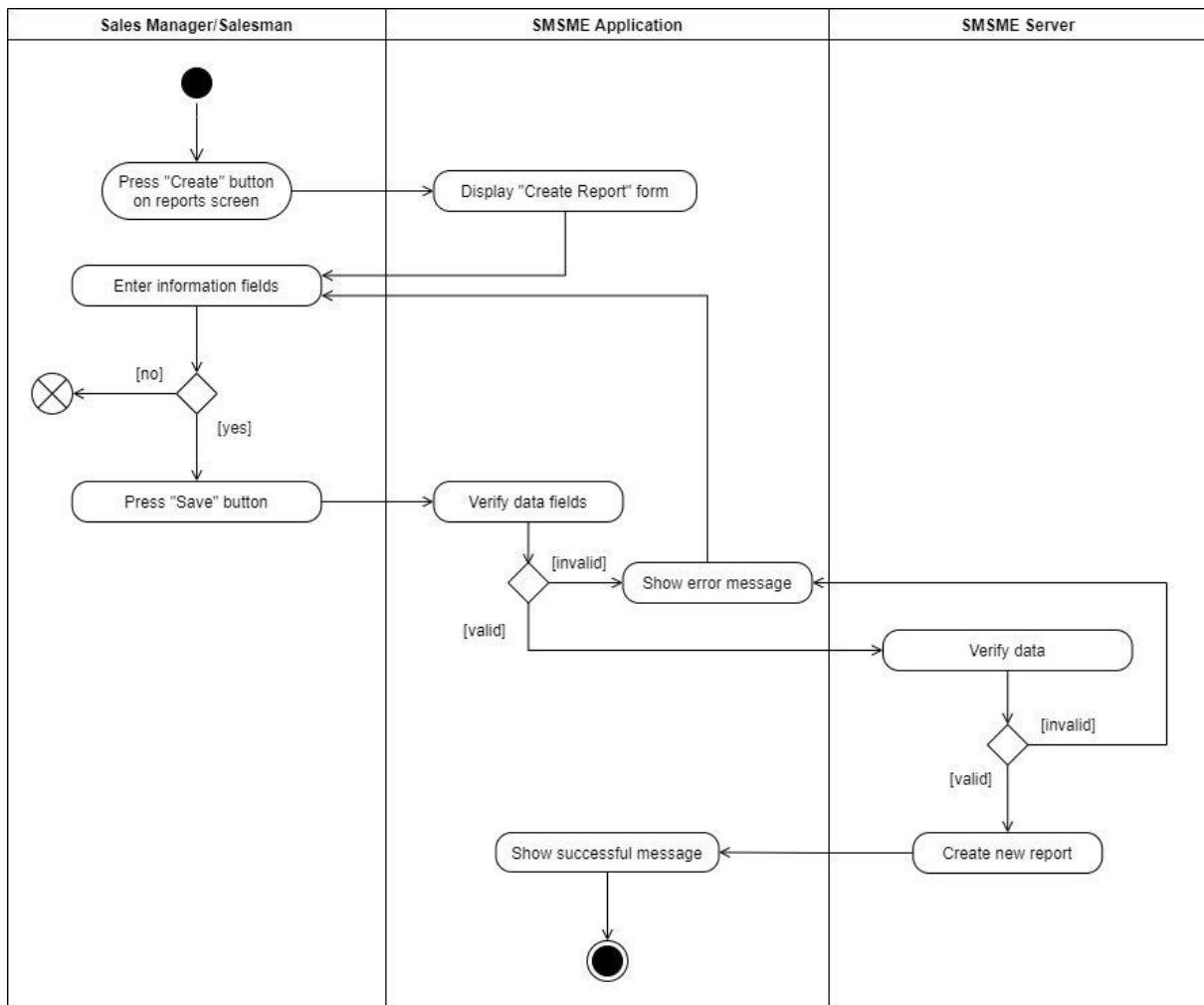


Figure 75. Create reports

f. <Sales Manager/Salesman> Update report

Summary: This diagram shows the process by which the sales manager or salesman update a report.

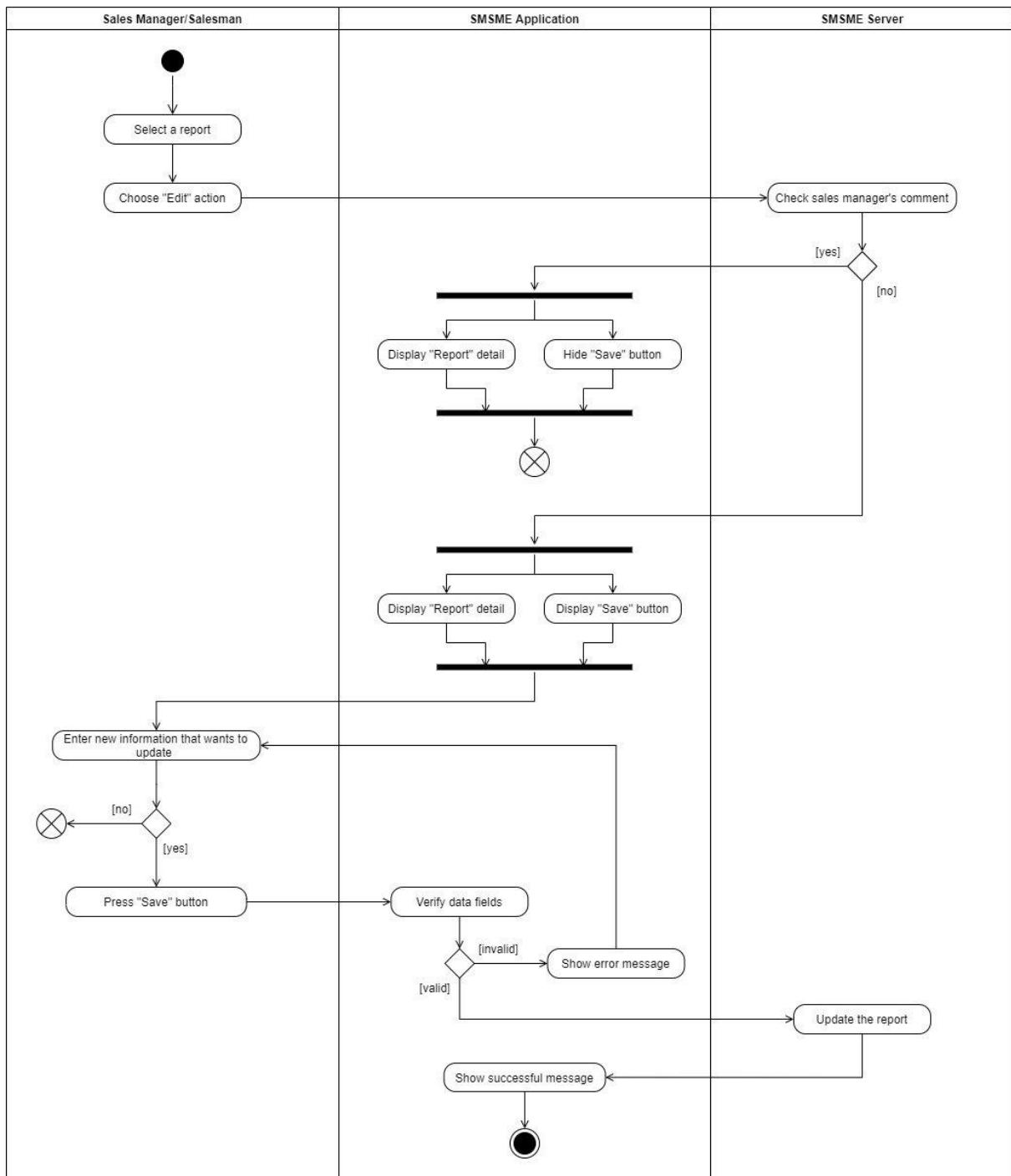


Figure 76. Update report

4. Class Specifications

4.1 User

Attribute	Type	Visibility	Description
username	String	private	The unique identifier of a user
passwordHash	String	private	The password hash of the user

fullName	String	private	The full name of the user
address	String	private	The address of the user
email	String	private	The email of the user
phone	String	private	The phone number of the user
isActive	boolean	private	The active status of the user
avatar	String	private	The avatar of the user
isMale	boolean	private	The gender of the user (true → male, false → female)
birthDate	Date	private	The birthdate of the user
latitude	double	private	The latitude of user's location.
longitude	double	private	The longitude of user's location.

Table 71. Class User Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value
2	setter	public	void	set attribute value

Table 72. Class User Specification - Methods

4.2 PersonalActivity

Attribute	Type	Visibility	Description
id	int	private	The unique identifier of a personal activity
title	String	private	The title of the personal activity
startTime	Date	private	The start time of the personal activity
endTime	Date	private	The end time of the personal activity
isCompleted	boolean	private	The completed status of the personal activity
remark	String	private	The remark of the personal activity
description	String	private	The description of the personal activity
location	String	private	The location of the personal activity

isAllDay	boolean	private	The duration of the personal activity, if it lasts for whole day or not
recurrenceId	int	private	The unique identifier of a recurrence series
recurrenceRule	String	private	The rule of the recurrence series
recurrenceException	String	private	The exception of the recurrence

Table 73. Class PersonalActivity Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value
2	setter	public	void	set attribute value

Table 74. Class PersonalActivity Specification - Methods

4.3 Role

Attribute	Type	Visibility	Description
id	int	private	The unique identifier of a role
name	String	private	The name of the role

Table 75. Class Role Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value
2	setter	public	void	set attribute value

Table 76. Class Role Specification - Methods

4.4 Service

Attribute	Type	Visibility	Description
id	int	private	The unique identifier of a memorandum
startDate	Date	private	The date when the service was launched.
endDate	Date	private	The date when the service was finished.
submitDate	Date	private	The date when Salesman submitted the service that was sold.
note	String	private	The additional information of the service.
rejectReason	String	private	The reason that the Manager rejects the service information sold by Salesman.
isExpired	boolean	private	The service expiration status (true -> out of date, false-> current).

classNumber	int	private	The number of classes using the service.
studentNumber	int	private	The number of students per class using the service.
slotNumber	int	private	The number of lesson.
pricePerSlot	double	private	The price per lesson.
status	String	private	The status of submitted service (approved/rejected/pending).

Table 77. Class Service Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value
2	setter	public	void	set attribute value

Table 78. Class Service Specification - Methods

4.5 Task

Attribute	Type	Visibility	Description
id	int	private	The unique identifier of a task.
schoolYear	String	private	The school year of the task.
note	String	private	The note of the task.
isActive	boolean	private	The active status of the task (use for soft deleting).
assignDate	Date	private	The date when the Manager assigns the task to Salesman.
endDate	Date	private	The date when task is finished.
completedDate	Date	private	The date when Salesman completes the task.

Table 79. Class Task Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value
2	setter	public	void	set attribute value

Table 80. Class Task Specification - Methods

4.6 Report

Attribute	Type	Visibility	Description
id	int	private	The unique identifier of a report
date	Date	private	The date of the report
result	String	private	The result of the report
description	String	private	The description of the report
positivity	String	private	The positivity of the report
difficulty	String	private	The difficulty of the report
futurePlan	String	private	The future plan of the report
supervisorComment	String	private	The supervisor comment of the report

Table 81. Class Report Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value
2	setter	public	void	set attribute value

Table 82. Class Report Specification - Methods

4.7 School

Attribute	Type	Visibility	Description
id	int	private	The unique identifier of a school
name	String	private	The name of the school
address	String	private	The address of the school
phone	String	private	The phone number of the school
type	SchoolType	private	The school type of the school
isActive	boolean	private	The active status of the school
reprName	String	private	The name of the representative
reprGender	boolean	private	The gender of the representative
reprPhone	String	private	The phone number of the representative

reprEmail	String	private	The email of the representative
latitude	double	private	The latitude of School's location.
longitude	double	private	The longitude of School's location

Table 83. Class School Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value
2	setter	public	void	set attribute value

Table 84. Class School Specification - Methods

4.8 District

Attribute	Type	Visibility	Description
id	int	private	The unique identifier of a district
name	String	private	The name of the district

Table 85. Class District Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value
2	setter	public	void	set attribute value

Table 86. Class District Specification - Methods

4.9 SchoolStatus

Attribute	Type	Visibility	Description
id	String	private	The unique identifier of a school status
name	String	private	The name of the school status

Table 87. Class SchoolStatus Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value
2	setter	public	void	set attribute value

Table 88. Class SchoolStatus Specification - Methods

4.10 Purpose

Attribute	Type	Visibility	Description

id	String	private	The unique identifier of a task purpose
name	String	private	The name of the task purpose

Table 89. Class TargetSchoolPurpose Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value
2	setter	public	void	set attribute value

Table 90. Class TargetSchoolPurpose Specification - Methods

4.11 EducationalLevel

Attribute	Type	Visibility	Description
id	int	private	The unique identifier of the educational level.
name	String	private	The name of the educational level.

Table 91. Class EducationalLevel Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value
2	setter	public	void	set attribute value

Table 92. Class EducationalLevel Specification - Methods

4.12 SchoolType

Value	Type	Visibility	Description
Công lập			Enum constant
Ngoài công lập			Enum constant
Bán công			Enum constant

Table 93. Enum Class SchoolType Specification

4.13 Auditable

Value	Type	Visibility	Description
CreatedDate	Date	private	The date of logging created event.
CreatedBy	String	private	The user's username of logging created event.
ModifiedDate	Date	private	The date of logging modified event.
ModifiedBy	String	private	The user's username of logging modified event.

Table 94. Class Auditable Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value.

2	setter	public	void	set attribute value.
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Table 95. Class Auditable Specification - Methods

4.14 Kpi

Value	Type	Visibility	Description
id	int	private	The unique identifier of the KPI.

Table 96. Class Kpi Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value.
2	setter	public	void	set attribute value.

Table 97. Class Kpi Specification – Methods

4.15 KpiGroup

Value	Type	Visibility	Description
id	int	private	The unique identifier of the KPI group.
startDate	Date	private	The date when the KPI group is applied.
endDate	Date	private	The date when the KPI group is finished.
isActive	boolean	private	The active status of the KPI group.
groupName	String	private	The name of KPI group.

Table 98. Class KpiGroup Specification - Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value.
2	setter	public	void	set attribute value.

Table 99. Class KpiGroup Specification – Methods

4.16 KpiDetails

Value	Type	Visibility	Description
id	int	private	The unique identifier of the KPI details.
targetValue	double	private	The value that Manager sets as the target.
actualValue	double	private	The value that Salesman creates.
weight	double	private	The weight of the KPI criteria.

Table 100. Class KpiDetails Specification – Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value.
2	setter	public	void	set attribute value.

Table 101. Class KpiDeatils Specification – Methods

4.17 Criteria

Value	Type	Visibility	Description
id	String	private	The unique identifier of the criteria.
description	String	private	The description of criteria.
name	String	private	The name of criteria.
type	String	private	The type of criteria.

Table 102. Class Criteria Specification – Attributes

No	Method	Visibility	Return Type	Description
1	getter	public	dataType	get attribute value.
2	setter	public	void	set attribute value.

Table 103. Class Criteria Specification – Methods

5. Data & Database Design

5.1 Database Design

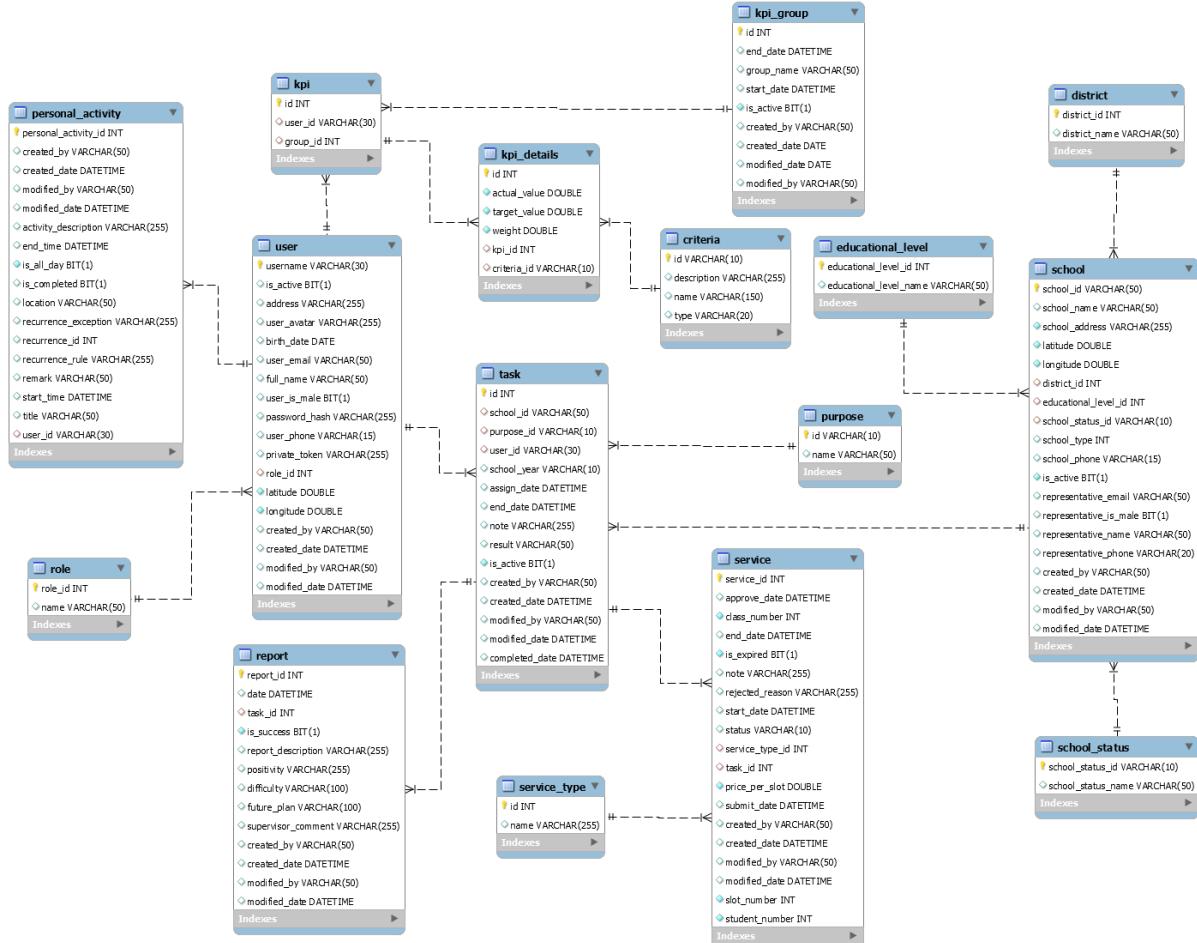


Figure 77. Database Diagram

a. school

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes

1	school_id	string	50	X	X	X	Auto generate from school_name + district_id + education_level_id
2	school_name	varchar	50		X		
3	school_phone	varchar	15				
4	school_address	varchar	255		X		
5	is_active	bit	1		X		Use for soft deleting
6	education_level_id	int			X	X	
7	school_type	int			X		
8	district_id	int			X	X	
9	school_status_id	varchar	10		X	X	
10	representative_name	varchar	50				
11	representative_email	varchar	50				
12	representative_phone	varchar	15				
13	representative_is_male	bit	1				
14	latitude	double					
15	longitude	double					
16	created_by	varchar	50				Use for auditing
17	created_date	datetime					Use for auditing
18	modified_by	varchar	50				Use for auditing
19	modified_date	datetime					Use for auditing

Table 104. Description for table "school"

b. *district*

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	district_id	int		X	X	X	
2	district_name	varchar	50		X		

Table 105. Description for table "district"

c. *school_status*

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	school_status_id	varchar	10	X	X	X	
2	school_status_name	varchar	50		X		

Table 106. Description for table "school_status"

d. *task*

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	id	int		X	X	X	
2	school_year	varchar	10		X	X	
3	school_id	int			X	X	
4	purpose_id	varchar	10		X	X	
5	user_id	varchar	30			X	
6	note	varchar	255				
7	result	varchar	50				
8	is_active	bit	1		X		Use for soft deleting
9	assign_date	datetime					
10	end_date	datetime					

11	completed_date	datetime					
12	created_by	varchar	50				Use for auditing
13	created_date	datetime					Use for auditing
14	modified_by	varchar	50				Use for auditing
15	modified_date	datetime					Use for auditing

Table 107. Description for table "target_school"

e. report

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	report_id	int		X	X	X	
2	date	datetime			X		
3	task_id	int			X	X	
4	is_success	bit	1		X		
5	report_description	varchar	255				
6	positivity	varchar	255				
7	difficulty	varchar	100				
8	future_plan	varchar	100				
9	supervisor_comment	varchar	255				
10	created_by	varchar	50				Use for auditing
11	created_date	datetime					Use for auditing
12	modified_by	varchar	50				Use for auditing
13	modified_date	datetime					Use for auditing

Table 108. Description for table "report"

f. purpose

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	id	varchar	10	X	X	X	
2	name	varchar	50		X		

Table 109. Description for table "target_school_purpose"

g. user

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	username	varchar	30	X	X	X	
2	password_hash	varchar	255		X		Password is hashed by Bcript Hashing Algorithm.
3	full_name	varchar	50				
4	user_email	varchar	50				
5	user_phone	varchar	15				
6	role_id	int			X	X	
7	is_active	bit	1		X		Use for soft deleting or when the users quit job.
8	address	varchar	255				
9	user_avatar	varchar	255				Presigned URL for retrieving images from Firebase Storage.
10	user_is_male	bit	1		X		
11	birth_date	date					

12	private_token	varchar	255				This token is used to recovered the forgotten password.
13	latitude	double					
14	longitude	double					
15	created_by	varchar	50				Use for auditing
16	created_date	datetime					Use for auditing
17	modified_by	varchar	50				Use for auditing
18	modified_date	datetime					Use for auditing

Table 110. Description for table "user"

h. role

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	role_id	int		X	X	X	
2	name	varchar	30		X		

Table 111. Description for table "role"

i. personal_activity

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	personal_activity_id	int		X	X	X	
2	title	varchar	30		X		Title of the to-do activity
3	remark	varchar	50				Result or remark of the activity
4	activity_description	varchar	255				
5	start_time	datetime			X		
6	end_time	datetime			X		
7	user_id	varchar	30		X	X	
8	is_all_day	bit	1		X		The duration of the personal activity, if it lasts for whole day or not
9	is_completed	bit	1		X		The status of the activity, whether it is completed or not
10	location	varchar	50				Location where this activity happens/will happen.
11	recurrence_id	int					An activity can occur one time or multiple time. If it occurs multiple time, this "recurrence_id" is to specify the series/family of that activity.
12	recurrence_rule	varchar	255				A series contains multiple same activities with the general rule for repeating after a period.
13	recurrence_exception	varchar	255				This list is used to store the "personal_activity_id" of an exception in the series.
14	created_by	varchar	50				Use for auditing
15	created_date	datetime					Use for auditing
16	modified_by	varchar	50				Use for auditing

17	modified_date	datetime					Use for auditing
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Table 112. Description for table "personal_activity"

j. service

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	service_id	int		X	X	X	
2	approved_date	datetime			X		
3	note	varchar	255				
4	class_number	int					
5	start_date	datetime			X		
6	end_date	datetime					
7	submit_date	datetime					
8	task_id	int			X	X	
9	is_expired	bit	1		X		
10	service_type_id	int				X	
11	status	varchar	10				
12	price_per_slot	double					
13	slot_number	int					
14	student_number	int					
15	rejectReason	varchar	255				
16	created_by	varchar	50				Use for auditing
17	created_date	datetime					Use for auditing
18	modified_by	varchar	50				Use for auditing
19	modified_date	datetime					Use for auditing

Table 113. Description for table "service"

k. service_type

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	id	int		X	X	X	
2	name	varchar	255		X		

Table 114. Description for table "service_type"

l. kpi

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	id	int		X	X	X	
2	user_id	String	30		X	X	
3	group_id	int			X	X	

Table 115. Description for table "kpi"

m. kpi_group

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	id	int		X	X	X	
2	group_name	varchar	50		X		
3	start_date	datetime			X		

4	end_date	datetime					
5	is_active	bit	1				
6	created_by	varchar	50				Use for auditing
7	created_date	datetime					Use for auditing
8	modified_by	varchar	50				Use for auditing
9	modified_date	datetime					Use for auditing

Table 116. Description for table "kpi_group"

n. kpi_details

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	id	int		X	X	X	
2	actual_value	double			X		
3	target_value	double			X		
4	weight	double			X		
5	is_active	bit	1		X		
6	kpi_id	int			X	X	
7	criteria_id	varchar	10		X	X	

Table 117. Description for table "kpi_details"

o. criteria

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	id	varchar	10	X	X	X	
2	description	varchar	255		X		
3	name	varchar	150		X		
4	type	varchar	20				

Table 118. Description for table "criteria"

p. educational_level

#	Field name	Type	Size	Unique	Not Null	PK/FK	Notes
1	educational_level_id	int		X	X	X	
2	educational_level_name	varchar	50				

Table 119. Description for table "educational_level"

5.2 Data File Design

We use firebase to store images.

#	File Name	Type	Notes
1	avatars	jpg, jpeg, png	The images are used for user avatar.
2	Import_Sample.xlsx	xlsx	The sample sheet for user import guidance.

Table 120. Data File Design

V. Software Testing Documentation

1. Overall Description

1.1 Test Model

Based on the user requirements, team resources, and project conditions, our team has come up with using the prototype model as a software development model. In this model, a prototype is built, tested, and reworked until it is accepted by the user.

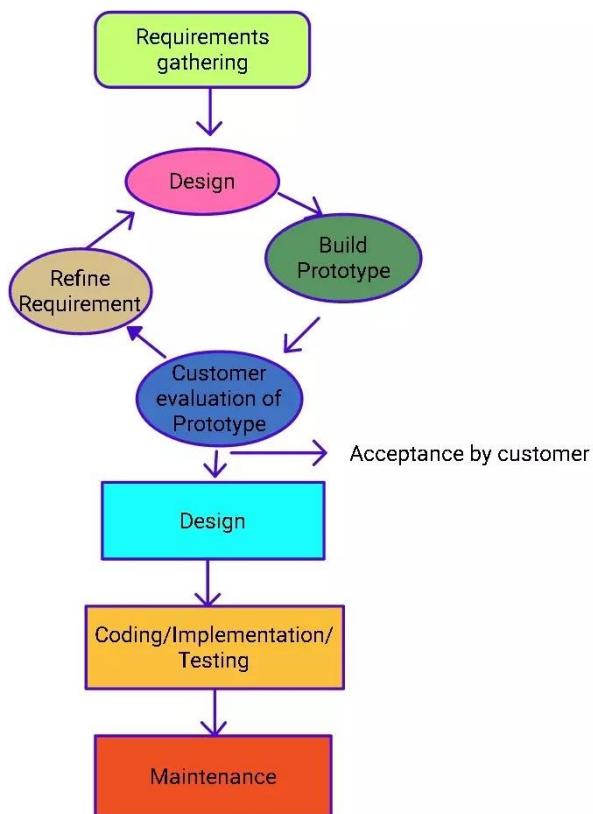


Figure 78. Prototype model

References: <https://www.geeksforgeeks.org/software-engineering-prototyping-model/>

1.2 Testing Levels

Testing Level	Description
Unit Testing	Checks the software modules are fit for use
Integration Testing	Checks the integrated logic of the software module group
System Testing	Checks the whole system if it works as expected or not

Acceptance Testing	Checks the software if the user requirements are met or not
--------------------	---

Table 121. Testing Levels

1.3 Testing Types

Testing types	Description
Functional Testing	<ul style="list-style-type: none"> • Unit Testing • Integration Testing • System Testing • Interface Testing • Regression Testing • Beta Testing
Non-functional Testing	<ul style="list-style-type: none"> • Performance Testing

Table 122. Testing Types

2. Test Plan

2.1 Test Stages

Type of Test	Stage of Test			
	Unit	Integration	System	Acceptance
Interface Testing	X		X	
Performance Testing		X		
Regression Testing	X	X		
Beta Testing				X

Table 123. Test Stages

2.2 Resources

a. Human Resources

Worker/Doer	Role	Specific Responsibilities/Comments
Phạm Thị Ngọc Hà	Leader	<ul style="list-style-type: none"> • Functional Testing • Non-functional Testing
Lê Gia Nguyên	Member	<ul style="list-style-type: none"> • Functional Testing • Non-functional Testing
Nguyễn Hoàng Gia	Member	<ul style="list-style-type: none"> • Functional Testing • Non-functional Testing

Table 124. Human Resources

b. Environment

Purpose	Tool	Provider	Version
Unit Testing	Postman	Postman, Inc	8.2.1

Unit Testing			
Integration Testing			
System Testing			89
Interface Testing	Chrome	Google LLC	
Regression Testing			
Performance Testing			

Table 125. Environment

2.3 Test Milestones

Milestone Task	Effort (md)	Start Date	End Date
Setup the environment	2	09/04/2021	09/04/2021
Admin role function unit test	2	09/04/2021	09/04/2021
Admin role integration test	3	09/04/2021	09/04/2021
Admin role interface test	2	09/04/2021	09/04/2021
Salesman role function unit test	4	09/04/2021	09/04/2021
Salesman role integration test	5	09/04/2021	09/04/2021
Salesman role interface test	4	09/04/2021	09/04/2021
Sales manager role function unit test	4	10/04/2021	10/04/2021
Sales manager role integration test	5	10/04/2021	10/04/2021
Sales manager role interface test	4	10/04/2021	10/04/2021
Admin role regression test	3	11/04/2021	11/04/2021
Admin role performance test	3	11/04/2021	11/04/2021
Salesman role regression test	5		
Salesman role performance test	3		
Sales manager role regression test	5		

Sales manager role performance test	3		
Sales supervisor role function unit test	3		
Sales supervisor role integration test	3		
Sales supervisor role interface test	3		
Sales supervisor role regression test	4		
Sales supervisor role performance test	3		
System test	7		
Beta test	10		

Table 126. Test Milestones

2.4 Deliverables

No	Deliverables	Due Date
1	Report5_Unit Test Case	12/04/2021
2	Report5_Test Case Document	13/04/2021

Table 127. Deliverables

3. Test Cases

No	Filename
1	Report5_Unit Test Case.xls
2	Report5_Test Case Document.xls

Table 128. Test Cases

4. Test Reports

No	Filename
1	Report5_Unit Test Case.xls

Table 129. Test Reports

VI. Release Package & User Guides

1. Deliverable Package

1.1 Source codes & documents

No.	Items	Sub-Items	Type	Version
Code Package				
1	Web Apps		New	1.0.0
2	API Services		New	1.0.0
Database				
1	Tables	service.sql district.sql personal_activity.sql report.sql role.sql school.sql school_status.sql target_school.sql target_school_purpose.sql user.sql	New	1.0.0
Documents				
1	Introduction	Report1_Project Introduction.docx	New	1.0.0
2	Management Plan	Report2_Project Management Plan.docx	New	1.0.0
3	Requirement	Report3_Software Requirement Specification.docx	New	1.0.0
4	Design	Report4_Software Design Document.docx	New	1.0.0
5	Testing	Report5_Test Documentation.docx Report5_Test Case Document.docx Report5_Unit Test Case.docx	New	1.0.0
6	User Guides	Report6_Software User Guides.docx	New	1.0.0
7	Final	Report7_Final Project Report.docx	New	1.0.0

Table 130. Source codes & documents

1.2 Known Issues, Limitations & Restrictions

- The current system does not provide a mobile app version for the user.
- The current system does not support communication channel with customers.
- The web application responsive interface has not stable yet.
- The interface still lacks consistency, may or may not cause uncomfortable for the user.
- The current application only supports English default.
- The system lacks testing, which leads to application performance or bugs that may cause during implementation.
- During the lack of team resources, some main features of the application have not been implemented.

2. Installation Guides

2.1 System Requirements

2.1.1 Hardware Requirements

- Since this system is a web application, all the devices using the system must run over the Internet.

- Our system is deployed on the server, which the minimum requirements services to run in the following:

For Web App

Hardware	Minimum Requirements
vCPU	1
Operation System	Linux Server/Window server
Memory (GiB)	1GiB (=1.07374 GB)

Table 131. <Installation guides> Hardware requirements for Web App

For API Services

Hardware	Minimum Requirements
vCPU	1
Operation System	Linux Server/Window server
Memory	1GiB (=1.07374 GB)

Table 132. <Installation guides> Hardware requirements for API service

For Database

Hardware	Minimum Requirements
vCPU	1
Operation System	Linux server/Window server
Computer Memory	1GiB (=1.07374 GB)

Table 133. <Installation guides> Hardware requirements for Database

2.1.2 Software Requirements

This web application works with: Chrome (version 52 or above), Firefox (version 51 or above), Edge (version 14 or above), Safari (version 10 or above), or Opera (version 38 or above) browser.

2.2 Setup Files

N/A

2.3 Installation Instruction

N/A

3. User Manual

3.1 Terms and definitions

- This system is built for Major Education with a project code SMSME, which stands for Sales Management System for Major Education.
- This system is an enterprise application, with the license rules and terms of use belong to Major Education.

3.2 System requirements

3.2.1 Hardware Requirements

- Since this system is a web application, all the devices using the system must run over the Internet.
- Our system is deployed on the server, which the minimum requirements services to run in the following:

For Web App

Hardware	Minimum Requirements
vCPU	1
Operation System	Linux Server/Window server
Memory (GiB)	1GiB (=1.07374 GB)

Table 134. <User Manual> Hardware requirements for Web App

For API Services

Hardware	Minimum Requirements
vCPU	1
Operation System	Linux Server/Window server
Memory (GiB)	1GiB (=1.07374 GB)

Table 135. <User Manual> Hardware requirements for API Services

For Database

Hardware	Minimum Requirements
vCPU	1
Operation System	Linux server/Window server
Memory (GiB)	1GiB (=1.07374 GB)

Table 136. <User Manual> Hardware requirements for Database

3.2.2 Software Requirements

This web application works with: Chrome (version 52 or above), Firefox (version 51 or above), Edge (version 14 or above), Safari (version 10 or above), or Opera (version 38 or above) browser.

3.3 Application Usage

3.3.1 Overview

The target users that SMSME mainly aims to are salesmen and sales managers of the Sales Department of Major Education.

For salesmen, this software would help them manage their work-plan as well as their tasks easier and more visually, submit daily reports more directly and they can also monitor other salesmen's works.

For sales managers, they would not have to collect and analyze all salesmen's reports manually. Now they can supervise salesmen or search for reports more easily. Moreover, they can see the overall picture of the company's business process, including what schools are lead or customers, who are the most effective salesman,...

c. 3.3.2 Accounts

Purpose

- The admin manages user accounts.

Functions

- View list of accounts.
- View account's details.
- Search accounts.
- Create accounts.
- Edit account's information.

User interface(s)

The screenshot shows the 'Accounts' page in the Major Education application. The sidebar on the left has 'Accounts 1' selected. The main area is titled 'Accounts' and displays a table of user records. The columns are: No, Username, Full Name, Phone, Email, and Role. The data is as follows:

No	Username	Full Name	Phone	Email	Role
1	admin1	Pham Thi Ngoc Ha	0947672158	haptnse130460@fpt.edu.vn	ADMIN
2	annhien1	Đoàn Thi An Nhiên	0519992071	haptnse130460@fpt.edu.vn	SALESMAN
3	baokhanh	Đinh Hoàng Bảo Khanh	0946123476	haptnse130460@fpt.edu.vn	SALESMAN
4	binhkhanh	Trịnh Thị Bình Khánh	0945124872	haptnse130460@fpt.edu.vn	SALESMAN
5	chanthanh	Bùi Hải Chân Thanh	0797823971	haptnse130460@fpt.edu.vn	SALESMAN
6	diemnhi1	Tô Diễm Nhí	0911564732	diemnhi@truongvietanh.com	SALESMAN

A context menu is open over the 3rd row, showing options like 'View details'. At the bottom, there are pagination controls: 'Rows per page: 10', '1-10 of 34', and a page number '1 / 4'.

Figure 79. List of Accounts

Step	Description
Pre-condition	User logged in as role "Admin"
1	Click on "Accounts" on the sidebar

Table 137. View all Accounts <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
3	Search	Search users by username, full name, phone, and user email.	No	No	Text Field	String

Table 138. View all Accounts <fields>

No	Function	Description	Validation	Outcome
2	Filter button	Open/Collapse Filter zone	No	An accordion which contains filters inside
4	Create accounts	Create new user account	No	A "Create Accounts" form
5	Sort		No	
6	Open menu options	Show menu options of actions which are allowed for a specific role	No	
7	Menu Option	Option "View details" to show more details of the table's row data	No	

8	Change limit of the table	Select number of rows per page to display on the table (pagination)	No	
9	First page	Move to the first page in the table	No	
10	Previous page	Move to the previous page in the table	No	
11	Next page	Move to the next page in the table	No	
12	Last page	Move to the last page in the table	No	

Table 139. View all Accounts <functions>



Figure 80. Accounts Filters

Step	Description
1	Click on the filters button

Table 140. Account Filters <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
4	Working status	Filter users by their working status (is working or quit job...)	No	No	Select	String
5	Roles	Filter users by their roles	No	No	Select	String

Table 141. Accounts Filters <fields>

No	Function	Description	Validation	Outcome
2	Clear All filters	Clear all selected filters and reset all filters to default value	No	
3	Remove a filter	Each selected filter is displayed as a chip. Clicks on "x" button to remove that chip and reset the according filter to default value	No	

Table 142. Accounts Filters <functions>

Create Account 11 ×

1 Username *

2 Full Name *

3 Phone Number *

4 Email *
This email will be used to confirm account

5 Address *

6 Gender * Male Female 7

8 Roles * SALESMAN 9 10

SAVE CANCEL

Figure 81. Create Account Form

Step	Description
Pre-condition	Click on the create account button

Table 143. Create Account Form <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
1	Username	Username of the user	No	Yes	Text Field	String
2	Full Name	Full name of the user	No	Yes	Text Field	String
3	Phone Number	Phone number of the user	No	Yes	Text Field	String
4	Email	Email of the user	No	Yes	Text Field	String
5	Address	Address of the user	No	Yes	Text Field	String
6	Gender	Gender of the user	No	Yes	Checkbox	Boolean

7	Birthday	Birthday of the user	No	No	Text Field	Date
8	Roles	Role of the user	No	Yes	Combo Box	String

Table 144 Create Account Form <fields>

No	Function	Description	Validation	Outcome
9	Save	Create a new account	Yes	Notify create successfully
10	Cancel	Cancel create a new account	No	Close the form
11	Close Icon	Cancel create a new account	No	Close the form

Table 145 Create Account Form <functions>

Figure 82. Account's details

Step	Description
Pre-condition	User logged in as role "Admin"
Pre-condition	Click on "View details" option on the menu item of the table

Table 146. View Accounts details <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
1	Username	Username of the user	Yes	Yes	Text Field	String

2	Email	Email of the user	Yes	Yes	Text Field	String
3	Phone number	Phone number of the users	No	Yes	Text Field	String
4	Address	Address of the user	No	Yes	Text Field	String
5	Gender	Gender of the user	No	Yes	Checkbox	Boolean
6	Birthday	Birthday of the user	No	No	Text Field	Date
7	Roles	Role of the user	No	Yes	Combo Box	String
8	Account Active	Working status of the user	No	Yes	Switch	Boolean

Table 147. View Account details <fields>

No	Function	Description	Validation	Outcome
9	Save	Update account info	Yes	Notify update successfully
10	Go back	Go back to accounts page	No	Redirect to Accounts page

Table 148. View Account details <functions>

d. 3.3.3 Schools

Purpose

- The admin manages school's info.
- The sales manager edits school's info.
- The sales supervisor edits school's info.
- The salesman edits school's info.

Functions

- View list of schools.
- View school's details.
- Search schools.
- Create schools.
- Edit school's information.

User interface(s)

No	School Name ↓ 5	Address	Principal	
1	THCS Cầu Kiệu	244 Phan Đình Phùng, phường 3, Phú Nhuận, Thành phố Hồ Chí Minh		6 :
2	THCS Cửu Long	2 Võ Duy Ninh, Khu đô thị Phú Mỹ Hưng, Phường 22, Bình Thạnh, Thành phố Hồ Chí Minh		7 :
3	THCS - THPT Đinh Thiện Lý	80 Nguyễn Đức Cảnh, Tân Phong, Quận 7, Thành phố Hồ Chí Minh	Mr. Chen Wei Hung	View details
4	Tiểu học Đinh Tiên Hoàng	67 Đường Đinh Tiên Hoàng, Đa Kao, Quận 1, Thành phố Hồ Chí Minh	Ms. Trần Thị Thu Hương	⋮
5	Tiểu học Đồng Đa	217 Nguyễn Gia Trí, Phường 25, Bình Thạnh, Thành phố Hồ Chí Minh	Ms. Nguyễn Thị Đoan Trang	⋮
6	THPT Giồng Ông Tố	200/10 Nguyễn Thị Đinh, Quận 2, Thành phố Hồ Chí Minh		⋮
7	Tiểu học Hảm Tử	738 Võ Văn Kiệt, phường 1, Quận 5, Thành phố Hồ Chí Minh		⋮
8	Tiểu học Hoàng Hoa Thám	6 Hoàng Hoa Thám, Phường 12, Tân Bình, Thành phố Hồ Chí Minh		⋮
9	THCS Hồng Bàng	132 Hồng Bàng, phường 12, Quận 5, Thành phố Hồ Chí Minh		⋮
10	Tiểu học Huỳnh Mẫn Đạt	5 Huỳnh Mẫn Đạt, phường 1, Quận 5, Thành phố Hồ Chí Minh		⋮

Figure 83. List of Schools

Step	Description
Pre-condition	User logged in as role “Admin”
1	Click on “Schools” on the sidebar

Table 149. View all Schools <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
3	Search	Search schools by school name, address, principal	No	No	Text Field	String

Table 150. View all Schools <fields>

No	Function	Description	Validation	Outcome
2	Filter button	Open/Collapse Filter zone	No	An accordion which contains filters inside
4	Create schools	Create new school	No	A menu list
5	Sort		No	
6	Open menu options	Show menu options of actions which are allowed for a specific role	No	
7	Menu Option	Option “View details” to show more details of the table’s row data	No	

8	Change limit of the table	Select number of rows per page to display on the table (pagination)	No	
9	First page	Move to the first page in the table	No	
10	Previous page	Move to the previous page in the table	No	
11	Next page	Move to the next page in the table	No	
12	Last page	Move to the last page in the table	No	

Table 151. View all Schools <functions>

The screenshot shows a user interface for filtering schools. At the top, there is a header with 'Filters' (1), 'CLEAR ALL' (2), and a search bar ('Quận 1' with an 'X' button) (3). Below the header, there are four dropdown filters labeled 4, 5, and 6, corresponding to 'Districts', 'School Types', and 'School Levels'. A fifth dropdown labeled 7 for 'Working Status' is also present. On the right side of the interface is a '+' button.

Figure 84. Schools Filters

Step	Description
1	Click on the filters button

Table 152. Schools Filters <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
4	Districts	Filter schools by the districts	No	No	Select	String
5	School Types	Filter schools by the school types	No	No	Select	String
6	School Levels	Filter schools by the educational level	No	No	Select	String
7	Working status	Filter schools by the working status	No	No	Select	String

Table 153. Schools Filters <fields>

No	Function	Description	Validation	Outcome
2	Clear All filters	Clear all selected filters and reset all filters to default value	No	
3	Remove a filter	Each selected filter is displayed as a chip. Clicks on "x" button to remove that chip and reset the according filter to default value	No	

Table 154. Schools Filters <functions>

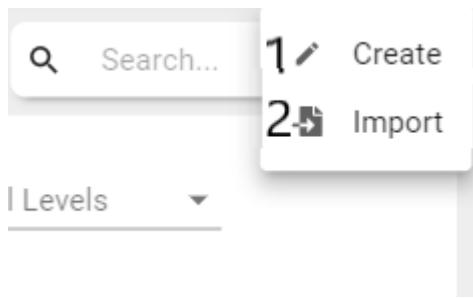


Figure 85. Create School Menu

Step	Description
Pre-condition	Click on the create school button

Table 155 Create School Menu <steps>

No	Function	Description	Validation	Outcome
1	Create	Create a new school info by using form	No	A “Create School” form
2	Import	Create a new school info by using import file	No	A “Import File” dialog

Table 156. Create School Menu <functions>

Create School 13 ×

1 School Name *

2 Address *

3 Tel

Educational Level 4
Tiểu học ▾

School Type 5
Công lập ▾

With Representative 6

7 Full Name

Gender
8 Male Female

9 Phone Number

10 Email

11 SAVE 12 CANCEL

Figure 86. Create School Form

Step	Description
Pre-condition	Choose “Create” from create school menu

Table 157. Create School Form <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
1	School Name	Name of the school	No	Yes	Text Field	String

2	Address	Address of the school	No	Yes	Text Field	String
3	Tel	Telephone number of the school	No	No	Text Field	String
4	Educational Level	Educational Level of the school	No	No	Combo Box	String
5	School Type	School Type of the school	No	No	Combo Box	String
6	With Representative	Check if the school has the representative info	No	No	Check box	Boolean
7	Full Name	Full name of the representative	No	No	Text Field	String
8	Gender	Gender of the representative	No	No	Checkbox	Boolean
9	Phone number	Phone number of the representative	No	No	Text Field	String
10	Email	Email of the representative	No	No	Text Field	String

Table 158 Create School Form <fields>

No	Function	Description	Validation	Outcome
11	Save	Create a new account	Yes	Notify create successfully
12	Cancel	Cancel create a new account	No	Close the form
13	Close Icon	Cancel create a new account	No	Close the form

Table 159 Create School Form <functions>

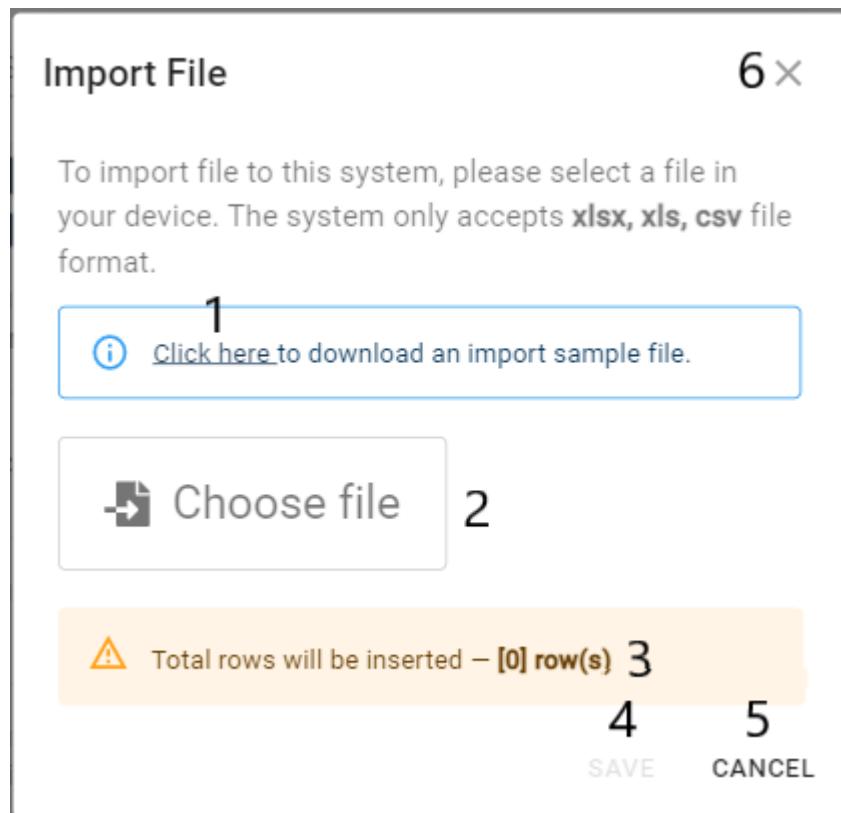


Figure 87. Import Schools

Step	Description
Pre-condition	Choose “Import” from create school menu

Table 160. Import Schools <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
3	Validate file info checker	Check validate row inserted successfully	No	No	Text Field	String

Table 161 . Import Schools <fields>

No	Function	Description	Validation	Outcome
1	Sample file	Download an import sample file	No	An import sample file
2	Choose file	Choose file to import	No	
4	Save	Create school's info by the imported file	Yes	Notify import successfully
5	Cancel	Cancel import file	No	Close the dialog

Table 162. Import Schools <functions>

Figure 88. School's details<General Info>

Step	Description
Pre-condition	User logged in as role "Admin"
Pre-condition	Click on "View details" option on the menu item of the table
Pre-condition	"General info" tab selected

Table 163. View Schools details <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
1	School Name	Name of the school	No	Yes	Text Field	String
2	Address	Address of the school	No	Yes	Text Field	String
3	Tel	Telephone number of the school	No	No	Text Field	String
4	Educational Level	Educational Level of the school	No	No	Combo Box	String
5	School Type	School Type of the school	No	No	Combo Box	String
8	School Active	Working status of the school	No	Yes	Switch	Boolean

Table 164. View School details <fields>

No	Function	Description	Validation	Outcome
9	Save	Update school info	Yes	Notify update successfully

10	Go back	Go back to school's page	No	Redirect to Schools page
----	---------	--------------------------	----	--------------------------

Table 165. View School details <functions>

Figure 89. School's details<Principal Info>

Step	Description
Pre-condition	User logged in as role "Admin"
Pre-condition	Click on "View details" option on the menu item of the table
Pre-condition	"Principal info" tab selected

Table 166. View School details <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
1	Full Name	Full name of the principal	No	No	Text Field	String
2	Gender	Gender of the principal	No	No	Checkbox	Boolean
3	Phone number	Phone number of the principal	No	No	Text Field	String
4	Email	Email of the principal	No	No	Text Field	String

Table 167. View School details <fields>

No	Function	Description	Validation	Outcome
9	Save	Update principal info	Yes	Notify update successfully

10	Go back	Go back to school's page	No	Redirect to Schools page
----	---------	--------------------------	----	--------------------------

Table 168. View School details <functions>

e. 3.3.4 Tasks

Purpose

- The sales manager manages tasks.
- The sales supervisor manages tasks.
- The salesman view assigned of tasks.

Functions

- View list of tasks.
- View task detail.
- Search tasks.
- Create tasks.
- Edit tasks information.
- Assign salesmen to tasks.
- Remove tasks.

User interface(s)

No	School Name	PIC	Purpose	Duration	Task Status
1	THCS Cửu Long Bình Thạnh	Dương Ái Xuân duongxuan	Sales mới	27-05-2021 - 28-05-2021	failed
2	Tiểu học Bình Tiên Hoàng Quận 1	Trần Thị Xuân Tuyền xuantuyen2	Sales mới	25-05-2021 - 30-05-2021	failed
3	Tiểu học Đống Đa Bình Thạnh	Trần Thị Xuân Tuyền xuantuyen2	Chăm sóc	15-05-2020 - 31-08-2020	Failed
4	Tiểu học Đống Đa Bình Thạnh	Hoàng Công Ninh hoangninh	Sales mới	25-05-2021 - 15-09-2020	Success
5	Tiểu học Đống Đa Bình Thạnh		Chăm sóc	Invalid date - 14-09-2021	
6	THCS Lê Quý Đôn Thủ Đức	Trần Thị Xuân Tuyền xuantuyen2	Sales mới	15-05-2021 - 30-09-2021	Successful
7	THCS Lê Quý Đôn Quận 3	Đoàn Thị An Nhân anhien1	Sales mới	25-05-2021 - 30-09-2021	Ongoing
8	THPT Marie Curie Quận 3		Sales mới	Invalid date - 30-09-2020	
9	THPT Marie Curie Quận 3		Chăm sóc	Invalid date - 13-10-2021	

Figure 90. List of Tasks<Manager view>

Step	Description
Pre-condition	User logged in as role "Sales Manager"

1

Click on “Tasks” on the sidebar

Table 169. View all Tasks <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
3	Search	Search schools by school name, PIC	No	No	Text Field	String

Table 170. View all Tasks <fields>

No	Function	Description	Validation	Outcome
2	Filter button	Open/Collapse Filter zone	No	An accordion which contains filters inside
4	Create tasks	Create new tasks	No	A “Create Tasks” dialog
5	Assign tasks	Assign tasks to salesman	No	A “Assign Salesman to Tasks” dialog
6	Sort		No	
7	Open menu options	Show menu options of actions which are allowed for a specific role	No	
8	Menu Option	Option “View details” to show more details of the table’s row data. Option “View reports” to show reports of the tasks. Option “Remove” to remove a task. Option “Assign/Unassign” salesman to the task.	No	
9	Change limit of the table	Select number of rows per page to display on the table (pagination)	No	
10	First page	Move to the first page in the table	No	
11	Previous page	Move to the page in the table	No	
12	Next page	Move to the next page in the table	No	
13	Last page	Move to the last page in the table	No	

Table 171. View all Tasks <functions>

Figure 91. Tasks Filters <Sales Manager view>

Step	Description
Pre-condition	User logged in as role “Sales Manager”
1	Click on the filters button

Table 172. Tasks Filters <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
4	School Status	Filter schools by the school status	No	No	Select	String
5	Purposes	Filter schools by the sales purposes	No	No	Select	String
6	Districts	Filter schools by the districts	No	No	Select	String
7	School Years	Filter schools by the school years	No	No	Select	String
8	School Types	Filter schools by the school types	No	No	Select	String
9	School Levels	Filter schools by the educational levels	No	No	Select	String
10	Task Status	Filter schools by the task status	No	No	Select	String
11	Assign Status	Filter schools by the assign status	No	No	Select	String
12	PIC's name	Filter schools by the PIC's name	No	No	Select	String

Table 173. Tasks Filters <fields>

No	Function	Description	Validation	Outcome
2	Clear All filters	Clear all selected filters and reset all filters to default value	No	
3	Remove a filter	Each selected filter is display as a chip. Clicks on “x” button to remove that chip and reset the according filter to default value	No	

Table 174. Tasks Filters <functions>

The screenshot shows a web-based application titled 'Create Tasks'. At the top, there are two tabs: 'CHƯA HỢP TÁC' (13) and 'ĐANG HỢP TÁC'. Below the tabs are three dropdown filters: 'Districts' (1), 'School Types' (2), and 'School Levels' (3). To the right of these filters is a search bar with a magnifying glass icon and a plus sign button. The main content area displays a table with columns: 'School Name' (sorted by name), 'Address', 'Principal', and 'Status'. The table lists 13 schools, each with a checkbox and a status badge. The schools are:

- THCS Cầu Kiệu
- THCS - THPT Đinh Thiện Lý
- Tiểu học Hàm Tử
- Tiểu học Hoàng Hoa Thám** (selected)
- THCS Hồng Bàng
- Tiểu học Huỳnh Mẫn Đạt
- THCS Kim Đồng
- THCS Mạch Kiếm Hùng
- Tiểu học Phạm Hồng Thái
- THCS Trần Bộ Cơ

The status badges for the schools are: Chưa hợp tác (for most), Tiềm năng (for one), and Chưa xác định (for one). The table has a footer with 'Rows per page: 10' and a navigation bar with pages 8, 9, 10, 11, 12.

Figure 92. View Create Tasks

Step	Description
Pre-condition	User logged in as role "Sales Manager"
1	Click on "Create Tasks" button

Table 175. View Create Tasks <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
1	Districts	Filter schools by the districts	No	No	Select	String
2	School Types	Filter schools by the school types	No	No	Select	String
3	School Levels	Filter schools by the educational levels	No	No	Select	String
4	Search	Search schools by school name, address, principal	No	No	Text Field	String

Table 176. View Create Tasks <fields>

No	Function	Description	Validation	Outcome
5	Add School	Add schools for the creating task	No	Open a dialog to confirm create tasks
6	Sort		No	
7	Select box	Select schools for the creating task	No	

8	Change limit of the table	Select number of rows per page to display on the table (pagination)	No	
9	First page	Move to the first page in the table	No	
10	Previous page	Move to the page in the table	No	
11	Next page	Move to the next page in the table	No	
12	Last page	Move to the last page in the table	No	

Table 177. View Create Tasks <functions>

Confirm Create Tasks

Purposes 1 School Year: 2021-2022

List of assigned schools:

#	School Name	Status	Purpose	Deadline
1	THCS Cầu Kiệu Phú Nhuận	Chưa hợp tác		30/09/2021 <input type="button" value="X"/>
2	THCS - THPT Đinh Thiện Lý Quận 7			30/09/2021 <input type="button" value="X"/>

3 SAVE 4 CANCEL

Figure 93. Confirm Create Tasks Dialog

Step	Description
Pre-condition	Add school from the create tasks dialog

Table 178. Confirm Create Tasks <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
1	Purposes	Sales purpose for the chosen schools	No	No	Combo box	String
2	Deadline	Deadline for the task	No	No	Text Field	Date

Table 179. Confirm Create Tasks <fields>

No	Function	Description	Validation	Outcome
3	Save	Submit a service	Yes	Notify create successfully
4	Cancel	Cancel create a new account	No	Close the form
5	Close Icon	Cancel create a new account	No	Close the form

Table 180 . Confirm Create Tasks <functions>

Assign Salesmen to Tasks

1 PICs Phan Hoàng Lộc

SALESMAN SUGGESTIONS 2

Xuân Tuyền xuantuyen2 ★ 4.5 1.5km
 Hoàng Lộc hoangloc ★ 4.5 3.4km
 Công Ninh hoangninh ★ 4.5 3.4km

List of assigned schools:

No	School Name	PIC	Note
1	Tiểu học Trần Khánh Dư Quận 1	Phan Hoàng Lộc hoangloc	<input checked="" type="checkbox"/> 3 × 4

5 SAVE 6 CANCEL

Figure 94. Assign Tasks to Salesman

Step	Description
Pre-condition	User logged in as role “Sales Manager”
Pre-condition	Select task to assign
Pre-condition	Click on “Assign Tasks” button

Table 181. Assign Tasks to Salesman <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
1	PIC	PIC's name	No	No	Text Field	String
3	Note	Note for the assigning	No	No	Text Field	Date

Table 182. Assign Tasks to Salesman <fields>

No	Function	Description	Validation	Outcome
2	Salesman suggestions	Helper for the assigning tasks to salesman	No	
4	Remove	Helper for the criteria of the service	No	
5	Save	Assign salesman to the tasks	Yes	Notify create successfully
6	Cancel	Cancel create a new account	No	Close the form
7	Close Icon	Cancel create a new account	No	Close the form

Table 183 Assign Tasks to Salesman <functions>

Figure 95. Assign Tasks to Salesman<Salesman Suggestion>

Step	Description
Pre-condition	User logged in as role “Sales Manager”
Pre-condition	Select task to assign
Pre-condition	Click on “Assign Tasks” button

Table 184. Assign Tasks to Salesman <steps>

No	Function	Description	Validation	Outcome
1	Select	Select suggested salesman to the tasks	No	
2	Barem of suggestions	Helper to understand the suggestion	No	

Table 185 Assign Tasks to Salesman <functions>

Figure 96. List of Tasks<Salesman view>

Step	Description
Pre-condition	User logged in as role “Salesman”
1	Click on “Tasks” on the sidebar

Table 186. View all Tasks <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
3	Search	Search schools by school name	No	No	Text Field	String

Table 187. View all Tasks <fields>

No	Function	Description	Validation	Outcome
2	Filter button	Open/Collapse Filter zone	No	An accordion which contains filters inside
4	Sort		No	
5	Open menu options	Show menu options of actions which are allowed for a specific role	No	
6	Menu Option	Option “View details” to show more details of the table’s row data. Option “View reports” to show reports of the tasks.	No	

		Option “Submit Service” to report a service of the task.		
9	Change limit of the table	Select number of rows per page to display on the table (pagination)	No	
10	First page	Move to the first page in the table	No	
11	Previous page	Move to the page in the table	No	
12	Next page	Move to the next page in the table	No	
13	Last page	Move to the last page in the table	No	

Table 188. View all Tasks <functions>

The screenshot shows a user interface for filtering tasks. At the top left is a 'Filters' button with a dropdown arrow (labeled 1). Next to it is a 'CLEAR ALL' button. In the center, there is a yellow rectangular area containing the text 'Chưa hợp tác' (Not yet assigned) with a close ('X') button, labeled 3. To the right of this is a search bar with a magnifying glass icon and the placeholder 'Search...'. Below these are several filter dropdowns arranged in two rows. The first row contains: 'School Status' (labeled 2), 'Chưa hợp tác' (labeled 4), 'Purposes' (labeled 5), 'Districts' (labeled 6), and 'School Years' (labeled 7). The second row contains: 'School Types' (labeled 8), 'School Levels' (labeled 9), and 'Task Status' (labeled 10).

Figure 97. Tasks Filters<Salesman view>

Step	Description
Pre-condition	User logged in as role “Salesman”
1	Click on the filters button

Table 189. Tasks Filters <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
4	School Status	Filter schools by the school status	No	No	Select	String
5	Purposes	Filter schools by the sales purposes	No	No	Select	String
6	Districts	Filter schools by the districts	No	No	Select	String
7	School Years	Filter schools by the school years	No	No	Select	String
8	School Types	Filter schools by the school types	No	No	Select	String
9	School Levels	Filter schools by the educational levels	No	No	Select	String
10	Task Status	Filter schools by the task status	No	No	Select	String

Table 190. Tasks Filters <fields>

No	Function	Description	Validation	Outcome
2	Clear All filters	Clear all selected filters and reset all filters to default value	No	
3	Remove a filter	Each selected filter is display as a chip. Clicks on “x” button to	No	

		remove that chip and reset the according filter to default value		
--	--	--	--	--

Table 191. Tasks Filters <functions>

Services for Tiểu học Thanh Đa

13 ×

Service types * 1
 ESL SEL Toán Khoa STEAM

Valid from 28/05/2021 2 Valid until 28/05/2022 3
dd/mm/yyyy dd/mm/yyyy

No. of applied classes * 4 Students per classes * 5
0 classes 0 students/class
Min: 1 class. Max: 100 classes Min: 1 student. Max: 100 students

Price floor * 6 Periods per week * 7
100.000 0 periods/week
100.000VND - 2.000.000VND Min: 1 period. Max: 10 periods

Estimate sales ≈ 10
2.000.000.000 ₫

Note 8

11 12 SAVE CANCEL

Figure 98. Summit Service

Step	Description
Pre-condition	Choose "Create" from create school menu

Table 192. Summit Service <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
1	Service Types	Type of the service	No	Yes	Checkbox	String
2	Validate from	Service day start	No	No	Text Field	Date
3	Validate until	Service day end	No	No	Text Field	Date
4	No. applied classes	Number of classes apply to the service	No	No	Text Field	String

5	Student per class	Number of students per class	No	No	Text Field	String
6	Price Floor	Price floor of the service	No	No	Text Field	String
7	Periods per week	Number of periods per week	No	No	Text Field	String
8	Note	Note of the service	No	No	Text Field	String

Table 193. Summit Service <fields>

No	Function	Description	Validation	Outcome
9	Criteria Description	Helper for the criteria of the service	No	
10	Estimate Sales	Helper for the sales price	No	
11	Save	Submit a service	Yes	Notify create successfully
12	Cancel	Cancel create a new account	No	Close the form
13	Close Icon	Cancel create a new account	No	Close the form

Table 194 Summit Service <functions>

Figure 99. Task's details<Task Info>

Step	Description
Pre-condition	User logged in as role "Sales Manager"

Pre-condition	Click on “View details” option on the menu item of the table
Pre-condition	“Task info” tab selected

Table 195. View Task details <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
1	Sales Purpose	Sales purpose of the task	No	No	Combo Box	String
2	Manager Note	Managers note for the task	No	No	Text Field	String

Table 196. View Task details <fields>

No	Function	Description	Validation	Outcome
3	Save	Update task info	Yes	Notify update successfully
4	Go back	Go back to tasks page	No	Redirect to Tasks page

Table 197. View Task details <functions>

The screenshot shows the application's navigation bar on the left with options like Dashboards, Schools, Tasks, Reports, Services, Salesmen, and Work Plans. The main content area is titled 'Tasks' and shows a sub-section for 'Tiểu học Thanh Đa'. The 'SCHOOL INFO' tab is active, displaying the following details:

- SCHOOL DETAIL:
 - School Name: Tiểu học Thanh Đa
 - Address: Cư xá Thanh Đa, phường 27, Bình Thạnh, Thành phố Hồ Chí Minh
 - District: Bình Thạnh
 - School Type: Công lập
- PRINCIPAL DETAIL:
 - Full Name: N/A
 - Phone: N/A
 - Email: N/A

Figure 100. Task's details<School Info>

Step	Description
Pre-condition	User logged in as role “Sales Manager”
Pre-condition	Click on “View details” option on the menu item of the table

Pre-condition “School info” tab selected

Table 198. View Task details <steps>

Figure 101. Task's details<Timeline>

Step	Description
Pre-condition	User logged in as role “Sales Manager”
Pre-condition	Click on “View details” option on the menu item of the table
Pre-condition	“Timeline” tab selected

Table 199. View Task details <steps>

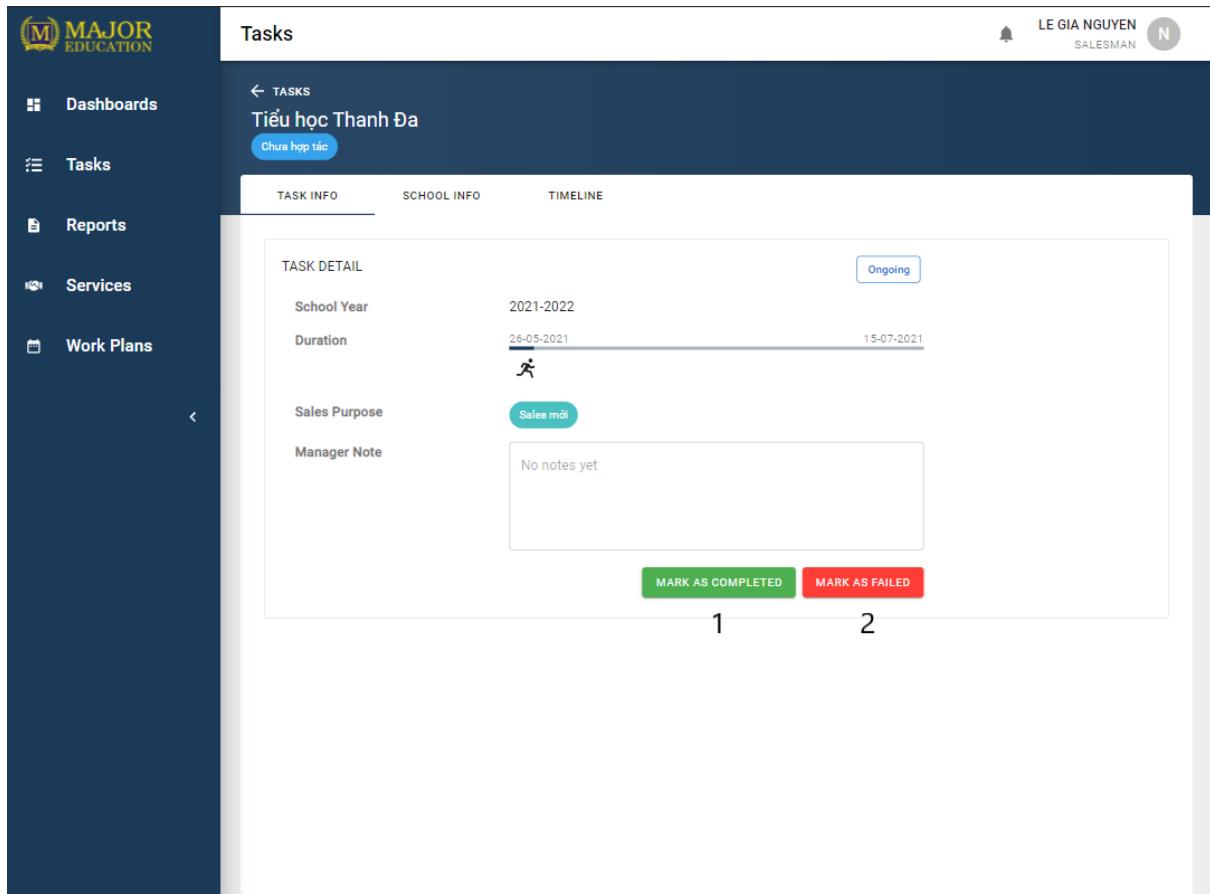


Figure 102. Task's details<Task Info>

Step	Description
Pre-condition	User logged in as role "Salesman"
Pre-condition	Click on "View details" option on the menu item of the table
Pre-condition	"Task info" tab selected

Table 200. View Task details <steps>

No	Function	Description	Validation	Outcome
3	Mark as Complete	Mark the target as complete	No	
4	Mark as Failed	Mark the target as failed	No	

Table 201. View Task details <functions>

f. 3.3.5 Reports

Purpose

- The sales manager manages personal daily reports.
- The sales supervisor manages personal daily reports.
- The salesman manages personal daily reports.
- The sales manager comments on salesman's report.

- The sales department monitors their reports.

Functions

- View list of reports.
- View report's details.
- Search reports.
- Create reports.
- Edit report's information.
- Comment reports.
- Remove reports.

User interface(s)

No	Date	School Name	PIC	Purpose	Result	Description	
1	28/05/2021	Tiểu học Thành Đa Bình Thạnh		Le Gia Nguyen nguyeng3	Sales mới	Chưa gặp HT/HP	Thầy bận họp
2	15/05/2021	Tiểu học Đồng Đa Bình Thạnh		Trần Thị Xuân Tuyền xuantuyen2	Chăm sóc	Chưa gặp HT/HP	Cô đi công tác.
3	13/05/2021	THCS Trần Quốc Toản Quận 9		Trần Thị Xuân Tuyền xuantuyen2	Sales mới	Đã gặp HT/HP	Đã giới thiệu Major, khóa SEL. Cô hẹn 3 ngày nữa sang gặp...
4	24/02/2021	Tiểu học Đồng Đa Bình Thạnh		Trần Thị Xuân Tuyền xuantuyen2	Chăm sóc	Đã gặp HT/HP	heo
5	17/06/2020	Tiểu học Đồng Đa Bình Thạnh		Hoàng Công Ninh hoangninh	Sales mới	Đã gặp HT/HP	Xin info Cô. Giới thiệu Major.
6	12/06/2020	Tiểu học Đồng Đa Bình Thạnh		Hoàng Công Ninh hoangninh	Sales mới	Chưa gặp HT/HP	Cô đi công tác không có ở văn phòng.
7	12/06/2020	Tiểu học Đồng Đa Bình Thạnh		Hoàng Công Ninh hoangninh	Sales mới	Chưa gặp HT/HP	Giờ nghỉ trưa, BV không cho vào

Figure 103. List of Reports

Step	Description
Pre-condition	User logged in as role "Salesman"
1	Click on "Reports" on the sidebar

Table 202. View all Reports <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
3	Search	Search reports by school name, PIC, description	No	No	Text Field	String

Table 203. View all Reports <fields>

No	Function	Description	Validation	Outcome
2	Filter button	Open/Collapse Filter zone	No	An accordion which contains filters inside
4	Create reports	Create new report	No	A “Create Report” form
5	Sort		No	
6	Menu Option	Option “View details” to show more details of the table’s row data. Option “Remove” to remove only when report does not have any manager comment.	No	
7	Open menu options	Show menu options of actions which are allowed for a specific role	No	
8	Change limit of the table	Select number of rows per page to display on the table (pagination)	No	
9	First page	Move to the first page in the table	No	
10	Previous page	Move to the page in the table	No	
11	Next page	Move to the next page in the table	No	
12	Last page	Move to the last page in the table	No	

Table 204. View all Reports <functions>

The screenshot shows a user interface for filtering reports. At the top left is a 'Filters' button with a dropdown arrow (labeled 1) and a 'CLEAR ALL' button. To its right is a search bar with the placeholder 'Search...' and a '+' button. Below these are three main filter sections: 'Purposes' (dropdown labeled 2, currently set to 'Sales mới'), 'Districts' (dropdown labeled 5), and 'School Years' (dropdown labeled 6). Underneath these are two more filter sections: 'Result' (dropdown labeled 7) and 'PICs' (dropdown labeled 8, currently set to 'PIC's name'). At the bottom right are date range inputs for 'From date' (dd/mm/yyyy) and 'To date' (dd/mm/yyyy).

Figure 104. Reports Filters

Step	Description
1	Click on the filters button

Table 205. Reports Filters <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
4	Purposes	Filter reports by the sales purpose	No	No	Select	String
5	Districts	Filter reports by the school district	No	No	Select	String
6	School Years	Filter reports by the school years	No	No	Select	String

7	Result	Filter reports by the result	No	No	Select	String
8	PIC's name	Filter reports by the PIC's name	No	No	Select	String
9	From date to date	Filter reports by date	No	No	Select	String

Table 206. Reports Filters <fields>

No	Function	Description	Validation	Outcome
2	Clear All filters	Clear all selected filters and reset all filters to default value	No	
3	Remove a filter	Each selected filter is display as a chip. Clicks on "x" button to remove that chip and reset the according filter to default value	No	

Table 207. Reports Filters <functions>

The screenshot shows a 'Create Reports' form. At the top left is a 'School Name' input field with a dropdown arrow labeled '1'. To its right is a yellow '+' button and a number '7'. In the top right corner is a date 'Friday, 28/05/2021'. Below the school name field is a dropdown menu for 'Result' containing 'Đã gặp người đại diện (HT/HP)' with a dropdown arrow labeled '2'. To the right of the dropdown is a 'Preview' section with a table header '# School Name Result Description'. Below the preview are five input fields numbered 3 through 7: 'Description *' (3), 'Positivity' (4), 'Difficulty' (5), and 'Future Plan' (6). At the bottom right are 'SAVE' and 'CANCEL' buttons.

Figure 105. Create Reports Form

Step	Description
Pre-condition	Click on the create reports button

Table 208. Create Reports Form <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
1	School Name	Name of the school	No	Yes	Text Field	String
2	Result	Result of the report	No	Yes	Combo Box	String
3	Description	Description of the report	No	Yes	Text Field	String
4	Positivity	Positivity of the result	No	No	Text Field	String
5	Difficulty	Difficulty of the result	No	No	Text Field	String

6	Future Plan	Future Plan for the result	No	No	Text Field	String
---	-------------	----------------------------	----	----	------------	--------

Table 209. Create Reports Form <fields>

No	Function	Description	Validation	Outcome
7	Add	Add a report to create reports list	Yes	Show the reports list
8	Save	Create a new account	No	Notify create successfully
9	Cancel	Cancel create a new account	No	Close the form
10	Close Icon	Cancel create a new account	No	Close the form

Table 210. Create Reports Form <functions>

The screenshot shows the 'REPORT INFO' tab of a report detail page. The page has a header with 'Reports' and a sub-header 'REPORTS 8'. Below this is a title 'Tiểu học Thanh Đa' and a date '28/05/2021'. The main content area is divided into sections: 'REPORT DETAIL' and 'MANAGER COMMENT'. In 'REPORT DETAIL', there are fields for 'Result' (dropdown menu with 'Chưa gặp người đại diện (HT/HP)' and value '1'), 'Description' (text input with 'Thầy bận họp'), 'Positivity' (text input with '3'), 'Difficulty' (text input with '4'), 'Future Plan' (text input with '5'), and a 'SAVE' button. In 'MANAGER COMMENT', there is a text input with placeholder 'No comments yet' and a number '7'.

Figure 106. Report's details<Report Info>

Step	Description
Pre-condition	User logged in as role "Salesman"
Pre-condition	Click on "View details" option on the menu item of the table
Pre-condition	Report has not been commented by the manager/supervisor
Pre-condition	"Report info" tab selected

Table 211. View Report details <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
----	------------	-------------	-----------	----------	--------------	-----------

1	Result	Result of the report	No	Yes	Combo Box	String
2	Description	Description of the report	No	Yes	Text Field	String
3	Positivity	Positivity of the result	No	No	Text Field	String
4	Difficulty	Difficulty of the result	No	No	Text Field	String
5	Future Plan	Future Plan for the result	No	No	Text Field	String
7	Manager Comment	A comment of the manager	No	No	Text Field	String

Table 212. View Report details <fields>

No	Function	Description	Validation	Outcome
6	Save	Update report info	Yes	Notify update successfully
8	Go back	Go back to school's page	No	Redirect to Schools page

Table 213. View Report details <functions>

Figure 107. Report's details<Assign Info>

Step	Description
Pre-condition	User logged in as role "Salesman"
Pre-condition	Click on "View details" option on the menu item of the table

Pre-condition	“Assign info” tab selected
---------------	----------------------------

Table 214. View Report details <steps>

g. 3.3.6. Profiles

Purpose

- The user edits personal profile.

Functions

- View profile.
- Edit profile.

User interface(s)

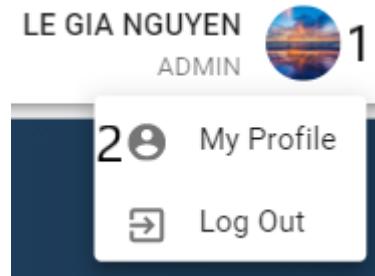


Figure 108. View profiles <steps>

Step	Description
Pre-condition	User logged in the application
1	Click on the user info in the top-right corner of the screen
2	In the menu list, select “My Profile” option

Table 215. View profiles <steps>

No	Function	Description	Validation	Outcome
1	[User Menu]	A button covers the user info and the user menu	No	A menu list shown below
2	My Profile	A button covers the “My Profile” menu item	No	Redirect to Profiles screen

Table 216. View profiles <functions>

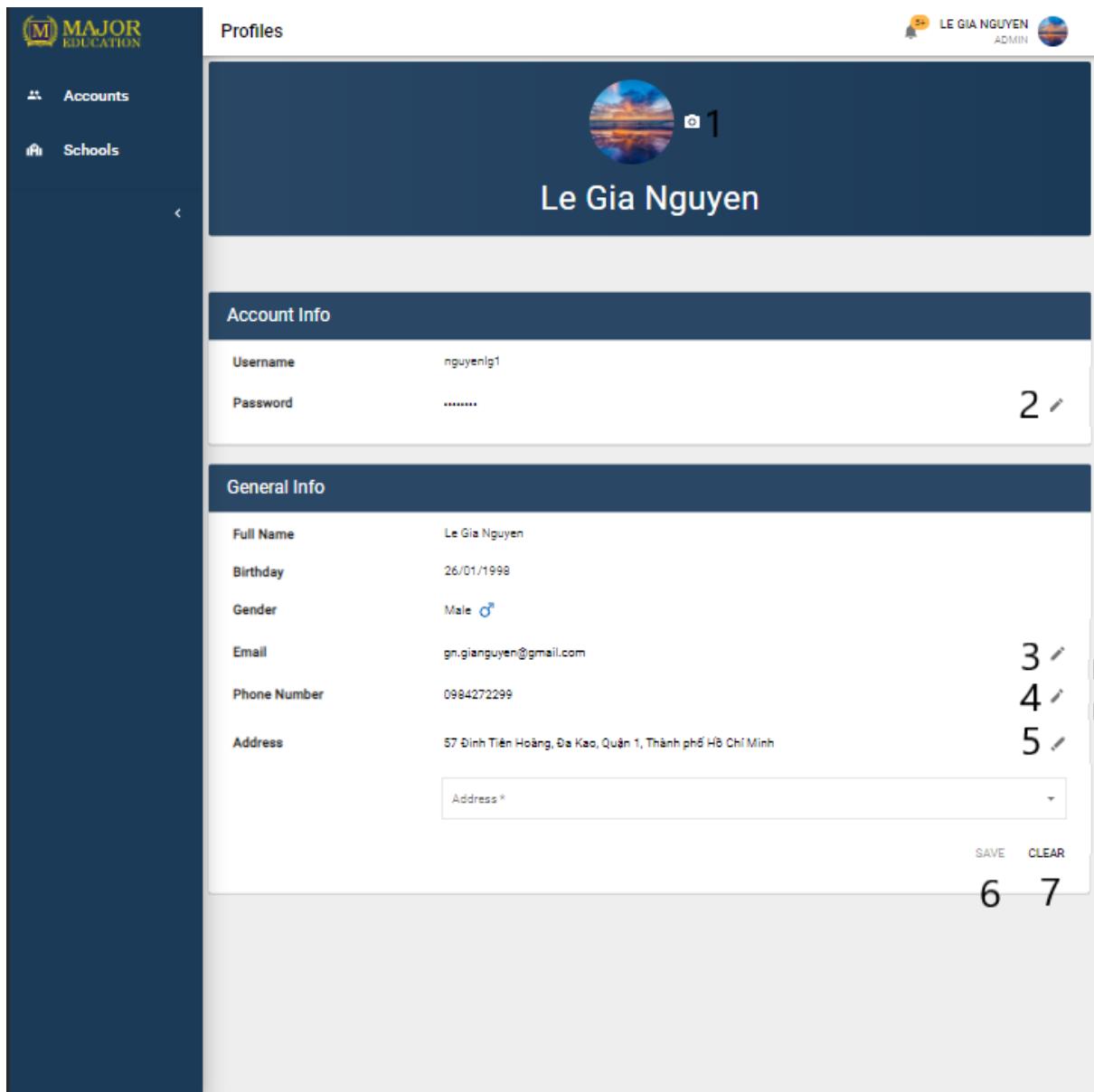


Figure 109 Profile

Step	Description
Pre-condition	User logged in the application
1	Click on the icon button to edit profile

Table 217. Edit profiles <steps>

No	Function	Description	Validation	Outcome
1	Upload avatar	An “camera” icon button for uploading avatar image	Yes	Let the user choose one image from their device storage
2	Change password	An “pen” icon button for opening edit form	Yes	A form to edit will be shown
3	Edit email	An “pen” icon button for opening edit form	Yes	A form to edit will be shown
4	Edit phone number	An “pen” icon button for opening edit form	Yes	A form to edit will be shown

5	Edit address	An “pen” icon button for opening edit form	Yes	A form to edit will be shown
6	Save	Update profile info	Yes	Notify update successfully
7	Cancel	Cancel create a new account	No	Close the form

Table 218. Edit profiles <functions>

h. 3.3.7 Workplans

Purpose

- The user manages personal workplans.

Functions

- View workplans.
- View personal activities details.
- Create personal activities.
- Edit personal activities.
- Remove personal activities.

User interface(s)

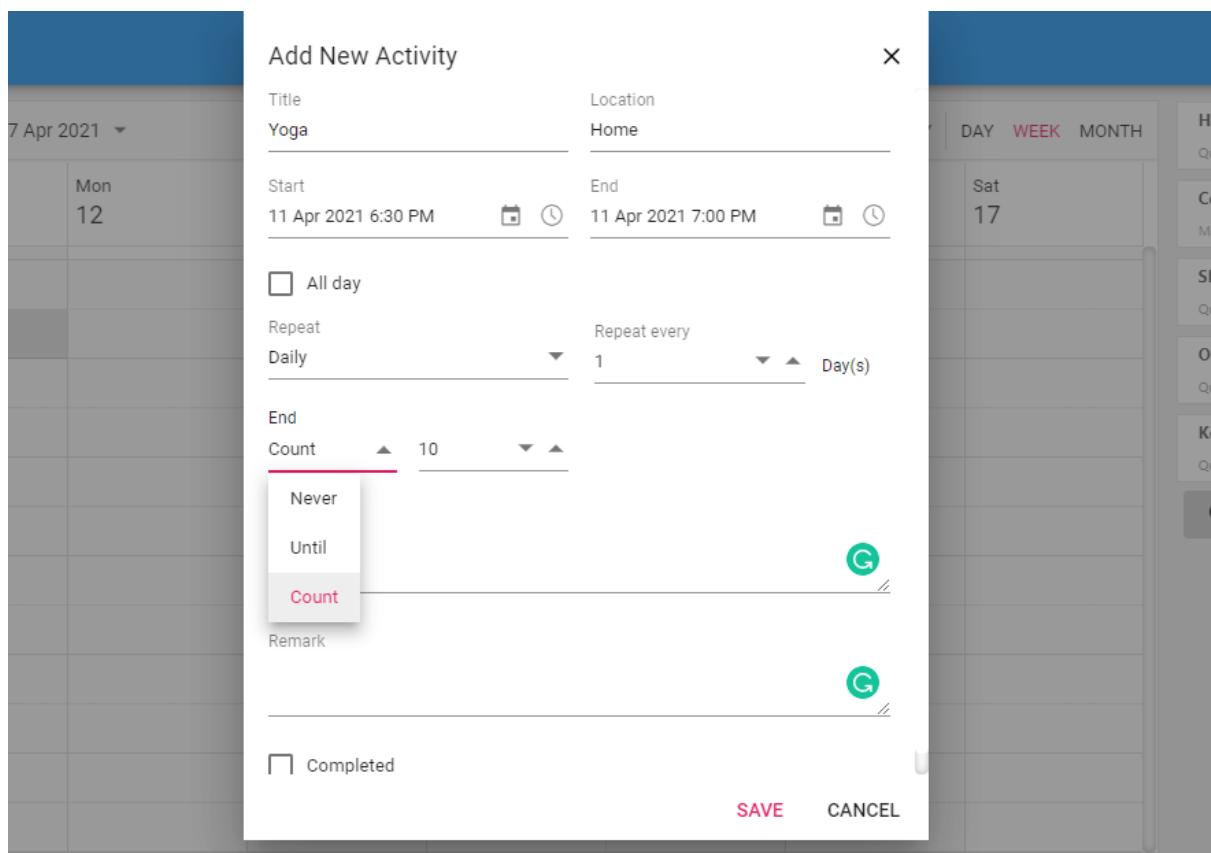


Figure 110 Add New Daily Activity

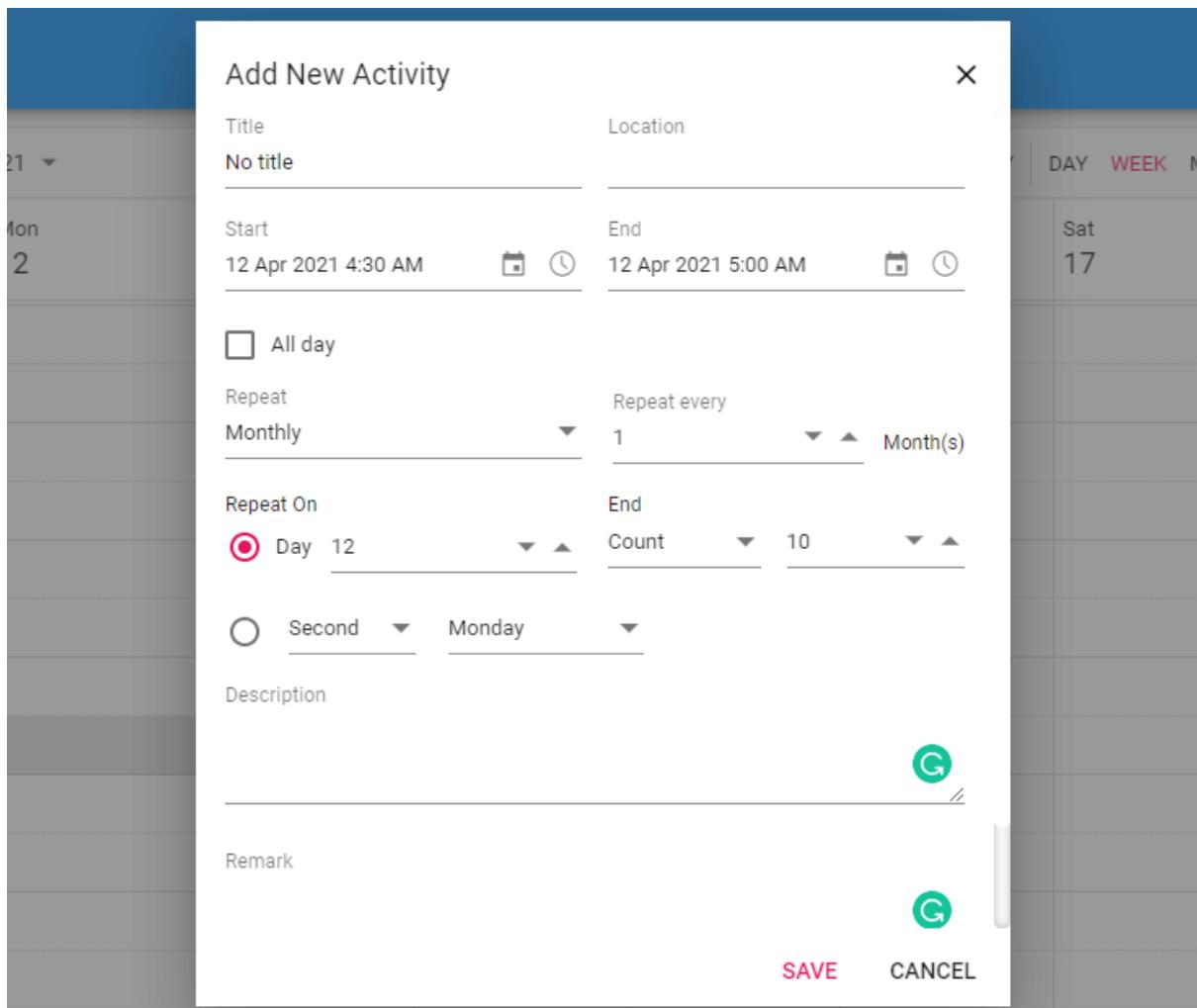


Figure 111 Add New Monthly Activity

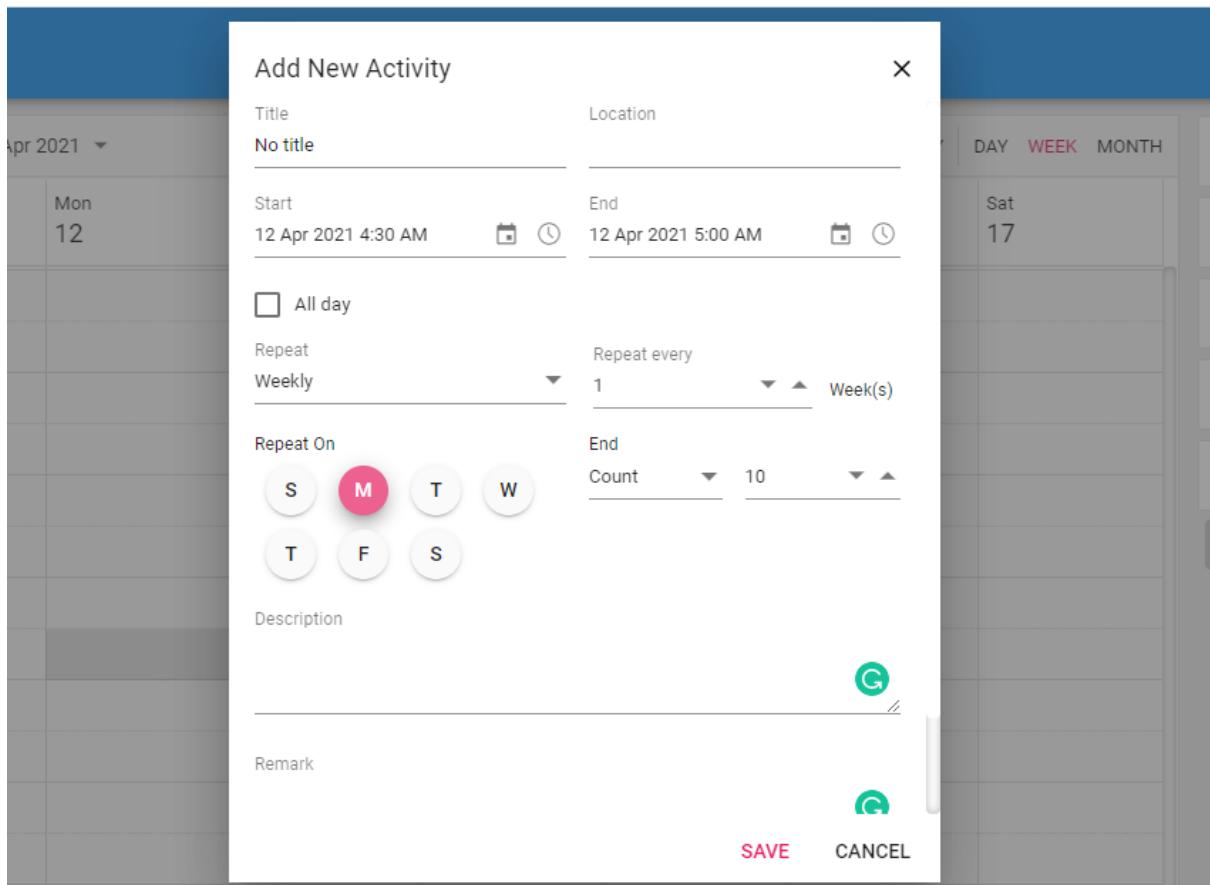


Figure 112 Add New Weekly Activity

Workplan

11 Apr 2021 - 17 Apr 2021

TODAY DAY WEEK MONTH

Sun	Mon	Tue	Wed	Thu	Fri	Sat
11	12	13	14	15	16	17
8:00 AM						
9:00 AM		Tiếp đón Hiệu trưởng				
10:00 AM						
11:00 AM						
12:00 PM						

Location List

- Home (default) Quận 9, HCM City
- Company (default) Major Education
- Shanxi University
- Kogai State University Quận 5
- Search...

Figure 113 Drag Location Card to Add new

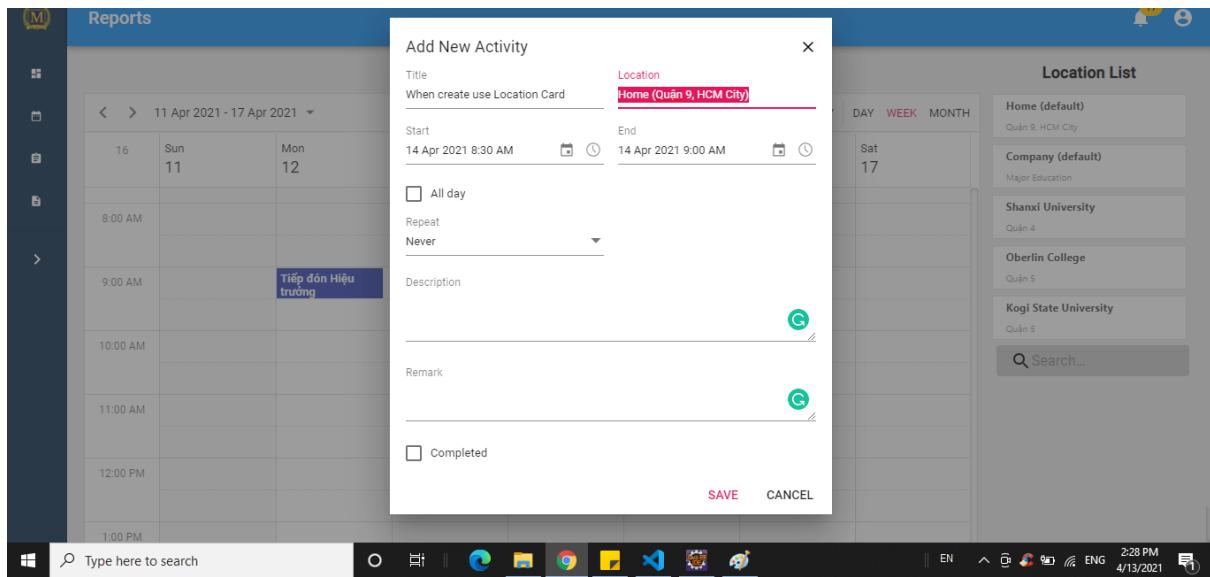


Figure 114 Add New Activity by Dragging Location Card

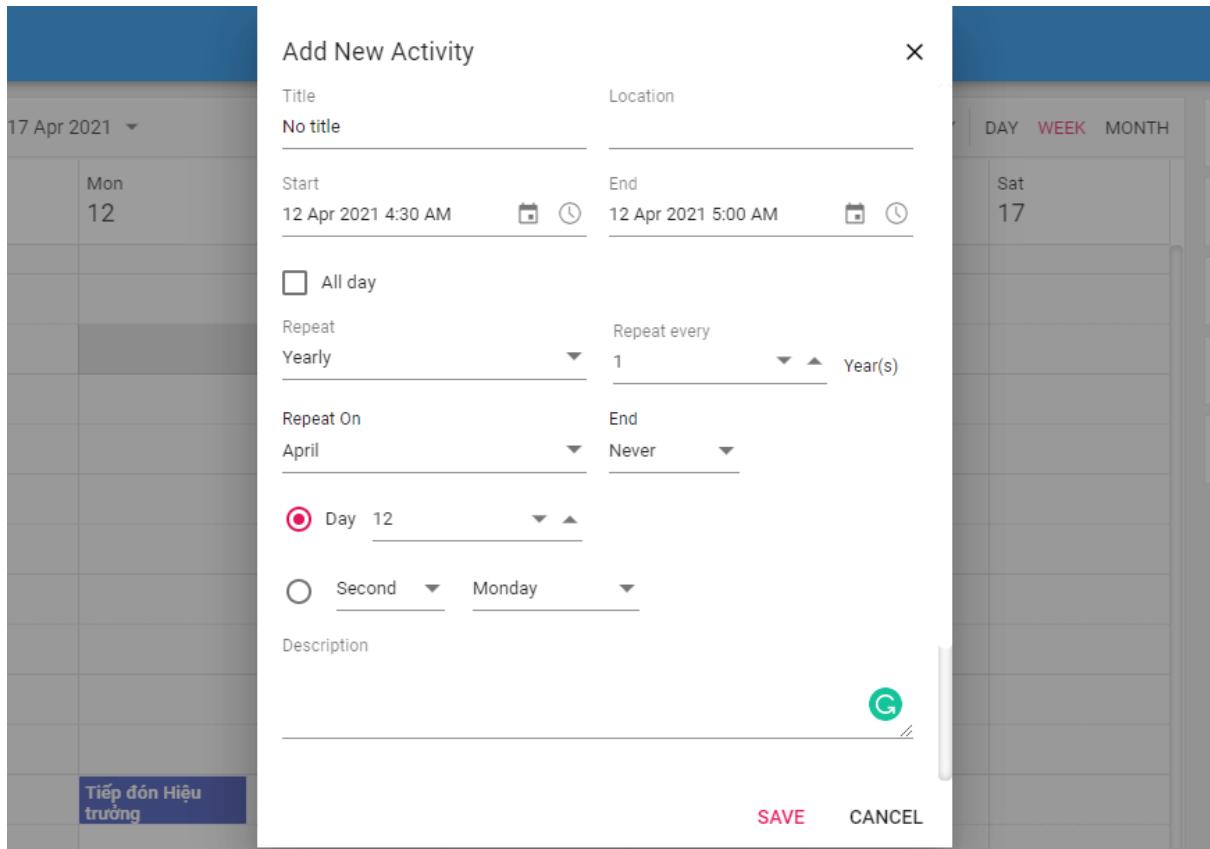


Figure 115 Add New Yearly Activity

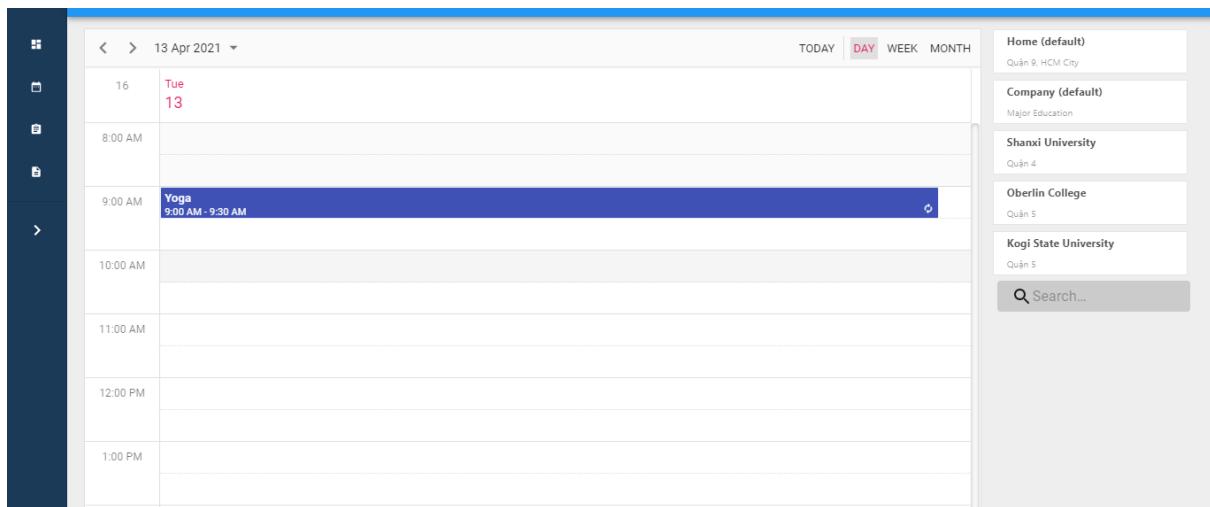


Figure 116 Day view

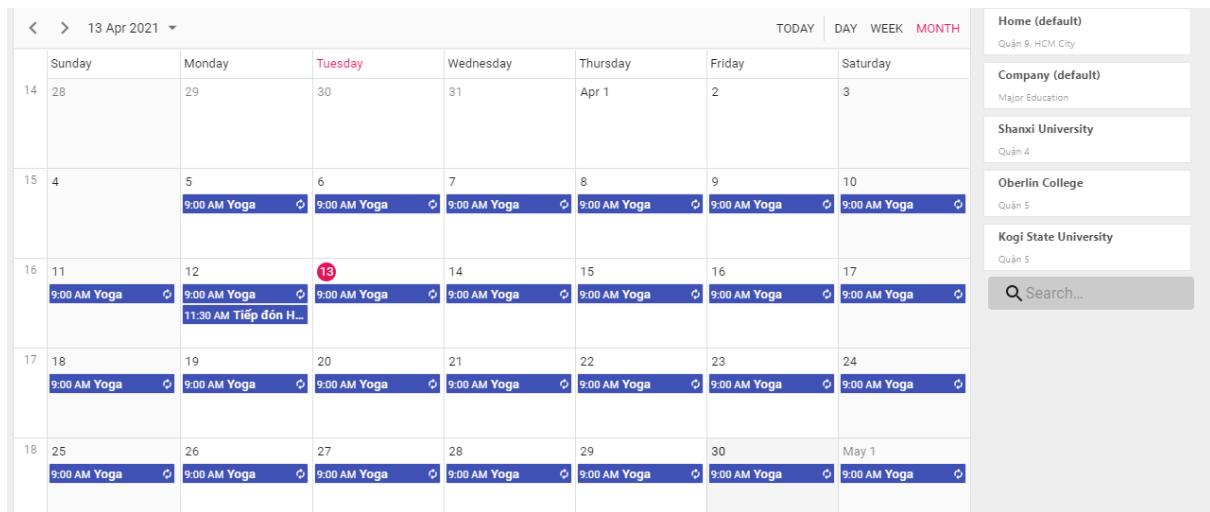


Figure 117 Monthly view

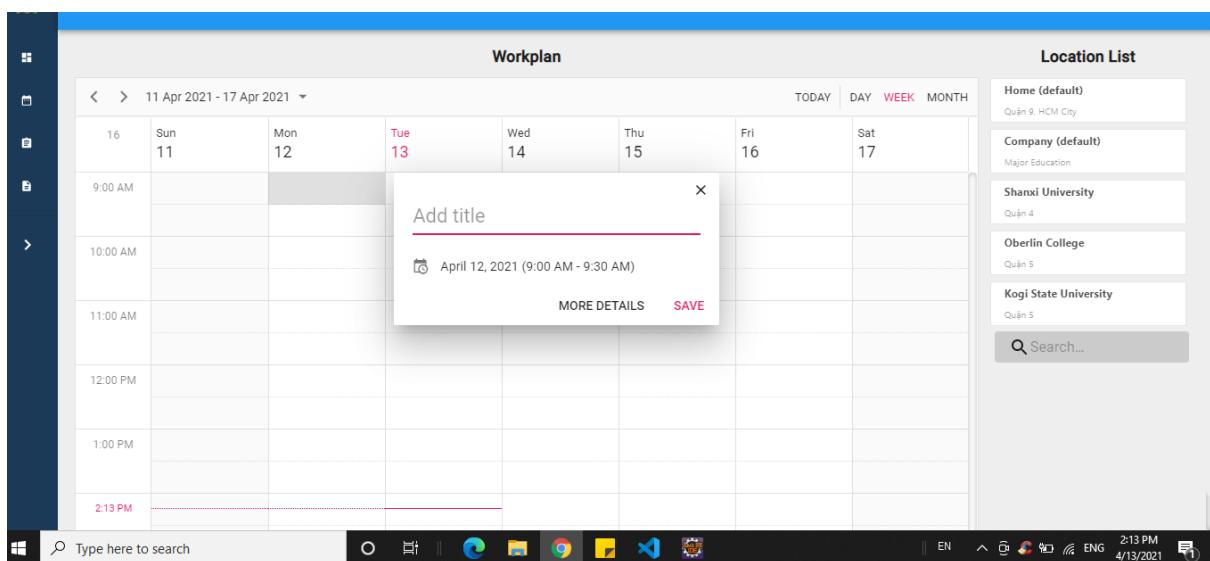


Figure 118 Quick Add Form

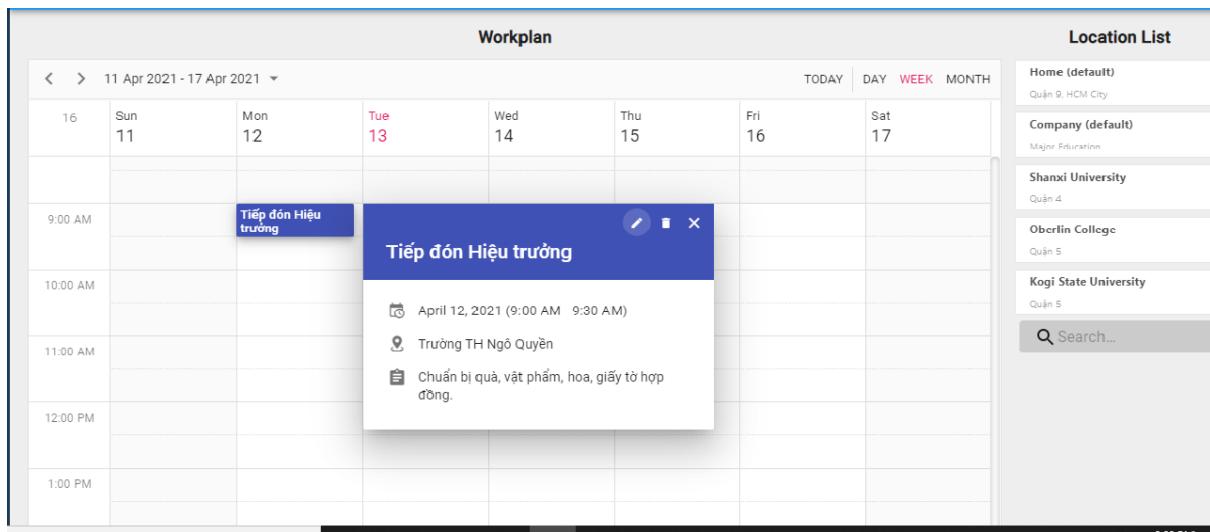


Figure 119 Quick Details

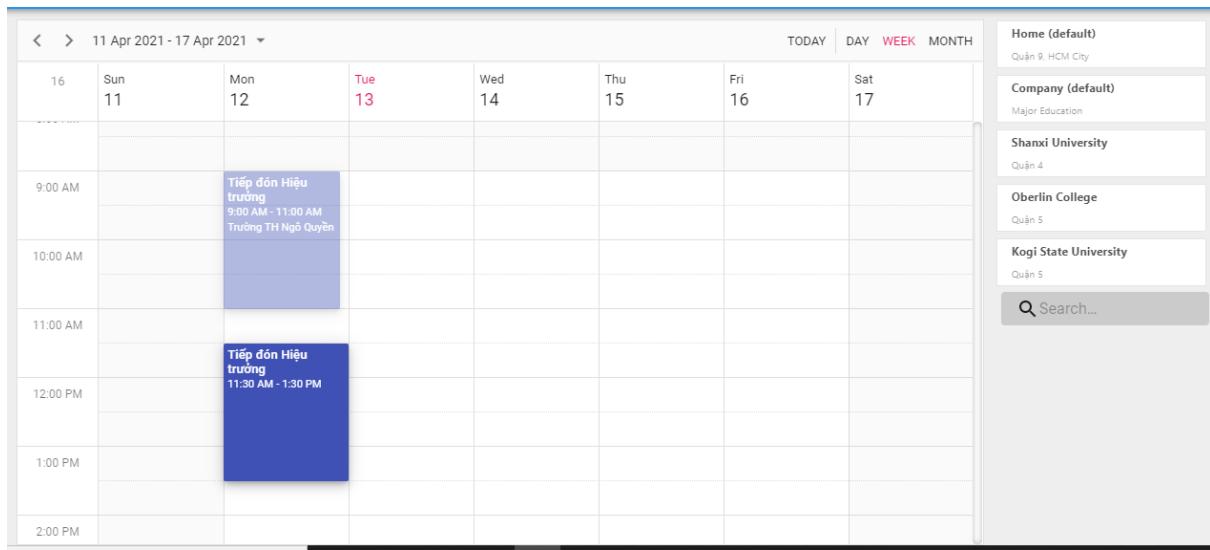


Figure 120 Edit by Drag Activity

i. 3.3.8 Dashboards

Purpose

- The sales department tracks their work process.

Functions

- View dashboards.

User interface(s)

N/A

j. 3.3.9 Services

Purpose

- The sales manager supervises services.
- The salesman tracks assigned services.

Functions

- View list of services.
- View contract's details.
- Search services.
- Edit service's information.

User interface(s)

No	Service Type	School Name	PIC	Duration	Status
1	STEAM	Tiểu học Đống Đa	Trần Thị Xuân Tuyên xuantuyen2	30-09-2021 - 18-05-2022	Approved
2	STEAM	THCS Nguyễn Du	Trần Thị Xuân Tuyên xuantuyen2	16-05-2021 - 16-05-2022	Approved
3	STEAM	THCS Trần Văn Ơn	Trần Thị Xuân Tuyên xuantuyen2		Rejected
4	Toán Khoa	THCS Trần Quốc Toản	Trần Thị Xuân Tuyên xuantuyen2	17-05-2021 - 08-06-2021	Approved
5	SEL	Tiểu học Tâm Vũ	Le Gia Nguyen nguyeng3	26-05-2021 - 26-05-2022	Approved
6	SEL	THCS Trần Quốc Toản	Trần Thị Xuân Tuyên xuantuyen2		Pending
7	SEL	THCS Lê Quý Đôn	Trần Thị Xuân Tuyên xuantuyen2		Pending
8			Trần Thị Xuân		
9					
10					
11					

Figure 121. List of Services

Step	Description
Pre-condition	User logged in as role "Sales Manager"
1	Click on "Services" on the sidebar

Table 219. View all Services <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
3	Search	Search services by school name, PIC, service type	No	No	Text Field	String

Table 220 View all Services <fields>

No	Function	Description	Validation	Outcome
2	Filter button	Open/Collapse Filter zone	No	An accordion which contains filters inside

4	Sort		No	
5	Menu Option	Option “View details” to show more details of the table’s row data. Option “Remove” to remove only when report does not have any manager comment.	No	
6	Open menu options	Show menu options of actions which are allowed for a specific role	No	
7	Change limit of the table	Select number of rows per page to display on the table (pagination)	No	
8	First page	Move to the first page in the table	No	
9	Previous page	Move to the page in the table	No	
10	Next page	Move to the next page in the table	No	
11	Last page	Move to the last page in the table	No	

Table 221 View all Services <functions>

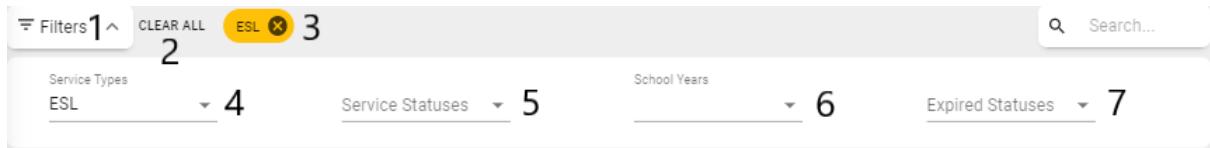


Figure 122. Services Filters

Step	Description
1	Click on the filters button

Table 222. Services Filters <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
4	Service Types	Filter services by types	No	No	Select	String
5	Service Status	Filter services by the status	No	No	Select	String
6	School Years	Filter services by the school years	No	No	Select	String
7	Expired Status	Filter services by the expired status	No	No	Select	String

Table 223. Services Filters <fields>

No	Function	Description	Validation	Outcome
2	Clear All filters	Clear all selected filters and reset all filters to default value	No	

3	Remove a filter	Each selected filter is display as a chip. Clicks on “x” button to remove that chip and reset the according filter to default value	No	
---	-----------------	---	----	--

Table 224. Services Filters <functions>

Figure 123. Service's detail

Step	Description
Pre-condition	User logged in as role “Sales Manager”
Pre-condition	Click on “View details” option on the menu item of the table

Table 225. View Service details <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
3	Note	Note for the service	No	No	Text Field	String

Table 226. View Service details <fields>

No	Function	Description	Validation	Outcome
1	Criteria Description	Helper for the criteria of the service	No	
2	Estimate Sales	Helper for the sales price	No	
4	Approve	Approve the service	No	

5	Reject	Reject the service	No	
6	Go back	Go back to services page	No	Redirect to Services page

Table 227. View Service details <functions>

k. 3.3.10 Logins

Purpose

- The unauthorized user logs in the system.
- The user retrieves their password.

Functions

- Login with username and password.
- Forgot password.

User interface(s)

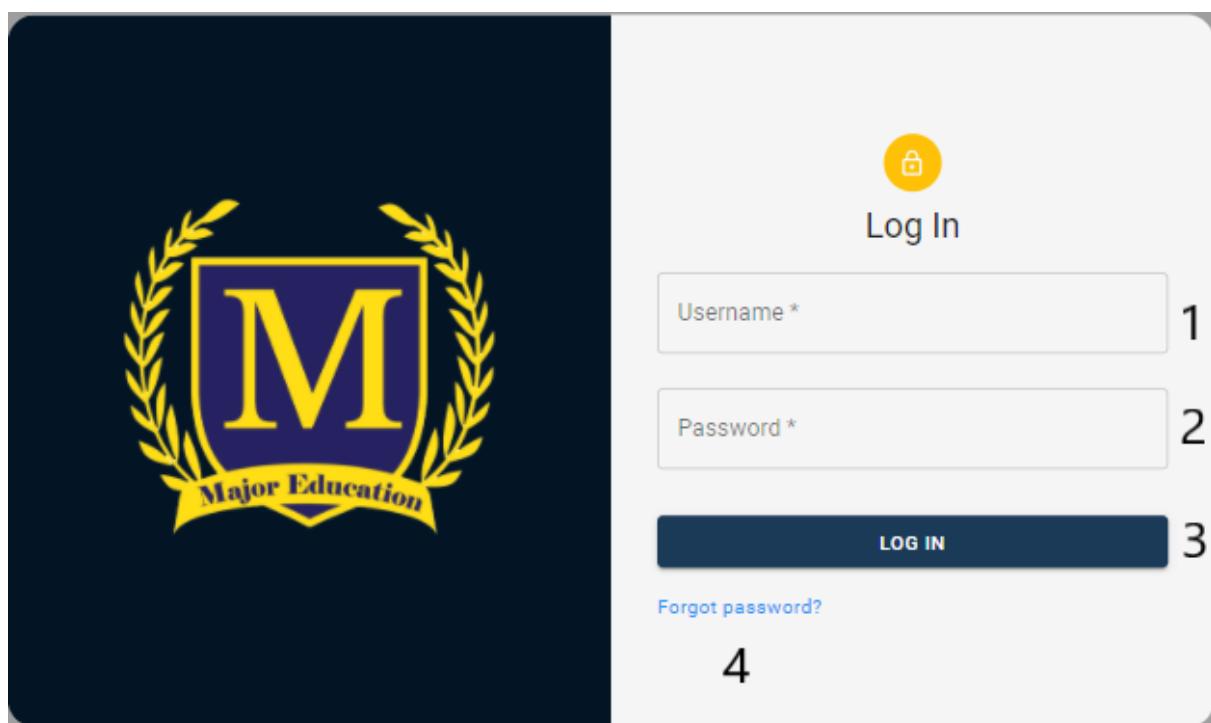


Figure 124 Login

Step	Description
Pre-condition	Go to login page of the app

Table 228. Login screen <steps>

No	Field Name	Description	Read only	Required	Control Type	Data Type
1	Username	Username of the user	No	Yes	Text Field	String
2	Password	Password of the user	No	Yes	Text Field	Password

Table 229. Login screen <fields>

No	Function	Description	Validation	Outcome
3	LOG IN	Log the user into the application	Yes	Redirect to the Home page
4	Forgot password	Let the user retrieves their password	No	Redirect to the Password Reset page

Table 230. Login screen <functions>

I. 3.3.11 Logout

Purpose

- The authorized user logouts the system

Functions

- Logout

User interface(s)

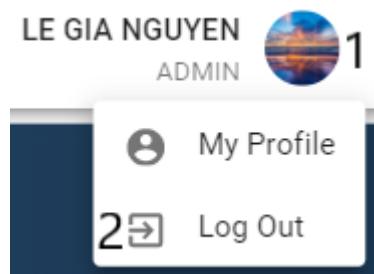


Figure 125 Logout

Step	Description
Pre-condition	User logged in the application
1	Click on the user info in the top-right corner of the screen
2	In the menu list, select “Log Out” option

Table 231. Log out <steps>

No	Function	Description	Validation	Outcome
1	[User Menu]	A button covers the user info and the user menu	No	A menu list shown below
2	Log Out	A button covers the “Log Out” menu item	No	Redirect to Login screen

Table 232. Log out <functions>

3.4 Troubleshooting

m. 3.4.1 Web app layout broke during cross-device use

Problems:

- The application responsive interface has not supported for all devices.

Workaround:

- Refresh the web app page.
- Contacts the system developers for more supports.

n. 3.4.2 Avatar or images loading time is long

Problems:

- The Internet connection is slow or unstable.

Workaround:

- Refresh the web app page.
- Connect with a better Internet connection.

o. 3.4.3 Data record loading time is long

Problems:

- The Internet connection is slow or unstable.

Workaround:

- Refresh the web app page.
- Connect with a better Internet connection.

4. ユーザーマニュアル

4.1 用語と定義

この販売管理システムは MajorEducation のため、開発されたものですから、すべての利用規約はそれらに属している。

4.2 システム要件

p. 4.2.1 ハードウェア要件

- このシステムは Web アプリケーションですから、システムを使用されるとき、インターネットで接続する必要がある。
- 私たちのシステムはサーバーにデプロイされており、実行するための最小要件サービスは次のとおりです。

Web アプリの場合

ハードウェア	最小要件
vCPU	1
オペレーションシステム	Linux Server/Window server
メモリー(GiB)	1GiB (=1.07374 GB)

Table 233. 「システム要件」 Web アプリの場合

API サービスの場合

Hardware	最小要件
vCPU	1
オペレーションシステム	Linux Server/Window server
メモリー(GiB)	1GiB (=1.07374 GB)

Table 234. 「システム要件」 API サービスの場合

Database の場合

Hardware	最小要件
vCPU	1
オペレーションシステム	Linux server/Window server
メモリー(GiB)	1GiB (=1.07374 GB)

Table 235. 「システム要件」 Database の場合

q. 4.2.2 ソフトウェア要件

この Web アプリケーションは、Chrome（バージョン 52 以上）、Firefox（バージョン 51 以上）、Edge（バージョン 14 以上）、Safari（バージョン 10 以上）、または Opera（バージョン 38 以上）ブラウザーで動作する。

4.3 アプリケーションの使用

r. 4.3.1 概要

この販売管理システムの主にユーザーは MajorEducation の販売部門です。

s. 4.3.2 アカウント

目標

- ユーザー アカウントを管理する。

機能

- アカウントのリストの表示
- アカウントの詳細の表示
- アカウントの検索
- アカウントの作成
- アカウントの情報の編集

ユーザーインターフェース

Accounts

LE GIA NGUYEN
ADMIN

No	Username	Full Name	Phone	Email	Role	
1	admin1	Pham Thi Ngoc Ha	0947672158	haptnse130460@fpt.edu.vn	ADMIN	6:
2	annhien1	Đoàn Thi An Nhiên	0519992071	haptnse130460@fpt.edu.vn	SALESMAN	7:
3	baokhanh	Đinh Hoàng Bảo Khanh	0946123476	haptnse130460@fpt.edu.vn	SALESMAN	8:
4	binhkhánh	Trịnh Thị Bình Khánh	0945124872	haptnse130460@fpt.edu.vn	SALESMAN	9:
5	chanthanh	Bùi Hải Chân Thanh	0797823971	haptnse130460@fpt.edu.vn	SALESMAN	10:
6	diemnhi1	Tô Diễm Nhí	0911564732	diemnhi@truongvietanh.com	SALESMAN	11:

Rows per page: 10 ▾ 1-10 of 34 | < 1 / 4 > | >|

Figure 126 アカウントリスト

Working Status

Active

Roles

Figure 127 アカウントフィルター

Create Account 11 ×

Username * 1

Full Name * 2

Phone Number * 3

Email * 4

This email will be used to confirm account

Address * 5 ▾

Gender * 6 7
 Male Female Birthday

Roles * 8
SALESMAN ▾ 9 10

SAVE CANCEL

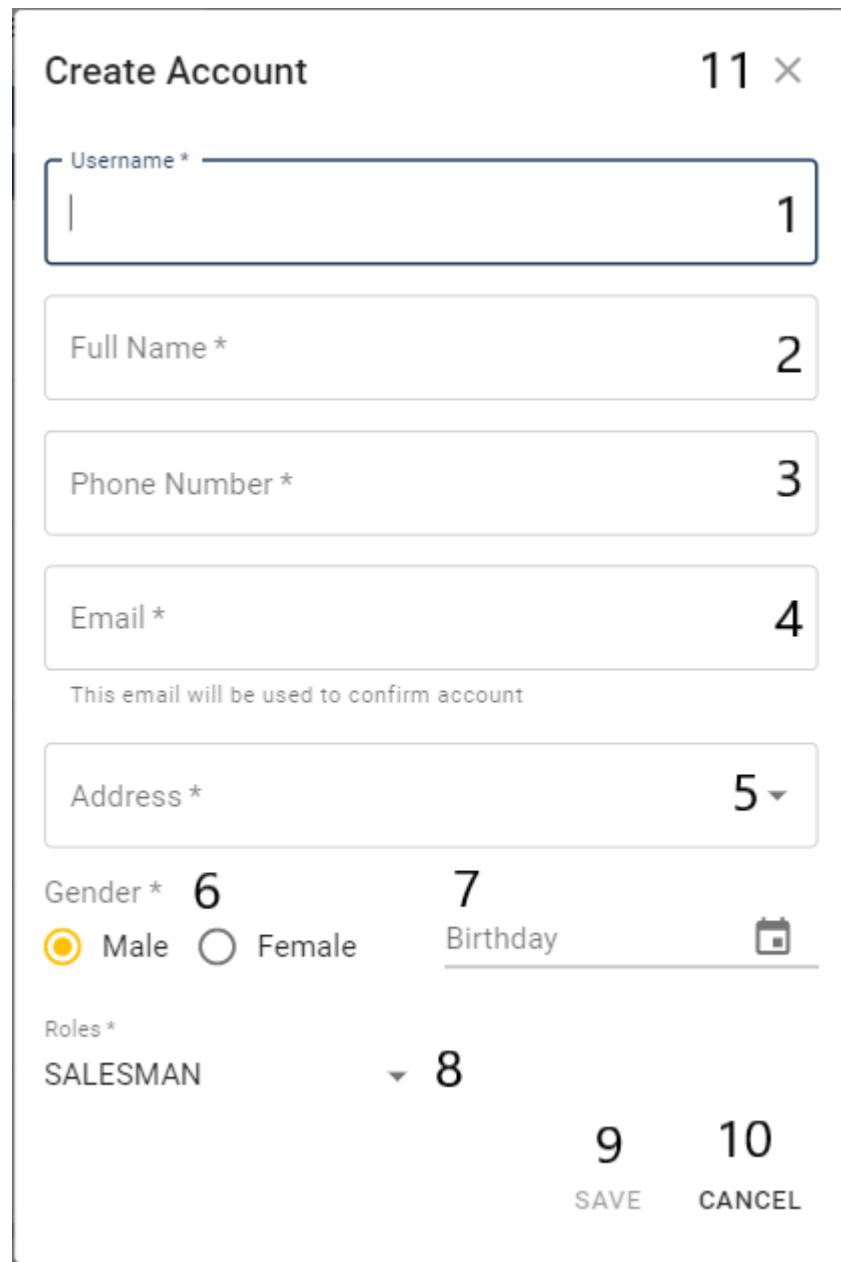


Figure 128 アカウントの作成

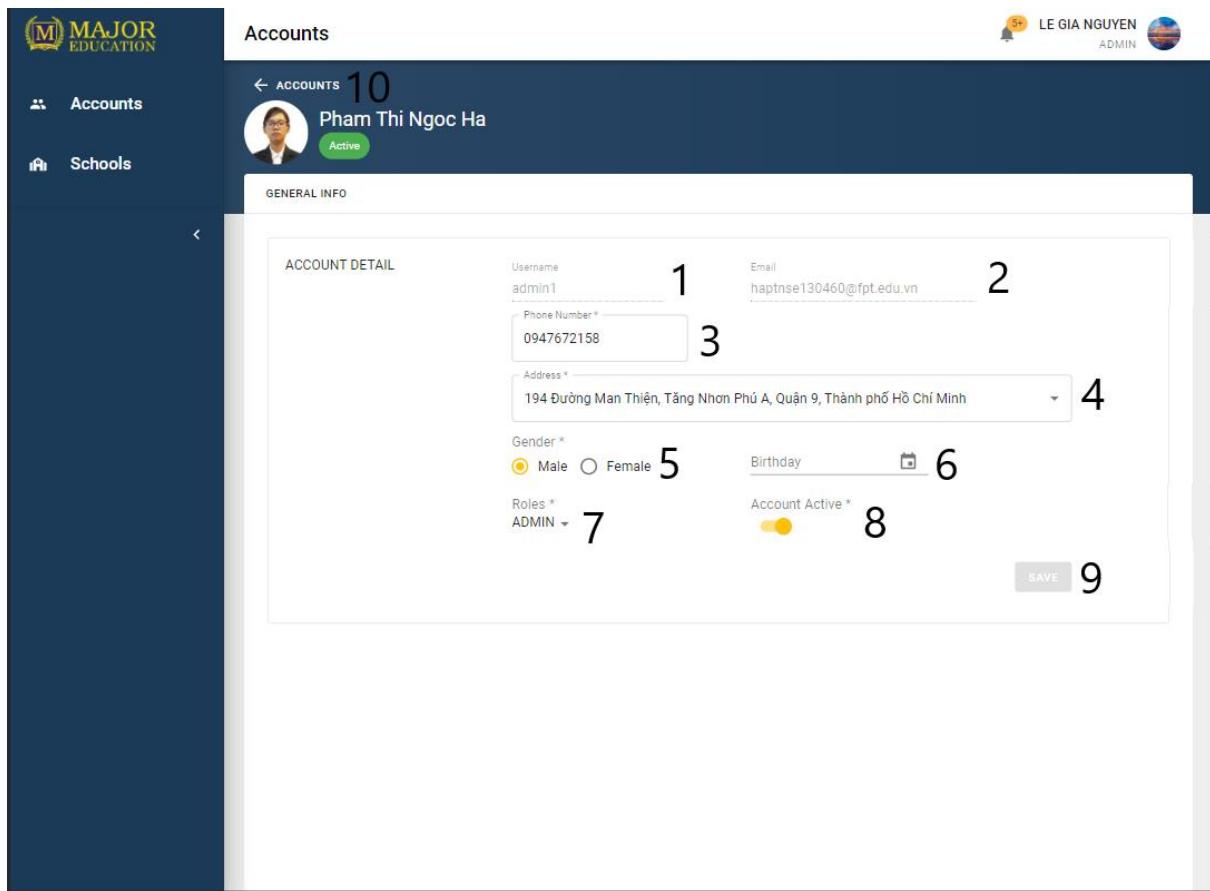


Figure 129 アカウント詳細

t. 4.3.3 スクール

目標

- スクールを管理する。

機能

- スクールのリストの表示
- スクールの詳細の表示
- スクールの検索
- スクールの作成
- スクールの情報の編集

ユーザーインターフェース

Schools

LE GIA NGUYEN
ADMIN

Filters 2

No School Name ↓ 5 Address Principal 4

1 THCS Cầu Kiệu 244 Phan Đình Phùng, phường 3, Phú Nhuận, Thành phố Hồ Chí Minh Phú Nhuận 6

2 THCS Cửu Long 2 Võ Duy Ninh, Khu đô thị Phú Mỹ Hưng, Phường 22, Bình Thạnh, Thành phố Hồ Chí Minh Bình Thạnh 7

3 THCS - THPT Đinh Thiện Lý 80 Nguyễn Đức Cảnh, Tân Phong, Quận 7, Thành phố Hồ Chí Minh Quận 7 Mr. Chen Wei Hung View details

4 Tiểu học Đinh Tiên Hoàng 67 Đường Đinh Tiên Hoàng, Đa Kao, Quận 1, Thành phố Hồ Chí Minh Quận 1 Ms. Trần Thị Thu Hương

5 Tiểu học Đồng Đa 217 Nguyễn Gia Trí, Phường 25, Bình Thạnh, Thành phố Hồ Chí Minh Bình Thạnh Ms. Nguyễn Thị Đoàn Trang

6 THPT Giồng Ông Tố 200/10 Nguyễn Thị Đinh, Quận 2, Thành phố Hồ Chí Minh Quận 2

7 Tiểu học Hảm Tử 738 Võ Văn Kiệt, phường 1, Quận 5, Thành phố Hồ Chí Minh Quận 5

8 Tiểu học Hoàng Hoa Thám 6 Hoàng Hoa Thám, Phường 12, Tân Bình, Thành phố Hồ Chí Minh Tân Bình

9 THCS Hồng Bàng 132 Hồng Bàng, phường 12, Quận 5, Thành phố Hồ Chí Minh Quận 5

10 Tiểu học Huỳnh Mẫn Đạt 5 Huỳnh Mẫn Đạt, phường 1, Quận 5, Thành phố Hồ Chí Minh Quận 5

Rows per page: 10 1-10 of 32 |< < 1 / 4 > >| 8 9 10 11 12

Figure 130 スクールリスト

Filters 1 ^ CLEAR ALL Quận 1 3

Districts Quận 1 4

School Types 5

School Levels 6

Working Status 7

+ Create Import

Figure 131 スクールフィルター

Search... 1 Create

2 Import

Levels

Figure 132 スクールの作成

Create School 13 ×

1 School Name *

2 Address *

3 Tel

4 Educational Level
Tiểu học ▼ 4

5 School Type
Công lập ▼ 5

6 With Representative 6

7 Full Name

Gender
8 Male Female 8

9 Phone Number

10 Email

11 SAVE 12 CANCEL

Figure 133 スクールの作成 <フォーム>

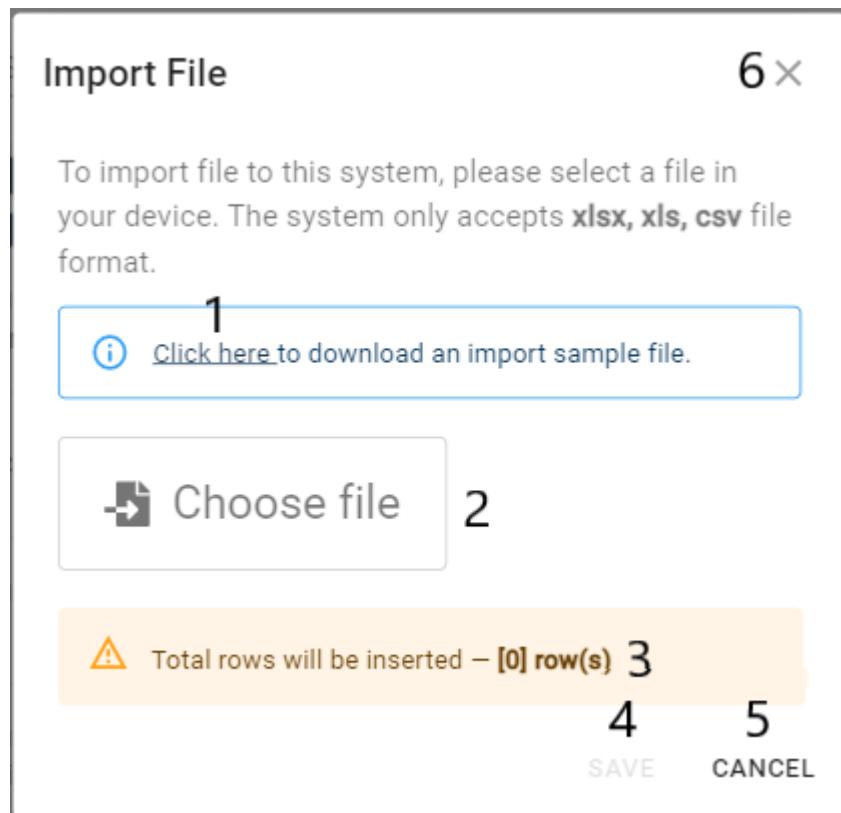


Figure 134 スクールの作成 <インポートファイル>

The screenshot shows the 'Schools' section of the Major Education application. The sidebar on the left has 'MAJOR EDUCATION' at the top, followed by 'Accounts' and 'Schools'. The 'Schools' section is active. The main area shows a list of schools with 'Tiểu học Đinh Tiên Hoàng' selected. A modal window is open for editing the school details. The modal has tabs 'GENERAL INFO' and 'PRINCIPAL INFO'. The 'GENERAL INFO' tab is active. Inside, there are fields for 'School Detail': 'School Name *' (containing 'Đinh Tiên Hoàng') 1, 'Address *' (containing '67 Đường Đinh Tiên Hoàng, Đà Kao, Quận 1, Thành phố Hồ Chí Minh') 2, 'Tel' (containing '02838294295') 3, 'Educational Level' (set to 'Tiểu học') 4, 'School Type' (set to 'Công lập') 5, 'School Active' (switch is on) 6, and a 'SAVE' button 7.

Figure 135 スクールの詳細

u. 4.3.4 タスク

目標

- タスクを管理する。

機能

- タスクのリストの表示
- タスクの詳細の表示
- タスクの検索
- タスクの作成
- タスク情報の編集
- タスクにセールスマンの割当
- タスクの削除

ユーザーインターフェース

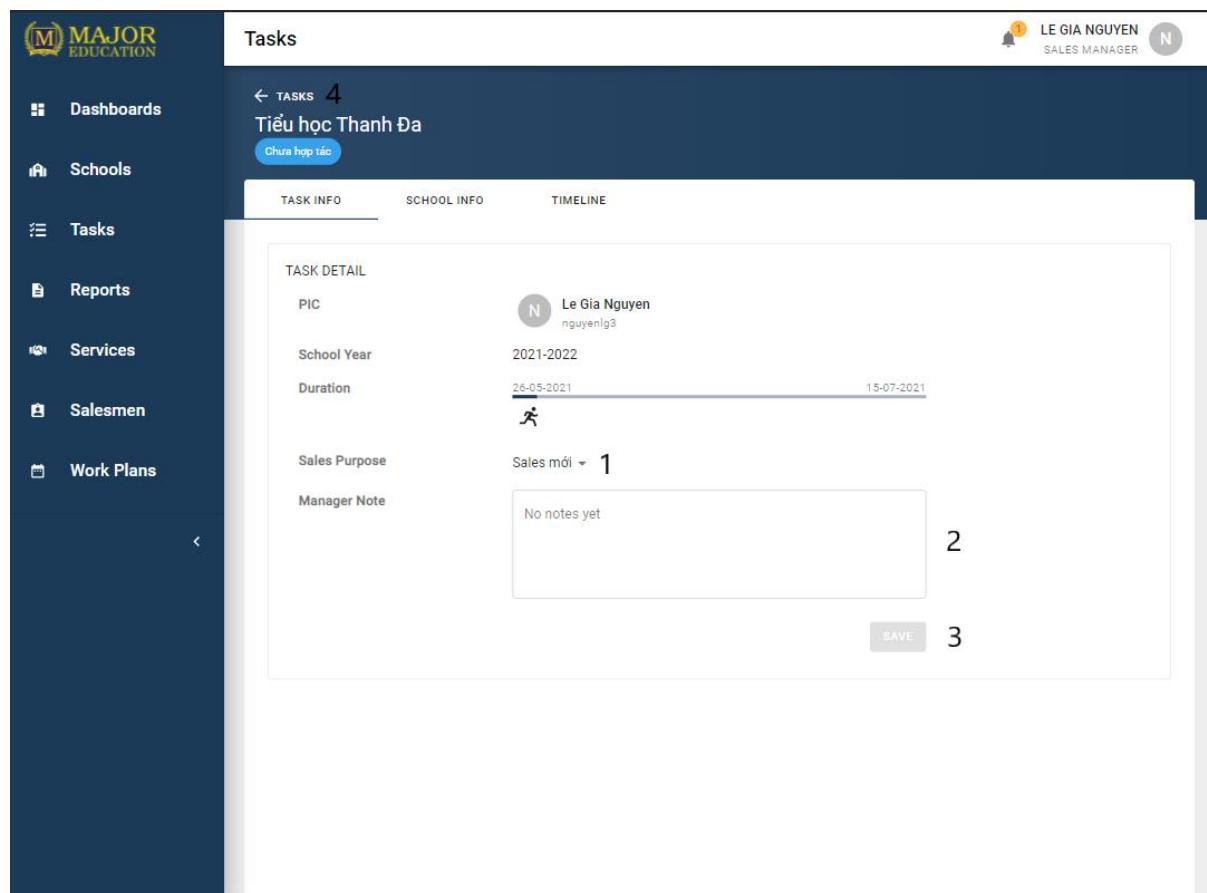


Figure 136 タスク

Filters 1 ^ CLEAR ALL Chưa hợp tác 3

School Status Chưa hợp tác 2	Purposes 5	Districts 6	School Years 7
School Types 8	School Levels 9	Task Status 10	Assigned status 11
PICs PIC's name 12			

Figure 137 タスクフィルター

Create Tasks

13 CHƯA HỢP TÁC ĐANG HỢP TÁC

4	Search...	+	5																																												
Districts 1	School Types 2	School Levels 3																																													
<table border="1"> <thead> <tr> <th>School Name ↓ 6</th> <th>Address</th> <th>Principal</th> <th>Status</th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/> THCS Cầu Kiệu</td><td>244 Phan Đình Phùng, phường 3, Phú Nhuận, ... Phú Nhuận</td><td></td><td>Chưa hợp tác</td></tr> <tr><td><input type="checkbox"/> THCS - THPT Đinh Thiện Lý</td><td>80 Nguyễn Đức Cảnh, Tân Phong, Quận 7, Thủ... Quận 7</td><td>Mr. Chen Wei Hung</td><td>Tiềm năng</td></tr> <tr><td><input type="checkbox"/> Tiểu học Hàm Tử</td><td>738 Võ Văn Kiệt, phường 1, Quận 5, Thành ph... Quận 5</td><td></td><td>Chưa hợp tác</td></tr> <tr><td>7 <input checked="" type="checkbox"/> Tiểu học Hoàng Hoa Thám</td><td>6 Hoàng Hoa Thám, Phường 12, Tân Bình, Thủ... Tân Bình</td><td></td><td>Chưa hợp tác</td></tr> <tr><td><input type="checkbox"/> THCS Hồng Bàng</td><td>132 Hồng Bàng, phường 12, Quận 5, Thành ph... Quận 5</td><td></td><td>Chưa hợp tác</td></tr> <tr><td><input type="checkbox"/> Tiểu học Huỳnh Mẫn Đạt</td><td>5 Huỳnh Mẫn Đạt, phường 1, Quận 5, Thành p... Quận 5</td><td></td><td>Chưa hợp tác</td></tr> <tr><td><input type="checkbox"/> THCS Kim Đồng</td><td>503 Phan Văn Trị, Phường 7, Quận 5, Thành ... Quận 5</td><td></td><td>Chưa hợp tác</td></tr> <tr><td><input type="checkbox"/> THCS Mạch Kiếm Hùng</td><td>712 Nguyễn Trãi, phường 11, Quận 5, Thành ... Quận 5</td><td></td><td>Chưa hợp tác</td></tr> <tr><td><input type="checkbox"/> Tiểu học Phạm Hồng Thái</td><td>38 Nguyễn Duy Dương, phường 3, Quận 5, Thủ... Quận 5</td><td></td><td>Chưa hợp tác</td></tr> <tr><td><input type="checkbox"/> THCS Trần Bộ Cơ</td><td>266 Hải Thượng Lãn Ông, phường 14, Quận 5,... Quận 5</td><td></td><td>Chưa hợp tác</td></tr> </tbody> </table>				School Name ↓ 6	Address	Principal	Status	<input type="checkbox"/> THCS Cầu Kiệu	244 Phan Đình Phùng, phường 3, Phú Nhuận, ... Phú Nhuận		Chưa hợp tác	<input type="checkbox"/> THCS - THPT Đinh Thiện Lý	80 Nguyễn Đức Cảnh, Tân Phong, Quận 7, Thủ... Quận 7	Mr. Chen Wei Hung	Tiềm năng	<input type="checkbox"/> Tiểu học Hàm Tử	738 Võ Văn Kiệt, phường 1, Quận 5, Thành ph... Quận 5		Chưa hợp tác	7 <input checked="" type="checkbox"/> Tiểu học Hoàng Hoa Thám	6 Hoàng Hoa Thám, Phường 12, Tân Bình, Thủ... Tân Bình		Chưa hợp tác	<input type="checkbox"/> THCS Hồng Bàng	132 Hồng Bàng, phường 12, Quận 5, Thành ph... Quận 5		Chưa hợp tác	<input type="checkbox"/> Tiểu học Huỳnh Mẫn Đạt	5 Huỳnh Mẫn Đạt, phường 1, Quận 5, Thành p... Quận 5		Chưa hợp tác	<input type="checkbox"/> THCS Kim Đồng	503 Phan Văn Trị, Phường 7, Quận 5, Thành ... Quận 5		Chưa hợp tác	<input type="checkbox"/> THCS Mạch Kiếm Hùng	712 Nguyễn Trãi, phường 11, Quận 5, Thành ... Quận 5		Chưa hợp tác	<input type="checkbox"/> Tiểu học Phạm Hồng Thái	38 Nguyễn Duy Dương, phường 3, Quận 5, Thủ... Quận 5		Chưa hợp tác	<input type="checkbox"/> THCS Trần Bộ Cơ	266 Hải Thượng Lãn Ông, phường 14, Quận 5,... Quận 5		Chưa hợp tác
School Name ↓ 6	Address	Principal	Status																																												
<input type="checkbox"/> THCS Cầu Kiệu	244 Phan Đình Phùng, phường 3, Phú Nhuận, ... Phú Nhuận		Chưa hợp tác																																												
<input type="checkbox"/> THCS - THPT Đinh Thiện Lý	80 Nguyễn Đức Cảnh, Tân Phong, Quận 7, Thủ... Quận 7	Mr. Chen Wei Hung	Tiềm năng																																												
<input type="checkbox"/> Tiểu học Hàm Tử	738 Võ Văn Kiệt, phường 1, Quận 5, Thành ph... Quận 5		Chưa hợp tác																																												
7 <input checked="" type="checkbox"/> Tiểu học Hoàng Hoa Thám	6 Hoàng Hoa Thám, Phường 12, Tân Bình, Thủ... Tân Bình		Chưa hợp tác																																												
<input type="checkbox"/> THCS Hồng Bàng	132 Hồng Bàng, phường 12, Quận 5, Thành ph... Quận 5		Chưa hợp tác																																												
<input type="checkbox"/> Tiểu học Huỳnh Mẫn Đạt	5 Huỳnh Mẫn Đạt, phường 1, Quận 5, Thành p... Quận 5		Chưa hợp tác																																												
<input type="checkbox"/> THCS Kim Đồng	503 Phan Văn Trị, Phường 7, Quận 5, Thành ... Quận 5		Chưa hợp tác																																												
<input type="checkbox"/> THCS Mạch Kiếm Hùng	712 Nguyễn Trãi, phường 11, Quận 5, Thành ... Quận 5		Chưa hợp tác																																												
<input type="checkbox"/> Tiểu học Phạm Hồng Thái	38 Nguyễn Duy Dương, phường 3, Quận 5, Thủ... Quận 5		Chưa hợp tác																																												
<input type="checkbox"/> THCS Trần Bộ Cơ	266 Hải Thượng Lãn Ông, phường 14, Quận 5,... Quận 5		Chưa hợp tác																																												
8	9	10	11 12																																												

Figure 138・タスクの作成

Confirm Create Tasks

5×

Purposes

1

School Year: 2021-2022

List of assigned schools:

#	School Name	Status	Purpose	Deadline	
1	THCS Cầu Kiệu Phú Nhuận	Chưa hợp tác		30/09/2021	× 2
2	THCS - THPT Đinh Thiện Lý Quận 7			30/09/2021	×

3 4

Figure 139 タスクの作成

Assign Salesmen to Tasks

7×

PICs 1
 Phan Hoàng Lộc

SALESMAN SUGGESTIONS

Xuân Tuyền xuantuyen2 ★ 4.5 1.5km	Hoàng Lộc hoangloc ★ 4.5 3.4km	Công Ninh hoangninh ★ 4.5 3.4km	
---	--------------------------------------	---------------------------------------	--

List of assigned schools:

No	School Name	PIC	Note	
1	Tiểu học Trần Khánh Dư Quận 1	Phan Hoàng Lộc hoangloc	3	× 4

5 6

Figure 140 タスクにセールスマンの割当

The screenshot displays the Major Education software interface. On the left is a dark sidebar with a navigation menu:

- MAJOR EDUCATION
- Dashboards
- Schools
- Tasks (selected)
- Reports
- Services
- Salesmen
- Work Plans

The main content area is titled "Tasks" and shows a task for "Tiểu học Thanh Đa". The task details are as follows:

FIELD	DETAILS
PIC	Le Gia Nguyen nguyenlg3
School Year	2021-2022
Duration	26-05-2021 to 15-07-2021
Sales Purpose	Sales mới 1
Manager Note	No notes yet

At the bottom right of the task detail card are three numbered buttons: 1, 2, and 3.

Figure 141 タスクの詳細

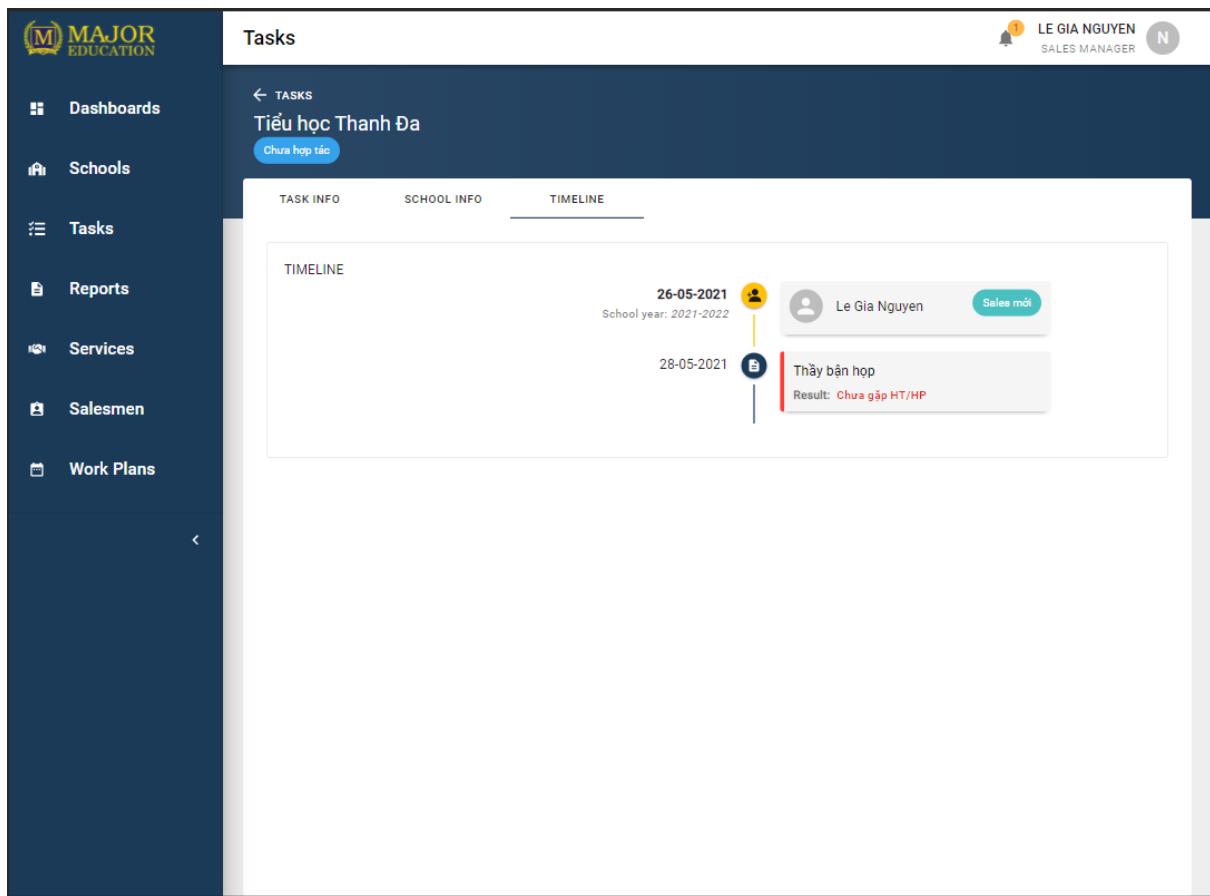


Figure 142 タスクの詳細

v. 4.3.5 レポート

目標

- レポートを管理する。

機能

- レポートのリストの表示
- レポートの詳細の表示
- レポートの検索
- レポートの作成
- レポートの情報の編集
- コメントレポート
- レポートの削除

ユーザーインターフェース

Reports

LE GIA NGUYEN
SALESMAN N

Filters 2

No Date ↓ 5 School Name PIC Purpose Result Description

1 28/05/2021 Tiểu học Thanh Đa Bình Thành Le Gia Nguyen nguyenlg3 Sales mới Chưa gặp HT/HP Thầy bận họp 6 View details Remove

2 15/05/2021 Tiểu học Đồng Đa Bình Thành Trần Thị Xuân Tuyền xuantuyen2 Chăm sóc Chưa gặp HT/HP Cô đi công tác. 7

3 13/05/2021 THCS Trần Quốc Toản Quận 9 Trần Thị Xuân Tuyền xuantuyen2 Sales mới Đã gặp HT/HP Đã giới thiệu Major, khóa SEL. Cố hẹn 3 ngày nữa sang gặp...

4 24/02/2021 Tiểu học Đồng Đa Bình Thành Trần Thị Xuân Tuyền xuantuyen2 Chăm sóc Đã gặp HT/HP helo 8

5 17/06/2020 Tiểu học Đồng Đa Bình Thành Hoàng Công Ninh hoanganhinh Sales mới Đã gặp HT/HP Xin info Cô. Giới thiệu Major. 9

6 12/06/2020 Tiểu học Đồng Đa Bình Thành Hoàng Công Ninh hoanganhinh Sales mới Chưa gặp HT/HP Cô đi công tác không có ở văn phòng. 10

7 12/06/2020 Tiểu học Đồng Đa Bình Thành Hoàng Công Ninh hoanganhinh Sales mới Chưa gặp HT/HP Giờ nghỉ trưa. BV không cho vào 11

Rows per page: 10 1-7 of 7 < 1 / 1 > | 12

Figure 143 レポートのリスト

Filters 1 ^ CLEAR ALL Sales mới 3

Purposes Sales mới 4

Districts 5

School Years 6

Result 7

PICs PIC's name 8

From date dd/mm/yyyy To date dd/mm/yyyy 9

Figure 144 レポートフィルター

Create Reports 10 ×

School Name *	1	+	7	Friday, 28/05/2021
Result *	Đã gặp người đại diện (HT/HP)			2
Description *				3
Positivity				4
Difficulty				5
Future Plan				6
				8 9 SAVE CANCEL

Figure 145 レポートの作成

MAJOR EDUCATION

Reports LE GIA NGUYEN
SALESMAN N

← REPORTS 8
Tiểu học Thanh Đa
28/05/2021

REPORT INFO ASSIGN INFO

REPORT DETAIL

Result *	Chưa gặp người đại diện (HT/HP)	1
Description *	Thầy bận họp	2
Positivity		3
Difficulty		4
Future Plan		5
SAVE		6

MANAGER COMMENT

No comments yet	7
-----------------	---

Figure 146 レポートの詳細

w. 4.3.6 プロフィール

目標

- プロフィールを管理する。

機能

- プロフィールの表示
- プロファイルの編集

ユーザーインターフェース

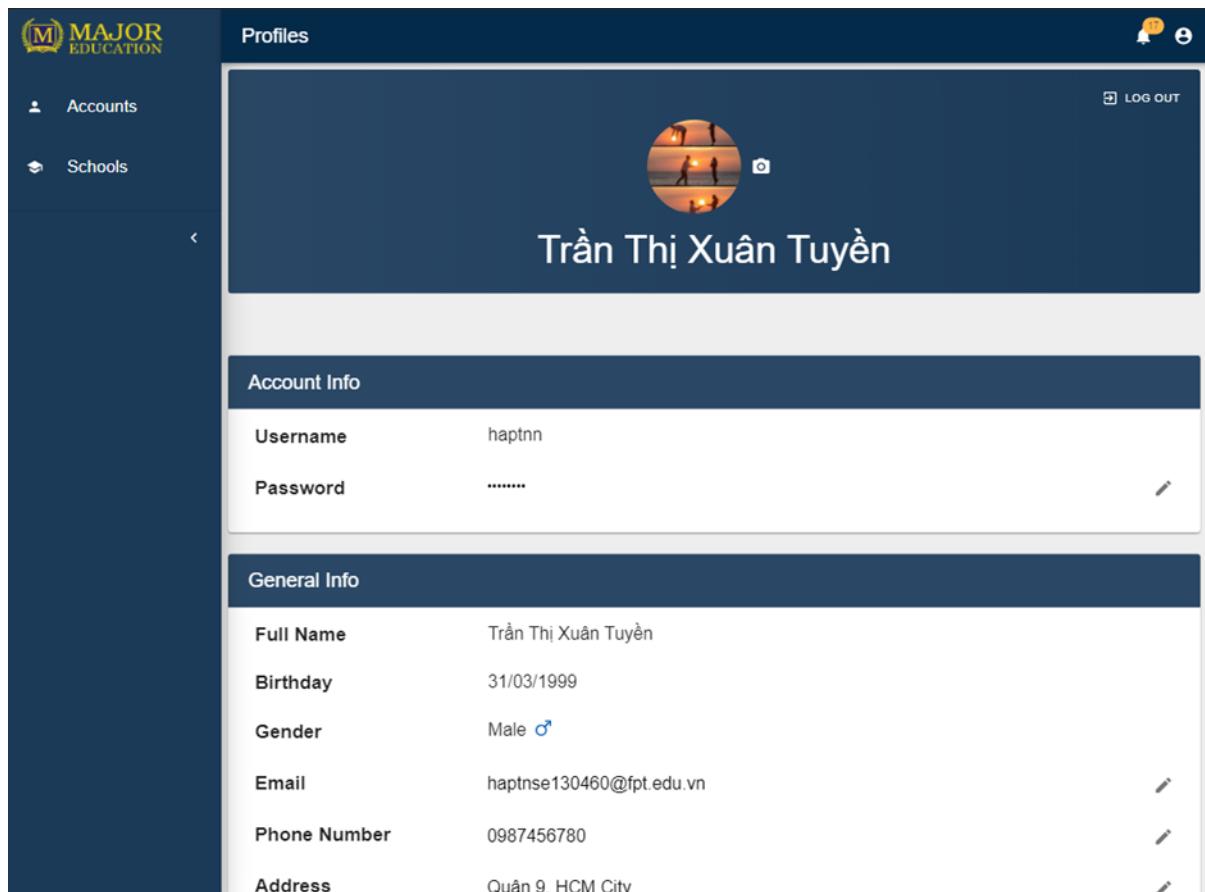


Figure 147 プロフィール

x. 4.3.7 作業計画

目標

- 作業計画を管理する。

機能

- 作業計画の表示
- 個人的な活動の詳細の表示
- 個人的な活動の作成
- 個人的な活動の編集
- 個人的な活動の削除

ユーチャーインターフェース

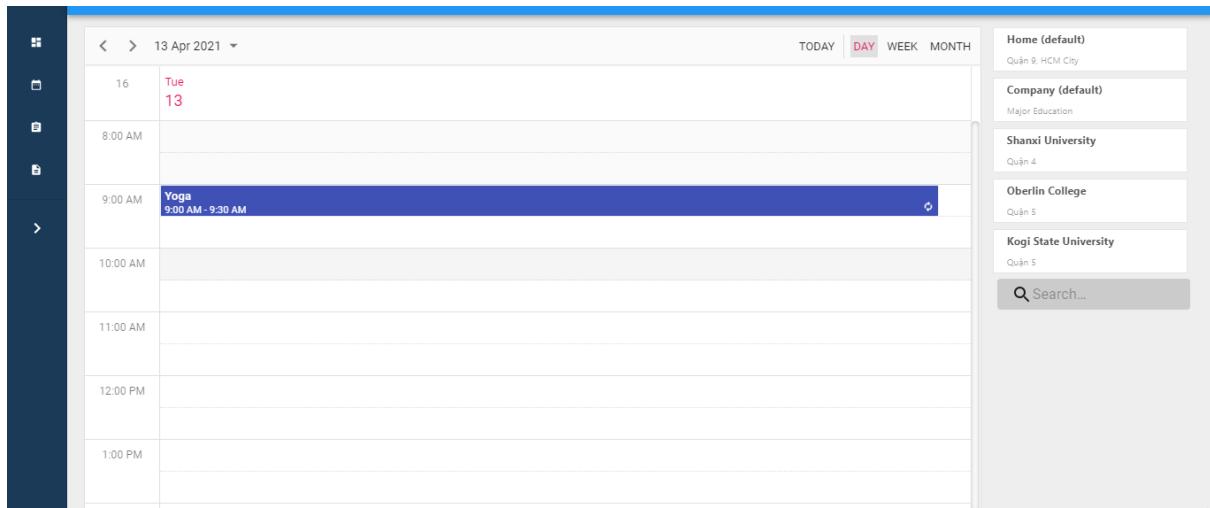


Figure 148 デイビュー

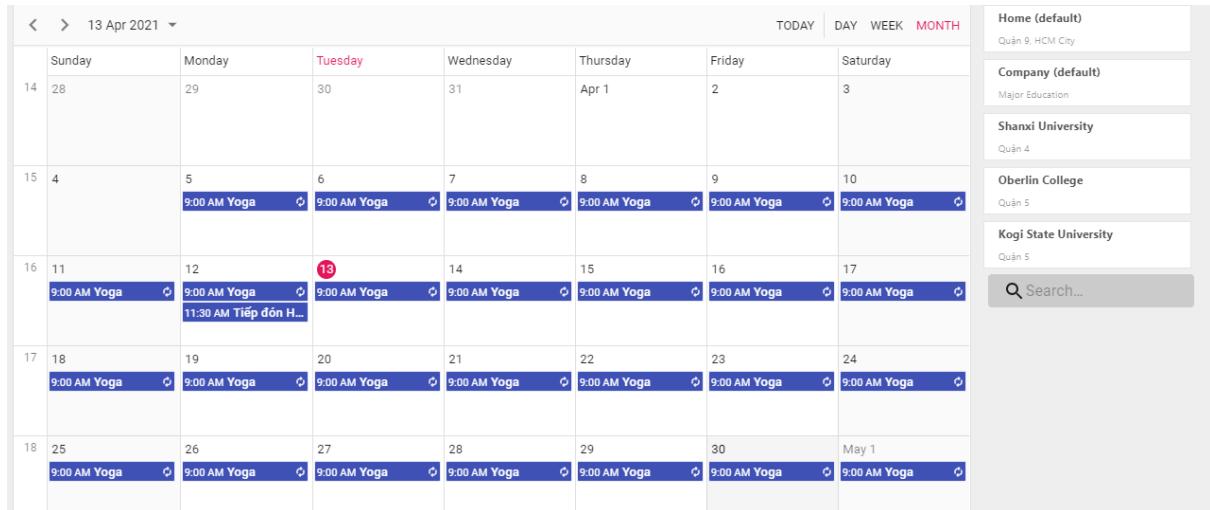


Figure 149 月表示

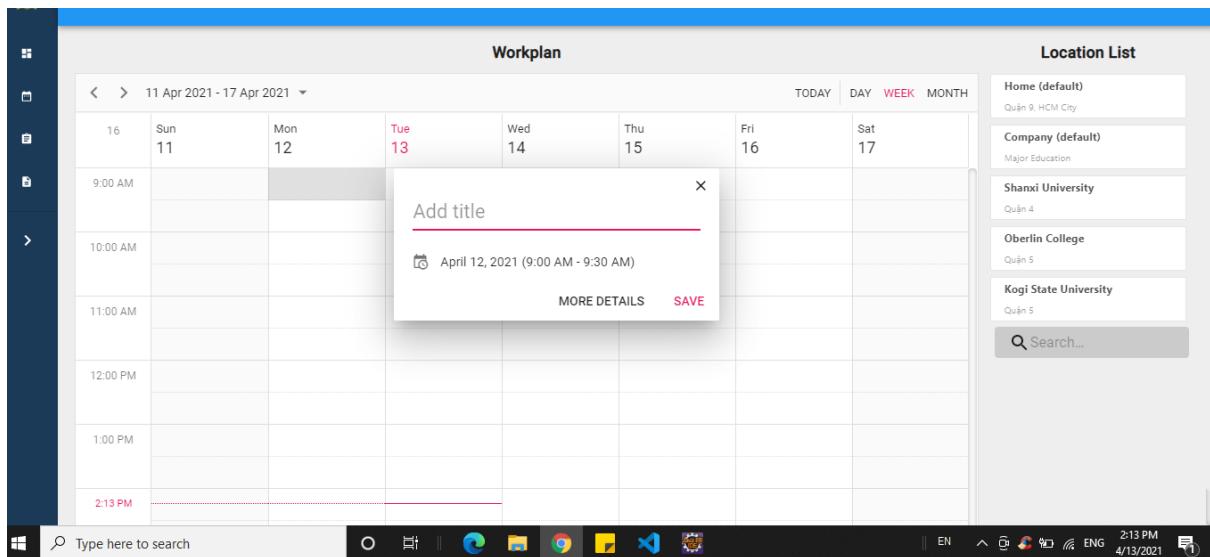


Figure 150 クイック追加

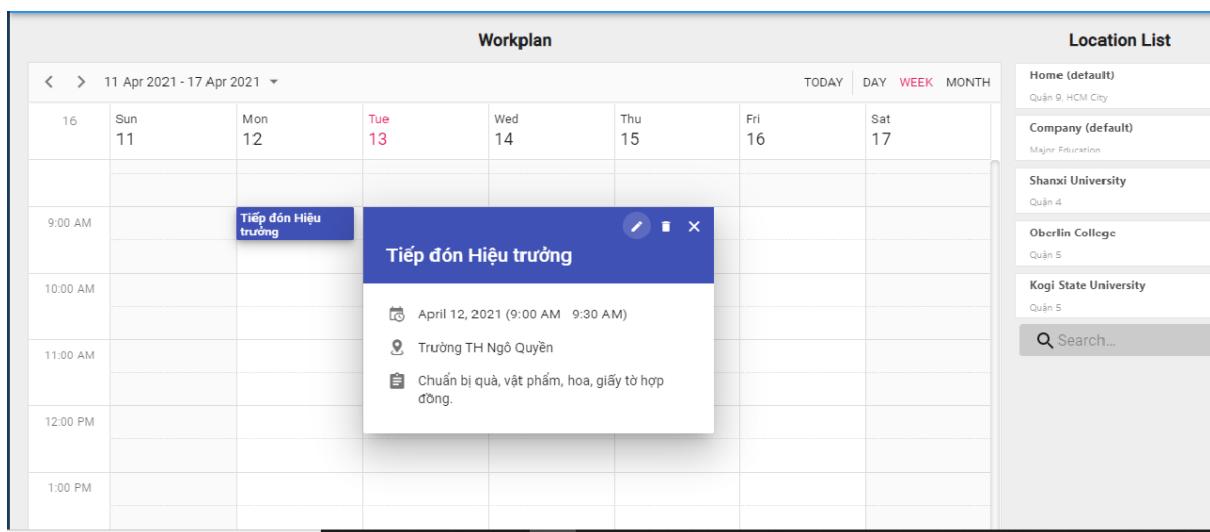


Figure 151 活動の詳細

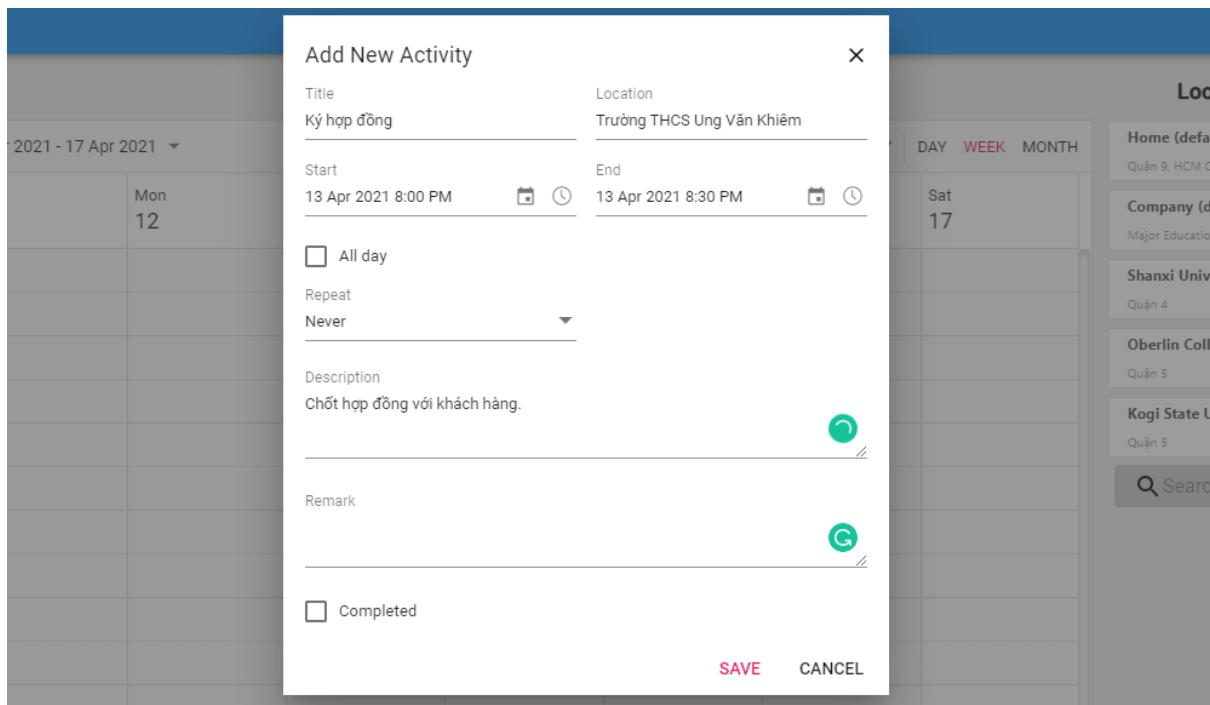


Figure 152 詳細追加

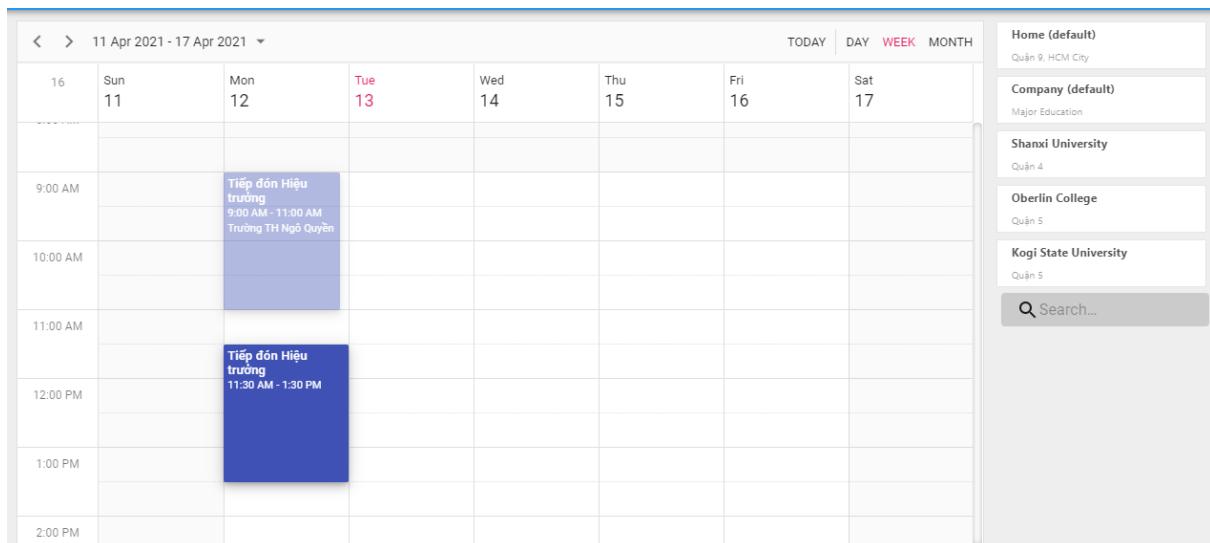


Figure 153 ドラッグして編集

y. 4.3.8 ダッシュボード

目標

- 営業部門は営業プロセスを追跡する。

機能

- ダッシュボードの表示

ユーザーインターフェース

N/A

2. 4.3.9 サービス

目標

- サービスを管理する。

機能

- サービスのリストの表示
 - サービスの詳細の表示
 - サービスの検索
 - サービスの作成
 - サービスの情報の編集

ユーザーアインターフェース

Services							LE GIA NGUYEN SALES MANAGER
Filters		2					Search...
No	Service Type	↑ 4	School Name	PIC	Duration	Status	
1	STEAM	Tiểu học Đống Đa	 Trần Thị Xuân Tuyền xuantuyen2	30-09-2021	18-05-2022	Approved	5:
2	STEAM	THCS Nguyễn Du	 Trần Thị Xuân Tuyền xuantuyen2	16-05-2021	16-05-2022	Approved	⋮
3	STEAM	THCS Trần Văn Ông	 Trần Thị Xuân Tuyền xuantuyen2	Rejected	⋮	 View details	
4	Toán Khoa	THCS Trần Quốc Toản	 Trần Thị Xuân Tuyền xuantuyen2	17-05-2021	08-06-2021	Approved	⋮
5	SEL	Tiểu học Tầm Vu	 Le Gia Nguyen nguyengi3	26-05-2021	26-05-2022	Approved	⋮
6	SEL	THCS Trần Quốc Toản	 Trần Thị Xuân Tuyền xuantuyen2	Pending	⋮		
7	SEL	THCS Lê Quý Đôn	 Trần Thị Xuân Tuyền xuantuyen2	Pending	⋮		
Rows per page: 10 1-10 of 10 < < 1 / 1 > >							
7	8	9	10	11			

Figure 154 サービスのリスト

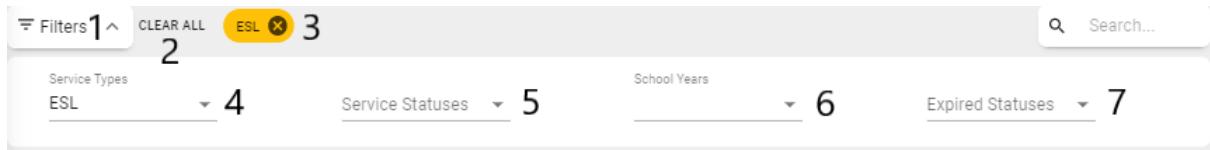


Figure 155 サービスフィルター

This figure shows a detailed view of a service submission with the following sections:

- Services**: A main heading.
- SEL for THCS Trần Quốc Toản**: The service name (6).
- LE GIA NGUYEN**: User information (7).
- SERVICE INFO** (3):

SERVICE DETAIL		EVALUATION CRITERIA
Service type	SEL	1
Duaration	26-05-2021 - 29-12-2022	
No. of applied classes	10 classes	<input checked="" type="checkbox"/> Price Floor
Students per classes	39 students/class	<input checked="" type="checkbox"/> Number of periods per week
Price floor	900.000 ₫/period	<input checked="" type="checkbox"/> Number of applied classes
Periods per week	1 period/week	<input checked="" type="checkbox"/> Number of students per class
Note	No notes yet	<input checked="" type="checkbox"/> Duration
		Estimate sales ≈ 36.000.000 ₫
- APPROVE** and **REJECT** buttons.
- SUBMISSION DETAIL** (4, 5):

Submitted on	27-05-2021
Submitted by	Trần Thị Xuân Tuyền xuantuyen2
Status	Pending

Figure 156 サービスの詳細

aa. 4.3.10 ログイン

目標

- 許可されていないユーザーがシステムにログインする。
- ユーザーのパスワードをリセットしする。

機能

- ユーザー名とパスワードでログイン
- パスワードリマインダー

ユーザーインターフェース

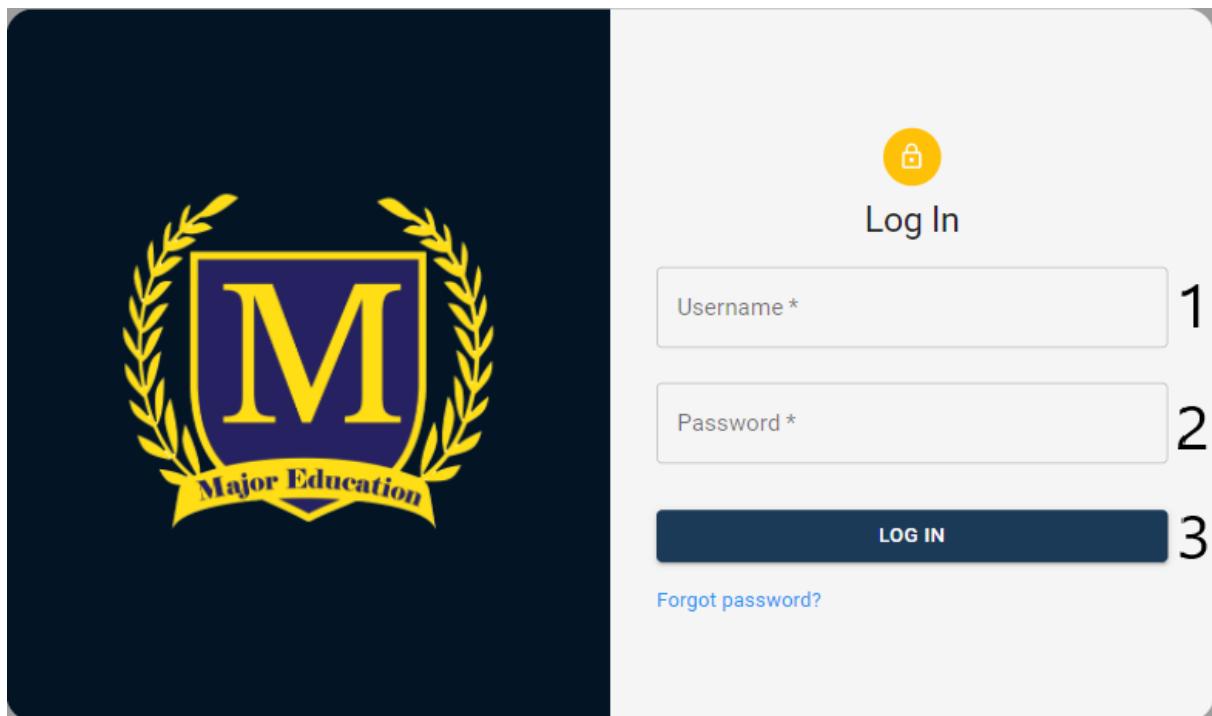


Figure 157 ログイン

bb. 4.3.11 ログアウト

目標

- 許可されたユーザーがシステムからログアウトする。

機能

- ログアウト

ユーザーインターフェース

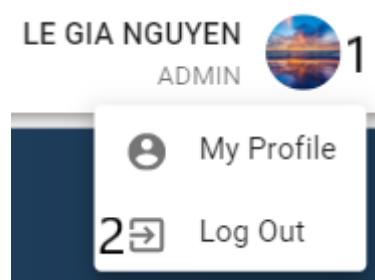


Figure 158 ログアウト

4.4 トラブルシューティング

cc. 4.4.1 Web アプリ画面レイアウトが崩れる

問題

- アプリケーションレスポンシブ UI は、すべてのデバイスでまだサポートされていないことです。

解決

- Web のページをリフレッシュしてください。
- その他のサポートについては、システム開発者に連絡してください。

dd. 4.4.2 画像の読み込み時間が遅い

問題

- インターネット接続が遅い。

解決

- Web のページをリフレッシュしてください。
- もっと良いインターネットに接続してください。

ee. 4.4.3 テーブルデータの読み込み時間が遅い

問題

- インターネット接続が遅い。

解決

- Web のページをリフレッシュしてください。
- もっと良いインターネットに接続してください。

VII. Appendix

1. References

- OMG Unified Modeling Language™ (OMG UML) Superstructure
<https://www.omg.org/spec/UML/2.4.1/Superstructure/PDF>
- UML Diagram
<https://www.uml-diagrams.org/>
- ReactJS
<https://reactjs.org/>
- Material design
<https://material.io/design>
- Material-UI
<https://material-ui.com/>
- Spring boot
<https://spring.io/projects/spring-boot>
- Firebase
<https://firebase.google.com/>