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BASIC THESIS
OF ENGINEERING IN
INFORMATION TECHNOLOGY
(HIGH-QUALITY PROGRAM)

BUILDING A TOURISM WEBSITE SYSTEM

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ABSTRACT

The research topic of the project "Building a Tourism Website System" is to build a website aimed at suggesting to customers tours to the Mekong Delta region. The topic aims to promote Mekong Delta tourism to website users, attract an audience of travelers, and contribute to the region's economic development. The research method of the project is to design a user-friendly and engaging website interface that aligns with the Mekong Delta's unique tourism offerings. Implement a seamless tour booking and payment system using VNPay to enhance user convenience. The intended result when implementing the project is through the website to promote more tourism in the Mekong Delta. The website will serve as a valuable resource for tourists seeking authentic experiences and exploring the rich cultural heritage of the Mekong Delta. Using websites to introduce tourist destinations in particular and the Mekong Delta in general is a method consistent with the development of current technology.

I. INTRODUCTION

1. THE PROBLEM OF THE STUDY

In an era of strong technology and engineering development, the application of information technology in many fields is increasingly widely applied in management, tourism, and other daily activities. A website can be used anywhere and on any electronic means (such as public computers, laptops, tablets, smartphones...). The website occupies a very large position today because of its convenience. The website provides users with quick, accurate information, services, and support using highly effective management tools.

The application of websites in the field of tourism, to promote tourism and provide services such as hotel booking, airline ticket booking, bus booking, etc. in Vietnam today is widespread, typically: Dulichviet, Vietravel, Ivivu, ... However, current websites do not fully meet the needs and desires of customers in suggesting destinations that suit their needs and preferences. Besides, current tours are not enough to promote the beauty of the Mekong Delta to tourists. These are limitations that need to be overcome to optimize user experience on tourism websites and increase benefits for local tourism development.

To help solve the above problem, building a "Tourism website system" is necessary to help users easily access tourist destinations that suit their needs and interests. At the same time, it helps promote the local tourism industry to develop more.

2. RELATED STUDY

The system is built with reference to the following two websites:

Fist website is ivivu.com. About advantages of the website, it has a user-friendly interface, a Wide range of features that meet user needs, and Relevant and timely tour recommendations. But, the disadvantages of it are the manual booking and payment process and limited use of advanced technologies.

The secord website is dulichviet.com.vn. The advantages of this website are it has a wide range of features that meet user needs and an efficient booking and payment process with good technology application. However, it has an unattractive interface that fails to engage users and an ineffective search experience

3. THE PURPOSE OF THE STUDY

The main goal of the project "Tourism Website System - Western Travel" is to build a website to help users book tours. Besides, develop additional functions that

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allow users to suggest additional tours. It helps improve user experience, easily search and book tours that suit customers' desires, and help local tourism develop.

4. SUBJECT AND SCOPE OF STUDY

4.1. SUBJECT OF STUDY

The study subjects are the tour booking process on the website, as well as the interests of customers and admins when using the website. For customers, the website should have a user-friendly interface, be easy to use, and support multiple platforms. For admins, the website should be easy and convenient to manage.

4.2. SCOPE OF STUDY

The scope of the study will be existing tour booking websites on the Internet.

5. RESEARCH METHOD

Research users' tour booking and payment processes through VNPay.

The design phase includes analyzing and designing system models: CDM, and PDM models. Design use case diagrams.

The theories studied and used are: Learn and grasp the theory of database analysis and design, technologies used for application programming such as PHP, HTML/CSS, JavaScript, MySQL, Xampp, and Bootstrap. The Solution is to collect information on the Internet and read more documents related to the topic.

6. RELATED WORK

The first is to learn about the tour booking process and payment through VNPay. Secord analyzes and designs website systems and then builds a website. Finally, prepare test documents and test system operations.

7. STRUCTURE OF THE BASIC THESIS

The layout of the basic thesis includes three main parts: introduction, content, and conclusion. The introduction will set out the problem, objectives, objects and scope, methods, and content of the research. The content will describe the problem in detail, analysis, function specification, data installation and design, and interface for e-commerce applications. Finally, there is the conclusion, presenting the achieved results, limitations, and development direction of the topic.

Additionally, it has references and appendices. Before the introduction, it will have an appendix, a list of tables, and pictures presented in the thesis, and a list of acronyms in use in this report. Finally, there is a table of contents instructing everyone on how to use the product.

II. CONTENT

CHAPTER 1: REQUIREMENTS SPECIFICATION

1. MAIN FUNCTIONS OF THE SYSTEM

The main function of the travel system is:

- The functions of visiting guests: Assign account, and Search for detailed information about tours.

- The functions of the users: Log in, Log out, Change the password, View user's information, Search for detailed information about tours, Booking available tours, Suggest additional tours if they are not available on the system, Service reviews, and Accumulate points.

- Staff: Log in, Log out, Change the password, Booking tour management.

- The functions of the admin: Log in, Log out, Change the password, Website management: ensuring the website is functional, user-friendly, and up-to-date, Booking management: typically involves overseeing and organizing reservations, appointments, or schedules for various purposes, and Analysis and reporting: involves examining data and information.

2. REQUIRED FUNCTIONALITY OF THE SYSTEM

- The system meets product requirements:

+ Achieving efficiency in speed: The time needed to look up information is no more than 10 seconds. The time required to update data is no more than 5 seconds.

+ Flexible: convenient for system development.

- The system meets organizational requirements:

+ Simple interface, easy to use.

+ Font: Use Vietnamese font, Unicode standard.

- The system meets security requirements:

+ The system will assign rights to the user. All rights in the system will be allowed to access some necessary functions and information.

CHAPTER 2: SOLUTION DESIGN

1. THEORETICAL UNDERPINNINGS:

1.1. Introduction to Dynamic Website

A dynamic website is a website that is generated and updated automatically based on data stored in a database. Unlike a static website, the content of a dynamic website is not fixed but changes over time, responding to user requests or interacting with them. Examples of dynamic websites are e-commerce websites, Social media websites, and Government websites, …

The information on a dynamic website is always new because it can be easily updated by you regularly using the update tools of web management software. Information is always updated in a database and internet users can view and edit it immediately. Therefore, websites supported by databases are the fastest means of exchanging information with Internet users. It is easy to see that websites that are regularly updated will attract more visitors than websites that have little change in information.

Dynamic websites offer a high level of user interaction. With dynamic websites, you can easily manage your website's content and operations through supporting software without necessarily requiring specific knowledge of HTML or web programming languages.

Dynamic websites are commonly developed using advanced programming languages such as PHP, ASP, ASP.NET, and Java. These websites utilize powerful relational databases like Access, MySQL, MS SQL, and Oracle to store and manage data.

For this project, I have chosen to utilize the Laravel framework in conjunction with the MySQL database to construct a comprehensive dormitory management website

1.2. Introduction to Visual Studio Code

Visual Studio Code (VS Code) is a free and open-source cross-platform code editor developed by Microsoft. It is widely used by software developers for a variety of programming languages and technologies.

Due to its powerful features and ease of use, Visual Studio Code has become incredibly popular among the coder community. It is a great choice for anyone looking for a powerful, versatile, and free code editor.

1.3. Introduction to HTML/CSS

In the age of technology, websites are ubiquitous on the internet, and behind these websites lies a familiar duo for coders: HTML and CSS. These languages work together to create the structure and style of web pages.

It can be said that HTML is the backbone of a website. It is a markup language designed for creating web pages and helps define the content and structure of the page, using tags to help the browser determine which elements are present.

CSS is the face of a website. It defines the visual style of HTML elements, adding things like color, font size, layout, and animations. It is used to style websites, making them more attractive to users.

1.4. Introduction to PHP.

PHP is a form of code or a series of scripting languages used to develop web applications that run on servers. When PHP programmers write programs, the command sequence will be processed on the server, and then HTML code will be generated on the client. Based on that, applications on the website will operate easily.

It is often used in building and developing websites because it can be easily connected to other websites that use HTML. PHP is also an open-source programming language, compatible with many different platforms such as MacOS, Linux, Windows, ...

The PHP programming language often focuses on setting up server programs, creating databases, building website content, and receiving cookie data. Not only that, it can also perform many other operations and functions such as Setting up programs for the server system, Creating script lines, and Building working applications, ...

1.5. Introduction to JavaScript

JavaScript is a programming language used to create interactive and dynamic web pages. It is a core part of the World Wide Web, alongside HTML and CSS.

JavaScript is often used to add interactive effects to websites such as drop-down menus, animations, and simple games. It is also used to process user input and respond accordingly, communicate with APIs, and also be used to create complex web pages.

With its advantages of being easy to learn thanks to its simple and easy-to-understand syntax, being flexible in creating various types of applications, and its popularity, JavaScript is considered a good language to start with.

1.6. Introduction to Microsoft MySQL Server

MySQL is a popular and powerful open-source database management system, developed in the 1990s and operating based on the client-server model. Be is an important software in managing and storing data for applications and websites.

This open-source database management system uses SQL query language and manages data through databases with multiple relational tables, creating a flexible system structure for storage. and information retrieval. Stability, open source code, and customization are the outstanding advantages of MySQL, giving users the freedom to be creative and adapt to their specific needs.

1.7. Introduction to Bootstrap

Bootstrap is a free and open-source front-end framework for web development. It provides a collection of pre-designed components and utilities that can be used to quickly and easily build responsive websites.

Bootstrap includes the basics available such as typography, forms, buttons, tables, navigation, modals, image carousels, and many more. Bootstrap has more components and Javascript to support responsive design more easily, more convenient, and faster.

1.8. Introduction to XAMPP

XAMPP is a free and open-source software package that allows you to easily set up a development environment to build websites on your local computer. By bundling these essential components together, XAMPP makes it easy for developers to get started with building websites locally without needing to install and configure each component individually. This is especially convenient for testing and development purposes before deploying a website to a live server.

CHAPTER 3: INSTALL THE SOLUTION

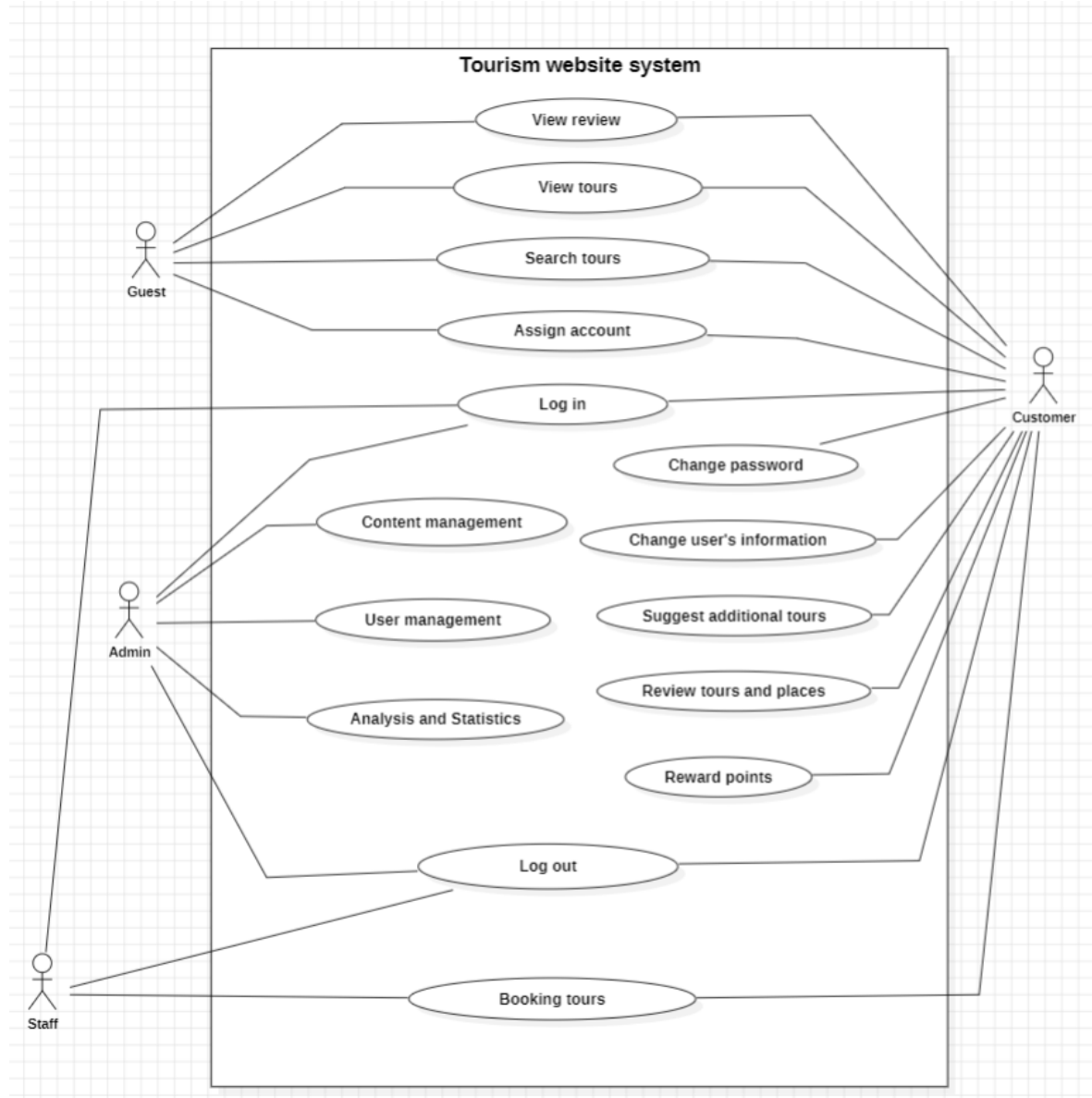## 1. SYSTEM OVERVIEW DIAGRAM

1.1. Usecase

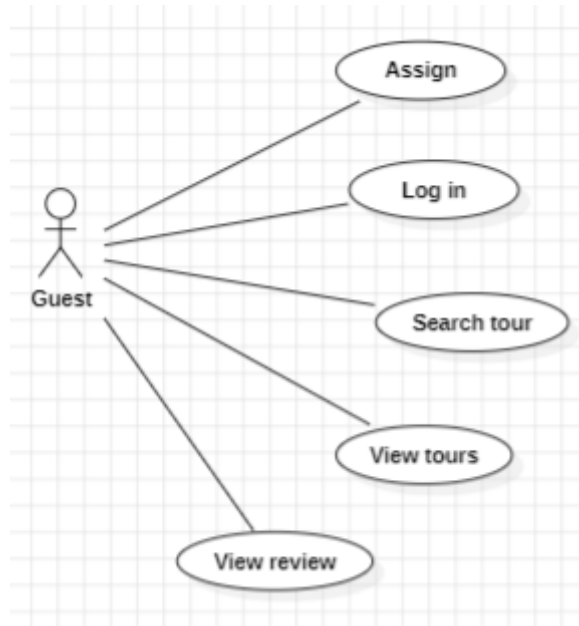*Figure 1.   System overview use case*

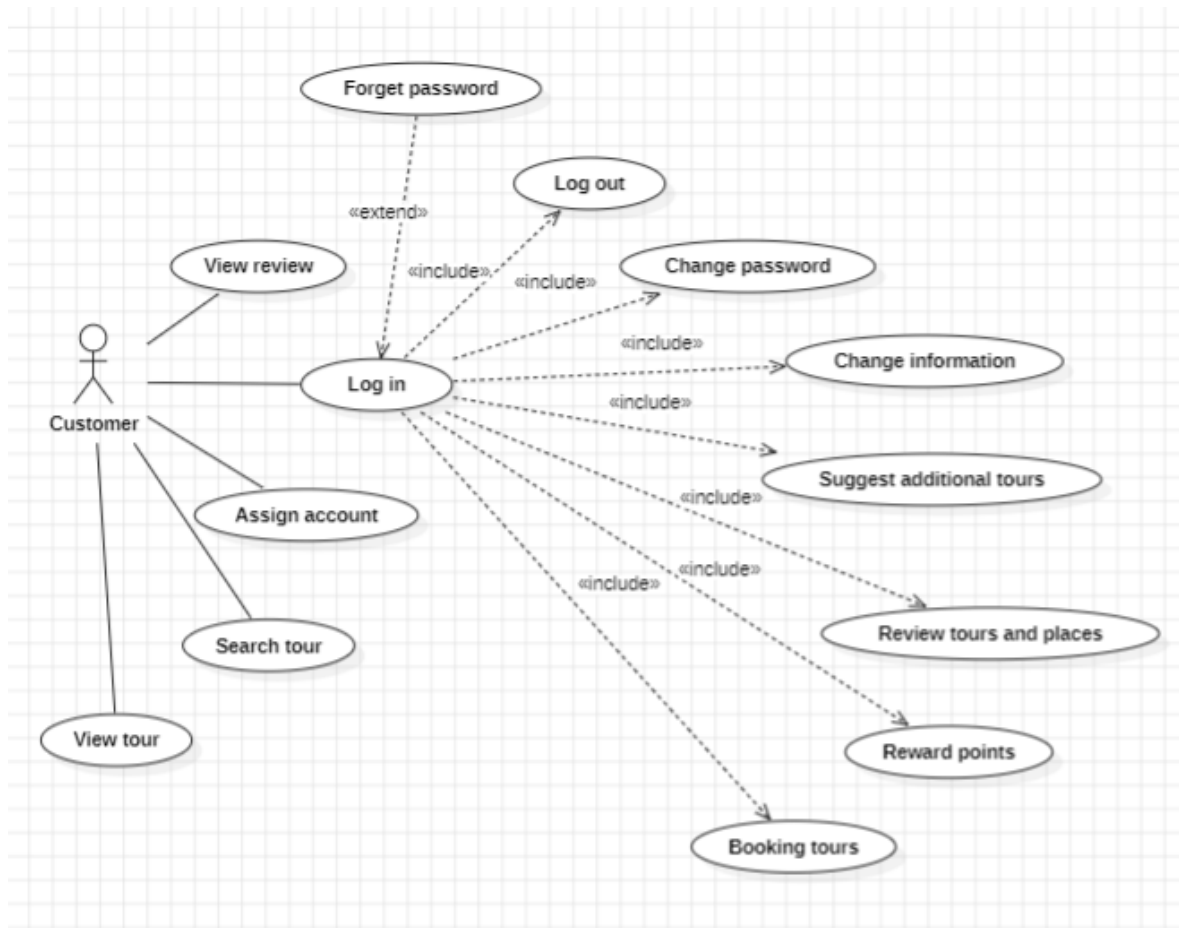*Figure 2. Use case of Guest*

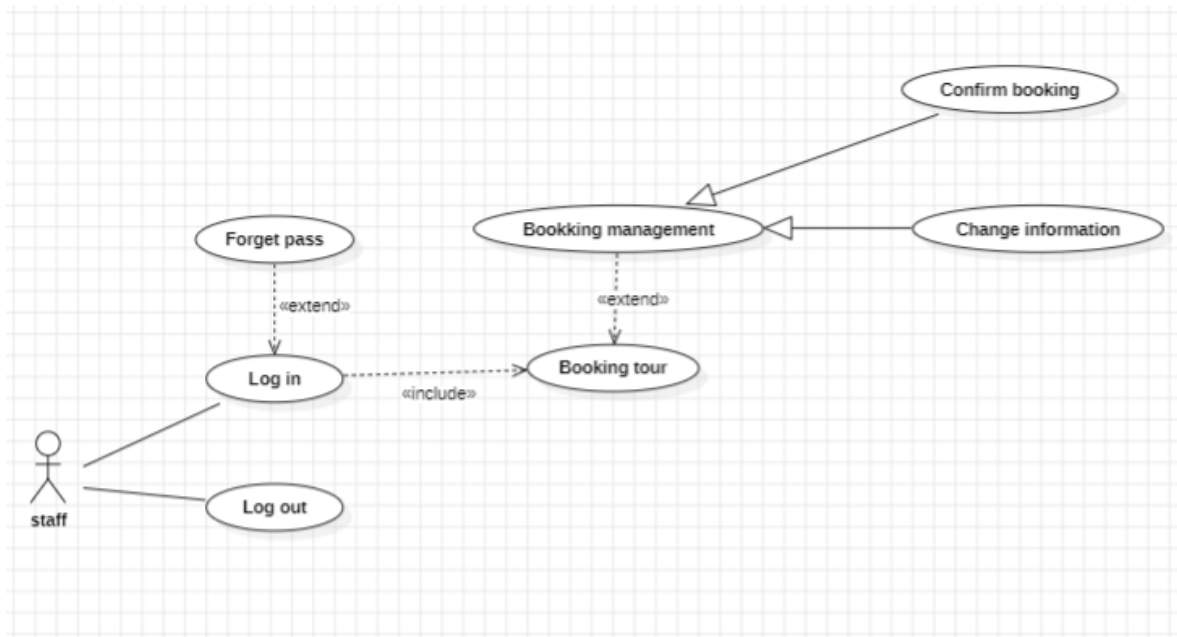*Figure 3. Use case of Customer*

Figure 4.   Use case of Staff
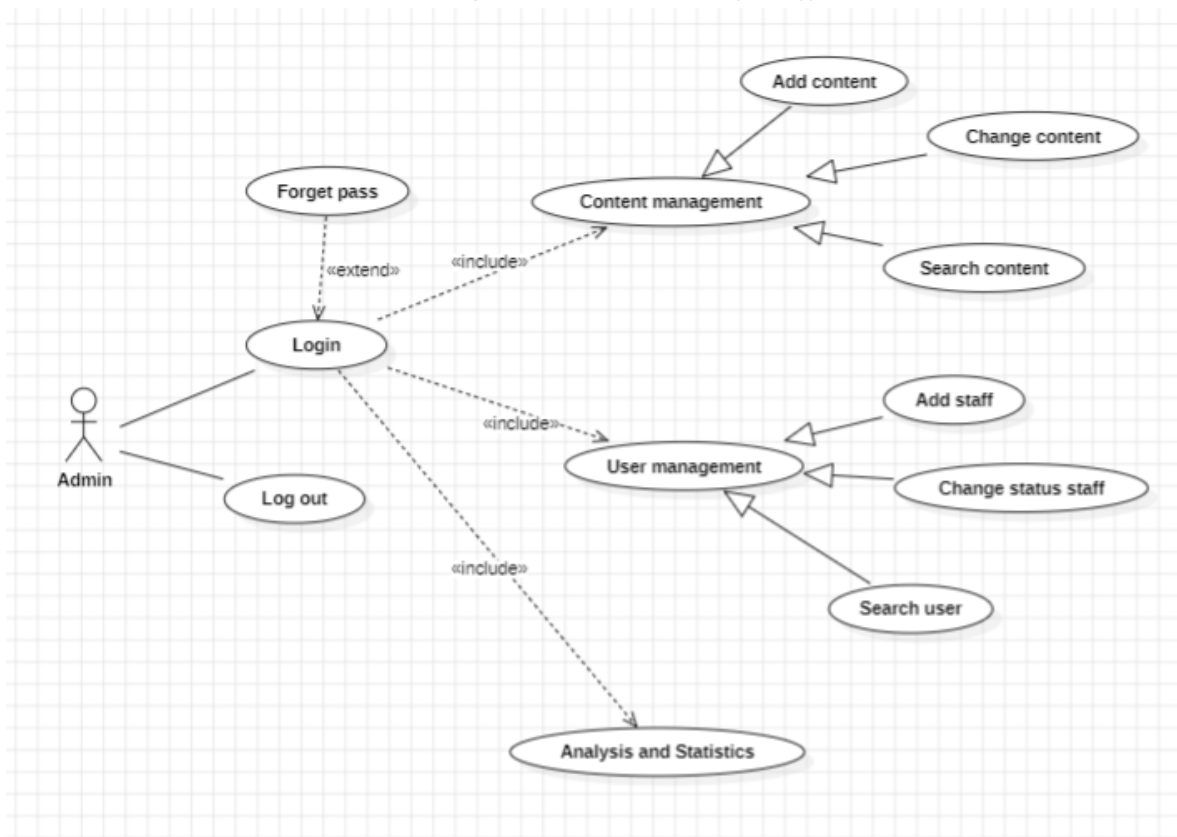
Figure 5.   Use case of Admin

1.1.1. Use Case View tours and tickets
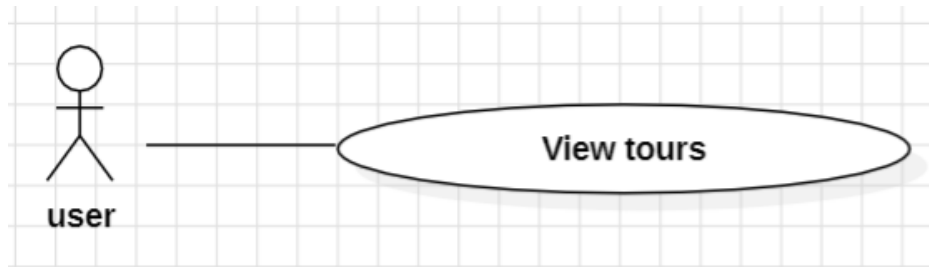
Figure 6.   Use case view tours

Use Case: View tours	ID: UC001
Main actor: User	Priority: Essential
Brief description: A user accesses the website. She/he wants to view tours and tickets.	
Trigger: User	Type: External
Relationship: + Association: User + Include: None + External: None	 + Generalization: None

Normal flow:
   1. Users access from a web browser.
   2. Users can view tours displayed on the screen.
   3. Users can click on tours to view details.	

Exceptional flows: If the website has an error, the customer presses the error button and asks the customer to try again later.	

1.1.2. Use Case Search tours

Figure 7.   Use Case Search tours

Use Case: Search for tours	**ID:** UC002
Main actor: User	**Priority:** Essential
Brief description: A user accesses the website. She/he wants to search for tours.	
Trigger: User	**Type**: External
Relationship: + **Association:** User + **Include:** None + **External:** None	+ **Generalization:** None

Normal flow:
  1. Users access to search bar of the web browser.
  2. Users enter the tour they want to search for based on the destination name or province name.
  3. The system processes customer queries and displays products related to products.	

Exceptional flows: If the information the customer enters is invalid, the system will not display any tours or tickets.	

1.1.3. Use Case Assign account

Figure 8. Use Case Assign account

Use Case: Assign account	**ID:** UC003
Main actor: User	**Priority:** Essential
Brief description: A user accesses the website. She/he wants to create an account to use other functions.	
Trigger: User	**Type**: External

Relationship:
+ **Association:** user
+ **Include:** none
+ **External:** None   + **Generalization:** None

Normal flow:

1. Users click on the system's new account creation feature to become a customer.
2. Users enter personal information needed to open an account including password and username.
3. The system will check whether the user already exists or not. If it does not exist, go to step 4; Otherwise, a notification that the account already exists is displayed.
4. The system will check the input to see if the values the user entered are valid or not. If it is not valid, display a message asking the user to re-enter; Otherwise, go to step 5.
5. The system will save all the details in the database and create a new account.

Exceptional flows:
At any time, if the User presses the "Cancel" button, the system will redirect the user to the home page and stop the process.

1.1.4. Use Case Log in

Figure 9. Use Case Log in

Use Case: Log in	ID: UC004
Main actor: User	**Priority:** Essential
Brief description: A user accesses the website. She/he wants to log in to their account to use the website's function.	
Trigger: User	**Type**: External

Relationship:	
+ **Association:** user	
+ **Include:** none	
+ **External:** Assign account	+ **Generalization:** None

Normal flow:

1. The customer is redirected to the log in page.
2. The system will display a form for customers to enter information including login name and password.
3. After the user has finished entering information, the system will check with the database whether the information is correct or not. If yes, go to step 4; Otherwise, the system will display a message asking to re-enter.
4. The user is redirected to the home page as a customer.

Exceptional flows:

1. At any time, if the User presses the "Cancel" button, the system will redirect the user to the home page and stop the process.
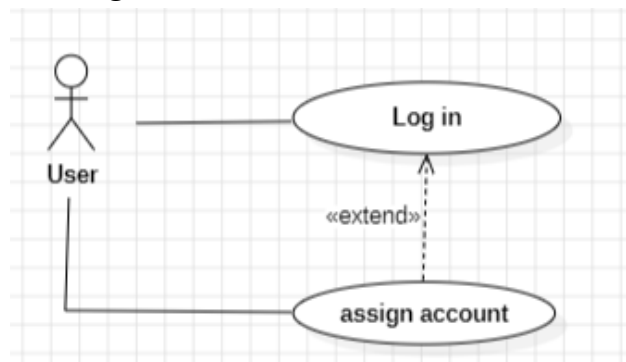
2. At any time, if the User presses the "Forgotten password" button, the system will redirect the user to the password recovery page and discontinue the process.

1.1.5. Use Case Change password
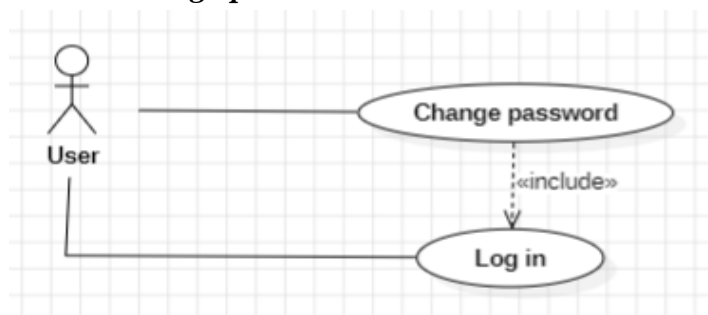
Figure 10. Use Case Change password

Use Case: Change password	**ID:** UC005
Main actor: User	**Priority:** Essential
Brief description A user accesses the website and logs in to their account. She/he wants to change their password.	
Trigger: User	**Type**: External

Relationship:
+ **Association:** user
+ **Include:** Log in
+ **External:** none   + **Generalization:** None

Normal flow:

1. The customer clicks the "Đổi mật khẩu" button.
 	
   2. The system will display a form for customers to enter information including old passwords and new passwords.
 	
   3. The system will check whether the old password entered matches the old password stored in the database: 3.1. If no, the system will display a message asking the customer to re-enter this information.
 	
   3.2. If yes, the system will check whether the newly entered password is valid or not:
 	
      3.2.1. If it is not valid, the system will display a message asking the customer to re-enter this information.
 	
      3.2.2. If it is valid, change to step 4.
 	
   4. The system will save the new password into the database.

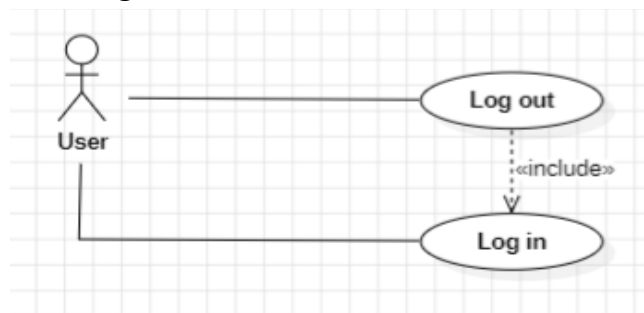| **Exceptional flows:** |
| :--- |
| At any time, if the User presses the "Cancel" button, the system will stop the process, and the Customer's record will be unchanged. |

1.1.6. Use Case Log out

Figure 11. Use Case Log out

Use Case: Log out	**ID:** UC006
Main actor: User	**Priority:** Essential

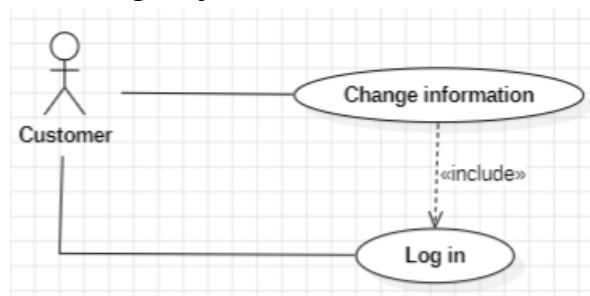| Brief description: A user accesses the website and logs in to their account. She/he wants to log out of their account.	
Trigger: User	**Type**: External
Relationship: + **Association:** user + **Include:** Log in + **External:** none + **Generalization:** None	

Normal flow:
   1. The user chooses the "Đăng xuất" feature.
   2. The system will return to the home page and return to guest mode.	

Exceptional flows: At any time, if the User presses the "Cancel" button, the system will stop the process.	

1.1.7. Use Case Change information

Figure 12. Use Case Change information

Use Case: Change information	**ID:** UC007
Main actor: Customer	**Priority:** Essential
Brief description: A user accesses the website and logs in to their account. She/he wants to change their information.	
Trigger: Customer	**Type**: External
Relationship: + **Association:** Customer + **Include:** Log in + **External:** none + **Generalization:** None	

Normal flow:

1. Include "Log in".
2. The user updates the selected part information and requests that the system save the entered values.
3. The system confirms the entered personal information

   4.1. The system describes which entered data was invalid and recommends the user with suggestions for entering valid data.

   4.2. The system reminds the User to re-enter the invalid information.

   4.3. The User re-enters the information and the system re-validates it.

   4.4. If valid, the information is entered and go to step 5; else go to step 4.1 or cancel the change personal information request. If the User entered invalid data or chooses to cancel the change request, there is no change to the User's record.

5. The updated personal information is stored in the User's record. The system notifies the User that the personal information has been updated.

Exceptional flows:

At any time, if the User presses the "Cancel" button, the system will stop the process, and the Customer's record will be unchanged.
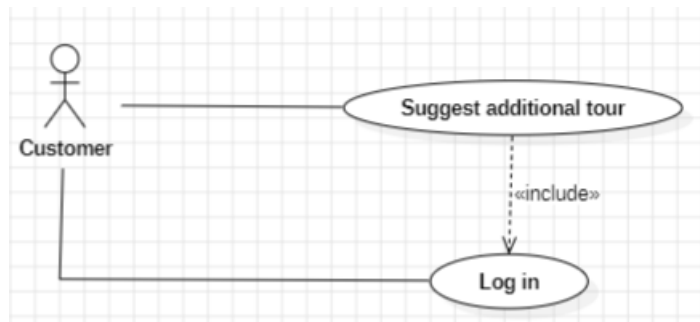
1.1.8. Use Case Suggest additional tour

Figure 13. Use Case Suggest additional tour

Use Case: Suggest additional tour	**ID:** UC008
Main actor: Customer	**Priority:** Essential
Brief description: A user accesses the website and logs in to their account. She/he wants to suggest an additional tour.	
Trigger: Customer	**Type**: External

Relationship:
+ **Association:** Customer
+ **Include:** Log in
+ **External:** none   + **Generalization:** None

Normal flow:
1. Include "Log in".
2. The Customer chooses the "Gợi ý thêm tour" feature.
3. The system will display a form for customers to fill in the tour information they want to suggest, including destinations and provinces.
4. When the customer presses the submit button, the system will notify that the customer has successfully submitted the suggestion.

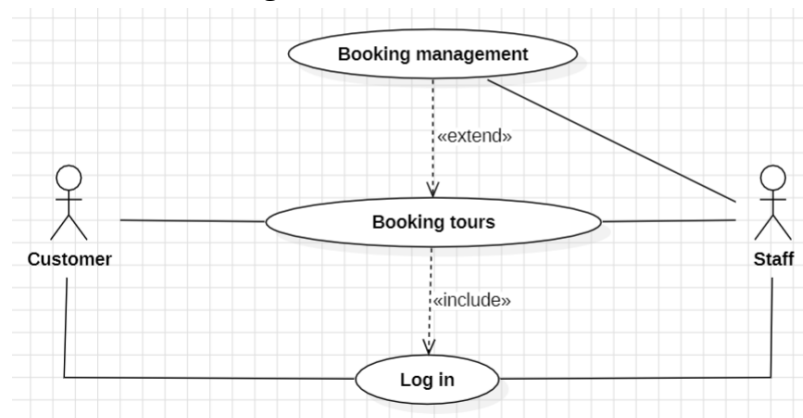| Exceptional flows: |
|---|
| 1. At any time, if the User presses the "Cancel" button, the system will stop the process, and the Customer's record will be unchanged. |
| 2. If during operation, the system has a problem and the customer clicks to send a suggestion. The system will display a notification and ask the customer to try again later. |

1.1.9. Use Case Booking tours

Figure 14. Use Case Booking tours

Use Case: Booking tours	**ID:** UC009
Main actor: Customer and Staff	**Priority:** Essential
Brief description: A user accesses the website and logs in to their account. She/he wants to book tours.	
Trigger: Customer and Staff	**Type**: External

Relationship:

+ **Association:** Customer and Staff – Booking tours

+ **Include:** Log in

+ **External:** Booking management   + **Generalization:** None

Normal flow:

1. Include "Log in".
2. The Customers see or search for tours and tickets. After viewing details and click booking, the system will redirect the customer to the booking page.
3. Customers will fill in general information including phone number, name of the booker, and email. Other specific information such as:
    3.1. Choose the departure date and number of people
4. The system will check if the value entered by the customer is valid.
    4.1. If not, go back to step 3 and display suggestions for the customer to enter the value.
    4.2. If yes, go to step 5.
5. Customer clicks on "Thanh toán" Button.
6. The customer proceeds to pay for the booking.
7. The system will send the customer booking information to the staff.
8. Staff members will contact the customer to confirm the booking.
9. The system will notify the customer whether the tour or ticket has been successfully registered or not.
    9.1. If successful, display a notification on the screen and change the booking status to "Booking successful".
    9.2. If not successful, the customer tells the incorrect information to the staff then the staff will change that information.

Exceptional flows:

1. At any time, if the User presses the "Cancel" button, the system will stop the process, and the Customer's record will be unchanged.

2. If during operation, the system has a problem, the system will display a notification and ask the customer to try again later.

3. In case the tour is no longer available, the system will display and stop accepting bookings for that case.

4. If during the order confirmation process, the staff calls the customer more than five times, the tour will be automatically canceled.

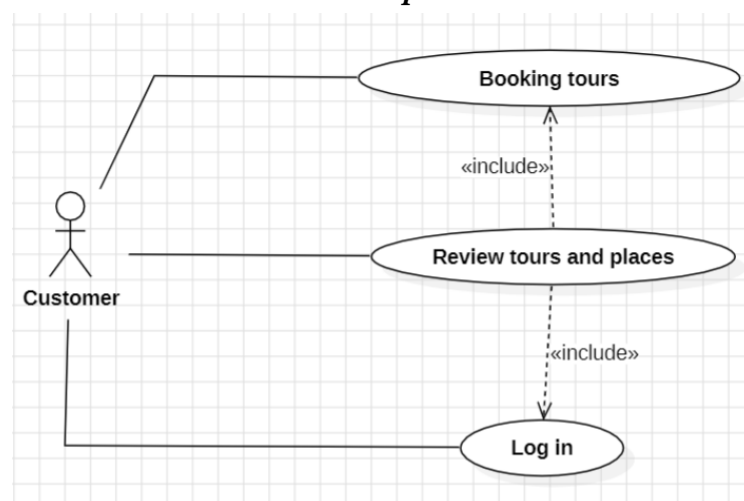| Use Case: Booking management	ID: UC0010
Main actor: Staff	Priority: Essential
Brief description: A user accesses the website. She/he wants to confirm the customer's booking.	
Trigger: Staff	Type: External
Relationship: + Association: Staff – Log in + Include: none + External: none	 + Generalization: None
Normal flow: 1. The customer clicks on the "Thông tin tour" button. 2. The system will send information to the staff, including the information of customers who have booked tours or tickets such as Phone number, Customer name, Number of guests booked, etc. 3. The staff will call the phone number registered for the tour or ticket of the customer to confirm: 3.1. If the customer confirms correctly: The staff clicks "Xác nhận" on the system and the system will save the customer information into the tour or ticket database. Then go to step 4. 3.2. If the customer does not confirm correctly: The staff clicks "Chỉnh sửa" and the system will direct to change infomation of the customer. 4. The system updates the customer's booking status to "Đã xác nhận".	

1.1.10. Use Case Review tours and places

Figure 15. Use Case Review tours and places

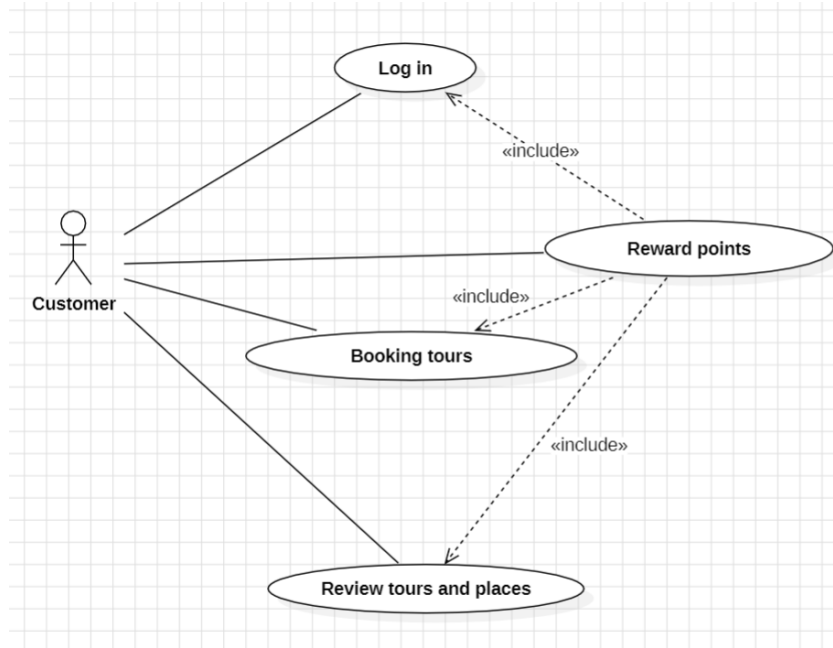| Use Case: Review tours and places.	ID: UC011
Main actor: Customer	**Priority:** Essential
Brief description: A user accesses the website and logs in to their account. She/he wants to provide a review about a tour or a place that they just experienced.	
Trigger: Customer	**Type**: External
Relationship: + **Association:** Customer + **Include:** Log in, Booking tours + **External:** none	+ **Generalization:** None

Normal flow:
    1. Include "Log in", and "Booking tours".
    2. Customers can access the review section directly on the tour or location they have booked. They can then leave a rating in the form of stars, write a comment, then click submit.
    3. The system will save their review and display it immediately in the tour review section.	

Exceptional flows: 1. At any time, if the User presses the "Cancel" button, the system will stop the process, and the Customer's record will be unchanged. 2. If during operation, the system has a problem, it will display a notification and ask the customer to try again later.	

1.1.11. Use Case Reward points

Figure 16. Use Case Reward points

Use Case: Reward points	ID: UC012
Main actor: Customer	Priority: Essential
Brief description: A user accesses the website and logs in to their account. After booking or reviewing the experience of the tour or the place, she/he can gain reward points.	
Trigger: Customer **Type**: External	
Relationship: + **Association:** Customer + **Include:** Log in, Booking tours, Review tours and places + **External:** none + **Generalization:** None	
Normal flow: 1. Include "Log in", "Booking tours", and "Review tours and places". 2. Customer makes a booking or reviewing. 3. The system determines the number of reward points based on the transaction value, the program's point accrual rules, and the customer's membership level. 4. The system adds reward points to the customer's account. 5. The system notifies the customer about the number of reward points that have been credited via email, and web notification.	

6. Customers can redeem reward points for gifts, discounts on future transactions, or membership upgrades.

7. Customers can track their reward points balance and redemption history in their account.

Exceptional flows:

1. At any time, if the User presses the "Cancel" button, the system will stop the process, and the Customer's record will be unchanged.

2. If during operation, the system has a problem, it will display a notification and ask the customer to try again later.
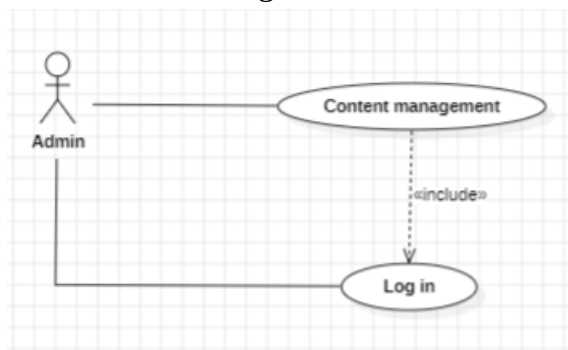
1.1.12. Use Case Content management

Figure 17. Use Case Content management

Use Case: Content management	**ID:** UC013
Main actor: Admin	**Priority:** Essential
Brief description: A user accesses the website and logs in to their account. The admin wants to manage the content.	
Trigger: Admin.	**Type**: External
Relationship: + **Association:** Admin – Content management + **Include:** Log in.	

+ **External:** none	+ **Generalization:** None

Normal flow:

    1. Include "Log in".

    2. The Admin selects the "Content" item in the administration menu.

    3. Admin can choose the desired operation such as adding, editing, deleting, and searching.

    4. The Admin performs the desired operation and then clicks save to the system.

    5. The system checks whether the input value of the admin is valid or not.

        5.1. If not correct, the system prompts the admin to re-enter and suggests the correct value.

        5.2. The Admin re-enters the information and the system checks the validity again.

        5.3. If correct, go to step 6. Otherwise, go to step 5.1.

    5. The updated content is stored in the database. The system notifies the Admin that content has been updated.

Exceptional flows:

1. At any time, if the Admin presses the "Cancel" button, the system will stop the process, and the Admin's record will be unchanged.

2. If during operation, the system has a problem, it will display a notification and the admin needs to contact the support department.
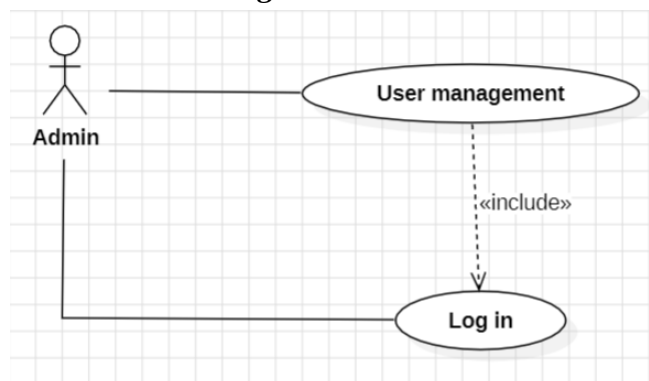
1.1.13. Use Case User management

Figure 18. Use Case User management

Use Case: User management	**ID:** UC014

Main actor: Admin	**Priority:** Essential
Brief description: A user accesses the website and logs in to their account. The admin wants to manage the user.	
Trigger: Admin.	**Type**: External
Relationship: + **Association:** Admin – User management + **Include:** Log in. + **External:** none	+ **Generalization:** None

Normal flow:

1. Include "Log in".

2. The Admin selects the "Người dùng" or the "Nhân viên" item in the administration menu.

3. The Admin can choose the desired operation such as adding, editing, searching, and disabling the "Nhân viên" item. For the "Người dùng" item, the Admin just can view the information of it.

4. The Admin performs the desired operation and then clicks save to the system.

5. The system checks whether the input value of the admin is valid or not.

   5.1. If not correct, the system prompts the admin to re-enter and suggests the correct value.

   5.2. The Admin re-enters the information and the system checks the validity again.

   5.3. If correct, go to step 6. Otherwise, go to step 5.1.

5. The updated information is stored in the database. The system notifies the Admin that information has been updated.

Exceptional flows:

1. At any time, if the Admin presses the "Cancel" button, the system will stop the process, and the Admin's record will be unchanged.

2. If during operation, the system has a problem, it will display a notification and the admin needs to contact the support department.
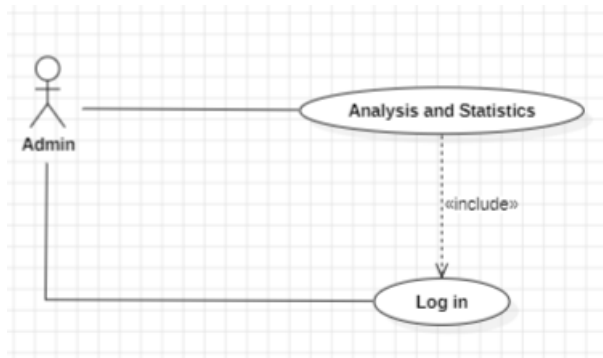
1.1.14. Use Case Analysis and Statistics

Figure 19. Use Case Analysis and Statistics

| Use Case: Analysis and Statistics	ID: UC015
Main actor: Admin	Priority: Essential
Brief description: A user accesses the website and logs in to their account. The admin wants to watch the analysis and statistics about the website.	
Trigger: Admin. Type: External	
Relationship: + **Association:** Admin – Analysis and Statistics + **Include:** Log in. + **External:** none + **Generalization:** None	

Normal flow:
    1. Include "Log in".
    2. The Admin selects the "Thống kê" item in the administration menu.
    3. The system displays statistical information about the website, including the Number of available tours, Number of tickets by type, Number of users, and Sales figures for the day, month, and year.	

Exceptional flows: 1. If during operation, the system cannot collect statistical data: The Admin needs to check the system again or contact the support department. 2. Statistical data is inaccurate: The Admin needs to check the data collection method again or contact the support department.	

1.2. Functional decomposition diagram
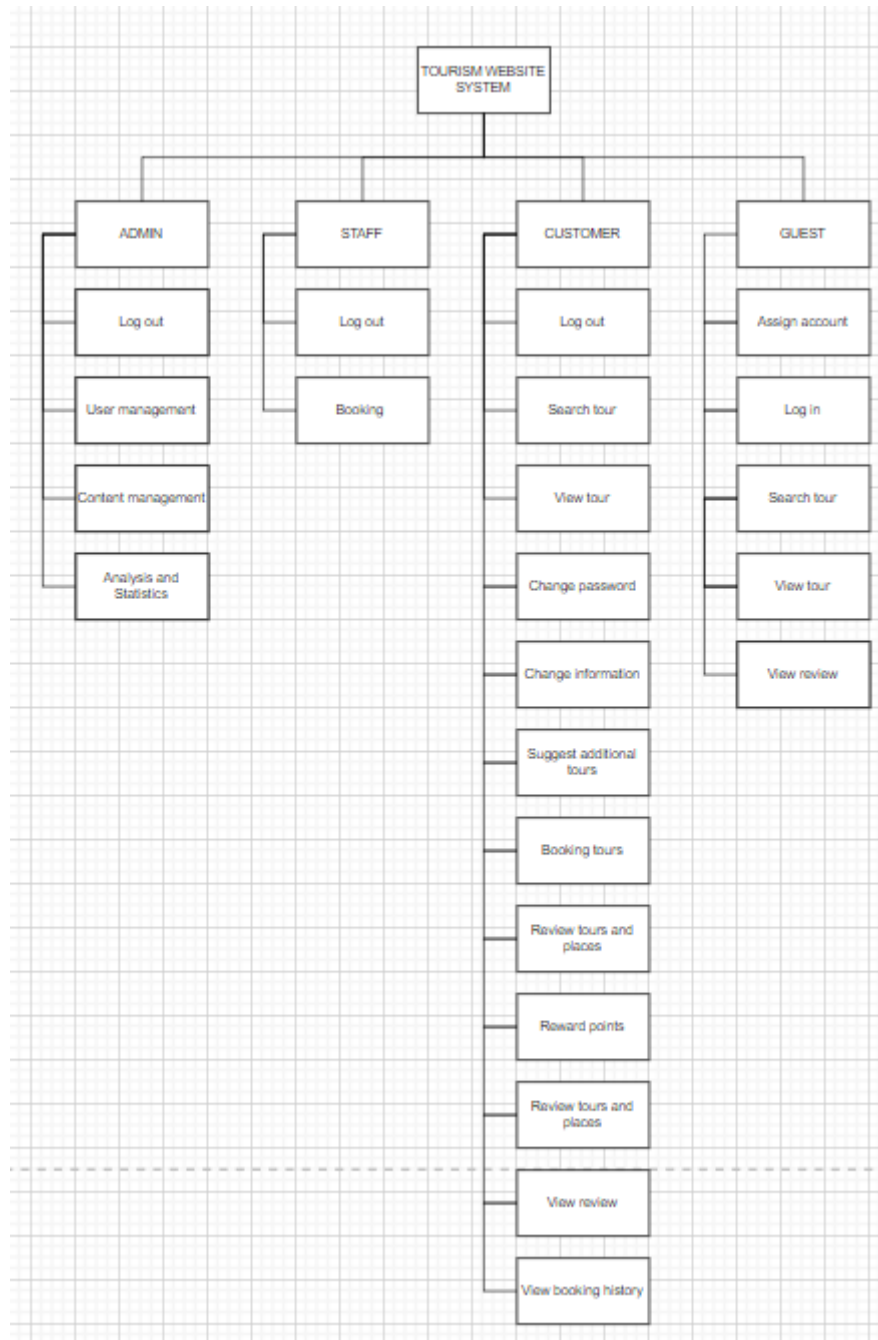
Figure 20. Functional decomposition diagram

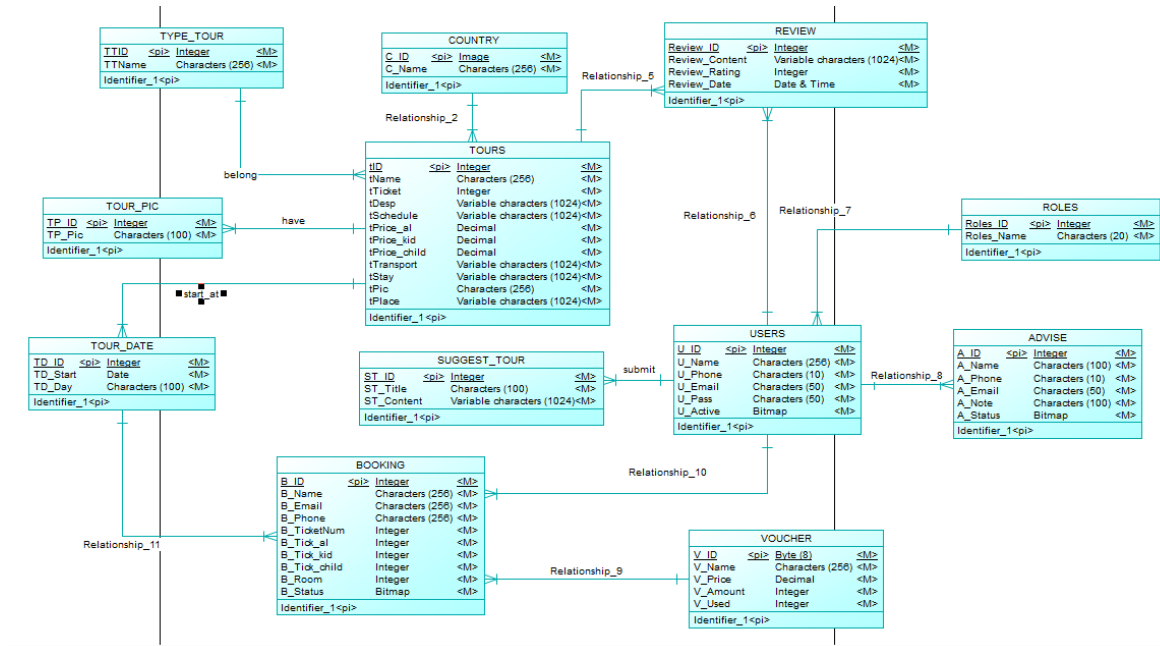## 1.3. Data design

1.3.1. Conceptual database model (CDM)

Figure 21. CDM
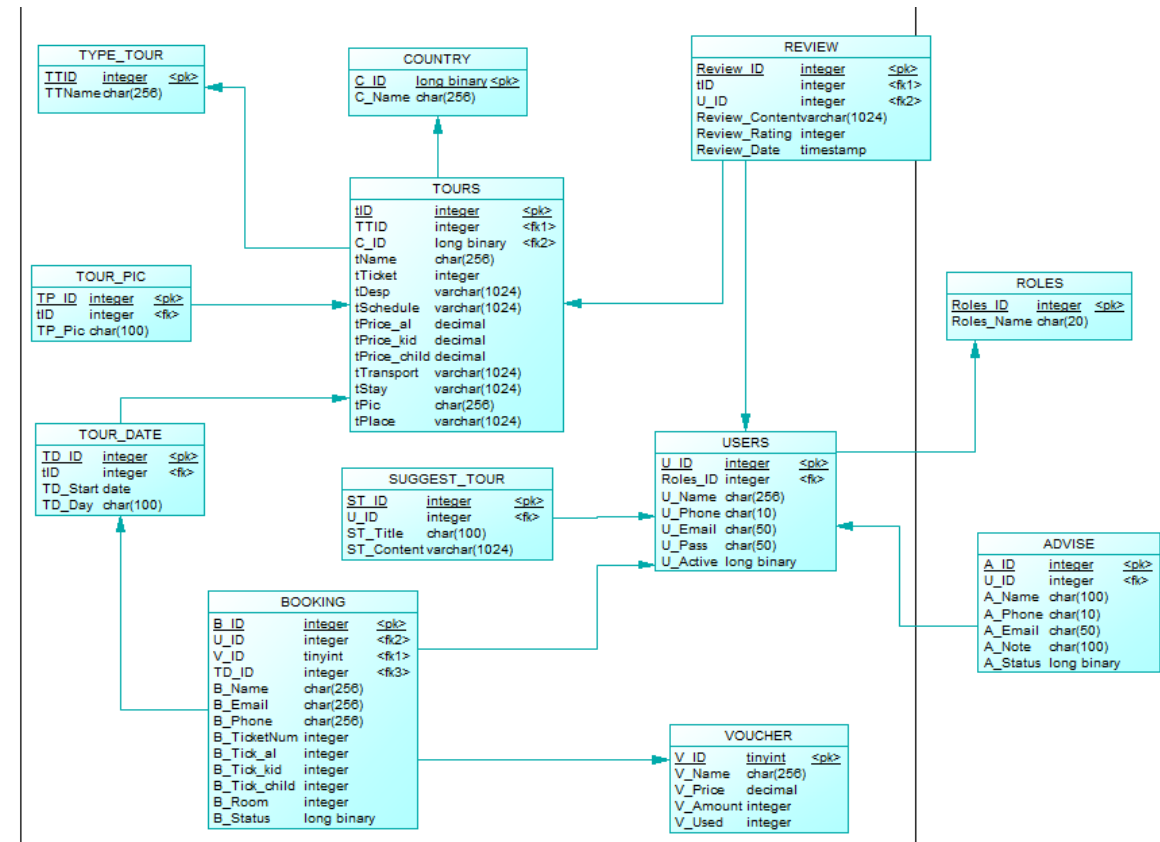
1.3.2. Physical database model (PDM)

Figure 22. PDM

CHAPTER 4: TEST EVALUATION

III. CONCLUSION

End matter

REFERENCES

APPENDICES