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# **Software Requirements Specification**

**for**

## **FLS – FPT Learning System**

**Version 1.0.0**

**Prepared by**

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**Date: 26/08/2020**

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## Revisions

Version	Primary Author(s)	Description of Version	Date Completed
1.0.0	Tran Quang Huy	FPT Learning System	26/08/20

# 1 Introduction

## 1.1 Document Purpose

This project showcases the web-based system, which manages the activity of “Training” for the internal training program of FPT Co.

The project aims to build a system that can manage trainee accounts, manage trainers, manage course categories, manage courses, manage topics, assign the topic to course, assign a trainer to a topic, assign trainee to the course used by the HR department.

There are 4 main roles: **administrator**, **training staff**, **trainer**, and **trainee** with different functions.

## 1.2 Product Scope

FPT Learning System is a system to manage staff, trainer, trainee, and manage courses.

The system targets a website that can work well on the Desktop and will develop on mobile in the future.

## 1.3 Intended Audience and Document Overview

This report is working on the Application Development subject. Reports will be presented to the teacher in charge of the subject, Mr. Hoang Nhu Vinh and classmates.

The main focus of the report is the deployment functionality, the use case model

## 1.4 Definitions, Acronyms, and Abbreviations

No.	Abbreviations/Terms	Explanation
1	SRS	Software Requirement Specification
2	MVC	Model-View-Controller
3	ERD	Entity Relationship Diagram
4	DFD	Data Flow Diagram
5	CRUD	Create-Read-Update-Delete
6	UC	Use Case
7	FLS	FPT Learning System

Table 1. Definition, Acronyms and Abbreviations table

## References and Acknowledgments

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## 2 Overall Description

### 2.1 Product Overview

System workflow:

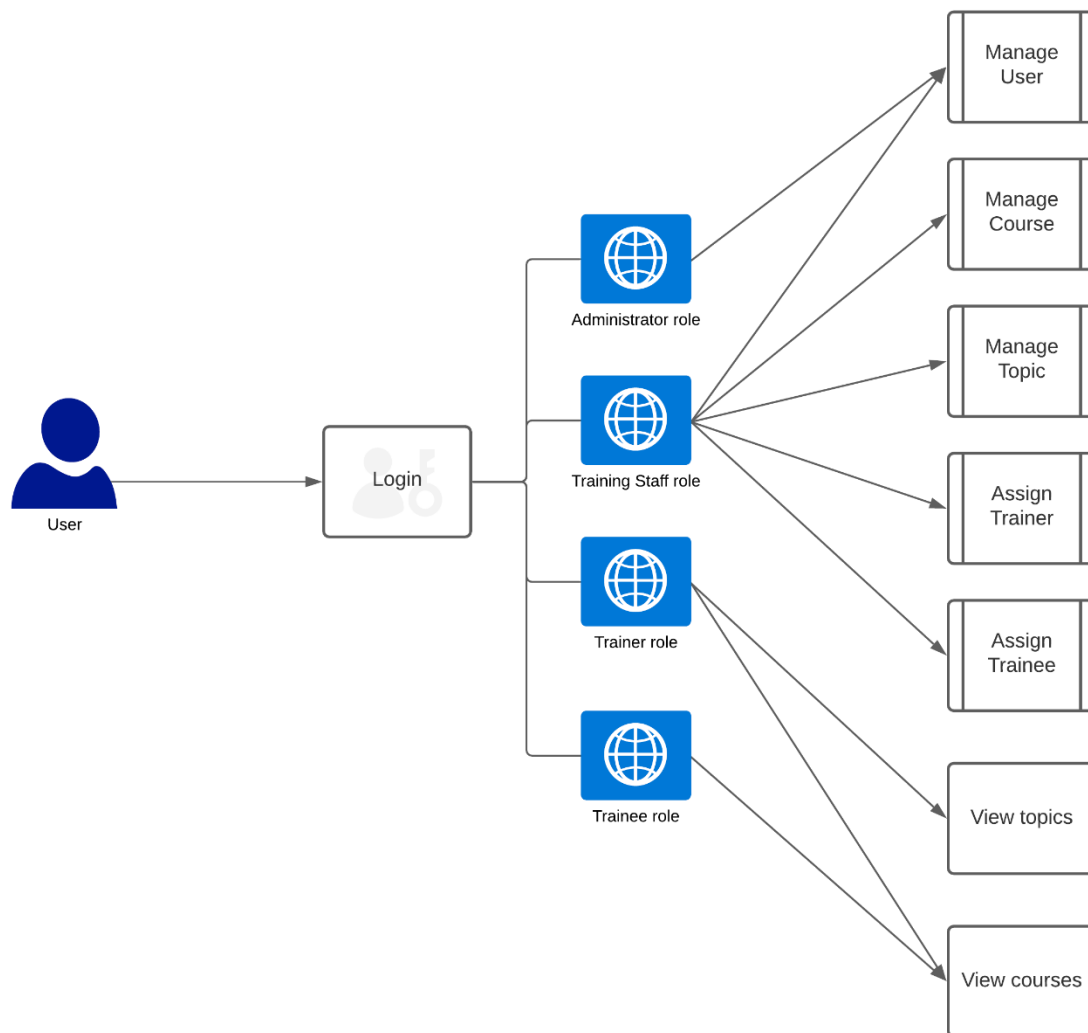
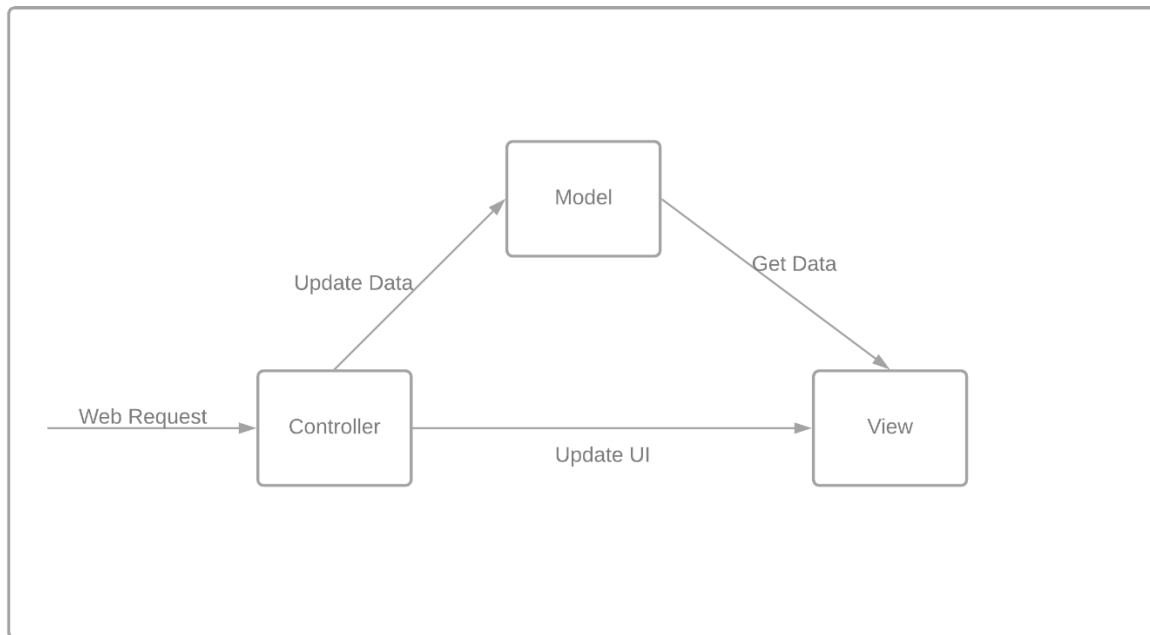


Figure 1. System workflow

**System MVC model:**



**Figure 2. System MVC model**

## **Product Functionality**

- As an administrator's role:
  - An administrator can log in to FLS
  - An administrator can manage trainer and training staff such as creating, editing, and deleting.
  - An administrator can assign or change username and password for user
- As a training staff's role:
  - Training staff can log in to FLS
  - Training staff can create trainee account by entering details such as trainee name, trainee accounts, age, date of birth.
  - Training staff can view the list of trainees
  - Training staff can look for trainee by trainee account, email.
  - Training staff can manage trainee account such as updating, deleting.
  - Training staff can manage categories such as searching, adding, updating, and deleting.
  - Training staff can manage courses such as searching, adding, updating, and deleting.
  - Training staff can manage topics such as searching, adding, updating, and deleting.
  - Training staff can manage trainer information such as adding, updating, and deleting information.
  - Training staff can assign a trainer to the topic.
  - Training staff can assign trainee to course
- As a trainer's role:
  - A trainer can log in to FLS
  - A trainer can manage his profile by updating the Trainer's name, email, password.
  - A trainer can view courses that trainer has been assigned to a topic.
  - A trainer can view the topic that the trainer has been assigned to the topic.
- As a trainee's role:
  - A trainee can log in to FLS
  - A trainee can view courses that trainee has been assigned to course.

## 2.2 Design and Implementation Constraints

### 2.2.1 Hardware constraints

- **For running ASP.NET core on Windows 10 Pro:**
  - Processor: x86 or x64
  - RAM: 512Mb
  - Disk Space: 4.5Gb
- **For development Environment**
  - Microsoft Visual Studio 2015 Update 3 (minimum), 2017 version latest (15.6.4), 2019.
  - .NET Core: Minimum .NET core 3.0 upto .NET 3.0.
  - Command Line (Optional. Necessary for command-line deployment)
  - SQL Server 2008 Express (optional)

### 2.2.2 Software constraints

- **Windows OS:** The following Windows versions are supported with .NET Core 3.1

(A + symbol represents the minimum version)

OS	Version	Architectures
Windows Client	8.1	x64, x86
Windows 10 Client	Version 1609+	x64, x86
Windows Server	2012 R2+	x64, x86
Nano Server	Version 1803+	x64, ARM32

Table 2. Windows version support .NET Core 3.1

- **Visual Studio:** the following table describes the minimum required version of Visual Studio based on the target .NET Core SDK version.

.NET Core SDK version	Visual Studio version
3.1	Visual Studio 2019 version 16.4 or higher.

Table 3. Visual Studio version

- **Google Chrome browser:** Version 84.0.4147.125 (Official Build) (64-bit)
- **Balsamiq Mockups:** Version 3.5.17
- **Bootstrap Studio:** Version 5.2.1



### 2.2.3 Database constraints

- **NOT NULL:** Ensures that a column cannot have a NULL value
- **UNIQUE:** Ensures that all values in a column are different
- **PRIMARY KEY:** A combination of a NOT NULL and UNIQUE. Uniquely identifies each row in a table
- **FOREIGN KEY:** Uniquely identifies a row/record in another table
- **CHECK:** Ensures that all values in a column satisfies a specific condition
- **DEFAULT:** Sets a default value for a column when no value is specified
- **INDEX:** Used to create and retrieve data from the database very quickly

### 2.2.4 Design constraints

- **Lack of nesting:** The constraint here is therefore that HTML be able to be mapped into a sequence of paragraphs of styled text, and that if that text is edited that the editor should be able to map the sequence of styles back onto a sequence of elements in a well-defined way. This allows some limited trivial nesting (eg LI within UL) but no general nesting, as a finite and small set of styles is used. In particular, the styles are not parameterized by the nesting level.
- **Logical Markup:** It is required that HTML be a common language between all platforms. This implies no device-specific markup, or anything which requires control over fonts or colors, for example. This is in keeping with the SGML ideal. (w3, n.d.)

### 2.2.5 Programming constraints

Constraints inform the compiler about the capabilities a type of argument must-have. Without any constraints, the type of argument could be any type. The compiler can only assume the members of the System.Object, which is the ultimate base class for any.

The following table lists the types of constraints:

Constraint	Description
<b>where T : struct</b>	The type argument must be a non-nullable value type. For information about nullable value types, see Nullable value types. Because all value types have an accessible parameterless constructor, the struct constraint implies the new() constraint and can't be combined with the new() constraint. You can't combine the struct constraint with the unmanaged constraint.
<b>where T : class</b>	The type argument must be a reference type. This constraint applies also to any class, interface, delegate, or array type. In a nullable context in C# 8.0 or later, T must be a non-nullable reference type.
<b>where T : class?</b>	The type argument must be a reference type, either nullable or non-nullable. This constraint applies also to any class, interface, delegate, or array type.
<b>where T : notnull</b>	The type argument must be a non-nullable type. The argument can be a non-nullable reference type in C# 8.0 or later, or a non-nullable value type.
<b>where T : unmanaged</b>	The type argument must be a non-nullable unmanaged type. The unmanaged constraint implies the struct constraint and can't be combined with either the struct or new() constraints.
<b>where T : new()</b>	The type argument must have a public parameterless constructor. When used together with other constraints, the new() constraint must be specified last. The new() constraint can't be combined with the struct and unmanaged constraints.
<b>where T : &lt;base class name&gt;</b>	The type argument must be or derive from the specified base class. In a nullable context in C# 8.0 and later, T must be a non-nullable reference type derived from the specified base class.
<b>where T : &lt;base class name&gt;?</b>	The type argument must be or derive from the specified base class. In a nullable context in C# 8.0 and later, T may be either a nullable or non-nullable type derived from the specified base class.
<b>where T : U</b>	The type argument supplied for T must be or derive from the argument supplied for U. In a nullable context, if U is a non-nullable reference type, T must be non-nullable reference type. If U is a nullable reference type, T may be either nullable or non-nullable.

Table 4. Programming constraints. (microsoft, n.d.)

**2.2.6 Business constraints**

- Usernames and Emails are unique instances.
- Category names are unique instances.
- Course names are unique instances.
- Administrators can only manage users such as training staff, trainers and trainees.
- The trainer can only view their courses and topics when assigned to the topics
- Training staff can only manage users such as trainers and trainees.

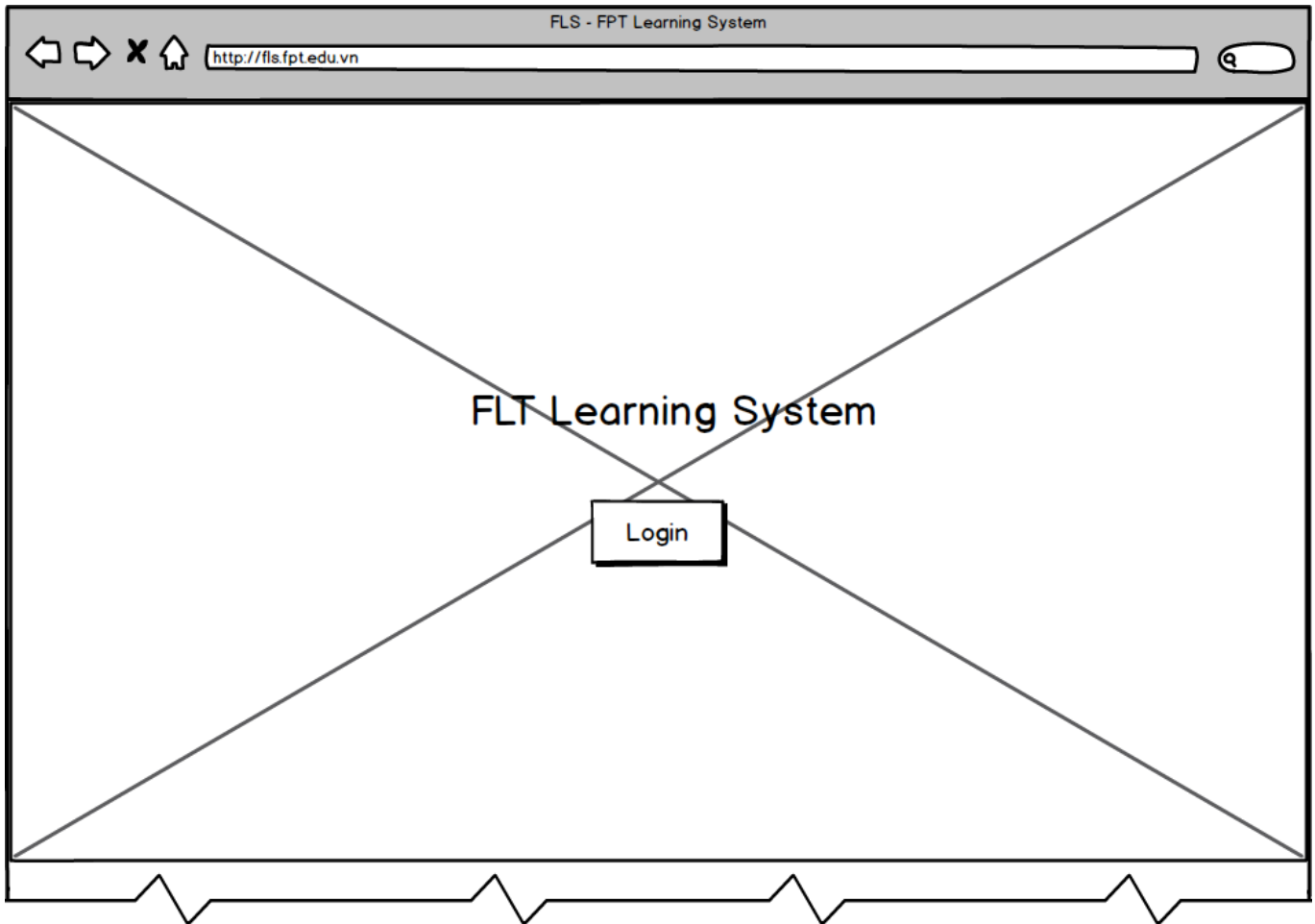
**2.2.7 Security constraints**

- **Web resource collection:** A list of URL patterns and HTTP that describe a set of resources to be protected. Web resource collections are discussed in Specifying a Web Resource Collection
- **Authorization constraint:** Specifies whether authentication is to be used and names the roles authorized to perform the constrained requests. For more information about authorization constraints.
- **User data constraint:** Specifies how data is protected when transported between a client and a server.

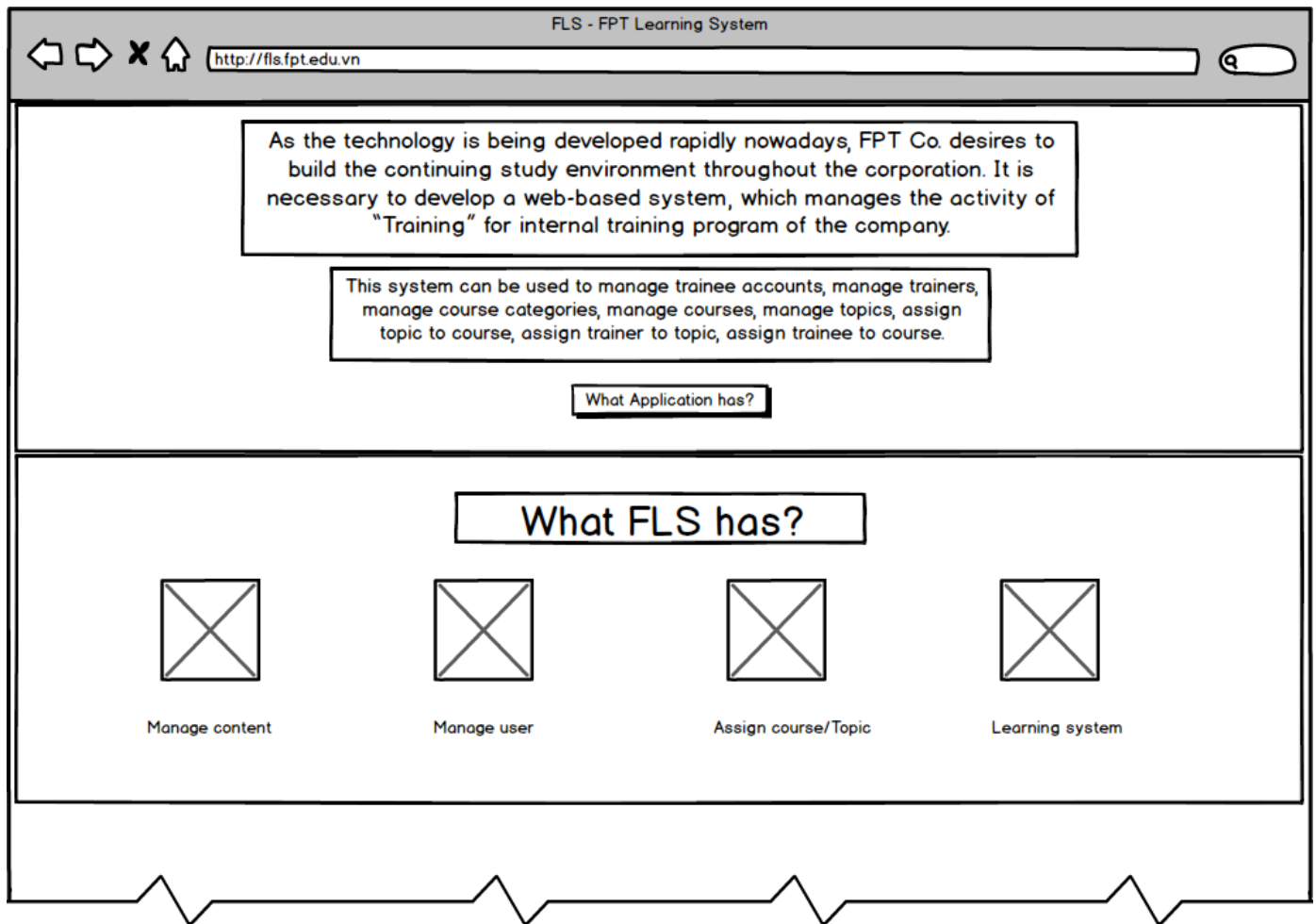
## 3 Specific Requirements

### 3.1 User interfaces

- Index – Unauthenticated

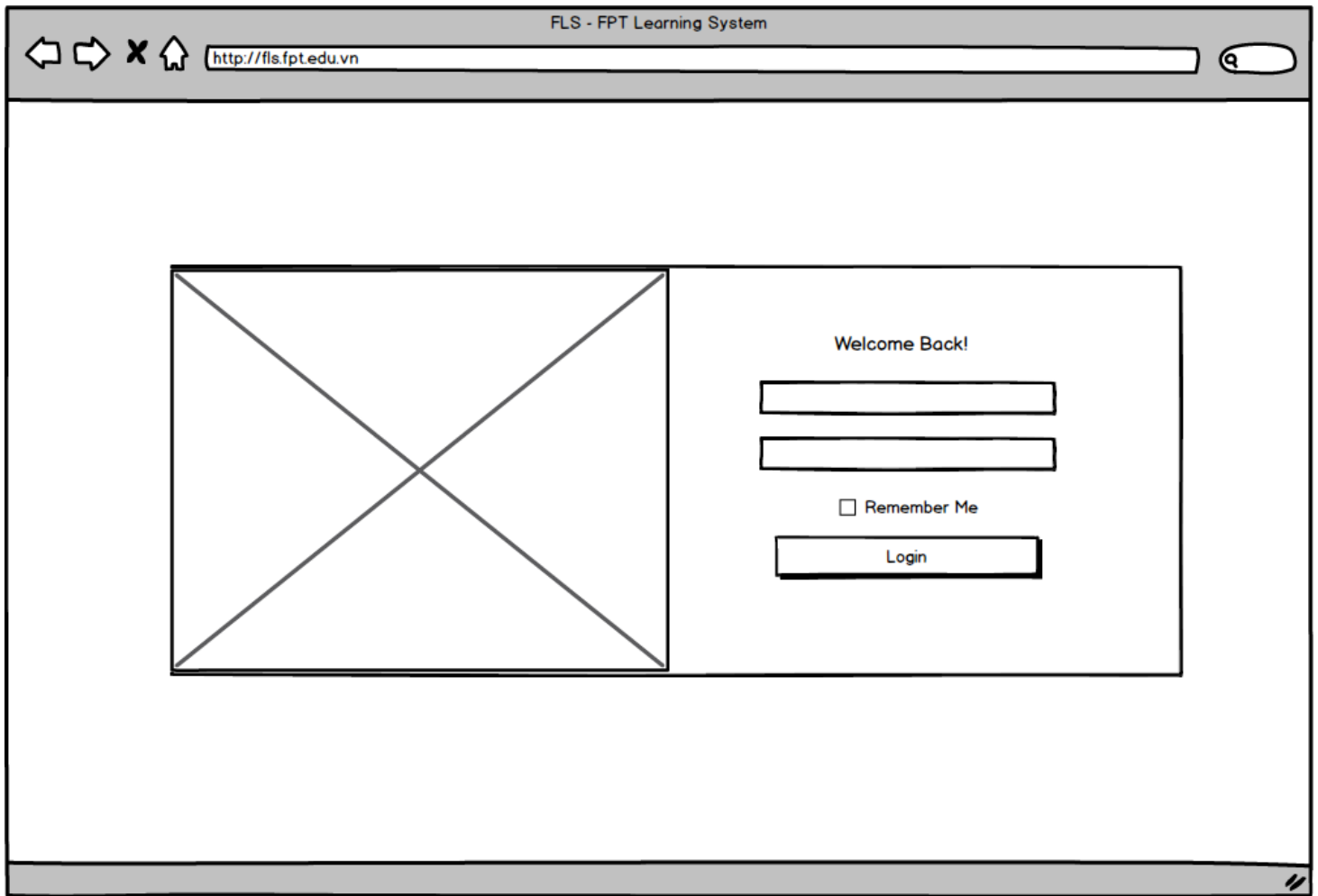


Picture 1. Index page for UnAuthenticated



Picture 2. Index page for UnAuthenticated

- Login



The image shows a web browser window titled "FLS - FPT Learning System". The address bar displays "http://fls.fpt.edu.vn". The main content area is divided into two sections. On the left is a large rectangular box with a diagonal cross, likely a placeholder for a logo or image. On the right is a login form with the text "Welcome Back!" at the top. Below this text are two input fields for username and password. Under the password field is a checkbox labeled "Remember Me". At the bottom of the form is a "Login" button.

FLS - FPT Learning System

http://fls.fpt.edu.vn

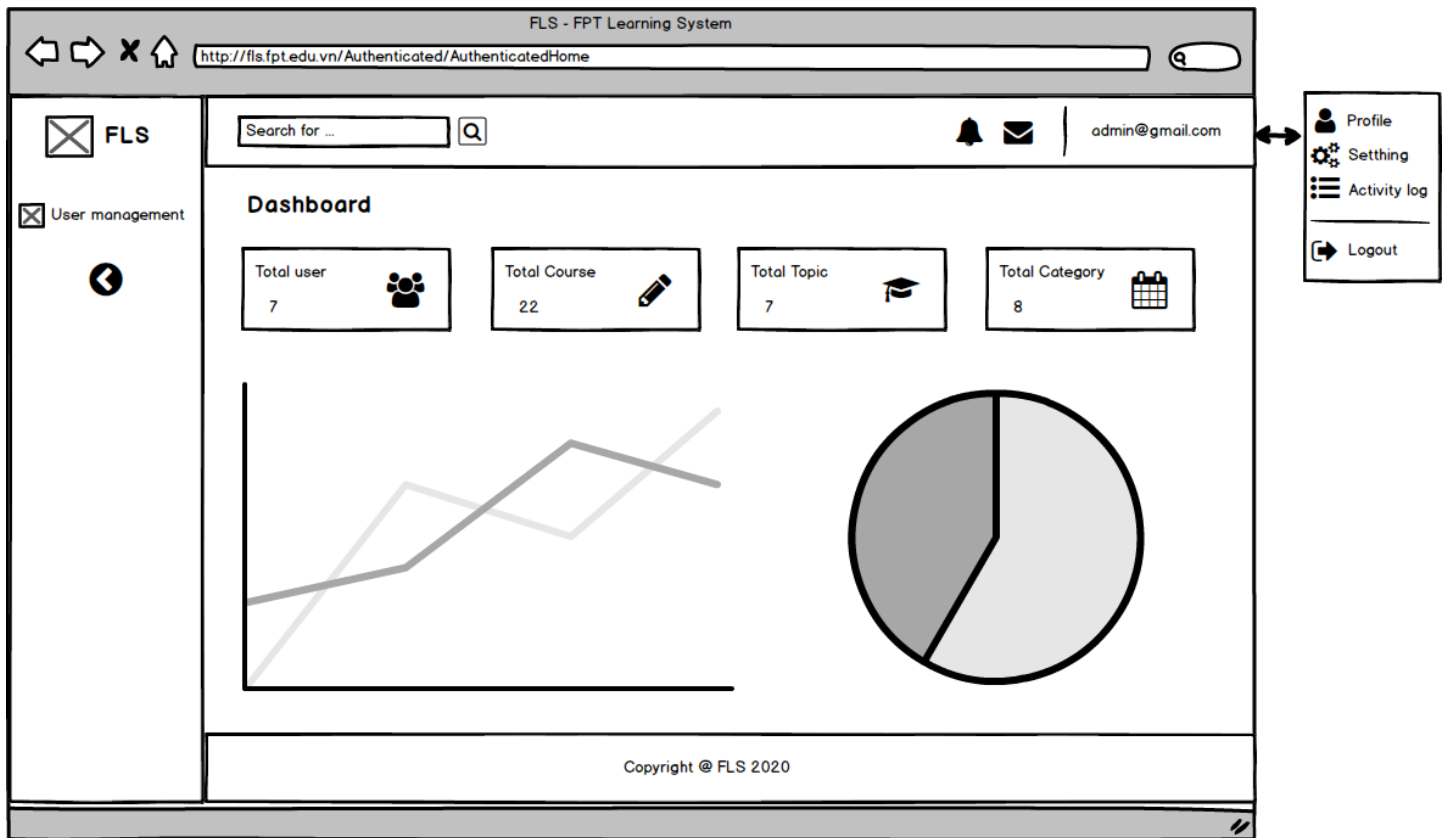
Welcome Back!

☐ Remember Me

Login

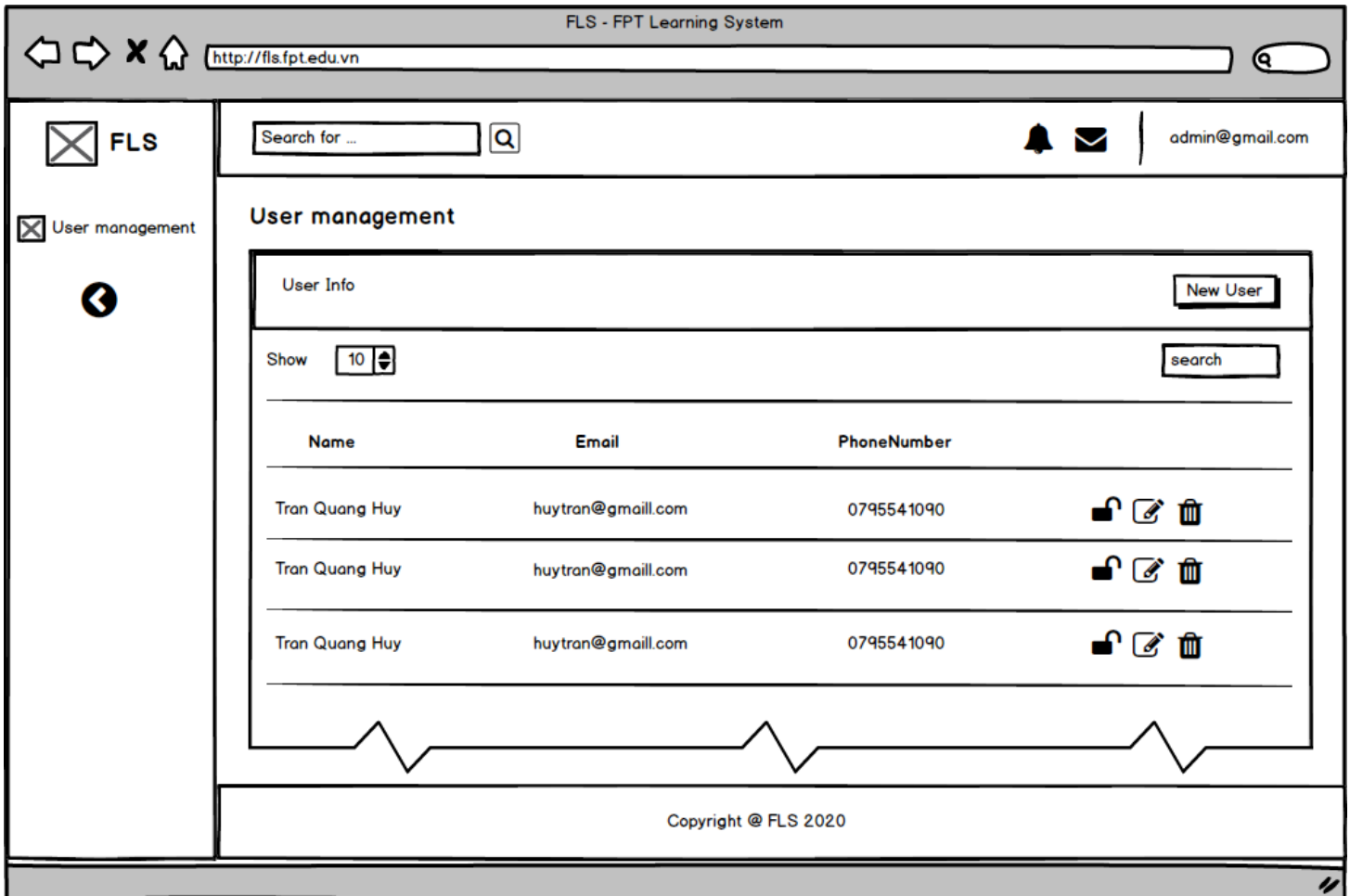
Picture 3. Login page

- Admin – Dashboard



Picture 4. Admin - Dashboard

- Admin – User management – Index



Picture 5. Admin - User management index page



- Admin – User management – Create

The screenshot shows a web browser window with the title "FLS - FPT Learning System". The address bar displays "http://fls.fpt.edu.vn". The browser interface includes navigation buttons (back, forward, stop, home) and a search bar. The page layout consists of a left sidebar and a main content area. The sidebar contains a logo with an 'X' and the text "FLS", a link for "User management" with a checkbox, and a circular arrow icon. The main content area has a search bar at the top with the placeholder "Search for ..." and a magnifying glass icon. To the right of the search bar are notification icons (bell and envelope) and the email address "admin@gmail.com". Below the search bar is the heading "User management". Under this heading is a section titled "Create a New Account" which contains a form with the following fields: "Name", "Email", "PhoneNumber", "Password", and "Confirm password", each with a corresponding text input field. Below these fields is a "Role" section with two radio buttons: "Trainer" and "TrainingStaff". At the bottom of the form is a "Create Account" button. The footer of the page displays "Copyright @ FLS 2020".

FLS - FPT Learning System

http://fls.fpt.edu.vn

Search for ...

admin@gmail.com

User management

Create a New Account

Name

Email

PhoneNumber

Password

Confirm password

Role

☐ Trainer ☐ TrainingStaff

Create Account

Copyright @ FLS 2020

Picture 6. Admin - User management create page

- Admin – User management – Edit

The screenshot shows a web browser window with the title "FLS - FPT Learning System". The address bar displays "http://fls.fpt.edu.vn". The page layout includes a sidebar on the left with a logo and a "User management" link. The main content area is titled "User management" and contains an "Edit User" form. The form has five input fields: "Name", "Email", "PhoneNumber", "Password", and "Confirm password". Below the fields are two buttons: "Update" and "Back To List". The footer of the page states "Copyright @ FLS 2020".

FLS - FPT Learning System

http://fls.fpt.edu.vn

FLS

Search for ...

admin@gmail.com

User management

Edit User

Name

Email

PhoneNumber

Password

Confirm password

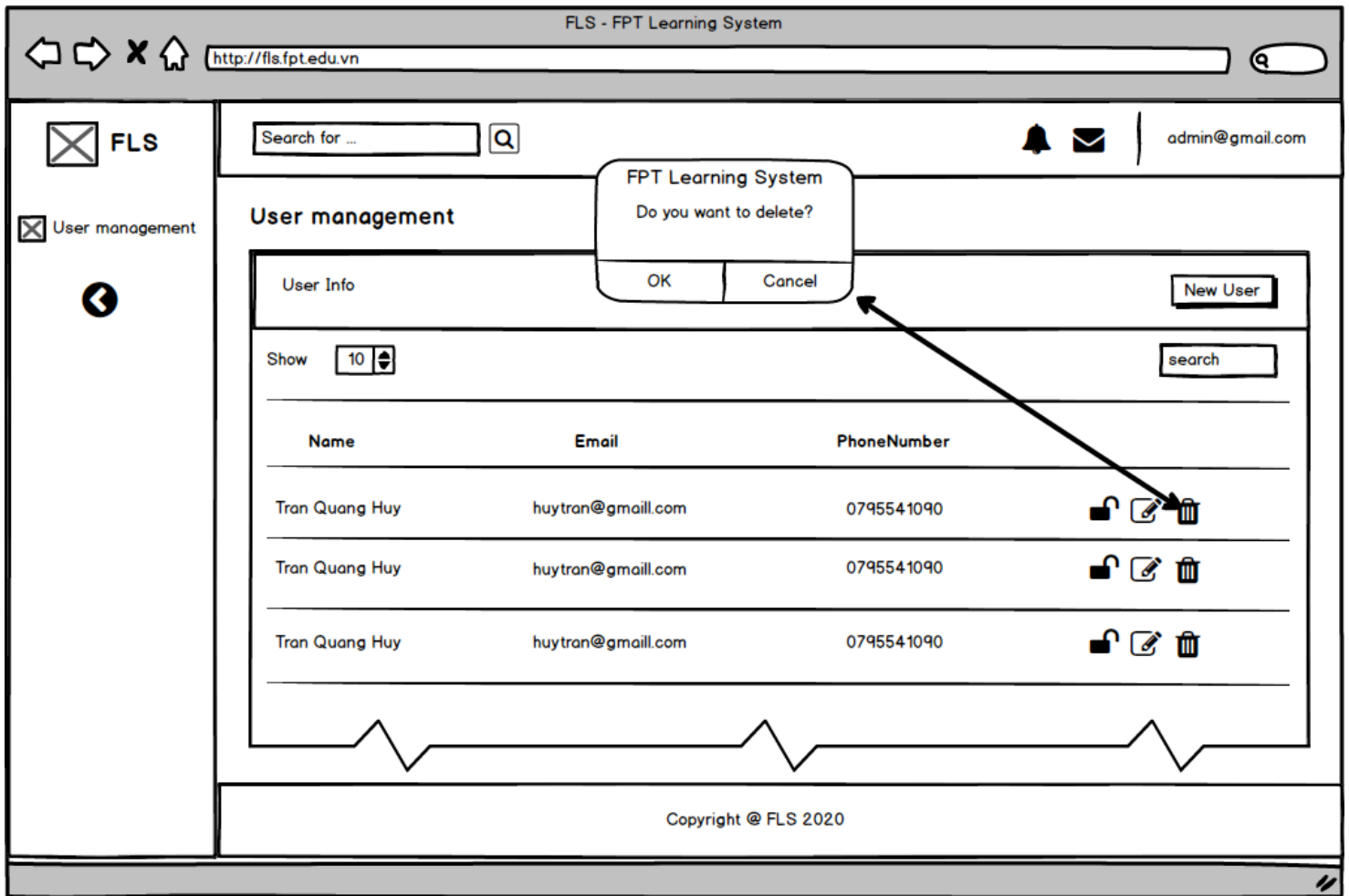
Update

Back To List

Copyright @ FLS 2020

Picture 7. Admin - User management edit page

- Admin – User management – Delete



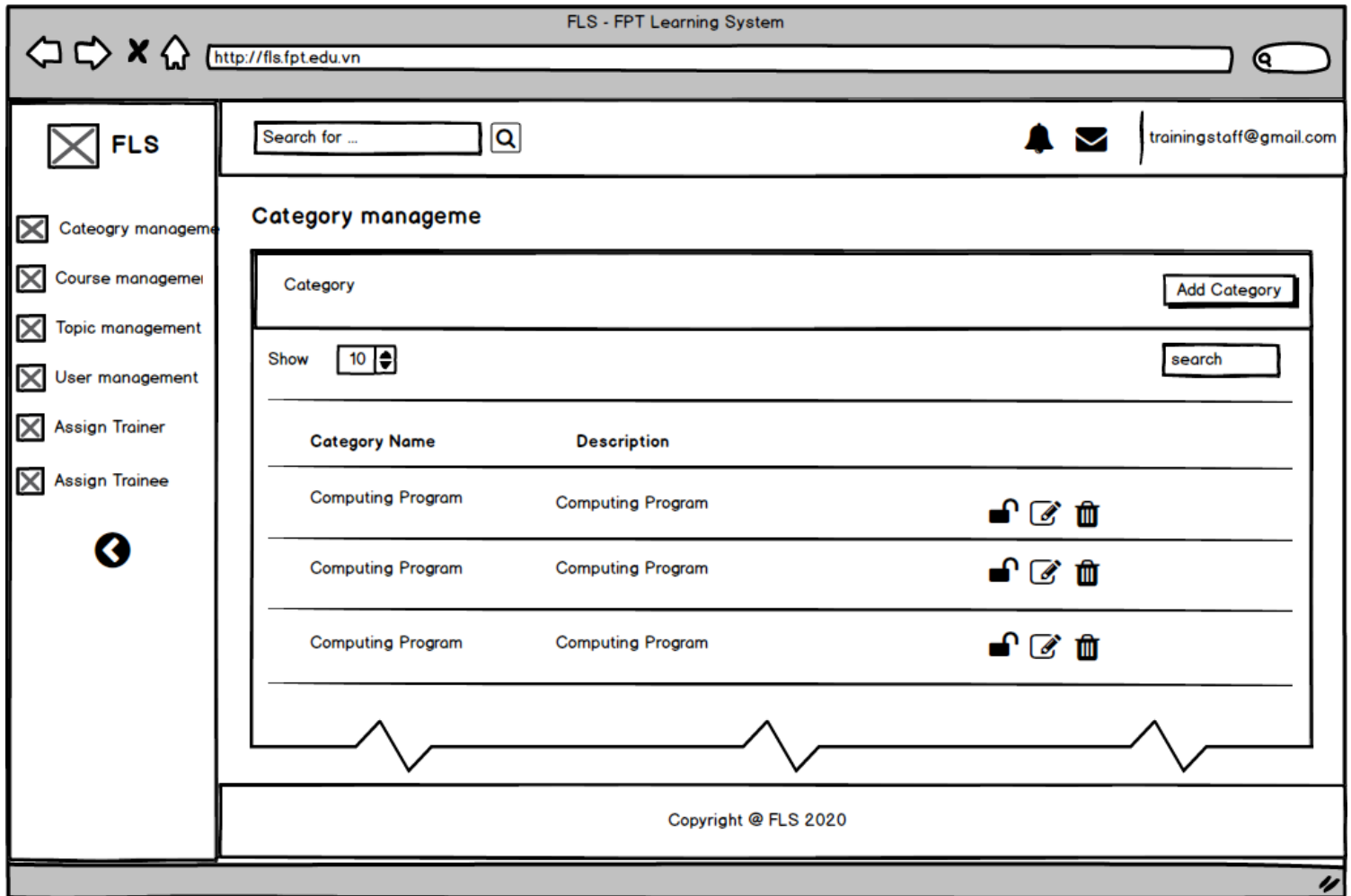
Picture 8. Admin - User management delete page

- TrainingStaff – Dashboard



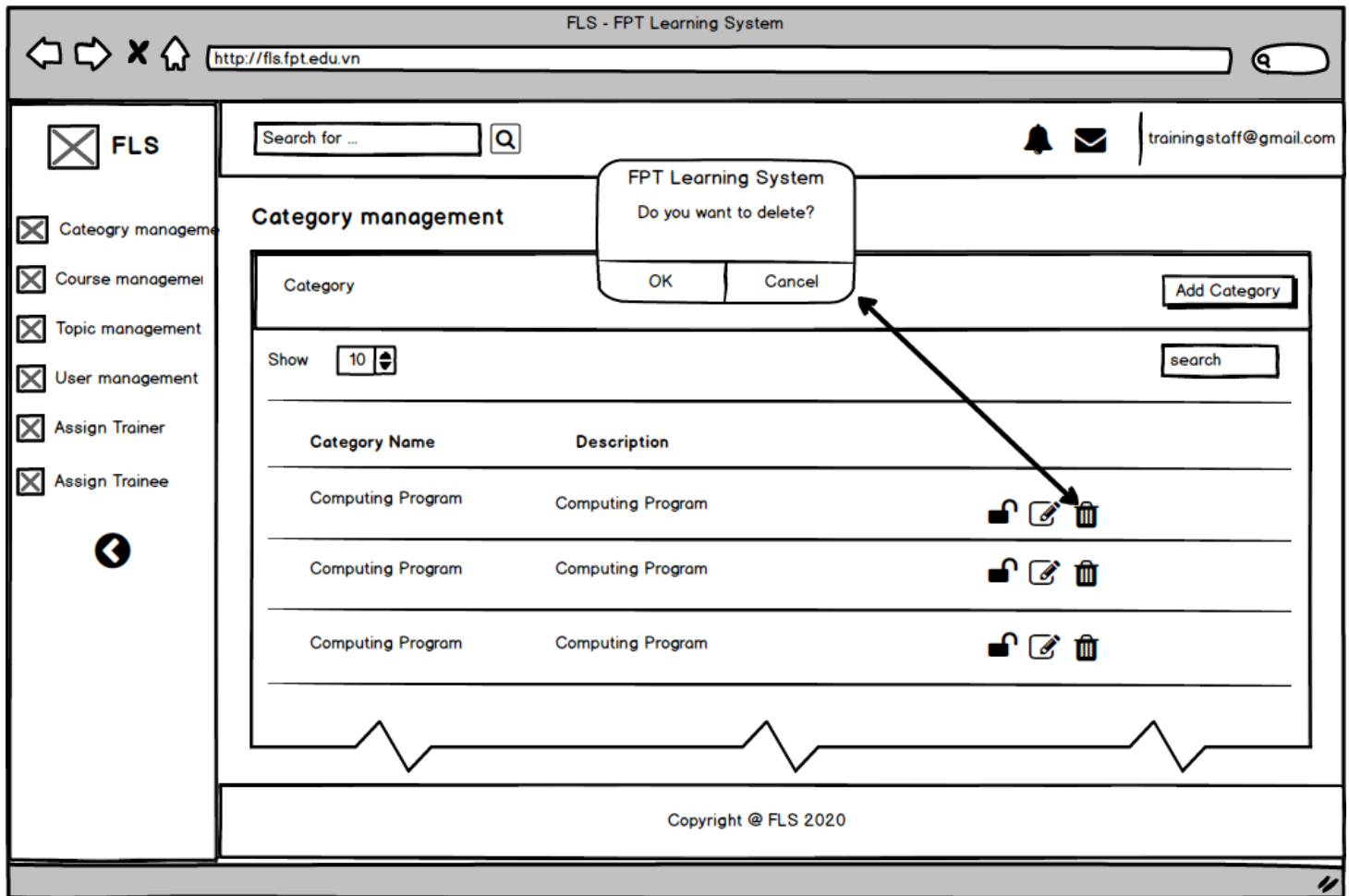
Picture 9. Training Staff dashboard

- TrainingStaff – Category management – Index



Picture 10. Training Staff - Category management index page

- TrainingStaff – Category management – Delete



Picture 11. Training Staff - Category management delete page

- TrainingStaff – Category management – Create

The screenshot displays the FLS - FPT Learning System web interface. The browser address bar shows `http://fls.fpt.edu.vn`. The page title is "FLS - FPT Learning System". The sidebar on the left contains the following navigation links:

- FLS
- Category management
- Course management
- Topic management
- User management
- Assign Trainer
- Assign Trainee

The main content area is titled "Category management" and contains a "Create Category" form. The form has two input fields: "Category Name" and "Description". Below the input fields are two buttons: "Add" and "Back To List".

The footer of the page displays "Copyright @ FLS 2020".

Picture 12. Training Staff - Category management create page

- TrainingStaff – Category management – Edit

FLS - FPT Learning System

http://fls.fpt.edu.vn

Search for ...

trainingstaff@gmail.com

### Category management

Update Category

Category Name: Computing Program

Description: Computing Program

Update Back To List

Copyright © FLS 2020

Picture 13. Training Staff - Category management edit page



- TrainingStaff – Category management – Details

The screenshot displays a web browser window titled "FLS - FPT Learning System". The address bar shows "http://fls.fpt.edu.vn". The page layout includes a left sidebar with a navigation menu under the "FLS" header, listing options like "Category management", "Course management", "Topic management", "User management", "Assign Trainer", and "Assign Trainee". The main content area is titled "Category management" and features a "Category Details" section. This section contains two input fields: "Category Name" and "Description", both with the value "Computing Program". Below these fields are two buttons: "Edit" and "Back To List". The top of the main content area has a search bar and a user profile for "trainingstaff@gmail.com". The footer of the page states "Copyright @ FLS 2020".

FLS - FPT Learning System

http://fls.fpt.edu.vn

FLS

Search for ...

trainingstaff@gmail.com

**Category management**

Category Details

Category Name: Computing Program

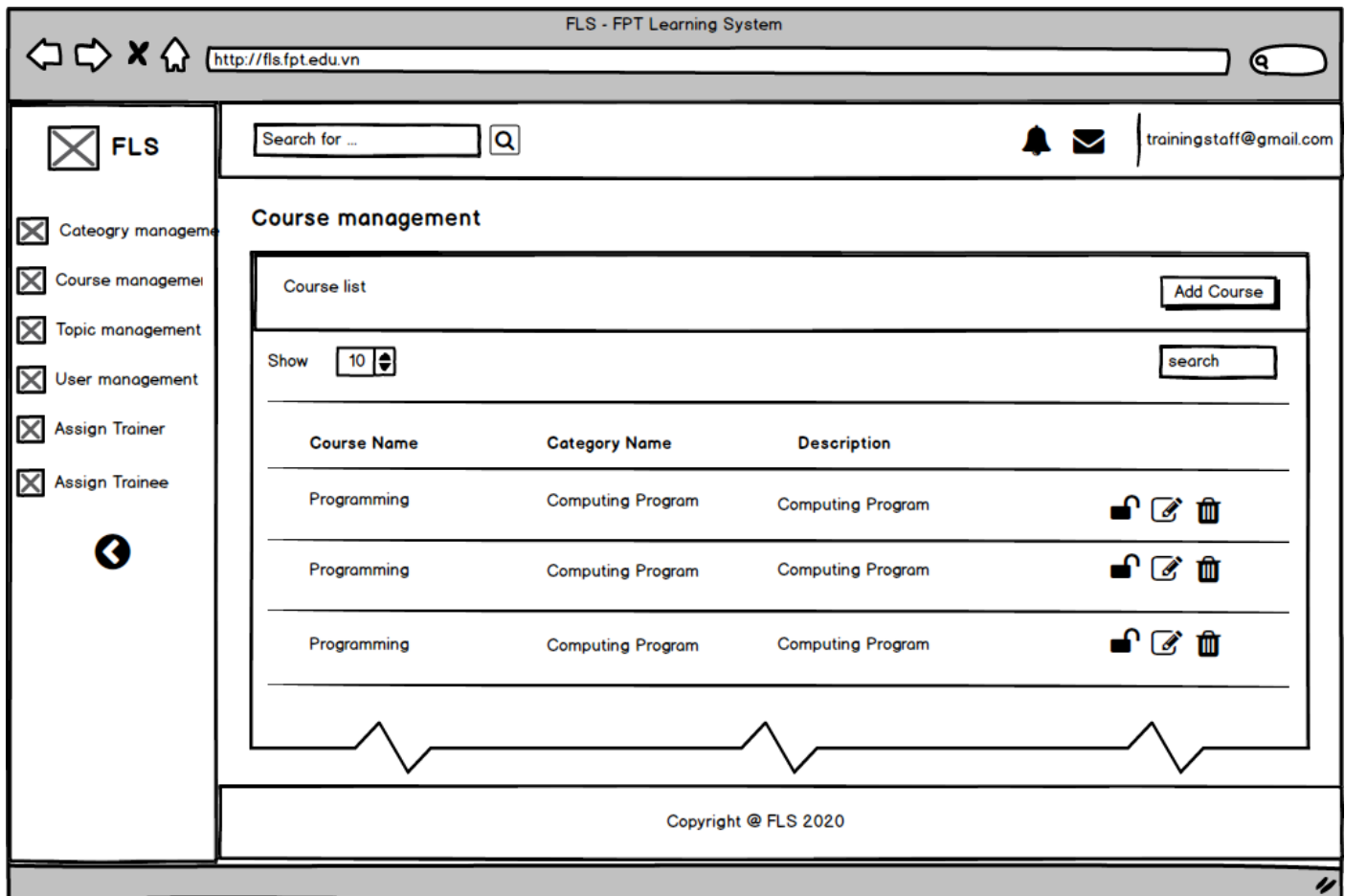
Description: Computing Program

Edit Back To List

Copyright @ FLS 2020

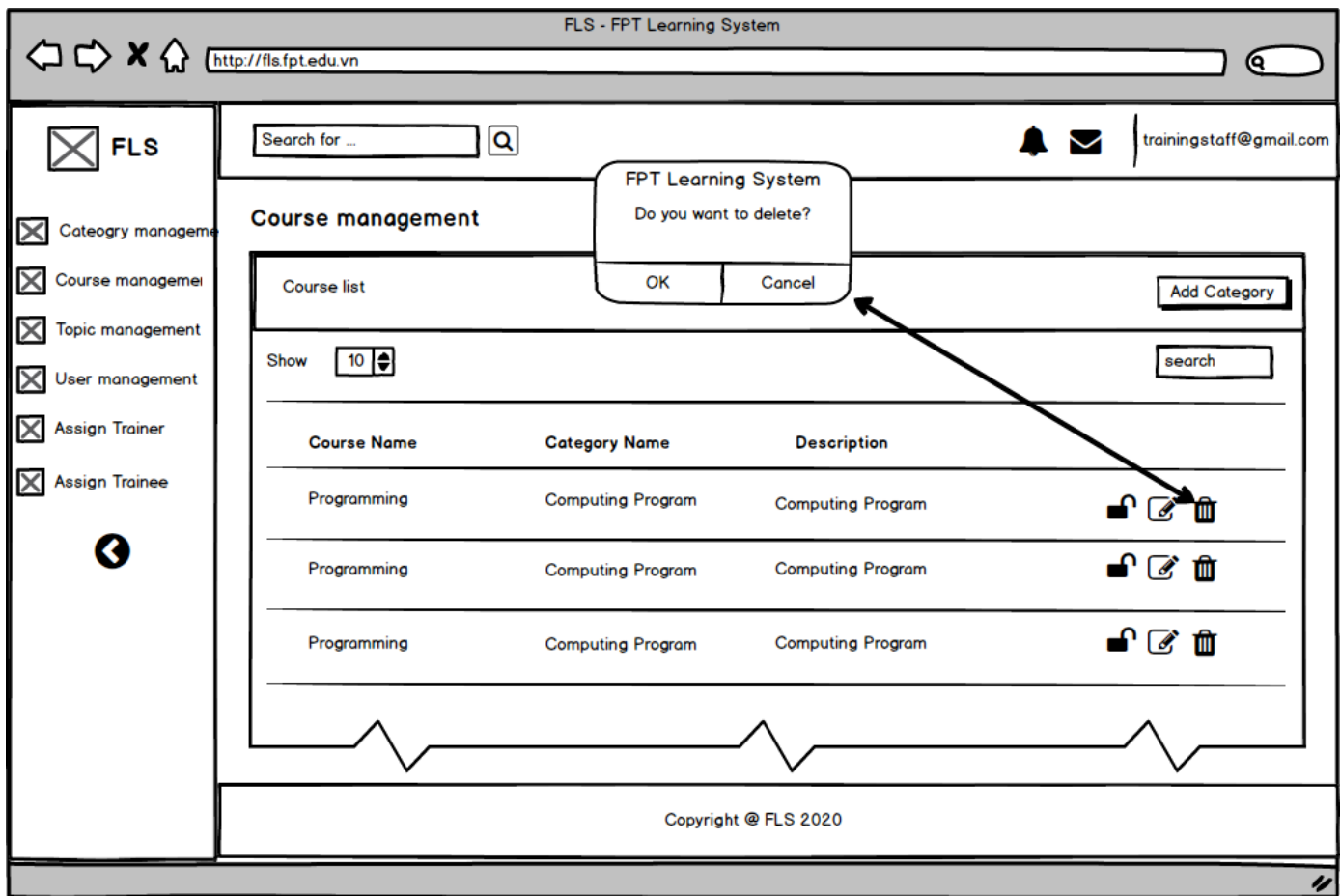
Picture 14. Training Staff - Category management details page

- TrainingStaff – Course management – Index



Picture 15. Training Staff - Course management index page

- TrainingStaff – Course management – Delete



Picture 16. Training Staff - Course management delete page

- TrainingStaff – Course management – Create

FLS - FPT Learning System

http://fls.fpt.edu.vn

Search for ...

admin@gmail.com

**Course management**

Create Course

Category: Select category

Course name:

Description:

Add Back To List

Existing Course:

- Programing
- Networking
- Security
- Advance Programming

Copyright @ FLS 2020

Picture 17. Training Staff - Course management create page

- TrainingStaff – Course management – Edit

The screenshot shows a web browser window titled "FLS - FPT Learning System" with the URL "http://fls.fpt.edu.vn". The browser's address bar and search bar are visible. The page has a sidebar on the left with a list of navigation items: "FLS", "Category management", "Course management", "Topic management", "User management", "Assign Trainer", and "Assign Trainee". The "Course management" item is selected. The main content area is titled "Category management" and contains a form for "Update Course". The form has three input fields: "Category" (a dropdown menu showing "Computing Program"), "Course name" (a text box containing "Programming"), and "Description" (a text box containing "Programming"). Below these fields are two buttons: "Update" and "Back To List". To the right of the form is a box labeled "Existing Course:" containing a list of course names: "Programing", "Networking", "Security", and "Advance Programming". The footer of the page displays "Copyright @ FLS 2020".

FLS - FPT Learning System

http://fls.fpt.edu.vn

Search for ...

trainingstaff@gmail.com

**Category management**

Update Course

Category: Computing Program

Course name: Programming

Description: Programming

Update Back To List

Existing Course:

- Programing
- Networking
- Security
- Advance Programming

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Picture 18. Training Staff - Course management edit page

- TrainingStaff – Course management – Details

The screenshot shows a web browser window titled "FLS - FPT Learning System". The address bar displays "http://fls.fpt.edu.vn". The page has a sidebar on the left with a navigation menu containing the following items, each with a checkbox icon: "FLS", "Category management", "Course management", "Topic management", "User management", "Assign Trainer", and "Assign Trainee". Below the menu is a circular arrow icon. The main content area is titled "Category management" and contains a "Course Details" section. This section includes three input fields: "Category" (a dropdown menu showing "Computing Program"), "Course name" (a text box containing "Programming"), and "Description" (a text box containing "Programming"). Below these fields are two buttons: "Edit" and "Back To List". At the top of the main content area, there is a search bar with the placeholder text "Search for ..." and a magnifying glass icon. To the right of the search bar are a bell icon, an envelope icon, and the email address "trainingstaff@gmail.com". The footer of the page displays "Copyright © FLS 2020".

FLS - FPT Learning System

http://fls.fpt.edu.vn

Search for ...

Category management

Course Details

Category: Computing Program

Course name: Programming

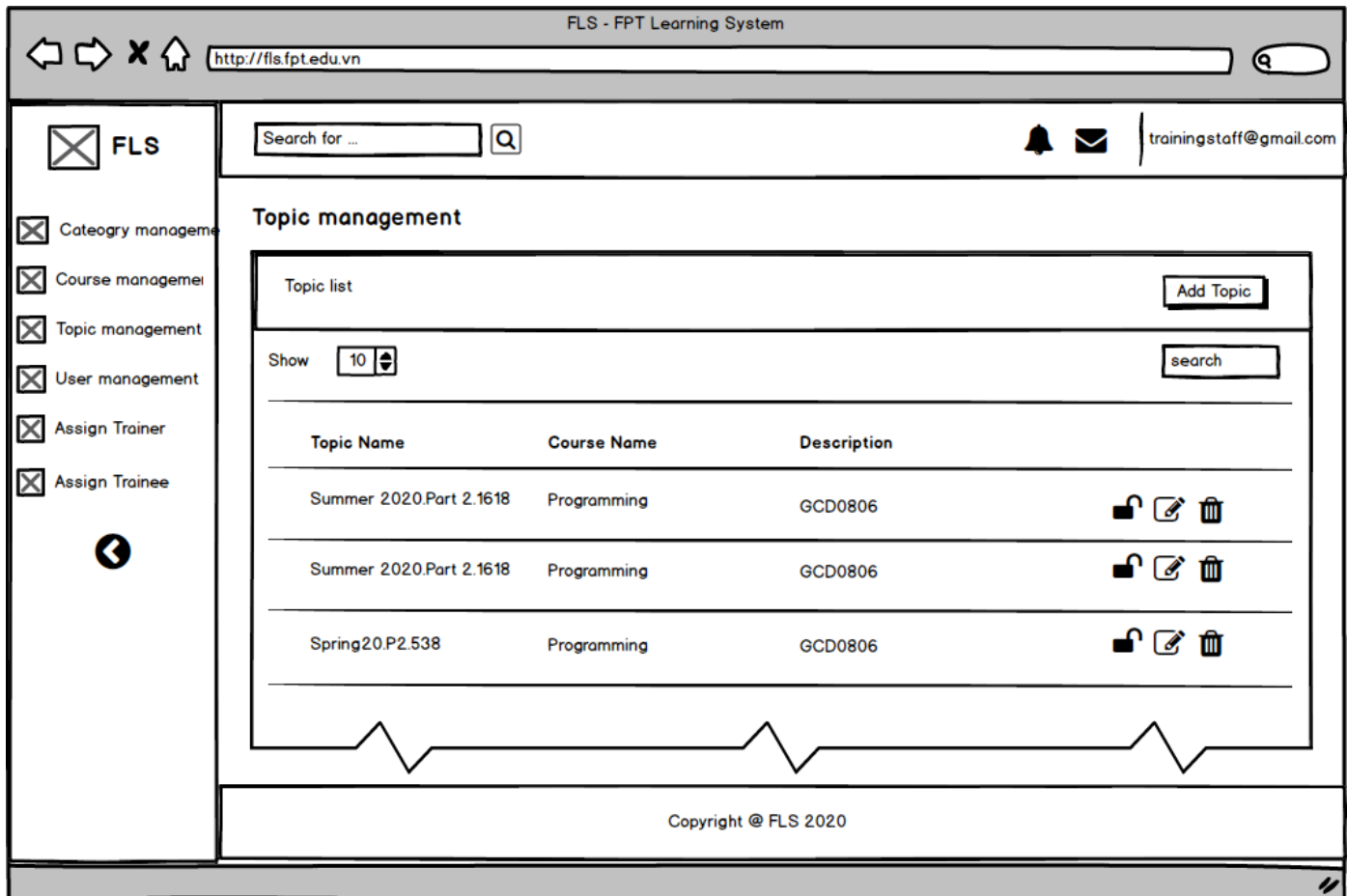
Description: Programming

Edit Back To List

Copyright © FLS 2020

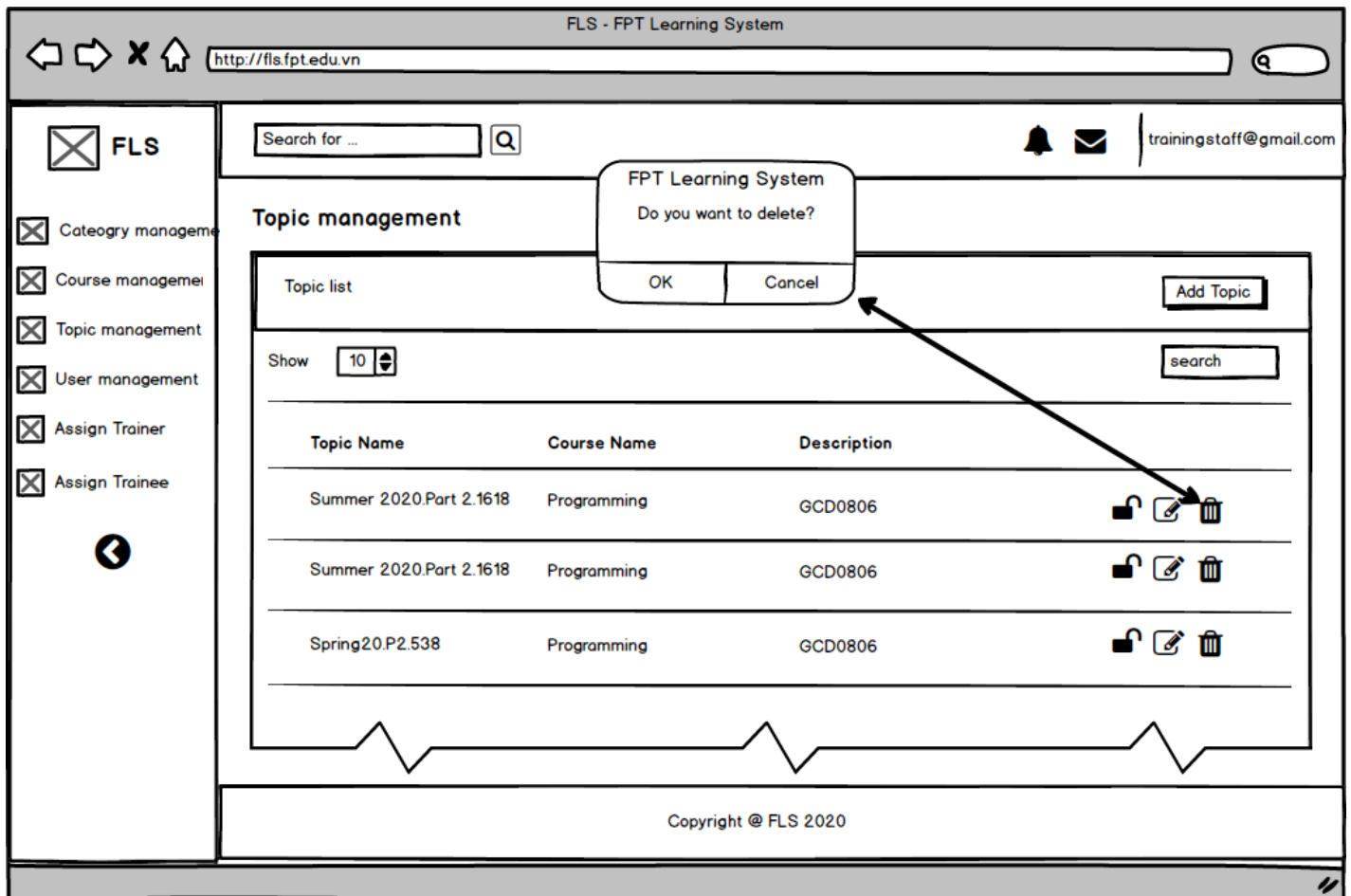
Picture 19. Training Staff - Course management details page

- TrainingStaff – Topic management – Index



Picture 20. Training Staff - Topic management index page

- TrainingStaff – Topic management – Delete



Picture 21. Training Staff - Topic management delete page



- TrainingStaff – Topic management – Create

FLS - FPT Learning System

http://fls.fpt.edu.vn

Search for ...

admin@gmail.com

**Course management**

Create Topic

Course: Select course

Topic name:

Description:

Add Back To List

Existing Topic:

- Summer 2020.Part 2.1618
- Summer 2020.Part 1.1618
- Fall19.P2.A.535

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Picture 22. Training Staff - Topic management create page

- TrainingStaff – Topic management – Edit

The screenshot displays the 'FLS - FPT Learning System' web application. The browser address bar shows 'http://fls.fpt.edu.vn'. The page header includes a search bar, a notification bell, and the email 'trainingstaff@gmail.com'. On the left, a sidebar menu lists various management functions: Category management, Course management, Topic management (selected), User management, Assign Trainer, and Assign Trainee. The main content area is titled 'Topic management' and contains an 'Update Topic' form. The form includes a 'Course' dropdown menu set to 'Programming', a 'Topic Name' text field with 'Fall19.P2.A.535', and a 'Description' text field with 'GCD0806'. Below these fields are 'Update' and 'Back To List' buttons. To the right of the form, an 'Existing Topic:' box lists three topics: 'Summer 2020.Part 2.1618', 'Summer 2020.Part 1.1618', and 'Fall19.P2.A.535'. The footer of the page states 'Copyright @ FLS 2020'.

FLS - FPT Learning System

http://fls.fpt.edu.vn

Search for ...

trainingstaff@gmail.com

**Topic management**

Update Topic

Course: Programming

Topic Name: Fall19.P2.A.535

Description: GCD0806

Update Back To List

Existing Topic:

- Summer 2020.Part 2.1618
- Summer 2020.Part 1.1618
- Fall19.P2.A.535

Copyright @ FLS 2020

Picture 23. Training Staff - Topic management details edit

- TrainingStaff – Topic management – Details

The screenshot shows a web browser window with the address bar displaying `http://fls.fpt.edu.vn`. The page title is "FLS - FPT Learning System". The browser's address bar contains navigation icons (back, forward, stop, home) and a search icon.

The page layout includes a sidebar on the left with a list of menu items, each preceded by a checkbox icon:

- ☒ FLS
- ☒ Category management
- ☒ Course management
- ☒ Topic management
- ☒ User management
- ☒ Assign Trainer
- ☒ Assign Trainee

Below the menu items is a circular icon with a left-pointing arrow.

The main content area is titled "Topic management" and contains a "Topic Details" section. This section includes three input fields:

- Course: A dropdown menu showing "Programming".
- Topic Name: A text input field containing "Fall19.P2.A.535".
- Description: A text input field containing "GCD0806".

Below the input fields are two buttons: "Edit" and "Back To List".

The footer of the page displays "Copyright @ FLS 2020".

Picture 24. Training Staff - Topic management details page

- TrainingStaff – User management – Create

The screenshot shows a web browser window with the title "FLS - FPT Learning System". The address bar displays "http://fls.fpt.edu.vn". The page has a sidebar on the left with a logo and a list of menu items: "Category management", "Course management", "Topic management", "User management", "Assign Trainer", and "Assign Trainee". The "User management" item is selected. The main content area is titled "User management" and contains a form titled "Create a New Account". The form has the following fields: "Name", "Email", "PhoneNumber", "Password", "Confirm password", and "Role". The "Role" field has a radio button selected for "Trainee". There is a "Create Account" button at the bottom of the form. The footer of the page says "Copyright @ FLS 2020".

FLS - FPT Learning System

http://fls.fpt.edu.vn

FLS

Search for ...

admin@gmail.com

### User management

#### Create a New Account

Name

Email

PhoneNumber

Password

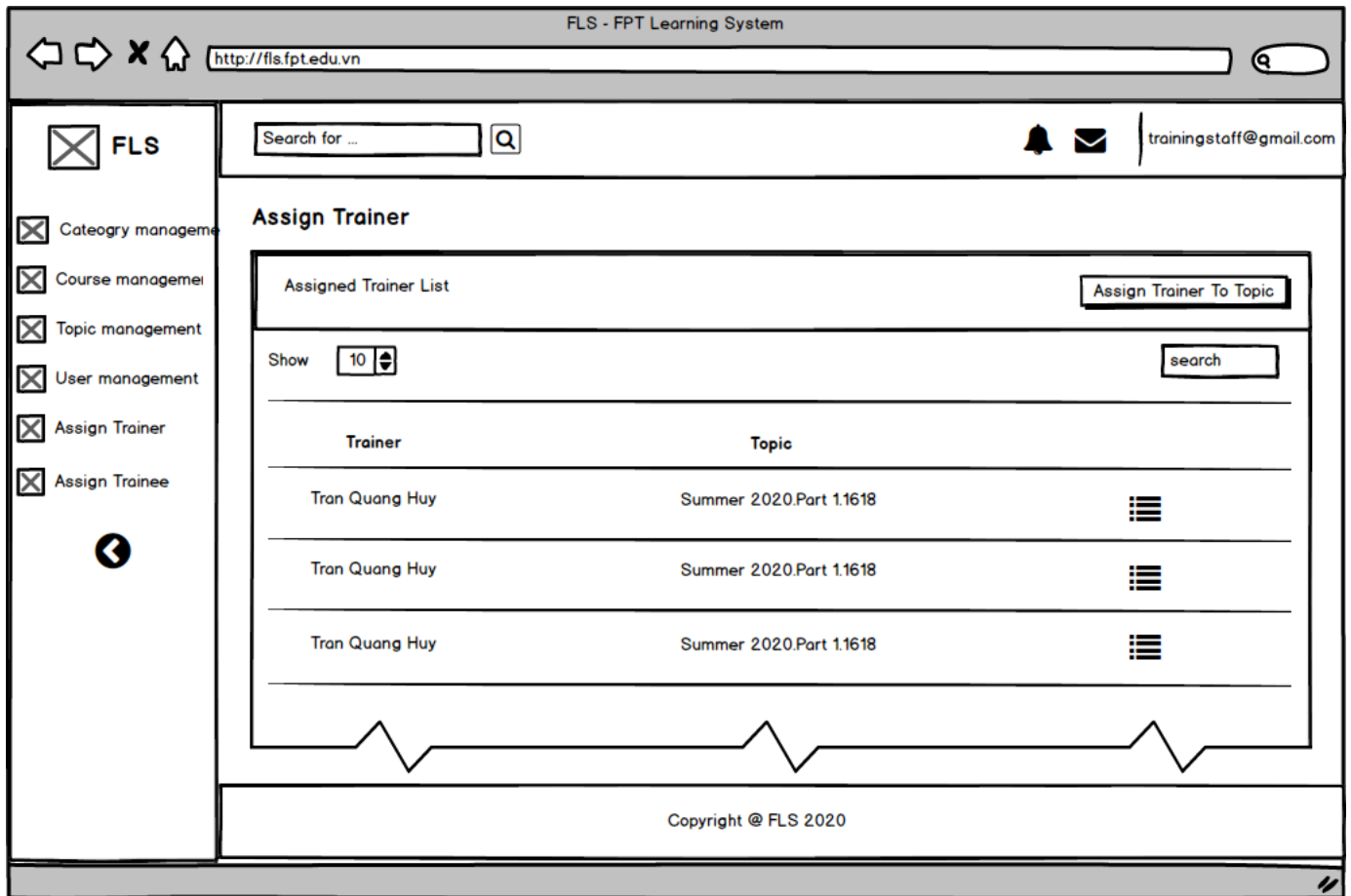
Confirm password

Role ☒ Trainee

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Picture 25. Training Staff - User management create page

- TrainingStaff – Assign Trainer – Index



Picture 26. Training Staff - Assign Trainer index page

- TrainingStaff – Assign Trainer – Create

FLS - FPT Learning System

http://fls.fpt.edu.vn

Search for ...

admin@gmail.com

### Assign Trainer

Assign Trainer To Topic

Trainer: Select Trainer

Topic: Select Topic

Assign Back To List

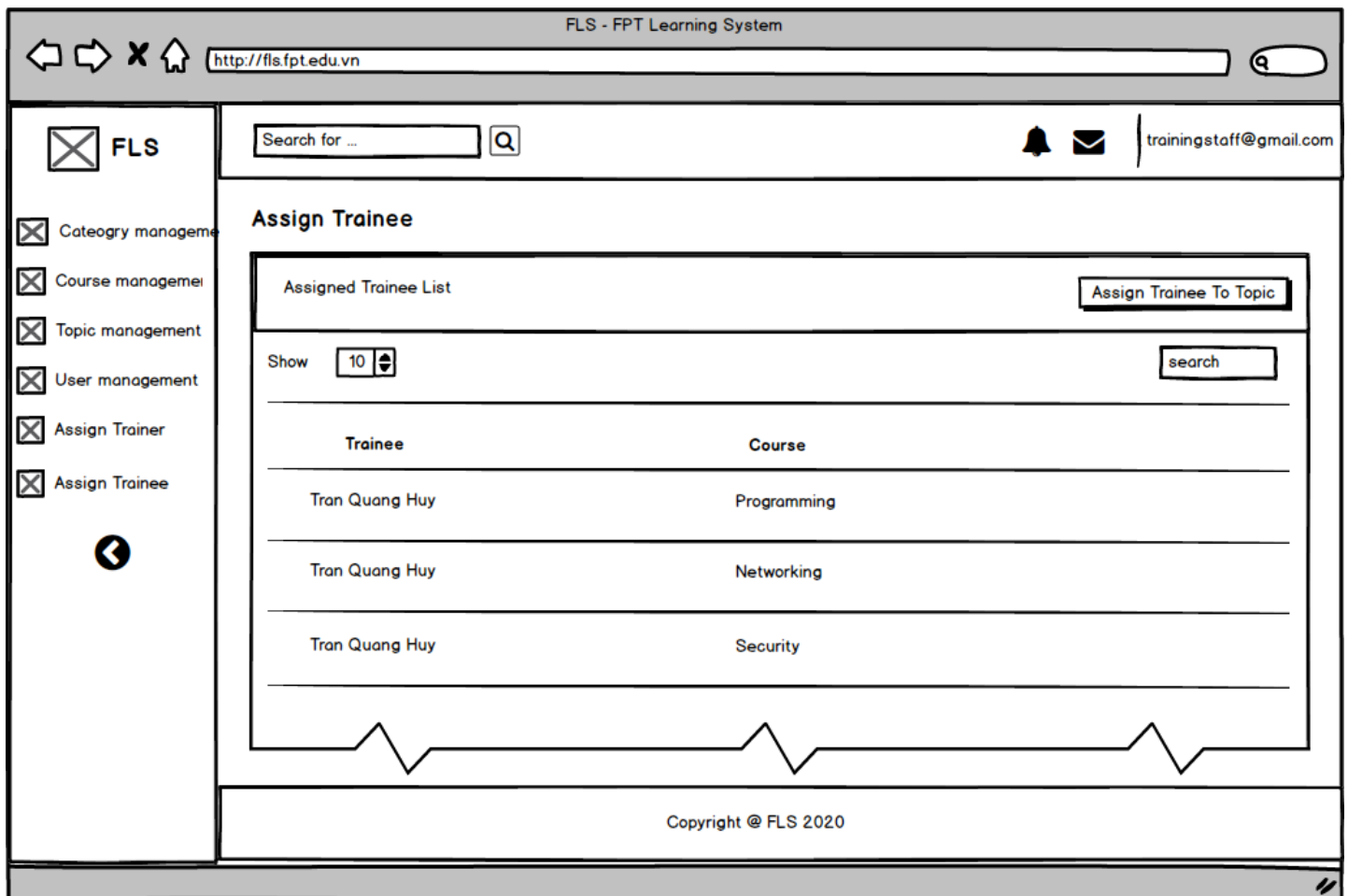
Tran Quang Huy  
Huynh Thai Hieu  
Nguyen Cong Nhat  
Nguyen Quang Ngoc

Summer  
Spring20.P2.538  
Fall19  
Summer

Copyright © FLS 2020

Picture 27. Training Staff - Assign Trainer create page

- TrainingStaff – Assign Trainee – Index



Picture 28. Training Staff - Assign Trainee index page

- TrainingStaff – Assign Trainee – Create

FLS - FPT Learning System

http://flsfpt.edu.vn

Search for ...

admin@gmail.com

### Assign Trainee

Assign Trainee To Course:

Trainee:

Course:

Tran Quang Huy  
Huynh Thai Hieu  
Nguyen Cong Nhat  
Nguyen Quang Ngoc

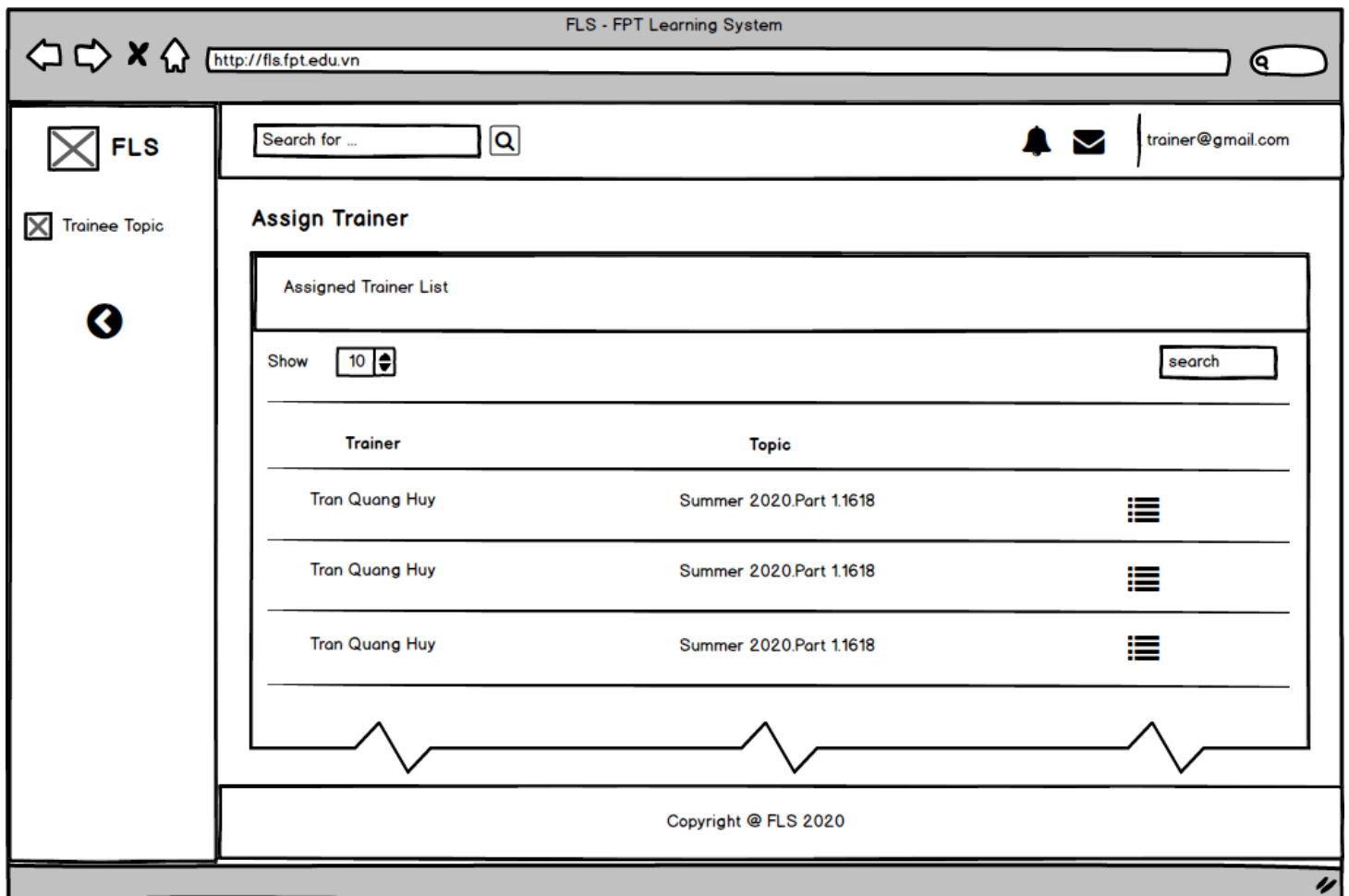
Programming  
Security  
Networking  
Application Development

Copyright © FLS 2020

Picture 29. Training Staff - Assign Trainee create page



- Trainer – Trainer Topic – Index



Picture 30. Trainer - Trainer Topic index page

- Trainer – Trainer Topic – Details

The screenshot shows a web browser window with the address bar displaying `http://fls.fpt.edu.vn`. The page title is "FLS - FPT Learning System". The browser's address bar contains navigation icons (back, forward, stop, home) and a search icon.

The page layout includes a sidebar on the left with the following elements:

- A close button (X) and the text "FLS".
- A checkbox labeled "Trainer Topic" which is checked.
- A circular arrow icon.

The main content area is titled "Topic management" and contains a "Topic Details" section. This section includes the following form elements:

- A "Course" dropdown menu with "Programming" selected.
- A "Topic Name" text input field containing "Fall19.P2.A.535".
- A "Description" text input field containing "GCD0806".
- A "Back To List" button.

The footer of the page displays "Copyright @ FLS 2020".

Picture 31. Trainer - Trainer topic details page

- Trainer – Account – Profile

The screenshot shows a web browser window titled "FLS - FPT Learning System". The address bar displays "http://fls.fpt.edu.vn". The page layout includes a left sidebar with a logo and a "Trainer Topic" link. The main content area is titled "Manage your account" and contains a "Change your account settings" section. This section has three tabs: "Profile" (selected), "Email", and "Password". The "Profile" tab displays a form with fields for "Username" (filled with "trainer@gmail.com") and "Phone number" (filled with "0795541090"). A "Save" button is located below the phone number field. The footer of the page indicates "Copyright @ FLS 2020".

FLS - FPT Learning System

http://fls.fpt.edu.vn

FLS

Trainer Topic

Search for ...

trainer@gmail.com

### Manage your account

Change your account settings

Profile

Email

Password

**Profile**

Username

trainer@gmail.com

Phone number

0795541090

Save

Copyright @ FLS 2020

Picture 32. Trainer - Account profile page

- Trainer – Account – Email

The screenshot shows a web browser window with the address bar displaying `http://fls.fpt.edu.vn`. The page title is "FLS - FPT Learning System". The browser's address bar contains navigation icons (back, forward, stop, home) and a search icon. The page layout includes a sidebar on the left with a search bar, a "Trainer Topic" link, and a circular icon. The main content area is titled "Manage your account" and features a "Change your account settings" section. This section contains three buttons: "Profile", "Email" (highlighted in blue), and "Password". The "Manage Email" section includes an "Email" field with the value "trainer@gmail.com", a "New email" field, and a "Change email" button. The footer of the page displays "Copyright @ FLS 2020".

FLS - FPT Learning System

http://fls.fpt.edu.vn

Search for ...

trainer@gmail.com

**Manage your account**

Change your account settings

Profile

Email

Password

**Manage Email**

Email

trainer@gmail.com

New email

Change email

Copyright @ FLS 2020

Picture 33. Trainer - Account email page

- Trainer – Account – Password

The screenshot shows a web browser window titled "FLS - FPT Learning System" with the address bar displaying "http://fls.fpt.edu.vn". The page layout includes a left sidebar with the "FLS" logo, a "Trainer Topic" link, and a back arrow. The main content area is titled "Manage your account" and features a search bar, notification and email icons, and the user email "trainer@gmail.com". Below this is a section for "Change your account settings" with three tabs: "Profile", "Email", and "Password" (which is selected). The "Manage Email" section contains three password input fields labeled "Current password", "New password", and "Confirm new password", followed by an "Update password" button. The footer of the page states "Copyright @ FLS 2020".

FLS - FPT Learning System

http://fls.fpt.edu.vn

FLS

Trainer Topic

Search for ...

trainer@gmail.com

**Manage your account**

Change your account settings

Profile

Email

Password

**Manage Email**

Current password

New password

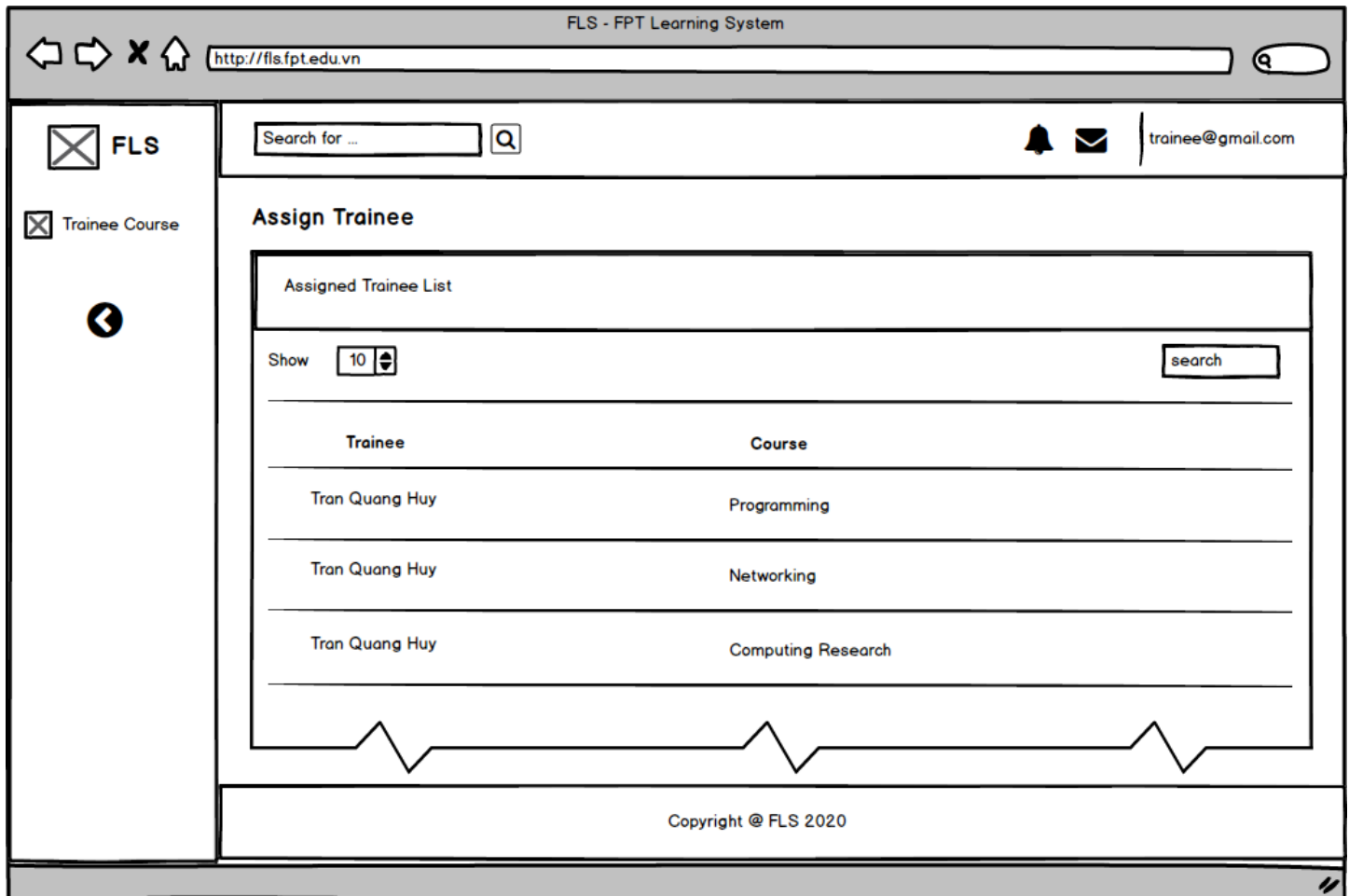
Confirm new password

Update password

Copyright @ FLS 2020

Picture 34. Trainer - Account password page

- Trainee – Trainee Course – Index



Picture 35. Trainee - Trainee Course index page

## 3.2 Functional Requirements

### 3.2.1 Administrator login

#### Use case Description:

<b>Name</b>	Administrator login	<b>ID</b>	UC_AD01
<b>Description</b>	Administrator login into FLS through the login page		
<b>Actor</b>	Administrator	<b>Trigger</b>	Click on the “login” button
<b>Pre-condition</b>	The login page loads completely		
<b>Post-condition</b>	Account inputted are valid and return to default page with the admin role		

#### Activities:

Actor		System	
Main flow: Login Successfully			
1	Administrator input the username/password and clicks the Login button on the login page		-
	-	2	Check the validation of Username and Password
	-	3	Check if the role is Administrator or Not
	-	4	Move to the default page with the admin role

#### Business Rules:

Rule No.	Rule	Description

#### System message:

Message No.	Message	Case
1	The Username/Password is incorrect. Please check again!	Wrong Username/ Password
2	The Username/Password does not exist.	The account doesn't exist in the database
3	Login successfully!	Correct Username & Password

### 3.2.2 Administrator view Administrator profile

#### Use case Description:

<b>Name</b>	Administrator view Administrator profile	<b>ID</b>	UC_AD02
<b>Description</b>	Administrator view administrator profile through the administrator page		
<b>Actor</b>	Administrator	<b>Trigger</b>	Click on the “Administrator profile” button
<b>Pre-condition</b>	The administrator login successfully		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: View Successfully			
1	Click on the “Administrator profile” button		-
	-	2	The system move to the administrator profile page

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
-	-	-



### 3.2.3 Administrator view Training staff profile

#### Use case Description:

<b>Name</b>	Administrator view Training staff profile	<b>ID</b>	UC_AD03
<b>Description</b>	Administrator view Training staff profile through the administrator page		
<b>Actor</b>	Administrator	<b>Trigger</b>	Click on the “User management” button
<b>Pre-condition</b>	The administrator login successfully		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: View Successfully			
1	Click on the “User management” button		-
	-	2	The system move to the Training staff profile page

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
-	-	-

### 3.2.4 Administrator view Trainer account

#### Use case Description:

<b>Name</b>	Administrator view Trainer profile	<b>ID</b>	UC_AD04
<b>Description</b>	Administrator view Trainer profile through the administrator page		
<b>Actor</b>	Administrator	<b>Trigger</b>	Click on the “User management” button
<b>Pre-condition</b>	The administrator login successfully		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: View Successfully			
1	Click on the “User management” button		-
	-	2	The system move to the Trainer profile page

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
-	-	-

### 3.2.5 Administrator view Trainee profile

#### Use case Description:

<b>Name</b>	Administrator view Trainee profile	<b>ID</b>	UC_AD05
<b>Description</b>	Administrator view trainee profile through the administrator page		
<b>Actor</b>	Administrator	<b>Trigger</b>	Click on the “User management” button
<b>Pre-condition</b>	The administrator login successfully		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: View Successfully			
1	Click on the “User management” button		-
	-	2	The system move to the Trainee profile page

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
-	-	-

### 3.2.6 The administrator creates a new user account for Training staff

#### Use case Description:

<b>Name</b>	Administrator creates Training staff account	<b>ID</b>	UC_AD06
<b>Description</b>	Administrator creates Training staff account through the administrator page		
<b>Actor</b>	Administrator	<b>Trigger</b>	Click on the “New User” button
<b>Pre-condition</b>	The administrator login successfully		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: Create Successfully			
1	Click on the “New User” button	-	-
-	-	2	The system moves to the “New Account” page
3	Input the Username/Password of the new user	-	-
4	Select role “Training staff”	-	-
-	-	5	Check the validation of Username and Password
6	Click on the “Create” button	-	-
-	-	7	Create new account with Username and Password assigned in database
-	-	8	The system moves to the “User management” page

#### Business Rules:

Rule No.	Rule	Description
1	Usernames are unique instances	Each account has a unique username

#### System message:

Message No.	Message	Case
1	“This account has already existed!”	Username has already existed in database
2	“Invalid password, please try again!”	Invalid password
3	“Please choose the role“	Forgot to set the role
4	“Account created successfully!”	Account has been created and saved into database



### 3.2.8 The administrator creates a new user account for Trainee

#### Use case Description:

<b>Name</b>	Administrator creates Trainee account	<b>ID</b>	UC_AD08
<b>Description</b>	Administrator creates Trainee account through the administrator page		
<b>Actor</b>	Administrator	<b>Trigger</b>	Click on the “New User” button
<b>Pre-condition</b>	The administrator login successfully		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: Create Successfully			
1	Click on the “New User” button		-
	-	2	The system moves to the “New Account” page
3	Input the Username/Password of the new user		-
4	Select role “Trainee”		-
	-	5	Check the validation of Username and Password
6	Click on the “Create” button		-
	-	7	Create new account with Username and Password assigned in database
	-	8	The system moves to the “User management” page

#### Business Rules:

Rule No.	Rule	Description
1	Usernames are unique instances	Each account has a unique username

#### System message:

Message No.	Message	Case
1	“This account has already existed! “	Username has already existed in database
2	“Invalid password, please try again!”	Invalid password
3	“Please choose the role “	Forgot to set the role
4	“Account created successfully!”	Account has been created and saved into database

### 3.2.9 Administrator edit Administrator account

#### Use case Description:

<b>Name</b>	Administrator edit Administrator account	<b>ID</b>	UC_AD09
<b>Description</b>	Administrator edit Administrator account through the administrator page		
<b>Actor</b>	Administrator	<b>Trigger</b>	Click on the “Profile” button
<b>Pre-condition</b>	The administrator login successfully and “Administrator dashboard” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Activities:

Actor		System	
Main flow: Edited Successfully			
1	Click on the “Profile” button		-
	-	2	The system moves to the “Profile” page with Administrator Id
3	Input the Username/Password of the new user		-
	-	4	Check the validation of Username and Password
5	Click on the “Save” button		-
	-	6	Create new account with Username and Password assigned in database
	-	7	The system moves to the “Administrator profile” page

#### Business Rules:

Rule No.	Rule	Description
1	Usernames are unique instances	Each account have a unique username

#### System message:

Message No.	Message	Case
1	“This account has already existed!”	Username has already existed in database
2	“Invalid password, please try again!”	Invalid password
3	“Please choose the role“	Forgot to set the role
4	“Account updated successfully!”	Account has been updated and saved into database

### 3.2.10 Administrator edit Training staff account

#### Use case Description:

<b>Name</b>	Administrator edit Training staff account	<b>ID</b>	UC_AD10
<b>Description</b>	Administrator edit Training staff account through the administrator page		
<b>Actor</b>	Administrator	<b>Trigger</b>	Click on the “Edit” button
<b>Pre-condition</b>	The administrator login successfully and “Administrator dashboard” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Activities:

Actor		System	
Main flow: Edited Successfully			
1	Click on the “Edit” button		-
	-	2	The system move to the “Edit” page with Administrator Id
3	Input the Username/Password of the new user		-
	-	4	Check the validation of Username and Password
5	Click on the “Update” button		-
	-	6	Create new account with Username and Password assigned in database
	-	7	The system move to the “User management” page

#### Business Rules:

Rule No.	Rule	Description
1	Usernames are unique instances	Each account has a unique username

#### System message:

Message No.	Message	Case
1	“This account has already existed!”	Username has already existed in database
2	“Invalid password, please try again!”	Invalid password
3	“Please choose the role“	Forgot to set the role
4	“Account updated successfully!”	Account has been updated and saved into database



### 3.2.11 Administrator edit Trainer account

#### Use case Description:

<b>Name</b>	Administrator edit Trainer account	<b>ID</b>	UC_AD11
<b>Description</b>	Administrator edit Trainer account through the administrator page		
<b>Actor</b>	Administrator	<b>Trigger</b>	Click on the “Edit” button
<b>Pre-condition</b>	The administrator login successfully and “Administrator dashboard” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Activities:

Actor		System	
Main flow: Edited Successfully			
1	Click on the “Edit” button		-
	-	2	The system move to the “Edit” page with Administrator Id
3	Input the Username/Password of the new user		-
	-	4	Check the validation of Username and Password
5	Click on the “Update” button		-
	-	6	Create new account with Username and Password assigned in database
	-	7	The system move to the “User management” page

#### Business Rules:

Rule No.	Rule	Description
1	Username are unique instances	Each account have a unique username

#### System message:

Message No.	Message	Case
1	“This account has already existed!”	Username has already existed in database
2	“Invalid password, please try again!”	Invalid password
3	“Please choose the role“	Forgot to set the role
4	“Account updated successfully!”	Account has been updated and saved into database

### 3.2.12 Administrator edit Trainee account

#### Use case Description:

<b>Name</b>	Administrator edit Trainee account	<b>ID</b>	UC_AD12
<b>Description</b>	Administrator edit Trainee account through the administrator page		
<b>Actor</b>	Administrator	<b>Trigger</b>	Click on the “Edit” button
<b>Pre-condition</b>	The administrator login successfully and “Administrator dashboard” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Activities:

Actor		System	
Main flow: Edited Successfully			
1	Click on the “Edit” button		-
	-	2	The system move to the “Edit” page with Administrator Id
3	Input the Username/Password of the new user		-
	-	4	Check the validation of Username and Password
5	Click on the “Update” button		-
	-	6	Create new account with Username and Password assigned in database
	-	7	The system move to the “User management” page

#### Business Rules:

Rule No.	Rule	Description
1	Username are unique instances	Each account has a unique username

#### System message:

Message No.	Message	Case
1	“This account has already existed!”	Username has already existed in database
2	“Invalid password, please try again!”	Invalid password
3	“Please choose the role“	Forgot to set the role
4	“Account updated successfully!”	Account has been updated and saved into database

**3.2.13 Administrator delete a user account****Use case Description:**

<b>Name</b>	Administrator delete exist account	<b>ID</b>	UC_AD13
<b>Description</b>	Administrator delete user account through the administrator page		
<b>Actor</b>	Administrator	<b>Trigger</b>	Click on the “Delete” button
<b>Pre-condition</b>	The administrator login successfully and “Administrator dashboard” page load completely		
<b>Post-condition</b>	-		

**Activities:**

Activities:

Actor		System	
Main flow: Deleted Successfully			
1	Click on the “Delete” button		-
	-	2	The system show pop-up confirm that Administrator want to delete or not
3	Administrator click on “Ok” button		-
	-	4	The account has been deleted in database
	-	5	The system move to the “User management”- page

**Business Rules:**

<b>Rule No.</b>	<b>Rule</b>	<b>Description</b>
-	-	-

**System message:**

<b>Message No.</b>	<b>Message</b>	<b>Case</b>
1	“Do you want to delete?”	Administrator click on the “delete” button
2	“The account has been deleted!”	The account has been deleted in database

### 3.2.14 Training staff login

#### Use case Description:

<b>Name</b>	Training staff login	<b>ID</b>	UC_TS01
<b>Description</b>	Training staff login into FLS through the login page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “login” button
<b>Pre-condition</b>	The login page loads completely		
<b>Post-condition</b>	Account inputted are valid and return to default page with the Training staff role		

#### Activities:

Actor		System	
Main flow: Login Successfully			
1	Training staff input the username/password and clicks the Login button on the login page		-
	-	2	Check the validation of Username and Password
	-	3	Check if the role is Administrator or Not
	-	4	Move to the default page with the training staff role

#### Business Rules:

Rule No.	Rule	Description

#### System message:

Message No.	Message	Case
1	The Username/Password is incorrect. Please check again!	Wrong Username/ Password
2	The Username/Password does not exist.	The account doesn't exist in the database
3	Login successfully!	Correct Username & Password

### 3.2.15 Training staff create trainee account

#### Use case Description:

<b>Name</b>	Training staff creates Trainee account	<b>ID</b>	UC_TS02
<b>Description</b>	Training staff creates Trainee account through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “New user” button
<b>Pre-condition</b>	The Training staff login successfully		
<b>Post-condition</b>	-		

#### Activities:

Activities:

Actor		System	
Main flow: Created Successfully			
1	Click on the “New user” button		-
	-	2	The system move to the “New Account”page
3	Input the Username/Password of the new user		-
4	Input the trainee name, age, date of birth, education, main programming language, TOEIC score, experience details, department, location, etc		-
	-	5	Check the validation of Username and Password
6	Click on the “Create” button		-
	-	7	Create new account with Username and Password assigned in database
	-	8	The system move to the “Training staff dashboard” page

#### Business Rules:

Rule No.	Rule	Description
1	Usernames are unique instances	Each account have a unique username

#### System message:

Message No.	Message	Case
1	“This account has already existed!”	Username has already existed in database
2	“Invalid password, please try again!”	Invalid password
3	“Account created successfully!”	Account has been created and saved into database

### 3.2.16 Training staff view list of trainees

#### Use case Description:

<b>Name</b>	Training staff view list of trainees	<b>ID</b>	UC_TS03
<b>Description</b>	Training staff view list of trainees through the training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “User management” button
<b>Pre-condition</b>	The Training staff login successfully		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: View Successfully			
1	Click on the “User management” button		-
	-	2	The system move to the “User management” page

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
-	-	-

**3.2.17 Training staff view trainee profile****Use case Description:**

<b>Name</b>	Training staff view trainee profile	<b>ID</b>	UC_TS04
<b>Description</b>	Training staff view list of trainees through the training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Trainee profile” button
<b>Pre-condition</b>	The Training staff login successfully		
<b>Post-condition</b>	-		

**Activities:**

Actor		System	
Main flow: View Successfully			
1	Click on the “Trainee profile” button		-
	-	2	The system move to the trainee profile page with trainee specific id

**Business Rules:**

Rule No.	Rule	Description
-	-	-

**System message:**

Message No.	Message	Case
-	-	-

### 3.2.18 Training staff update trainee profile

#### Use case Description:

<b>Name</b>	Training staff update trainee profile	<b>ID</b>	UC_TS05
<b>Description</b>	Training staff update trainee profile through the training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Edit” button
<b>Pre-condition</b>	The Training staff login successfully		
<b>Post-condition</b>	-		

#### Activities:

Activities:

Actor		System	
Main flow: Updated Successfully			
1	Click on the “Edit” button		-
	-	2	The system move to the “edit trainee profile” page with trainee specific id
3	Training staff input the trainee information		
4	Click on the “Update” button		
		5	The trainee information has been updated into database

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
1	“Missing some information. Please fill in again!”	Trainning staff forgot to fill in some information
2	“Updated successfully!”	The trainee information has been updated into database





**3.2.20 Training staff view list of courses****Use case Description:**

<b>Name</b>	Training staff view list of courses	<b>ID</b>	UC_TS07
<b>Description</b>	Training staff view list of course through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Course management” button
<b>Pre-condition</b>	The Training staff login successfully and “Course” page load completely		
<b>Post-condition</b>	-		

**Activities:**

Actor		System	
Main flow: View Successfully			
1	Click on the “Course management” button		-
	-	2	The system move to the “Course management” page

**Business Rules:**

<b>Rule No.</b>	<b>Rule</b>	<b>Description</b>
-	-	-

**System message:**

<b>Message No.</b>	<b>Message</b>	<b>Case</b>

### 3.2.21 Training staff add a course

#### Use case Description:

<b>Name</b>	Training staff add course	<b>ID</b>	UC_TS08
<b>Description</b>	Training staff add course through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Add Course” button
<b>Pre-condition</b>	The Training staff login successfully and “Course” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: Added Successfully			
1	Click on the “Add Course” button		-
	-	2	The system move to the “Add Course” page
3	Input information about course such as course name and course description		
4	Click on the “Add” button		
		5	Check the exist Course in Database
		6	The course has been created into database
		7	Show pop-up add successful message

#### Business Rules:

Rule No.	Rule	Description
1	Course name is unique	Each course have a unique name

#### System message:

Message No.	Message	Case
1	“Course name cannot be empty”	Training staff forgot to fill course name
2	“Course created!”	Created course into database

### 3.2.22 Training staff update course

#### Use case Description:

<b>Name</b>	Training staff update course	<b>ID</b>	UC_TS09
<b>Description</b>	Training staff update course through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Edit” button
<b>Pre-condition</b>	The Training staff login successfully and “Course” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Activities:

Actor		System	
Main flow: Updated Successfully			
1	Click on the “Edit” button		-
	-	2	The system move to the “Edit Course” page
3	Input information about course such as course name and course description		
4	Click on the “Update” button		
		5	Check the exist Course in Database
		6	The course has been updated into database
		7	Show pop-up add successful message

#### Business Rules:

Rule No.	Rule	Description
1	Course name is unique	Each course have a unique name

#### System message:

Message No.	Message	Case
1	“Course name cannot be empty”	Training staff forgot to fill course name
2	“Course updated!”	Updated course into database

### 3.2.23 Training staff delete course

#### Use case Description:

<b>Name</b>	Training staff delete course	<b>ID</b>	UC_TS10
<b>Description</b>	Training staff delete course through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Delete Course” button
<b>Pre-condition</b>	The Training staff login successfully and “Course” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: Deleted Successfully			
1	Click on the “Delete Course” button		-
	-	2	The system show pop-up confirm that want to delete or not
3	Click on “Ok” button		-
	-	4	The Course has been deleted in database

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
1	“Do you want to delete this course?”	Administrator click on the “delete” button
2	“The course has been deleted!”	The course has been deleted in database

### 3.2.24 Training staff add topic into course

#### Use case Description:

<b>Name</b>	Training staff Add topic into course	<b>ID</b>	UC_TS11
<b>Description</b>	Training staff add topic into course through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Add topic” button
<b>Pre-condition</b>	The Training staff login successfully and “Course” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: Added Successfully			
1	Click on the “Add topic” button		-
	-	2	The system move to the “Add topic” page
3	Input information about course such as course name and course description		-
4	Select course name		-
5	Click on the “Add” button		
		6	The topic assigned to course and create in database
		7	The system show pop-up success message

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
1	“Assigned topic to course successfully”	Add topic to course

### 3.2.25 Training staff add category

#### Use case Description:

<b>Name</b>	Training staff add category	<b>ID</b>	UC_TS12
<b>Description</b>	Training staff add category through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Add Category” button
<b>Pre-condition</b>	The Training staff login successfully and “Category” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Activities:

Actor		System	
Main flow: Added Successfully			
1	Click on the “Add Category” button		-
	-	2	The system move to the “Add Category” page
3	Input information about category such as category name and course description		
4	Click on the “Add” button		
		5	Check the exist Category in Database
		6	The Category has been created into database
		7	Show pop-up add successful message

#### Business Rules:

Rule No.	Rule	Description
1	Category name is unique	Each Category have a unique name

#### System message:

Message No.	Message	Case
1	“Category name cannot be empty”	Training staff forgot to fill Category name
2	“Category created!”	Created Caregory into database

### 3.2.26 Training staff update category

#### Use case Description:

<b>Name</b>	Training staff update category	<b>ID</b>	UC_TS13
<b>Description</b>	Training staff update category through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Edit Category” button
<b>Pre-condition</b>	The Training staff login successfully and “Category” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Activities:

Actor		System	
Main flow: Updated Successfully			
1	Click on the “Edit Category” button		-
	-	2	The system move to the “Edit Category” page
3	Input information about course such as course name and course description		
4	Click on the “Update” button		
		5	Check the exist Category in Database
		6	The Category has been updated into database
		7	Show pop-up add successful message

#### Business Rules:

Rule No.	Rule	Description
1	Category name is unique	Each Category have a unique name

#### System message:

Message No.	Message	Case
1	“Category name cannot be empty”	Training staff forgot to fill Category name
2	“Category updated!”	Updated Category into database



### 3.2.27 Training staff delete category

#### Use case Description:

<b>Name</b>	Training staff delete Category	<b>ID</b>	UC_TS14
<b>Description</b>	Training staff delete Category through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Delete Category” button
<b>Pre-condition</b>	The Training staff login successfully and “Category” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: Deleted Successfully			
1	Click on the “Delete Category” button		-
	-	2	The system show pop-up confirm that want to delete or not
3	Click on “Yes” button		-
	-	4	The Category has been deleted in database

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
1	“Do you want to delete this Category?”	Administrator click on the “delete” button
2	“The Category has been deleted!”	The Category has been deleted in database

### 3.2.28 Training staff add course into a category

#### Use case Description:

<b>Name</b>	Training staff add course to category	<b>ID</b>	UC_TS15
<b>Description</b>	Training staff add course to category through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Course to category” button
<b>Pre-condition</b>	The Training staff login successfully and “Course” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: Added Successfully			
1	Click on the “Add topic” button		-
	-	2	The system move to the “Add topic” page
3	Input information about course such as course name and course description		-
4	Select course name		-
5	Click on the “Add” button		
		6	The topic assigned to course and create in database
		7	The system show pop-up success message

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
1	“Assigned topic to course successfully”	Add topic to course

**3.2.29 Training staff view trainer profile****Use case Description:**

<b>Name</b>	Training staff view trainer profile	<b>ID</b>	UC_TS16
<b>Description</b>	Training staff view trainer profile through the training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “User management” button
<b>Pre-condition</b>	The Training staff login successfully		
<b>Post-condition</b>	-		

**Activities:**

Actor		System	
Main flow: View Successfully			
1	Click on the “Trainer profile” button		-
	-	2	The system move to the Trainer profile page with trainee specific id

**Business Rules:**

Rule No.	Rule	Description
-	-	-

**System message:**

Message No.	Message	Case
-	-	-

### 3.2.30 Training staff add trainer profile

#### Use case Description:

<b>Name</b>	Training staff creates Trainer account	<b>ID</b>	UC_TS17
<b>Description</b>	Training staff creates Trainer account through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “New User” button
<b>Pre-condition</b>	The Training staff login successfully		
<b>Post-condition</b>	-		

#### Activities:

Activities:

Actor		System	
Main flow: Created Successfully			
1	Click on the “New User” button		-
	-	2	The system move to the “New Account”page
3	Input the Username/Password of the new user		-
4	Input the Trainer name, external or internal type, working place, telephone, and email address.		-
	-	5	Check the validation of Username and Password
6	Click on the “Create” button		-
	-	7	Create new account with Username and Password assigned in database
	-	8	The system move to the “User management” page

#### Business Rules:

Rule No.	Rule	Description
1	Usernames are unique instances	Each account have a unique username

#### System message:

Message No.	Message	Case
1	“This account has already existed!”	Username has already existed in database
2	“Invalid password, please try again!”	Invalid password
3	“Account created successfully!”	Account has been created and saved into database

**3.2.31 Training staff update trainer profile****Use case Description:**

<b>Name</b>	Training staff update trainer profile	<b>ID</b>	UC_TS18
<b>Description</b>	Training staff update trainer profile through the training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Edit” button
<b>Pre-condition</b>	The Training staff login successfully		
<b>Post-condition</b>	-		

**Activities:**

Actor		System	
Main flow: Updated Successfully			
1	Click on the “Edit” button		-
	-	2	The system move to the “edit trainer profile” page with trainee specific id
3	Training staff input the trainer information		
4	Click on the “Update” button		
		5	The trainer information has been updated into database

**Business Rules:**

<b>Rule No.</b>	<b>Rule</b>	<b>Description</b>
-	-	-

**System message:**

<b>Message No.</b>	<b>Message</b>	<b>Case</b>
1	“Missing some information. Please fill in again!”	Trainning staff forgot to fill in some information
2	“Updated successfully!”	The trainer information has been updated into database

### 3.2.32 Training staff delete trainer profile

#### Use case Description:

<b>Name</b>	Training staff delete exist trainer	<b>ID</b>	UC_TS19
<b>Description</b>	Training staff delete trainer account through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Delete” button
<b>Pre-condition</b>	The Training staff login successfully and “Trainer” page load completely		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: Deleted Successfully			
1	Click on the “Delete” button		-
	-	2	The system show pop-up confirm that want to delete or not
3	Click on “Ok” button		-
	-	4	The account has been deleted in database
	-	5	The system move to the “Trainer” page

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
1	“Do you want to delete this account?”	Administrator click on the “delete” button
2	“The account has been deleted!”	The account has been deleted in database

### 3.2.33 Training staff assign a trainer to topic

#### Use case Description:

<b>Name</b>	Training staff assign trainer to topic	<b>ID</b>	UC_TS20
<b>Description</b>	Training staff assign trainer to topic through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Assign trainer” button
<b>Pre-condition</b>	The Training staff login successfully		
<b>Post-condition</b>	Redirect to “Assign Trainer” page		

#### Activities:

Actor		System	
Main flow: Assign trainer Successfully			
1	Click on the “Assign trainer” button		-
2	Select topic from dropdown list of topic		-
	-	3	The system show pop-up confirm that want to assign or not
4	Click on “Yes” button		-
	-	5	The system update “trainer” into topic in database
	-	6	The system move to the “Assign Trainer” page

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
1	“Do you want to replace this trainer?”	Confirmation when another trainer is already assigned to topic
2	“Do you want to assign this trainer to this topic?”	Confirmation when assign Trainer to topic
3	“The trainer has been assigned to topic!”	The trainer has been assigned to topic in database

### 3.2.34 Training staff assign trainee to course

#### Use case Description:

<b>Name</b>	Training staff assign trainee to course	<b>ID</b>	UC_TS21
<b>Description</b>	Training staff assign trainee to course through the Training staff page		
<b>Actor</b>	Training staff	<b>Trigger</b>	Click on the “Assign trainee” button
<b>Pre-condition</b>	The Training staff login successfully		
<b>Post-condition</b>	Redirect to “Assign Trainee” page		

#### Activities:

Actor		System	
Main flow: Assign trainee Successfully			
1	Click on the “Assign trainee” button		-
2	Select topic from dropdown list of topic		-
	-	3	The system show pop-up confirm that want to assign trainee or not
4	Click on “Yes” button		-
	-	5	The system update “trainee” into course in database
	-	6	The system move to the “Assign trainee” page

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
1	“Do you want to assign this trainer to this topic?”	Confirmation when assign Trainer to topic
2	“The trainer has been assigned to topic!”	The trainer has been assigned to topic in database



### 3.2.35 Trainer login

#### Use case Description:

<b>Name</b>	Trainer login	<b>ID</b>	UC_TN01
<b>Description</b>	Trainer login into FLS through the login page		
<b>Actor</b>	Trainer	<b>Trigger</b>	Click on the “login” button
<b>Pre-condition</b>	The login page loads completely		
<b>Post-condition</b>	Account inputted are valid and return to default page with the Trainer role		

#### Activities:

Actor		System	
Main flow: Login Successfully			
1	Trainer input the username/password and clicks the Login button on the login page		-
	-	2	Check the validation of Username and Password
	-	3	Check if the role is Administrator or Not
	-	4	Move to the default page with the Trainer role

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
1	The Username/Password is incorrect. Please check again!	Wrong Username/ Password
2	The Username/Password does not exist.	The account doesn't exist in the database
3	Login successfully!	Correct Username & Password

### 3.2.36 Trainer update current trainer profile

#### Use case Description:

<b>Name</b>	Trainer update current Trainer profile	<b>ID</b>	UC_TN02
<b>Description</b>	Trainer update current Trainer profile through the Trainer page		
<b>Actor</b>	Trainer	<b>Trigger</b>	Click on the “Update profile” button
<b>Pre-condition</b>	The Trainer login successfully		
<b>Post-condition</b>	-		

#### Activities:

Actor		System	
Main flow: Updated Successfully			
1	Click on the “Update profile” button		-
	-	2	The system move to the “edit Trainer profile” page with trainee specific id
3	Trainer input the information such as Trainer name, External or Internal Type, education, working place, telephone, and email address.		
4	Click on the “Update” button		
		5	The Trainer information has been updated into database

#### Business Rules:

Rule No.	Rule	Description
-	-	-

#### System message:

Message No.	Message	Case
1	“Missing some information. Please fill in again!”	Trainer forgot to fill in some information
2	“Updated successfully!”	The Trainer information has been updated into database

**3.2.37 Trainer view list of topic****Use case Description:**

<b>Name</b>	Trainer view list of topic	<b>ID</b>	UC_TN03
<b>Description</b>	Training staff view list of topic through the Trainer page		
<b>Actor</b>	Trainer	<b>Trigger</b>	Click on the “Topic Details” button
<b>Pre-condition</b>	The Trainer login successfully, “Topic” page load completely and the trainer has been assigned to topic		
<b>Post-condition</b>	-		

**Activities:**

Actor		System	
Main flow: View Successfully			
1	Click on the “Topic Details” button		-
	-	2	The system move to the “Topic Details” page

**Business Rules:**

<b>Rule No.</b>	<b>Rule</b>	<b>Description</b>
-	-	-

**System message:**

<b>Message No.</b>	<b>Message</b>	<b>Case</b>

**3.2.38 Trainee login****Use case Description:**

<b>Name</b>	Trainee login	<b>ID</b>	UC_TE01
<b>Description</b>	Trainee login into FLS through the login page		
<b>Actor</b>	Trainee	<b>Trigger</b>	Click on the “login” button
<b>Pre-condition</b>	The login page loads completely		
<b>Post-condition</b>	Account inputted are valid and return to default page with the Trainee role		

**Activities:**

Actor		System	
Main flow: Login Successfully			
1	Trainee input the username/password and clicks the Login button on the login page		-
	-	2	Check the validation of Username and Password
	-	3	Check if the role is Administrator or Not
	-	4	Move to the default page with the Trainee role

**Business Rules:**

<b>Rule No.</b>	<b>Rule</b>	<b>Description</b>
-	-	-

**System message:**

<b>Message No.</b>	<b>Message</b>	<b>Case</b>
1	The Username/Password is incorrect. Please check again!	Wrong Username/ Password
2	The Username/Password does not exist.	The account doesn't exist in the database
3	Login successfully!	Correct Username & Password

**3.2.39 Trainee view list of courses****Use case Description:**

<b>Name</b>	Trainee view list of courses	<b>ID</b>	UC_TE02
<b>Description</b>	Trainee view list of course through the Trainee page		
<b>Actor</b>	Trainee	<b>Trigger</b>	Click on the “Trainee Course” button
<b>Pre-condition</b>	The Trainee login successfully, “Course” page load completely and the Trainee has been assigned to topic		
<b>Post-condition</b>	-		

**Activities:**

Actor		System	
Main flow: View Successfully			
1	Click on the “Trainee Course” button		-
	-	2	The system move to the “Trainee Course” page

**Business Rules:**

<b>Rule No.</b>	<b>Rule</b>	<b>Description</b>
-	-	-

**System message:**

<b>Message No.</b>	<b>Message</b>	<b>Case</b>

### 3.3 Use Case Model

#### 3.3.1 Administrator use case diagram

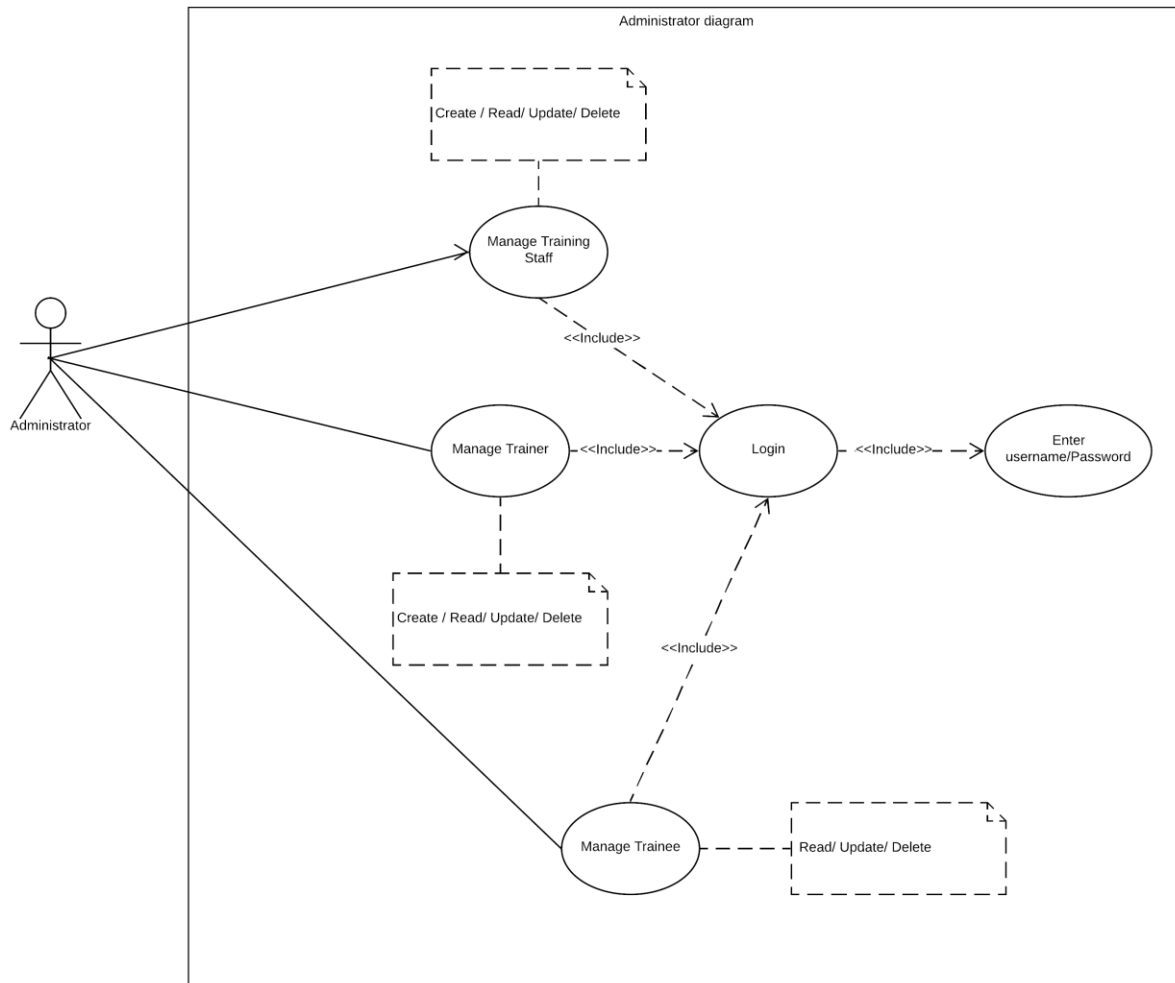


Figure 3. Administrator use case diagram

- **Purpose:** The interaction between Administrator and system.
- **Requirements Traceability:** Base on system requirement that system can used to manage trainee accounts, manage trainers, manage course categories, manage courses, manage topics, assign topic to course, assign trainer to topic, assign trainee to course and the Administrator role can login to the system, create, edit and delete new user account
- **Priority:** High
- **Actors:** Administrator
- **Extends:**
  - View/Create/Update/Delete Training staff account
  - View/Create/Update/Delete Trainer account
  - View/Create/Update/Delete Course
  - View/Create/Update/Delete Topic
  - View/Create/Update/Delete Category
- **Includes:**
  - Verify username/password

### 3.3.2 Training staff use case diagram

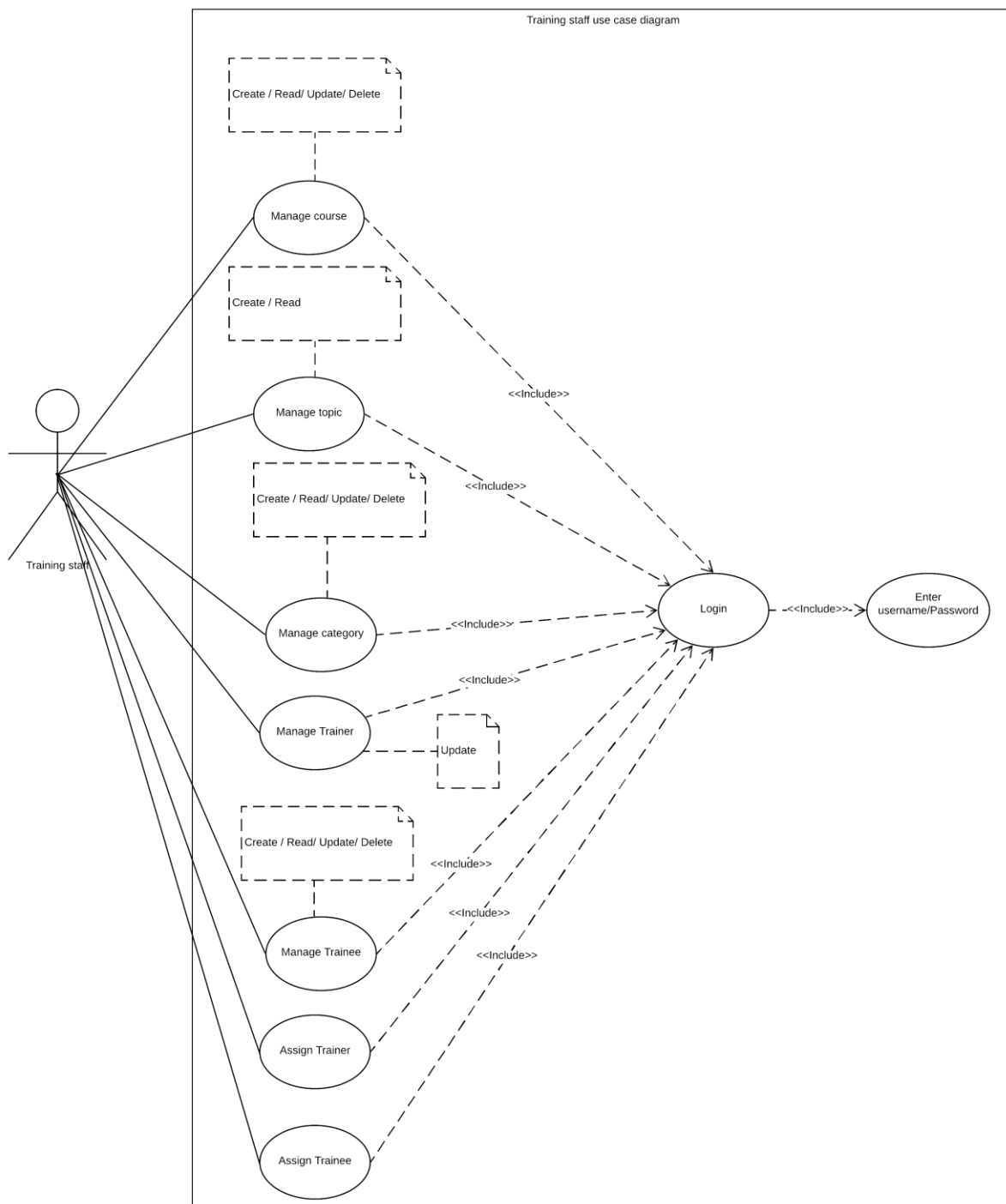


Figure 4. Training Staff use case diagram Manage contents



**Purpose:** The interaction between Training Staff and system.

- **Requirements Traceability:** Base on system requirement that system can used to manage trainee accounts, manage trainers, manage course categories, manage courses, manage topics, assign topic to course, assign trainer to topic, assign trainee to course and the Administrator role can login to the system, create, edit and delete new Trainer and trainee account
- **Priority:** High
- **Actors:** Training Staff
- **Extends:**
  - View /Update Training staff account
  - View/Create/Update/Delete Trainer account
  - View/Create/Update/Delete Trainee account
  - View/Create/Update/Delete Course
  - View/Create Topic
  - View/Create/Update/Delete Category
  - Assign Trainer
  - Assign Trainee
- **Includes:**
  - Verify username/password

### 3.3.3 Trainer use case diagram

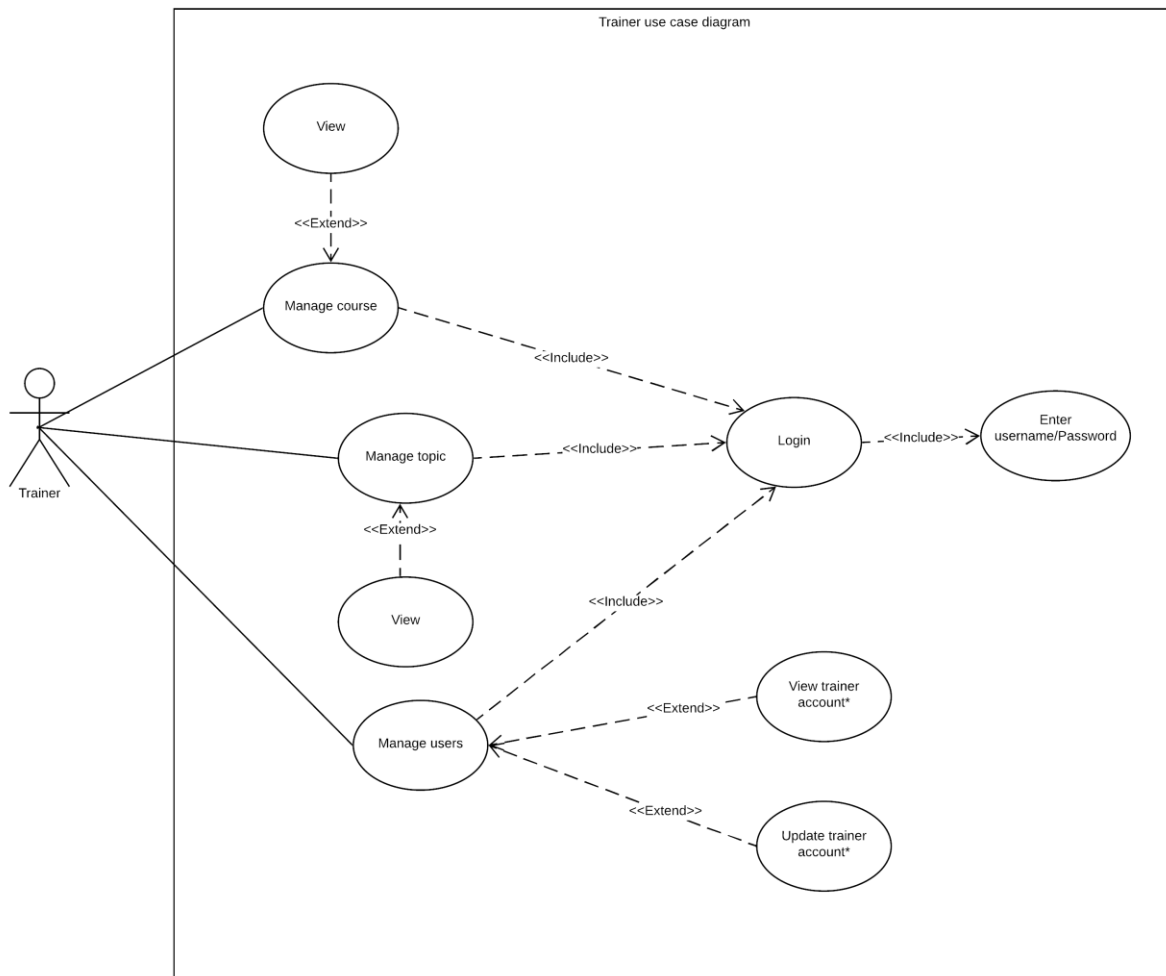


Figure 5. Trainer use case diagram

- **Purpose:** The interaction between Trainer and system
- **Requirements Traceability:** Base on system requirement that system can used to manage trainee accounts, manage trainers, manage courses, manage topics, can login to the system.
- **Priority:** High
- **Actors:** Training Staff
- **Extends:**
  - View/Update\* Trainer account
  - View Course
  - View Topic
- **Includes:**
  - Verify username/password

### 3.3.4 Trainee use case diagram

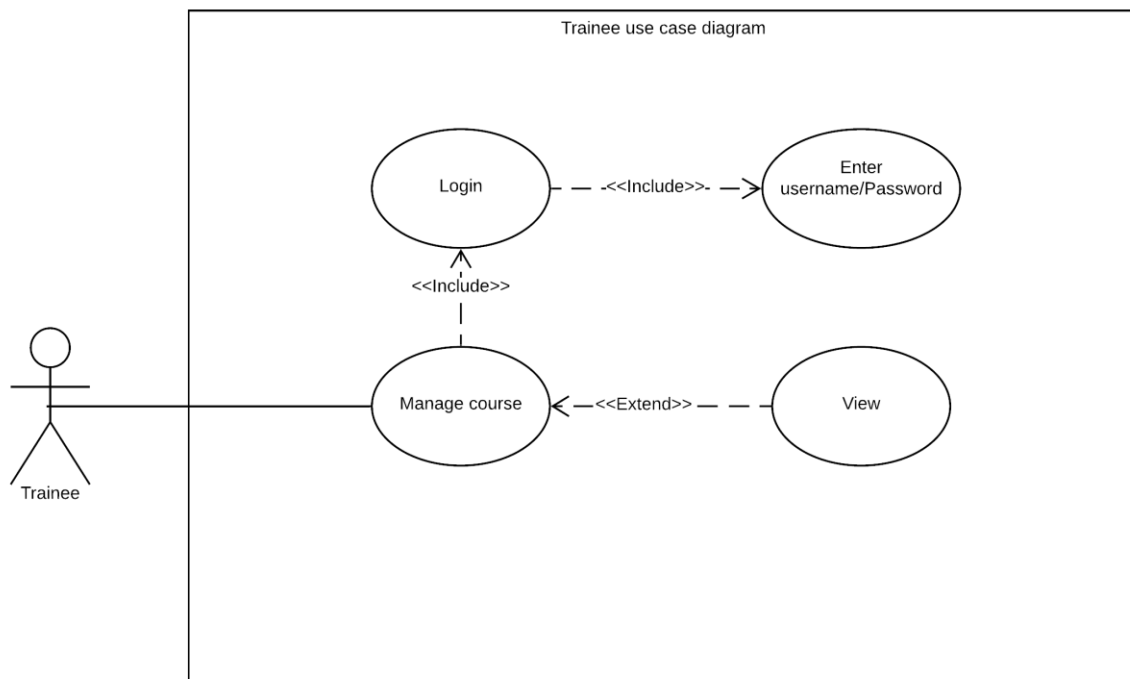


Figure 6. Trainee use case diagram

- **Purpose:** The interaction between Trainee and system.
- **Requirements Traceability:** Base on system requirement that system can used to manage trainee accounts, manage courses, manage topics, can login to the system
- **Priority:** High
- **Actors:** Training Staff
- **Extends:**
  - View Course
- **Includes:**
  - Verify username/password

## 4 Other Non-functional Requirements

### 4.1 Performance Requirements

- **First Contentful Paint:** Less or equal to 2.0 s
- **First Meaningful Paint:** Less or equal to 2.0 s
- **Speed Index:** Less or equal to 2.0 s
- **First CPU Idle:** Less or equal to 2.0 s
- **Time to Interactive:** Less or equal to 2.3 s
- **Max Potential First Input Delay:** Less or equal to 60 ms

0.1 second: the limit after which the system reaction doesn't seem instantaneous;

1 second: when user will notice the delay, but without interrupting the flow of thought;

10 seconds: when user attention is completely lost.

The landing page supporting 5 thousand users per hour must provide 6 seconds or less response time in a Chrome desktop browser, including the rendering of text and images, over an LTE connection.

### 4.2 Safety and Security Requirements

The website will deploy with HTTPS and has SSL

### 4.3 Software Quality Attributes

The web dashboard must be available to users 98 percent of the time every month during business hours

### 4.4 Localization

The date format must be as follows: month.date.year.

The font on the website must be easy to read.