

## Higher Nationals in Computing

### UNIT 30

# UNIT 30: APPLICATION DEVELOPMENT

## ASSIGNMENT No.2

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Class: GCS0801\_NX

Subject code: 1670

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Assignment due: May 2021

Assignment submitted: May 2021

## ASSIGNMENT 2 FRONT SHEET

<b>Qualification:</b>	BTEC HND Diploma in Computing and Systems Development		
<b>Unit number and title:</b>	Unit 30: Application Development		
<b>Assignment due:</b>	May 2021	<b>Assignment submitted:</b>	May 2021
<b>Learner's name:</b>	Trinh Thi Dieu Huyen	<b>Assessor name:</b>	Thai Thi Thanh Thao
<b>Learner declaration:</b>	I certify that the work submitted for this assignment is my own and research sources are fully acknowledged.		
<b>Learner signature:</b>	huyen	<b>Date:</b>	May 2021

### Grading grid

P4	P5	P6	M3	M4	M5	D2	D3

<b>Assignment title</b>	<b>Assignment 2: Application Implementation and Evaluation</b>
In this assignment, you will have opportunities to provide evidence against the following criteria.  Indicate the page numbers where the evidence can be found.	

ASSESSMENT CRITERIA	EXPECTED EVIDENCE	TASK	ASSESSOR'S FEEDBACK
<b>LO3 Work individually and as part of a team to plan and produce a functional business application with support documentation</b>			
<b>P4</b> Create a formal questionnaire that effectively reviews your business application, problem definition statement, proposed solution and development strategy. Use this questionnaire as part of a peer-review and document any feedback given.	1. Questionnaires to peer-review your application	1	
<b>P5</b> Develop a functional business application based on a specified business problem.	2. A runnable implementation of the application	2	
<b>LO4 Evaluate the performance of a business application against its Software Design Document and initial requirements</b>			
<b>P6</b> Review the performance of your business application against the Problem Definition Statement and initial requirements.	3. Test plan 4. Test results	3	

Assessment criteria	Expected Evidence	Feedback (note on Merit/Distinction if applicable)
Merit descriptor No. (M3)		
Merit descriptor No. (M4)		
Merit descriptor No. (M5)		
Distinction descriptor No. (D2)		
Distinction descriptor No. (D3)		

**Summative feedbacks:**

<b>Assessor's Signature:</b>		<b>Date:</b>	
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## ASSIGNMENT 2 BRIEF

<b>Unit Number and Title</b>	<b>Unit 30: Application Development</b>
Academic Year	2021
Unit Tutor	Thai Thi Thanh Thao
<b>Assignment Title</b>	<b>Assignment 2: Application Implementation and Evaluation</b>
<b>Issue Date</b>	<b>May 2021</b>
Submission Date	May 2021
IV Name & Date	Thai Thi Thanh Thao April 2021

### SUBMISSION FORMAT

The submission is in the form of documents/files:

1. A report document including required evidences
2. An installable and executable version of your application (P5)
3. A presentation if necessary (D2, D3)

You are required to make use of headings, paragraphs, subsections and illustrations as appropriate, and all work must be supported with research and referenced using the Harvard referencing system.

### ASSIGNMENT BRIEF AND GUIDANCE

As technology is being developed rapidly nowadays, FPT Co. desires to build a continuing study environment throughout the corporation. It is necessary to develop a web-based system, which manages the activity of "Training" for the internal training program of the company. This system can be used to manage trainee accounts, manage trainers, manage course categories, manage courses, manage topics, assign topics to courses, assign trainers to topics, assign trainees to courses.

This is a system used by the HR department. We have three roles in this system, administrator, training staff and trainer. A brief description of those roles is as follows.

### **1. An administrator's role**

- Can log in to the system through the first page of the application
- Can create/edit/delete new user account for trainer/training staff and assign/change (of existing user) username and a password

### **2. A training staff's role**

- A registered training staff, who is assigned a user name and a password by the administrator logs in can create trainee accounts by entering details like trainee name, trainee accounts, age, date of birth, education, main programming language, TOEIC score, experience details, department, location, etc.
- After entering successfully all details for trainees, his/her details are then stored in the database. The training staff is given a list of trainees for him to view and search. From the list of trainees, he can also search by trainee account, programming language, TOEIC score...
- Can update, delete trainee accounts
- Can manage course categories such as searching, adding, updating and deleting course categories. Course category includes the information such as course category name and descriptions.
- Can manage courses such as searching, adding, updating and deleting courses. Course includes course name and description.
- Can add topics such as topic name and topic descriptions into a course, add courses into a category.
- Can manage trainer profile such as adding, updating and deleting the information: Trainer name, External or Internal Type, working place, telephone, and email address.
- Can assign trainer to a topic.
- Can assign trainee to a course.

### **3. A trainer's role**

- In the same system, the trainer who have been registered by the administrator can login and can update his profile such as Trainer name, External or Internal Type, education, working place, telephone, and email address.

- Can view courses which have a topic he is assigned to.

Your manager suggests that this would be a great opportunity for you to demonstrate your capabilities by designing and developing the application. After considering, you decide to do the project. The project consists of 4 steps which are divided into two phases. After the two first steps of analyzing and designing the solution, now it is time to implement and evaluate the application.

ASSIGNMENT GUIDANCE		
Task	Assessment Criteria	Requirement
1	<b>P4</b> Create a formal questionnaire that effectively reviews your business application, problem definition statement, proposed solution and development strategy. Use this questionnaire as part of a peer-review and document any feedback given.	1. <i>Questionnaires to peer-review your application</i>
2	<b>P5</b> Develop a functional business application based on a specified business problem.	2. <i>A runnable implementation of the application</i>
3	<b>P6</b> Review the performance of your business application against the Problem Definition Statement and initial requirements.	3. <i>Test plan</i> 4. <i>Test results</i>
4	<b>M3</b> Interpret your peer-review feedback and identify opportunities not previously considered.	5. <i>Peer-review feedback and Evaluation on feedback</i> 6. <i>Recommendation for improvements</i>
5	<b>M4</b> Develop a functional business application based on a specific Software Design Document with supportive evidence of using the preferred tools, techniques and methodologies.	7. <i>Sequence diagrams to show business process of important application functions</i>
6	<b>M5</b> Analyse the factors that influence the performance of a business application and use them to undertake a critical review of the design, development and testing stages of your application.	8. <i>Evaluation of test results</i>

7	<b>D2</b> Evaluate any new insights, ideas or potential improvements to your system and justify the reasons why you have chosen to include (or not to include) them as part of this business application.	<i>9. A presentation about your application</i>
8	<b>D3</b> Critically evaluate the strengths and weaknesses of your business application and fully justify opportunities for improvement and further development.	<i>10. Evaluation of your application in the presentation</i>

Learning Outcomes and Assessment Criteria		
Pass	Merit	Distinction
<b>LO3</b> Work individually and as part of a team to plan and produce a functional business application with support documentation		
<b>P4</b> Create a formal questionnaire that effectively reviews your business application, problem definition statement, proposed solution and development strategy. Use this questionnaire as part of a peer-review and document any feedback given.  <b>P5</b> Develop a functional business application based on a specified business problem.	<b>M3</b> Interpret your peer-review feedback and identify opportunities not previously considered.  <b>M4</b> Develop a functional business application based on a specific Software Design Document with supportive evidence of using the preferred tools, techniques and methodologies.	<b>D2</b> Evaluate any new insights, ideas or potential improvements to your system and justify the reasons why you have chosen to include (or not to include) them as part of this business application.
<b>LO4</b> Evaluate the performance of a business application against its Software Design Document and initial requirements		

<p><b>P6</b> Review the performance of your business application against the Problem Definition Statement and initial requirements.</p>	<p><b>M5</b> Analyze the factors that influence the performance of a business application and use them to undertake a critical review of the design, development and testing stages of your application.</p>	<p><b>D3</b> Critically evaluate the strengths and weaknesses of your business application and fully justify opportunities for improvement and further development.</p>
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## ASSIGNMENT 1 ANSWERS

**LO3 Work individually and as part of a team to plan and produce a functional business application with support documentation**

**P4 Create a formal questionnaire that effectively reviews your business application, problem definition statement, proposed solution and development strategy. Use this questionnaire as part of a peer-review and document any feedback given.**

The purpose of this questionnaire is to evaluate the effectiveness of the FPT company's web-based application. The participants (includes training staff, trainers and trainees of the FPT Co.) shall fill out the application data.

*Table 1: Questionnaires to peer-review our application*

PARTICIPANT INFORMATION					
<b>ID:</b>					
<b>Name:</b>					
<b>Gender:</b>					
<b>Position:</b>					
<b>Department:</b>					
<b>Training Course:</b>					
QUESTIONNAIRE					
<b>Instructions:</b> Please indicate your level of agreement with the statement listed below					
General view of our website	<b>Totally agree</b>	Agree	Neutral	Disagree	Strongly disagree
The web provides user interaction with different users					

The web can play an important part in the training process					
The web can replace the traditional training process					
<b>User interface design</b>	<b>Totally agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly disagree</b>
The color on the screen is clear and soothing to the eyes					
The interface of the website is pleasant					
The font size is clear					
<b>General about the functions for trainees of our website</b>	<b>Totally agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly disagree</b>
There is clear decentralization among users					
The website navigation is intuitive					
I easily control the course and the topic of a course					
<b>General about the functions for trainers of our website</b>	<b>Totally agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly disagree</b>
I easily manage the trainees in a course					
I easily create, update, view, and					

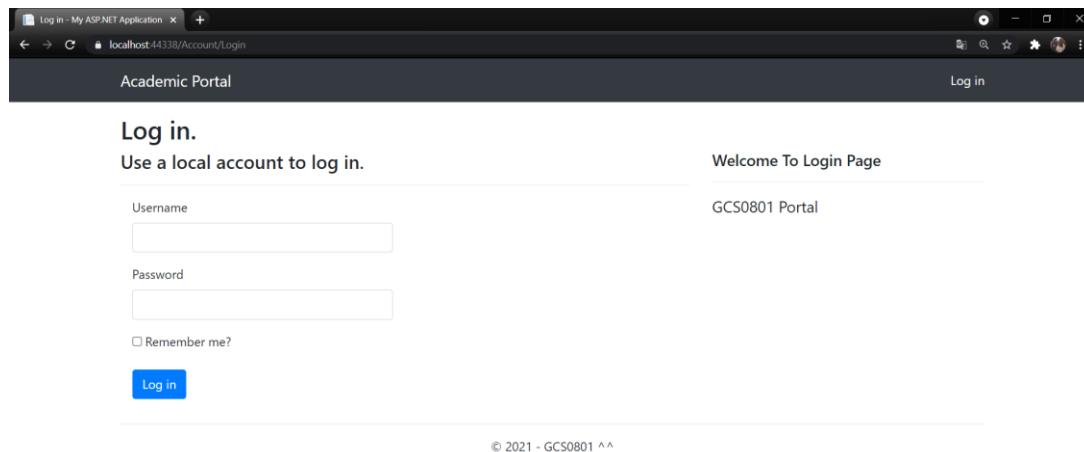
delete topics					
General about the functions for training staff of our website	Totally agree	Agree	Neutral	Disagree	Strongly disagree
I easily manage the trainers account and trainees account					
Easy to create, delete, update, view the account of trainers and trainees					
It is easy to manage categories and courses (C.R.U.D)					
<b>What did you like most about our Website?</b> →					
<b>What aspects of the website could be improved?</b> →					
<i>Thanks for your feedback!</i>					

## P5 Develop a functional business application based on a specified business problem

Our web application contains a lot of code files with many programming languages like C#, HTML, CSS, etc. Source code of project and relations document is already uploaded to Google Drive. Below is a link to Google Drive containing that folder you can to access:

<https://drive.google.com/drive/folders/12t09g8iAc7J5MRRTB9GXMReNjGCxSQSI?usp=sharing>

### 1. Login Page



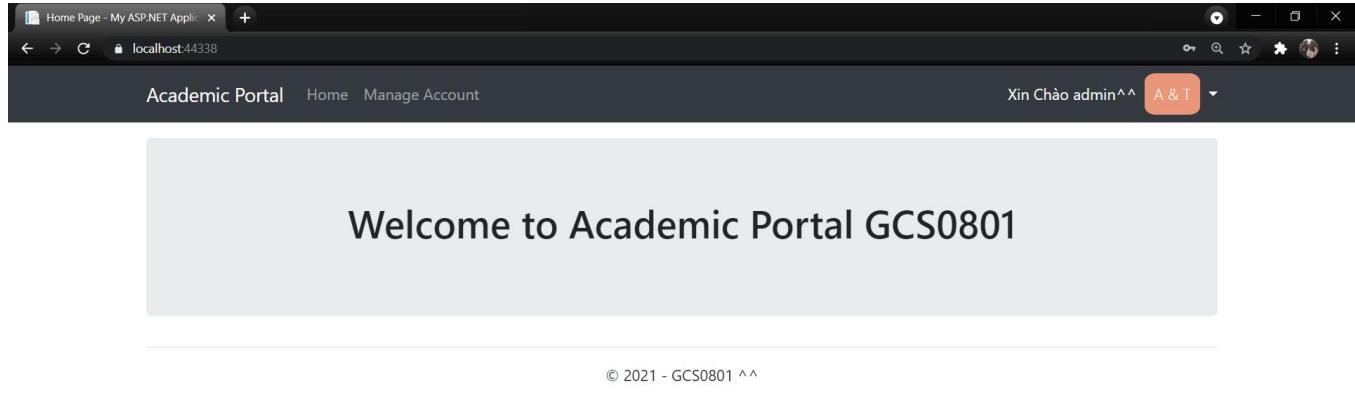
The screenshot shows a web browser window with the title 'Log in - My ASP.NET Application' and the URL 'localhost:44338/Account/Login'. The page is titled 'Academic Portal' and has a 'Log in' button in the top right corner. The main content area is titled 'Log in.' and 'Use a local account to log in.' It contains two text input fields: 'Username' and 'Password', both with placeholder text. Below the password field is a 'Remember me?' checkbox. A blue 'Log in' button is at the bottom. The right side of the page has a sidebar with the text 'Welcome To Login Page' and 'GCS0801 Portal'. At the bottom, a copyright notice reads '© 2021 - GCS0801 ^^'.

Figure 1: Login Page

## 2. Admin Page

### 2.1. Home page

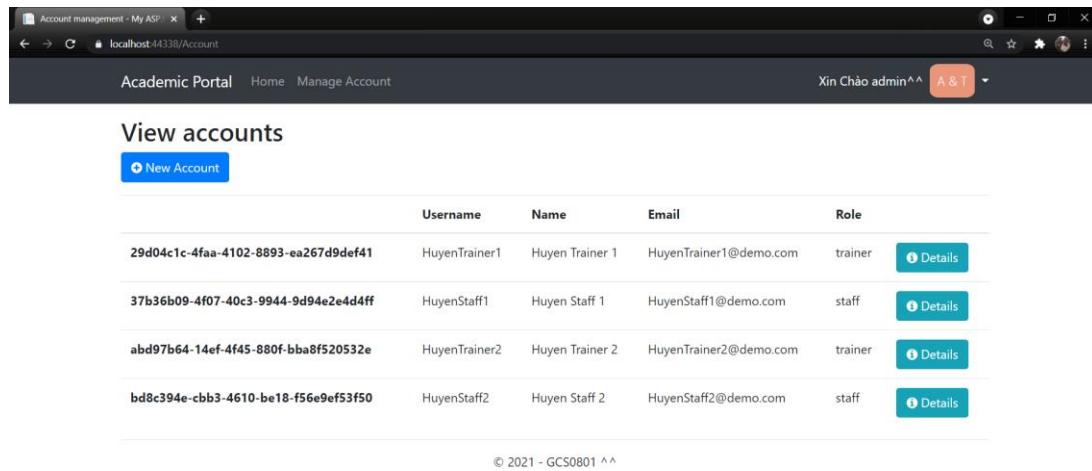
- ✓ Username: Admin
- ✓ Password: a



The screenshot shows a web browser window with the title 'Home Page - My ASP.NET Application' and the URL 'localhost:44338'. The page is titled 'Academic Portal' and has links for 'Home' and 'Manage Account'. On the right, there is a user profile with the text 'Xin Chào admin^^' and a dropdown menu with 'A & T'. The main content area has a large text box with the message 'Welcome to Academic Portal GCS0801'. At the bottom, a copyright notice reads '© 2021 - GCS0801 ^^'.

Figure 2: Admin - Home Page

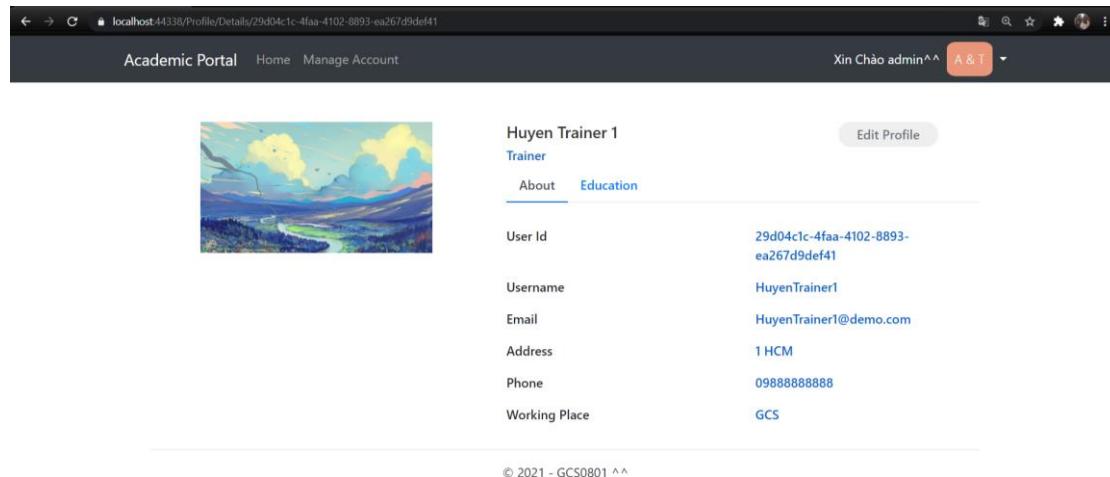
## 2.2. Manage account (Staff, Trainer)



Username	Name	Email	Role
29d04c1c-4faa-4102-8893-ea267d9def41	Huyen Trainer 1	HuyenTrainer1@demo.com	trainer
37b36b09-4f07-40c3-9944-9d94e2e4d4ff	Huyen Staff 1	HuyenStaff1@demo.com	staff
abd97b64-14ef-4f45-880f-bba8f520532e	Huyen Trainer 2	HuyenTrainer2@demo.com	trainer
bd8c394e-cbb3-4610-be18-f56e9ef53f50	Huyen Staff 2	HuyenStaff2@demo.com	staff

Figure 3: Admin - View Account

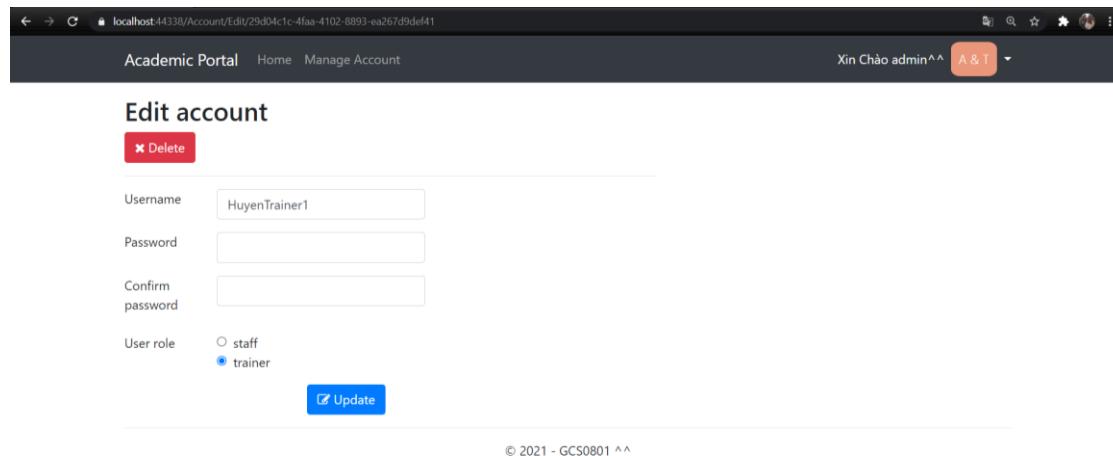
### View account details



User Id	29d04c1c-4faa-4102-8893-ea267d9def41
Username	HuyenTrainer1
Email	HuyenTrainer1@demo.com
Address	1 HCM
Phone	0988888888
Working Place	GCS

Figure 4: Admin - View Account Details

### Edit for update or delete



localhost:44338/Account/Edit/29d04c1c-4faa-4102-8893-ea267d9def41

Academic Portal Home Manage Account

Xin Chào admin^^ A & T

**Edit account**

**>Delete**

Username: HuyenTrainer1

Password:

Confirm password:

User role:

staff

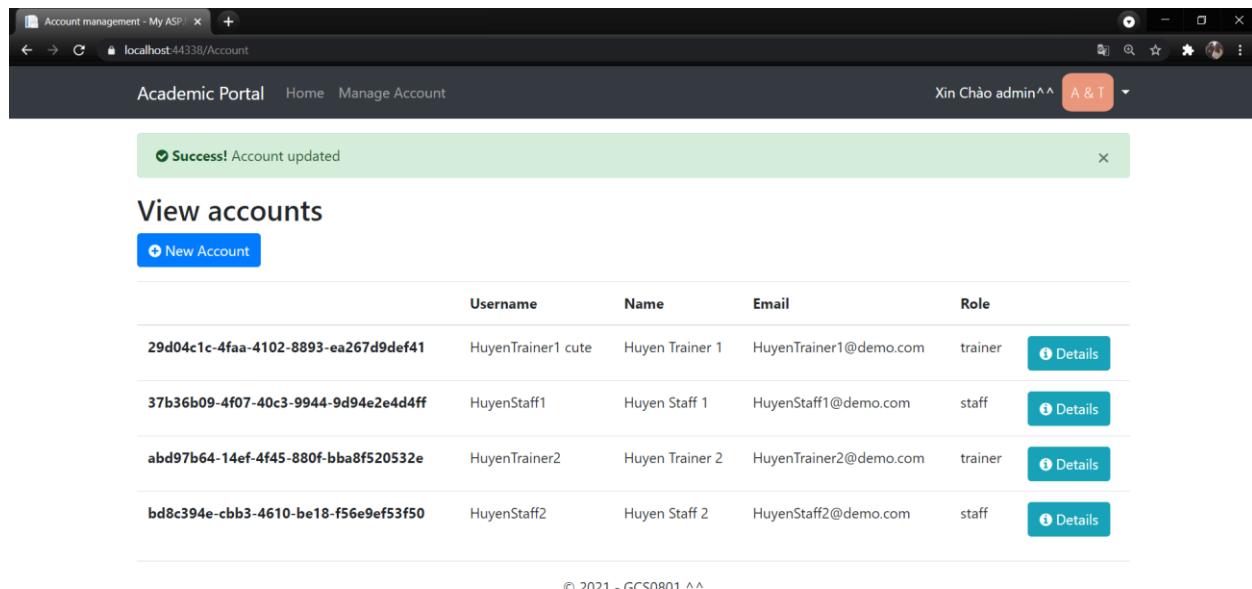
trainer

**Update**

© 2021 - GCS0801 ^^

Figure 5: Admin - Edit Account

### Result update account



localhost:44338/Account

Academic Portal Home Manage Account

Xin Chào admin^^ A & T

**Success! Account updated**

**View accounts**

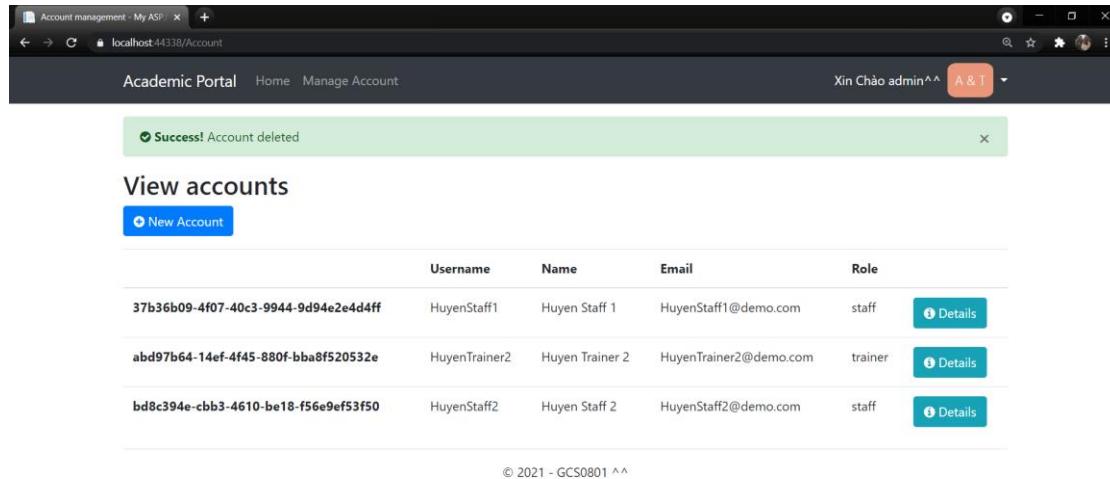
**New Account**

	Username	Name	Email	Role
29d04c1c-4faa-4102-8893-ea267d9def41	HuyenTrainer1 cute	Huyen Trainer 1	HuyenTrainer1@demo.com	trainer
37b36b09-4f07-40c3-9944-9d94e2e4d4ff	HuyenStaff1	Huyen Staff 1	HuyenStaff1@demo.com	staff
abd97b64-14ef-4f45-880f-bba8f520532e	HuyenTrainer2	Huyen Trainer 2	HuyenTrainer2@demo.com	trainer
bd8c394e-cbb3-4610-be18-f56e9ef53f50	HuyenStaff2	Huyen Staff 2	HuyenStaff2@demo.com	staff

© 2021 - GCS0801 ^^

Figure 6: Admin - View Account After Update

## Result delete account



Success! Account deleted

**View accounts**

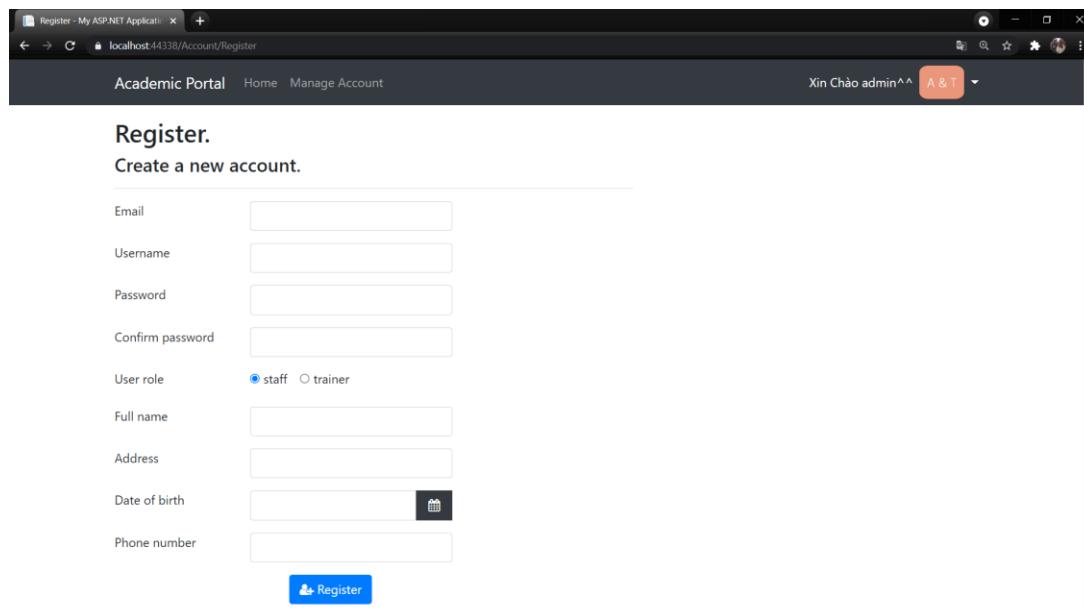
[New Account](#)

Username	Name	Email	Role
37b36b09-4f07-40c3-9944-9d94e2e4d4ff	HuyenStaff1	HuyenStaff1@demo.com	staff
abd97b64-14ef-4f45-880f-bba8f520532e	HuyenTrainer2	HuyenTrainer2@demo.com	trainer
bd8c394e-cbb3-4610-be18-f56e9ef53f50	HuyenStaff2	HuyenStaff2@demo.com	staff

© 2021 - GCS0801 ^^

Figure 7: Admin - View Account After Delete

## Create accounts for trainer or staff



Register.

Create a new account.

Email

Username

Password

Confirm password

User role  staff  trainer

Full name

Address

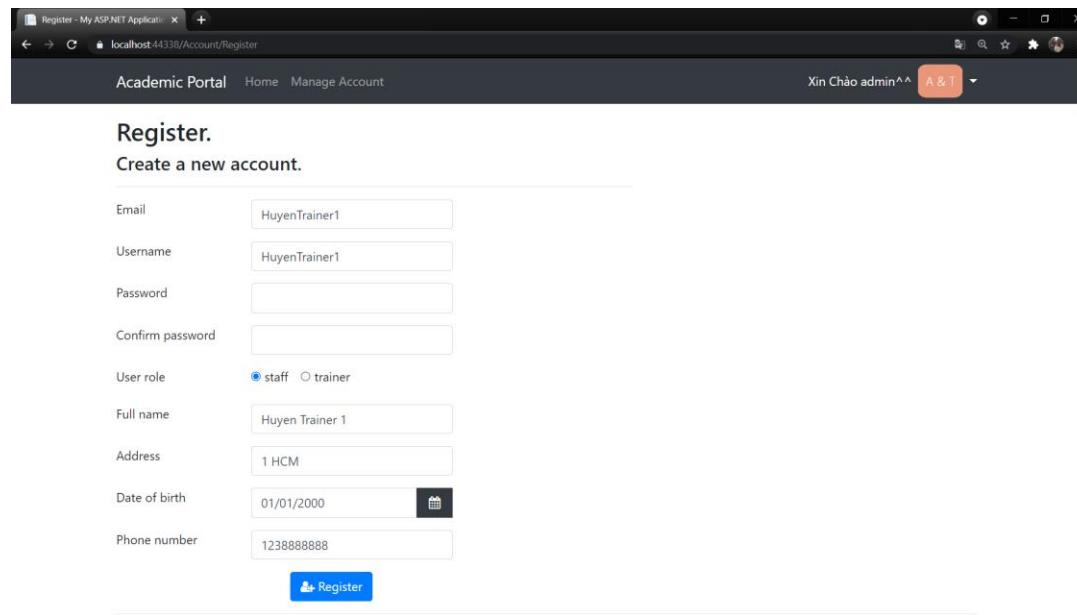
Date of birth  

Phone number

[Register](#)

Figure 8: Admin - Create Account

## Result create account

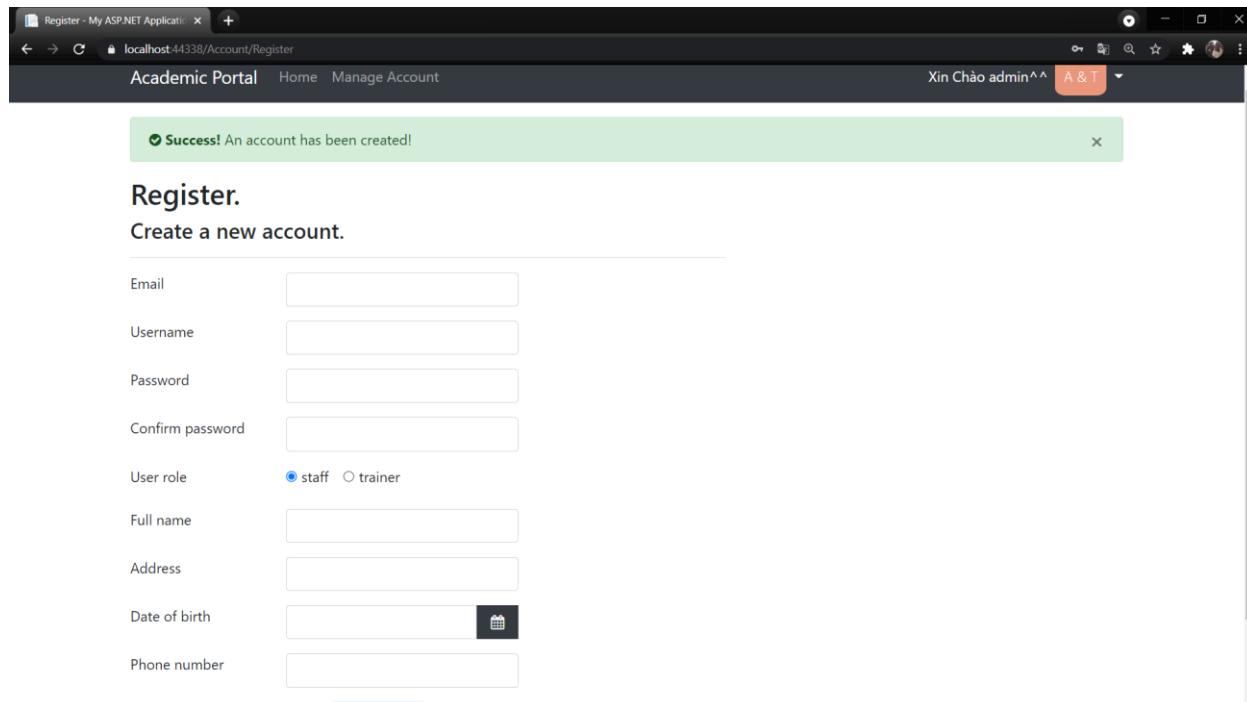


The screenshot shows a web browser window with the URL `localhost:44338/Account/Register`. The page title is "Register - My ASP.NET Application". The header includes "Academic Portal", "Home", "Manage Account", and a welcome message "Xin Chào admin^^ A & T". The main content is a "Register" form for creating a new account. The form fields are as follows:

Email	HuyenTrainer1
Username	HuyenTrainer1
Password	
Confirm password	
User role	<input checked="" type="radio"/> staff <input type="radio"/> trainer
Full name	Huyen Trainer 1
Address	1 HCM
Date of birth	01/01/2000 
Phone number	1238888888

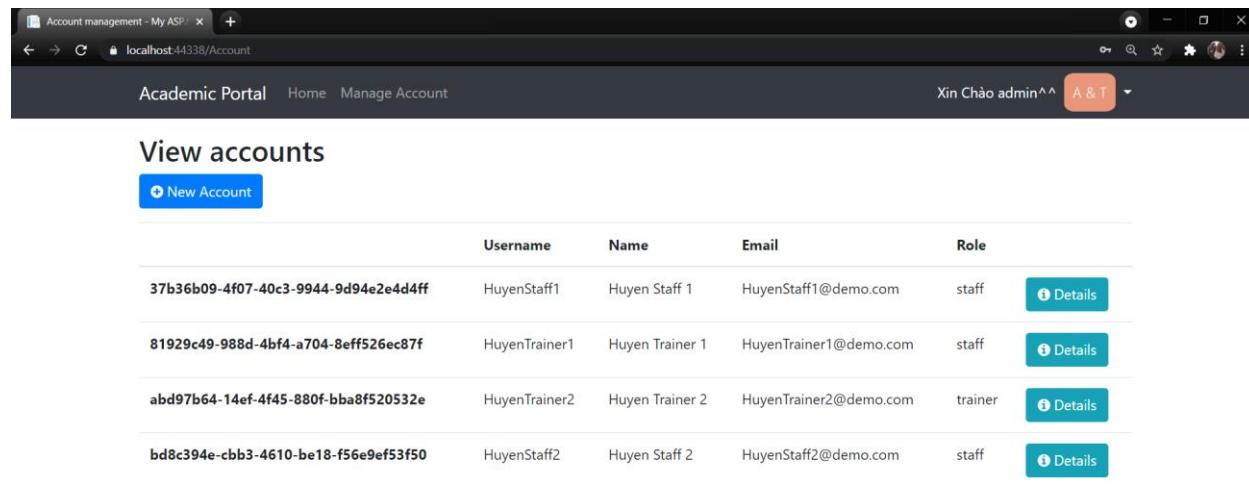
**Register**

Figure 9: Admin – Result Create Account – Input Info



The screenshot shows a web browser window with the URL `localhost:44338/Account/Register`. The page title is "Register - My ASP.NET Application". The header includes "Academic Portal", "Home", "Manage Account", and a welcome message "Xin Chào admin^^ A & T". A green success message box displays "Success! An account has been created!" with a close button "x". The main content is a "Register" form for creating a new account. The form fields are identical to Figure 9. A blue progress bar is visible at the bottom of the form.

Figure 10: Admin - Result Create Account - Confirmation Created Successfully



View accounts

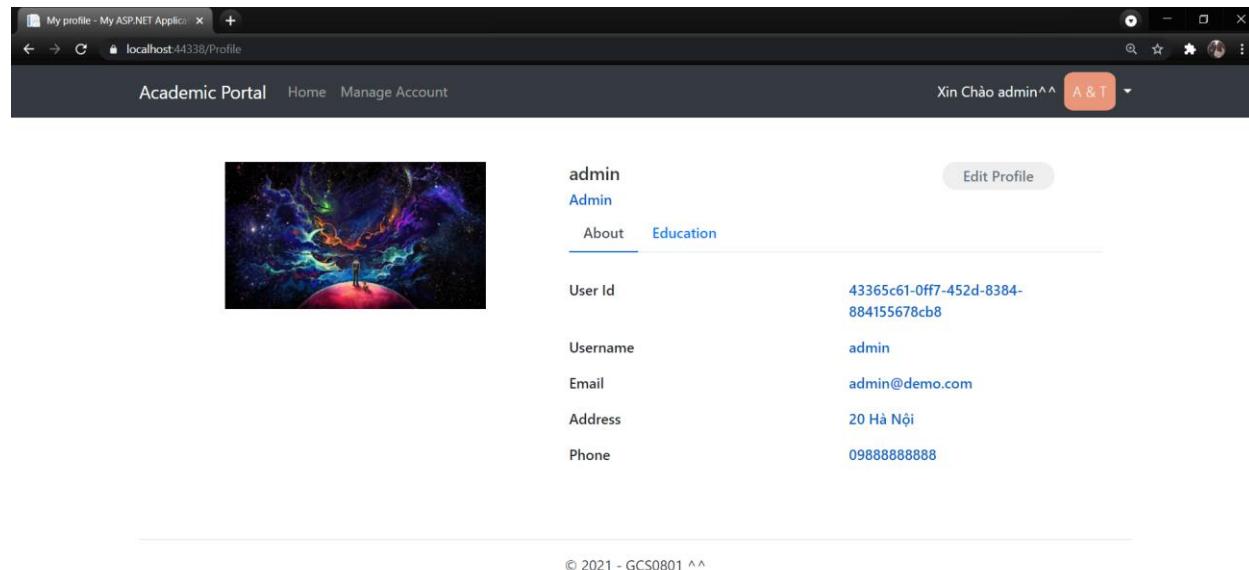
[New Account](#)

	Username	Name	Email	Role
37b36b09-4f07-40c3-9944-9d94e2e4d4ff	HuyenStaff1	Huyen Staff 1	HuyenStaff1@demo.com	staff
81929c49-988d-4bf4-a704-8eff526ec87f	HuyenTrainer1	Huyen Trainer 1	HuyenTrainer1@demo.com	staff
abd97b64-14ef-4f45-880f-bba8f520532e	HuyenTrainer2	Huyen Trainer 2	HuyenTrainer2@demo.com	trainer
bd8c394e-cbb3-4610-be18-f56e9ef53f50	HuyenStaff2	Huyen Staff 2	HuyenStaff2@demo.com	staff

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Figure 11: Admin - Result Create Account - View Account After Created

### Admin can edit profile of Admin



My profile - My ASP.NET App

localhost:44338/Profile

Academic Portal Home Manage Account

Xin Chào admin^^ A & T



admin  
Admin

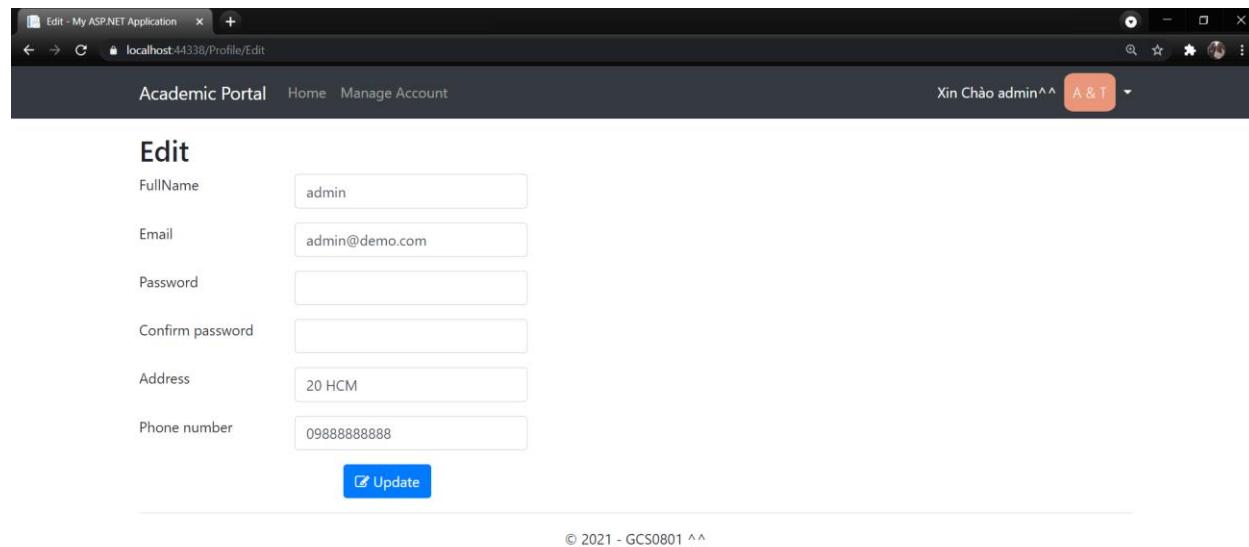
[Edit Profile](#)

[About](#) [Education](#)

User Id	43365c61-0ff7-452d-8384-884155678cb8
Username	admin
Email	admin@demo.com
Address	20 Hà Nội
Phone	0988888888

© 2021 - GCS0801 ^^

Figure 12: Admin - View My Profile



The screenshot shows a web browser window titled 'Edit - My ASP.NET Application' with the URL 'localhost:44338/Profile/Edit'. The page is titled 'Edit' and contains fields for 'FullName' (admin), 'Email' (admin@demo.com), 'Password' (empty), 'Confirm password' (empty), 'Address' (20 HCM), and 'Phone number' (0988888888). Below the form is a blue 'Update' button. At the bottom, a copyright notice reads '© 2021 - GCS0801 ^^'. The top navigation bar includes 'Academic Portal', 'Home', 'Manage Account', 'Xin Chào admin^^', and 'A & T'.

Figure 13: Admin - Edit My Profile

### 3. Staff Page

#### 3.1. Home Page

- ✓ Username: HuyenStaff1
- ✓ Password: a

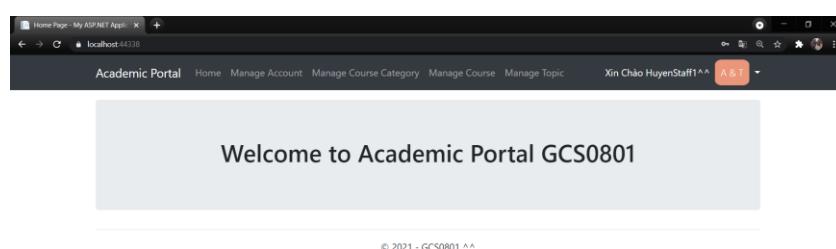
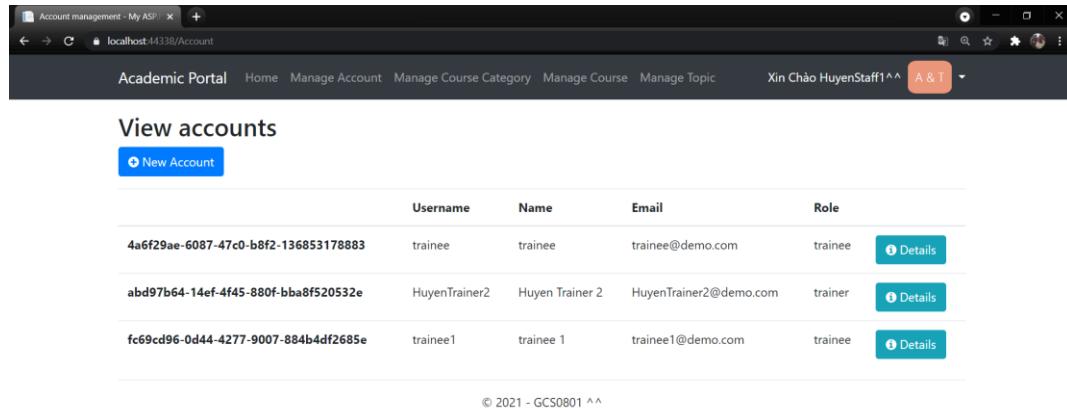


Figure 14: Staff - Home Page

### 3.2. Manage trainee/trainer account

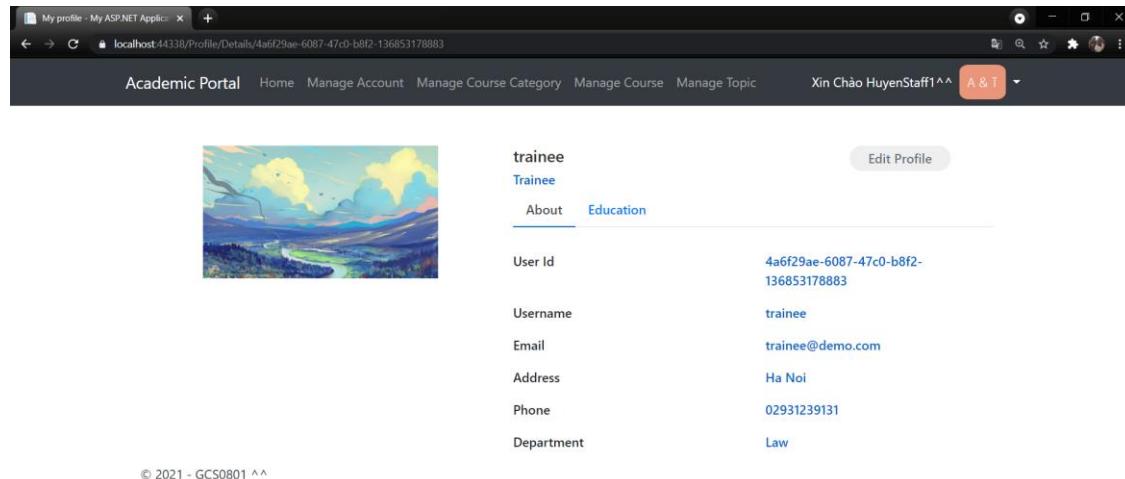
→ For the trainer account you can only view the information



Username	Name	Email	Role
4a6f29ae-6087-47c0-b8f2-136853178883	trainee	trainee@demo.com	trainee
abd97b64-14ef-4f45-880f-bba8f520532e	Huyen Trainer 2	Huyen Trainer 2@demo.com	trainer
fc69cd96-0d44-4277-9007-884b4df2685e	trainee1	trainee1@demo.com	trainee

Figure 15: Staff - View account

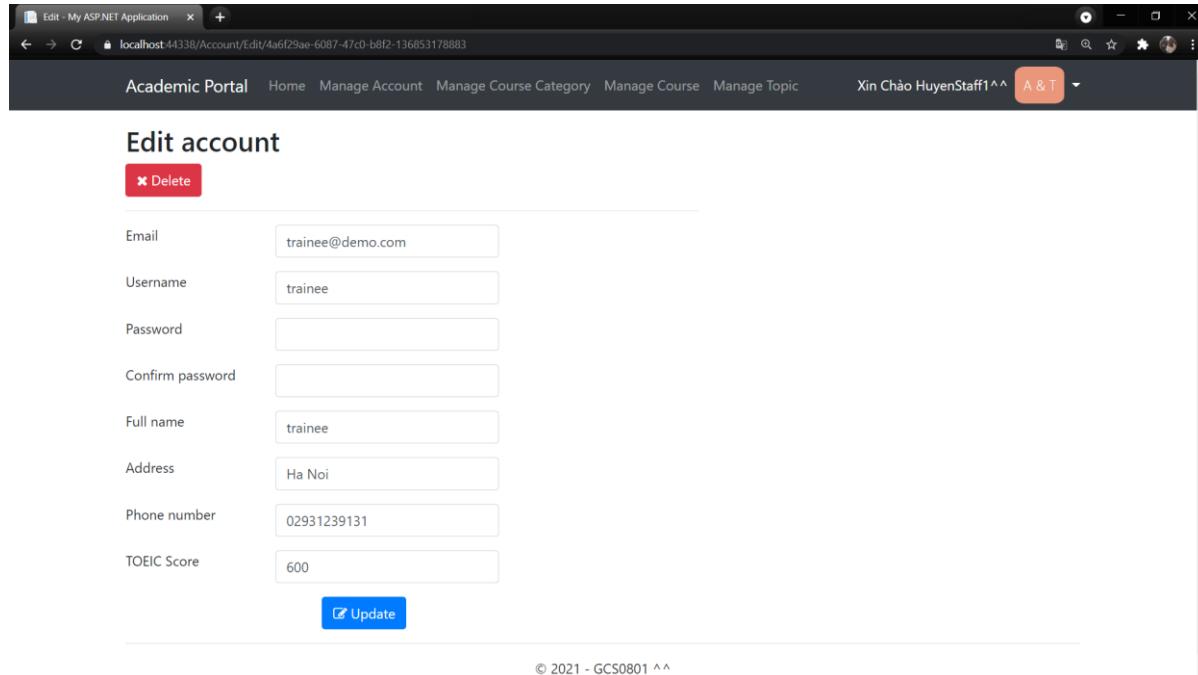
### View detail trainee – profile



User Id	4a6f29ae-6087-47c0-b8f2-136853178883
Username	trainee
Email	trainee@demo.com
Address	Ha Noi
Phone	02931239131
Department	Law

Figure 16: Staff - View Profile

## Edit trainee account and result

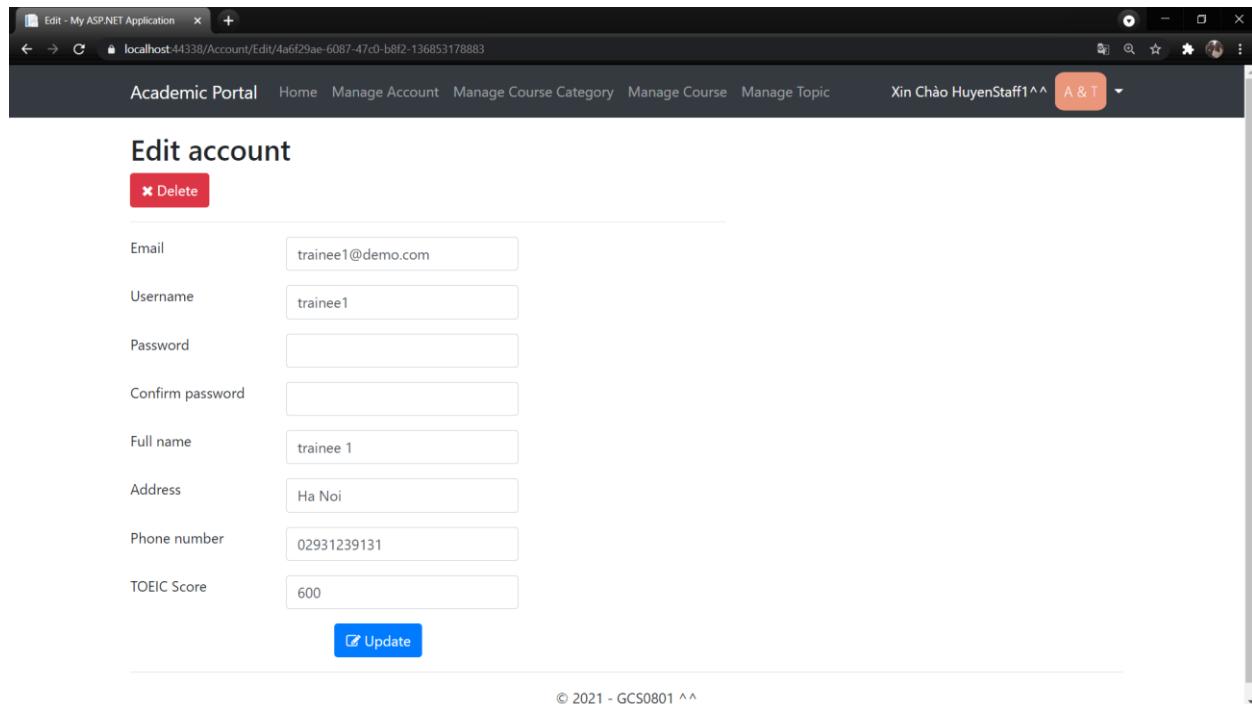


Edit account

Email	trainee@demo.com
Username	trainee
Password	
Confirm password	
Full name	trainee
Address	Ha Noi
Phone number	02931239131
TOEIC Score	600

© 2021 - GCS0801 ^^

Figure 17: Staff - Edit Trainee Account

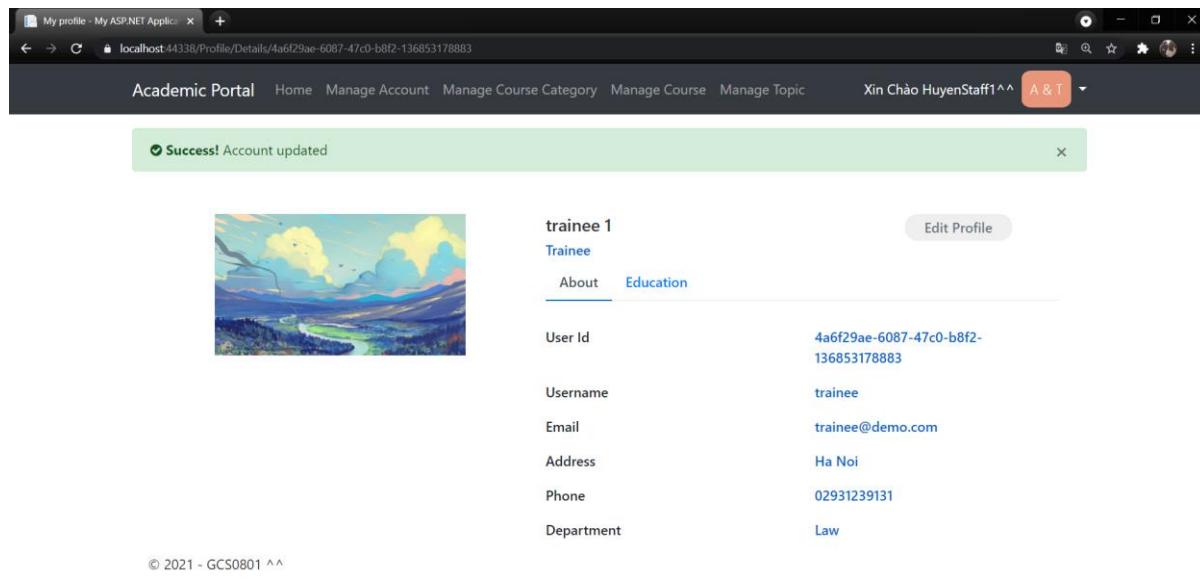


Edit account

Email	trainee1@demo.com
Username	trainee1
Password	
Confirm password	
Full name	trainee 1
Address	Ha Noi
Phone number	02931239131
TOEIC Score	600

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Figure 18: Staff - Edit Trainee Account - Form Edit



Success! Account updated

trainee 1

Trainee

About Education

User Id 4a6f29ae-6087-47c0-b8f2-136853178883

Username trainee

Email trainee@demo.com

Address Ha Noi

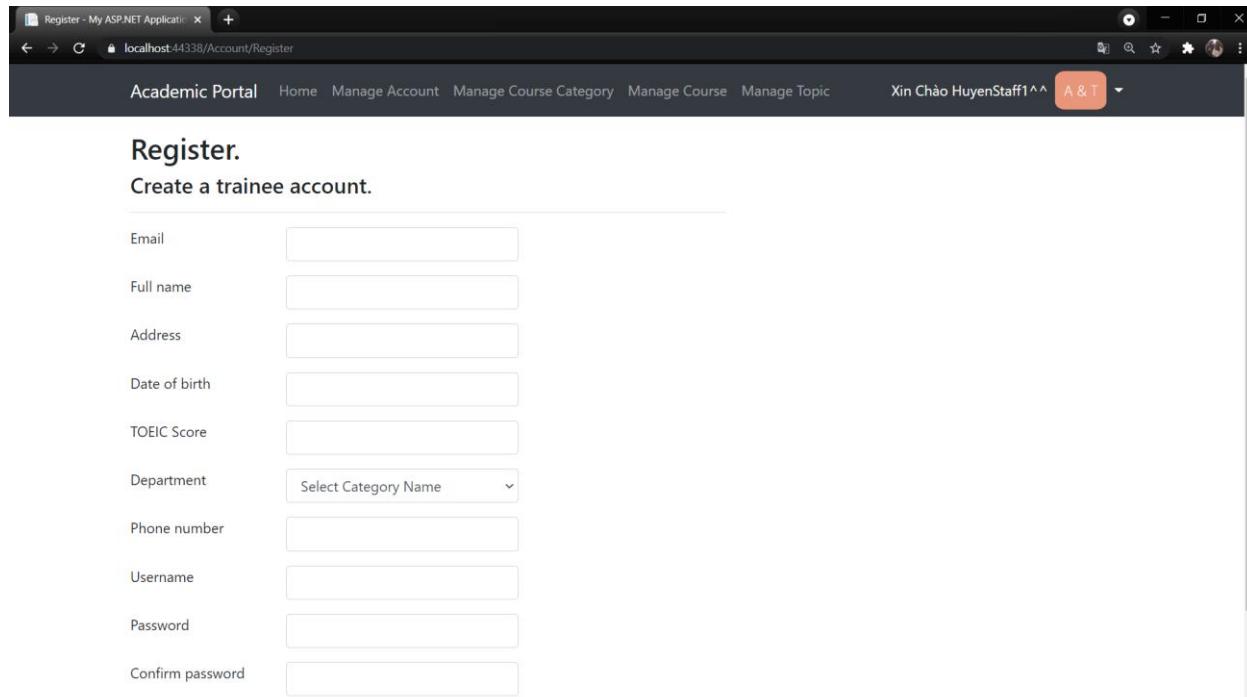
Phone 02931239131

Department Law

© 2021 - GCS0801 ^^

Figure 19: Staff - Result Edit Trainee Account

### Create trainee account and result



Register.

Create a trainee account.

Email

Full name

Address

Date of birth

TOEIC Score

Department

Phone number

Username

Password

Confirm password

Figure 20: Staff - Create Trainee Account

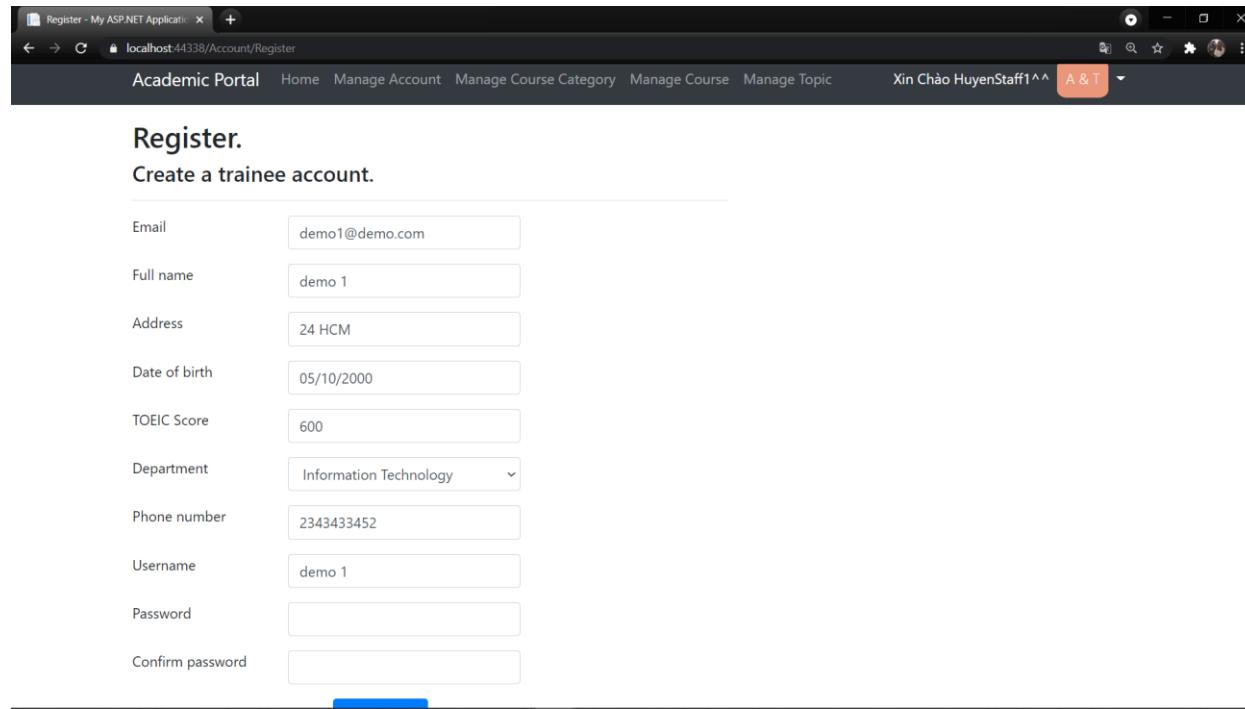


Figure 21: Staff – Create Trainee Account - Form to Create

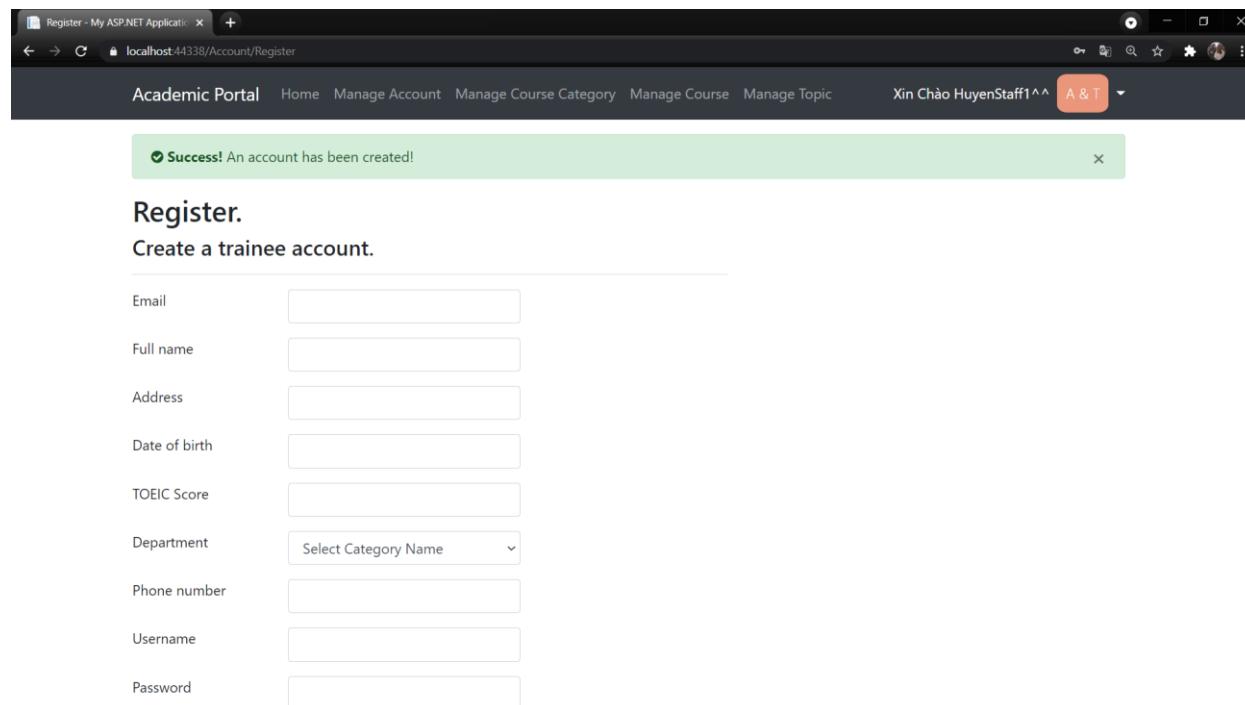
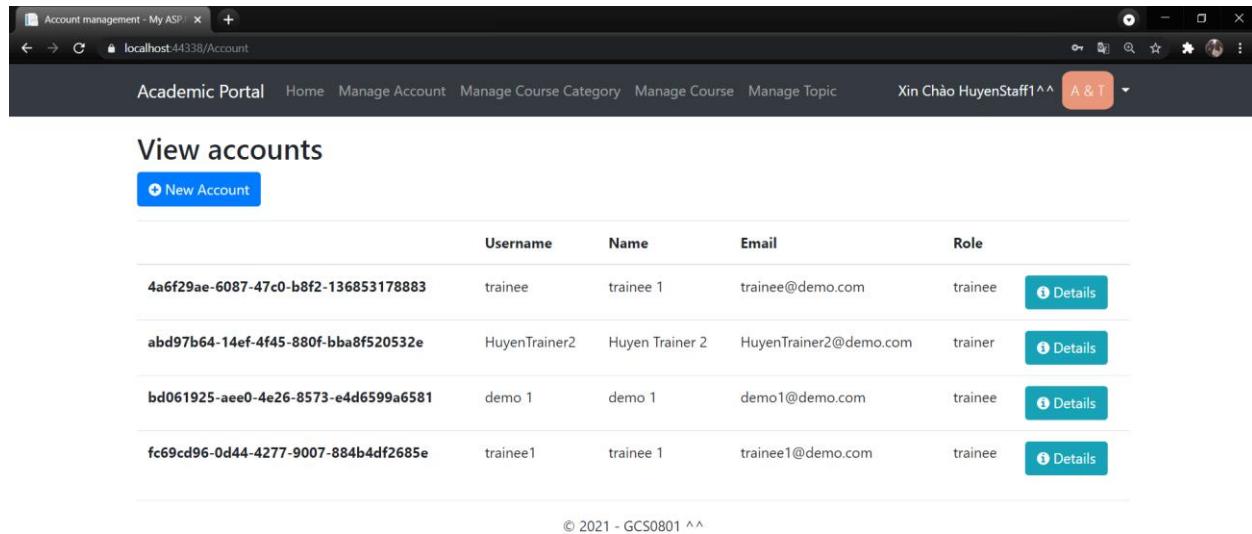


Figure 22: Staff - Result Create Trainee Account - Confirmation Created Successfully



Academic Portal Home Manage Account Manage Course Category Manage Course Manage Topic Xin Chào HuyenStaff1^^ A & T

**View accounts**

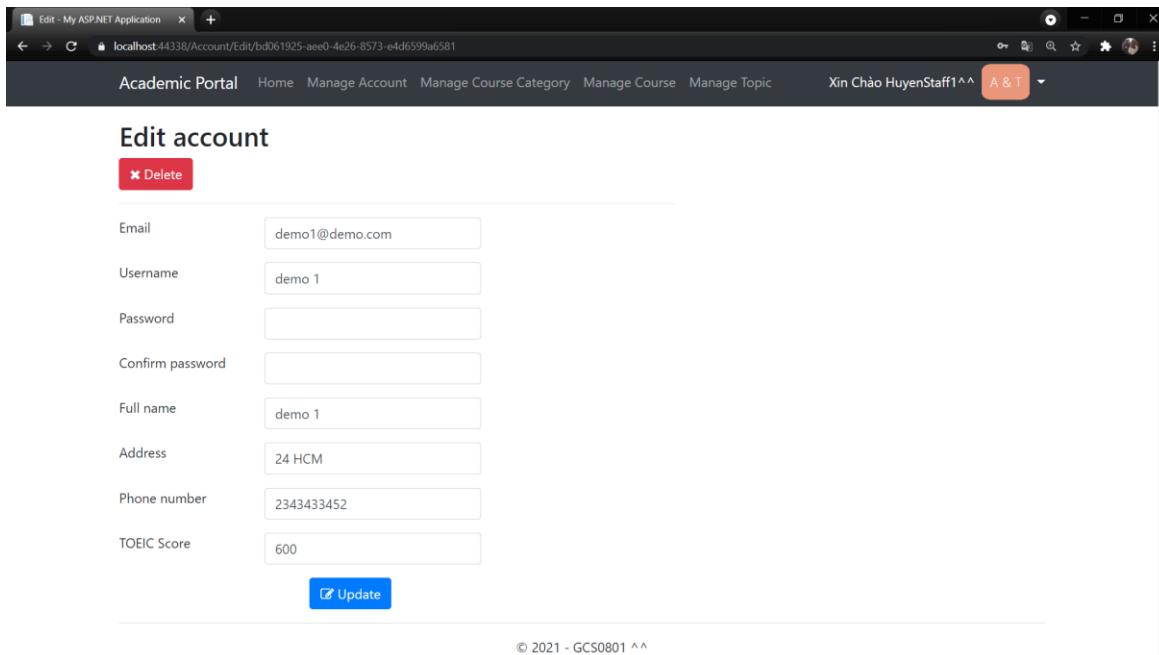
[New Account](#)

Username	Name	Email	Role	
4a6f29ae-6087-47c0-b8f2-136853178883	trainee	trainee 1	trainee	<a href="#">Details</a>
abd97b64-14ef-4f45-880f-bba8f520532e	HuyenTrainer2	Huyen Trainer 2	trainer	<a href="#">Details</a>
bd061925-aee0-4e26-8573-e4d6599a6581	demo 1	demo 1	trainee	<a href="#">Details</a>
fc69cd96-0d44-4277-9007-884b4df2685e	trainee1	trainee 1	trainee	<a href="#">Details</a>

© 2021 - GCS0801 ^^

Figure 23: Staff - View Account After Created Account

### Delete trainee account and result



Edit - My ASP.NET Application

localhost:44338/Account/Edit/bd061925-aee0-4e26-8573-e4d6599a6581

Academic Portal Home Manage Account Manage Course Category Manage Course Manage Topic Xin Chào HuyenStaff1^^ A & T

**Edit account**

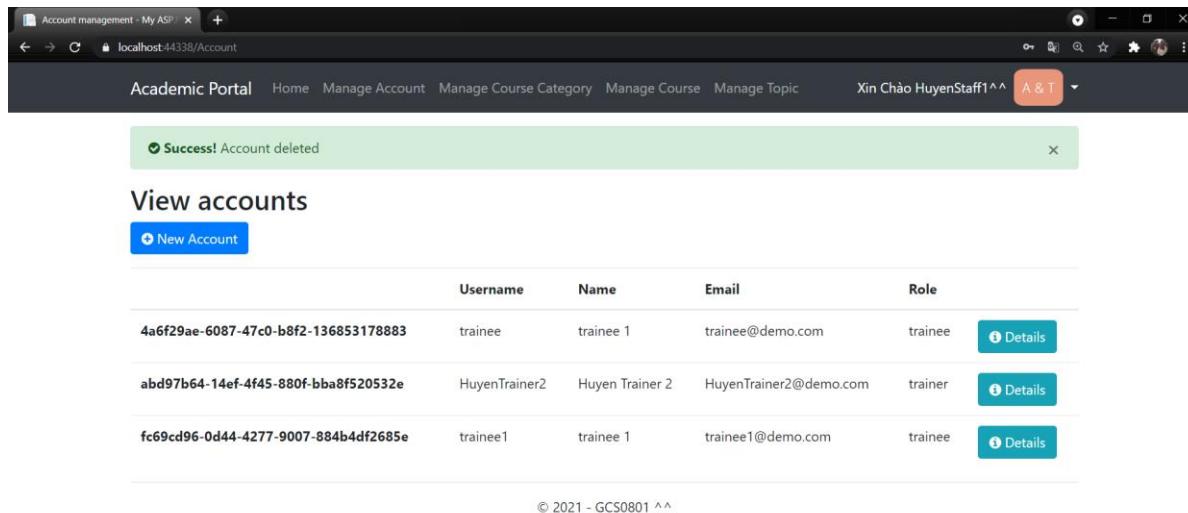
[Delete](#)

Email	demo1@demo.com
Username	demo 1
Password	
Confirm password	
Full name	demo 1
Address	24 HCM
Phone number	2343433452
TOEIC Score	600

[Update](#)

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Figure 24: Staff - Delete Trainee Account



Success! Account deleted

**View accounts**

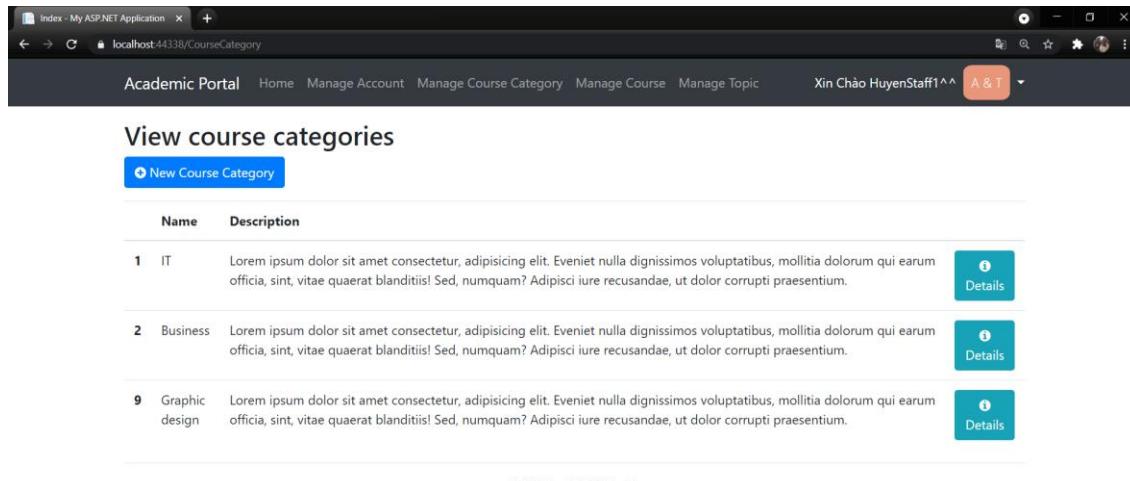
[New Account](#)

	Username	Name	Email	Role
4a6f29ae-6087-47c0-b8f2-136853178883	trainee	trainee 1	trainee@demo.com	trainee
abd97b64-14ef-4f45-880f-bba8f520532e	HuyenTrainer2	Huyen Trainer 2	HuyenTrainer2@demo.com	trainer
fc69cd96-0d44-4277-9007-884b4df2685e	trainee1	trainee 1	trainee1@demo.com	trainee

© 2021 - GCS0801 ^^

Figure 25: Staff - View Account After Delete Trainee Account

### 3.3. Manage categories



Success! Category deleted

**View course categories**

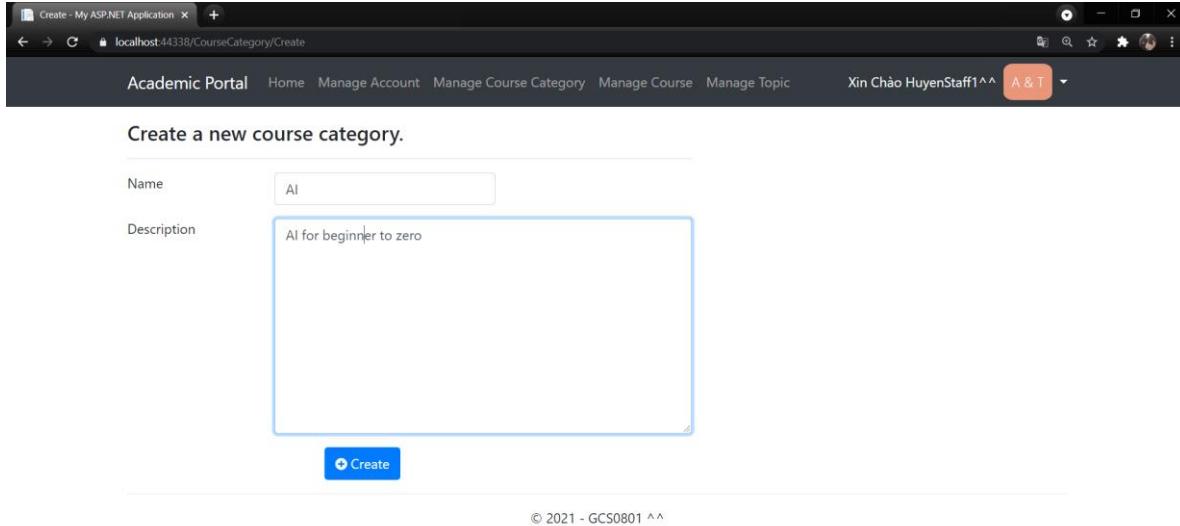
[New Course Category](#)

	Name	Description
1	IT	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.
2	Business	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.
9	Graphic design	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.

© 2021 - GCS0801 ^^

Figure 26: Staff - View Categories

## Create categories and result



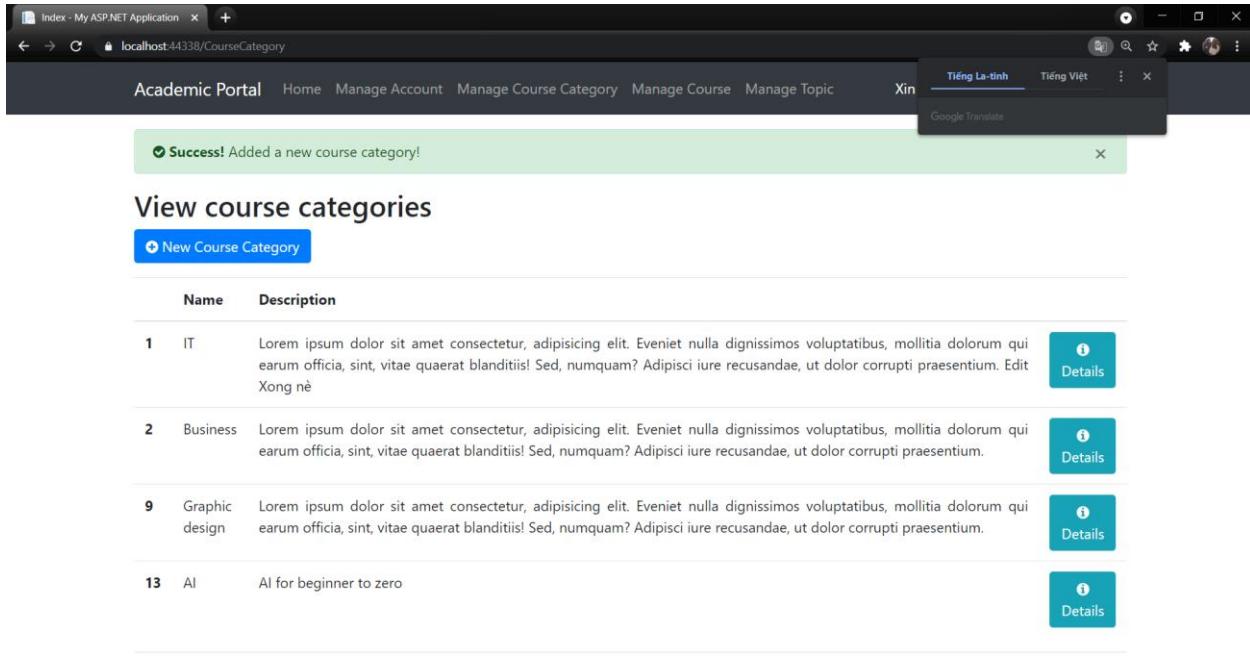
Create a new course category.

Name	AI
Description	AI for beginner to zero

**Create**

© 2021 - GCS0801 ^^

Figure 27: Staff - Create Categories



View course categories

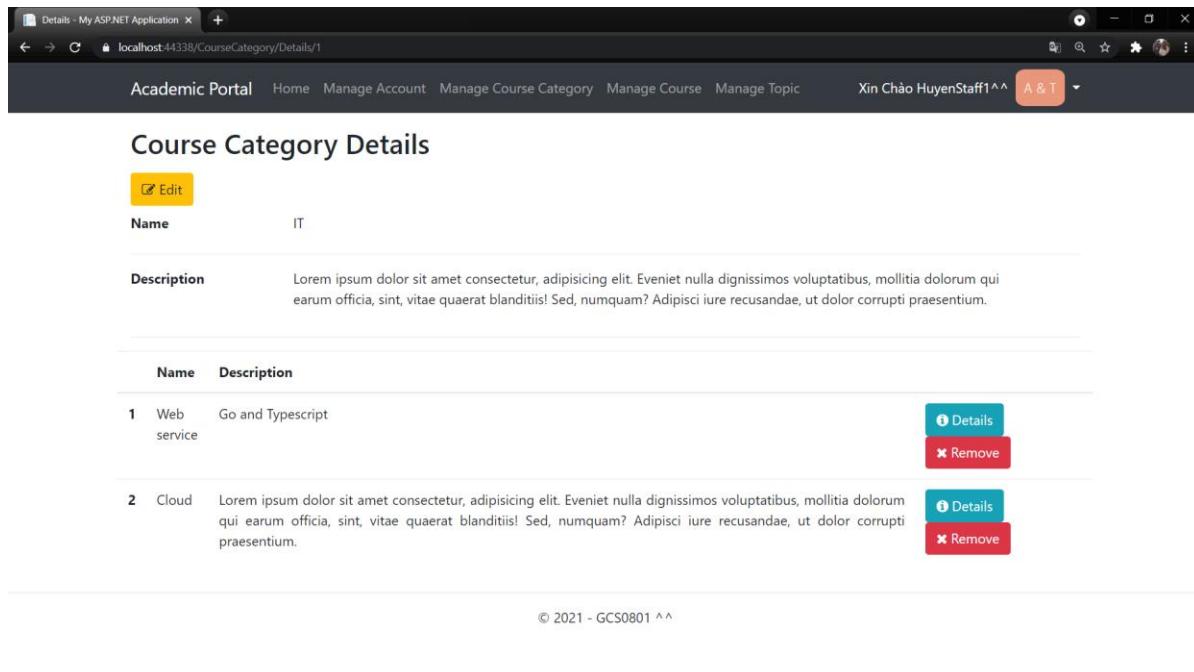
**New Course Category**

	Name	Description	
1	IT	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium. Edit Xong nè	<b>Details</b>
2	Business	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	<b>Details</b>
9	Graphic design	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	<b>Details</b>
13	AI	AI for beginner to zero	<b>Details</b>

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Figure 28: Staff - View Categories After Created

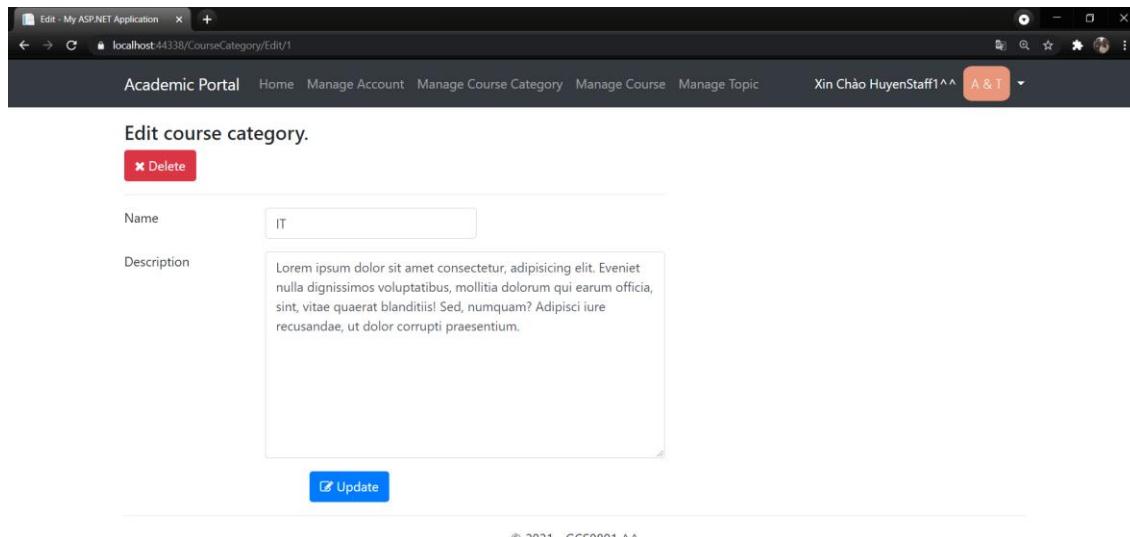
## View details course categories



The screenshot shows a web application interface for managing course categories. The title bar indicates the page is 'Course Category Details' under 'Edit - My ASP.NET Application' at 'localhost:44338/CourseCategory/Details/1'. The top navigation bar includes 'Academic Portal', 'Home', 'Manage Account', 'Manage Course Category', 'Manage Course', 'Manage Topic', and a user profile 'Xin Chào HuyenStaff1^^ A & T'. The main content area displays a table of course categories with columns 'Name' and 'Description'. The first category, 'Web service', has a 'Go and Typescript' description. The second category, 'Cloud', has a longer, placeholder description. Each category row includes a blue 'Details' button and a red 'Remove' button.

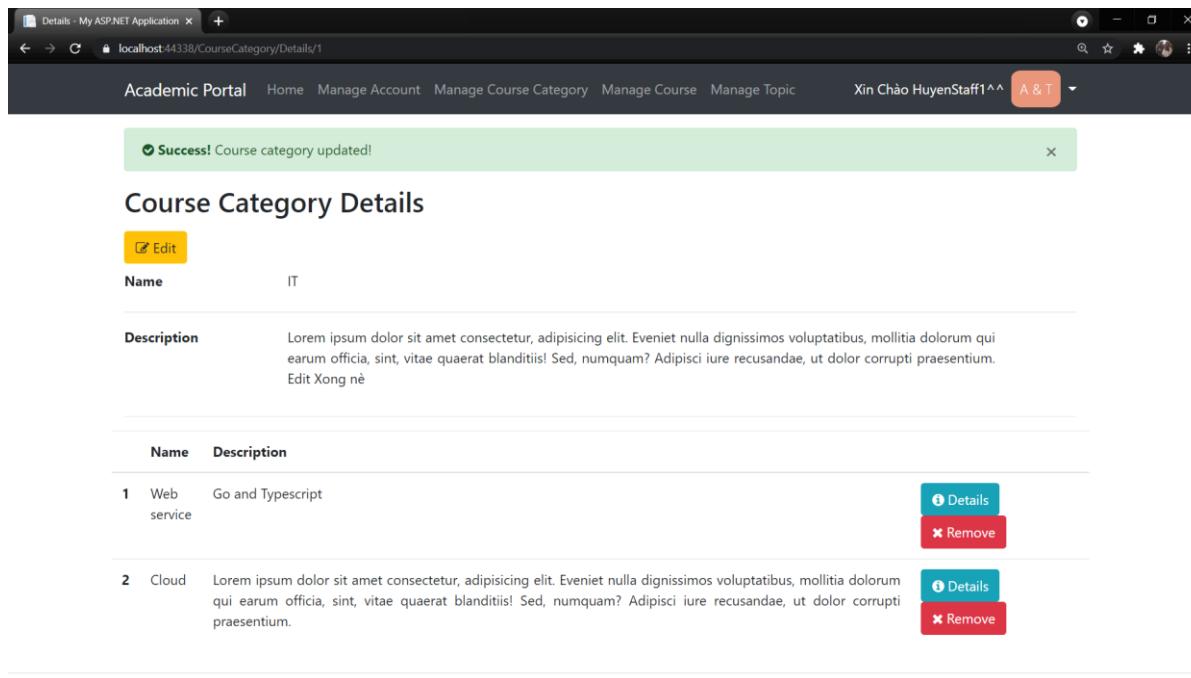
Figure 29: Staff - View Course

## Edit course categories and result



The screenshot shows a 'Edit course category' page for the 'IT' category. The title bar is 'Edit - My ASP.NET Application' at 'localhost:44338/CourseCategory/Edit/1'. The top navigation bar is identical to Figure 29. The main content shows a form with 'Name' (IT) and 'Description' (placeholder text). A blue 'Update' button is at the bottom. The footer copyright is '© 2021 - GCS0801 ^^'.

Figure 30: Staff - Edit Course



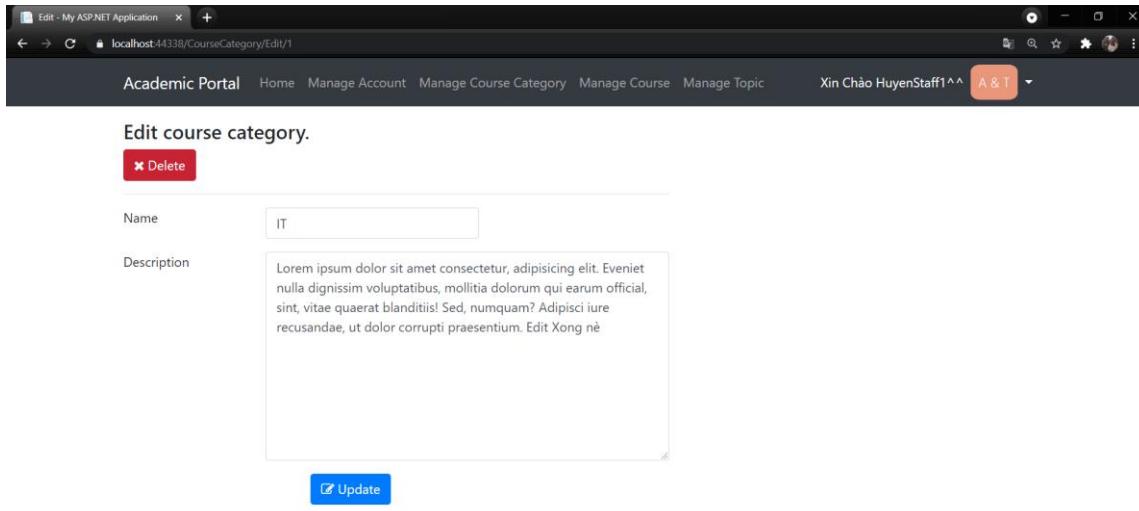
Success! Course category updated!

## Course Category Details

Course Category Details			
<a href="#">Edit</a>			
Name	Description		
1 Web	Go and Typescript service	<a href="#">Details</a>	<a href="#">Remove</a>
2 Cloud	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium. Edit Xong nè	<a href="#">Details</a>	<a href="#">Remove</a>

Figure 31: Staff - View Course After Deleted

### Delete course categories



Edit course category.

[Delete](#)

Name	IT
Description	<p>Placeholder text: Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium. Edit Xong nè</p>

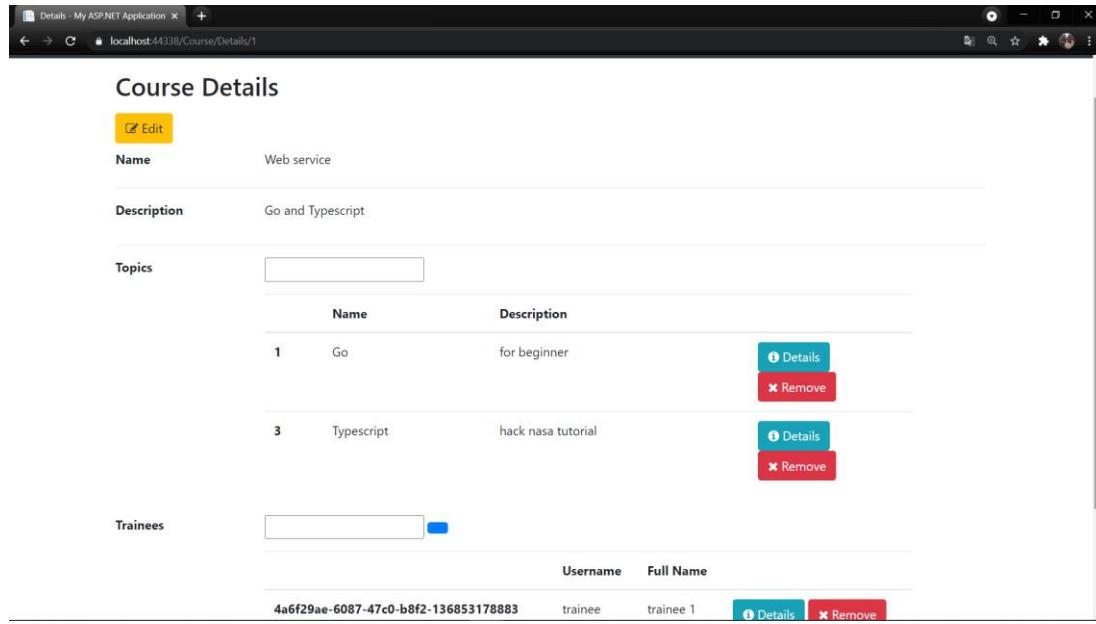
[Update](#)

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Figure 32: Staff - Delete Course

→ The way to check the results is the same as the test in the previous functions

### View course details categories



The screenshot shows a web browser window with the title 'Details - My ASP.NET Application'. The URL in the address bar is 'localhost:44338/Course/Details/1'. The page content is as follows:

**Course Details**

**Name:** Web service

**Description:** Go and Typescript

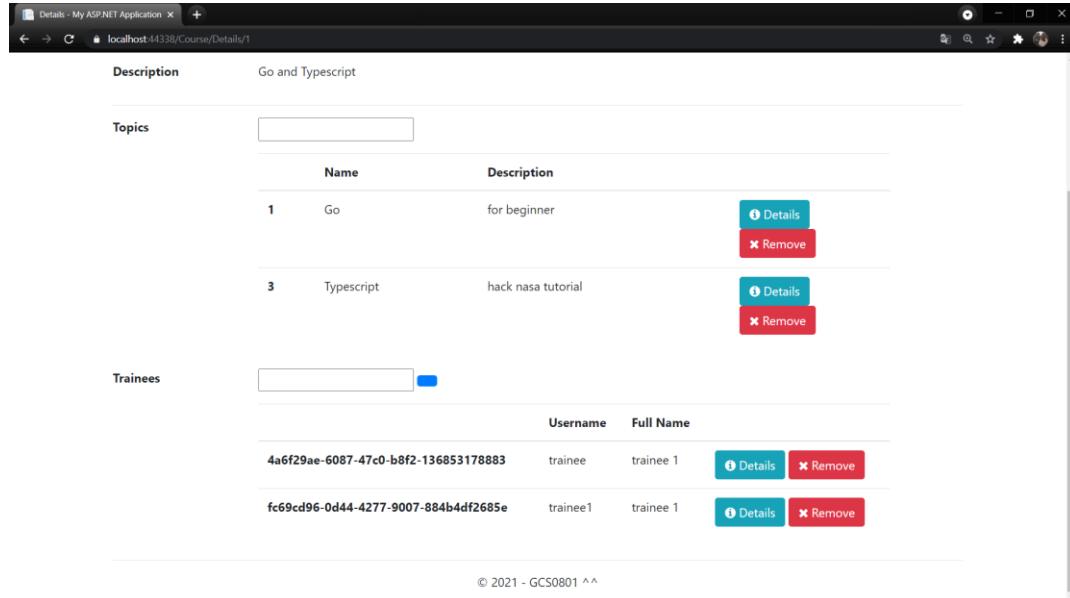
**Topics:** (empty input field)

	Name	Description	
1	Go	for beginner	<span>Details</span> <span>Remove</span>
3	Typescript	hack nasa tutorial	<span>Details</span> <span>Remove</span>

**Trainees:** (empty input field)

	Username	Full Name	
4a6f29ae-6087-47c0-b8f2-136853178883	trainee	trainee 1	<span>Details</span> <span>Remove</span>

Figure 33: Staff - View Course Categories Detail 1



The screenshot shows a web browser window with the title 'Details - My ASP.NET Application'. The URL in the address bar is 'localhost:44338/Course/Details/1'. The page content is as follows:

**Description:** Go and Typescript

**Topics:** (empty input field)

	Name	Description	
1	Go	for beginner	<span>Details</span> <span>Remove</span>
3	Typescript	hack nasa tutorial	<span>Details</span> <span>Remove</span>

**Trainees:** (empty input field)

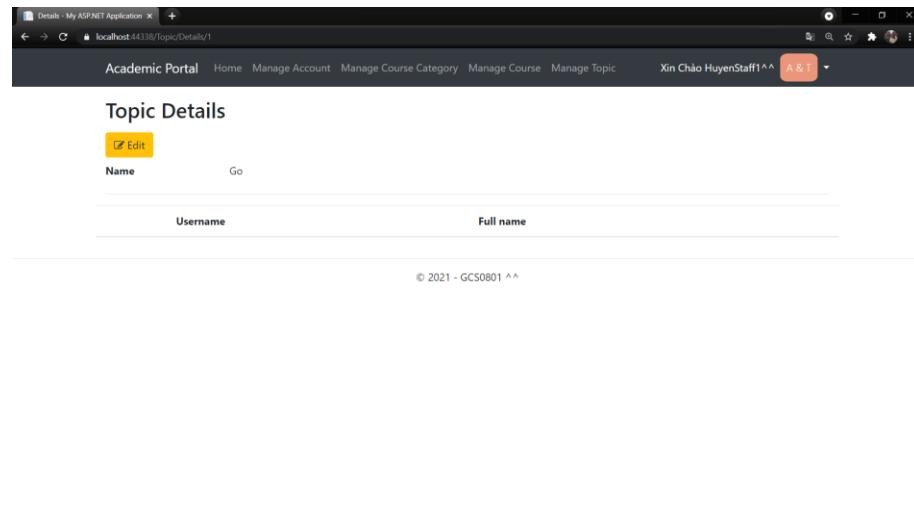
	Username	Full Name	
4a6f29ae-6087-47c0-b8f2-136853178883	trainee	trainee 1	<span>Details</span> <span>Remove</span>
fc69cd96-0d44-4277-9007-884b4df2685e	trainee1	trainee 1	<span>Details</span> <span>Remove</span>

© 2021 - GCS0801 ^^

Figure 34: Staff - View Course Categories Detail 1

### 3.4. Manage topic

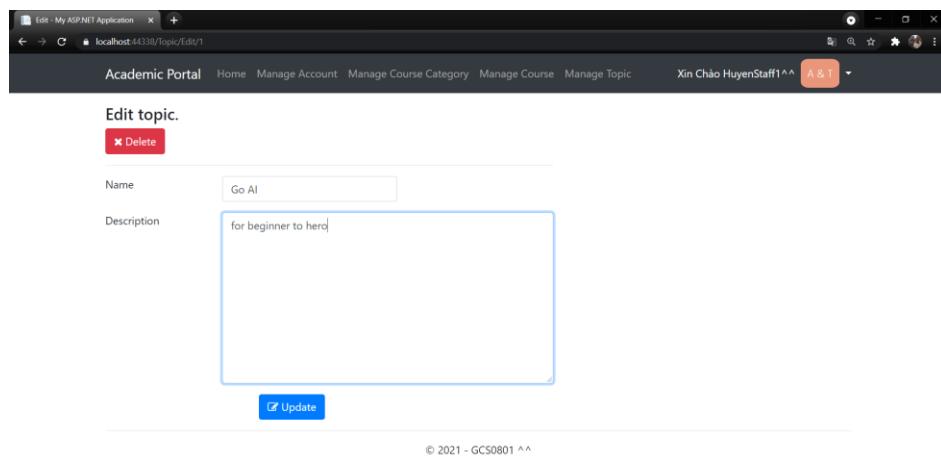
#### **View topic details**



The screenshot shows a web browser window titled 'Details - My ASP.NET Application'. The URL is 'localhost:44338/Topic/Details/1'. The page is titled 'Topic Details' and features a table with two columns: 'Username' and 'Full name'. The table contains one row with the values 'Xin Chào HuyenStaff1^^' and 'Xin Chào HuyenStaff1^^'. At the top of the page, there is a navigation bar with links: 'Academic Portal', 'Home', 'Manage Account', 'Manage Course Category', 'Manage Course', 'Manage Topic', and a dropdown menu 'Xin Chào HuyenStaff1^^ A & T'. The footer of the page includes the text '© 2021 - GCS0801 ^^'.

Figure 35: Staff - View Topic Details

#### **Edit topic and result**



The screenshot shows a web browser window titled 'Edit - My ASP.NET Application'. The URL is 'localhost:44338/Topic/Edit/1'. The page is titled 'Edit topic.' and features a form with fields for 'Name' (containing 'Go AI') and 'Description' (containing 'for beginner to hero'). Below the form is a large text area with the same text. At the bottom of the page is a 'Update' button. The page includes a navigation bar with links: 'Academic Portal', 'Home', 'Manage Account', 'Manage Course Category', 'Manage Course', 'Manage Topic', and a dropdown menu 'Xin Chào HuyenStaff1^^ A & T'. The footer of the page includes the text '© 2021 - GCS0801 ^^'.

Figure 36: Staff - Edit Topic

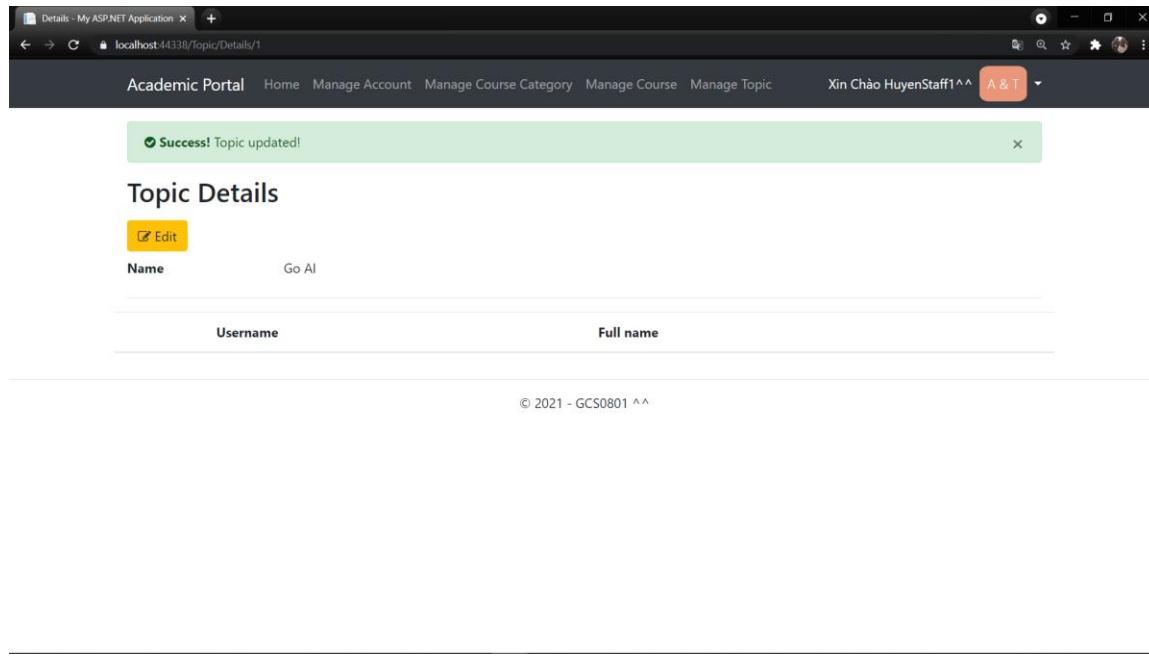


Figure 37: Staff - View Topic After Edited

### Delete topic and result

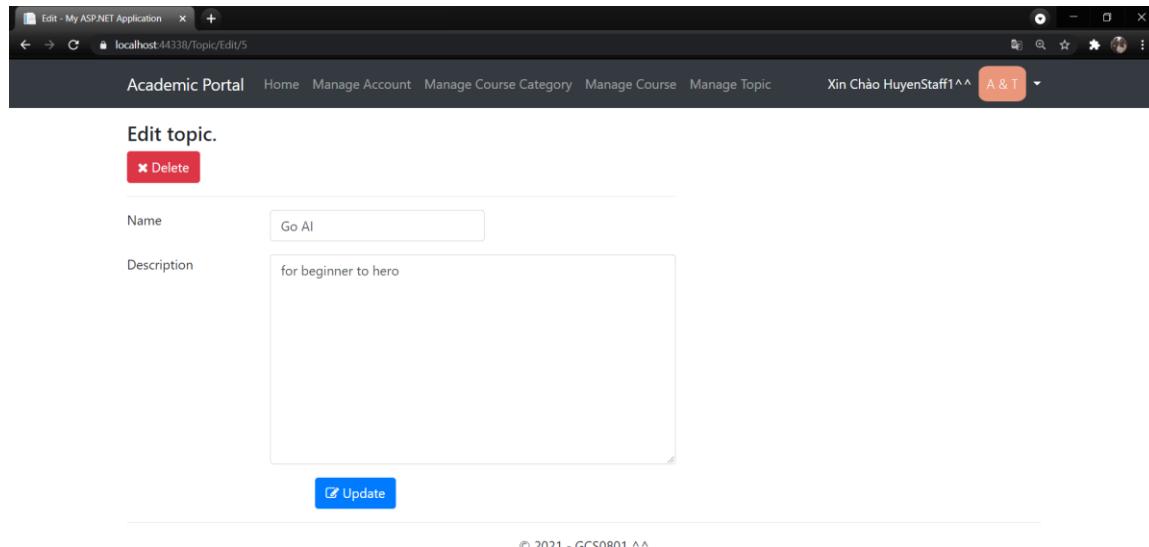


Figure 38: Staff - Delete Topic

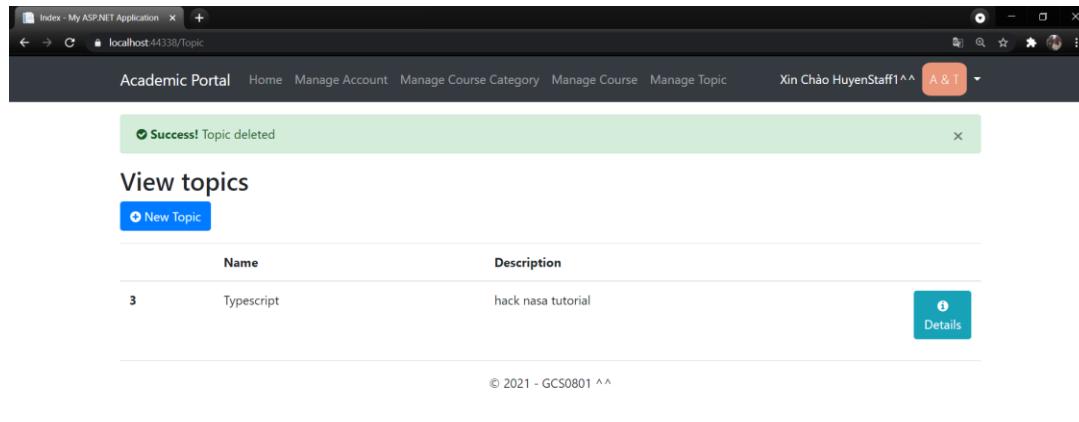
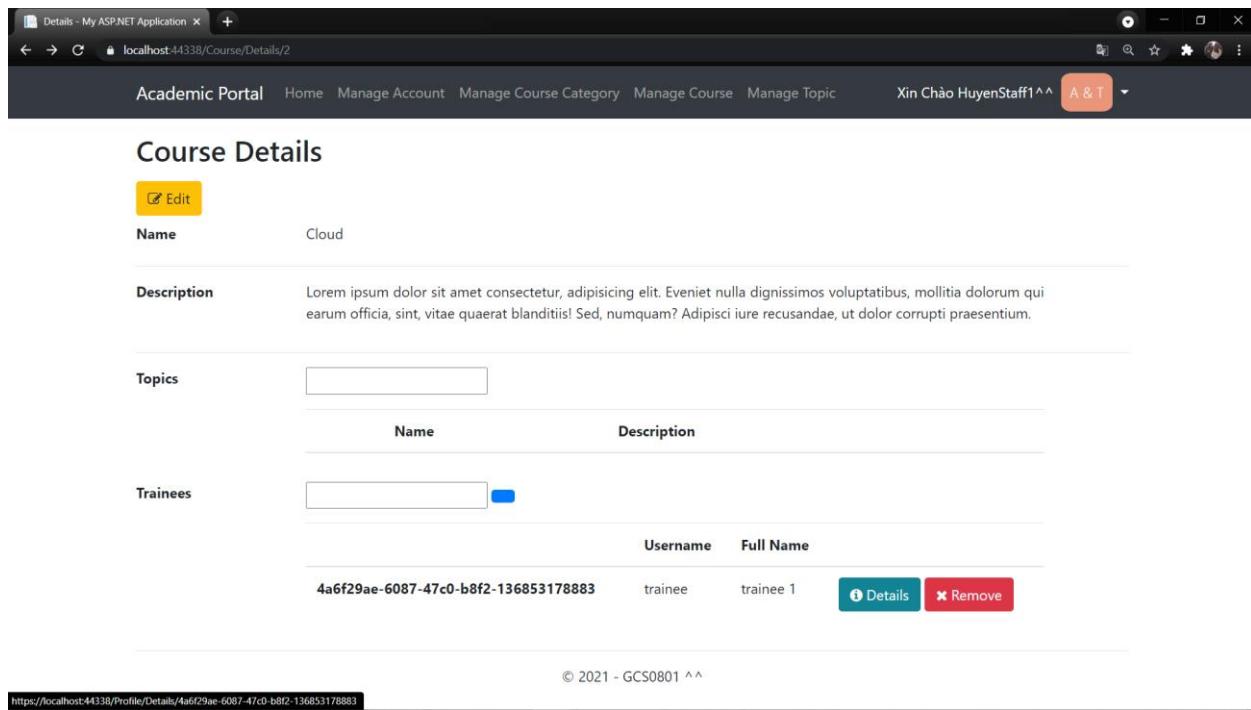


Figure 39: Staff - View Topic After Deleted

### Trainee details form course and result



Course Details

Edit

Name	Description
Cloud	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.

Topics

Name	Description

Trainees

Username	Full Name
4a6f29ae-6087-47c0-b8f2-136853178883	trainee trainee 1

Details  Remove

© 2021 - GCS0801 ^^

<https://localhost:44338/Profile/Details/4a6f29ae-6087-47c0-b8f2-136853178883>

Figure 40: Staff - Trainee Details Form Course

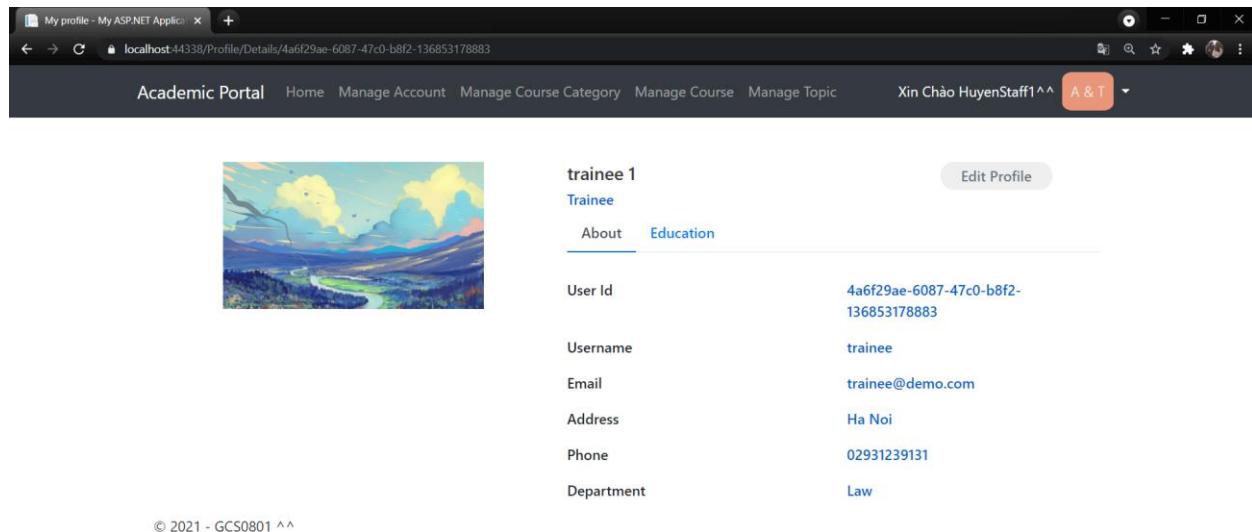


Figure 41: Staff - Result Trainee Details Form Course

### Delete trainer from course

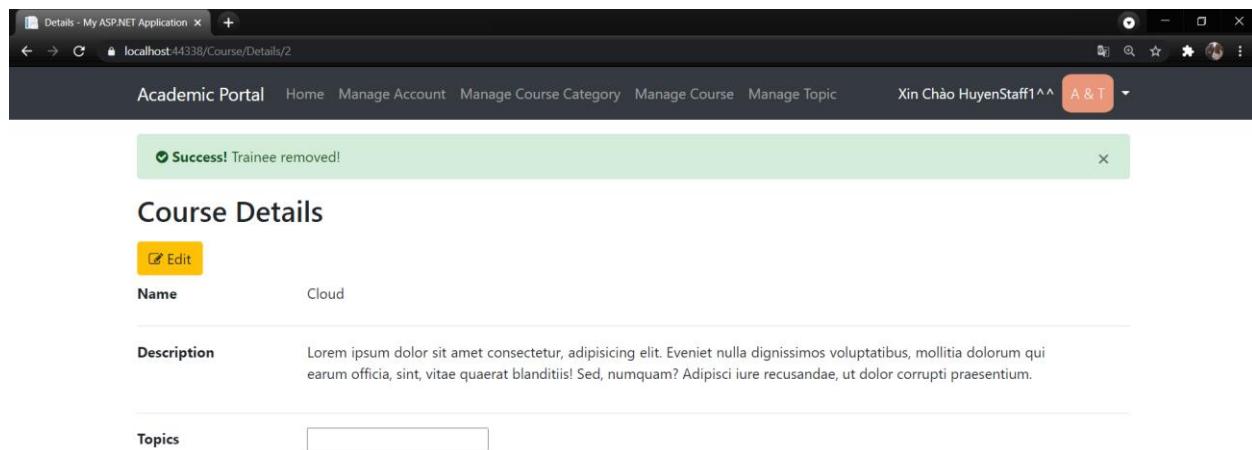
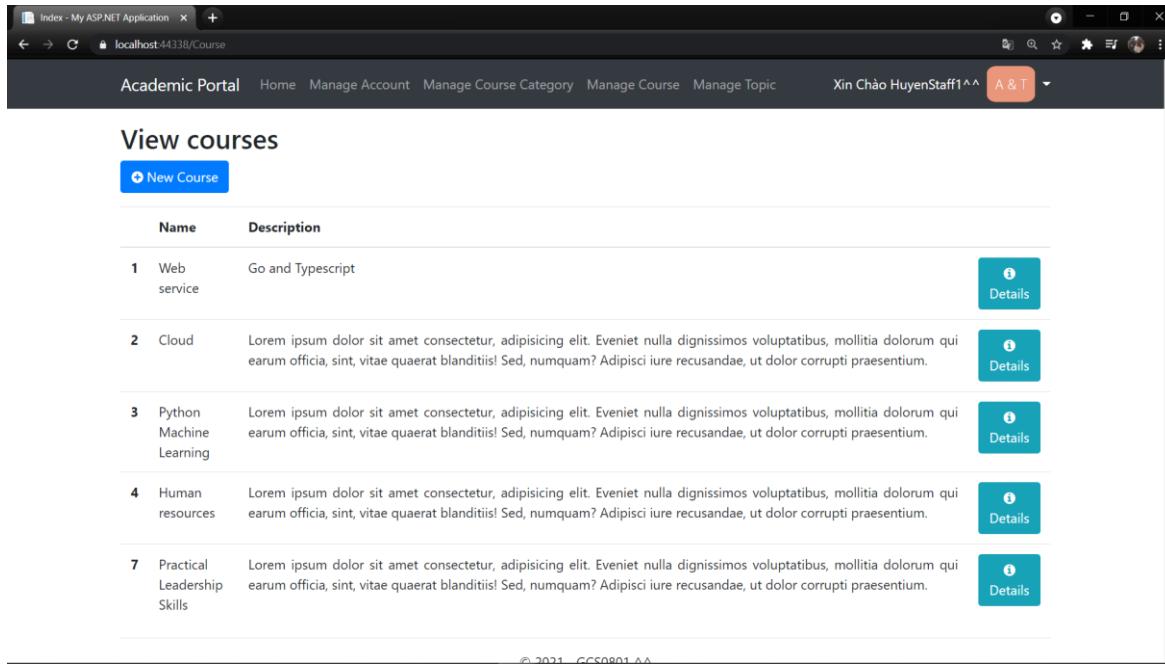


Figure 42: Staff - Delete Trainer from Course

→ The way to check the results is the same as the test in the previous functions

### 3.5. Manage course



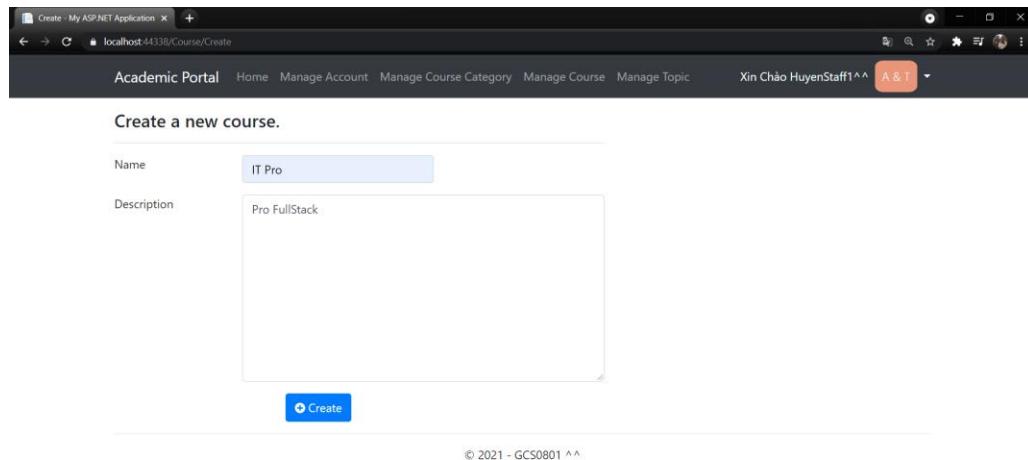
The screenshot shows a web application interface for managing courses. The top navigation bar includes links for Academic Portal, Home, Manage Account, Manage Course Category, Manage Course, and Manage Topic. The user is identified as 'Xin Chào HuyenStaff1^^' with a 'A & T' dropdown. The main content area is titled 'View courses' and features a table with the following data:

	Name	Description	
1	Web service	Go and Typescript	 Details
2	Cloud	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	 Details
3	Python Machine Learning	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	 Details
4	Human resources	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	 Details
7	Practical Leadership Skills	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	 Details

At the bottom of the page, a copyright notice reads '© 2021 - GCS0801 ^^'.

Figure 43: Staff - View Course

### Create courses and result

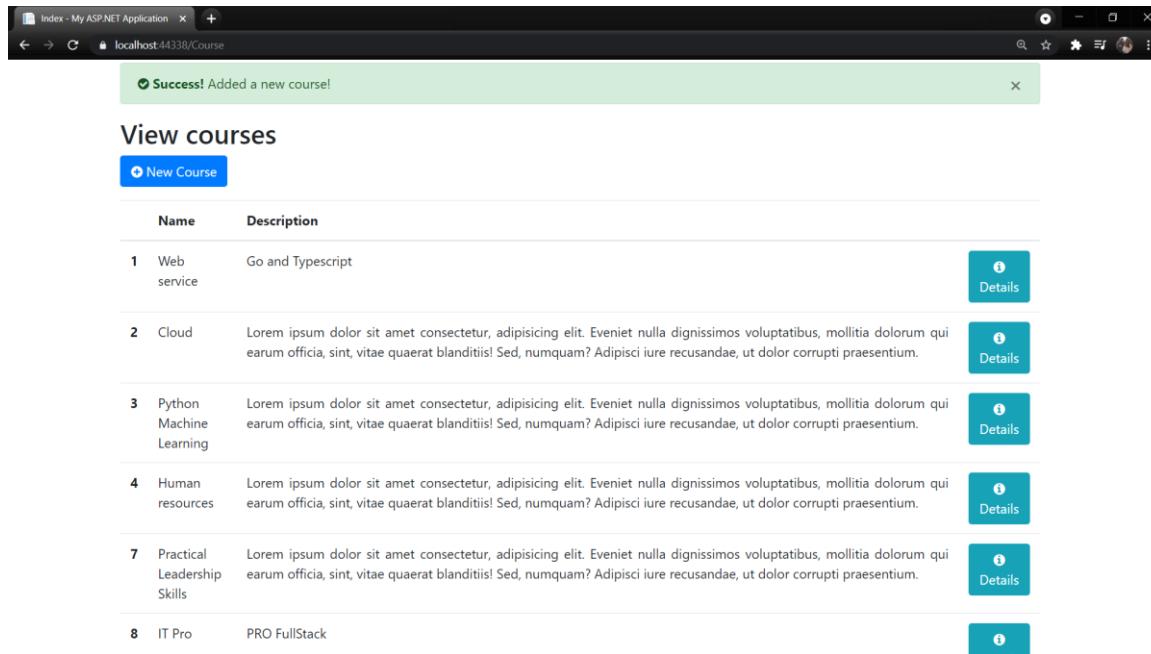


The screenshot shows a web application interface for creating a new course. The top navigation bar includes links for Academic Portal, Home, Manage Account, Manage Course Category, Manage Course, and Manage Topic. The user is identified as 'Xin Chào HuyenStaff1^^' with a 'A & T' dropdown. The main content area is titled 'Create a new course.' and features a form with the following fields:

Name	<input type="text" value="IT Pro"/>
Description	<input type="text" value="Pro FullStack"/>

At the bottom of the form is a blue 'Create' button with a plus sign icon. The page footer contains the copyright notice '© 2021 - GCS0801 ^^'.

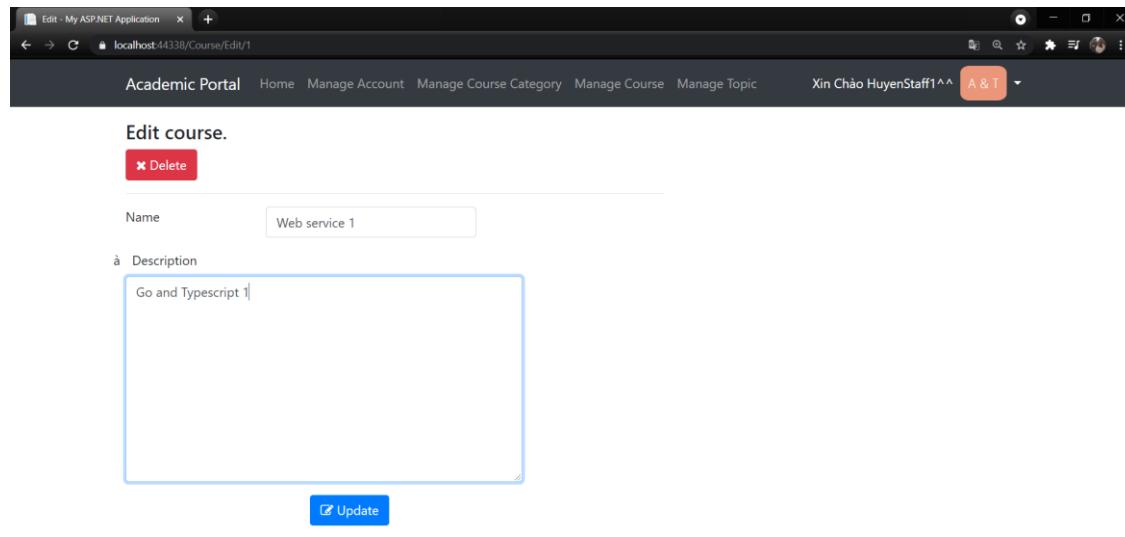
Figure 44: Staff - Create Course



	Name	Description	
1	Web service	Go and Typescript	
2	Cloud	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	
3	Python Machine Learning	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	
4	Human resources	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	
7	Practical Leadership Skills	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	
8	IT Pro	PRO FullStack	

Figure 45: Staff - View Course After Created

### Edit course and result



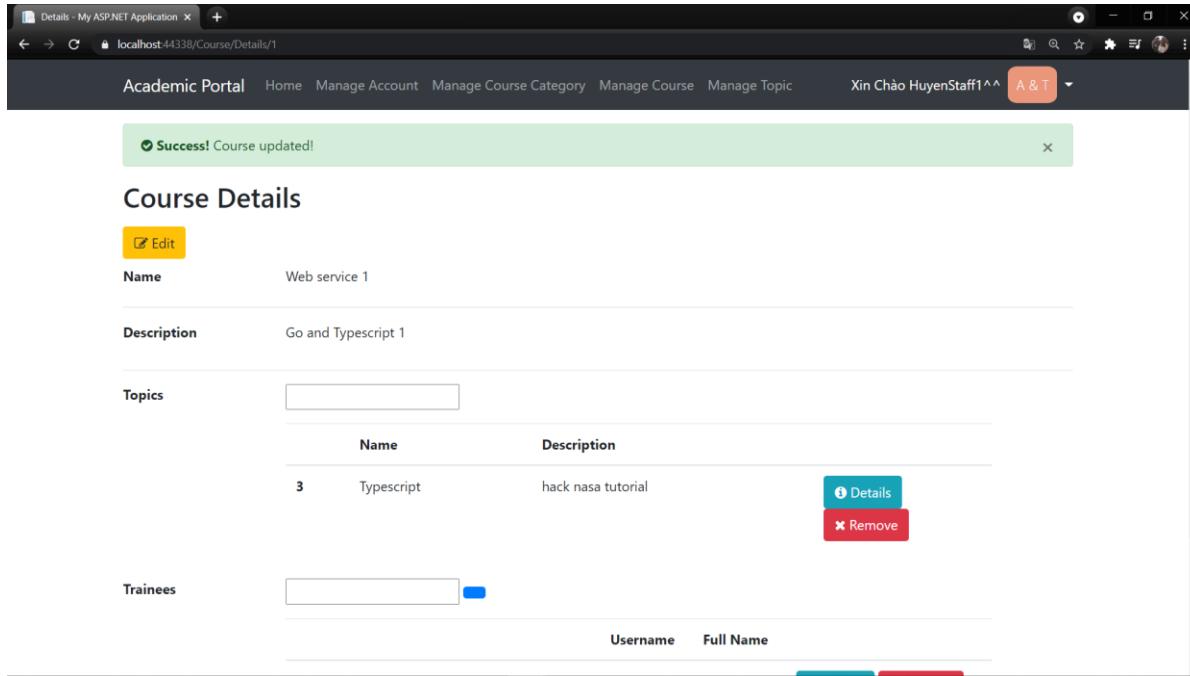
Edit course.



Name	Web service 1
Description	Go and Typescript



Figure 46: Staff - Edit Course



Details - My ASP.NET Application

localhost:44338/Course/Details/1

Academic Portal Home Manage Account Manage Course Category Manage Course Manage Topic Xin Chào HuyenStaff1^ A & T

Success! Course updated!

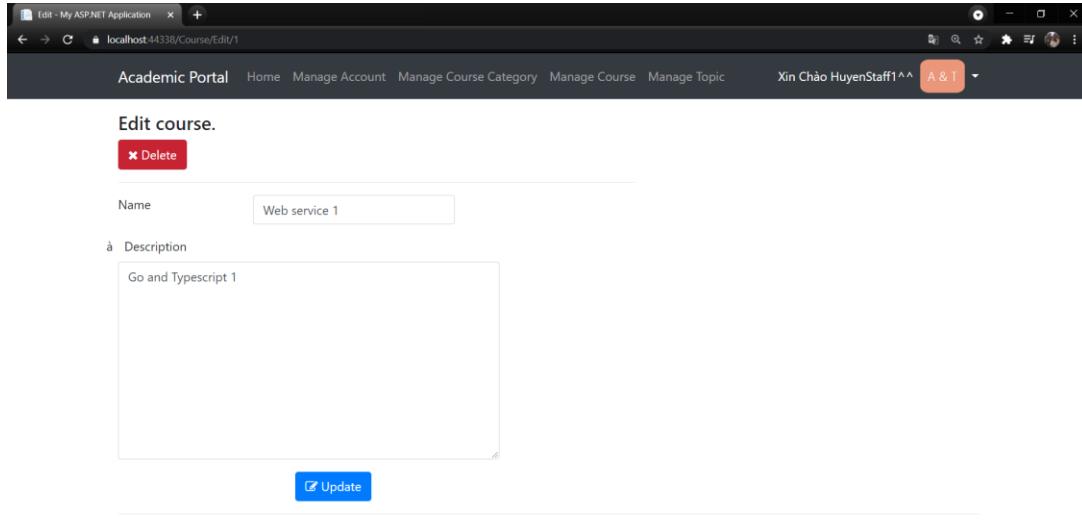
### Course Details

[Edit](#)

Name	Web service 1			
Description	Go and Typescript 1			
Topics	<input type="text"/>			
Name	Description			
3	Typescript	hack nasa tutorial	<a href="#">Details</a>	<a href="#">Remove</a>
Trainees	<input type="text"/>			
Username	Full Name			

Figure 47: Staff - Result Edit Course

### Delete course and result



Edit course.

[Delete](#)

Name	<input type="text"/> Web service 1
Description	<input type="text"/> Go and Typescript 1

[Update](#)

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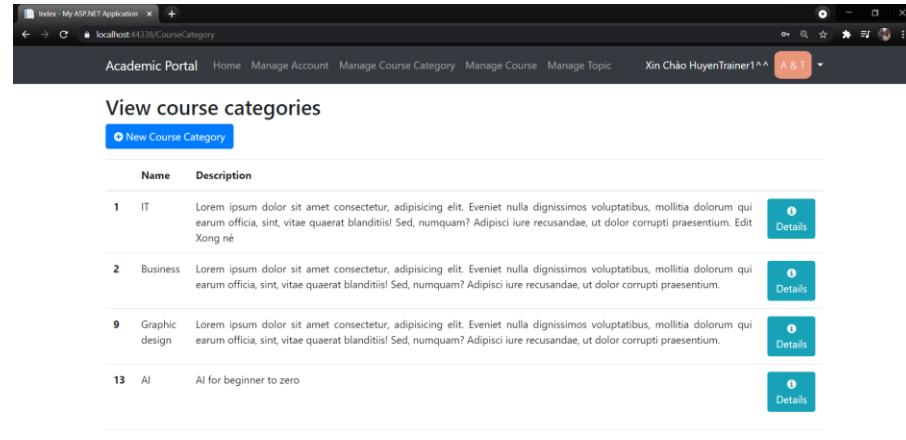
Figure 48: Staff - Delete Course

→ The way to check the results is the same as the test in the previous functions

→ *The rest of the functions are the same as the “Course Details” in the “MANAGE TOPIC”*

### 3.6. Manage course categories

#### Create course categories



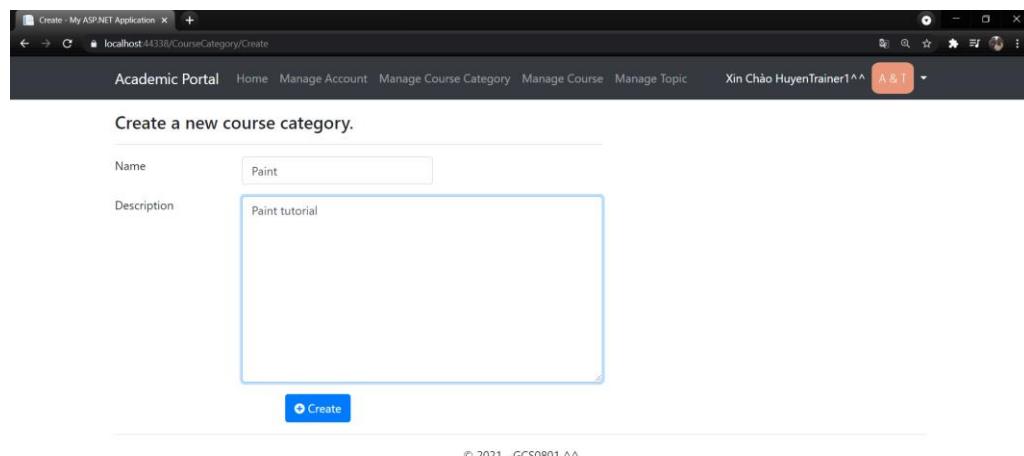
The screenshot shows a web application interface for managing course categories. The title bar reads "Index - My ASP.NET Application" and the URL is "localhost:4438/CourseCategory". The page is titled "View course categories" and features a "New Course Category" button. A table lists course categories with columns for "Name" and "Description". Each row includes a "Details" button. The categories listed are:

	Name	Description	Details
1	IT	... (long description)	 Details
2	Business	... (long description)	 Details
9	Graphic design	... (long description)	 Details
13	AI	AI for beginner to zero	 Details

At the bottom, a copyright notice reads "© 2021 - GCS0801 ^^".

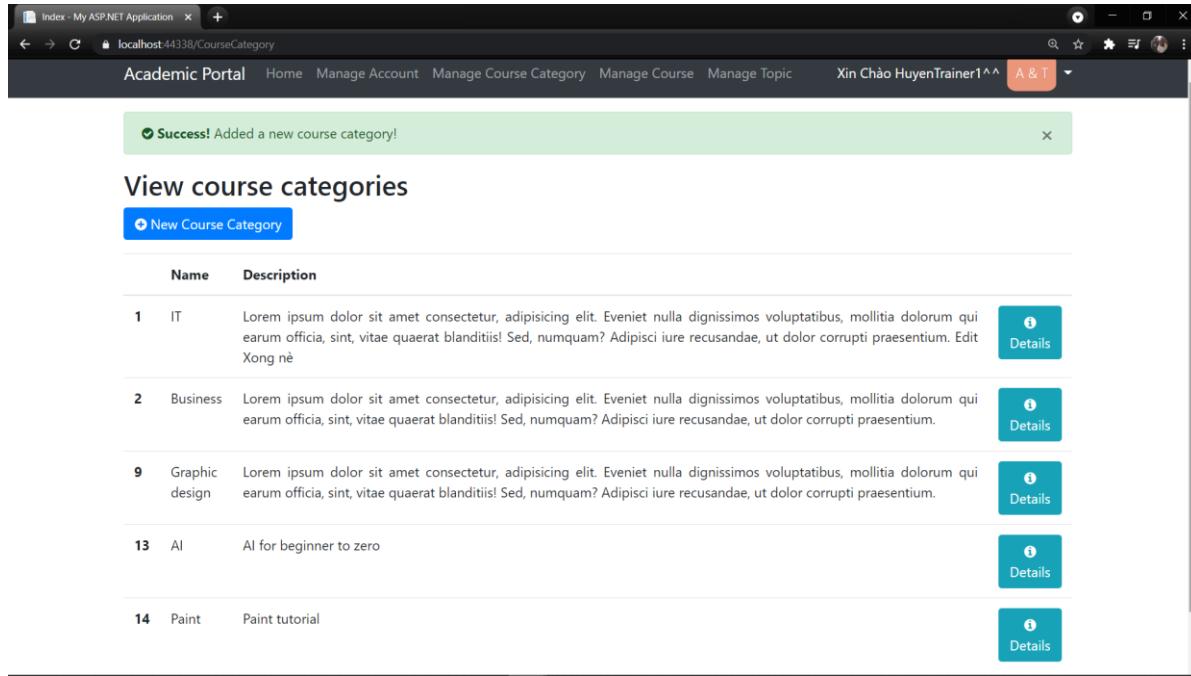
Figure 49: View course categories

#### Create course categories and result



The screenshot shows a web application interface for creating a new course category. The title bar reads "Create - My ASP.NET Application" and the URL is "localhost:4438/CourseCategory/Create". The page is titled "Create a new course category." It has two input fields: "Name" (containing "Paint") and "Description" (containing "Paint tutorial"). A "Create" button is at the bottom. The footer copyright notice is "© 2021 - GCS0801 ^^".

Figure 50: Create course categories



Success! Added a new course category!

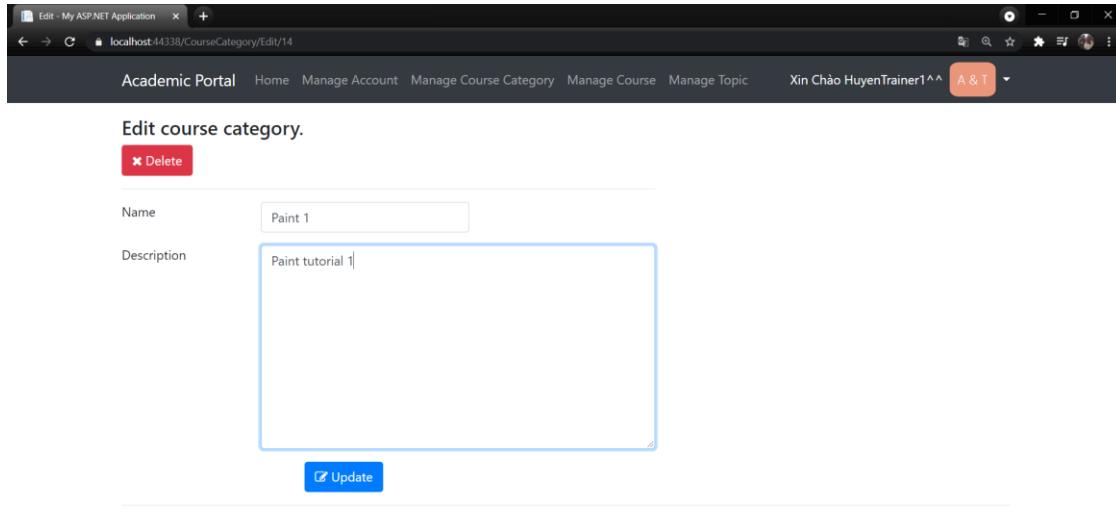
### View course categories

[New Course Category](#)

	Name	Description	
1	IT	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium. Edit Xong nè	<a href="#">Details</a>
2	Business	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	<a href="#">Details</a>
9	Graphic design	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	<a href="#">Details</a>
13	AI	AI for beginner to zero	<a href="#">Details</a>
14	Paint	Paint tutorial	<a href="#">Details</a>

Figure 51: View course categories after created

### Edit course categories and result



Edit course category.

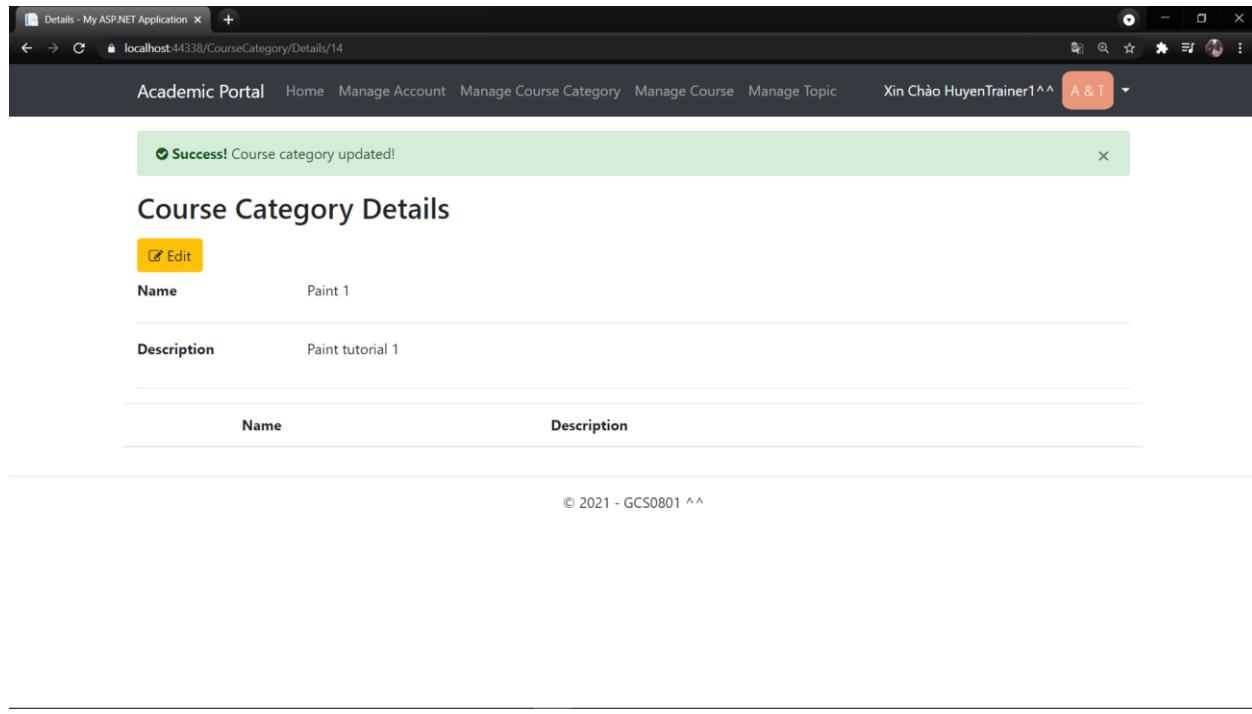
[Delete](#)

Name	Paint 1
Description	Paint tutorial 1

[Update](#)

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Figure 52: Edit course categories



Details - My ASP.NET Application

localhost:44338/CourseCategory/Details/14

Academic Portal Home Manage Account Manage Course Category Manage Course Manage Topic Xin Chào HuyenTrainer1^^ A & T

Success! Course category updated!

## Course Category Details

Edit

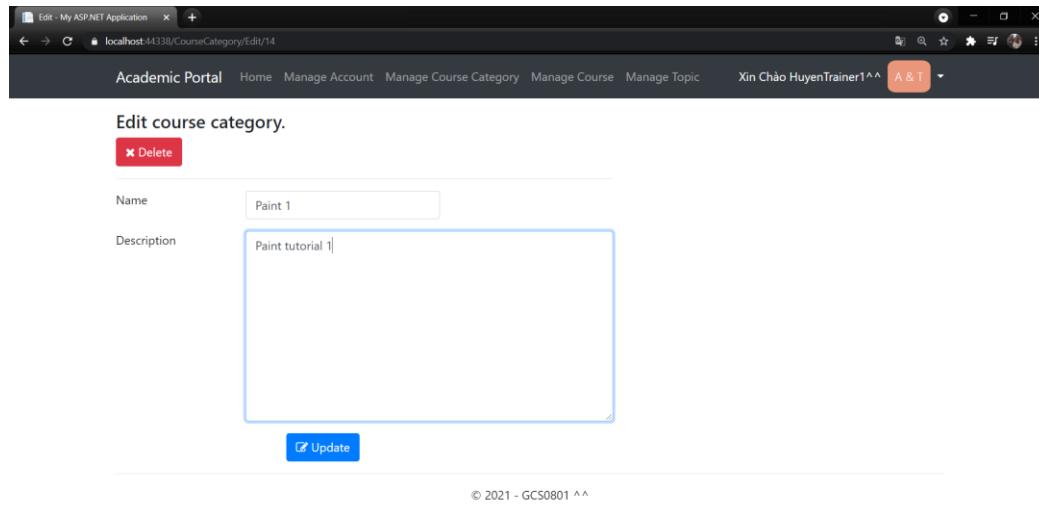
Name	Paint 1
Description	Paint tutorial 1

Name	Description

© 2021 - GCS0801 ^^

Figure 53: Result edit course categories

### Delete course categories and result



Edit - My ASP.NET Application

localhost:44338/CourseCategory/Edit/14

Academic Portal Home Manage Account Manage Course Category Manage Course Manage Topic Xin Chào HuyenTrainer1^^ A & T

Edit course category.

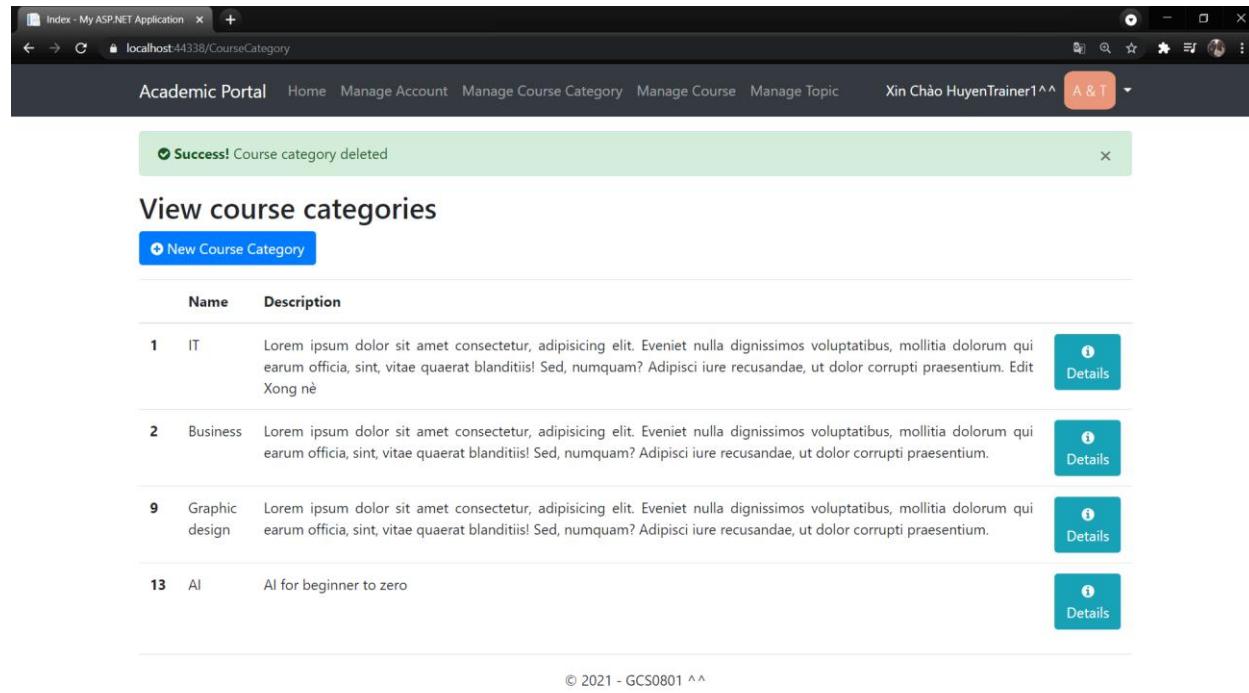
Delete

Name	Paint 1
Description	Paint tutorial 1

Update

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Figure 54: Delete course categories



Index - My ASP.NET Application

localhost:44338/CourseCategory

Academic Portal Home Manage Account Manage Course Category Manage Course Manage Topic Xin Chào HuyenTrainer1^^ A & T

Success! Course category deleted

### View course categories

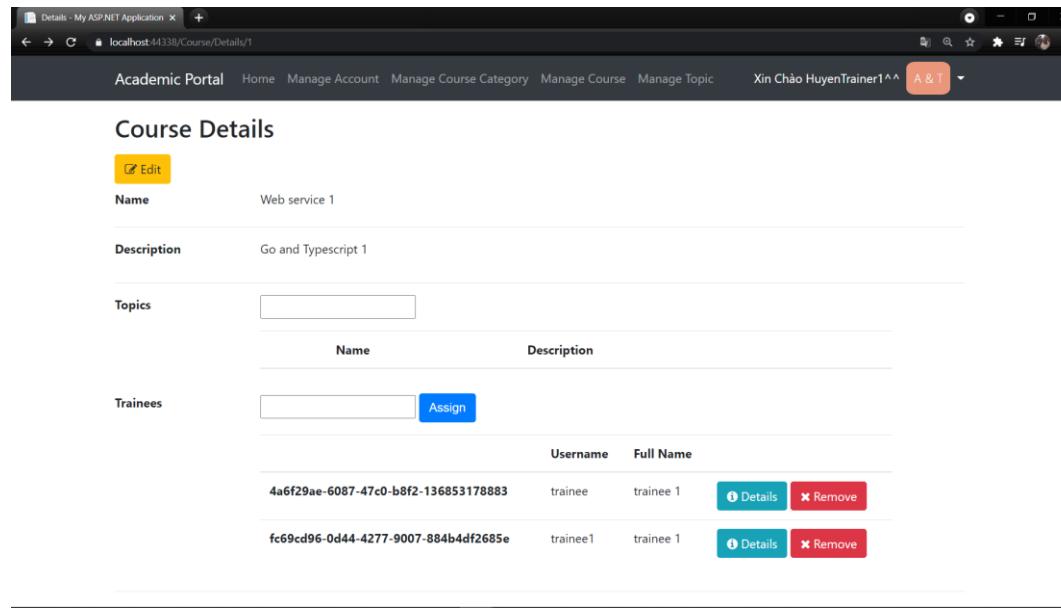
[New Course Category](#)

	Name	Description	
1	IT	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium. Edit Xong nè	<a href="#">Details</a>
2	Business	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	<a href="#">Details</a>
9	Graphic design	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	<a href="#">Details</a>
13	AI	AI for beginner to zero	<a href="#">Details</a>

© 2021 - GCS0801 ^^

Figure 55: Result delete course categories

→ The remaining functions are the same as the “Details Categories Course”. So, just need the additional "assign" function.



Details - My ASP.NET Application

localhost:44338/Course/Details/1

Academic Portal Home Manage Account Manage Course Category Manage Course Manage Topic Xin Chào HuyenTrainer1^^ A & T

### Course Details

[Edit](#)

Name	Web service 1						
Description	Go and Typescript 1						
Topics	<input type="text"/>						
	<table border="1"> <thead> <tr> <th>Name</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Description				
Name	Description						
Trainees	<input type="text"/> <a href="#">Assign</a>						
	<table border="1"> <thead> <tr> <th>Username</th> <th>Full Name</th> </tr> </thead> <tbody> <tr> <td>4a6f29ae-6087-47c0-b8f2-136853178883</td> <td>trainee trainee 1 <a href="#">Details</a> <a href="#">Remove</a></td> </tr> <tr> <td>fc69cd96-0d44-4277-9007-884b4df2685e</td> <td>trainee1 trainee 1 <a href="#">Details</a> <a href="#">Remove</a></td> </tr> </tbody> </table>	Username	Full Name	4a6f29ae-6087-47c0-b8f2-136853178883	trainee trainee 1 <a href="#">Details</a> <a href="#">Remove</a>	fc69cd96-0d44-4277-9007-884b4df2685e	trainee1 trainee 1 <a href="#">Details</a> <a href="#">Remove</a>
Username	Full Name						
4a6f29ae-6087-47c0-b8f2-136853178883	trainee trainee 1 <a href="#">Details</a> <a href="#">Remove</a>						
fc69cd96-0d44-4277-9007-884b4df2685e	trainee1 trainee 1 <a href="#">Details</a> <a href="#">Remove</a>						

Figure 56: Assign trainee

## 4. Trainee/Trainer Page

### 4.1. Home Page

Have two account are *HuyenTrainer1* or *HuyenTrainer2* for trainer

- ✓ Username: *HuyenTrainer1* → Password: *a*
- ✓ Username: *HuyenTrainer2* → Password: *a*

Have two account are Trainee and Trainee1 for trainee

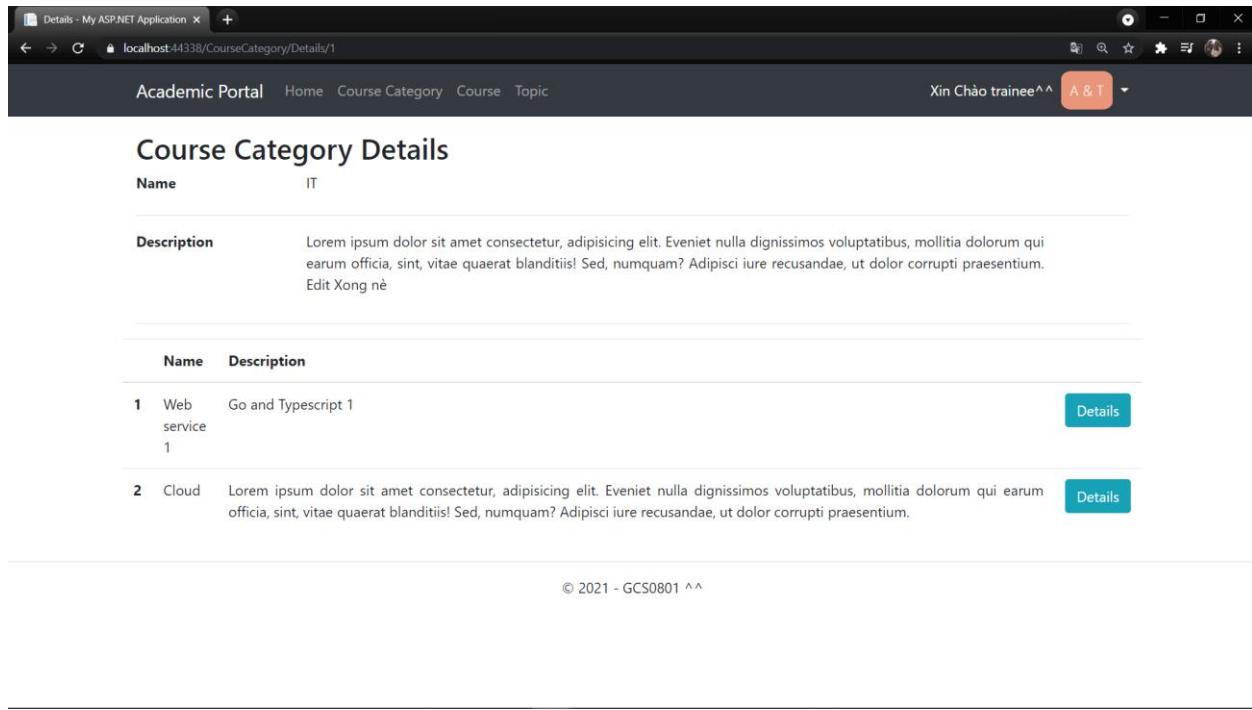
- ✓ Username: *Trainee* → Password: *a*
- ✓ Username: *Trainee1* → Password: *a*

→ The interface and functions of the trainer and the trainee are set to be exactly the same



Figure 57: Home Page

## 4.2. View course, course category and details

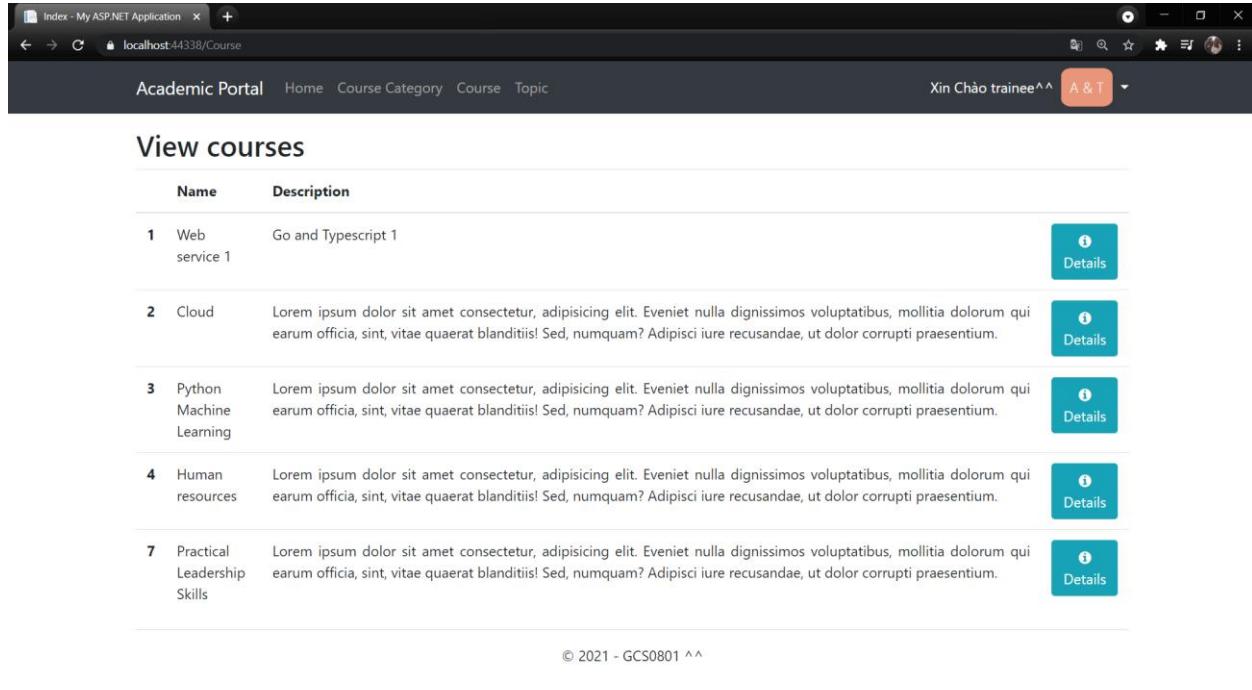


Course Category Details

Name	Description	
1 Web service 1	Go and Typescript 1	<a href="#">Details</a>
2 Cloud	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	<a href="#">Details</a>

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Figure 58: View course categories



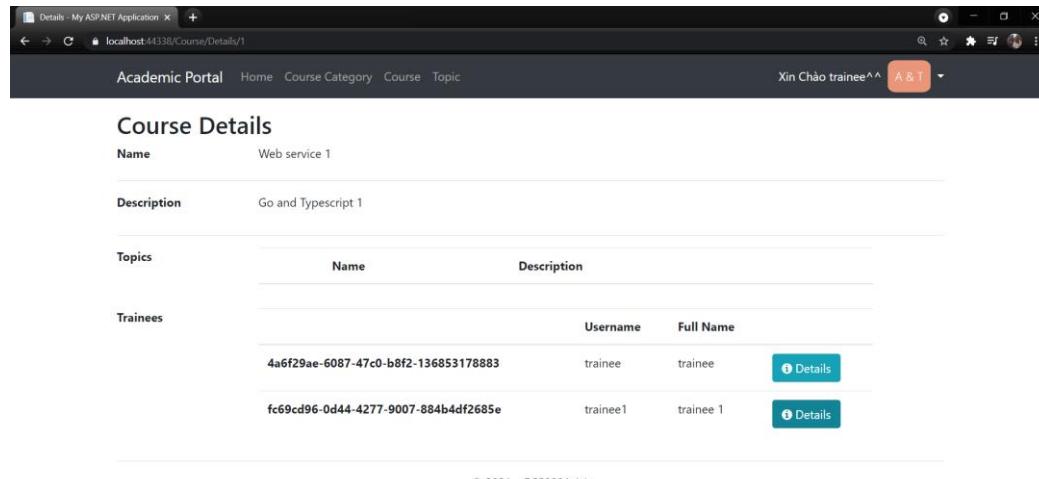
View courses

Name	Description	
1 Web service 1	Go and Typescript 1	<a href="#">Details</a>
2 Cloud	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	<a href="#">Details</a>
3 Python Machine Learning	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	<a href="#">Details</a>
4 Human resources	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	<a href="#">Details</a>
7 Practical Leadership Skills	Lorem ipsum dolor sit amet consectetur, adipisicing elit. Eveniet nulla dignissimos voluptatibus, mollitia dolorum qui earum officia, sint, vitae quaerat blanditiis! Sed, numquam? Adipisci iure recusandae, ut dolor corrupti praesentium.	<a href="#">Details</a>

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Figure 59: View course

- Of course, at "Details" has click web service



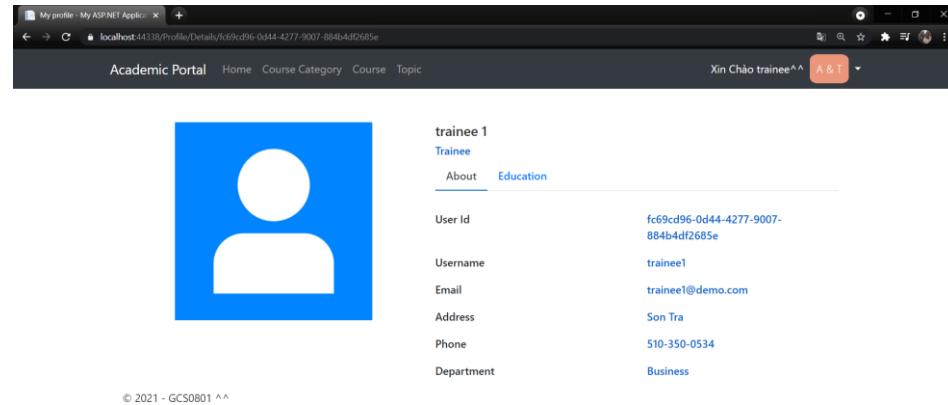
Course Details

Topics	Name	Description
Trainees		
	Username	Full Name
4a6f29ae-6087-47c0-b8f2-136853178883	trainee	trainee
fc69cd96-0d44-4277-9007-884b4df2685e	trainee1	trainee 1

© 2021 - GCS0801 ^^

Figure 60: View course details

- Trainer/Trainee can see classmates, but can only view the information and not edit anything. On the other hand, they can see and edit their profile.



trainee 1

Trainee

About Education

User Id	fc69cd96-0d44-4277-9007-884b4df2685e
Username	trainee1
Email	trainee1@demo.com
Address	Son Tra
Phone	510-350-0534
Department	Business

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Figure 61: View classmate profile

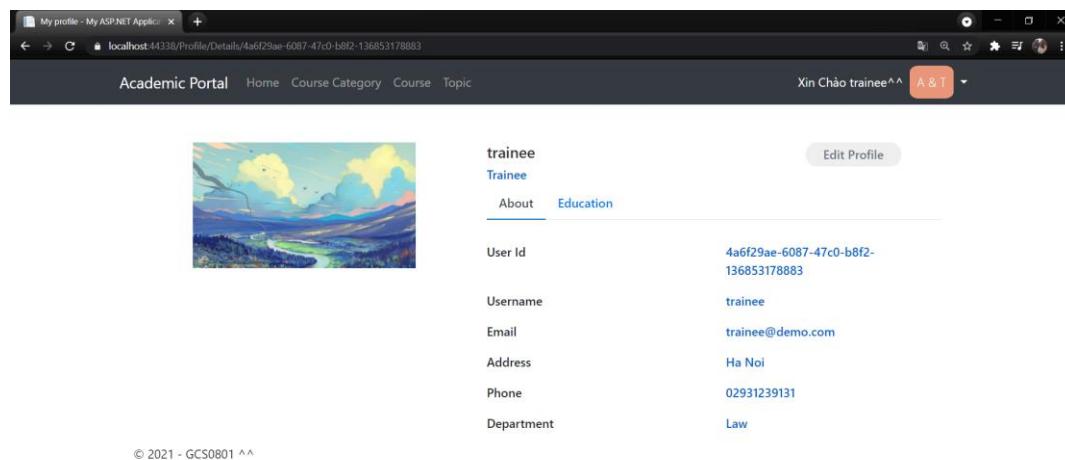


Figure 62: View profile or can edit it

### 4.3. View topic and details

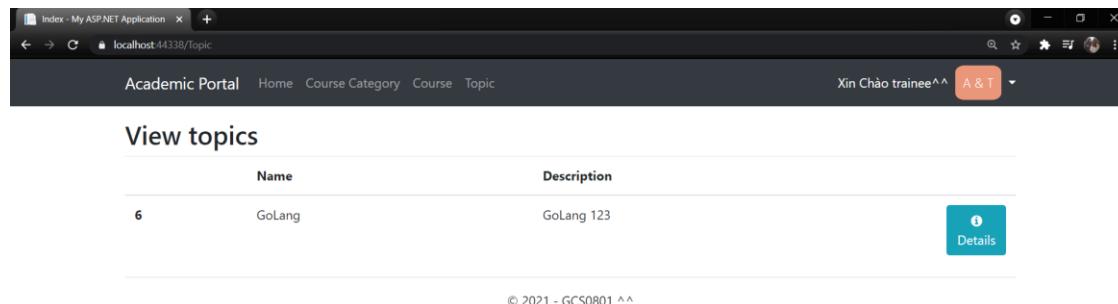
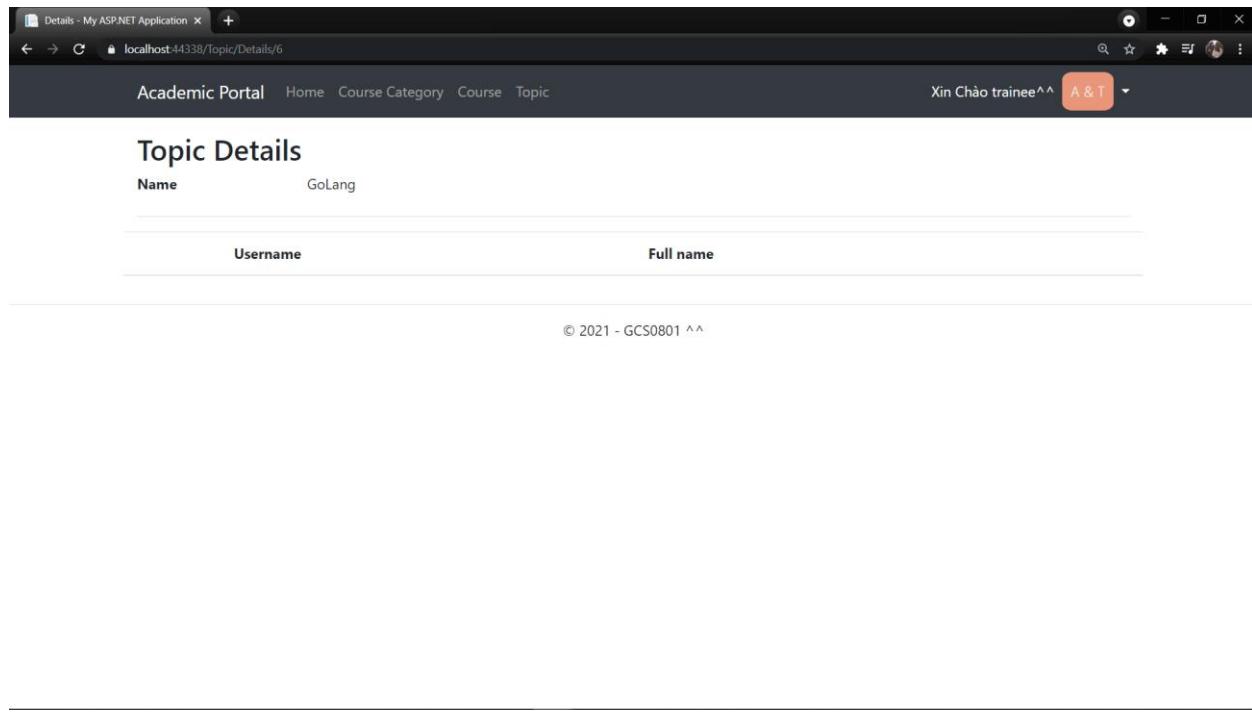


Figure 63: View topic



*Figure 64: View topic details*

**M3 & D2 Interpret your peer-review feedback and identify opportunities not previously considered. Evaluate any new insights, ideas or potential improvements to your system and justify the reasons why you have chosen to include (or not to include) them as part of this business application.**

## **1. Peer-review feedback and evaluation on feedback**

### **1.1. Peer-review feedback**

We will synthetically, select and analyze the user feedback from the results of questionnaires peer-review our applications. Then will evaluate and recommend improvements for our web app.

Table 2: Summarize and analyze feedback about the general view of our website

General view of our website	Totally agree	Agree	Neutral	Disagree	Strongly disagree
The web provides user interaction with different users	1%	1%	1%	78.3%	18.7%
The web can play an important part in the training process	9.9%	50.6%	30.2%	8.3%	1%
The web can replace the traditional training process	2%	40.1%	13.9%	43%	1%

Most users disagree with the opinion the web provides user interaction with different users (78.3%) and 18.7% of people strongly disagree with that opinion. Besides that, just more than half of the total users agree that the web can play an important part in the training process (50.6%) and 8.3% of people realized that the web can't play an important part in the training process. In addition to the percentage of people who disagree with the web, the traditional training process occupies 43%.

Table 3: Summarize and analyze feedback about user interface design

User interface design	Totally agree	Agree	Neutral	Disagree	Strongly disagree
The color on the screen is clear and soothing to the eyes	1%	8%	77%	13%	1%
The interface of the website is pleasant	1%	14%	34%	20%	31%
The font size is clear	45%	36%	16.7%	1.3%	1%

More than half of users neutral with the color on screen are clearly and soothing to the eyes (77%) and 31% of total users neutral with the interface of the website are pleasant. Otherwise, the people who strongly agree with the opinion that the font- size is clearly occupied 45%.

Table 4: Summarize and analyze feedback about general about the functions for trainees of our website

General about the functions for trainees of our website	Totally agree	Agree	Neutral	Disagree	Strongly disagree
There is clear decentralization among users	1%	1%	2%	86%	10%
The website navigation is intuitive	45%	36%	16%	2%	1%
I easily control the course and the topic of a course	3%	20%	11%	66%	1%

Almost all users said to disagree with the website is clear decentralization among users (77%). Otherwise, 45% of the total users strongly agree that website navigation is intuitive. More than 66% of users don't think it easy to control the course and the topic of a course.

Table 5: Summarize and analyze feedback about general about the functions for trainers of our website

General about the functions for trainers of our website	Totally agree	Agree	Neutral	Disagree	Strongly disagree
I easily manage the trainees in a course	1%	12%	34%	22%	31%
I easily create, update, view, and delete topics	50%	43%	5%	1%	1%

34% of users said they have a neutral opinion that it is easy to manage the trainees in a course. And 43% of users agree with it being easy to create, update, view, and delete a topic.

*Table 6: Summarize and analyze feedback about general about the functions for training staff of our website*

<b>General about the functions for training staff of our website</b>	<b>Totally agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly disagree</b>
I easily manage the trainers account and trainees account	50%	44%	6%	0%	0%
Easy to create, delete, update, view the account of trainers and trainees	50%	44%	6%	0%	0%
It is easy to manage categories and courses (C.R.U.D)	50%	44%	6%	0%	0%

Half of the total user strongly agree that they easy to manage the trainers account and trainees account, create, delete, update, view the account of trainers and trainees, easy to manage categories and course (C.R.U.D)

*Table 7: Some answer to short question*

<b>Some answer to the question "What did you like most about our website?"</b>
- The interface of the website is easy to use, but it is too simple
- The feature that I like most about the Website has managed the course and topic
- With this website, it helps me so much in controlling the course and the topic that I enrolled in
<b>Some answer to the question "What aspects of the website could be improved?"</b>
- Improve the interface, more color and beauty website
- The website has a dashboard to control and track traffic
- The website to have an online learning function via video call between trainers and trainees, and also the function to submit online articles instead of traditional submission methods

## 1.2. Evaluation on feedback (M3 & D2)

The aim of this study was to evaluate the effectiveness of a web-based training program on FPT Co., which consists of special features such as management training staff, trainers and trainee accounts as well as help manage courses and topics rely on the permissions of each account that the user is provided by the system administrator or training department. The effectiveness of the program was analyzed in terms of its function and content. A total of 2000 people who are training staff, trainers and trainees participated in the questionnaire, but based on the standard of the valid of the questionnaire form, we have selected 1000 the answer of the questionnaire that is valid for the given criteria. In the satisfaction evaluation of the web-based training program, the usefulness of information, system efficiency, adequacy of information and convenience of use all received a positive evaluation. Although the program was evaluated as somewhat useful and satisfactory, it should be improved upon by providing clearer decentralization between account types on the system, as well as, configure the user interface more colorfully, especially for the admin or training staff of our website.

The number of trainees on FPT Co. is increasing so that the management and monitoring of the curriculum of both trainers and trainees become out of control. In addition, with traditional training methods that bring many shortcomings such as lack of specific documents, trainees are unable to prepare knowledge in advance, unable to specifically monitor the effectiveness of the training program through courses, etc. On the other hand, today information and education provided through the Internet have been actively used to improve the effectiveness of the training program, as well as to assist trainees and trainers to master the training process as well as knowledge. Preliminary knowledge through each day participating in the training. Based on the above mentioned, we strongly believe that the web-based training program will be very effective and effective in supporting FPT Co.

## 2. Recommendation for improvements (M3 & D2)

First, the website needs to edit the user interface with more colors and be more attractive to users. Besides, it is also necessary to adjust the font size and content of the website, because sometimes it is too simple to become monotonous to users being bored. Second, we will set up

a plan to add more new functions instead of traditional methods. This means the website will have an online learning function via video call between trainers and trainees, and also the function to submit online articles instead of traditional submission methods. These improvements can help both the trainees and trainers can access the training process remotely. This also is the main reason to make the website become an important part of the training program of FPT. Third, with the feedback of the user, we will try to make a dashboard page to help the training staff to measure the effectiveness of the training program. Mean, the website will have a dashboard to control and track traffic. Finally, making decentralization between different users clearer.

#### **M4 Develop a functional business application based on a specific Software Design Document with supportive evidence of using the preferred tools, techniques and methodologies**

Below are Sequence diagrams to show the business process of important application functions

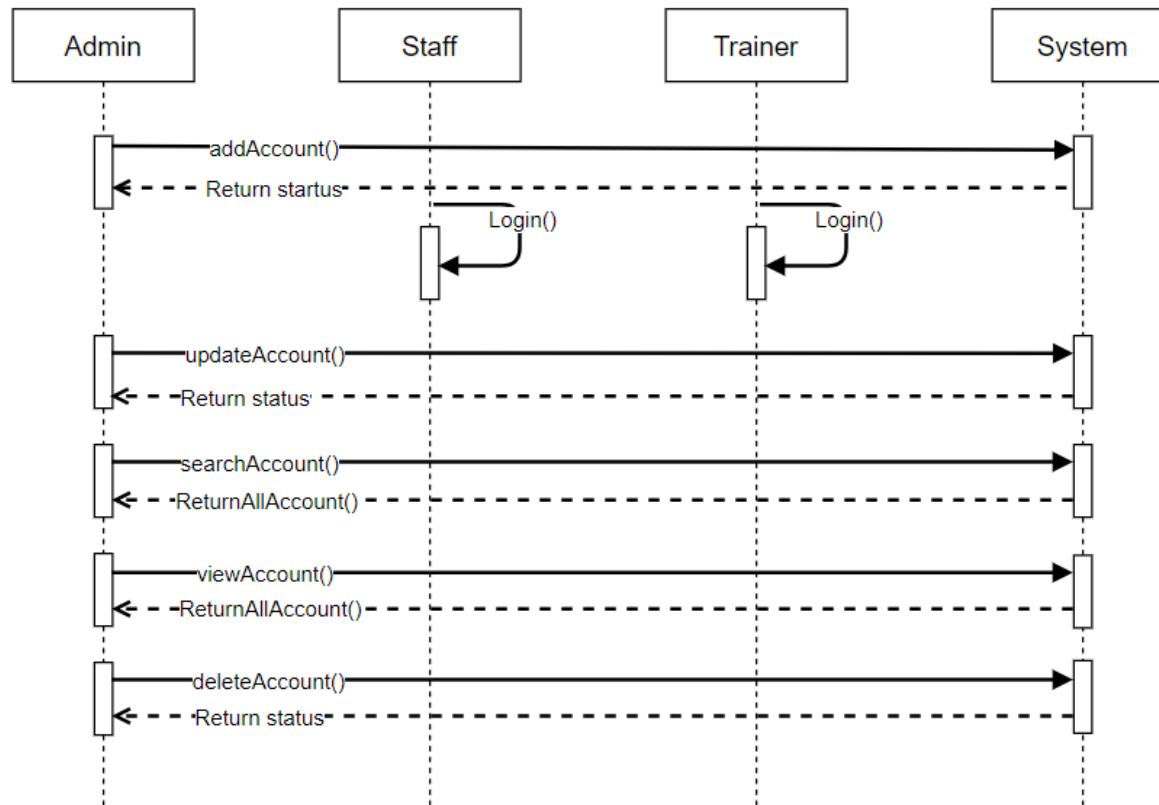


Figure 65: Admin's Sequence Diagram - Account Management (Staff/Trainer)



Figure 66: Staff's Sequence Diagram - Trainee Account Management

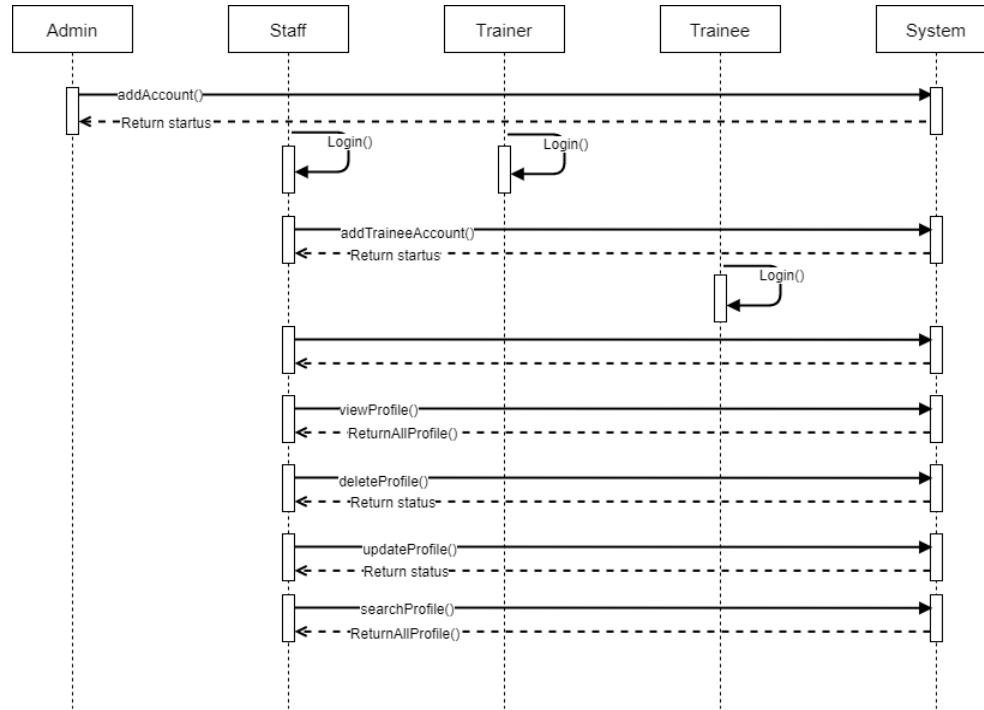


Figure 67: Staff's Sequence Diagram - Profile Management

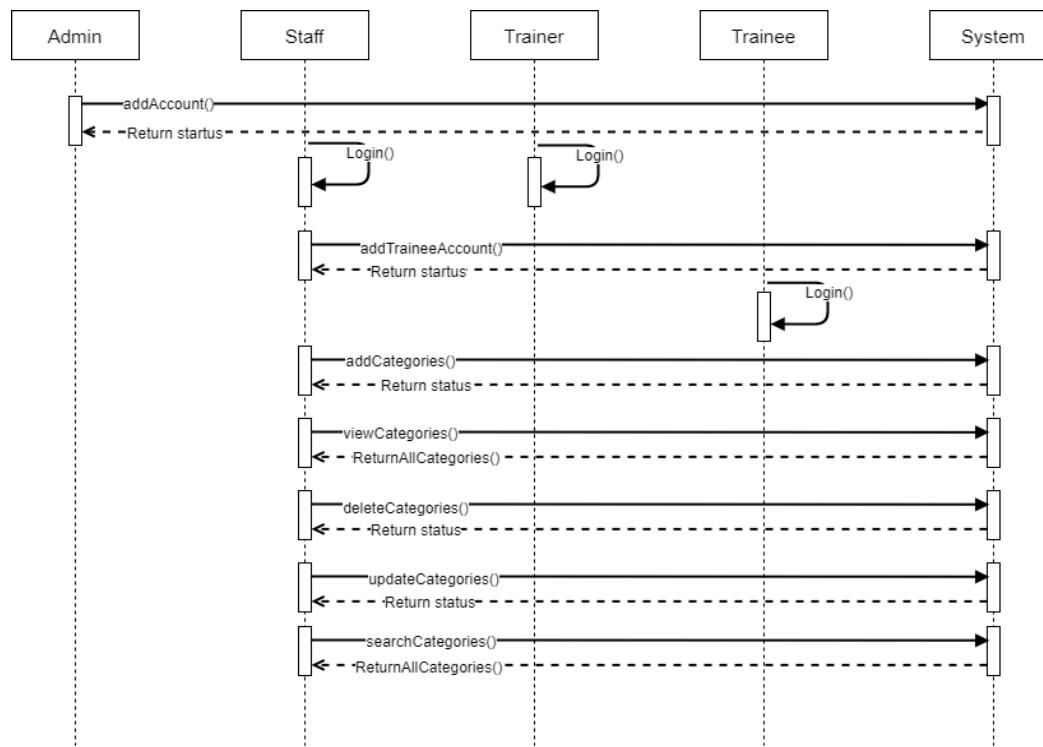


Figure 68: Staff's Sequence Diagram - Categories Management

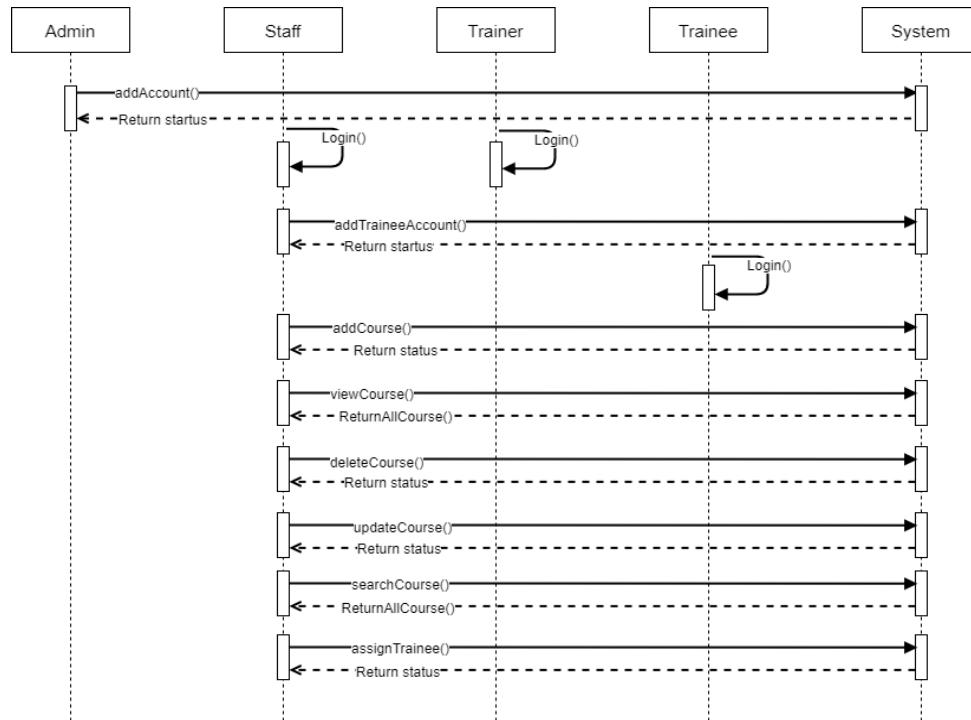


Figure 69: Staff's Sequence Diagram - Course Management

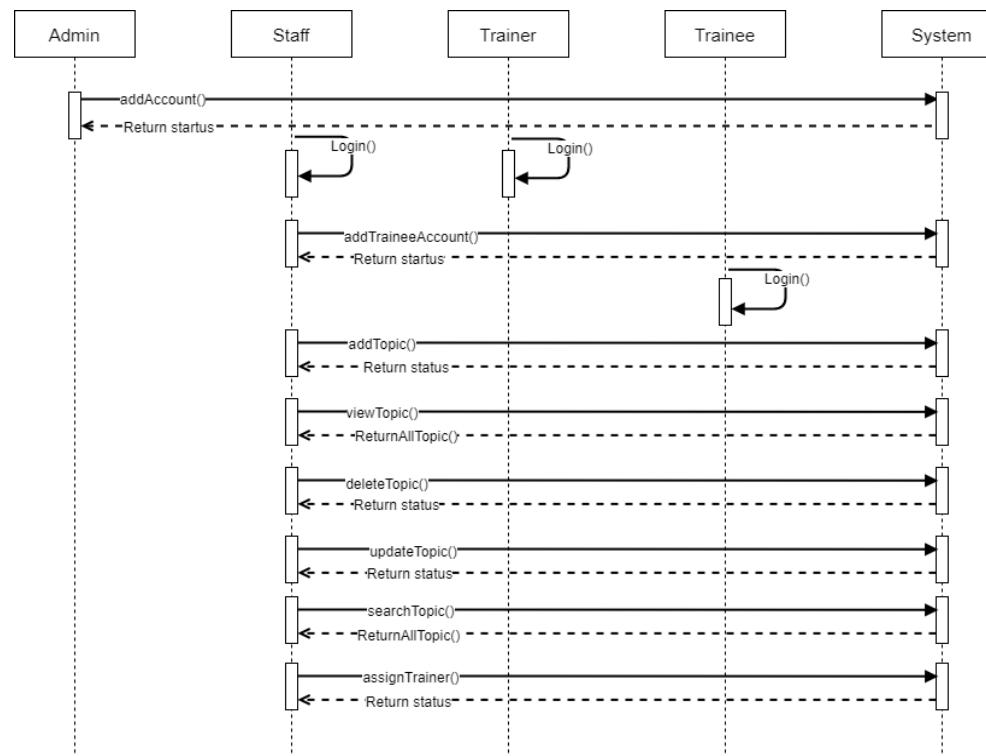


Figure 70: Staff's Sequence Diagram - Topic Management

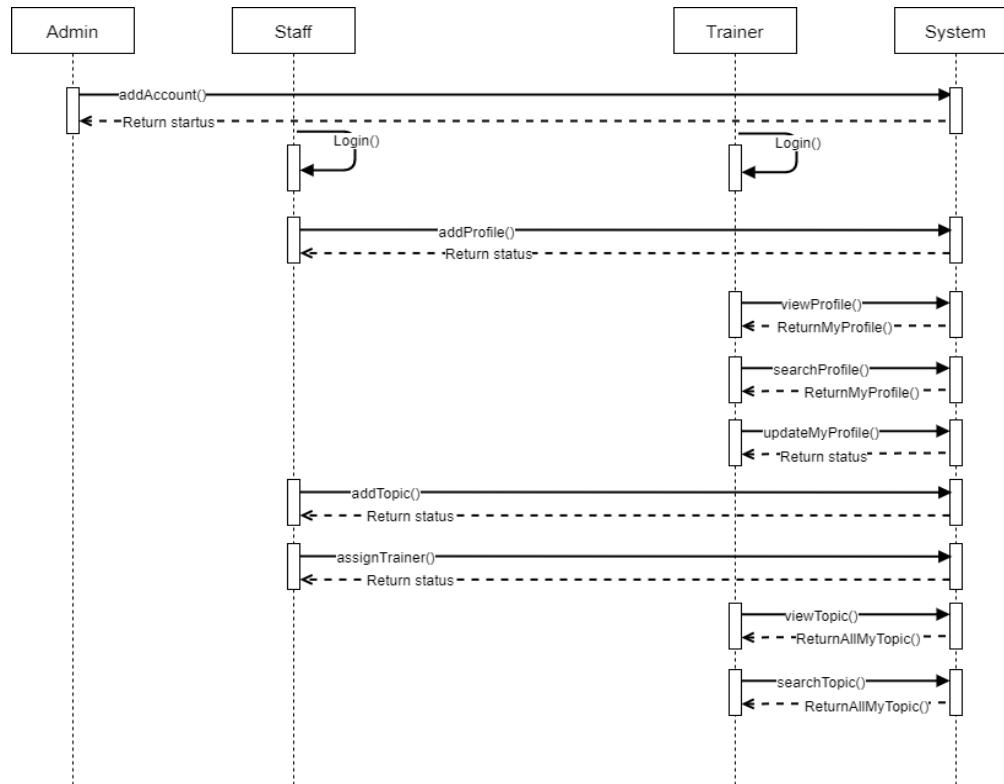


Figure 71: Trainer's Sequence Diagram

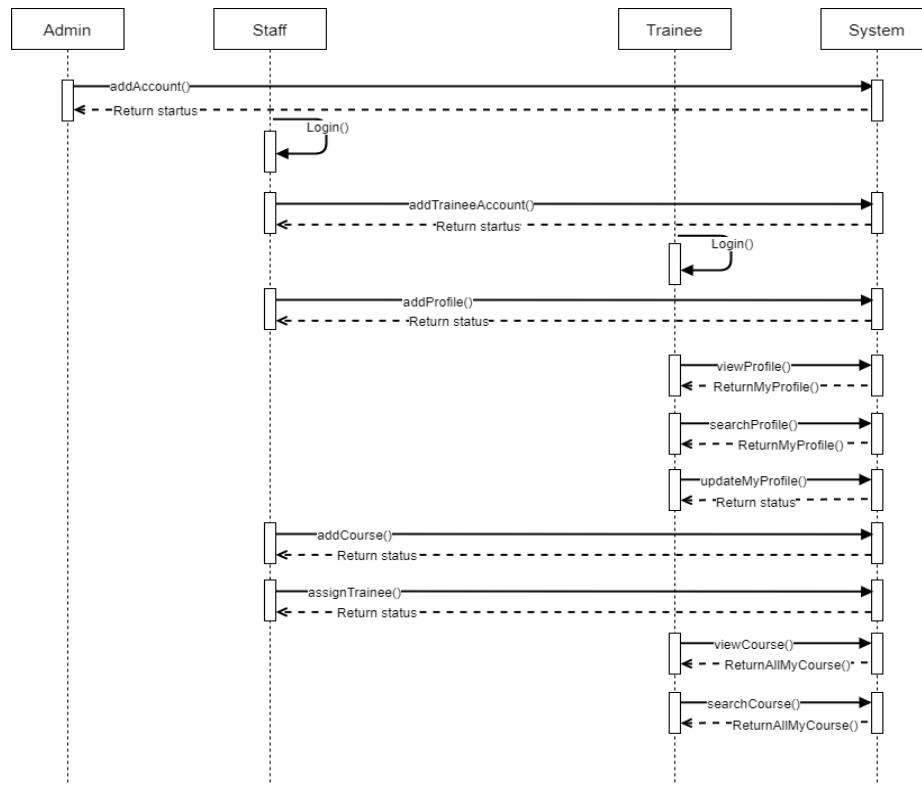


Figure 72: Trainee's Sequence Diagram

## LO4 Evaluate the performance of a business application against its Software Design Document and initial requirements

### P6 Review the performance of your business application against the Problem Definition Statement and initial requirements

#### 1. Test plan

A software project testing plan is a document that describes the objectives, scope, approach and focuses on software testing efforts. The process of preparing a test plan is a useful way to think about the efforts needed to confirm the acceptability of a software product.

Benefits of test plan: test plan helps us determine the effort needed to confirm the quality of the application under test, help people outside the testing team like developers, business managers, customers understand the details of testing. Besides, a test plan guides our thinking. It is like a rule book, and needs to be obeyed.

Identification test: Check insert, update, delete, display, block, unblock functionality.

Test target: All required functions will run without error.

Inspection level: Normal situations, Data validation and Extreme data.

Test schedule:

- ✓ **Test**: Function Test and Unit Test → 1 day
- ✓ **Regression test**: Test of all functions and units of the test case → 1 day

Recorded data: Data given from the system test plan will be recorded and will be executed when the system process fails and runs successfully.

*Table 8: Test plan*

NO	TEST CASE	DESCRIPTION
1	Login	Log in to the system with many different roles (Admin, Training Staff, Trainee, Trainer)
2	Username/Password textbox	Only 50 characters can be entered into the Username / Password textbox. If the number exceeds 50 characters, the system will display an over-limit number
3	Register new account	Create a new account with the admin role for the remaining roles. Create a new account with the role of training staff for the remaining roles except for the admin role
4	Change password	Change the password for any account, then log out and log in with the new password
5	Edit account	Change information of any account
6	Delete account	Delete any account and then see if it exists in the database or has been deleted
7	View account	After clicking view in any account, showing all information of the account
8	Search account	Find an account with any user information
9	Assign trainer	Assign a topic to the trainer, then see if the trainer is already assigned to the topic

10	Assign trainee	Assign a trainee to a course, then see if a course already exists within that course
11	Create course	Create a course then see if the course exists
12	Search course	Find any course with course information
13	Remove course	Delete any course
14	Update course	Edit information of any course
15	Change course name	Change the name of the course
16	Change course description	Change the description of the course
17	Add course to topic	Add a course to a topic then check if that course is added to the topic
18	View course	See courses that already exist
19	Search course categories	Find any course categories that exist in the system
20	View course categories	View course categories
21	Add course categories	Add any course categories to the system
22	Update course categories	Edit course categories information
23	Delete course categories	Delete any existing course categories in the system
24	Buttons	Check if the buttons execute the assigned function

## 2. Test results

Test results are the outcome of the whole process of the software testing life cycle. The results thus produced, offer an insight into the deliverables of a software project, significant in representing the status of the project to the stakeholders.

Table 9: Test result

No	Test steps	Test data	Expected output	Actual output	Status	Notes
1	Login (Admin)	U/N: Admin P/W: admin	Login successfully and can use the manage account function	As expected	Pass	Successful
2	Login (Staff)	U/N: HuyenStaff1 P/W: a	Login successfully can use the functions of account management, course, course categories and profile	As expected	Pass	Successful
3	Login (Trainer)	U/N: HuyenTrainer1 P/W: a	Login successfully, can edit information and view topics and courses	As expected	Pass	Successful
4	Login (Trainee)	U/N: Trainee P/W: a	Login successfully, can edit information and view topics and courses	As expected	Pass	Successful
5	Input more than 50 into Username and Password textbox	Username: admin Password: testing (wrong password)	Enter more than 50 characters in the textbox, cannot enter more than 50 characters	As expected	Pass	Need improvement, display on the screen if the input exceeds 50 characters
6	Register new account by admin role	U/N: HuyenStaff2 P/W: a	Register new accounts for users with the roles of training staff, trainer and trainee	As expected	Pass	Successful
7	Register new account by training staff role	U/N: HuyenTrainer2 P/W: a	Register new accounts for users as trainers and trainees	As expected	Pass	Successful

8	Delete account	HuyenTrainer1	Delete any account, then that account is deleted from the database	As expected	Pass	Successful
9	View account	HuyenStaff1	View any account information, all account information is displayed on the user interface	As expected	Pass	Successful
10	Search account profile	Trainee1	Search on the toolbar, then display all information of the user to search	As expected	Pass	Successful
11	Assign trainer to topic	HuyenTrainer1 Cloud	Assign a trainer to a topic, then go to the topic, showing the trainer in that topic	As expected	Pass	Successful
12	Assign trainee to course	HuyenTrainee1 Web server 1	Assign a trainee to the course, then enter the course, showing the trainee in that topic	As expected	Pass	Successful
13	Change password	U/N: Admin P/W: a	Change password then login successfully with new password	As expected	Pass	Successful
14	Edit account by training staff role	Address: HCM -> 2HCM	Change the information for any account, then that account displays new information in the profile except for the admin account	As expected	Pass	Successful
15	Create course	Cloud	Create a new course with all the details	As expected	Pass	Successful

16	Search course	Cloud	Find a course with the name of the course.	As expected	Pass	Successful
17	Remove course	Biz	Delete a course with the course ID	As expected	Pass	Successful
18	Update course	Web server	Change the description of the course, showing the description that has been changed	As expected	Pass	Successful
19	Change course name	WS -> Webserver	Change the name of the course, then display the new name of the course that has been changed	As expected	Pass	Successful
20	Change course description	LoRem -> Go	Change the description of the course, showing the description that has been changed	As expected	Pass	Successful
21	Add course to topic	Add Cloud to Go AI	Add a course to the topic then display the new description	As expected	Pass	Successful
22	View course	IT Pro	Shows details of the selected course	As expected	Pass	Successful
23	Search course categories	IT	Find information of course categories with Name. Then, display the course categories information on the user interface	As expected	Pass	Successful
24	View course categories	N/A	Show all course categories	As expected	Pass	Successful
25	Add course categories	Paint	Add course categories with ID and name. Then display the new course	As expected	Pass	Successful

			categories add			
26	Update course categories	Paint -> Paint 1	Change the information of the course categories, then check and display the changed information	As expected	Pass	Successful
27	Delete course categories	Paint 1	Delete any course categories, then it will be deleted from the database	As expected	Pass	Successful
28	Buttons	N/A	The buttons both execute the assigned function	As expected	Pass	Successful
29	Home page	N/A	From any page, clicking Home will return to the home page	As expected	Pass	Successful
30	Register page	N/A	From any page, clicking on Register will return to the Register page	As expected	Pass	Successful
31	Login page	N/A	If you are not logged in, from any page, clicking Login will return the Login page	As expected	Pass	Successful
32	Trainee page	N/A	From any page, clicking on Trainee will return to the Trainee page	As expected	Pass	Successful
33	Trainer page	N/A	From any page, clicking on Trainer will return to Trainer page	As expected	Pass	Successful
34	Course page	N/A	From any page, clicking the Course will return to the Course page	As expected	Pass	Successful
35	Topic page	N/A	From any page, when clicking on Topic will return to Topic page	As expected	Pass	Successful
36	Login button	N/A	If you enter the correct Username / Password, you will log into the account from the Home page. If you enter the wrong Username / Password, you will return to the Login page	As expected	Pass	Successful

## M5 Analyze the factors that influence the performance of a business application and use them to undertake a critical review of the design, development and testing stages of your application

Application complexity is one of the biggest factors impacting application performance. Maybe the Web server and app server are running fine, but if the database is faltering, the user experience will suffer. Being able to measure and keep tabs on all those moving parts is the challenge and requires an APM (Application Performance Management) tool that can provide a view into the performance of all the parts, not just individual components. As the saying goes, “The more moving parts, the more that can go wrong.” Today, applications are generally developed in simulation labs with no performance test on live networks and before applications are displayed then transport in highly distributed network architectures today should be monitored and optimized. Therefore, fault testing of the application in the live production environment impacts performance. So, it is for developers and testers to have a clear understanding of the non-functional performance criteria.

On the other hand, performance goals also need to be characterized when applications are specified and this is in parallel with the information of the environment in which the applications will run. Moreover, some improvements are left behind and applications are tracked, analyzed, or corrected after they are put into implementation. Besides, poorly optimized code and infrastructure also are the factors that affect application performance, such as sub-optimal SQL queries and poorly configured network infrastructure. All of these problems can be hard to cater to, and the emphasis on DevOps processes can cause multiplying quickly by increasing the rate of change in the data center. Hence, it is important to capably tool the data center to monitor and report on all aspects of a deployed application using code-level instrumentation, EURT and network performance tools, and traditional IT infrastructure monitoring solutions.

Finally, the network also on which the application is used impacts performance greatly, in particular for mobile and cloud. Some problems such as inconsistent bandwidth, high jitters increased latency, and packet loss all work to decrease application performance. While it might not be able to cloud networks or control mobile, by building the test of an app with these network conditions in mind the issue can be comprehended. Before the network impacts are felt by users, this will give organizations the opportunity to optimize app performance.

→ After completing the project to develop a website school management, we have listed the Test Plan, which is what I will do after completing the system. We then list out all the things we tested in the Test Result. In fact, the system is not perfect, it still lacks a lot. Compared to the requirements of the initial project, we achieved 90%, the rest we have not completed. We learned from this project and developed this project after the deadline for submission of this project. In order to complete as required by the exam, not only can you develop more than the problem you have expected.

**D3 & D2 Critically evaluate the strengths and weaknesses of your business application and fully justify opportunities for improvement and further development. Evaluate any new insights, ideas or potential improvements to your system and justify the reasons why you have chosen to include (or not to include) them as part of this business application.**

In the process of building and developing the website. We found that there are a number of website strengths and weaknesses that we seriously need to evaluate in order to improve and develop them in the future.

Here are some reviews of strengths that we value highly:

- **Download speed:** our website ensures regular uptime, limiting from being interrupted many times. According to our observations and assessment. The site has very fast page load times (less than 1 second). Login pages or user information management, course code management, topic management, course category manager all load very quickly and without delay.
- **Arrange layout and information:** the website has a complete informative section and layout, not too cumbersome and redundant, very suitable for the needs of user (staff, trainer, trainee) and administrators. According to our observation, the arrangement of functions and information is very reasonable and complete, not cumbersome. Categories such as user information management, course management, and subject matter follow a certain pattern and are consistent. Function buttons are arranged according to the original, clear and complete design. Information about users, courses and topics is displayed clearly and in detail.

- **Functionality:** one of our highly appreciated criteria is that the site's functionality is easy to use. Focus on user needs, no-frills and confusing. The functions in the website are easy to use like user-added functions, editing functions, delete functions, and details view functions are all easy to use. Usage of the functions is very easy so I think any user can use it. The functions are set up don't redundantly and focus on the needs of users, very suitable for those who are less knowledgeable about using the website. Moreover, the indispensable strength is bringing business benefits to the website. It is a very good tool for school. The functions of the website are well supported to help employees manage student information well as well as management courses and topics well. Through it also saves the school in trainee management and other things.
- **Confidentiality:** regarding security, according to the observation process, we appreciate that. Because of very secure encrypted security. In addition, the trainees were created by the staff and this makes it difficult for an attacker to log into the system.

Besides the strengths, here are the weaknesses we need to consider:

- **Interface:** regarding the look and feel of the website, we think the interface is missing a lot like the interface does not include school introduction images, the interfaces do not have many eye-catching colors and have not yet attracted users. Besides, there are no symbols for functions so that the user can easily identify what that function is through which the user must read to understand the functions.
- **Interaction:** the website that we need to pay attention to and develop is trainee interaction so there should be functions for interacting with trainees like through websites where notifications can be sent to trainees, through the website can interact with students by chat functions with trainees or through the website it is possible to interact with trainees by the function of feedback and notifications.

## REFERENCES

- [1] Luke Harsel, 2021. *The Ultimate Keyword Research Checklist*. [online] Semrush Blog. Available at: <<https://www.semrush.com/blog/the-ultimate-keyword-research-checklist/?cmp=15726934&kw&ad=42256329&dclid=CKfipfu0tfACFQOpvQod9JICTw>> [Accessed 6 May 2021].
- [2] Agilemodeling.com. 2021. *User Interface Flow Diagrams (UI Storyboards): An Agile Introduction*. [online] Available at: <<http://agilemodeling.com/artifacts/uiFlowDiagram.htm>> [Accessed 18 April 2021].
- [3] The Official E-SPIN Blog. 2021. *5 Top Factors that Impact Application Performance*. [online] Available at: <<https://espincorp.wordpress.com/2013/05/21/5-top-factors-that-impact-application-performance/>> [Accessed 8 May 2021].
- [4] Guru99.com. 2021. *UML Use Case Diagram: Tutorial with EXAMPLE*. [online] Available at: <<https://www.guru99.com/use-case-diagrams-example.html>> [Accessed 18 April 2021].
- [5] Smartdraw.com. 2021. *Entity Relationship Diagram (ERD) - What is an ER Diagram?*. [online] Available at: <<https://www.smartdraw.com/entity-relationship-diagram/>> [Accessed 18 April 2021].
- [6] Jason Meserve, 2021. *15 Top Factors That Impact Application Performance*. [online] APMdigest - Application Performance Management. Available at: <<https://www.apmdigest.com/15-top-factors-that-impact-application-performance>> [Accessed 8 May 2021].
- [7] Rces.info. 2021. *Các nội dung cơ bản trong một bảng hỏi khảo sát – RCES / Công đồng sinh viên kinh tế nghiên cứu khoa học*. [online] Rces.info. Available at: <<http://rces.info/sinh-vien-kinh-te-nckh/cac-noi-dung-co-ban-trong-mot-bang-hoi-khao-sat/>> [Accessed 6 May 2021].
- [8] CHAITANYA SINGH, 2021. *C++ Tutorial - Learn C++ Programming with examples*. [online] beginnersbook.com. Available at: <<https://beginnersbook.com/2017/08/c-plus-plus-tutorial-for-beginners/>> [Accessed 6 May 2021].

- [9] Carmelo Garcia, 2021. *School Management System In C++ With Source Code / Source Code & Projects*. [online] Source Code & Projects. Available at: <<https://code-projects.org/school-management-system-in-c-with-source-code/>> [Accessed 6 May 2021].
- [10] Cppexamples.xyz. 2021. *School Management System Project in C++*. [online] Available at: <<https://www.cppexamples.xyz/2016/02/school-management-system-project-in-c.html>> [Accessed 6 May 2021].
- [11] Experience UX. 2021. *What is wireframing / Experience UX*. [online] Available at: <<https://www.experienceux.co.uk/faqs/what-is-wireframing/>> [Accessed 18 April 2021].
- [12] Visual-paradigm.com. 2021. *UML Class Diagram Tutorial*. [online] Available at: <<https://www.visual-paradigm.com/guide/uml-unified-modeling-language/uml-class-diagram-tutorial/>> [Accessed 18 April 2021].
- [13] Mindtools.com. 2021. *Risk Analysis and Risk Management: Evaluating and Managing Risks*. [online] Available at: <[https://www.mindtools.com/pages/article/newTMC\\_07.htm](https://www.mindtools.com/pages/article/newTMC_07.htm)> [Accessed 18 April 2021].
- [14] Mike Griffiths, 2021. *The Top Five Software Project Risks*. [online] Project Smart. Available at: <<https://www.projectsmart.co.uk/top-five-software-project-risks.php>> [Accessed 18 April 2021].
- [15] Professionalqa.com. 2021. *Test Results* |Professionalqa.com. [online] Available at: <<https://www.professionalqa.com/test-results>> [Accessed 6 May 2021].
- [16] SOFTWARE TESTING Fundamentals. 2021. *Test Plan - SOFTWARE TESTING Fundamentals*. [online] Available at: <<https://softwaretestingfundamentals.com/test-plan/>> [Accessed 6 May 2021].
- [17] Tutorialspoint.com. 2021. *MVC Framework - Introduction - Tutorialspoint*. [online] Available at: <[https://www.tutorialspoint.com/mvc\\_framework/mvc\\_framework\\_introduction.htm](https://www.tutorialspoint.com/mvc_framework/mvc_framework_introduction.htm)> [Accessed 18 April 2021].

- [18] Vignesh Mani, 2021. *Advantage and Disadvantage of ASP.NET MVC*. [online] C-sharpcorner.com. Available at: <<https://www.c-sharpcorner.com/blogs/advantage-and-disadvantage-of-asp-net-mvc1>> [Accessed 18 April 2021].
- [19] Tutorialspoint.com. 2021. *LINQ - SQL - Tutorialspoint*. [online] Available at: <[https://www.tutorialspoint.com/linq/linq\\_sql.htm](https://www.tutorialspoint.com/linq/linq_sql.htm)> [Accessed 18 April 2021].
- [20] Azure.microsoft.com. 2021. *SQL Database – Managed Cloud Database Service | Microsoft Azure*. [online] Available at: <<https://azure.microsoft.com/en-au/services/sql-database/>> [Accessed 18 April 2021].
- [21] ArtSoft Consult. 2021. *Tools and technologies used in software development at ArtSoft Consult*. [online] Available at: <<https://www.artsoft-consult.ro/areas-of-application/tools-and-technologies>> [Accessed 18 April 2021].
- [22] Sami, M., 2021. *Software Development Life Cycle Models and Methodologies - Mohamed Sami*. [online] Mohamed Sami. Available at: <<https://melsatar.blog/2012/03/15/software-development-life-cycle-models-and-methodologies/>> [Accessed 18 April 2021].
- [23] NATALYA RAHMANY, 2021. *Software Testing Methodology V-Model, Agile, Waterfall, Spiral*. [online] Productive Hut. Available at: <<https://productivehut.com/v-model-agile-waterfall-spiral/>> [Accessed 18 April 2021].
- [24] VN, T., mềm, S. and thử, T., 2021. *Test Plans - Kế hoạch kiểm thử - testingvn.com*. [online] Testingvn.com. Available at: <<http://www.testingvn.com/viewforum.php?f=30>> [Accessed 6 May 2021].
- [25] Softwaretestingmentor.com. 2021. *What are Test Results – Software Testing Mentor*. [online] Available at: <<https://www.softwaretestingmentor.com/test-results/>> [Accessed 6 May 2021].
- [26] Microsoft. 2021. *ASP.NET / Open-source web framework for .NET*. [online] Available at: <<https://dotnet.microsoft.com/apps/aspnet>> [Accessed 18 April 2021].