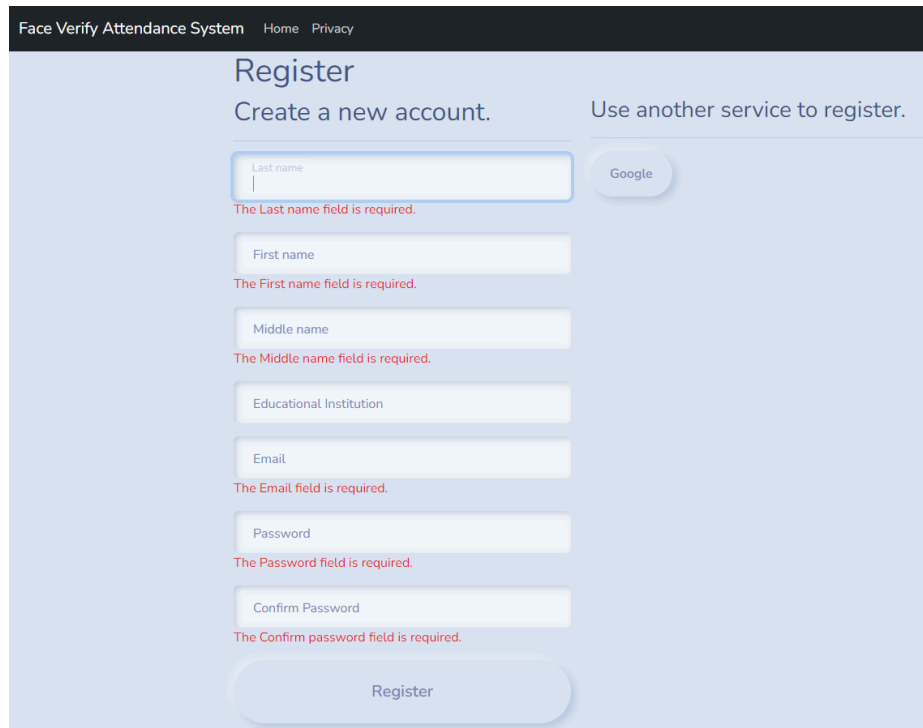


## 1.1 Analysis of the Web Application Functionality

Figure 1.1 shows the registration form, which the user must complete in full; otherwise, an appropriate message will be displayed.



Face Verify Attendance System Home Privacy

### Register

Create a new account. Use another service to register.

Last name  
The Last name field is required.

First name  
The First name field is required.

Middle name  
The Middle name field is required.

Educational Institution

Email  
The Email field is required.

Password  
The Password field is required.

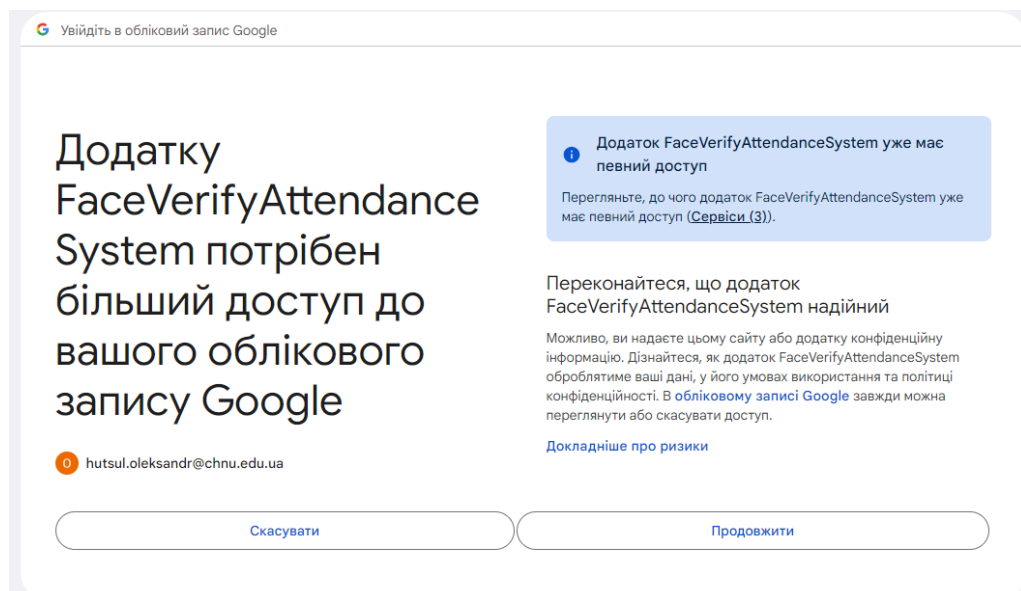
Confirm Password  
The Confirm password field is required.

Register

Google

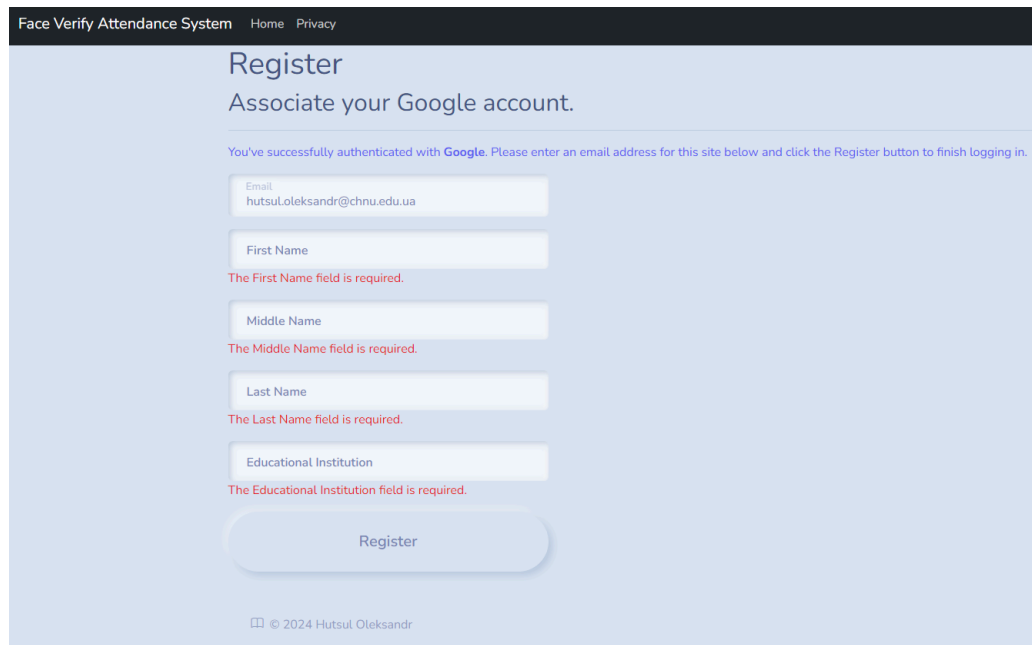
Figure 1.1 – Registration Form

Additionally, the user can register using an alternative method through the Google service (Figure 1.2).



## Figure 1.2 – Google Registration

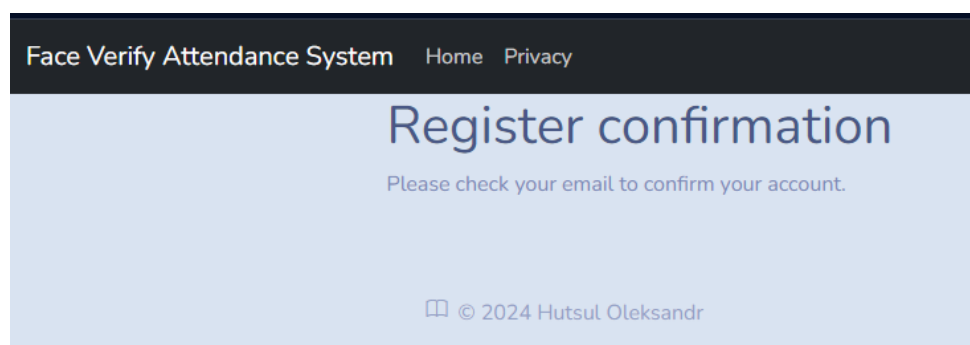
After continuing with registration, the user needs to fill out brief information about themselves to ensure the application functions correctly in the future (Figure 1.3). The advantage of registering through Google is that you do not need to go through and confirm your address.



The screenshot shows a web page titled "Face Verify Attendance System" with navigation links for "Home" and "Privacy". The main heading is "Register" with the sub-heading "Associate your Google account." Below this, a message states: "You've successfully authenticated with Google. Please enter an email address for this site below and click the Register button to finish logging in." The form contains five input fields: "Email" (with the value "hutsul.oleksandr@chnu.edu.ua"), "First Name", "Middle Name", "Last Name", and "Educational Institution". Each of the four name and institution fields has a red error message below it: "The First Name field is required.", "The Middle Name field is required.", "The Last Name field is required.", and "The Educational Institution field is required." A "Register" button is positioned below the form. At the bottom left, there is a copyright notice: "© 2024 Hutsul Oleksandr".

Figure 1.3 – Google Registration Form

If the user does not wish to register via Google services, they need to fill out the form (Figure 1.1). After this, the user will see a message (Figure 1.4). An email with further information will also be automatically sent to the user (Figure 1.5). After confirmation, the user will see a corresponding message (Figure 1.6).



The screenshot shows a web page titled "Face Verify Attendance System" with navigation links for "Home" and "Privacy". The main heading is "Register confirmation" with the sub-heading "Please check your email to confirm your account." At the bottom center, there is a copyright notice: "© 2024 Hutsul Oleksandr".

Figure 1.4 – Further Actions Information

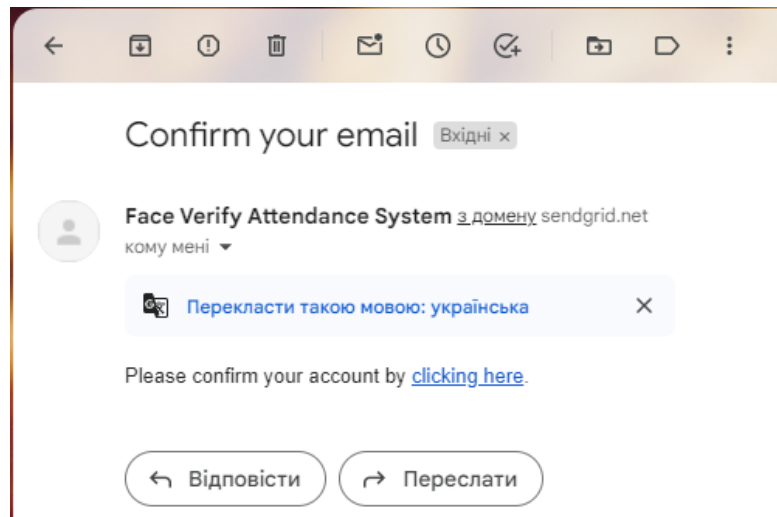


Figure 1.5 – Registration Confirmation Message

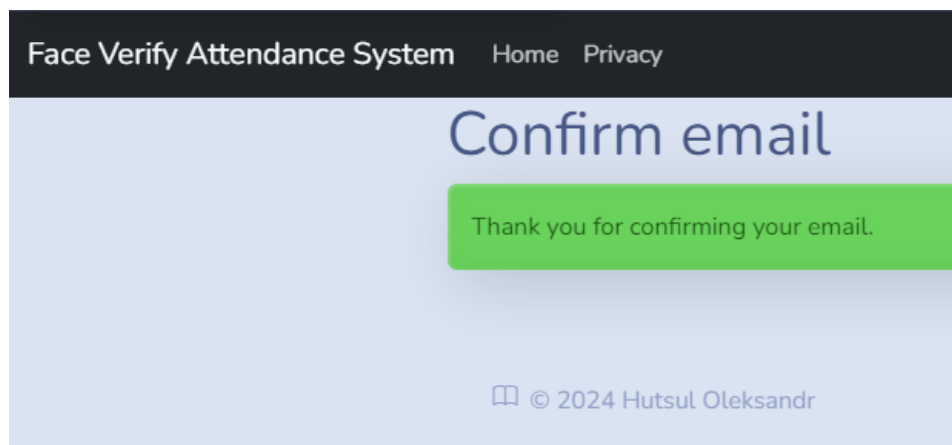


Figure 1.6 – Successful Email Confirmation Message

After successful registration, the user has several options. The first option is to log in to their account (Figure 1.7). Also, if the user registered using Google services, they should log in using Google services as well. The second option is to reset the password if the user has forgotten it (Figure 1.8). The third option is to resend the confirmation email (Figure 1.9).

Face Verify Attendance System Home Privacy

## Log in

Use a local account to log in. Use another service to log in.

Email  
hutsul.oleksandr@chnu.edu.ua

Google

Password  
••••••••

Remember me?

Log in

[Forgot your password?](#)

[Register as a new user](#)

[Resend email confirmation](#)

Figure 1.7 – Login Form

Face Verify Attendance System Home Privacy

## Forgot your password?

Enter your email.

Email  
hutsul.oleksandr@chnu.edu.ua

Reset Password

© 2024 Hutsul Oleksandr

Figure 1.8 – Forgot Password Form

Face Verify Attendance System Home Privacy

## Resend email confirmation

Enter your email.

Email  
hutsul.oleksandr@chnu.edu.ua

Resend

© 2024 Hutsul Oleksandr

Figure 1.9 – Resend Confirmation Form

If the user needs to reconfirm the password, they should fill out the form (Figure 1.9) and follow the same instructions provided in Figures 1.4 – 1.6. If the user forgets the password, they can use the appropriate function (Figure 1.8). The user should then follow the on-screen instructions. Initially, a message will inform the user that the email has been successfully generated and to check their address (Figure 1.10). After viewing the message in their email (Figure 1.11), the user needs to follow the link and complete the appropriate form to change the password (Figure 1.12).

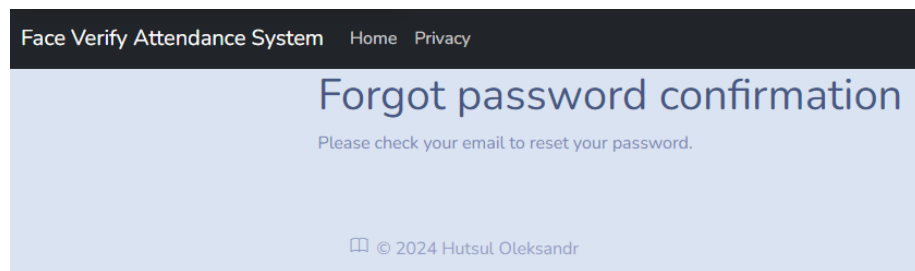


Figure 1.10 – Further Actions Information

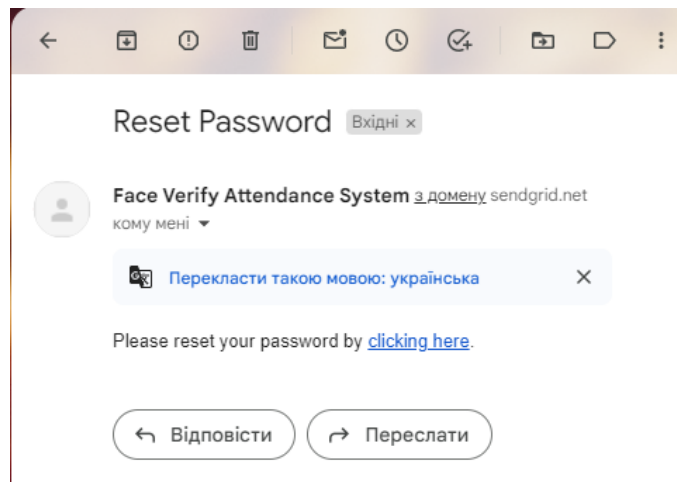


Figure 1.11 – Password Reset Message

Face Verify Attendance System Home Privacy

## Reset password

Reset your password.

Email  
hutsul.oleksandr@chnu.edu.ua

Password

Confirm password

Reset

© 2024 Hutsul Oleksandr

Figure 1.12 – New Password Entry Form

After registration, the user is redirected to the application's home page (Figure 1.13). By default, the user has the role of a student; it will be demonstrated later how to change the role.

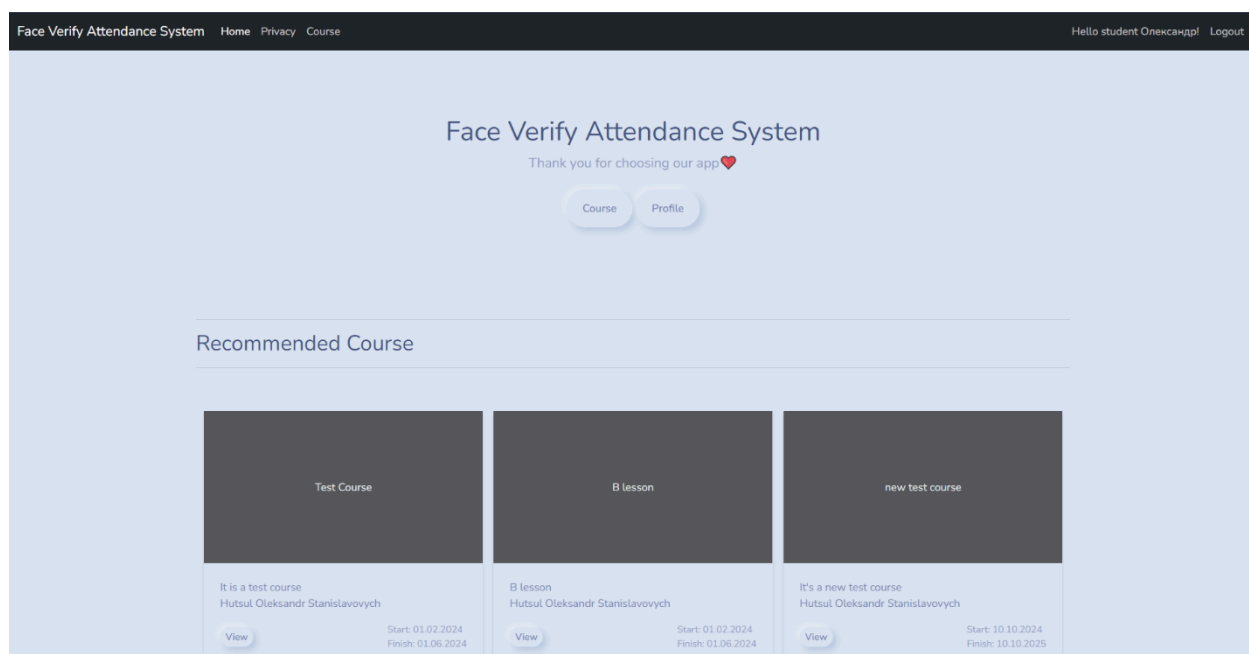


Figure 1.13 – Home Page

The user needs to fill out additional information about themselves by going to the profile section by clicking on the relevant link, specifically "Hello student

name\_student" (Figure 1.14). Next, the user must complete the additional information. After filling out and saving the information, the user will see a corresponding success or error message (Figure 1.15).

The image shows a user profile page with a sidebar menu on the left and a main form area on the right. The sidebar menu includes: Profile (highlighted), Password, External logins, Two-factor authentication, Personal data, and Change Role. The main form area is titled "Profile" and contains the following fields and values:

- First Name: Олександр
- Middle Name: Станіславович
- Last Name: Гуцул
- Username: hutsuLoleksandr@chnu.edu.ua
- Phone number: (empty field with a red error message below: "The Phone number field is required.")
- Educational Institution: Чернівецький національний університет
- Birthday: дд.мм.рррр (with a calendar icon)
- Identification Number: (empty field with a red error message below: "The Identification Number field is required.")
- Country: (empty field)
- City: (empty field)
- Group number: (empty field with a red error message below: "The Group number field is required.")
- Upload Photo: Вибір файлу (Файл не вибрано)

On the right side of the profile, there is a large circular placeholder for a profile picture containing the letter "O".

Figure 1.14 – User Profile

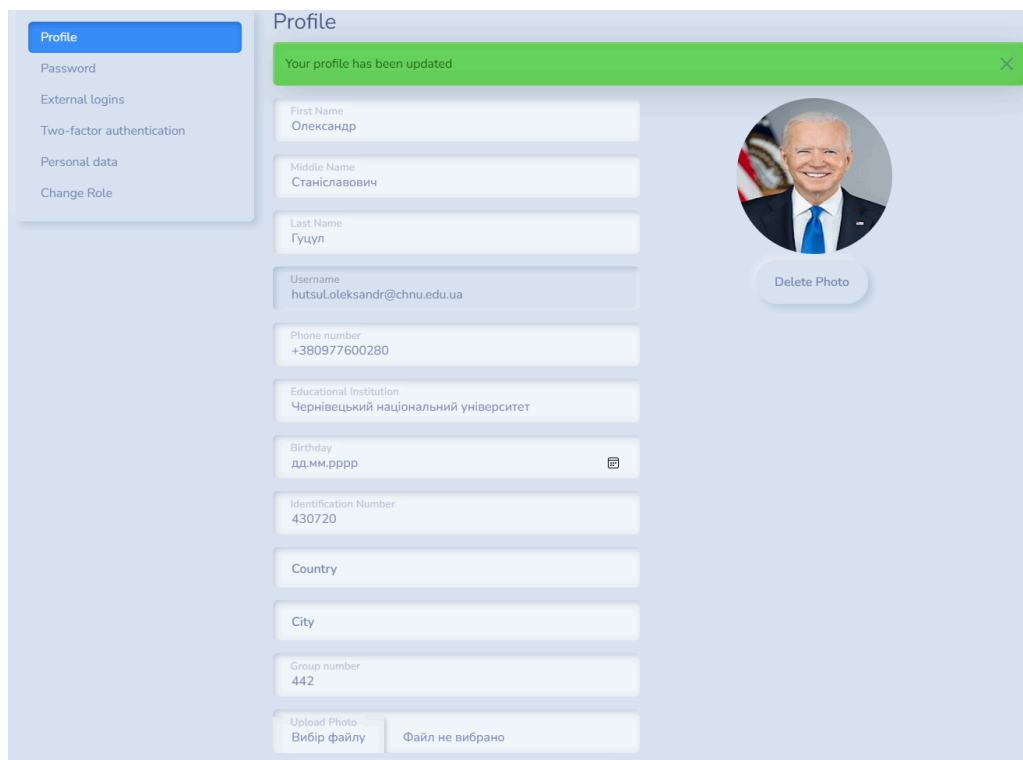


Figure 1.15 – Updating User Profile Information

Photos are stored on Google Drive (Figure 1.16), and links to them and their subsequent display in the profile are managed through the links saved in the database.

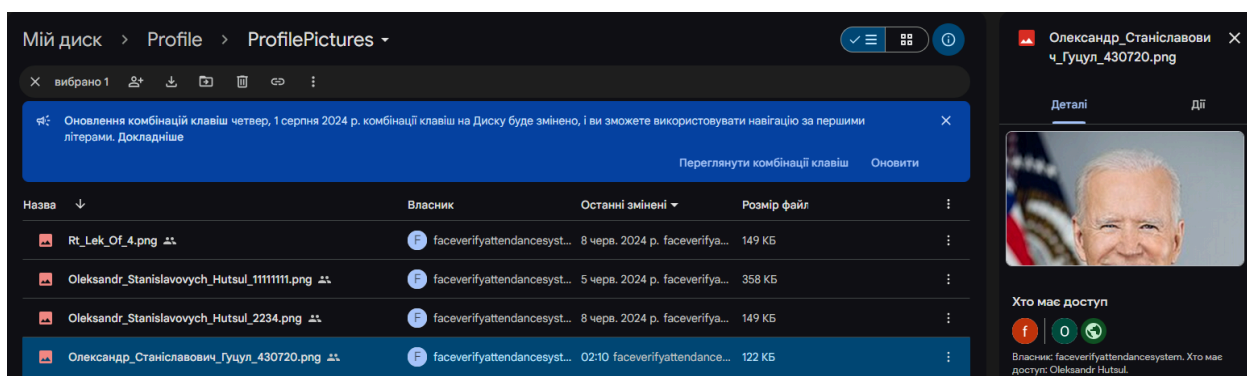


Figure 1.16 – User-uploaded Photo on Google Drive

In the profile settings, the user can also change the password by filling out the appropriate fields (Figure 1.17).

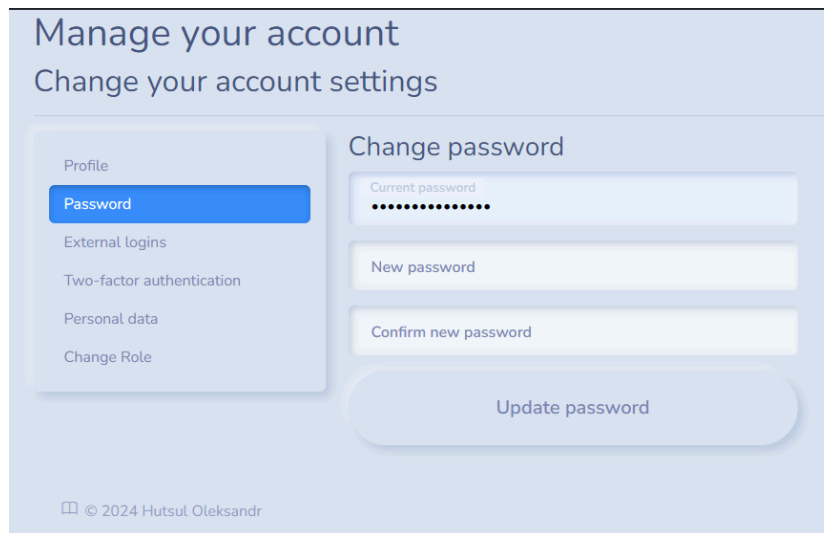


Figure 1.17 – Change Password Form in Profile

In the external logins tab, available external services should be displayed so that the user can add or remove external logins (Figure 1.18).

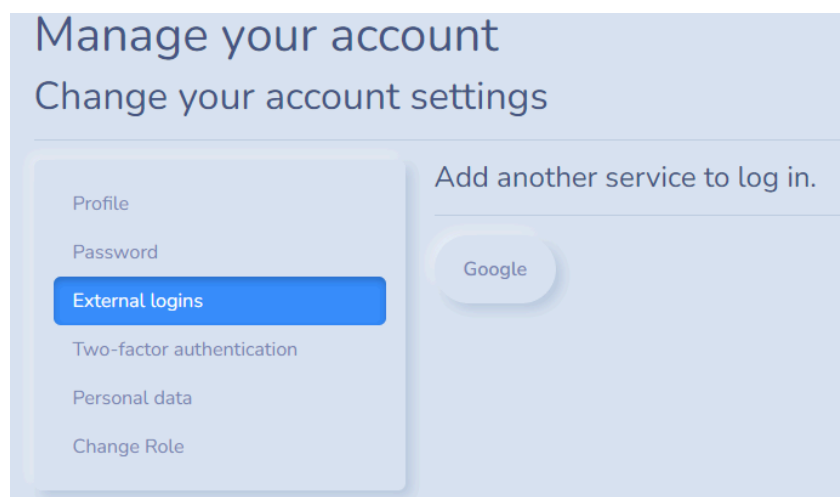


Figure 1.18 – External Logins

In today's world, security is paramount, which is why users will have the option to add two-step verification for subsequent logins (Figure 1.19). To set up two-step verification, users need to download the Google Authenticator app, scan the barcode, and enter the code displayed on their smartphone (Figure 1.20). After filling in this information, users need to save the recovery code in a secure location (Figure 1.21). Users can manage two-step verification as they wish (Figure 1.22). When

attempting to log in to the account, users will need to obtain a code from the app or use one of the recovery codes (Figure 1.23).

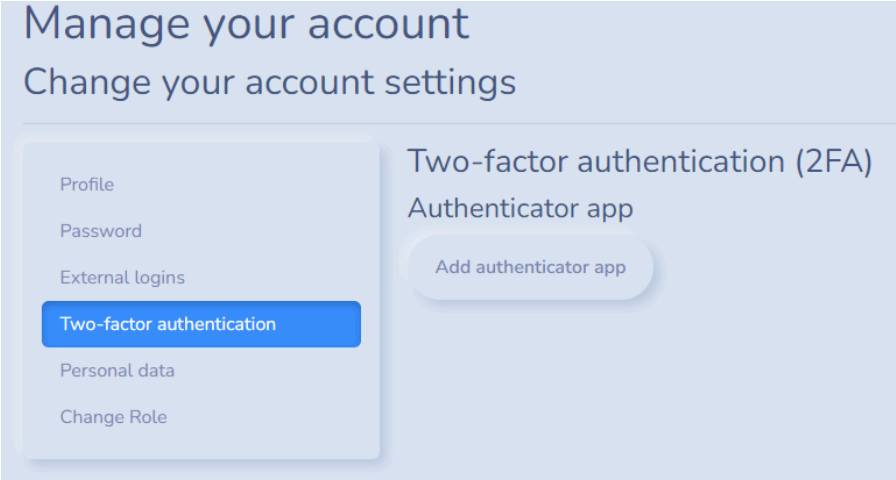


Figure 1.19 – Two-Step Verification

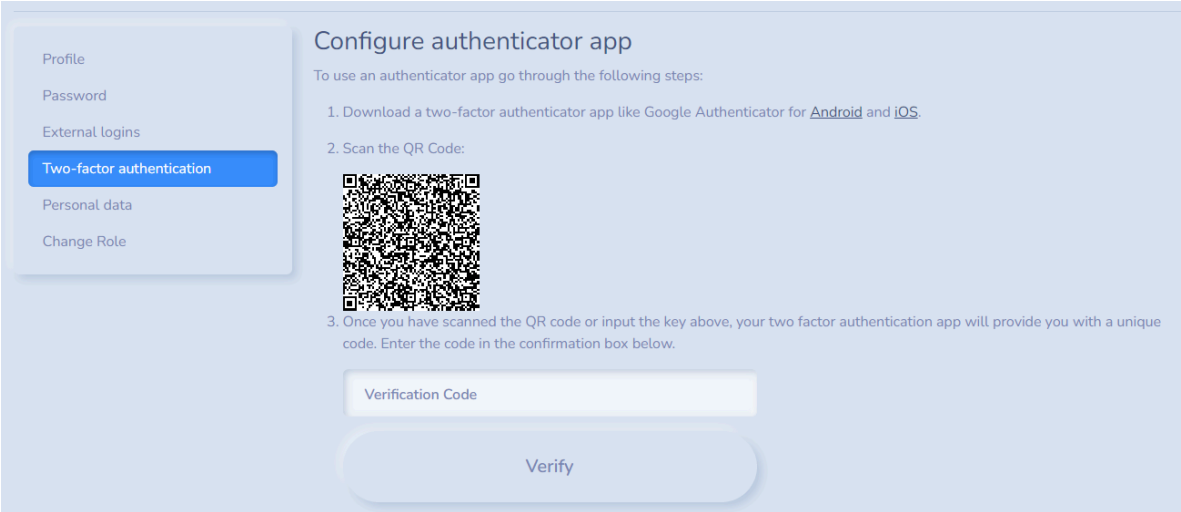


Figure 1.20 – Two-Step Verification Setup

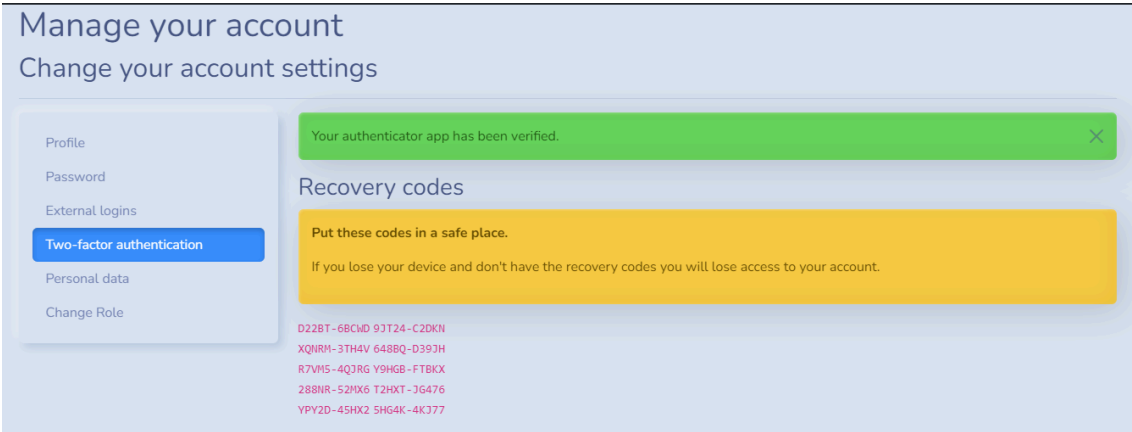


Figure 1.21 – Successful Verification Setup and Recovery Codes

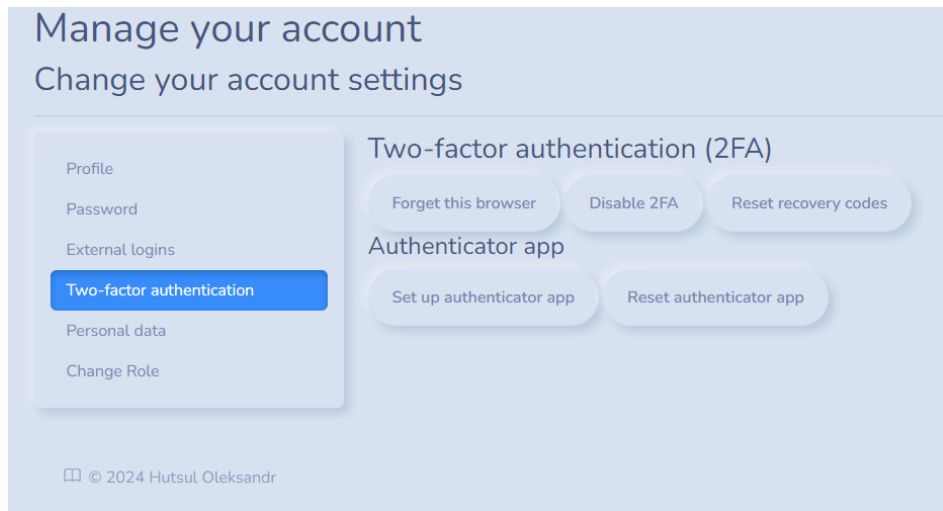


Figure 1.22 – Available User Actions

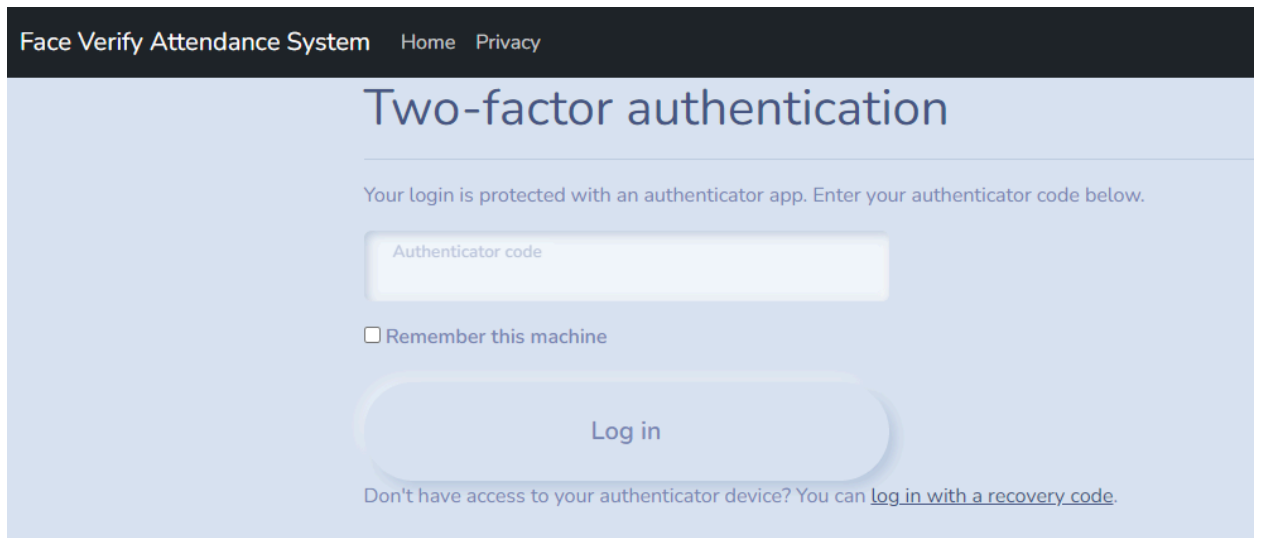


Figure 1.23 – Account Login after Adding Two-Step Verification

After the user marks the device as trusted (Figure 1.23), an additional option appears to forget the login for a specific machine and only log in using the code from the app (Figure 1.24).

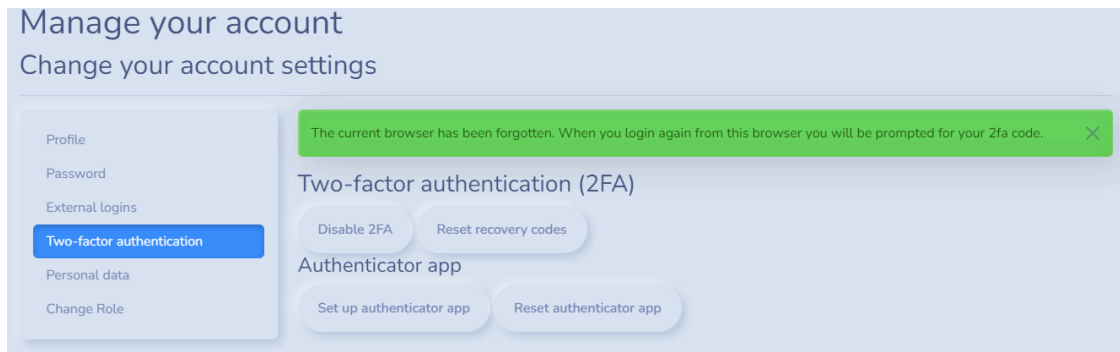


Figure 1.24 – Disabling Trusted Device

If the user no longer needs the recovery codes, they can simply reset them by selecting the appropriate option from the available ones (Figure 1.22). After clicking reset code, the program warns the user about the consequences (Figure 1.25). However, the user can generate them again if needed.

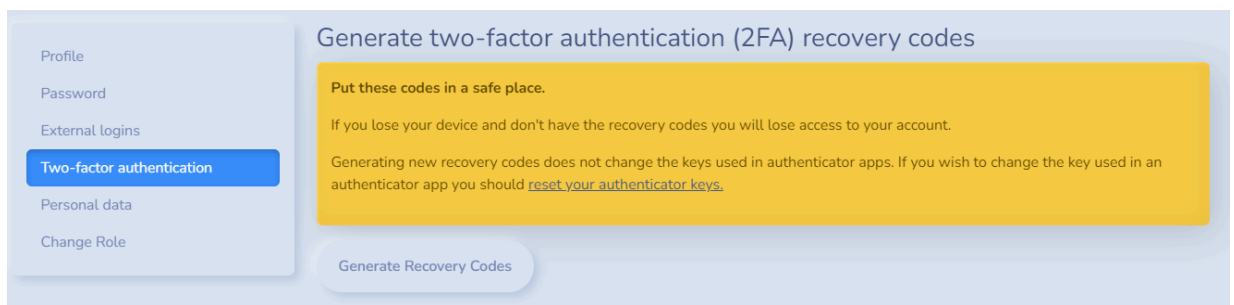


Figure 1.25 – Warning about Consequences of Resetting Recovery Codes

The user can also disconnect from Google Authenticator by selecting the appropriate option from the available menu (Figure 1.22). The program will again warn about the consequences of this disconnection (Figure 1.26).

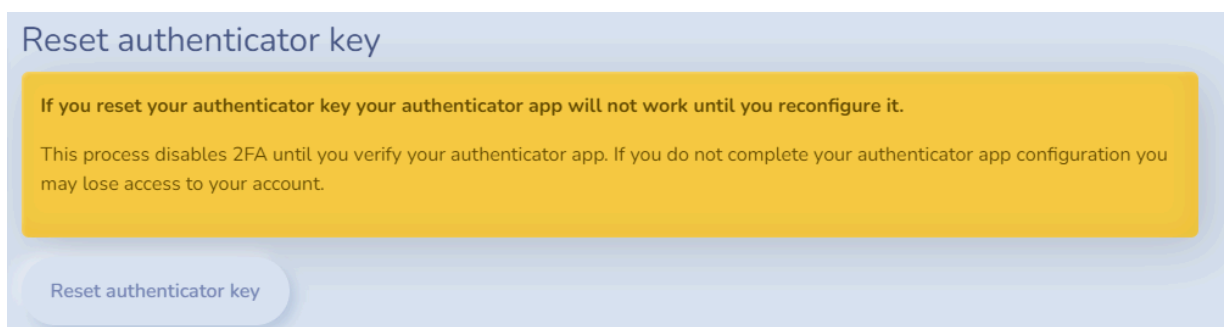


Figure 1.26 – Warning about Consequences of Disconnecting the App

The user can also disable two-step verification by selecting the appropriate option from the available menu (Figure 1.22). The program will again warn about the consequences of this disconnection (Figure 1.27).

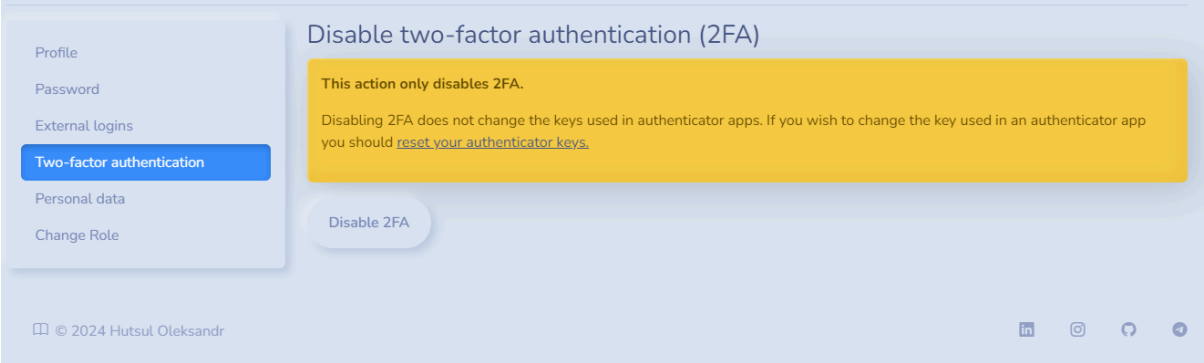


Figure 1.27 – Warning about Consequences of Disabling Two-Step Verification

The next menu item is downloading personal data (Figure 1.28). After opening the downloaded file, the user can see their data, which is generated based on the database table (Figure 1.29).

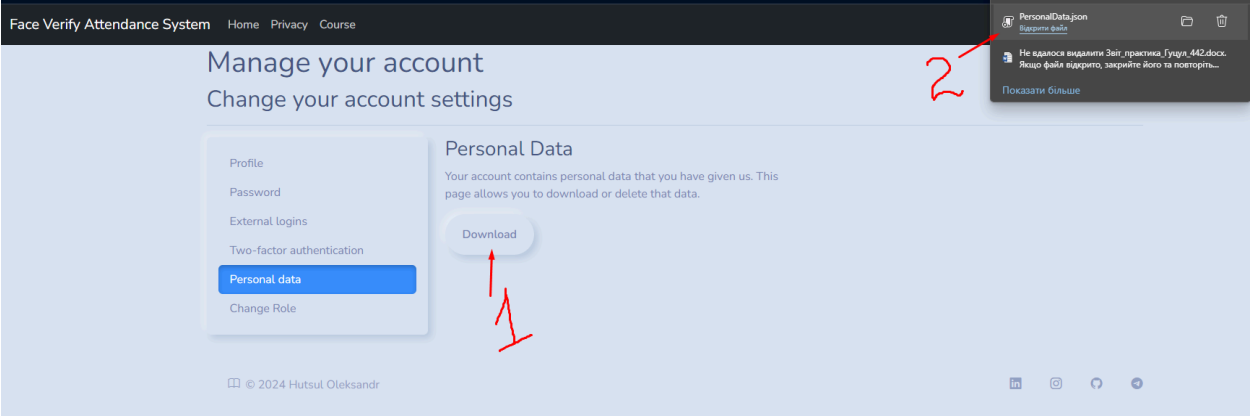


Figure 1.28 – Download Personal Data

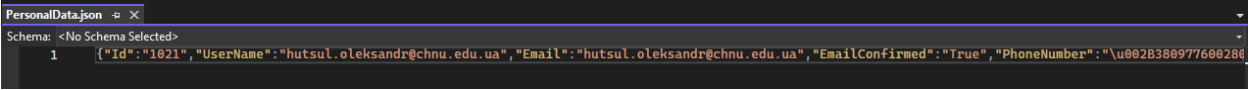
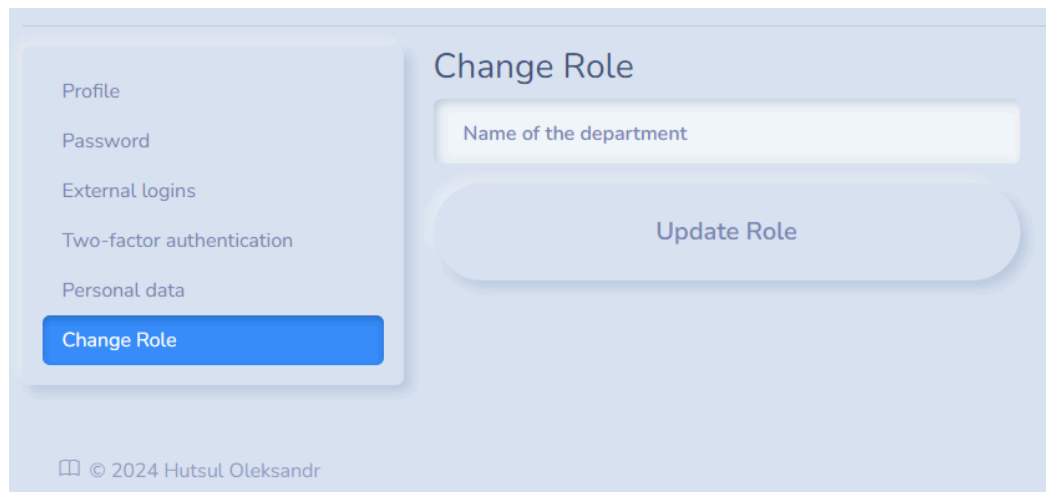


Figure 1.29 – Display Personal Data

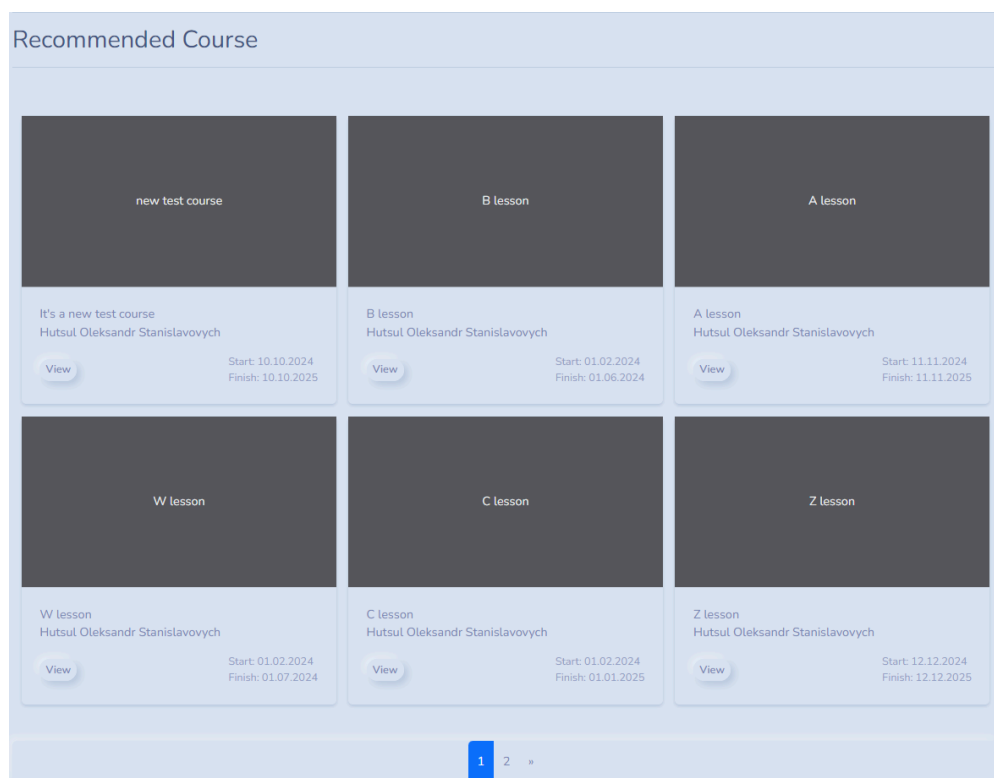
To change their role from student to teacher, the user needs to fill out a form (Figure 1.30). Afterward, it is sent to the admin for review, and they either approve or reject the application.



The screenshot shows a user profile interface with a sidebar on the left and a main content area. The sidebar contains links for Profile, Password, External logins, Two-factor authentication, Personal data, and a highlighted 'Change Role' button. The main content area is titled 'Change Role' and features a text input field labeled 'Name of the department' and a large 'Update Role' button. At the bottom left of the main area, there is a copyright notice: '© 2024 Hutsul Oleksandr'.

Figure 1.30 – Role Change Form

After examining all the profile sections in detail, you can return to the home page. To allow users to see interesting courses, a special method has been written that randomly returns 30 courses from the database. To avoid cluttering the home page, pagination has been added, ensuring a pleasant interface (Figure 1.31).



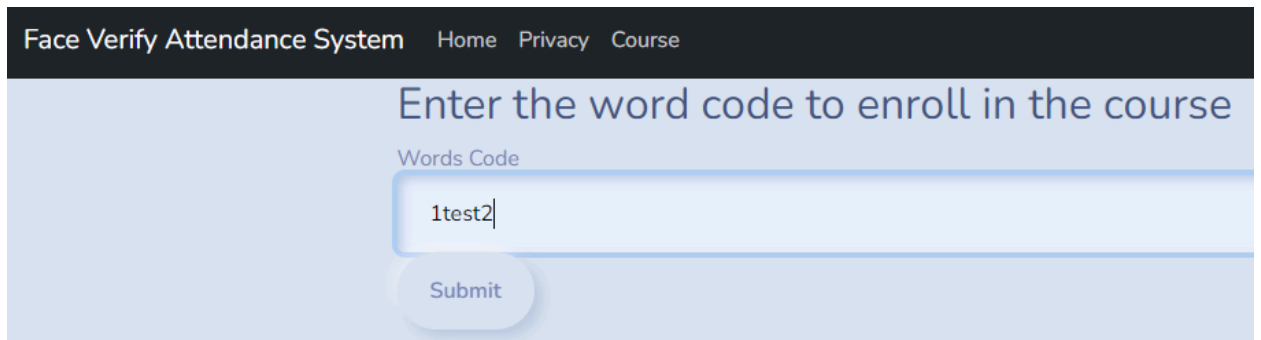
The screenshot displays a 'Recommended Course' section with a grid of six course cards. Each card includes a title, instructor name, start/finish dates, and a 'View' button. The courses are:

Course Title	Instructor	Start	Finish
new test course	Hutsul Oleksandr Stanislavovych	10.10.2024	10.10.2025
B lesson	Hutsul Oleksandr Stanislavovych	01.02.2024	01.06.2024
A lesson	Hutsul Oleksandr Stanislavovych	11.11.2024	11.11.2025
W lesson	Hutsul Oleksandr Stanislavovych	01.02.2024	01.07.2024
C lesson	Hutsul Oleksandr Stanislavovych	01.02.2024	01.01.2025
Z lesson	Hutsul Oleksandr Stanislavovych	12.12.2024	12.12.2025

At the bottom of the page, there is a pagination bar showing '1 2 »', indicating the current page is 1 of 2.

Figure 1.31 – Recommended Courses

To register for a course, the user needs to click the "View" button and fill out the appropriate form (Figure 1.32). After successfully registering for the course, the user can view information about the participants (Figure 1.33) and see the attendance schedule (Figure 1.34).



Face Verify Attendance System Home Privacy Course

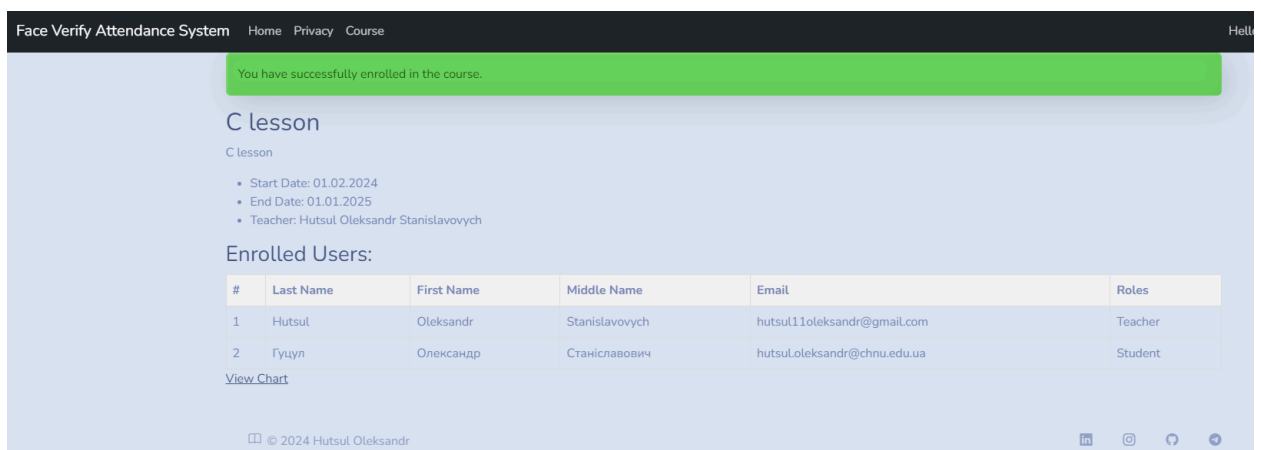
Enter the word code to enroll in the course

Words Code

1test2

Submit

Figure 1.32 – Course Registration Form



Face Verify Attendance System Home Privacy Course Hello

You have successfully enrolled in the course.

### C lesson

C lesson

- Start Date: 01.02.2024
- End Date: 01.01.2025
- Teacher: Hutsul Oleksandr Stanislavovych

Enrolled Users:

#	Last Name	First Name	Middle Name	Email	Roles
1	Hutsul	Oleksandr	Stanislavovych	hutsul11oleksandr@gmail.com	Teacher
2	Гуцул	Олександр	Станіславович	hutsul.oleksandr@chnu.edu.ua	Student

[View Chart](#)

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Figure 1.33 – Course and Participant Information

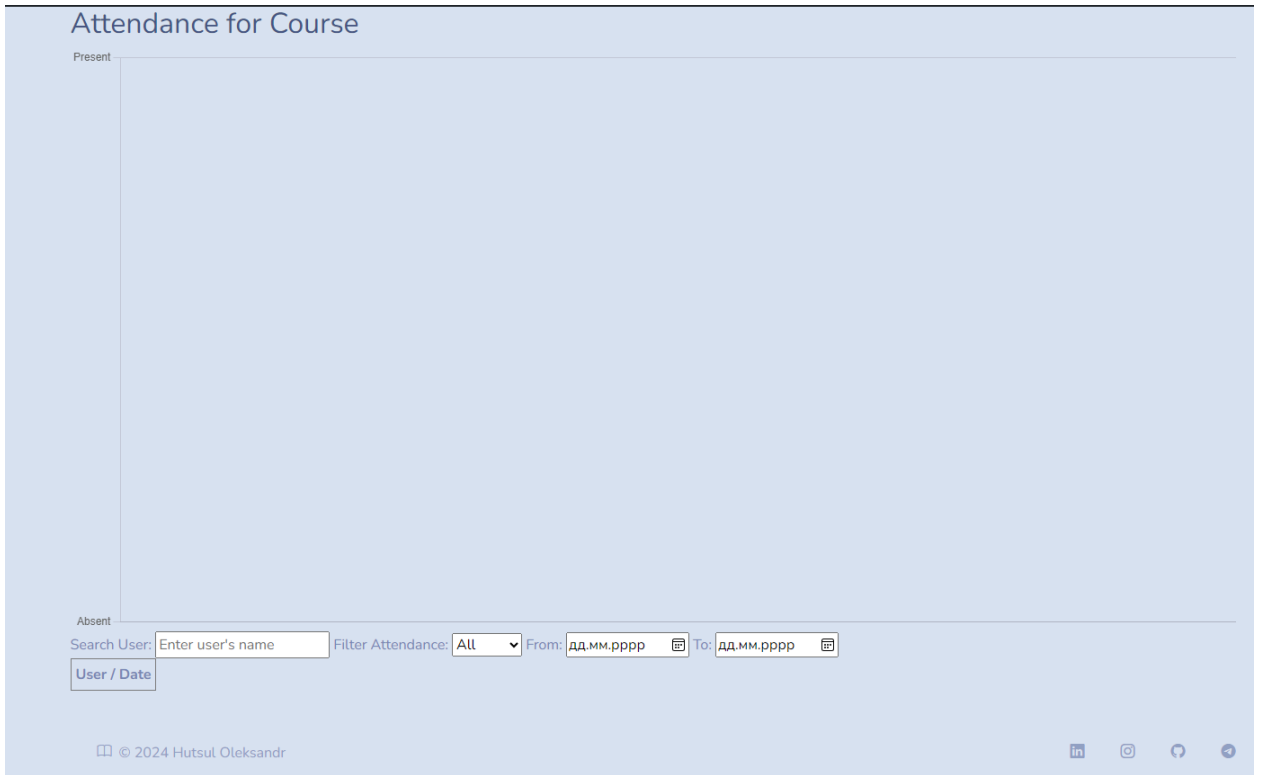


Figure 1.34 – Attendance Schedule

On the courses page, only the courses the user has successfully registered for are available (Figure 1.35).

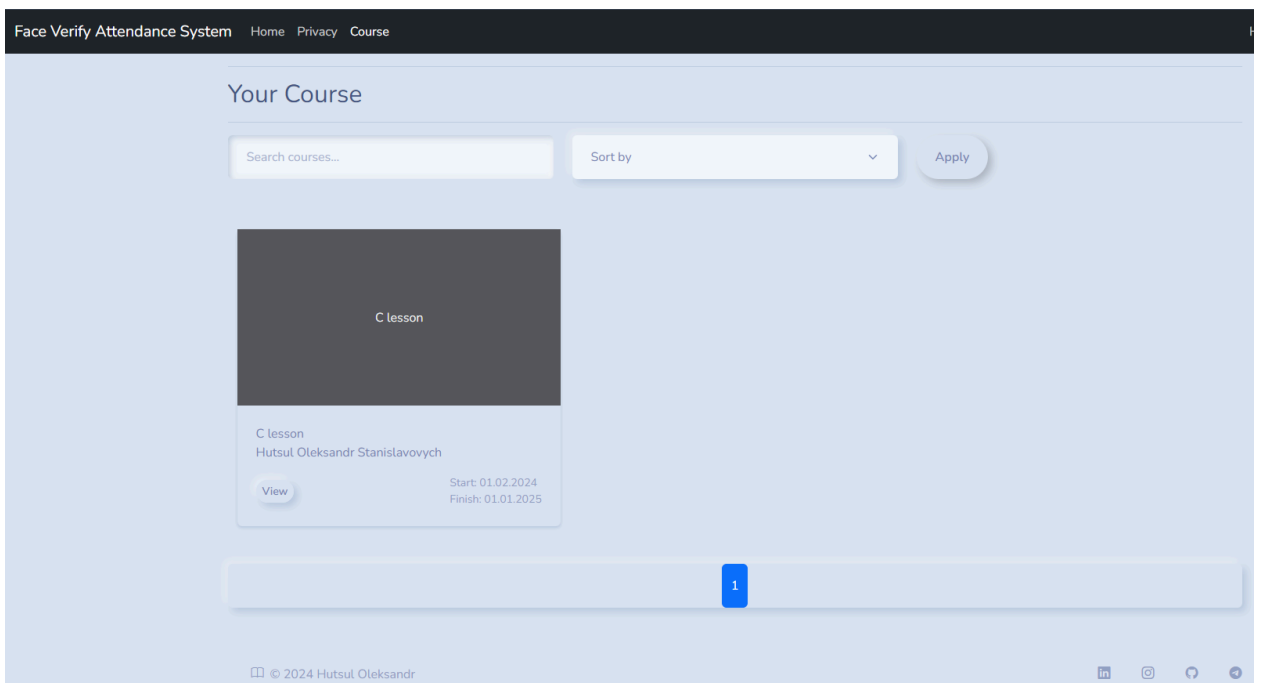
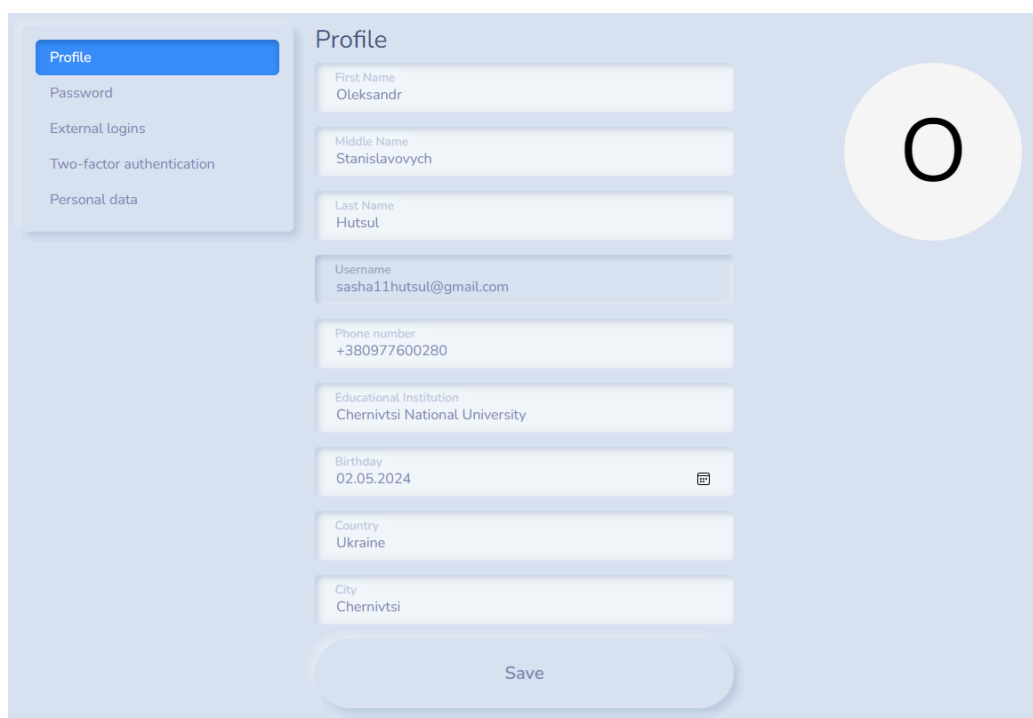


Figure 1.35 – Courses Page Display

After reviewing the functionality for a user with a student role, we can proceed to examine the functionality for a user with a teacher role. We go to the profile to

view the settings (Figure 1.36). As we can see, unnecessary fields for completion have been removed, and there is no option to upload a photo.



Field	Value
First Name	Oleksandr
Middle Name	Stanislavovych
Last Name	Hutsul
Username	sasha11hutsul@gmail.com
Phone number	+380977600280
Educational Institution	Chernivtsi National University
Birthday	02.05.2024
Country	Ukraine
City	Chernivtsi

Figure 1.36 – Teacher Role User Profile

Returning to the home page, we can notice that a button has appeared to edit course information (Figure 1.37). It should be noted that you can only edit information about a course that you are the author of. Also, only the course owner can remove users from their course (Figure 1.38).

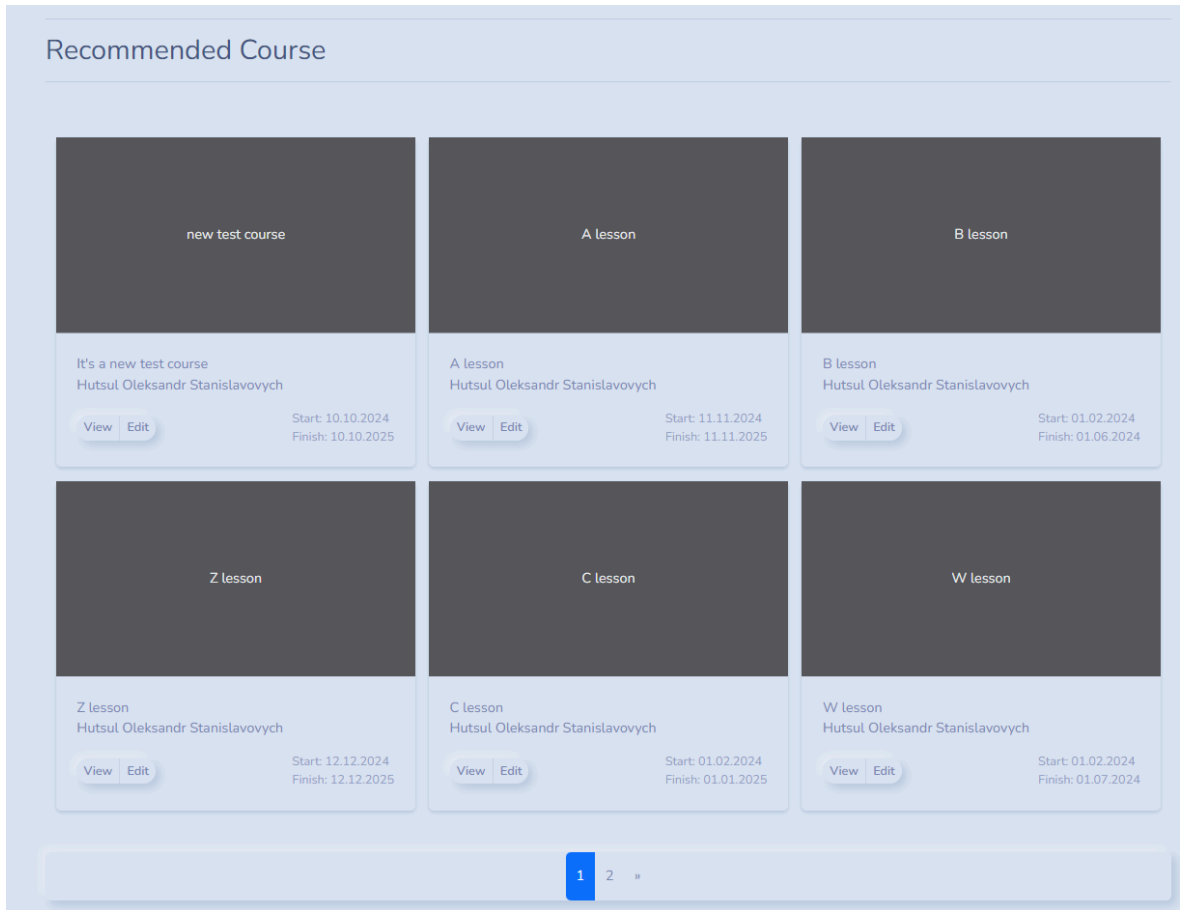


Figure 1.37 – Edit Button in Course

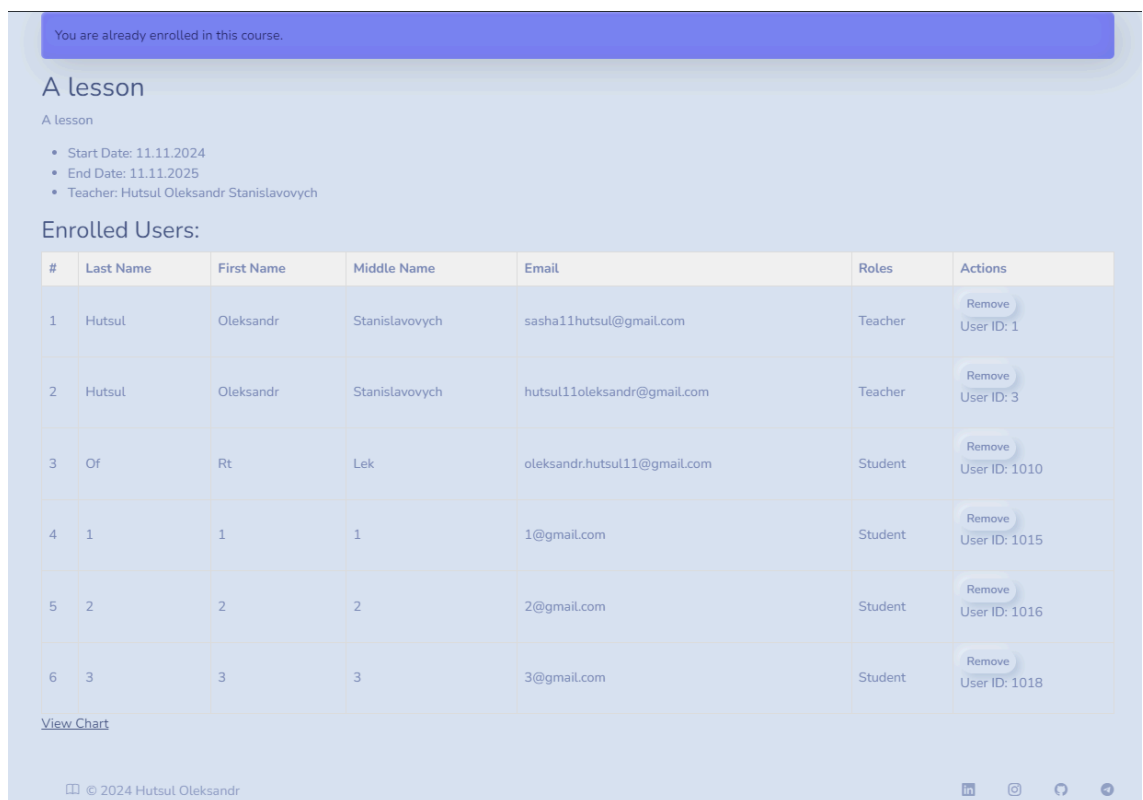


Figure 1.38 – Course View from the Course Owner's Perspective

By going to the courses tab, we can see that the option to create courses has also appeared (Figure 1.39). By filling out the appropriate form (Figure 1.40), the user creates a new course (Figure 1.41).

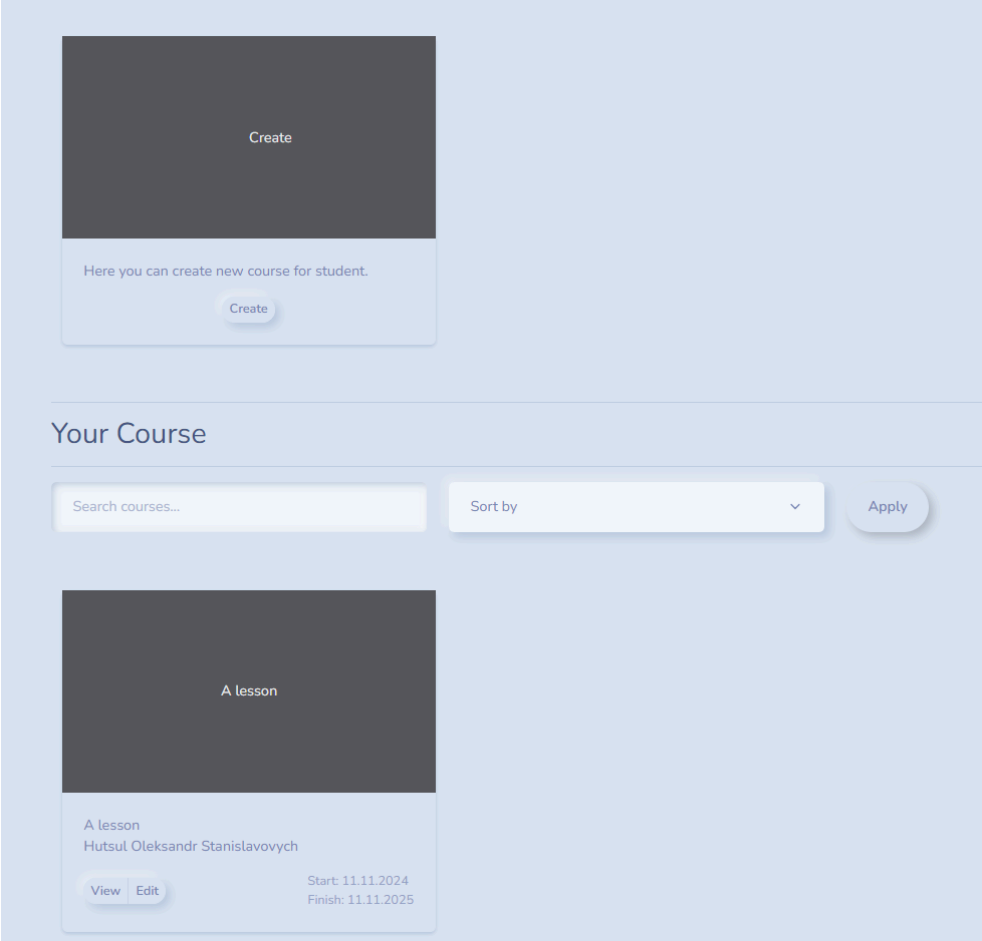


Figure 1.39 – Courses Page from the Teacher's Perspective

The image displays a 'Create Course' form. It features several input fields: 'NameCourse' (a standard text input), 'WordsCode' (a standard text input), and 'DescriptionCourse' (a larger text area). Below these are two date pickers: 'StartCourse' and 'EndCourse', both with the format 'dd.mm.pppp' and a calendar icon. At the bottom of the form is a 'Create' button.

Figure 1.40 – Course Creation Form

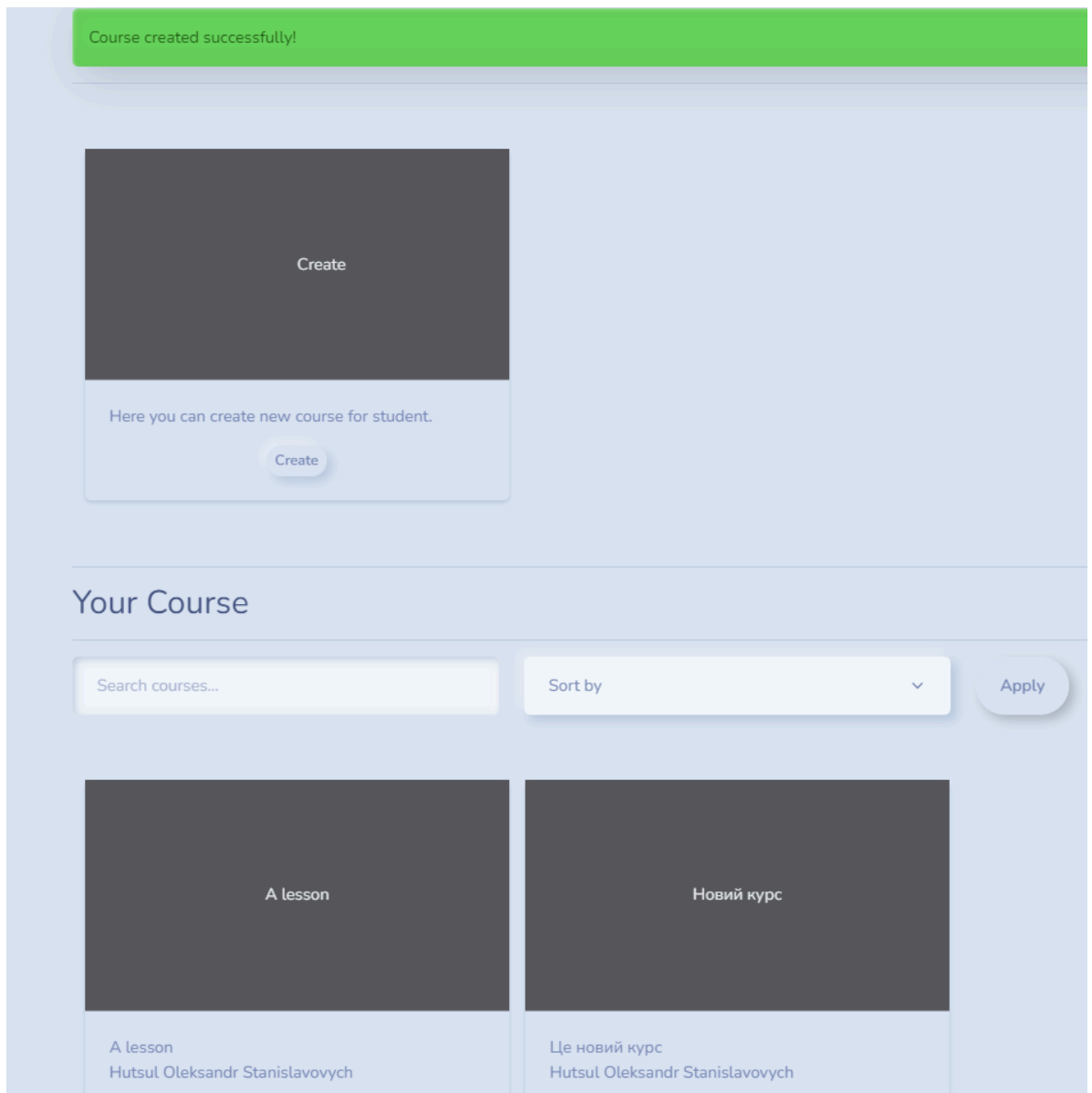


Figure 1.41 – Created Course Display

The teacher has the ability to update course information by filling out the appropriate form in case of an error or expiration of the course (Figure 1.42).

Update Course

NameCourse  
Новий курс

WordsCode  
Новий\_курс\_2024

DescriptionCourse  
Це новий курс

StartCourse  
20.06.2024

EndCourse  
20.10.2024

Update

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Figure 1.42 – Course Information Update Form

The teacher also has the responsibility, which must be fulfilled for the correct operation of the WinForms application, to create a schedule for a class, or in other words, to link a specific class to a specific course. By going to the schedule tab, the user sees the schedule they have already created (Figure 1.43). After this, the user can create a new time slot for a specific course by filling out the appropriate field (Figure 1.44). The user also has the option to edit a class in the schedule by filling out the appropriate field (Figure 1.45). Finally, the user can delete a class in the schedule (Figure 1.46).

Schedules

Create New

Location	Day Of Week	Time	Lesson
314	Friday	16:10:00 - 17:30:00	A lesson

Edit

Delete

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Figure 1.43 – Schedule Page

Create Schedule

Schedule

Location

314

Time

11:30:00 - 12:50:00

Day Of Week

Wednesday

Lesson

Новий курс

Create

[Back to List](#)

Figure 1.44 – Schedule Creation Form

Edit Schedule

Location

316

Time

11:30:00 - 12:50:00

Day

Wednesday

Lesson

Новий курс

Save

[Back to List](#)

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in @

Figure 1.45 – Schedule Information Update Form

00

Фільми C# Instagram Дод.Презент

На сайті localhost:7163 повідомляється

Are you sure you want to delete this item?

OK Скасувати

Privacy Course Schedule

Delete Schedule

Are you sure you want to delete this schedule?

Delete Schedule

Location 316

Day Of Week Wednesday

Time 11:30:00 - 12:50:00

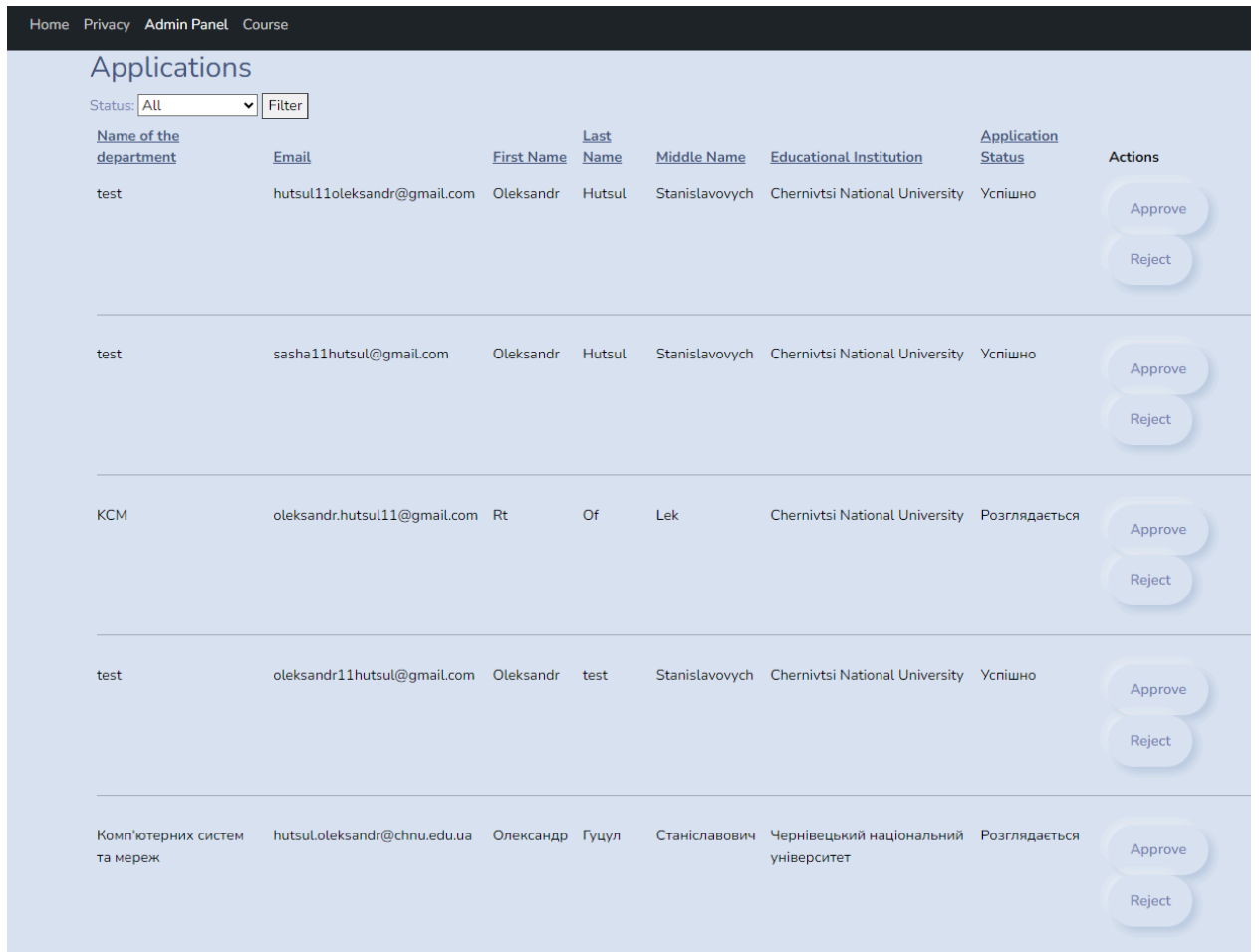
Lesson Новий курс

Delete

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Figure 1.46 – Schedule Deletion Form

The administrator's role in this project is very minimal, as their job is only to review and either approve or reject applications. The admin panel can be seen in Figure 1.47.



Name of the department	Email	First Name	Last Name	Middle Name	Educational Institution	Application Status	Actions
test	hutsul11oleksandr@gmail.com	Oleksandr	Hutsul	Stanislavovych	Chernivtsi National University	Успішно	Approve Reject
test	sasha11hutsul@gmail.com	Oleksandr	Hutsul	Stanislavovych	Chernivtsi National University	Успішно	Approve Reject
KCM	oleksandr.hutsul11@gmail.com	Rt	Of	Lek	Chernivtsi National University	Розглядається	Approve Reject
test	oleksandr11hutsul@gmail.com	Oleksandr	test	Stanislavovych	Chernivtsi National University	Успішно	Approve Reject
Комп'ютерних систем та мереж	hutsuloleksandr@chnu.edu.ua	Олександр	Гуцул	Станіславович	Чернівецький національний університет	Розглядається	Approve Reject

Figure 1.47 – Admin Panel