



CORRECTIONS CAREERS



EUROPEAN CAREER COUNSELLING GUIDELINES **FOR STAFF WORKING** IN CRIMINAL CORRECTIONAL JUSTICE SYSTEM

Specifications of the online environment

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Introduction

Prisons often do not receive much public attention. Politics, the media and the public usually only become aware of prisons when there is a scandal, such as a prisoner escaping from prison or an incident (riot, fight, etc.). The quality of imprisonment is also only discussed after the same scandals, but prison systems in different countries have undergone many changes in the last decade. Nevertheless, in order to improve the quality of the prison experience, it is important to pay more attention to the professional orientation of correctional staff. A learning platform is being developed to help prison staff develop their competences in key topics such as assertive communication, digital skills, gender stereotypes, organised crime and gangs, self-confidence, mental health and stress management. The learning platform will help staff to assess their initial knowledge and get a personalised learning plan, and to monitor their acquired skills with knowledge check questionnaires.

The aim of this platform is to enable prison staff to develop their professional competences in an interactive digital environment.

Analysis

System definition

Learning platform "CCJ4C" is a platform for improving the competencies of staff working in prisons. Since it is a self-learning platform, it will give the employee of the prison an opportunity to self-assess their level of knowledge and, based on the answers to the different scenarios presented, create an individual learning plan for each learner and allow them to track their learning progress. The platform will also give you the opportunity to have a mentor who will help you stay motivated and help you when you encounter difficulties. The platform will also have an administrator subsystem, which will enable the author of the course to manage the provided learning material.

General purpose of the activity

The Learning Platform is a key tool for introducing lifelong learning principles into the daily life of prison staff. Due to the unchanging purpose of their work, i.e. to execute the sentence in an ethical and humane manner, they are not usually considered as a group of people for whom it is important to improve their knowledge throughout their lives. The aim of this project is to show that the development of competences is also important in prisons, where wardens spend a lot of time with prisoners. These wardens need to have a strong psychological preparation in order to be able to cope successfully with different and unusual situations during their work.

Validity of the system

The organization of online courses is usually organized according to the principle that the authors prepare the material, present it in the chosen space and provide a description of which target group it is most suitable for, what the knowledge level of the individuals should be, etc. Such courses leave the learner the right to self-evaluate himself and decide whether these trainings are suitable for him or not, whether they will help him acquire new competencies or not. If it is still a paid course, the buyer may be disappointed that the course did not meet his expectations and did not provide new knowledge.

In the learning platform being developed, before starting the learning course, the learner has to take a test to assess his/her existing knowledge, which presents

different scenarios from work activities, questions that the learner has to answer or choose the solution that he/she finds most appropriate. Based on this, an individual learning plan is generated for the learner, with the aim that the learner improves his/her existing competences. The aim is to ensure that the material presented to the prison staff will help them to acquire new skills and will be of real use to them, rather than simply presenting information they already know.

Self-learners often lose motivation, so the platform offers the possibility of having a mentor to lean on when a learner is struggling or needs to discuss a particular issue. Having a mentor helps the learner to stay motivated and not to feel lonely when learning. It also allows for international knowledge exchange, as the learner can choose a mentor from any country.

Analysis of existing solutions

There are many learning platforms available in the digital environment for the development and delivery of online courses. Such platforms have become particularly popular and necessary in the wake of the pandemic, when all learning was digitized. Platforms for online course development offer a range of options for lecturers/teachers to digitally deliver learning materials and adapt them for learners.

There are two main types of tools for developing distance learning courses - virtual learning environments and online learning platforms. Virtual learning environments are platforms such as Moodle and Canvas. Moodle is an open source learning platform that provides the means to manage and deliver online courses. Moodle is particularly popular among educational institutions due to its ability to organise courses in groups, post assessments and upload completed work. Due to its ability to easily personalise the learning environment, Moodle is also popular with the business sector, which uses Moodle to develop its own training courses. A second example of virtual learning systems is Canvas, which is software-as-a-service. Canvas has gained a lot of recognition and is even used by Harvard University. Both systems allow the creation of courses, the creation of interactive assignments, communication with the module leader, and the assessment of learners' work, which is particularly important for educational institutions.

The second category is online learning platforms such as Thinkific and LearnWorlds. These differ from virtual learning environments in that they focus on selling the created courses. The Thinkific platform provides a range of sales and marketing opportunities through integrated tools, in addition to the usual functions needed for course development. It also provides the course author with information on student progress and results. LearnWorlds provides similar opportunities for the author as the above platform, but gives the course author more opportunities to present the learning material in a more interactive way. Both platforms provide the possibility to generate a certificate that the learner can receive upon completion of the course.

Below is a comparison of existing online course development platforms and the capabilities of the platform being developed (Table 1).

Table 1. Comparison of existing solutions and the platform being developed

Criteria for comparison	Virtual learning environments (Moodle, Canvas)	Online learning platforms (Thinkific, LearnWorlds)	CCJ4C platform
Creation of courses	+	+	+
Creation of groups	+	+	-
Additional activities (interactivity)	+	+	+
Communication with mentor/teacher/learners	Opportunity to interact with the course teacher and other participants of the course	Opportunity to interact with the course teacher and other participants of the course	There is the possibility to communicate with one mentor, but not with the course author or learners
Choice of a mentor	-	-	+
Individual learning plan	-	-	+
Tracking learning progress (for the learner)	+	+	+

Criteria for comparison	Virtual learning environments (Moodle, Canvas)	Online learning platforms (Thinkific, LearnWorlds)	CCJ4C platform
Grades	+	-	-
Marketing opportunities	-	+	-

The table shows that the platform being developed focuses on self-directed learning and, like the main platforms for online course development, has the ability to create courses, additional activities that make learning more interactive and allow the learner to track his/her own learning progression. As it is not oriented towards group learning, which would be suitable for an educational institution or a course organisation, the platform does not have the possibility to create groups, to write grades, and as it is not oriented towards the course author, the platform does not have already integrated marketing possibilities. The advantages of this platform compared to existing solutions are the possibility of mentoring, where the learner can choose a mentor from among all the mentors who are registered on the platform. One of the most important advantages is also the generation of an individual learning plan based on the learner's existing knowledge, which is not implemented in the existing solutions.

Prototypes

The learning platform was developed using Wordpress content management system as a base. During the implementation, this framework was complemented by two plugins and a customised theme, which implemented the main functions and user interface of the system. During the development of the platform, the information required for the implementation was consulted in the Wordpress documentation. The graphical user interface was developed on the basis of the visualisation created by the designer and the stylesheet information provided.

Technical feasibility analysis

The platform was developed using the following programming languages:

- PHP - this language can be considered the main language of Wordpress, as the content management system itself is written using PHP. These considerations led to the choice of PHP as the optimal option to take advantage of the already

built-in features and thus speed up the development of the plug-in. This language was also useful for one of the functionalities, the generation of a PDF file, for which the PHP library Dompdf, which allows the generation of PDF files from HTML templates and supports many PDF functions, was the perfect choice.

- JavaScript - widely used for web development. This language was chosen for UI development because of its easy compatibility with PHP - jQuery library, AJAX requests. These capabilities were also important for the choice of a language that would allow the creation of a dynamic user interface. AJAX programming technology was also an important aspect in the choice of the JavaScript programming language, as it allows a request to be sent to the server and a response to be received without reloading the page, which was particularly important in order to create a responsive user interface.

- HTML/CSS - these languages are essential for the development of a platform that uses Wordpress as a base. These languages allow to define the layout, appearance, style and colours of the elements on the page, so HTML and CSS were used to realise the entire design of the page created by the designer.

The choice of database was determined by the content management system Wordpress itself, as it requires a MySQL database for storing information. Thus, this database was also created for the learning platform.

The technical feasibility analysis carried out ensures that there are no additional obstacles that could prevent the development of the platform.

Platform

Commercial specification

The project is commissioned by the consortium of the international project "CCJ4C - European Career Counselling Guidelines for Staff Working in Criminal Correctional Justice System", which consists of 10 organisations from 8 countries - Romania, Lithuania, Portugal, Italy, Belgium, Turkey, Denmark, United Kingdom and Germany. The organisations are prisons, vocational training organisations, non-governmental organisations, companies. General list of organisations in the consortium:

- Baltic Education Technology Institute, Lithuania.
- IPS Innovative Prison Systems, Portugal.
- International Centre for the Promotion of Education and Development, Italy.
- International Corrections and Prisons Association, Belgium.
- General Directorate of Prisons and Detention Houses, Turkey.
- Centrul Pentru Promovarea Invatarii Permanente - CPIP, Romania.
- Timisoara Penitentiary, Romania.
- The National Trade Union of Prison Policemen (SNPP), Romania.
- York Associates, United Kingdom.
- Bremen Ministry of Justice and Constitution, Germany.
- BRAIN LOG, Denmark.

The organisation responsible for the implementation of this platform is Baltic Education Technology Institute.

The platform delivery date is 30 April 2023. All programming, testing and implementation work must be completed by this date. The platform must be ready for use by prison staff.

Functions of the system

Functional requirements for a learning platform to improve the competences of prison staff are presented in UML use case diagrams (Figures 1 to 2).

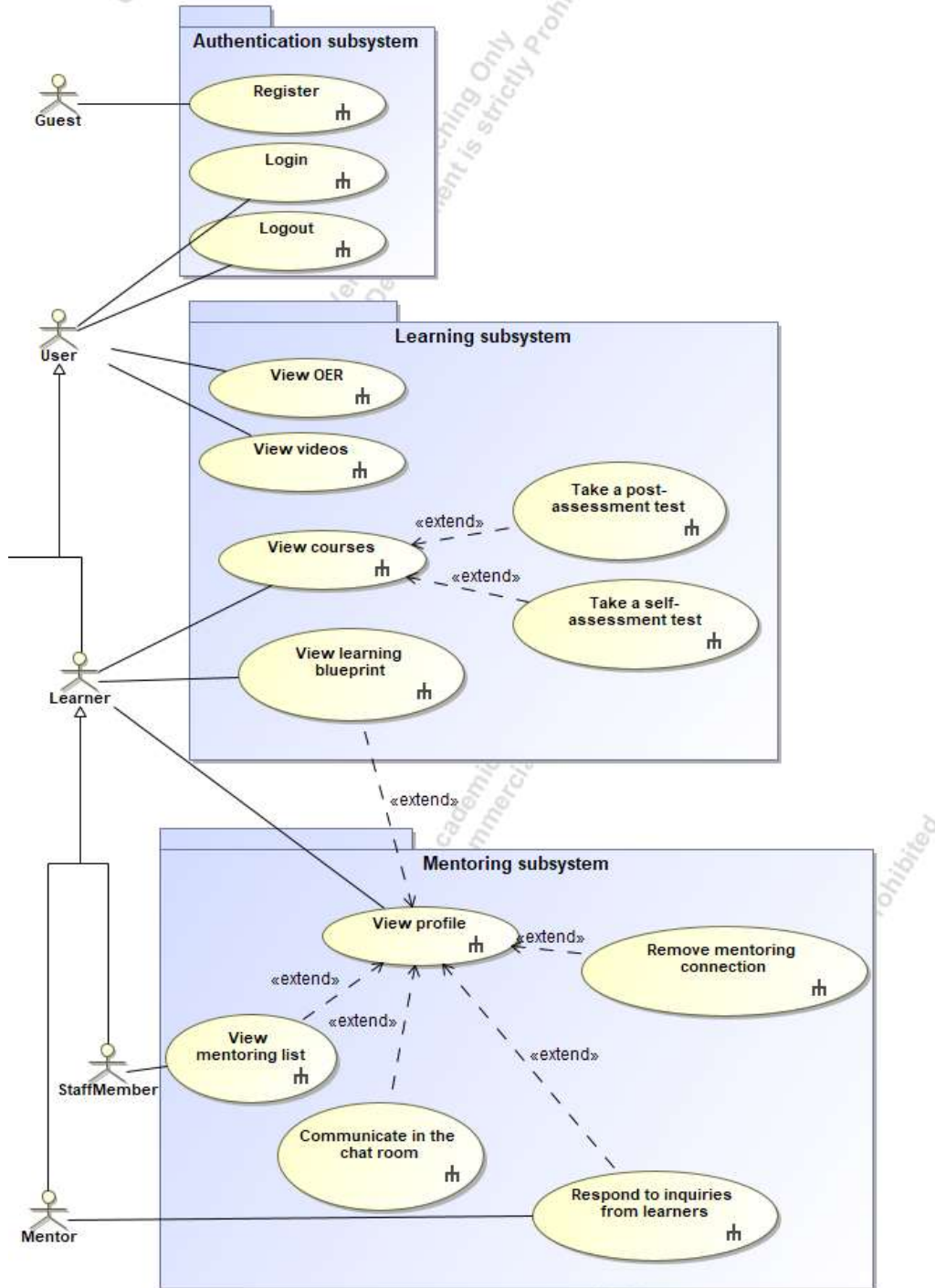


Figure 1. Authentication, learning and mentoring subsystems use case diagram

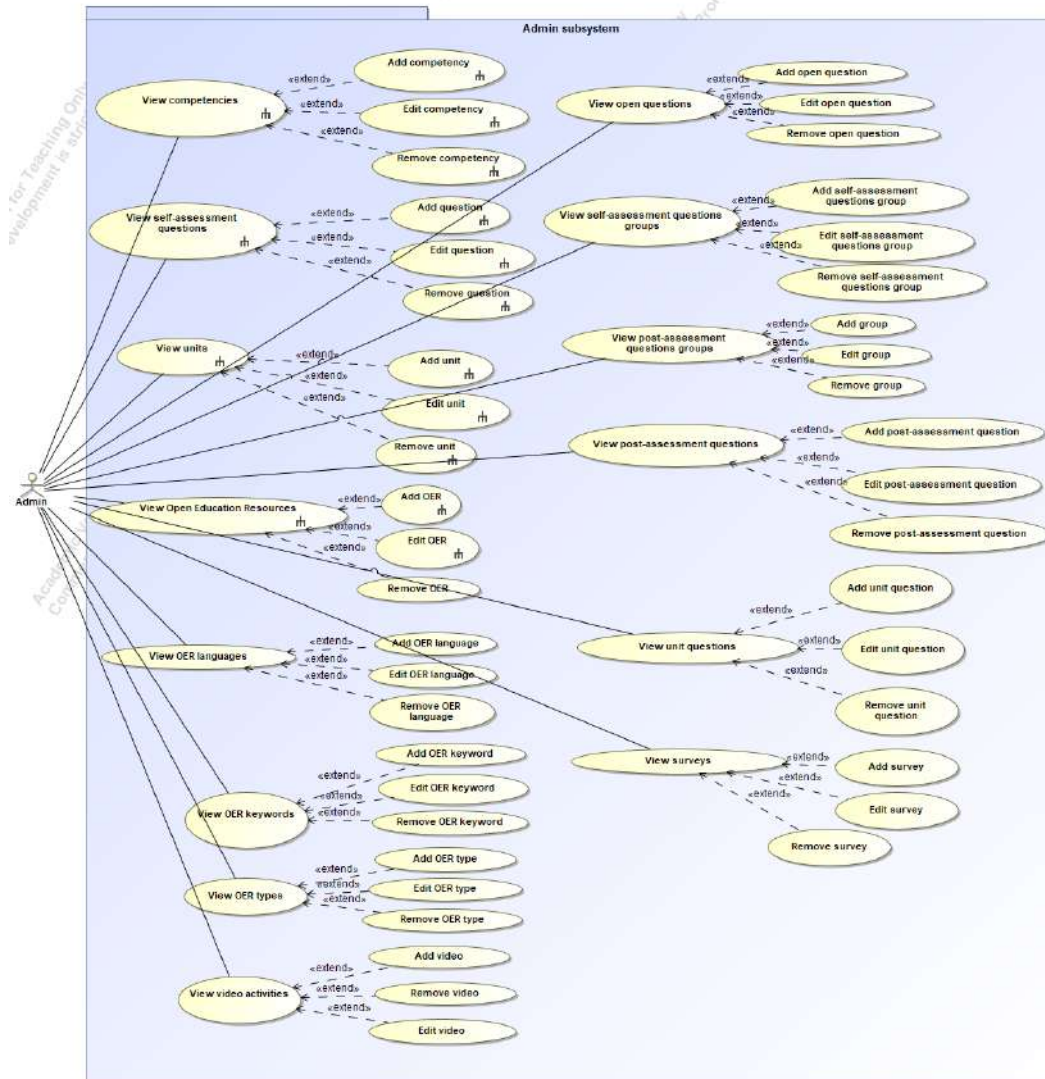


Figure 2. Administrator subsystem use case diagram

The platform is divided into an authentication subsystem, a learner subsystem, a mentoring subsystem and an administrator subsystem, according to the possible functionalities. The actors of the system have been identified:

- Guest - an internet user who has the opportunity to sign in to a learning platform and view open educational resources and videos.
- User - a registered user who can log in and log out, logged in users have different rights and permissions:
 - Learner - can view the courses, can take the self-assessment test if he/she hasn't already done so, and can check his/her knowledge by taking the test after completing all the units of one module

(competency). The learner can view his/her profile, where he/she can view the learning progress report, if a mentoring relationship has already been created, he/she can remove it, if a chat room has already been created, he/she can chat there. Depending on whether the learner is a mentor or a prison staff member, he/she has different additional functions in his/her profile:

- Staff member can view the list of mentors and send a mentoring request to the desired mentor.
- Mentors can respond to mentoring requests from staff members.
- Administrator - in addition to all the capabilities of the administrator subsystem provided by the Wordpress learning management system, the administrator can also view, create, delete and edit - competences, self-assessment questions, their groups, units, open educational resources, their languages, keywords, types, video activities, surveys, units questions, post-assessment questions, their groups, open ended questions.

The use cases of the authentication subsystem - "Register", "Login" and "Logout" - are further elaborated by UML activity diagrams (Figures 3 to 5).

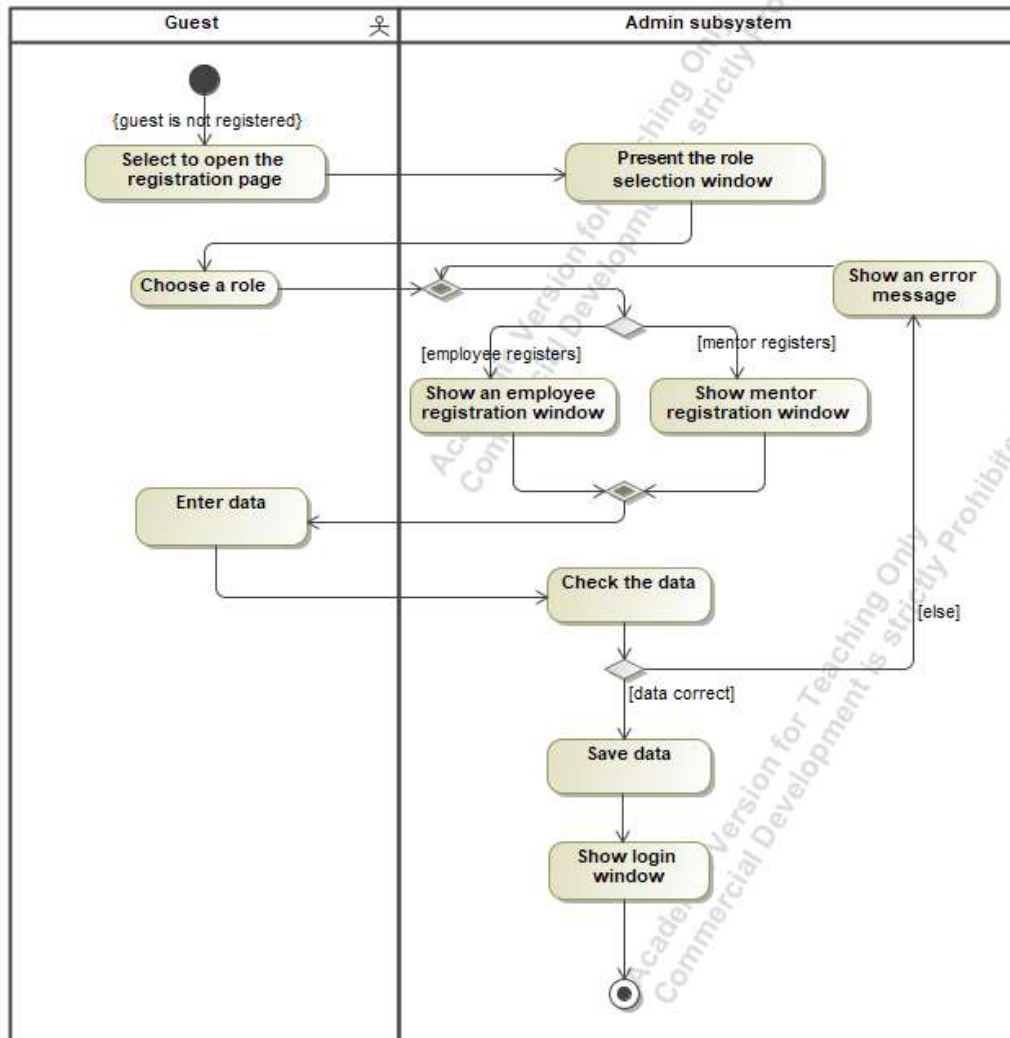


Figure 3. Activity diagram for the use case "Register"

If a visitor who has not yet registered visits the platform, they are given the opportunity to register. In the registration window provided, the guest is presented with a role selection window, where he/she needs to indicate whether he/she is a mentor or a prison staff member. Based on this choice, the system provides the appropriate registration form. Once the guest has entered the data, it is checked and if all the data is correct, the data is saved, and the login window is presented.

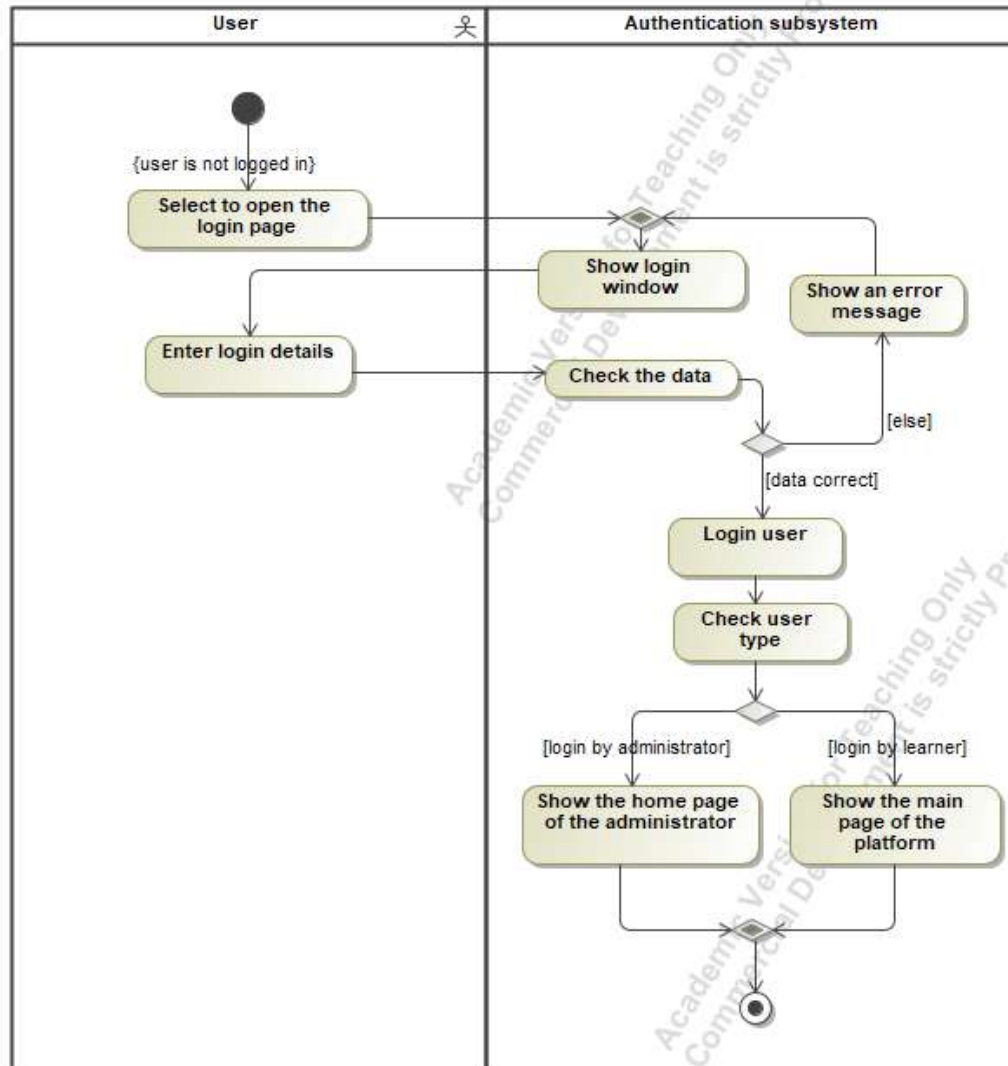


Figure 4. Activity diagram for the use case "Login"

Logged-out users have the possibility to access the learning platform. Selecting to open the login window provides the user with a login window. Once the login details are entered, they are checked and, if the details are correct, the user is logged in and the corresponding page is displayed according to his/her role. If the user is an administrator, the administrator page is displayed, if the user is a learner (mentor or staff member), the main platform page is displayed.

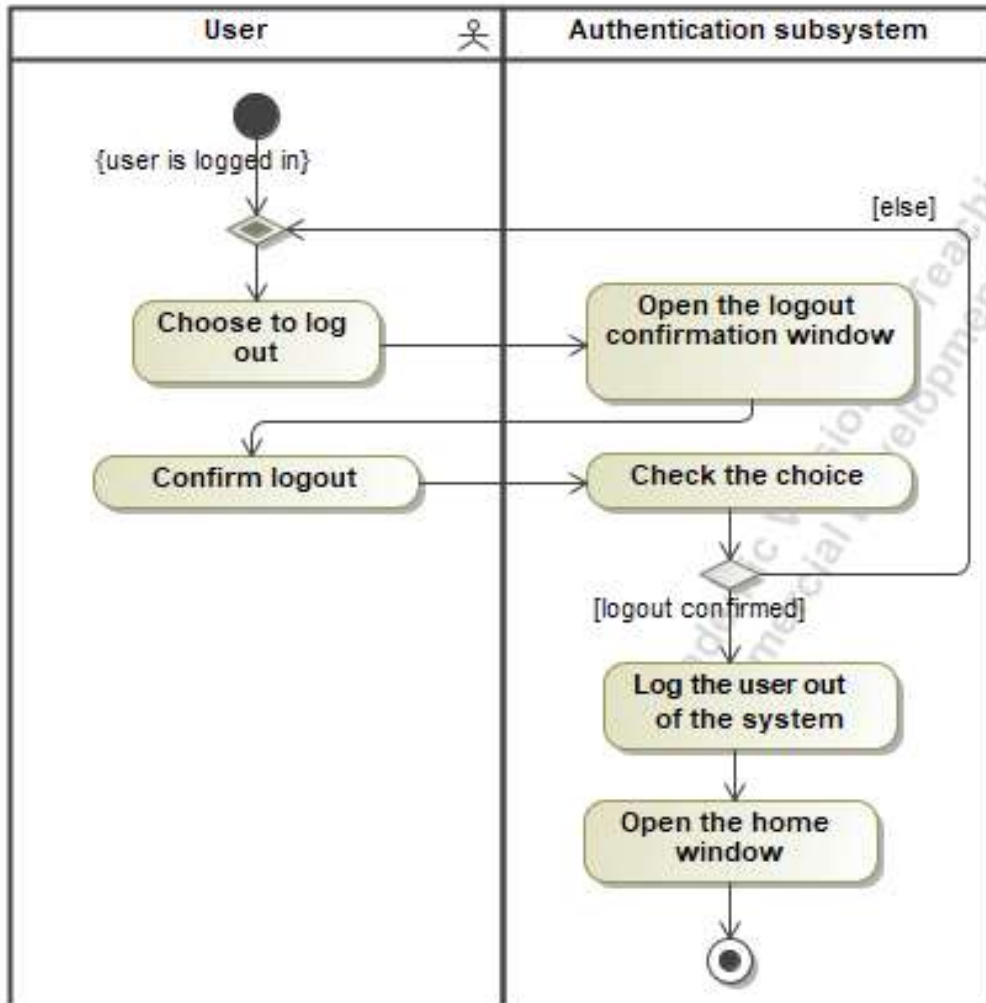


Figure 5. Activity diagram for the use case "Logout"

Once logged in, the user has the option to log out of the platform. After selecting to log out, the user is presented with a logout confirmation window. If the logout is confirmed, the user is logged out of the system and the home page is displayed.

The use cases of the learning subsystem – “View courses”, “View OER”, “Take a post-assessment test”, “View videos”, “Take a self-assessment test”, “View learning blueprint” - are further elaborated by UML activity diagrams (Figures 6 to 11).

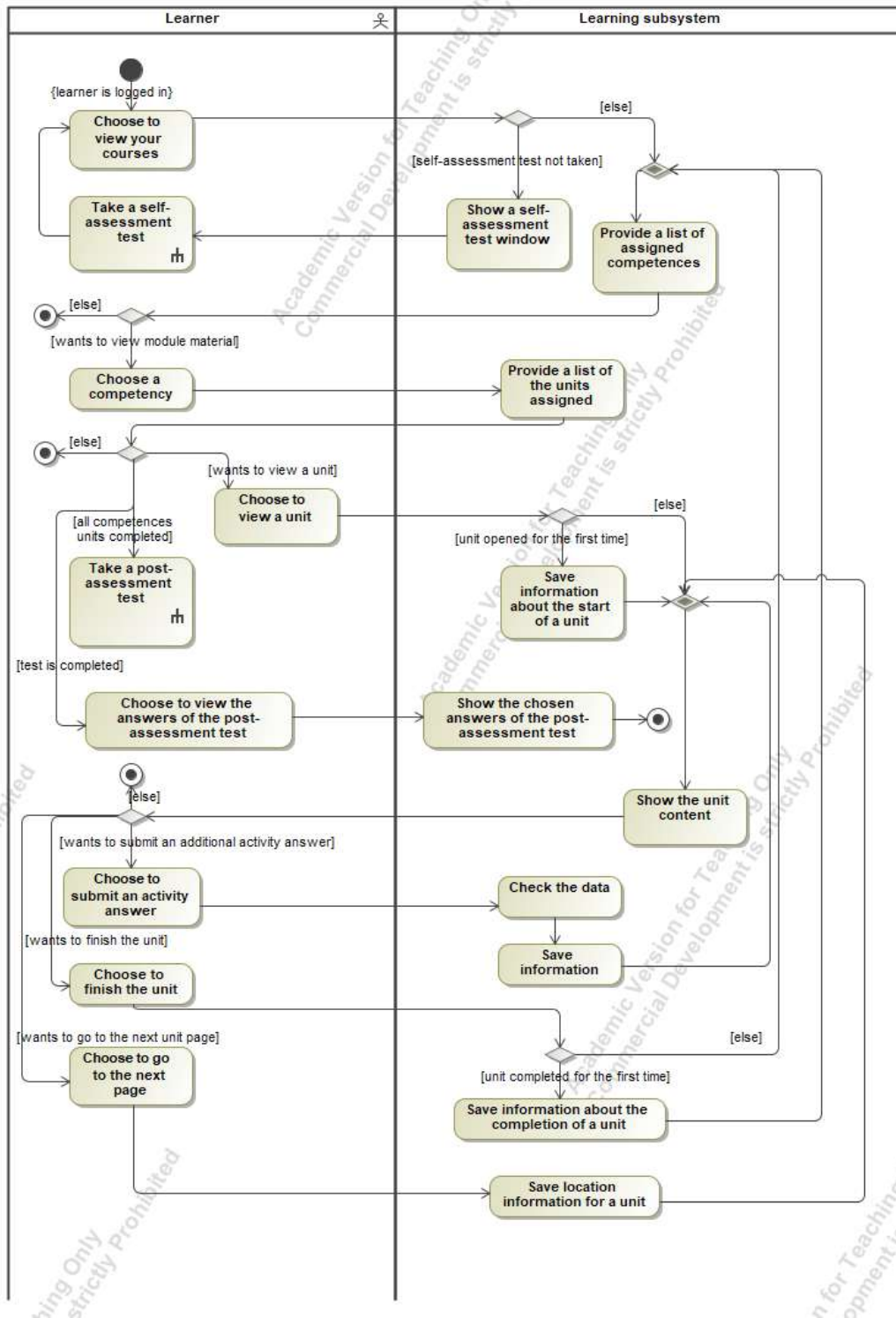


Figure 6. Activity diagram for the use case "View courses"

When the learner chooses to view his learning courses, it is checked whether the knowledge self-assessment test has already been completed. If the test is not completed, a knowledge self-assessment questionnaire window is presented.

The scenario of the use case "Take a self-assessment test" is presented below (Figure 10). If the learner has already completed the test, he/she is given a list of assigned competencies. After choosing to view the competence, a list of assigned units is presented (when all units are completed, this list also shows the self-assessment test of acquired knowledge). After choosing to view a unit, it is checked whether the unit has already been opened before, if not, the start time is saved, which is then displayed in the learning progress tracking report. Then the unit material is displayed, it can be a text or an activity. If this is an additional activity, choosing to submit an answer saves the user's answer information and presents the next page of the content. The user can move between pages of the unit, each change of location in the unit is stored in the system as the user's last location in the unit. If the learner has reached the last page of the unit, he/she can choose to end the unit, the system saves information only about the first time when the end of the unit is chosen, subsequent views are not saved. After completing the unit, the learner is returned to the list of competencies. When all units of one competence are completed, the learner gets the opportunity to take a post-assessment test of the acquired knowledge, which is displayed in the same window as the units assigned to the competence. The scenario of the use case "Take a post-assessment test" is presented in Figure 8.

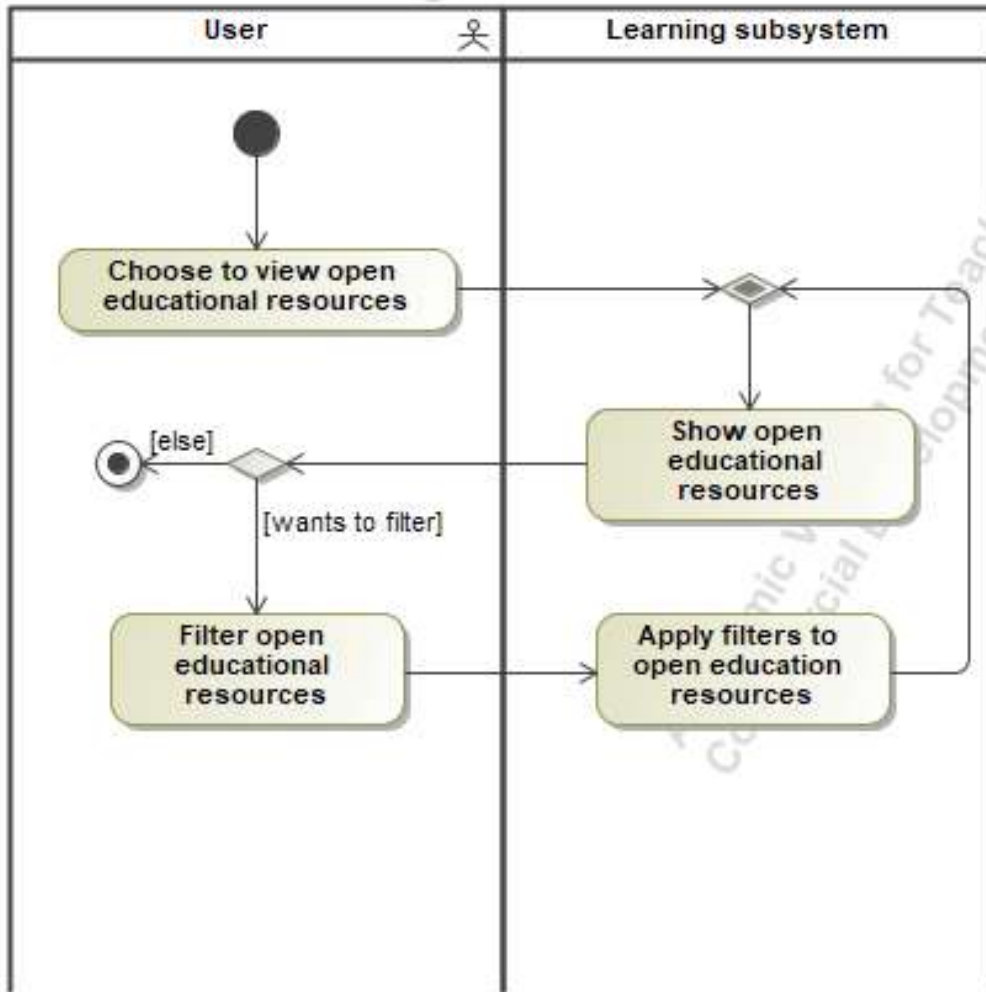


Figure 7. Activity diagram for the use case "View OER"

A system user who does not need to be logged in has the possibility to view Open Educational Resources (OER). Selecting to view Open Educational Resources provides the user with a list of all Open Educational Resources in the system. The user is given the possibility to filter them (searchable by phrase, type or language). Once the desired filters have been selected, the filters are applied and an updated list of Open Educational Resources is displayed.

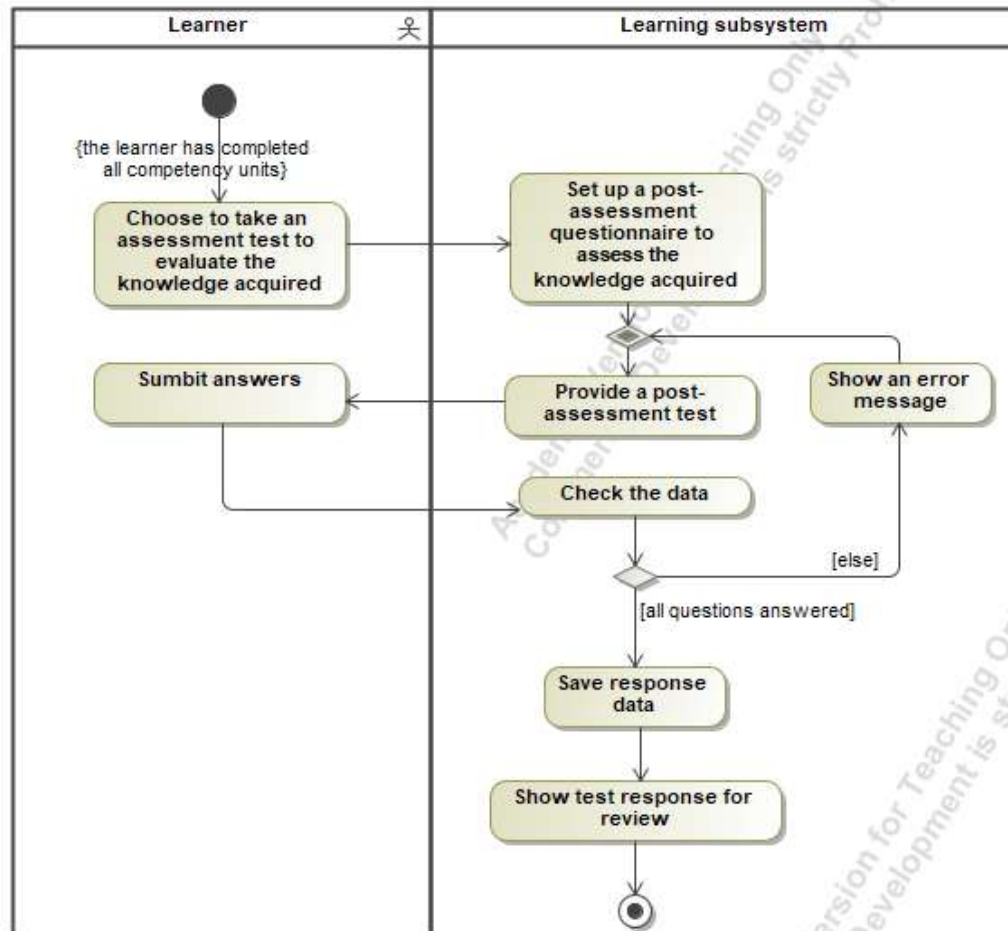


Figure 8. Activity diagram for the use case "Take a post-assessment test"

When the learner successfully completes all the units of the competence assigned to him/her, he/she gets the opportunity to take a self-assessment test of the acquired knowledge. If a learner chooses to take this test, only the questions of the assigned units are selected from the group of questions of the competence. These questions form a questionnaire for the learner to complete. After answering all the questions, the answer information is saved and a questionnaire with the correct and selected answers is presented.

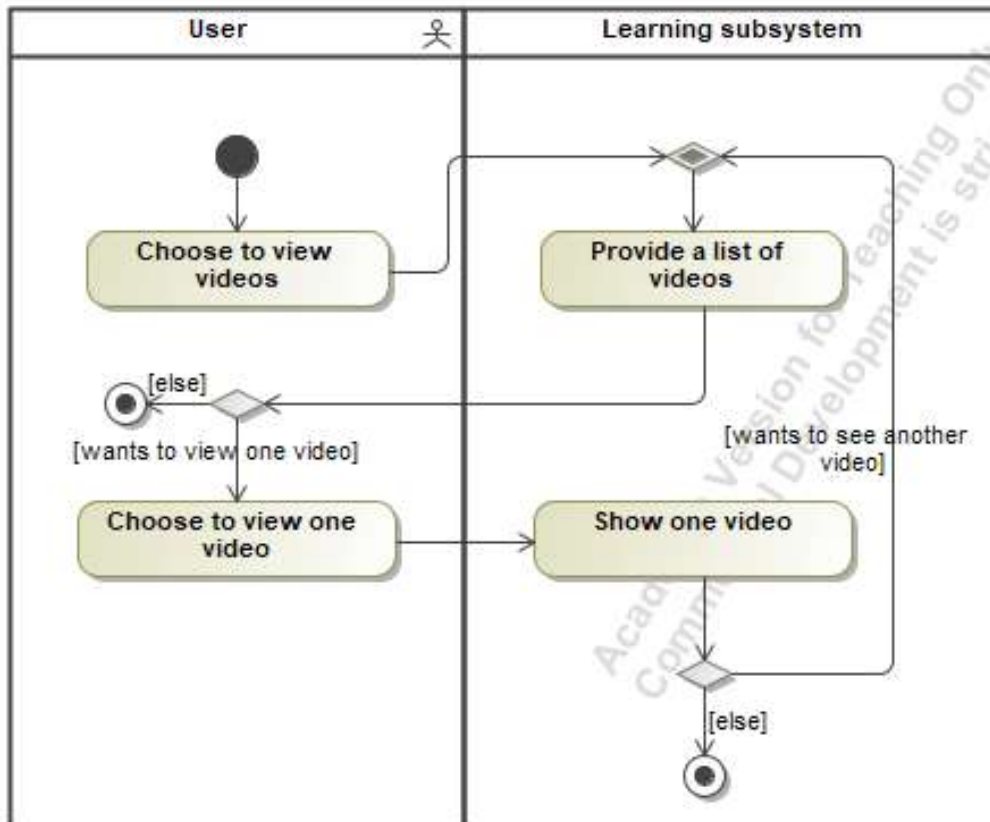


Figure 9. Activity diagram for the use case "View videos"

The user, who does not have to be logged in to the platform, can view videos from prisons in different countries. A list of videos is provided when you select to view them. If the user prefers, he/she can choose to open a single video.

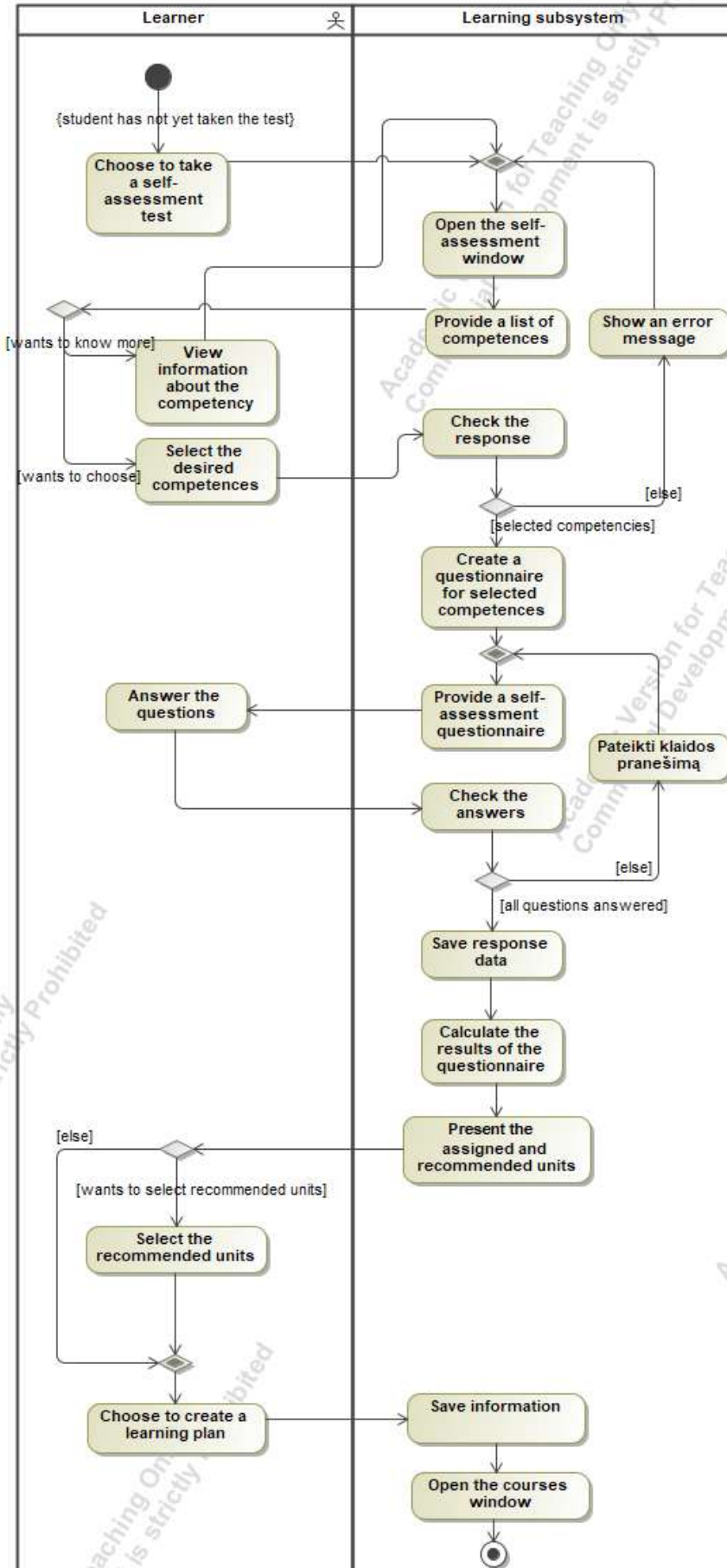


Figure 10. Activity diagram for the use case "Take a self-assessment test"

This use case allows each learner to receive an individualized learning plan. This test can be taken once. After choosing to take the knowledge self-assessment test, a knowledge self-assessment test with a list of competencies is presented. The learner can choose to view more information about each competency, which includes information about the competency's objectives, tasks, sections, and more. From the provided list of competencies, the learner can choose as many competencies as he wants, but at least one must be selected. After selecting the desired competencies, a questionnaire is generated that contains questions about situations related to each competency. The generated questionnaire is presented to the learner, he/she has to choose one answer option for each question. After answering all the questions, the information of the answers is saved, the results of the questionnaire are calculated and according to this the competence units are divided into assigned, recommended and unassigned. Assigned and recommended units are provided to the learner. If he wants, he can additionally choose the recommended units. Information about the complete learning plan is saved and the course page is presented.

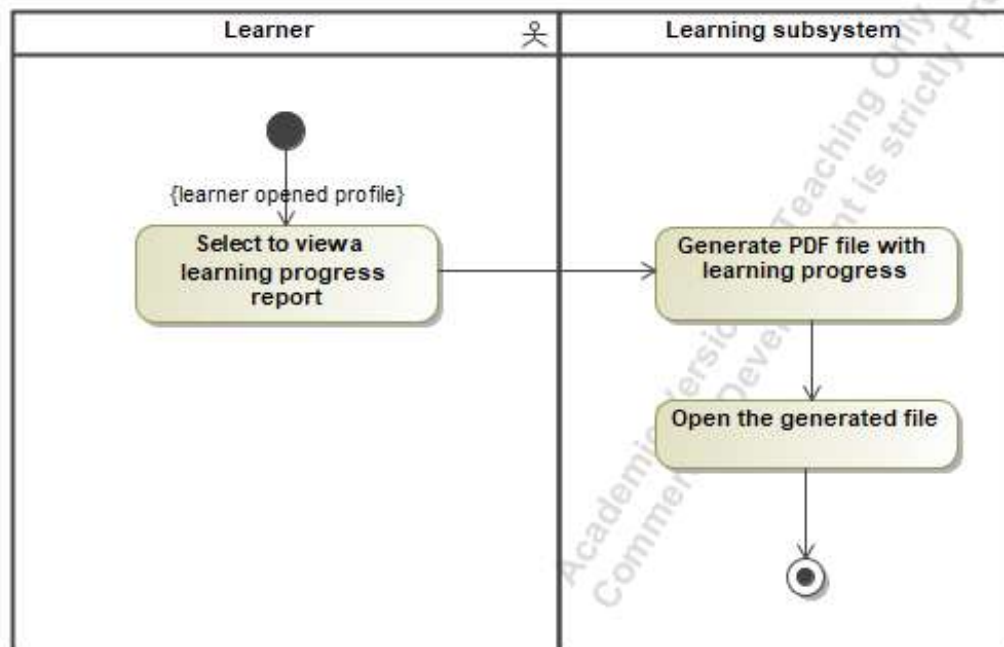


Figure 11. Activity diagram for the use case "View learning blueprint"

When a learner is on the profile window, they have the option to view a learning progress report. After choosing to view this report, the system generates a PDF file with all the learning information:

- personal user information;
- selected competences;
- selected answers of the self-assessment test;
- units – assigned and recommended;
- the progress of each unit - start and end date, answers to questions about the unit's activities;
- selected answers of the self-assessment test of acquired knowledge.

This generated PDF file is presented to the learner when it is opened in a browser. From here he/she can download or print it.

The use cases of the mentoring subsystem – “View profile”, “View mentors list”, “Communicate in the chat room”, “Respond to requests from learners”, “Remove mentoring connection” - are further elaborated by UML activity diagrams (Figures 12 to 16).

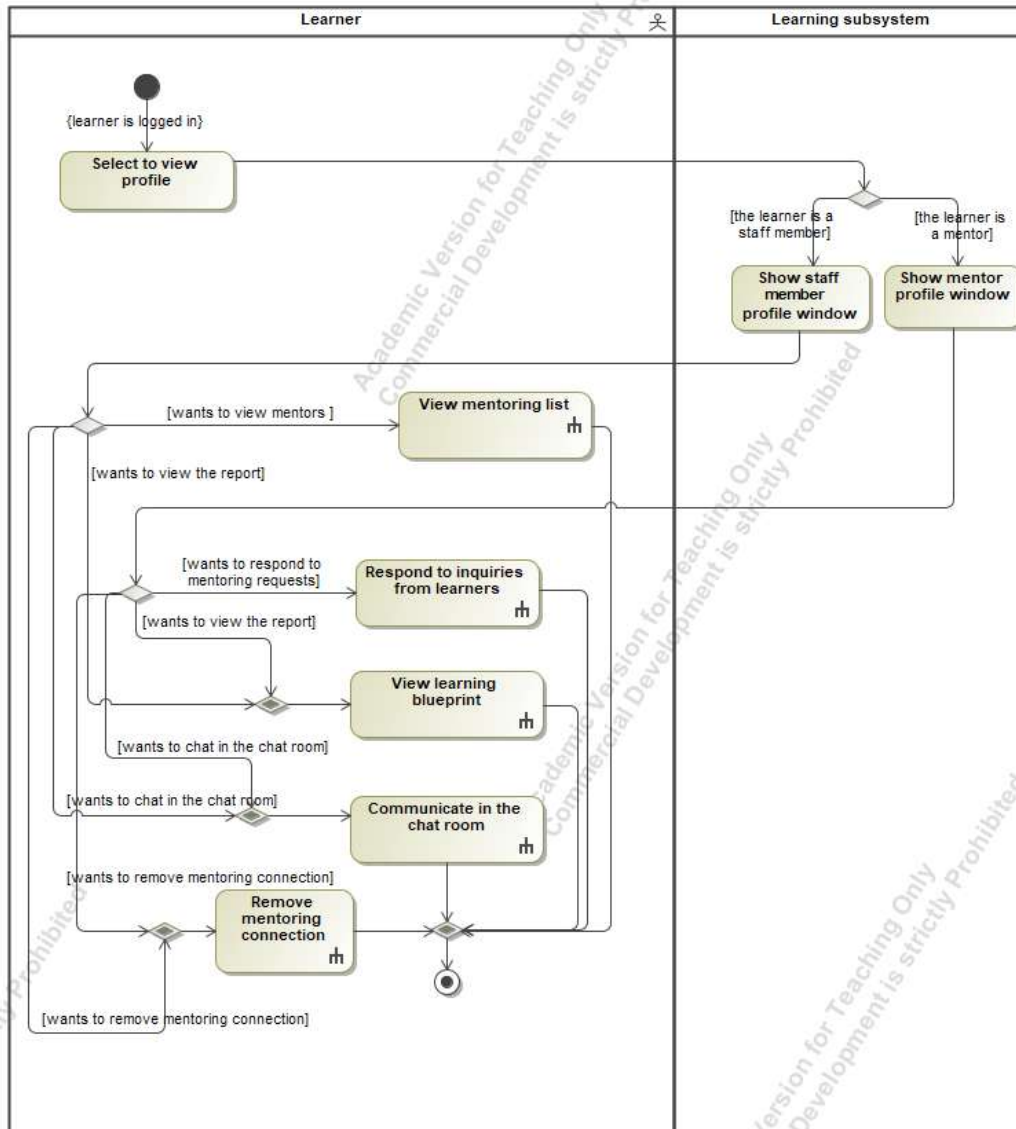


Figure 12. Activity diagram for the use case "View profile"

The learner has the option to view his profile. Depending on whether he/she is a staff member or a mentor, he/she is presented with the appropriate profile window. If the learner is a staff member, he/she can view the list of mentors, view the learning progress report and communicate in the chat room. If the learner is a mentor, he/she can answer learners' requests, view the learning progress report, communicate in the chat room.

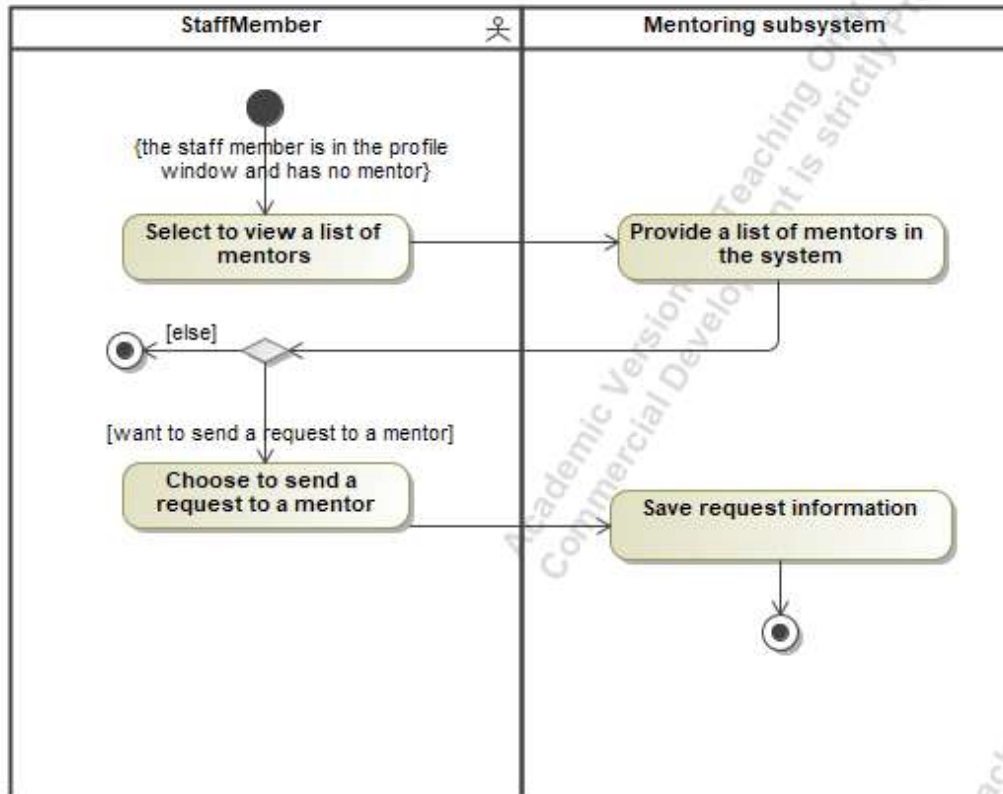


Figure 13. Activity diagram for the use case "View the list of mentors"

If the staff member has opened his/her profile window and does not yet have a mentor, he/she can see the list of mentors. After choosing to view the list of mentors, he/she is presented with the list of all the mentors registered on the platform. After choosing to send a request, the request information is saved. Once a mentor approves a request, instead of a list of mentors, the learner will only see their mentor.

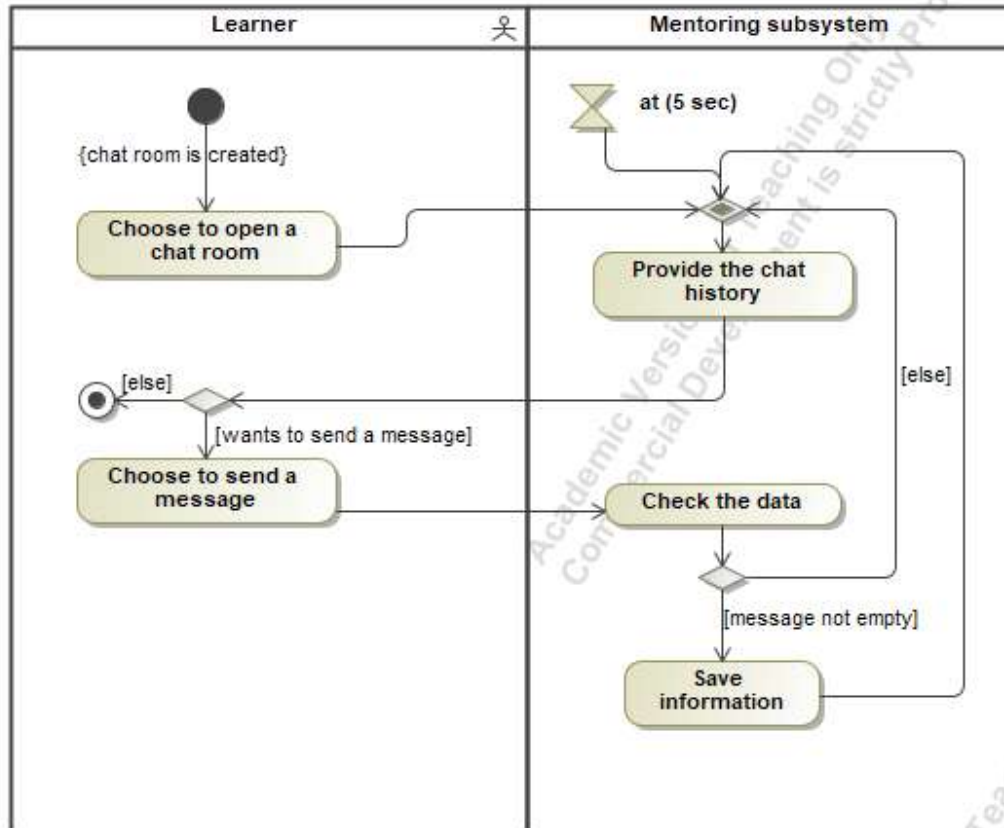


Figure 14. Activity diagram for the use case "Communicate in the chat room"

When a staff member sends a request and a mentor approves it, a chat room is created. This use case allows the learner (mentor and staff member) to communicate with each other and send messages. If you choose to open a chat room, the learner is presented with the chat room correspondence and all messages if there has been previous communication. The conversation is updated every 5 seconds. After writing a text and choosing to send, the message information is saved and an updated conversation is presented.

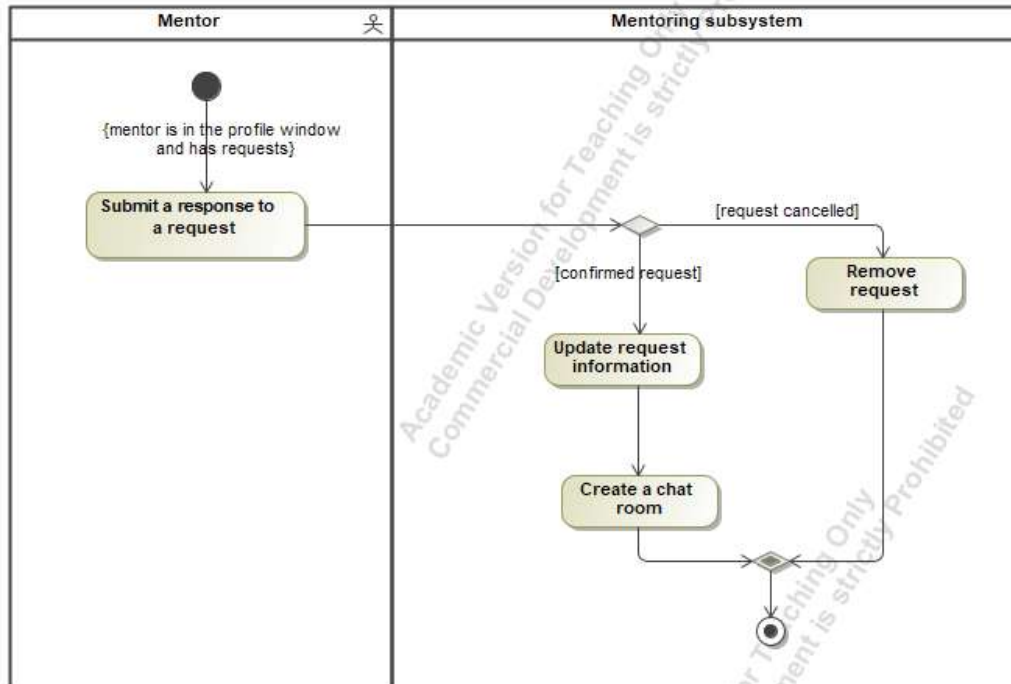


Figure 15. Activity diagram for the use case "Respond to requests from learners"

If the learner is a mentor, they see requests from staff members on their profile. If the mentor chooses to approve the request, the request information in the system is updated and a chat room is created for the sender of the request and the mentor to communicate. If the mentor chooses to cancel the request, this request is removed. The staff member will have the opportunity to choose a new mentor.

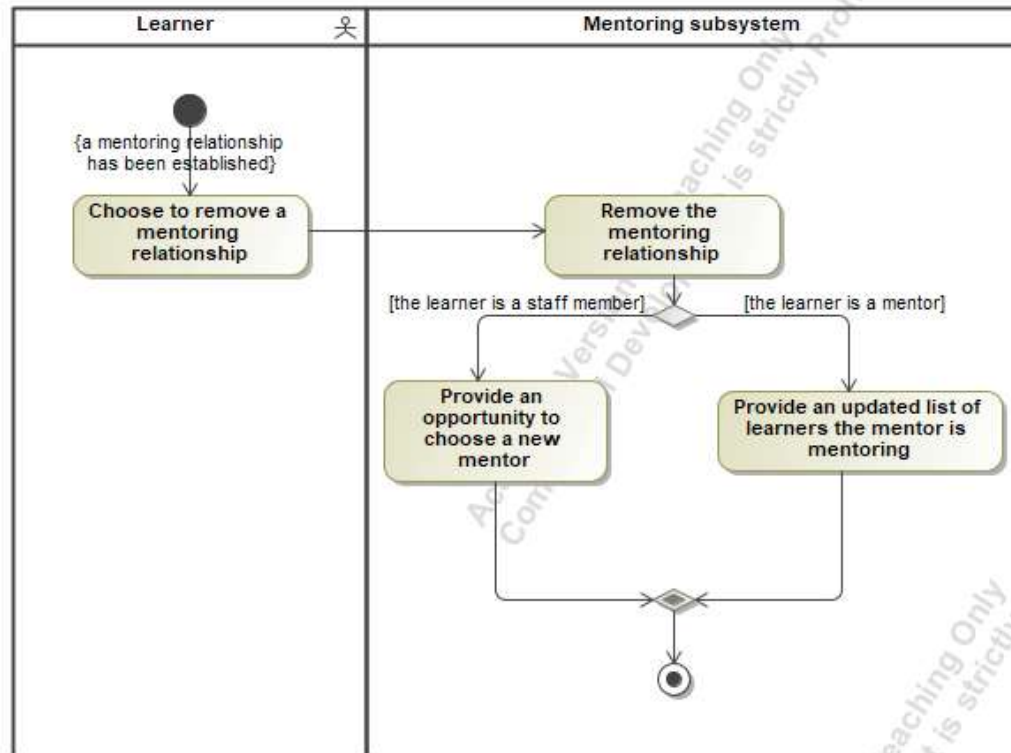


Figure 16. Activity diagram for the use case "Remove mentoring connection"

A learner who is a staff member and a learner who is a mentor can form a mentoring relationship when the member sends a request to the mentor and the mentor approves it. This use case provides an opportunity to terminate that mentoring relationship. If the mentor chooses to do so, the connection is removed and an updated list of mentored learners is provided. If the staff member chooses to remove the connection with the current mentor, this connection is removed and the opportunity to choose a new mentor again is provided. A list of all mentors is provided.

The administrator subsystem has a large number of use cases, since the main task of the administrator is to bring all the material into the system and present it to the users. The use cases in the admin subsystem of this learning platform are illustrated in the admin subsystem use case diagram above (Figure 2). All of these sets of use cases, which allow you to view a list, add an item, edit an item, and remove an item, follow the same principle, so only one set of activity diagrams for a self-assessment test question will be presented (Figures 17 - 20).

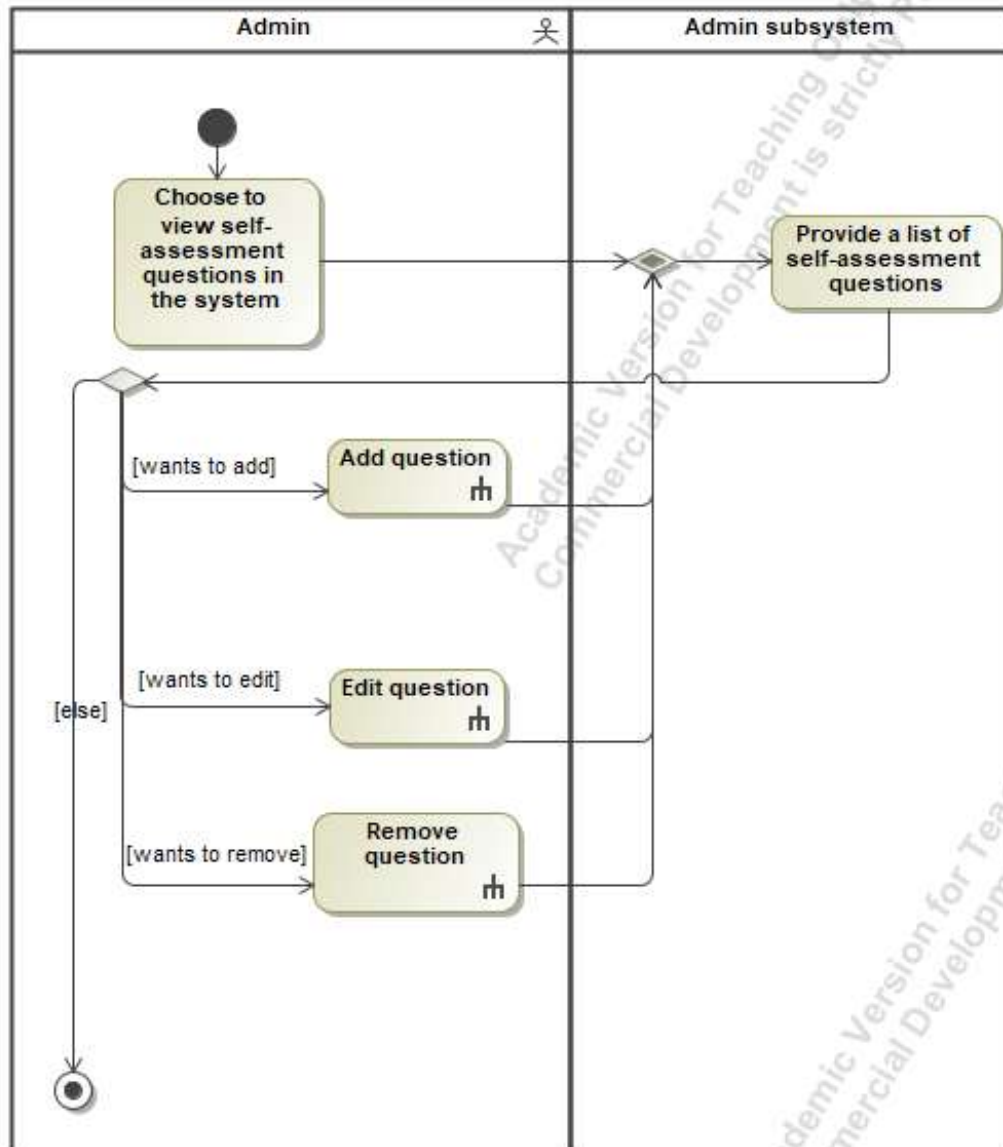


Figure 17. Activity diagram for the use case "View self-assessment questions"

The administrator is given the opportunity to view the self-assessment test questions in the system. After choosing to view these questions, a list of them is presented to the administrator. In the opened window, he also has the option to add a question (Figure 18), edit a question (Figure 19) and remove a question (Figure 20).

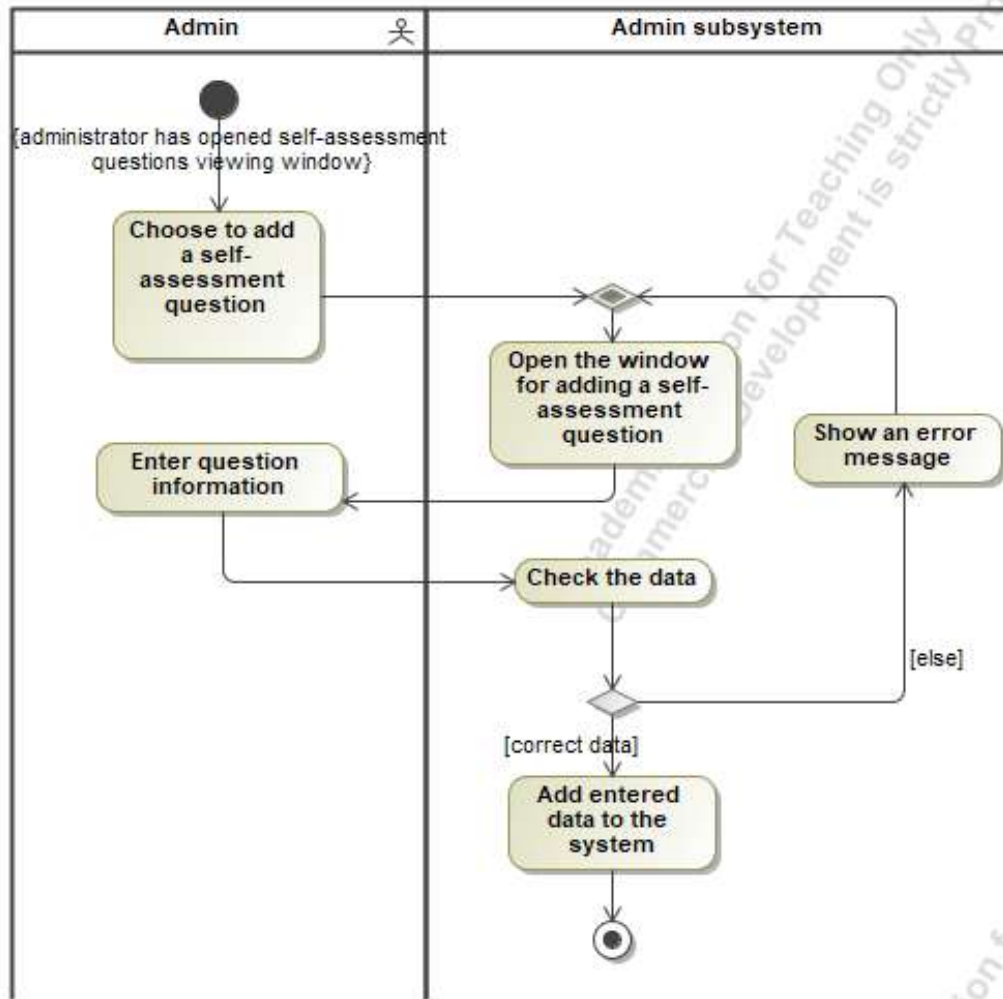


Figure 18. Activity diagram for the use case "Add question"

This use case allows the administrator to add a new self-assessment test question. After choosing to add a question, a window is presented where all the information of the question must be provided, after checking the entered data, it is either saved successfully (if the data is correct) or an error message is returned.

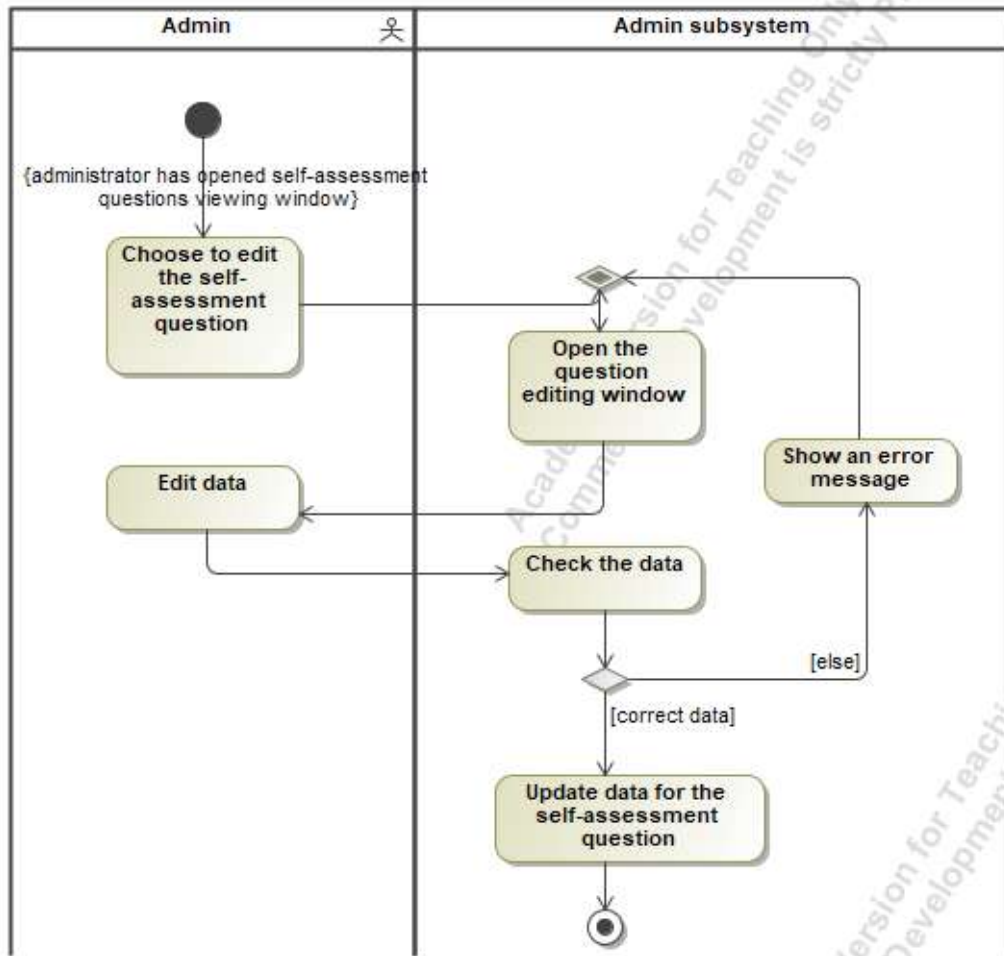


Figure 19. Activity diagram for the use case "Edit question"

The administrator has the option to edit an already created self-assessment test question. After choosing to edit a question, an editing window is displayed. After submitting the updated data, it is checked and if the data is correct, the question information is updated.

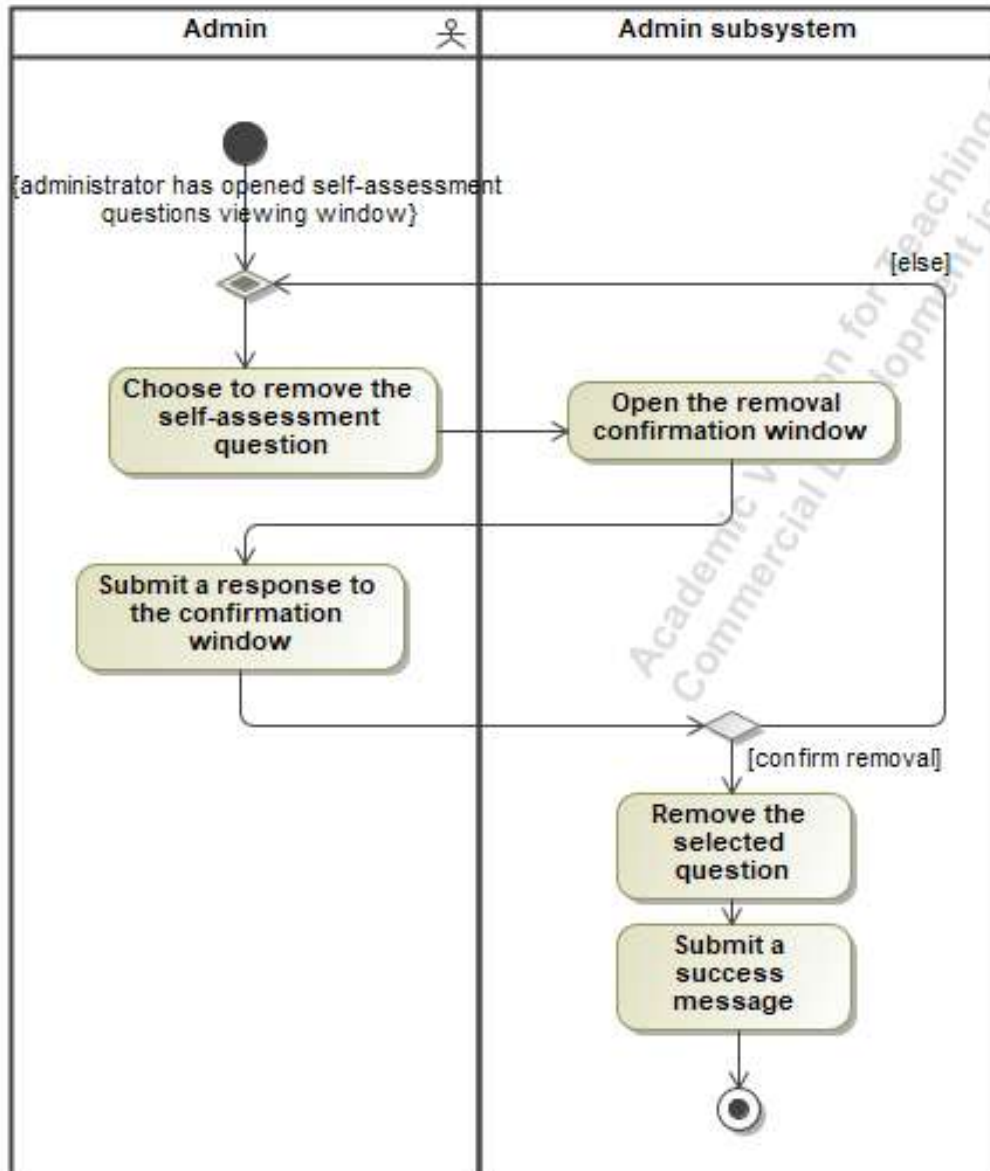


Figure 20. Activity diagram for the use case "Remove question"

The administrator has the option to remove an already created self-assessment test question. After selecting delete, a delete confirmation window is presented and after confirming the delete, the question information is removed from the system.

User interface specification

Basic requirements for the user interface:

- The color palette of the platform must not differ from the project logo, green, black, gray colors should be used.
- The most important parts - learning material, learning plan, mentoring system should be accessible in no more than 2 clicks.
- User interface style should be consistent across the platform (same colors, typography).
- User interface design must adapt to the device (responsive design).
- The platform should have five main pages - main, learning courses, profile, videos, open educational resources.
- The user must receive error messages, for example, when entering data incorrectly in the registration form, not marking all the answers in the questionnaire, etc.

Based on these requirements, the project designer created prototypes of the platform design. Below are the created sketches (Figures 21 - 24).

Welcome to CCJ4CJ platform!

European Career Counselling Guidelines for
Staff Working in Criminal Correctional Justice System

ABOUT

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Vivamus gravida magna eu mattis convallis. Praesent nec trincidunt nibh, Mauris gravida convallis turpis ut interdum. Maecenas felis felis, malesuada quis ante vel, porttitor ultrices enim. Nam in tortor quis lorem congue egestas nec ac nisi. Aliquam sit amet ornare ipsum. Integer consequat lobortis ligula in interdum. Maecenas interdum vestibulum

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HOW DOES IT WORK?



OUR PARTNERS



Funded by the
Erasmus+ Programme
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Figure 21. Visual solution of the platform's main window

WEBSITE EN RO DE IT TR MT PT REGISTRATE

Correctional staff
Mentor

HOME LEARNING BLUEPRINT MY PROFILE

WELCOME
CCJ40

ABOUT

HOW DOES IT WORK

OUR PARTNERS

YORK ASSOCIATES

FRIS HANNOVER BREMEN

ICPA
International Corrections & Prison Association

BRAIN.OG

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Welcome!

Name

Email address

Country

Organization

Username

Password

I would evaluate my career management competencies as:

poor good I do not know but I would like to find out

Did you take any career development courses online before?

yes no

What are your expectations concerning this platform and the objectives you want to achieve?

Line of work

Position in career

Please, tick the box if you agree to our Privacy and Cookies policy

Register

system

Aliquam in sem
et, lacinia arcu.
vitae hendrerit sed,
is, eros id hendrerit
misan erat, non
Nam quis ultricies
sagittis sit amet
gue. Quisque cursus

5. Post-assessment

Figure 22. Visual solution of the registration form

Hi, Name Surname!
Welcome back to your profile

Upload your
profile photo
max 500x500 px

About

namesurname@gmail.com
Romania
National prison

Progress report



85 %

Download a document

I want a mentor

Figure 23. Visual solution of the staff member profile

WEBSITE EN RO DE IT TR MT PT LOGIN


HOME LEARNING BLUEPRINT MY PROFILE

Self-assessment

Know your abilities and possibilities

About and aim

Aliquam in sem tincidunt, dictum libero eget, lacinia arcu. Donec dui lectus, aliquam vitae hendrerit sed, mollis ac dui. Morbi rhoncus, eros id hendrerit dignissim, libero eros accumsan erat, non rutrum arcu arcu vel nunc. Nam quis ultricies magna. Sed augue neque, sagittis sit amet purus a, facilisis facilisis augue. Quisque cursus lobortis vulpate.

Take a test

1.

Morbi rhoncus, eros id hendrerit dignissim, libero eros accumsan erat, non rutrum arcu arcu vel nunc?

- Answer 1 Answer 2 Answer 3

2.

Morbi rhoncus, eros id hendrerit dignissim, libero eros accumsan erat, non rutrum arcu arcu vel nunc?

- Answer 1 Answer 2 Answer 3

3.

Morbi rhoncus, eros id hendrerit dignissim, libero eros accumsan erat, non rutrum arcu arcu vel nunc?

- Answer 1 Answer 2 Answer 3

Submit



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Figure 24. Visual solution of the self-assessment test



Hi, Name Surname!
Welcome back to your profile



About

namesurname@gmail.com
Romania
National prison

Mentoring request

- Name Surname
Submit
- Name Surname
Submit
- Name Surname
Submit

My mentees



Name Surname 1
namesurname@gmail.com
Romania
National prison

Chat Progress Remove



Name Surname 2
namesurname@gmail.com
Romania
National prison

Chat Progress Remove



Name Surname 3
namesurname@gmail.com
Romania
National prison

Chat Progress Remove



Name Surname 4
namesurname@gmail.com
Romania
National prison

Chat Progress Remove



Name Surname 5
namesurname@gmail.com
Romania
National prison

Chat Progress Remove



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Figure 25. Visual solution of the mentor profile

Non-functional requirements

1. User interface:
 - a. The implementation of the user interface must meet the requirements set in the user interface specification.
2. Security:
 - a. Data transmission over the Internet must only be done using HTTPS requests.
 - b. Learning materials must be accessible only to registered users.
3. Operational:
 - a. The platform must work with the most popular browsers (Google Chrome 113, Safari 16.4, Microsoft Edge 112, Mozilla Firefox 112).
4. Organizational:
 - a. The platform must be built using the Wordpress framework.
 - b. The platform must be placed online, i.e. installed on the web server.
5. Cultural - political:
 - a. The platform must be available in 8 languages - English, Romanian, German, Italian, Turkish, Portuguese, Danish and Lithuanian.

Static view of the system

The general composition of the created learning platform system is presented in the UML deployment diagram (Figure 26).

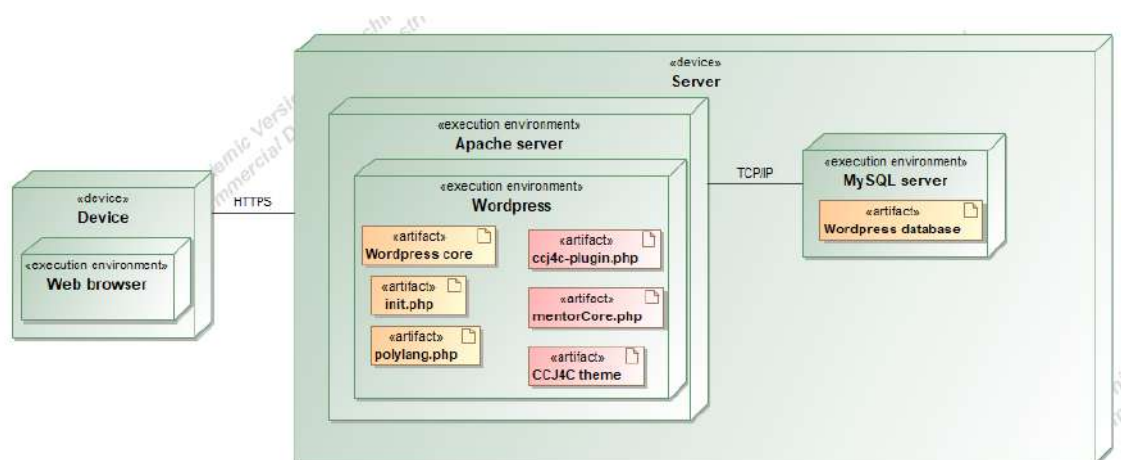


Figure 26. System deployment diagram

The learning platform is available for any device that has access to the Internet and a web browser. The system requires the base of the WordPress learning management system, the plugin "Pods - Custom Content Types and Fields" (init.php), the plugin "Polylang" (polylang.php). The files of this system are also required: plugin "CCJ4C" (ccj4cPlugin.php), plugin "MentorCore" (mentorCore.php) and created theme "CCJ4C theme". All of this is installed on an Apache server. A MySQL server with the system database installed is also required.

The simplified structure of the system is presented in the packet diagram (Figure 27).

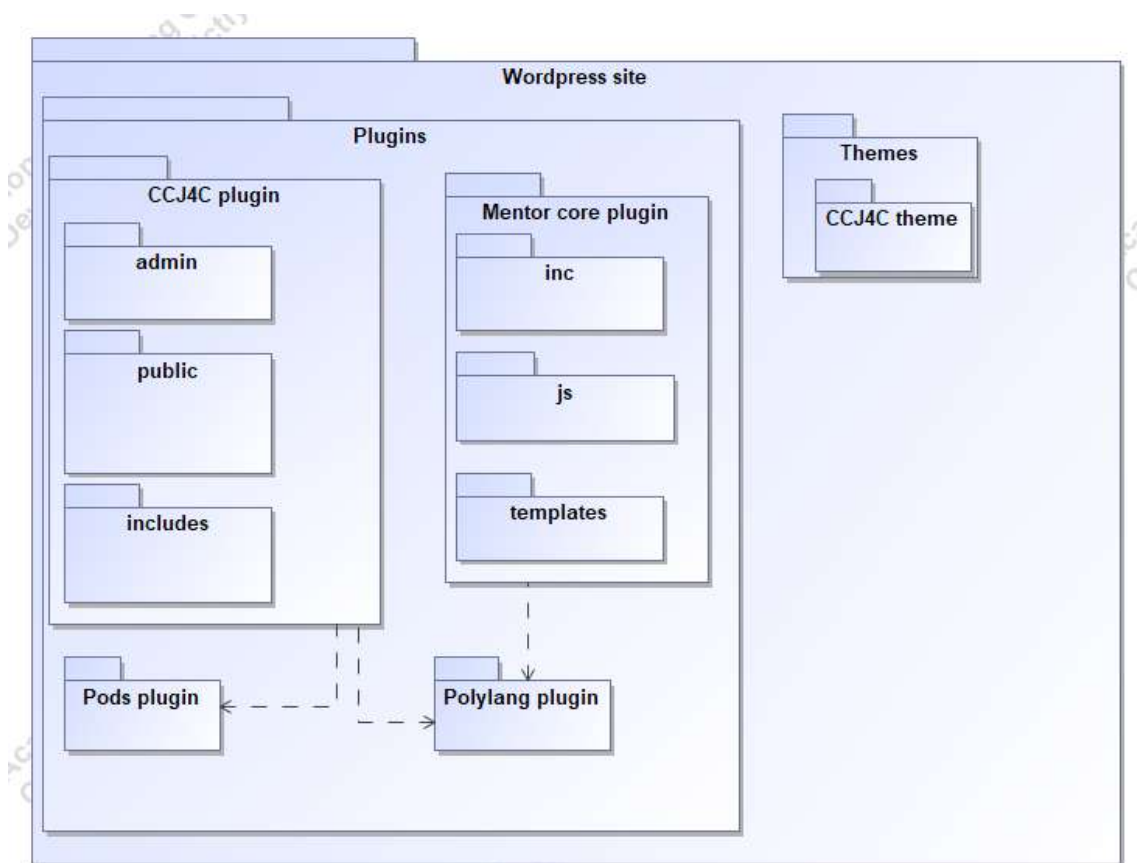


Figure 27. System package diagram

This package diagram shows the logic behind the learning platform, it also shows the Pods and Polylang plugins, which won't be covered in detail later, but shows how they relate to system elements. The CCJ4C plugin logic is divided into the following parts:

- "admin" – plugin administrator functions;

- "public" - the main functionality and representation of the plugin;
- "includes" - plugin management functions (activation, deactivation, etc.).
- The Mentor core plugin logic is divided into the following parts:
- "inc" - main classes of the plugin;
- "js" - Scripts in JavaScript format that describe AJAX requests and other functions related to the user interface;
- "templates" – implementation of plug-in functions.

The Pods plugin is needed to store different content on the platform. This plugin accesses data from a database. The Polylang plugin is required for both plugins created to translate information into different languages. The files required for the CCJ4C theme are stored in the theme package.

- CCJ4CPluginDeactivator - responsible for deactivating the plugin.
- "CCJ4CPluginLoader" - responsible for registering all plugin events (action hooks) and filters.
- "CCJ4CPlugini18n" - responsible for internationalization implementation.
- "Mentor" - responsible for the realization of the mentor's profile.
- "Student" - responsible for the realization of the employee's profile.
- "Chat" - responsible for the functionality of the chat room when communicating with the database.
- MentorCore - The main plugin class.

All non-class PHP format files are used to implement different system functions. An event (action hook) is created for the functions created in them, which is then activated by the user and the corresponding function is implemented.

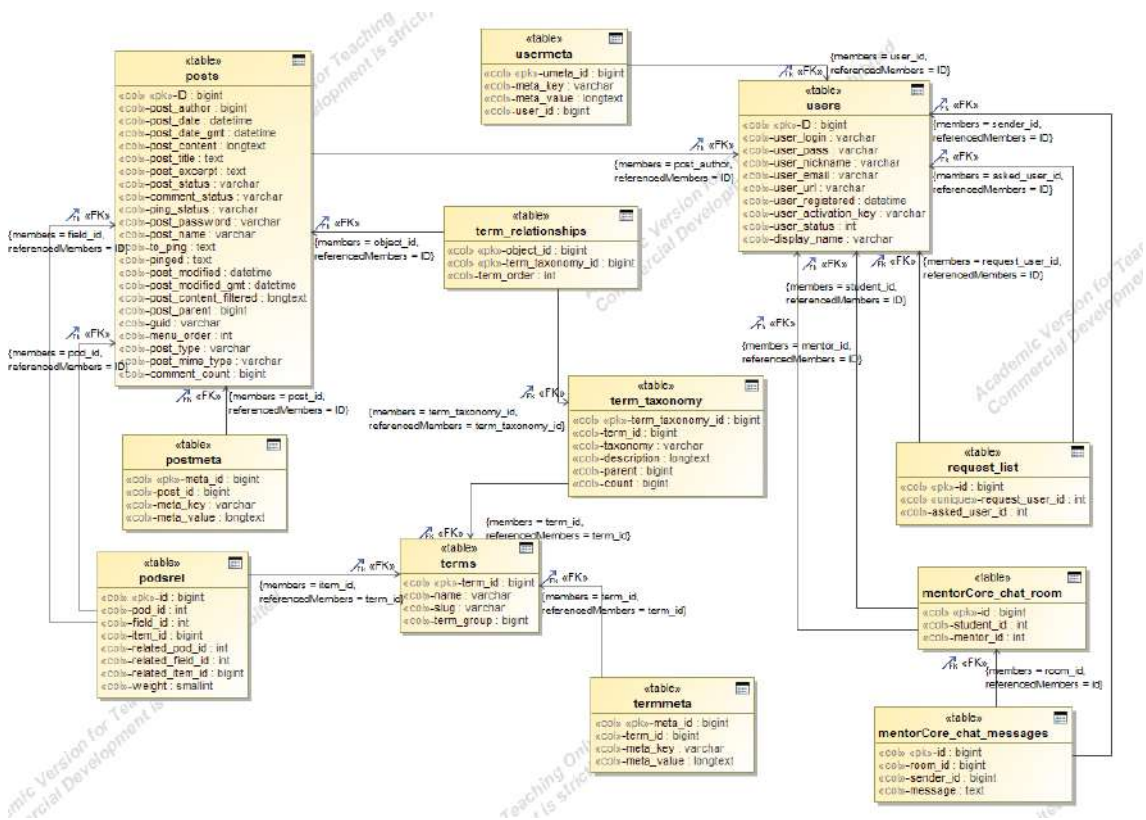


Figure 29. Database schema structure

This schema contains only those database tables that are relevant to the implementation of this system. All tables except "request_list", "mentorCore_chat_room", "mentorCore_chat_messages" are automatically created by Wordpress system. The three tables listed are designed to store data related to mentoring. The Pods plugin was used to store the main training

material, with the help of which a custom data structure and required fields were created. Using the plugin's capabilities, the data model presented below was realized (Figure 30).

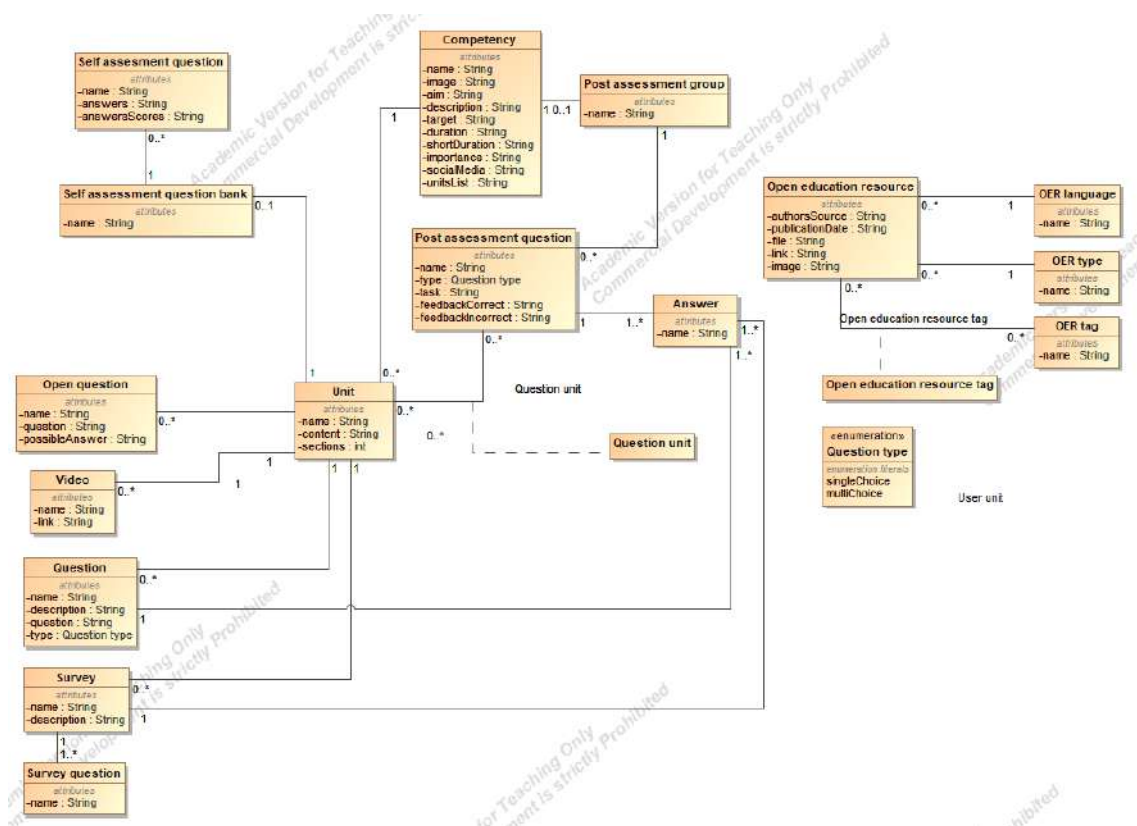


Figure 30. Learning material data model

This data model provides information on which fields are needed to store information for each element. This model has been implemented in the Pods plugin, where tables and fields have been created and mapped automatically to the admin subsystem, where the administrator can start entering the desired learning material.

OER	oer	Custom Post Type	1	8
OER languages	oer_language	Custom Taxonomy	1	0
OER tag	oer_tag	Custom Taxonomy	1	0
OER types	oer_type	Custom Taxonomy	1	0

Figure 31. A view of the data model implementation in the Pods plugin

Label	Name	Type
Author(s)/source	field_authors_source	Plain Text
Publication date	field_publication_date	Plain Text
OER type *	field_oer_type	Relationship = OER types (oer_type)
File	field_file	File / Image / Video
Language *	field_language	Relationship = OER languages (oer_language)
Keywords	field_keywords	Relationship = OER tag (oer_tag)
OER link	field_oer_link	Plain Text
Image	field_oer_image	File / Image / Video

Figure 32. The data fields of the "OER" element that are implemented in the "Pods" plugin

Dynamic view of the system

Sequence diagrams are used to represent the dynamic view of the system. It was chosen to depict three essential scenarios of the system's operation - "Communicate in the chat room" (Figure 33), "Take a post-assessment test" (Figure 34), "Take a self-assessment test" (Figure 35). Chat room communication is chosen as the essential operating scenario of the mentoring subsystem. The self-assessment test and the acquired knowledge test are chosen to be written in more detail with sequence diagrams, as they are the most platform-specific capabilities that also allow the system to stand out from other learning platforms.

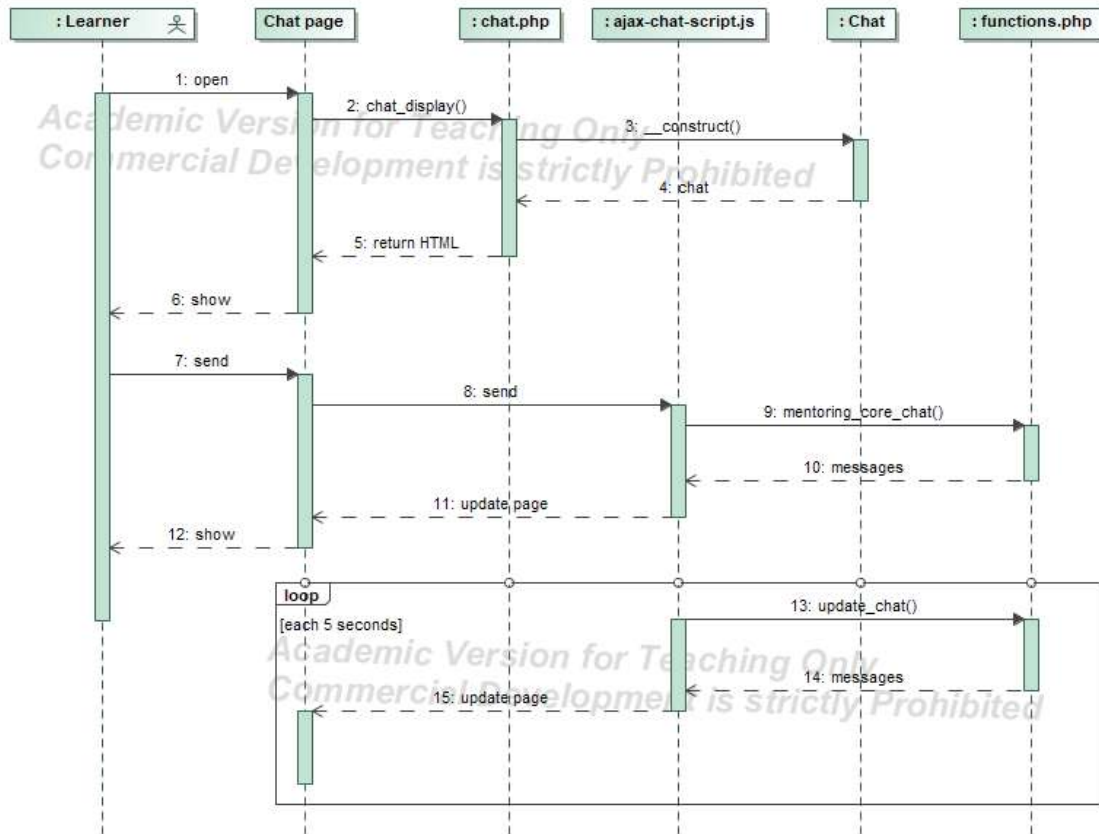


Figure 33. Use case "Communicate in the chat room" sequence diagram

Use case "Communicate in the chat room" sequence diagram represents how data transfers happen when communicating in a chat room. To render the chat room to the learner, the chat room page must refer to a function file (chat.php) that receives the chat from the Chat class to render to the learner. When you choose to send a message, the message information is sent to a script file (ajax-chat-script.js), which sends a request to the functions file (functions.php). This file returns the messages that are displayed in the updated chat window. The chat window is updated every 5 seconds when the script file (ajax-chat-script.js) calls the functions file (functions.php) and it returns messages.

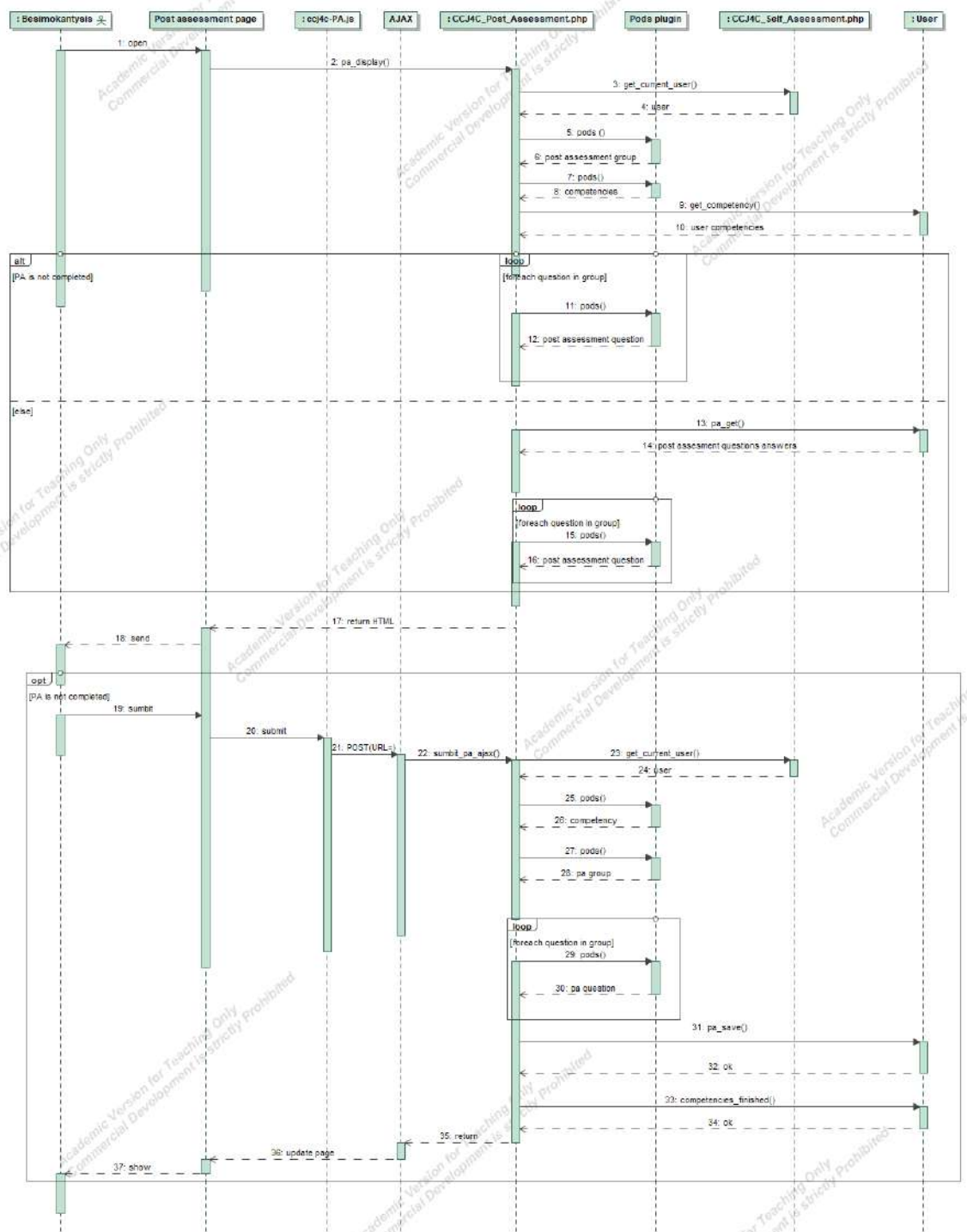


Figure 34. Use case "Take a post-assessment test" sequence diagram

The sequence diagram of the use case "Take a post-assessment test" shows how data transfers occur during the post-assessment test. The creation of these tests relies on repeated requests to the Pods plugin, which is responsible for storing all the learning material. When the test is selected, the main page calls the "pa_display()" function via shortcode, which is connected to it. The Pods plugin gets all the information about the learner's competencies and units, and

the User class gets the information about the competencies assigned to the learner. Depending on whether he/she has already passed the test or not, the following data transfer sequences are executed. If the test hasn't been done yet, the Pods plugin is called to provide questions, if the test has already been done, the User class is called for the learner's answers. When running a test, the Pods plugin is called when learning material data is needed, and when the learner's selections need to be saved or displayed, the request is sent to the User class. This principle is used throughout the system.

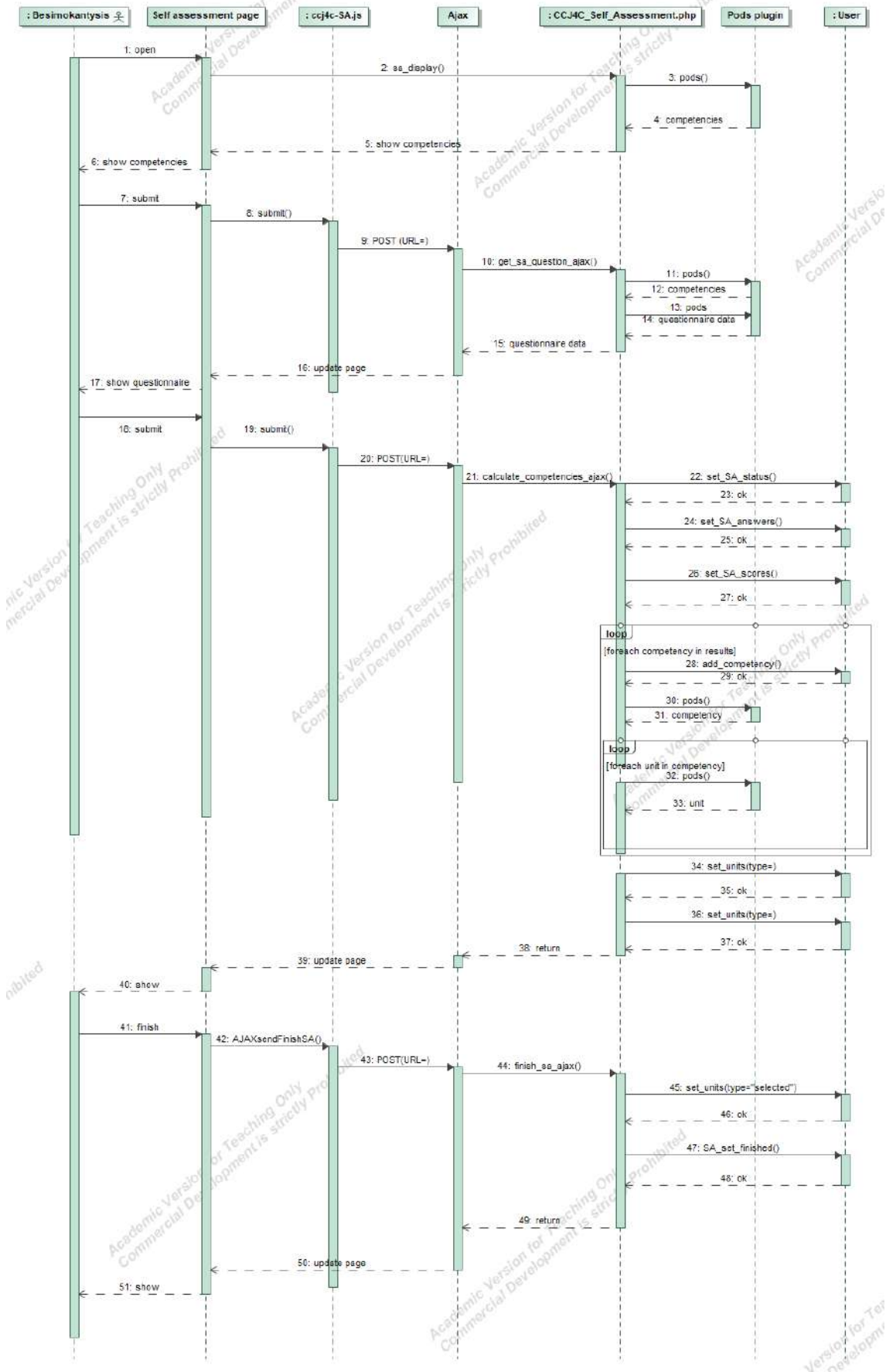


Figure 35. Use case "Take a self-assessment test" sequence diagram

The use case "Take a self-assessment test" sequence diagram represents how data transfers take place during the self-assessment test. The initial window of the knowledge self-assessment test is presented in the same way as the initial window of the acquired knowledge post-assessment test - by using a shortcode (shortcode), which calls to the function of presenting the test. Again, the whole process follows the same principles - the information required for the rendering is obtained from the Pods plugin, and the information about the learner's choices is stored or obtained by calling the User class. All but the first test window are rendered when the script file (ccj4c-SA.js) responds to user actions in the user interface and sends requests to the function file "CCJ4C_Self_Assessment.php" using AJAX (action hooks).

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