I AM – web application for people with depression

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1. General description of the IT system

Depression is one of the most common diseases in the 21st century. People with depression often isolate themselves and do not share their problems. The system is designed to help people with depression reach out for support from a close person during episodes of poor well-being. The system is going to be a web application.

Users will be able to create a personal account. After creating an account, they will be required to invite another user to be their caregiver. The user will have the option to press a button that will notify the caregiver about their poor well-being. The user will have access to a calendar with photos. Every day, at the time set by the caregiver, the user will be required to upload a photo that will show where they are now and what they are doing, making it easier to determine how the user is feeling and what progress they are making in the fight against depression. The caregiver will have access to the calendar. Additionally, once a day, when the user opens the app, they will be asked to answer 5 multiple-choice questions about their well-being. Based on the average of the answers, the system will decide whether to send a report to the caregiver.

The system is aimed at people experiencing depressive states and their loved ones.

2. Software requirements specification

Functional requirements:

Caregiver requirements:

US.CAR01 *As a caregiver, I want to check the calendar, so I can check where the person I am taking care of has been for the last few days.*

Acceptance criteria:

- *The caregiver can view a calendar interface.*
- *The calendar displays entries from previous days.*
- *Each calendar entry shows statistics and/or photos (if available).*
- *Only entries related to the assigned user are visible.*

US.CAR02 *As a caregiver, I can set a time for uploading photos to establish a routine for the user.*

Acceptance criteria:

- The caregiver can define a recurring time slot for photo uploads.
- The user receives a reminder at the defined time.
- The schedule can be edited or deleted by the caregiver.
- Each user has an individual schedule defined by their caregiver.

US.CAR03 *As a caregiver, I would like to have the option to modify my details, so I can change outdated information about myself.*

Acceptance criteria:

- The caregiver can access their profile settings.
- The caregiver can modify and save personal details such as email and password.
- Validation is performed before changes are saved.
- A confirmation message is displayed after a successful update.

US.CAR04 *As a caregiver, I want to create an account, so that I can use the app.*

Acceptance criteria:

- The caregiver can access the registration form.
- Required fields include name, email, and password.
- The caregiver receives confirmation upon successful account creation.
- Duplicate accounts with the same email are prevented.

US.CAR05 *As a caregiver, I want to delete an account, so that I can stop using the app.*

Acceptance criteria:

- The caregiver can access an account deletion option in settings.
- The system asks for confirmation before deletion.
- After deletion, login is no longer possible.
- Associated data is removed or anonymized as required by privacy policy.

US.CAR06 *As a caregiver, I want to have access to summaries with replies to questions answered by the person I care for, so that I can monitor their wellbeing*

Acceptance criteria:

- The caregiver can view a dashboard with summaries of answered questions.
- Each summary includes timestamps and user responses.
- Data is grouped by date or wellbeing of the user.
- The interface updates with the most recent data.

User requirements:

US.USER01 *As a user, I can send an invitation to another user, so that they can become my caregiver.*

Acceptance criteria:

- The user can input the email address of the supposed caregiver.
- An invitation is sent to the selected person.
- The invitation status is visible to the sender.
- The system prevents duplicate invitations to the same person.

US.USER02 *As a user, I can respond to another user's invitation, so I can become their caregiver.*

Acceptance criteria:

- *The user receives a notifica*tion or message about the invitation.
- The user can accept or decline the invitation.
- Upon acceptance, the inviter becomes their caregiver.
- Declining the invitation removes it from pending status.

US.USER03 *As a user, I can press the 'HELP' button, so I can inform my caregiver about my unwellness.*

Acceptance criteria:

- The user interface includes a clearly visible "HELP" button.
- Pressing the button sends a notification to the caregiver.
- A confirmation message is shown after pressing.
- The caregiver receives the alert in near real-time.

US.USER04 *As a user, I want to have access to my calendar, so I can observe an improvement in my well-being.*

Acceptance criteria:

- The user can access a personal calendar view.

- Entries include uploaded photos and statistics of wellbeing.
- The calendar allows navigation to past and future dates.
- The user can visually track their progress.

US.USER05 *As a user, I want to upload photos to my calendar, so I can develop a routine where I do certain things at set time.*

Acceptance criteria:

- The user can take a photo and then upload it to the calendar.
- Photos appear on the calendar view.
- The system confirms successful uploads.

US.USER06 *As a user, I can answer questions about my mood, so my caregiver can be notified about changes in my well-being.*

Acceptance criteria:

- The user is presented with mood-related questions daily.
- Responses are saved and timestamped.
- The caregiver is notified about new responses.

US.USER07 As a user, I would like to have the option to modify my details, so I can change outdated information about myself (e.g. caregiver).

Acceptance criteria:

- The user can access and edit their personal profile.
- Editable fields include name, email, caregiver assignment, etc.
- Changes are saved after validation.
- Updated details are immediately reflected in the system.

US.USER08 *As a user, I want to create an account so that I can use the app.*

Acceptance criteria:

- The user can register via a sign-up form.
- Required fields are validated before submission.
- A welcome screen or message is shown post-registration.

- Duplicate email registrations are blocked.

US.USER09 *As a user, I want to delete an account so that I can stop using the app.*

Acceptance criteria:

- The user can request account deletion from the settings.
- The system asks for confirmation before proceeding.
- After deletion, access is removed, and data is handled by privacy policy.
- The user receives a confirmation message after deletion.

Admin requirements:

US.ADM01 *As an admin, I want to have full access to the database to manage it.*

Acceptance criteria:

- Admin can view, edit, and delete any database entry.
- Admin access is secured with elevated credentials.
- Audit logs track changes made by admins.
- Access is restricted to authorized personnel only.

US.ADM02 *As an admin, I want to have access to add new admins, so I can add my successor.*

Acceptance criteria:

- Admin can input new admin credentials.
- Only existing admins can create other admins.
- A confirmation is displayed upon successful creation.
- The new admin can log in immediately.

US.ADM03 *As an admin, I want to add new user, so more people can access the application.*

Acceptance criteria:

- Admin can create a new user via a form.
- Required fields include email and name.
- The user is notified upon account creation (if configured).
- Duplicate entries are prevented.

US.ADM04 *As an admin, I want to delete users, so I can always have an up-to-date user base.*

Acceptance criteria:

- Admin can select a user and delete their account.
- A confirmation prompt appears before deletion.
- Deleted users lose all access.
- Data is handled according to privacy and legal policies.

US.ADM05 *As an admin, I want to create new questions, so that users can answer them to give information about their mood.*

Acceptance criteria:

- Admin can define a new mood question and its format (e.g., scale, open-ended).
- Questions can be scheduled (e.g. daily, weekly).
- Users receive new questions as part of their routine.
- Questions can be edited or removed by the admin.

Non-functional requirements:

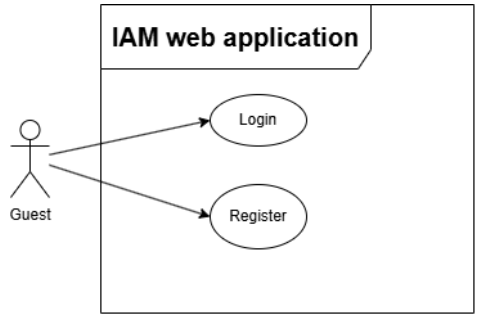
- **Security** - Passwords
  NFR1(H) *Each user must use a password according to the appropriate password policy. Password policy - min. 12 characters, number, special character. Password cannot contain username/email.*
- **Security** - Encryption
  NFR2(H) *Each user account will be stored encrypted using SHA-256. Passwords are stored as hash.*

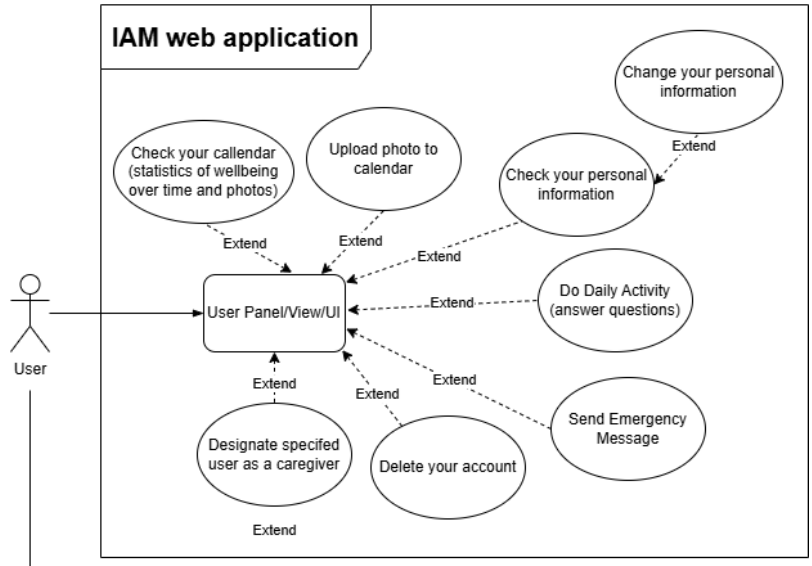
- **Security** - Liability
  NFR3(L) *We will be able to link actions performed in the application to a given account - actions such as sending a photo, answering* questions
- **Compatibility** - Modularity
  NFR4(L) *The system will be created in a modular way - i.e. in a way that allows you to easily add new functionality, modify the old one, without significantly affecting the operation of the rest. I.e. We want to add a new function to the user profile. Adding this option will not involve rewriting the login system, or other changes.*

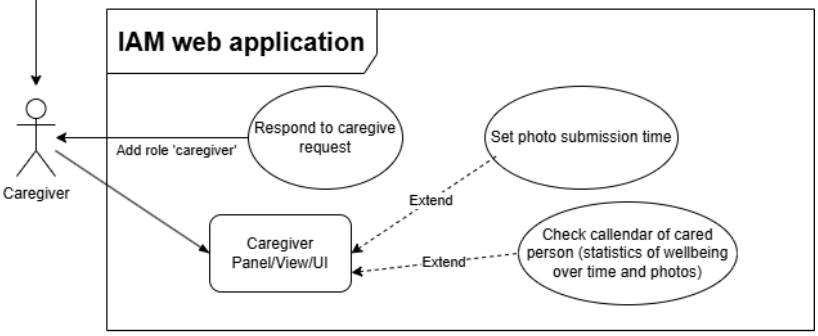
- **Compatibility** - Browser compatibility
  NFR5(H) Works in Chrome 131.0, Safari 17.4.1, Firefox 133.0 browsers
- **Compatibility** - Compatibility with mobile devices (smartphones)
  NFR6(M) *The system must be compatible with mobile devices running on Android (version 12.0 and newer), iOS (version 16.0 and newer)*
- **Security** - Data confidentiality
  NFR7(H) The system must be GDPR compliant
- **Reliability** - System availability
  NFR8(M) *The system must have an "uptime" of 99.9% - Redundant server, using RAID arrays. In the event of a failure of our servers, restoring data from a backup to a VPS (e.g. Azure, AWS)*
- **Performance** - performance
  NFR9(M) *User response time - loading the home page in a maximum of 2 seconds, updating user data in less than 5 seconds for 100 users (3 seconds more for each additional 100 users).*
- **Interaction capability** - *Language support*
  NFR10(H) *The system must have support for Polish and English*
- **Interaction capability** – UI
  NFR11(L) *The system will have an interface compliant with WCAG 2.1 guidelines.*
- **Security** - Encrypted Data Transmission
  NFR18(H) *All server connections must be encrypted (TLS 1.3). HTTP connection is not allowed – automatic redirection to HTTPS.*

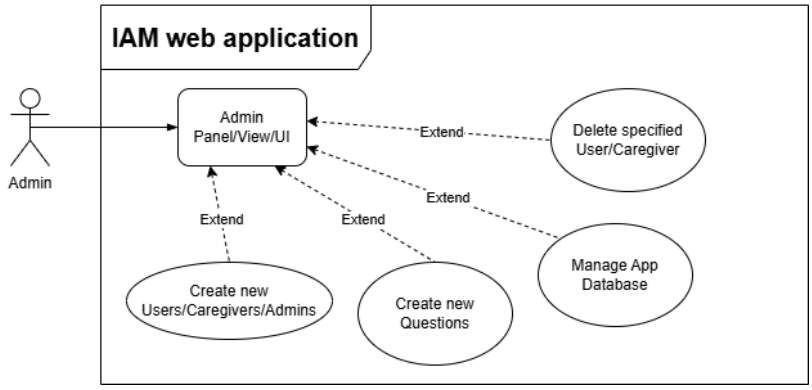
3. Models

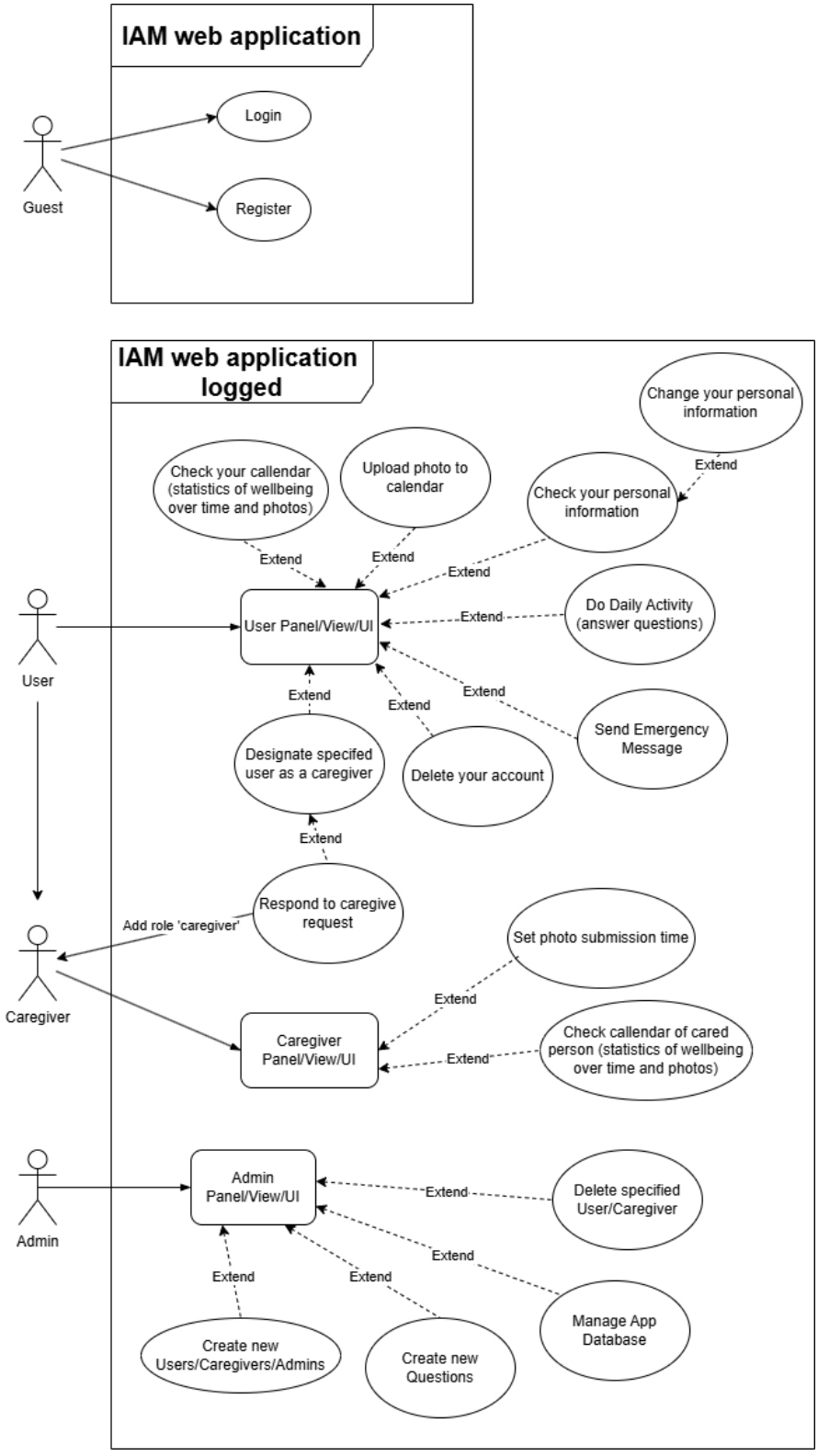
3.1. Use case diagram


IAM web application
Login
Register
Guest

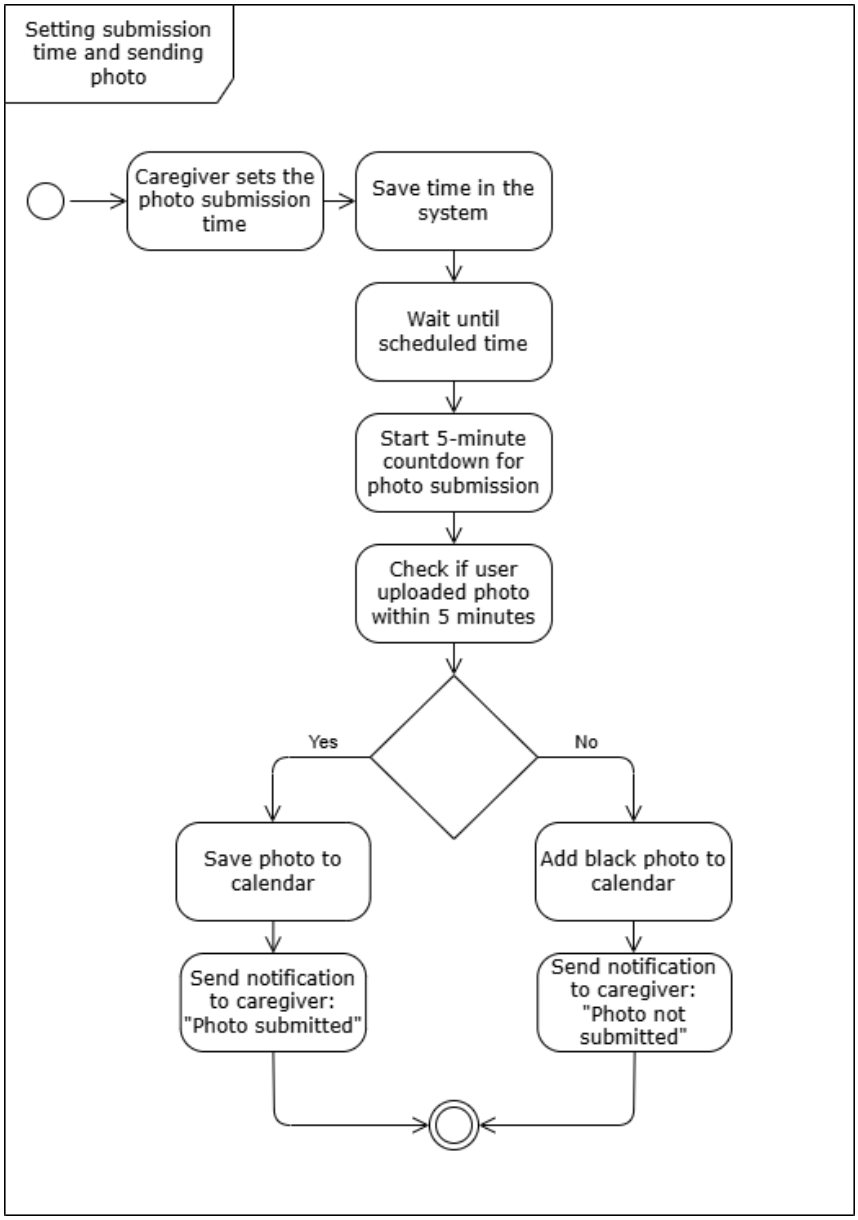

IAM web application
Change your personal information
Check your callendar (statistics of wellbeing over time and photos)
Upload photo to calendar
Check your personal information
Extend
User Panel/View/UI
Do Daily Activity (answer questions)
Designate specifed user as a caregiver
Delete your account
Send Emergency Message
User

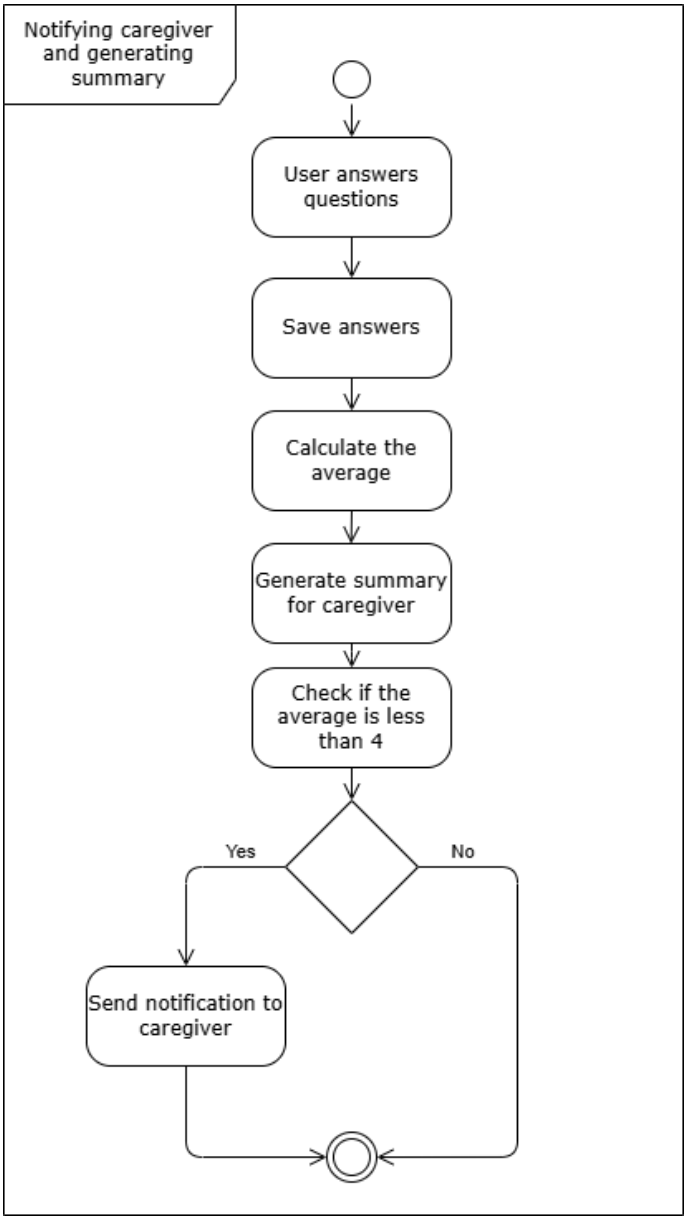

IAM web application
Respond to caregive request
Add role 'caregiver'
Set photo submission time
Caregiver Panel/View/UI
Check callendar of cared person (statistics of wellbeing over time and photos)
Caregiver


IAM web application
Admin Panel/View/UI
Delete specified User/Caregiver
Manage App Database
Create new Users/Caregivers/Admins
Create new Questions
Admin

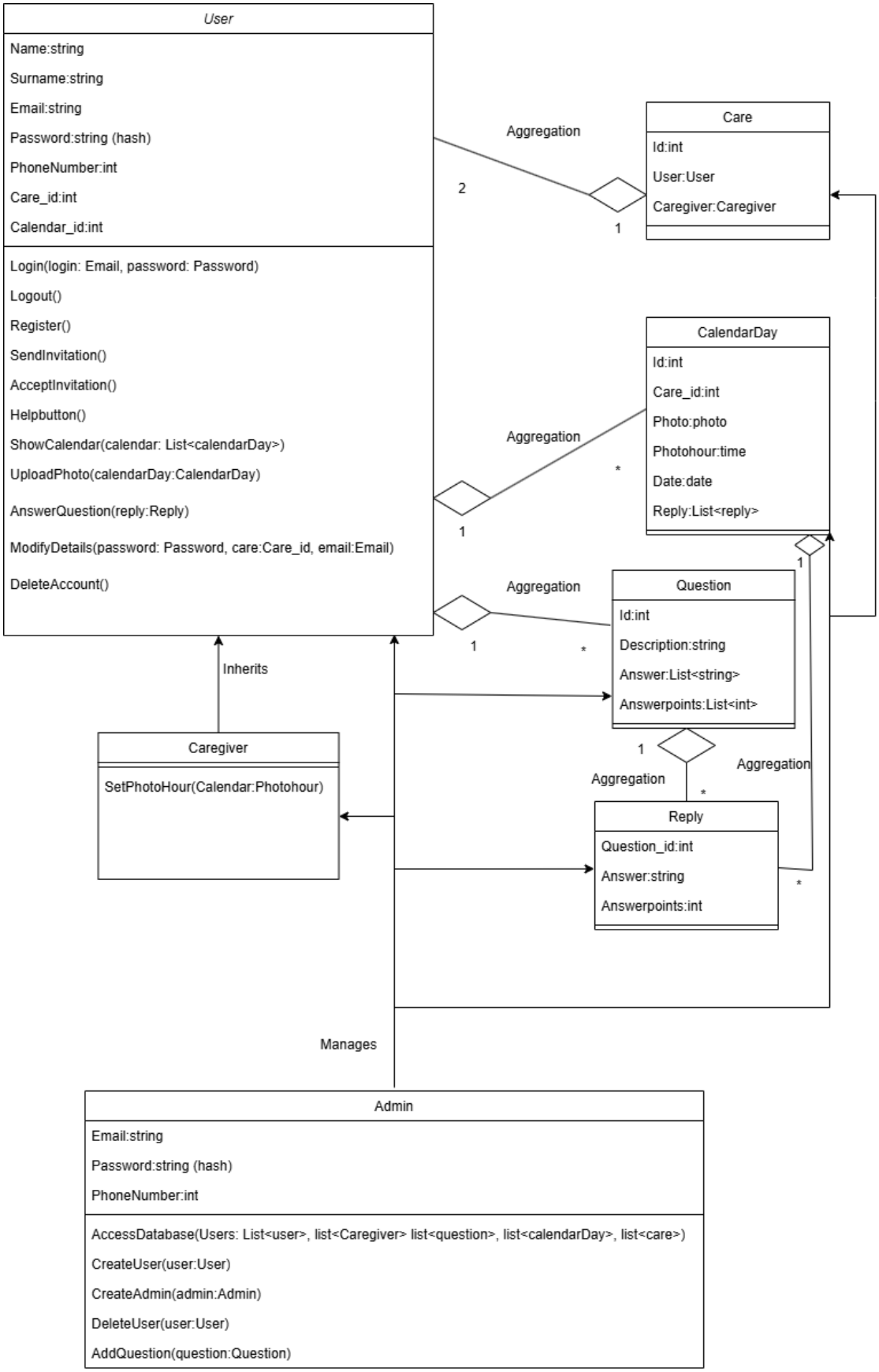


3.2. Activity diagram


Setting submission time and sending photo
Caregiver sets the photo submission time
Save time in the system
Wait until scheduled time
Start 5-minute countdown for photo submission
Check if user uploaded photo within 5 minutes
Yes
No
Save photo to calendar
Add black photo to calendar
Send notification to caregiver: "Photo submitted"
Send notification to caregiver: "Photo not submitted"



3.3. Class diagram


User
Name:string
Surname:string
Email:string
Password:string (hash)
PhoneNumber:int
Care_id:int
Calendar_id:int
Login(login: Email, password: Password)
Logout()
Register()
SendInvitation()
AcceptInvitation()
Helpbutton()
ShowCalendar(calendar: List<calendarDay>)
UploadPhoto(calendarDay:CalendarDay)
AnswerQuestion(reply:Reply)
ModifyDetails(password: Password, care:Care_id, email:Email)
DeleteAccount()
Aggregation
2
1
Care
Id:int
User:User
Caregiver:Caregiver
Aggregation
1
*
CalendarDay
Id:int
Care_id:int
Photo:photo
Photohour:time
Date:date
Reply:List<reply>
1
Aggregation
1
*
Question
Id:int
Description:string
Answer:List<string>
Answerpoints:List<int>
Inherits
Caregiver
SetPhotoHour(Calendar:Photohour)
1
Aggregation
Aggregation
*
Reply
Question_id:int
Answer:string
Answerpoints:int
*
Manages
Admin
Email:string
Password:string (hash)
PhoneNumber:int
AccessDatabase(Users: List<user>, list<Caregiver> list<question>, list<calendarDay>, list<care>)
CreateUser(user:User)
CreateAdmin(admin:Admin)
DeleteUser(user:User)
AddQuestion(question:Question)

4. System prototype

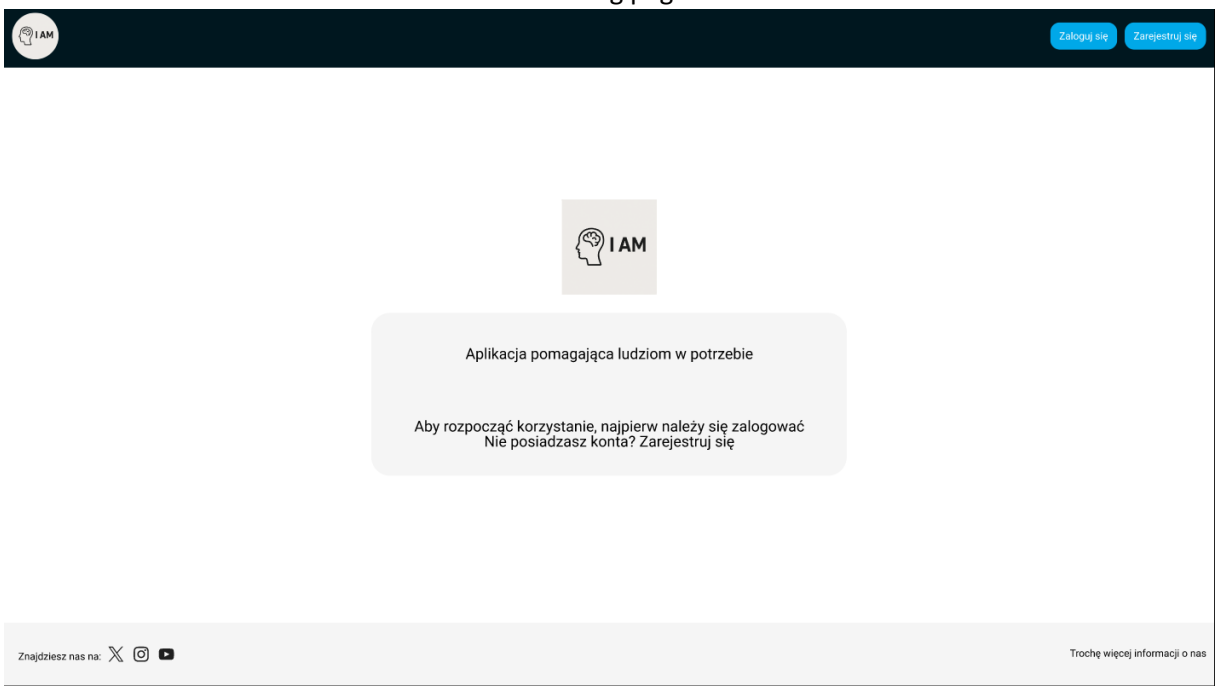
4.1. Graphic design

Figma file:
https://www.figma.com/design/xIKudkHJeGUSQOuqbxDKKl/I-AM?node-id=0-1&p=f&t=Nbpj8Oj7FLrOX0DC-0

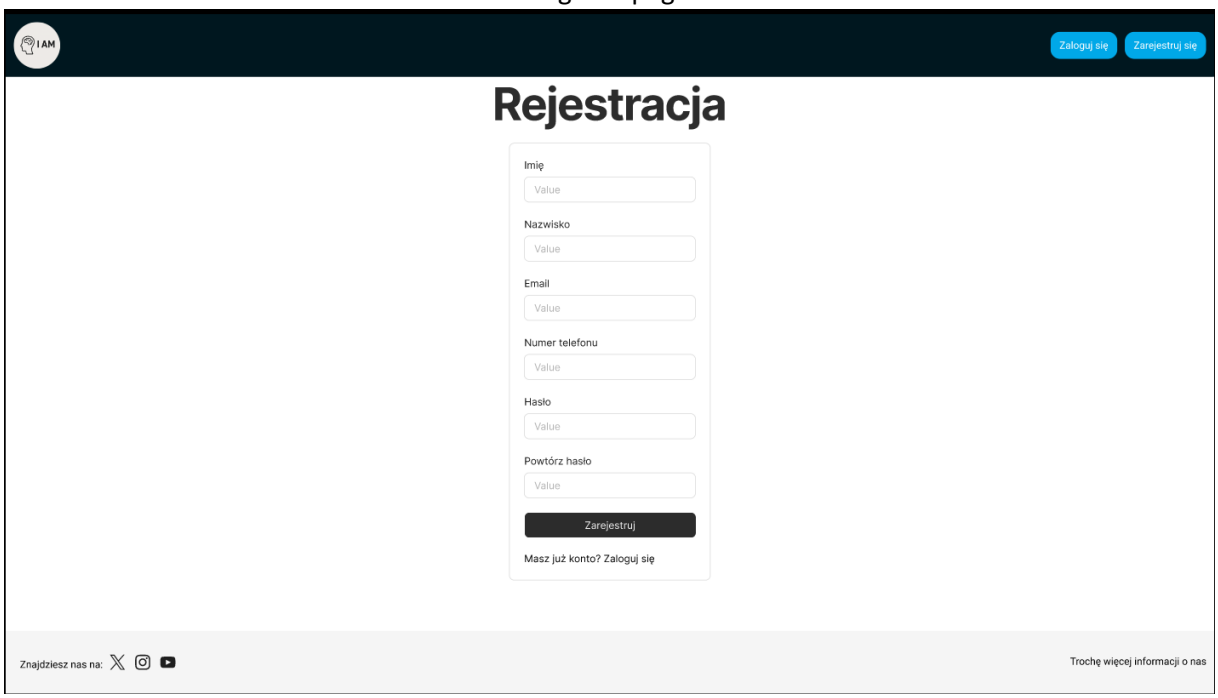
Prototype:
https://www.figma.com/proto/xIKudkHJeGUSQOuqbxDKKl/I-AM?node-id=7-458&t=AOnMVWqpDxrpT1D4-1&scaling=scale-down&content-scaling=fixed&page-id=0%3A1&starting-point-node-id=13%3A532

Print screens of the prototype application:

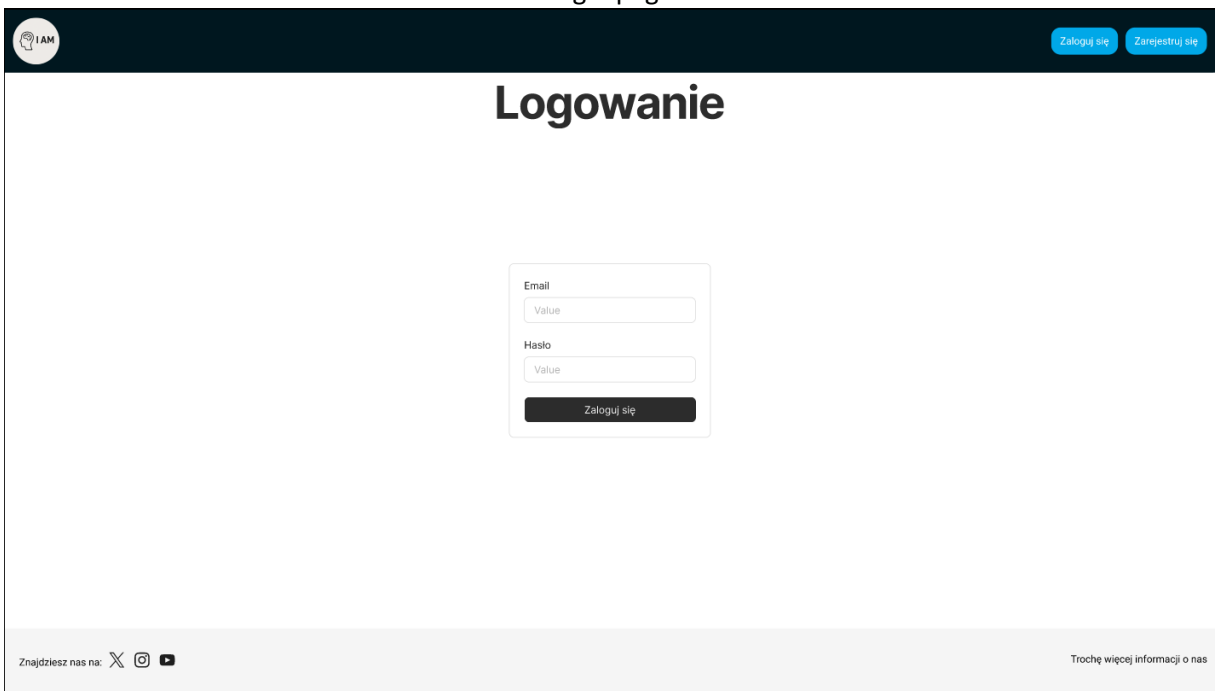
Landing page



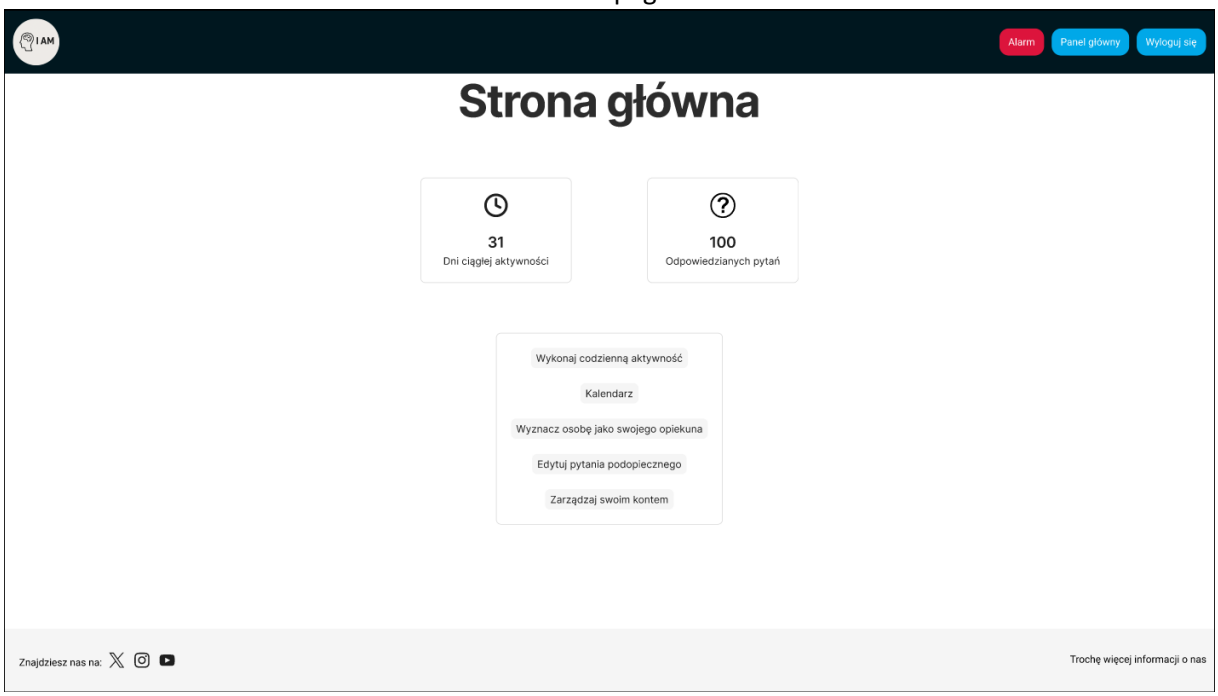
Register page



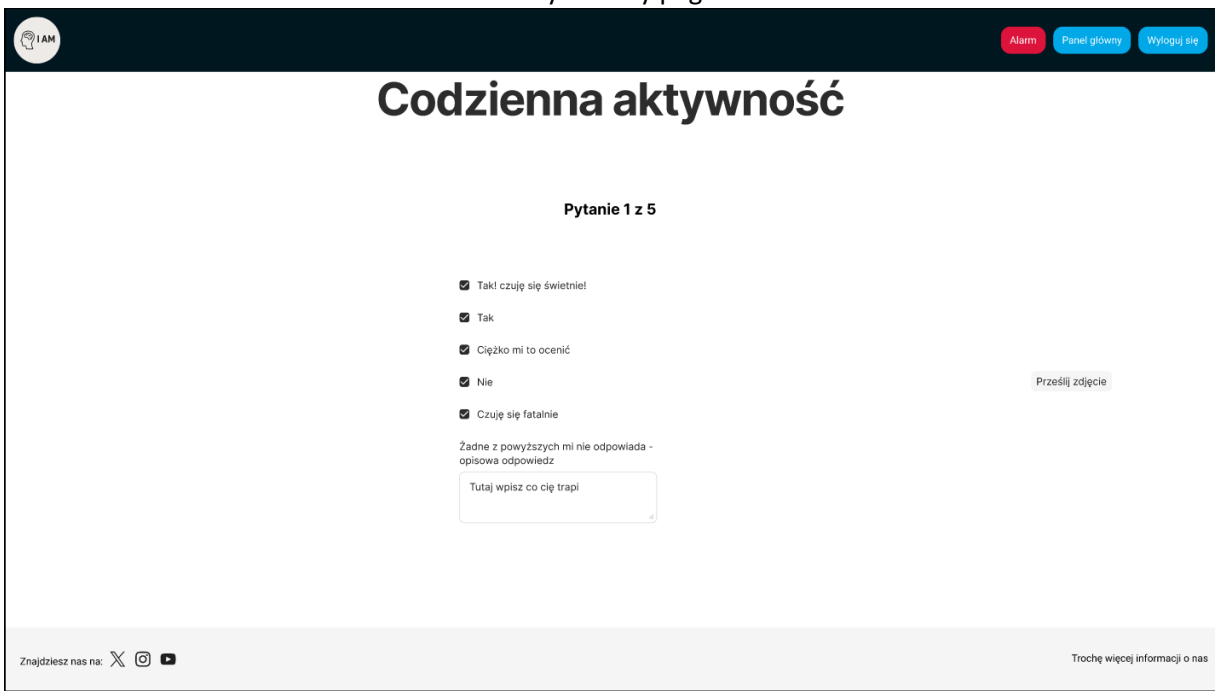
Login page



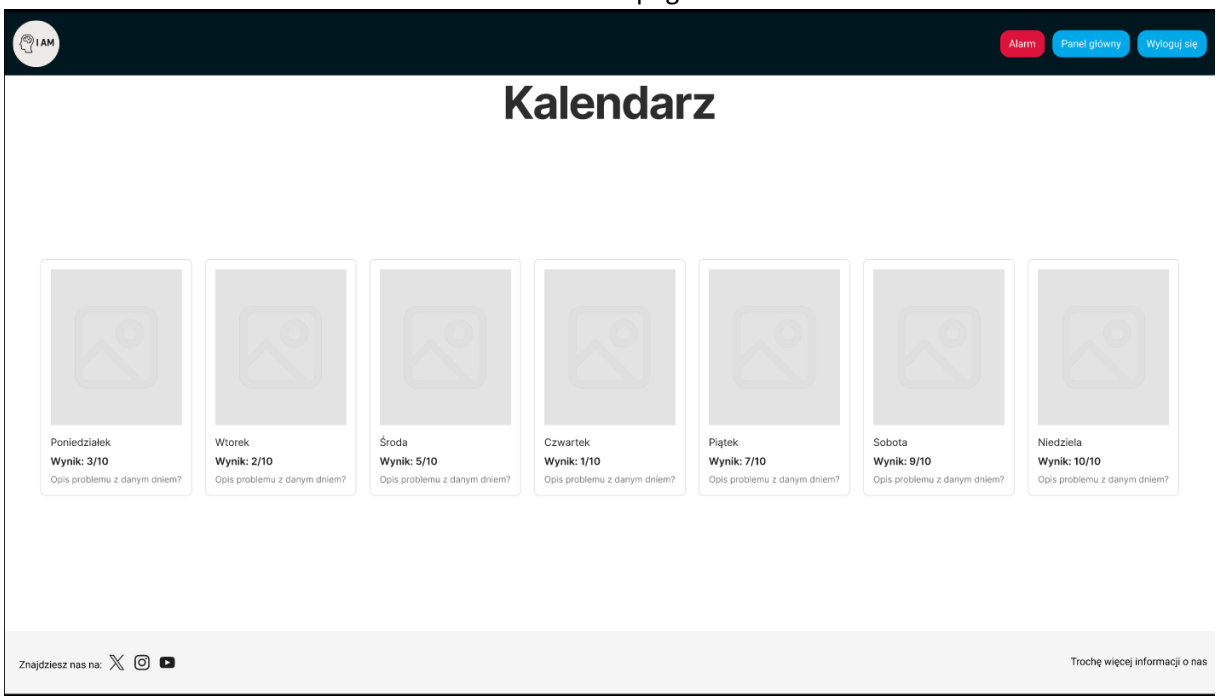
Main page



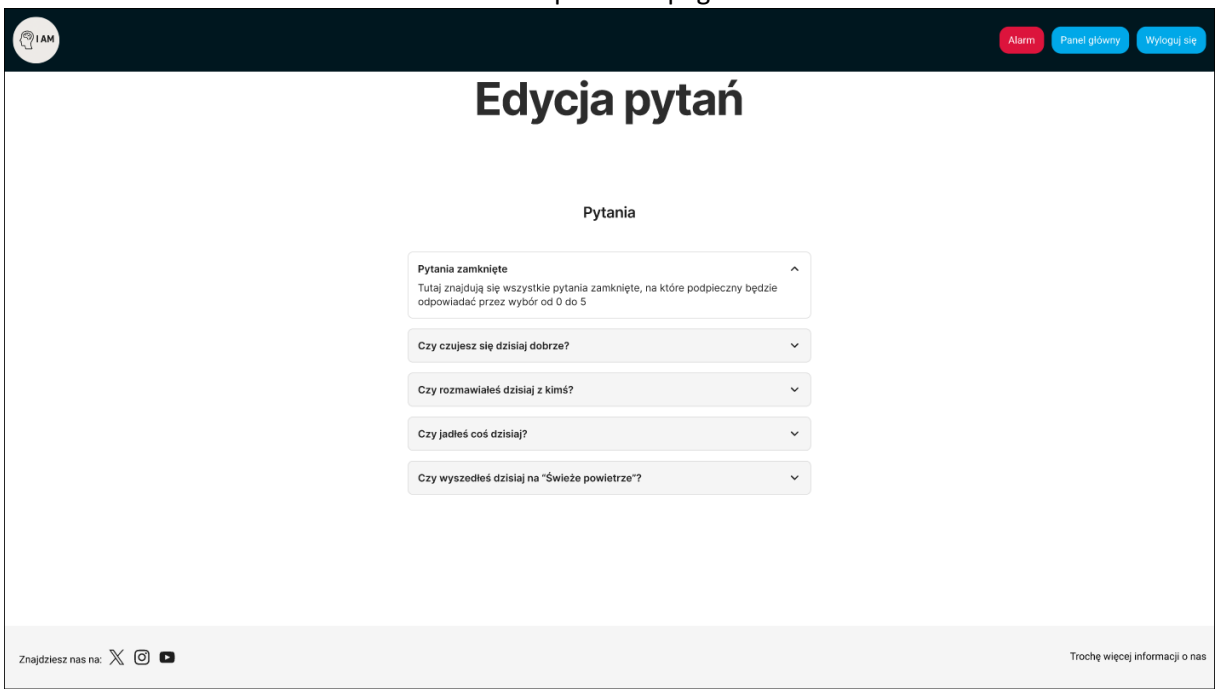
Daily activity page



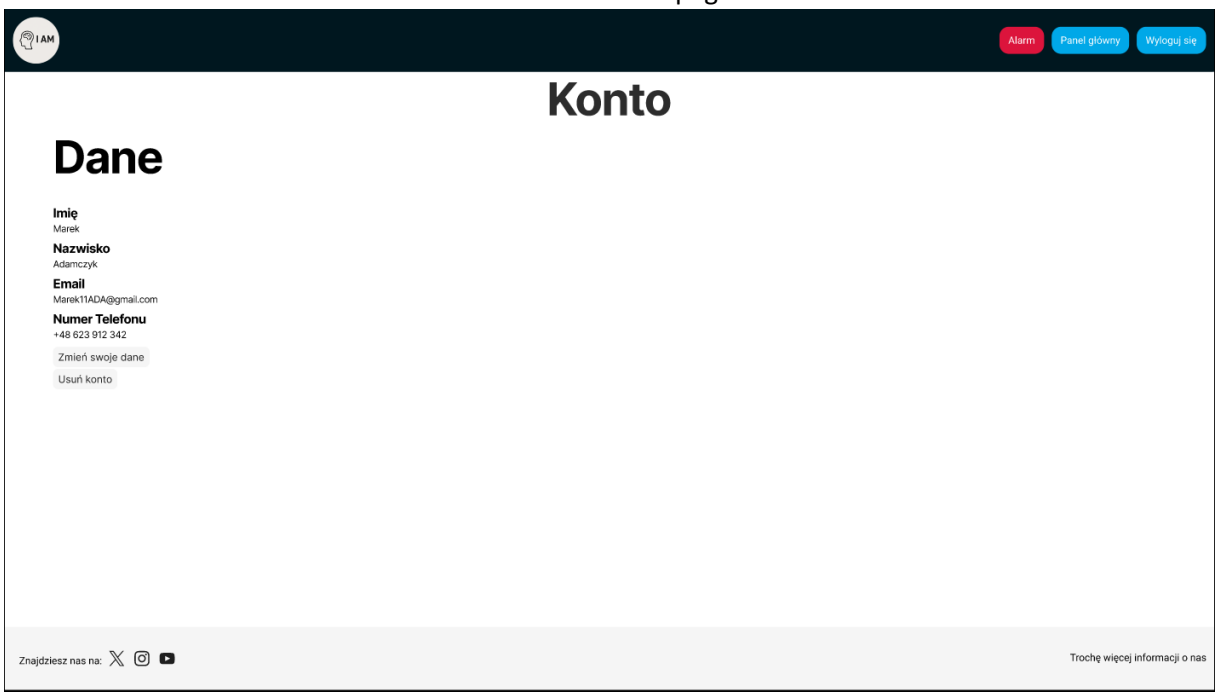
Calendar page



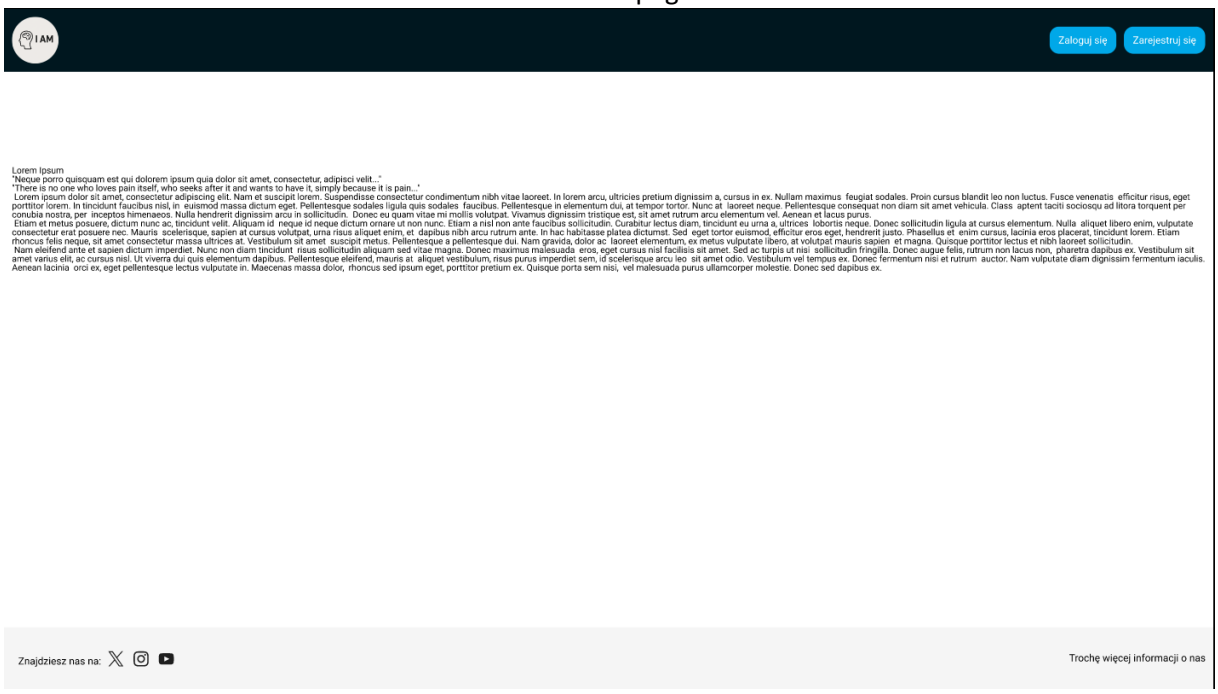
Edit questions page



Account details page



About us page



4.2. Technology used for the implementation

Programming Language: *C#, HTML, CSS, Java Script*

Framework: *ASP.NET MVC*

.NET Version: *.NET 8.0*

Database: *Firebase*

ORM Tool: *Entity Framework Core, ASP.NET Core Identity*

Other Libraries: *Bootstrap, jQuery, Figma*

IDE Environment: *Visual Studio 2022*