

# BodyBuddy

**Team Name: Cre8**  
**WMDD - 4980 Project 2**

**Designers**

Calvin Tsai (Lead)  
Jason Yang  
Liezcel Sagayadoro  
Trang Nguyen Thuy  
Viola Sun

**Developers**

Vinicius Souza (Lead)  
Cocoy Suguitan  
Terumasa Mori  
Yosuke Hanaoka (PM)

**snə́weyə́t lelə́m.**

THE COLLEGE OF HIGHER LEARNING.

**Langara.**

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# Project Overview

BodyBuddy is an AI-powered fitness web platform for people who want to exercise in their own homes or on the go, at their own pace. The platform offers an effective fitness experience without the need for a gym or personal trainer and without the worry of time and location constraints. The AI analysis checks your form in real-time, ensuring correct posture for a safe and effective workout. It also helps you create personalized workout plans based on your fitness level and goals. Plus, the progress dashboard keeps you motivated, making it easier to stay on track and maintain a regular workout routine, even when exercising alone!

# Main Features

## Guided Workout through Motion Tracking

Real-time feedback on exercise form through motion tracking helps users correct improper movements, prevent injury, and ensure effective workouts by maintaining proper form.

We use machine learning models to detect posture in real-time from webcam footage, tracking the coordinates of 33 body points. Based on this positional data, the system evaluates the user's movements by calculating joint angles and other key metrics during exercises, supporting users.

The tracked joint angles are displayed through an overlay, which also includes real-time updates on the key metrics, correctional cues, and an exercise demonstration from the demo library.

## Exercise Demo Library

This library offers exercise demonstrations that focus on correct form and common mistakes. It also provides knowledge about exercises targeting specific muscle groups to help users improve their movements.

The exercises within the library are displayed in a list of cards, which can further be sorted by muscle groups as well as by goal. When the user selects an exercise they want to learn more about, they are brought to another page which shows a demonstration video of the exercise, along with written instructions on how to best perform the exercise. The individual exercise page also gives the user the option to practice the movement.

## Data Visualisation of User Workout Progress

Visually displaying workout history, achievements, and progress toward goals helps maintain user motivation and supports goal achievement by tracking growth.

To help maintain user motivation, the system uses generative AI to suggest personalized workout routines and schedules tailored to the user's goals,

exercise frequency, and preferences, helping to create plans that align with their individual needs.

From the dashboard, the user can view their personal growth over various lengths of time through an interactive chart. Users can also view the complete details of each workout they've done, along with video recordings of each session they've chosen to record, in the history section of their profile. Users can also see all the achievements and badges they've earned in the Wall of Fame, which can be accessed through both the dashboard and their profile.

# Data-Driven Feature

BodyBuddy leverages a comprehensive set of data to offer personalized workout experiences and track user progress in real-time. The data is primarily divided into two categories: **user-provided input data** and **real-time data** generated during workouts. These data points allow BodyBuddy to dynamically tailor workout routines and provide meaningful insights, enhancing the user's fitness journey.

## Types of Data Sources

BodyBuddy's data sources can be categorized into two main types:

- **User-provided input data:** This refers to user-provided information such as profile details (age, gender, goals, workout schedule) and exercise preferences.
- **Real-Time data:** During workouts, various metrics are captured, including posture information derived from machine learning models tracking the coordinates of 33 body points. Additionally, workout data such as sets, reps, calories burned, and overall progress are recorded.

Both input and real-time data are continuously updated based on the user's interaction with the app, ensuring that the information is always up-to-date and reflective of the user's ongoing fitness progress.

## Data Interaction and User Engagement

BodyBuddy's data evolves in real-time, continuously reflecting changes in user behavior and performance.

As the user updates their profile (age, weight, fitness goals), the AI selects exercises that match the user's preferences and customizes the program. During workouts, BodyBuddy tracks key metrics like posture, workout duration, sets, reps, and calories burned.

For posture detection, BodyBuddy utilizes a model provided by Google's well-established MediaPipe framework. This model monitors the coordinates of 33 body points to provide real-time feedback. For example, if a user bends their knees excessively during an exercise, BodyBuddy immediately notifies them to correct their form, helping them maintain proper technique.

MediaPipe also offers flexibility for future customization, allowing BodyBuddy to refine the model using its own data. After each session, these metrics are automatically updated to give users a detailed view of their performance and progress.

## **Relevance to User Experience**

The data-driven approach ensures that users can effectively reach their fitness goals. BodyBuddy provides real-time insights into performance, helping users adjust their routines as needed. Posture feedback guarantees safe and effective workouts, while visualized metrics keep users motivated by highlighting progress and achievements. This continuous, personalized feedback loop makes workouts more engaging and helps users stay on track.

## **Data Privacy and Security**

BodyBuddy takes user data privacy seriously. All data transfers between the client and the server are encrypted using HTTPS, ensuring that sensitive information is securely transmitted. The platform employs JWT-based authentication, ensuring that only authorized users can access their profile and workout data. While Supabase handles the backend data management, strict access controls are enforced, aligning with industry-standard security practices.

# Competitive Analysis

						
Application	BodyBuddy	Tempo Move	JAXJOX	Freeletics	FitOn	Fitness AI
	BodyBuddy offers an adaptive, personalized training program that tracks user progress. It provides guided workout by motion tracking, providing real-time cues and corrections. It's designed for casual users and beginners who want to start exercising at home.	Tempo uses 3D sensors and motion tracking to guide users through strength training and HIIT workouts, offering real-time form feedback and adjustment suggestions. Tempo's motion-tracking focus on real-time cues and joint alignment.	JAXJOX integrates smart equipment with its app to offer guided workouts, tracking metrics like repetitions, power, and heart rate. It provides real-time feedback on form and performance through its smart technology, targeting home fitness enthusiasts interested in strength and cardio training.	Freeletics offers AI-driven, personalized workout plans tailored to users' goals and fitness levels. It includes video tutorials and focuses on home-based, bodyweight exercises.	FitOn provides free workout plans with guided video exercises that target different fitness goals. It uses a mix of celebrity trainers and AI-powered customization to offer users a flexible fitness experience at home. FitOn is tailored to casual users.	Fitness AI offers personalized strength training plans driven by machine learning, focusing on optimizing hypertrophy and performance improvements. Unlike other apps, it doesn't include video demonstrations, relying on text-based guidance instead.
Guided Workouts by Motion Tracking	Motion tracking through laptop's camera	3D motion tracking system	Smart equipment with motion tracking			
Exercise Video Library	Video demonstrations for various exercise	Strength, HIIT, and cardio focused	Library synced with smart equipment	Extensive video tutorials	Large library with celebrity trainers	Focuses on text-based guidance
Tracking User Workout Progress	Track workout progress	Real-time feedback and tracked metrics	Tracks performance metrics like reps, power, heart rate	Tracks progress via app	Progress tracking within the app	Tracks workout metrics and progress
Personalized Workout Plan	AI-powered plans based on goals and fitness level	AI-driven and adjusted based on progress	AI-driven with focus on strength and cardio	AI-powered plans based on goals and fitness level	AI-driven, adjusts based on user input	AI-driven based on strength and hypertrophy data
Record Workout Sessions	Self-record during exercise for user sharing & review progress					

# User Personas

## Power User



**Jane Lee**

**Age:** 34  
**Occupation:** Marketing Coordinator  
**Location:** Vancouver

Jane is a busy marketing professional. She wants to have a healthy lifestyle. So she always tries hard to establish a routine of working out to stay healthy and energetic, but among work and family responsibilities, she struggles to find time to do so. Even when sometimes she finds a way to start, it's hard to stay consistent, which makes her feel "losing control of her own life". Jane prefers working out at home, where she can enjoy the flexibility of her schedule while following guided instructions to avoid injury and ensure she's doing exercises correctly.

### Motivations

- Stay healthy and energized.
- The convenience and flexibility of working out and the peace of mind that she won't get hurt.
- Tools or support to see her progress and stay on top of her fitness goals.

### Goals

- Establish a consistent workout routine that she can follow without needing to go to a gym.
- Stay healthy and avoid injuries while working out.
- Build stamina and strength while tracking her progress over time.

### Frustrations

- Feels unsure about her workout techniques and sometimes experiences discomfort due to improper form.
- She is often discouraged by a lack of immediate feedback or progress tracking, leading to inconsistent fitness efforts.
- Time limitations due to work and family responsibilities.

### Habits

- Works out at home a few times a week when she can find time, but consistency is a challenge.
- Occasionally follows online workout videos but is unsure if she's doing the exercises correctly.
- Tends to lose motivation when she doesn't see immediate results.

## Average User



**Johnathon Williams**

**Age:** 63  
**Occupation:** Retiree  
**Location:** Calgary

As a health enthusiast seeking low-impact workouts, Johnathon committed to improving his physical and mental well-being. With a focus on safety and enjoyment, he is eager to discover effective home exercise routines that he can incorporate into his daily life. He believes in the power of regular exercise to build strength and boost overall health. While he enjoys working out independently, he is also open to sharing his fitness journey with friends and connecting with a supportive community.

### Motivations

- Stay healthy and build strength
- Share daily workout to family and friends
- Find enjoyment in exercise and make it as a habit

### Frustrations

- Minimal equipment
- Can't do intense exercise
- Lack of knowledge about working out at home

### Goals

- Have a low-impact exercises plan tailored for him
- Need some easy-to-follow instructions for workout
- Avoid injury and consider physical limitations
- Increase mobility and flexibility so he can reduce stiffness and improve movement

### Habits

- Do exercise Regularly
- Chat with friends

## Casual User



**Sophia Smith**

**Age:** 21  
**Occupation:** College Student  
**Location:** Edmonton

Sarah, a 21-year-old college student, prefers to keep her workouts simple and flexible. She's not into intense gym sessions but likes to stay active by incorporating short, easy exercises into her routine. Whether it's a quick walk, a short stretch, or bodyweight exercises in her apartment, Sarah uses the app to track her daily activity. She focuses on burning calories and maintaining streaks to stay consistent without taking too much time out of her day. The app helps her fit in quick workouts between studying while tracking her progress through exercise streaks and form accuracy for better results.

### Motivations

- Track calories burned to monitor activity levels
- Stay Healthy
- Improve form accuracy and overall performance

### Frustrations

- Limited space because I only have a small space in my apartment
- Limited time to do exercise workout because of doing some school commitments

### Goals

- Keep myself motivated
- Burn a set number of calories per day for better health maintenance
- Maintain Good Health

### Habits

- Go for a walk
- Short exercises

# Project Milestones

## Design Plan

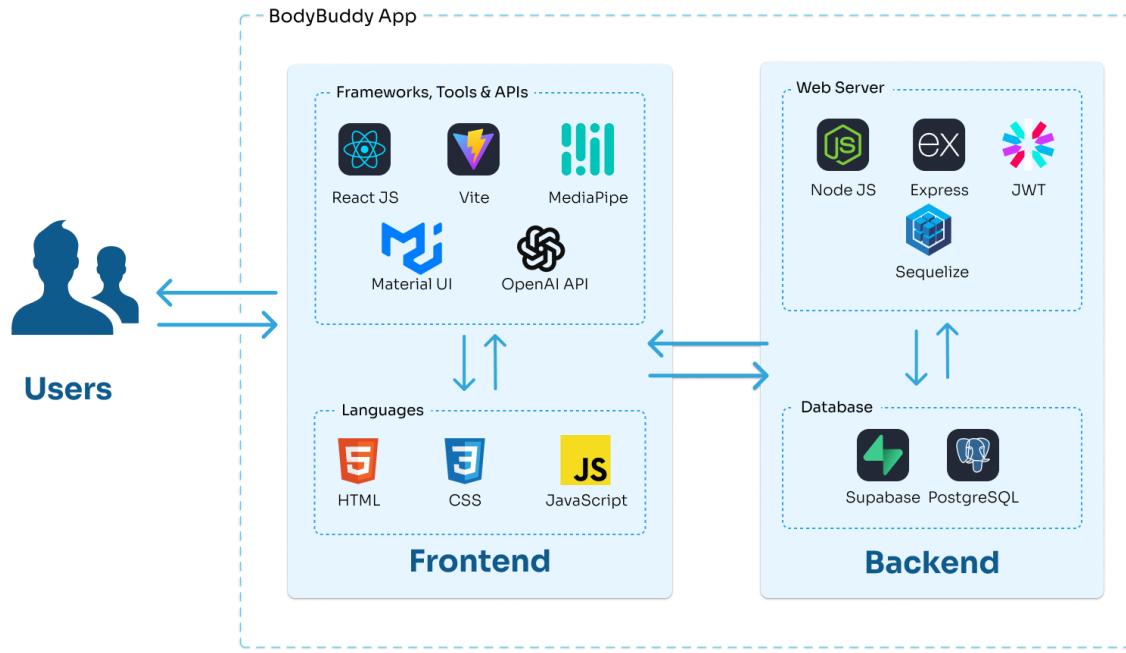
<b>Week 1</b>	Brainstorm & Research Ideas
<b>Week 2</b>	Design Workshop, Market Research, Personas
<b>Week 3</b>	User Journey, User Flow, Branding Research
<b>Week 4</b>	Branding Assets, Wireframes, UI Kit
<b>Week 5</b>	Wireframes Revised, Mockups, UI Kit Revised
<b>Week 6</b>	Mockups Refined, Prototype Planning, UI Kit Lockdown
<b>Week 7</b>	Prototype Main Features
<b>Week 8</b>	Full Functional Prototype
<b>Week 9</b>	Usability Testing
<b>Week 10</b>	Social Marketing Strategy and Assets
<b>Week 11</b>	Print Ready Promotional Materials
<b>Week 12</b>	Pitch Finalized, Presentation Dry Run
<b>Week 13</b>	Final Presentation

# Development Plan

<b>Week 1</b>	Brainstorm & Research Ideas
<b>Week 2</b>	Technical Research, Tech Stack Definition & GitHub Repository Setup
<b>Week 3</b>	Backend Configuration (Server, Database & APIs)
<b>Week 4</b>	Pages, Routes, Basic Components, Authentication, & Data models
<b>Week 5</b>	Exercises Library, Single Exercise Session, & UI Implementation
<b>Week 6</b>	Program Generation & Data Visualization
<b>Week 7</b>	Program Completion & Finish UI Implementation
<b>Week 8</b>	Alpha Build
<b>Week 9</b>	Voice Feedback, Session Recording, Bug Bashing & Optimization
<b>Week 10</b>	Beta Build
<b>Week 11-12</b>	Bug Bashing & Optimization
<b>Week 13</b>	Final Presentation

# Technical Overview

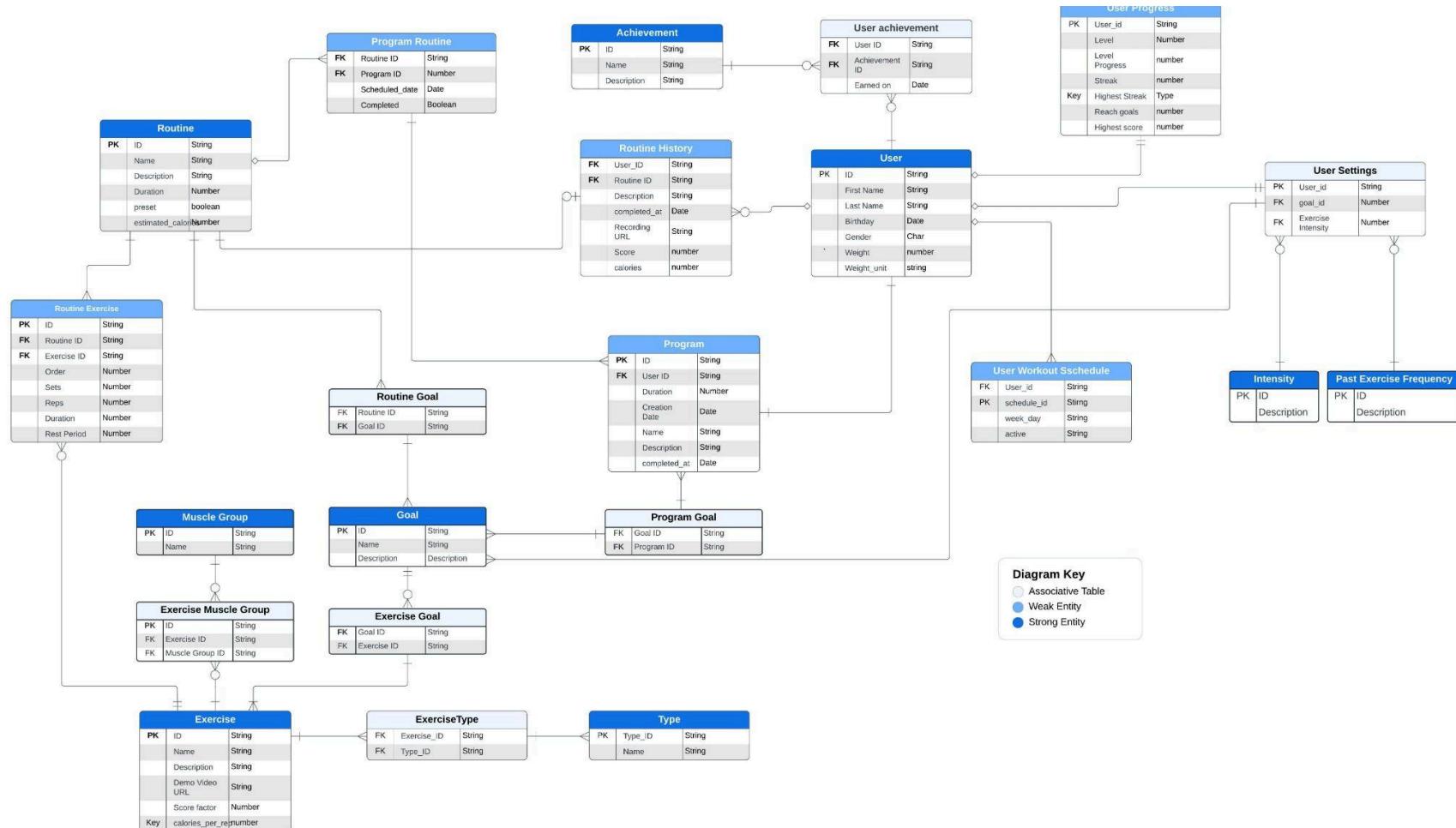
## Tech Stack / System Architecture



## API Endpoint

To be updated.

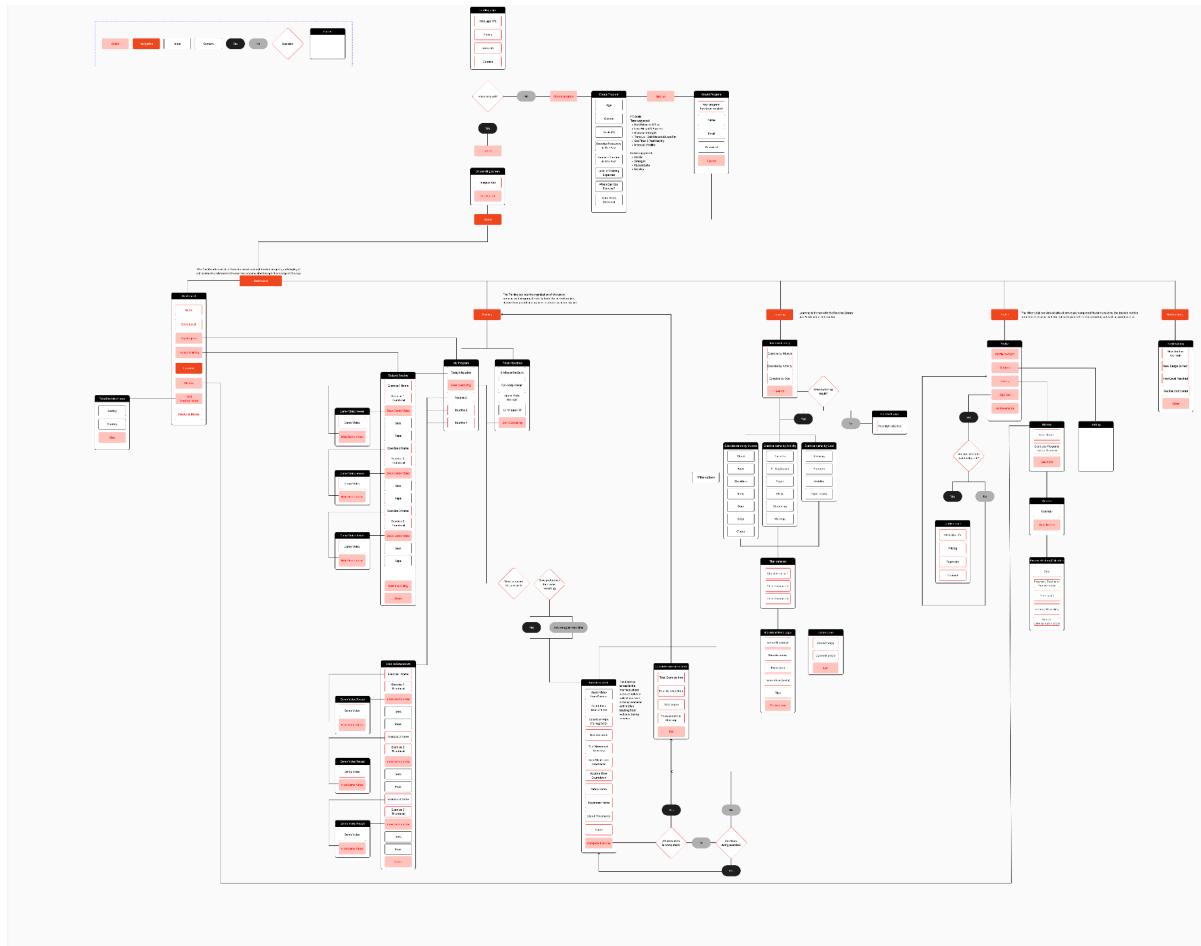
# Data Model



# User Flow, Wireframes, Mockups, & UI Kit

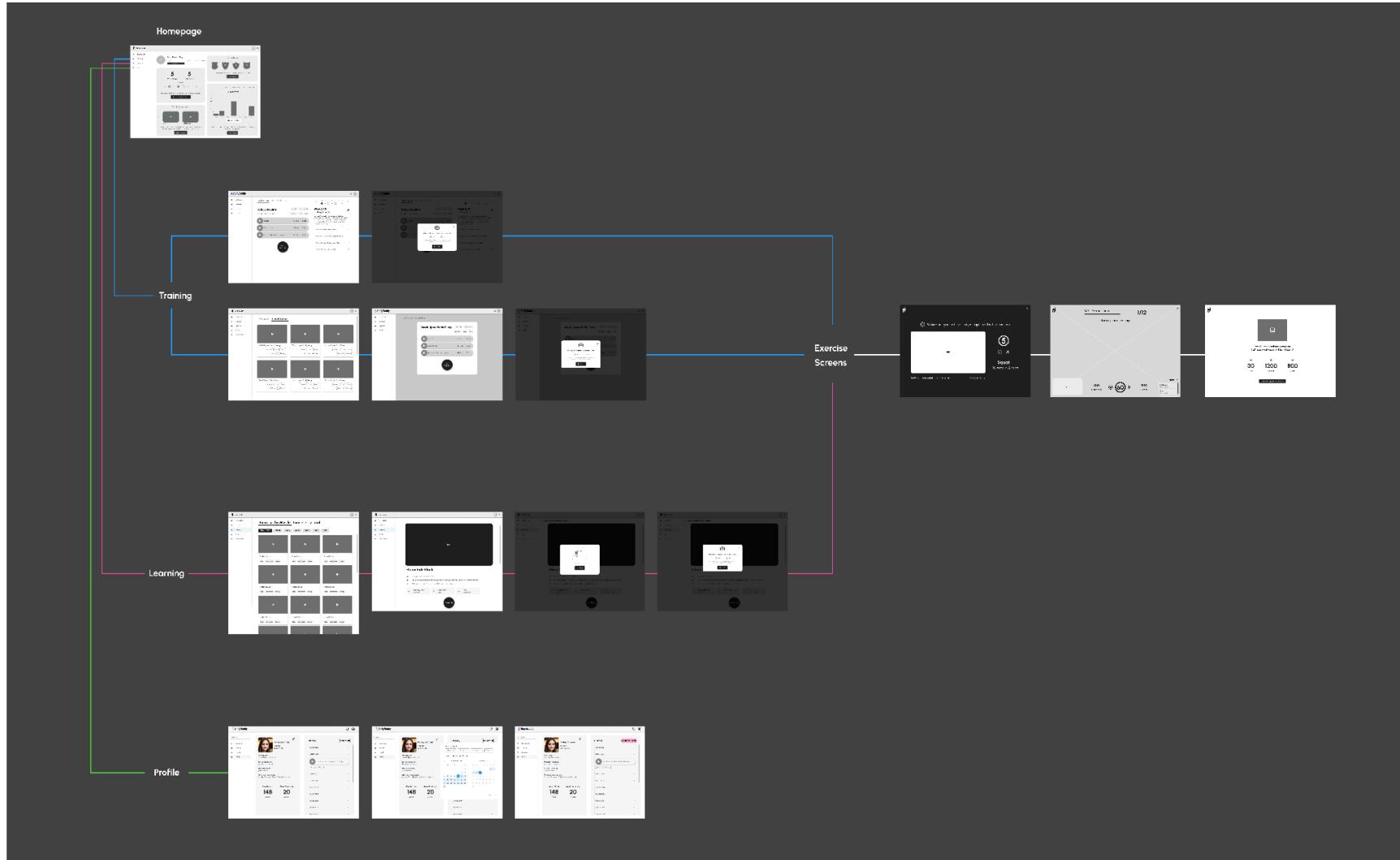
## User Flow

[User Flow Figma Link](#)



# Wireframes

[Wireframes Figma Link](#)



# Mockups

[Mockups Figma Link](#)

## Sign Up & Log In



## Dashboard

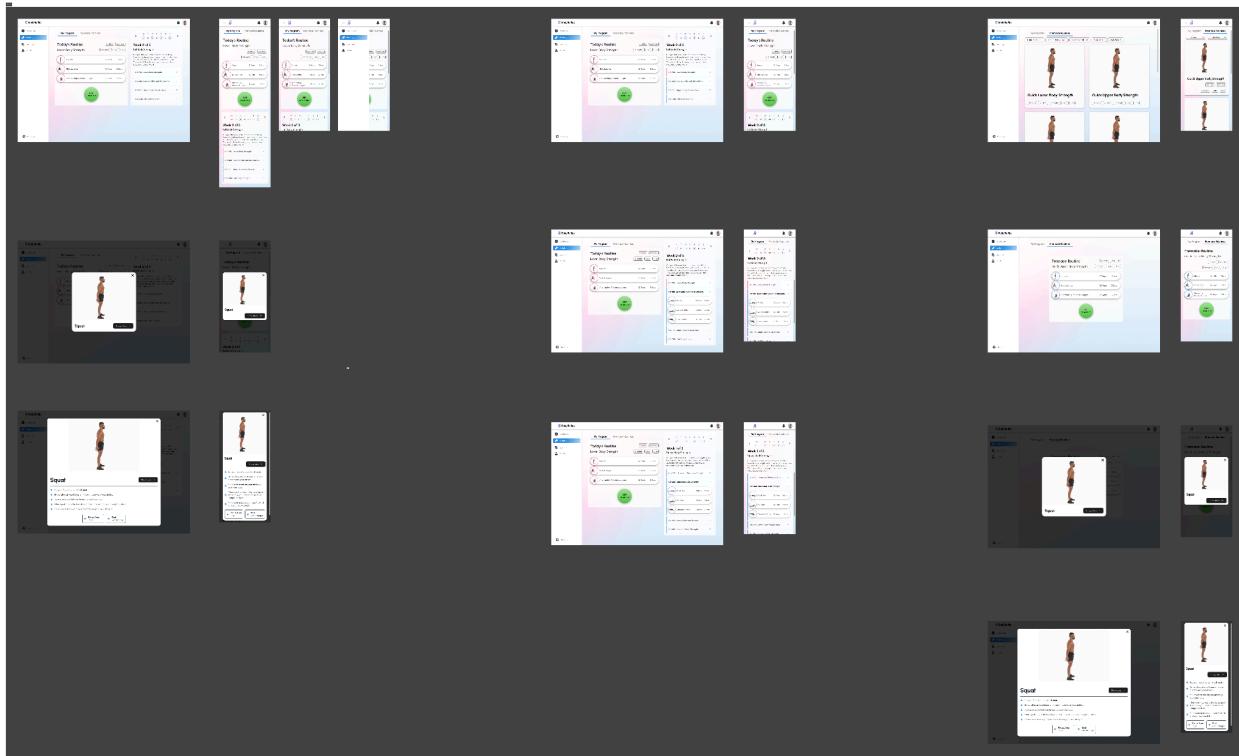
**Left Dashboard (User at Level 2):**

- User Profile:** Trang Nguyen Thuy, Level 2, 500/1200 points.
- Streaks:** Week Streaks: 5, Best Streaks: 5.
- Exercise Log:** Total 500 min (Oct 7, 2024 - Oct 3, 2024). Bar chart shows activity distribution by day: Mon (10 min), Tue (20 min), Wed (10 min), Thu (80 min), Fri (40 min), Sat (500 kcal), Sun (50 min).
- Wall of Fame:** Keep up with your exercise plan to earn new surprises. View All.
- Today's Routine:** Exercise at least 3 times a week to keep your streak not reset.
- Start Learning:** Your favourite moves: Squat, Squat, Side Lunges.

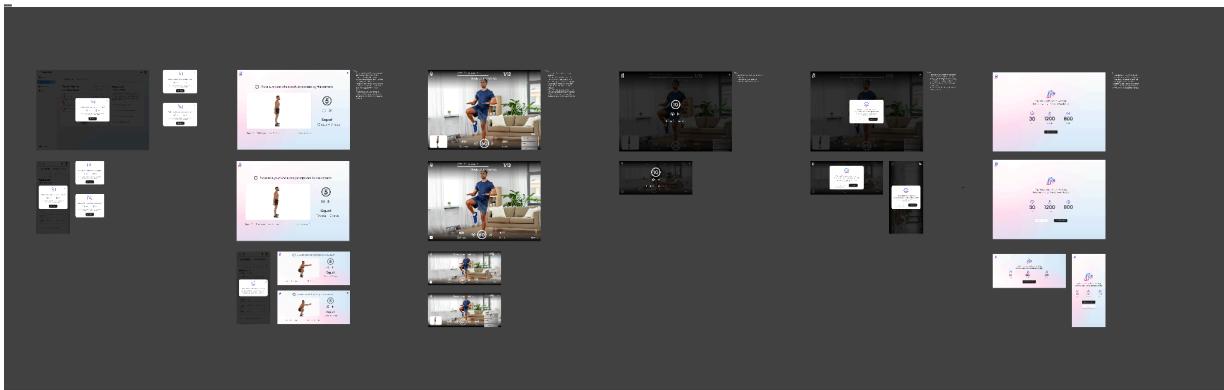
**Right Dashboard (User at Level 2):**

- User Profile:** Trang Nguyen Thuy, Level 2, 700/1200 points.
- Streaks:** Week Streaks: 5, Best Streaks: 5.
- Exercise Log:** Total 500 min (Oct 7, 2024 - Oct 3, 2024). Bar chart shows activity distribution by day: Mon (10 min), Tue (20 min), Wed (10 min), Thu (80 min), Fri (40 min), Sat (500 kcal), Sun (50 min).
- Wall of Fame:** Keep up with your exercise plan to earn new surprises. View All.
- Today's Routine:** Exercise at least 3 times a week to keep your streak not reset.
- Start Learning:** Your favourite moves: Squat, Side Lunges.

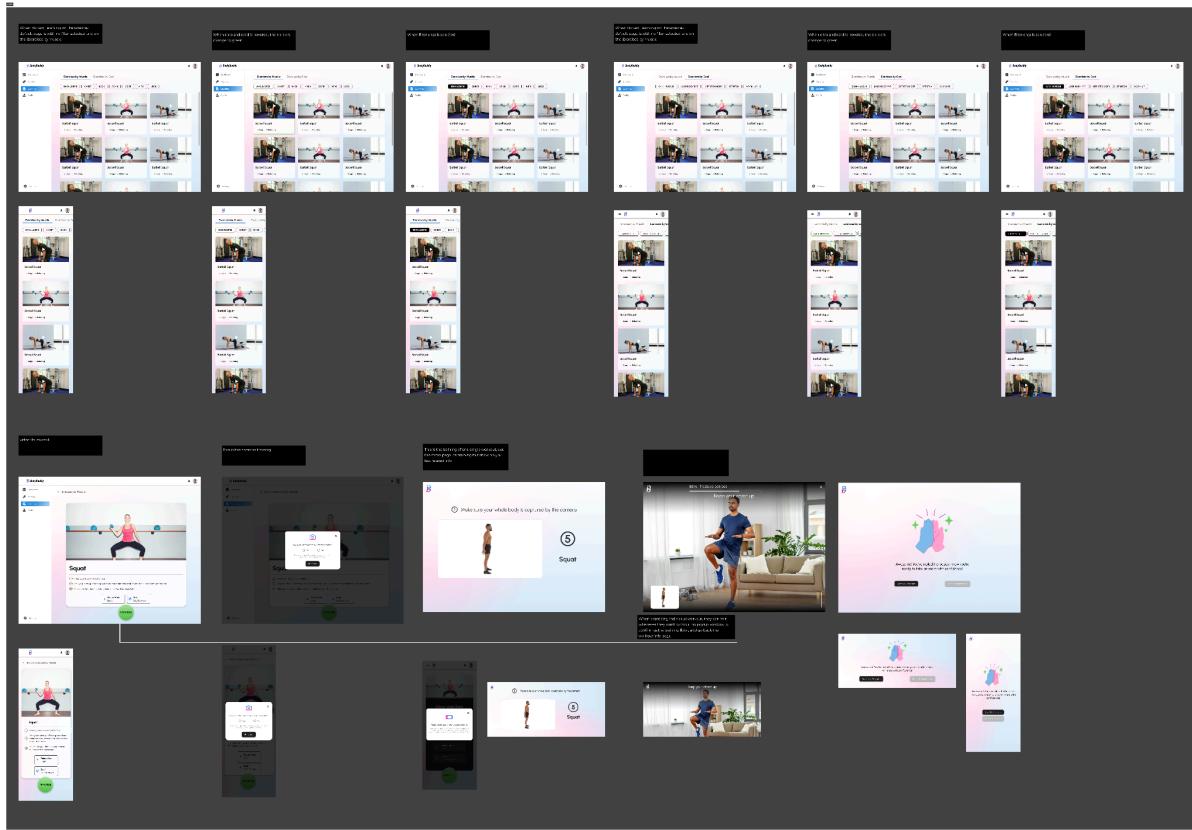
## Training



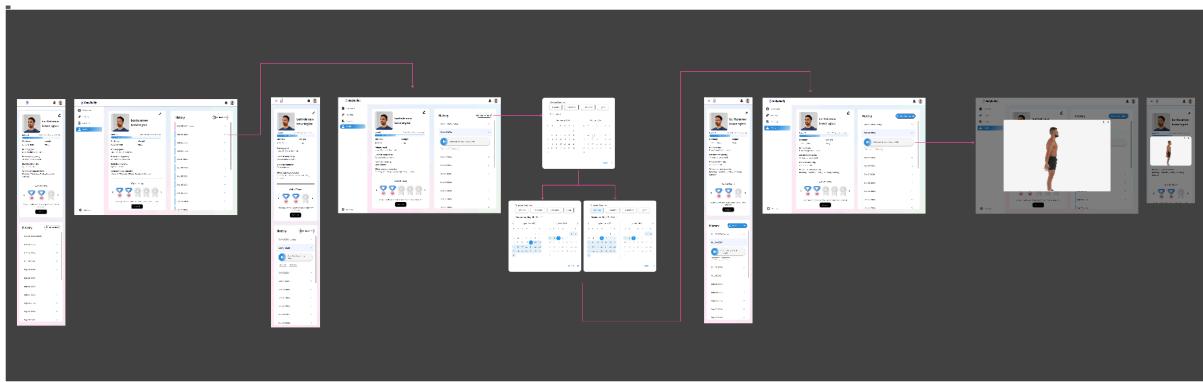
## Exercise Screens



## Learning

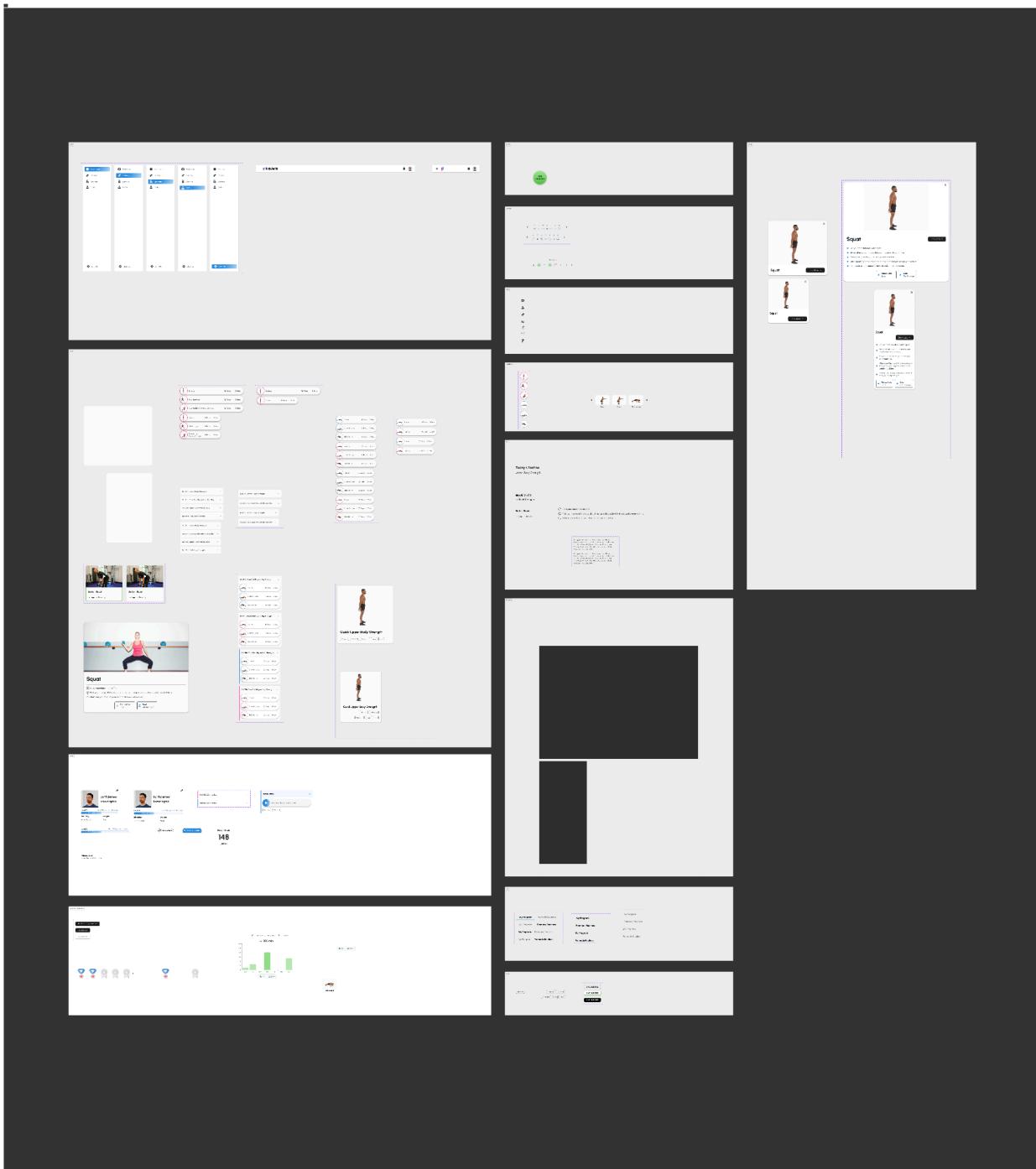


## Profile



# UI Kit

[UI Kit Figma Link](#)



# **Business Strategy**

To be updated.

# Future Roadmap

To be updated.

# Meet the Team



**Calvin Tsai**

Lead Designer / UI/UX Designer

<https://www.linkedin.com/in/calvin-tsai-96717832a/>

Calvin is transitioning from Digital Marketing to UX Design, with a background in Psychology from UC Irvine. His responsibility as the design lead is to guide our team to create polished deliverables for our developers, establish powerful branding, and develop a comprehensive UI Kit.



**Jason Yang**

UI/UX Designer

<https://www.linkedin.com/in/jasonyang21656/>

With over 5 years of experience as a UI/UX Designer in Taiwan, he remains passionate about the field, with a current focus on AI for UX design. In this project, he will support the design team by applying my experience and be responsible for partly UI/UX design work.



**Liezcel Sagayadoro**

UI/UX Designer

Liezcel has a degree in Computer Engineering with 5 years of experience as a Data Processing Associate in the Philippines; now, she has decided to focus on the field of Design. In this project, she will support UI/UX Design and manage data to create features that accurately store and analyse information, ensuring a smooth user experience.



### **Trang Nguyen Thuy**

Co-Project Manager / UI/UX Designer

<https://www.linkedin.com/in/trang-nguyen-thuy-18b2b1107/>

Trang has a marketing degree and five years of experience in brand marketing. Now, she is transitioning into product design, applying her skills to create user-centred solutions that align with business goals. In this project, together with other designers, she is responsible for design-related tasks from research to final design and testing.



### **Viola Sun**

UI/UX Designer

<https://www.linkedin.com/in/viola-sun-29a2902ab/>

Viola transitioned from translator to UX writer to UX designer, gaining a versatile skill set that helps her understand user needs and create intuitive, impactful designs. She's always been an advocate for end-users, championing their needs throughout her journey. In this project, She is the UX and UI designer responsible for related tasks from the early user research to the final deliverables.



### **Vinicius Souza**

Lead Developer / Full Stack Developer

<https://www.linkedin.com/in/vinicius-abner/>

Vinicius has over 5 years of software development experience and around 3 years of web development experience. In this project, he's a full-stack developer and the development lead.



### **Cocoy Suguitan**

Full Stack Developer

<https://www.linkedin.com/in/cocoysgl/>

Cocoy holds a degree in Fine Arts and has over 10 years of experience as a multidisciplinary designer, specialising in UX, UI, visual identity, and

interaction design. He enrolled in the WMDD developer stream to enhance his design expertise with development skills. In this project, he will support the development team as a front-end developer.



**Terumasa Mori**

Full Stack Developer

<https://www.linkedin.com/in/terumori/>

Terumasa has around 5 years of graphic design experience. Now he has been learning in the WMDD developer stream to build and grow development skills. In this project, he's in the development team as a member for the frontend development part.



**Yosuke Hanaoka**

Project Manager / Full Stack Developer

<https://www.linkedin.com/in/yosuke-hanaoka/>

Yosuke has about 20 years of experience as a Software Engineer and Project Manager in the IT industry since 2004, mainly engaged in the development of financial and electric power-related systems. In this project, he is responsible for backend development as well as ensuring the project is on track as PM.