

Buddoo

Info 3

Project Documentation

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1 Introduction

The name “**Buddoo**” combines the terms “**Bud**” representing a sprout and “**To-do**”. “*Bud*” symbolizes the beginning of growth, potential, new beginnings, and small achievements that gradually develop into something greater. “*To-do*” is a common term referring to structure, goal-setting, and action.

Bud + To-do = Buddoo. A creative and meaningful word formation expressing: “*Every completed task helps something grow.*” Thus, the website becomes a personal progress tracker.

The goal of our project is to make learning easier for everyone by providing a centralized place to **create notes**, **organize tasks**, and **track progress**, enabling users to keep an overview of their accomplishments. This significantly supports motivation and self-organization. Additionally, Buddoo includes an **academic calendar** that allows efficient planning of deadlines and exams.

Our application is not limited to academic use; it also supports **personal development** and **individual growth**, whether through daily planning, goal tracking, or creative note-taking.

2 Requirements

2.1 User Stories

- As a user, I want to log in or register so that my data can be saved locally within my profile for a more personalized experience.
- As a user, I want to save short notes to quickly capture ideas or thoughts.
- As a user, I want to delete tasks or notes I no longer need so I can keep my workspace clean and organized.
- As a user, I want to ensure that my data is securely stored, such as having my password hashed. So I can trust the app with my personal information.
- As a user, I want to start a focus timer to study with concentration.
- As a user, I want to switch between tabs (“Tasks,” “Notes,” “Focus Mode”) to navigate efficiently.
- As a user, I want to use a personal calendar to manage important dates such as deadlines and exams clearly.
- As a user, I want to filter my notes by category to find study material faster.
- As a user, I want to organize my day into morning, afternoon, and evening segments to stay motivated and focused.
- As a user, I want the website to be responsive so that it displays properly on both my laptop and my phone.

2.2 Use Cases

2.2.1 Use Case 1: Add Task to To-Do List

Persona: Mandy (Student)

Scenario: Mandy adds “Write report” to her morning list.

Goal: Keep an overview of academic tasks.

Steps:

1. User clicks “Add Task”
2. Types task + time slot (e.g., morning)
3. Task appears in daily list

Outcome: Task stored in `localStorage` and UI updates

2.2.2 Use Case 2: Check Off Completed Task

Persona: Mark (Parent)

Scenario: Mark checks off “Send school form” after doing it.

Goal: Visual progress and mental relief.

Steps:

1. User clicks checkbox
2. Task is marked as done
3. Completion bar updates

Outcome: Encouragement through visual feedback

2.2.3 Use Case 3: Create and Save Note

Persona: James (Professional)

Scenario: James quickly jots down an idea from a meeting.

Goal: Capture ideas efficiently.

Steps:

1. Click “New Note”
2. Type content
3. Saved instantly in browser

Outcome: No forgotten ideas

3 Design and Implementation

3.1 Technical Decisions

3.1.1 Frontend Development

- **HTML5:** Semantic structuring of the user interface using sectioning elements such as `<section>`, `<article>`, and `<nav>`.
- **CSS3:**
 - Responsive design using Flexbox and media queries.
 - CSS variables used to maintain a consistent design theme (e.g., color palette and spacing).
 - Centralized styling of navigation and layout for global design consistency.
- **JavaScript:**
 - Modular structure using classes for task management, timer, and UI updates.
 - Implementation of a circular Pomodoro timer with real-time DOM updates.
 - Event-driven architecture for task creation, note editing, and timer interactions.

3.1.2 Development Environment

Tool	Purpose
Visual Studio Code	Primary code editor with extensions for HTML/CSS/JS support.
Git	Version control and team collaboration.
GitHub	Remote repository hosting and code backup.
Local Server	Enables local hosting and testing of the website during development.
Local Storage and JSON	Manages client-side data persistence by storing user data in JSON format within the browser.

3.1.3 Data Storage Decision

Initially, we planned to use an external backend service (e.g., Render) to manage persistent data storage. However, due to project complexity and time limitations, we decided to simplify our approach.

Instead, we implemented a local-first solution using the browser's `localStorage` API. All data, tasks, notes, and calendar settings are stored in JSON format directly within the user's browser. This method ensures persistence across sessions without relying on an internet connection or external infrastructure, making the app lightweight and fully functional offline.

3.2 UML Diagram

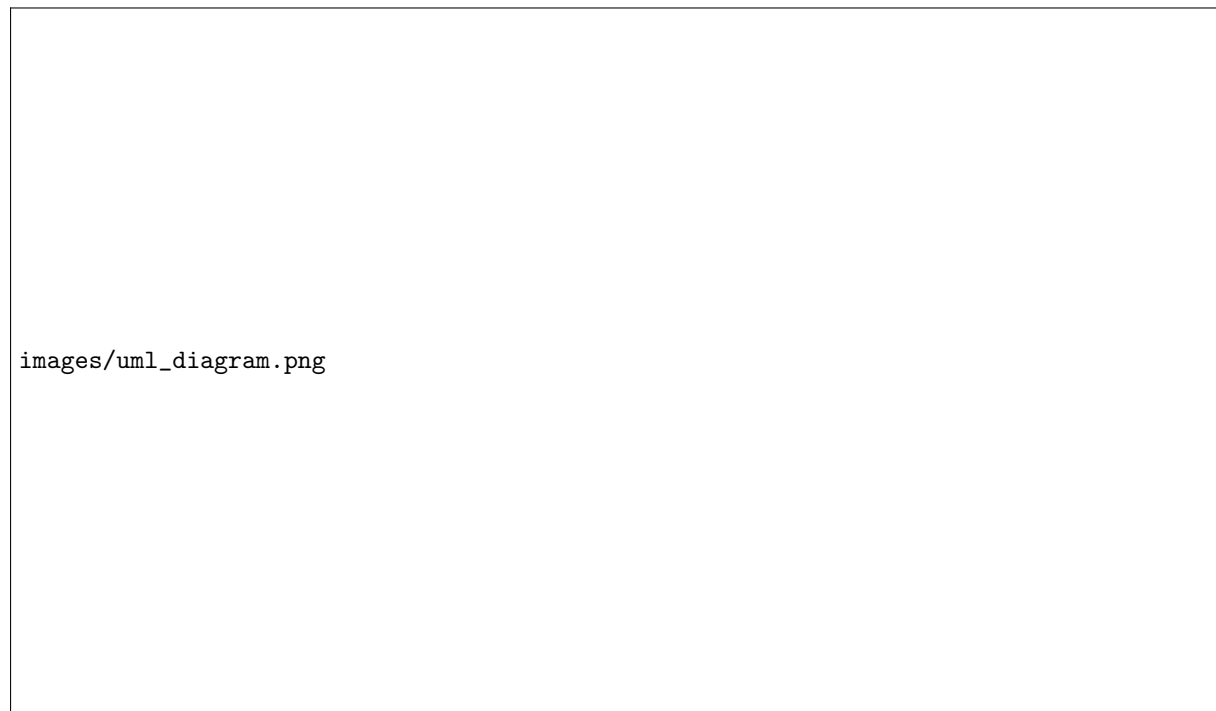


Figure 1: UML Diagram of our JavaScript architecture

4 Summary and Outlook

4.1 What Worked Well

- The transition from Java Swing to a web-based stack significantly improved development speed and design flexibility.
- Core features such as the Pomodoro timer, to-do list, and note-taking were implemented successfully and functioned reliably.
- Local storage was effectively used to preserve user data between sessions.

4.2 What Could Be Improved

- The attempted database integration was not fully realized due to limited experience; backend functionality remains a future milestone.
- Graphical tree visualization did not meet initial expectations and would require further refinement or replacement.
- The UI/UX could benefit from deeper testing and feedback to address accessibility and mobile responsiveness.

4.3 Short-Term Ideas

- Synchronization with external services such as Google Calendar or cloud accounts.
- Implementation of progress statistics (e.g., most productive day/week, streaks).
- User-selectable dark mode and light mode for better accessibility and comfort.

4.4 Long-Term Vision

- Introduction of community features such as shared tasks, collaborative study groups, or public boards.
- Enhanced reward system including animations, achievements, or gamified streaks to encourage long-term usage.

4.5 Next Steps

- Deepen knowledge in backend development to fully integrate database functionality.
- Improve the modularity of the codebase to support future extensions (e.g., calendar sync, themes).
- Conduct usability testing to inform UI/UX improvements.
- Continue iterating on the visual growth mechanic and potentially explore other motivational metaphors.

5 Sprint Diary

5.1 Sprint 0: Concept Phase (until April 24)

Goal:

Develop an initial concept and feature set for the application.

Challenges:

We brainstormed ways to merge note-taking, task management, and event tracking with a Pomodoro timer. Our unique idea was to include a gamified growth mechanic: completion of tasks grows a leaf, while bigger achievements, like exams, grow branches—encouraging long-term engagement.

UML Diagrams

5.2 Sprint 1 (May 8 – May 22)

Goal:

Begin implementation using Java and Java Swing.

Challenges:

We faced difficulties with Java Swing’s rigid UI design. The framework lacked the flexibility and visual fluidity we needed, leading us to consider a transition to web technologies.

5.3 Sprint 2 (May 22 – June 5)

Goal:

Continue developing with Java while evaluating other frameworks.

Challenges:

We found Java Swing increasingly inefficient for our visual and interactive goals. The customization of styling and layout proved cumbersome, prompting a deeper investigation of alternative front-end web development options.

5.4 Sprint 3 (June 6 – June 19)

Goal:

Transition to a web-based tech stack using HTML, CSS, and JavaScript.

User Stories:

- As a user, I want to start a focus timer to study with concentration.
- As a user, I want to switch between tabs (“Tasks,” “Notes,” “Focus Mode”) to navigate efficiently.
- As a user, I want to save short notes to quickly capture ideas or thoughts.

Challenges:

Migrating from Java to a web stack required reworking our structure, but it allowed us to build a cleaner, more responsive interface. We began rebuilding core components with a modern and user-friendly layout.

5.5 Sprint 4 (June 20 – July 3)

Goal:

Finalize the design system and implement the main features.

User Stories:

- As a user, I want to filter my notes by category to find study material faster.
- As a user, I want to use a personal calendar to manage important dates such as deadlines and exams clearly.

- As a user, I want to organize my day into morning, afternoon, and evening segments to stay motivated and focused.
- As a user, I want to delete tasks or notes I no longer need so I can keep my workspace clean and organized.

Challenges:

We established the visual theme, completed core features such as the to-do list, note-taking, and integrated the Pomodoro timer. We attempted to implement a graphical tree visualization, but the result did not meet our expectations.

5.6 Sprint 5 (July 4 – July 17)

Goal:

Implement localStorage.

User Stories:

- As a user, I want to log in or register so that my data can be saved locally within my profile for a more personalized experience.
- As a user, I want to ensure that my data is securely stored, such as having my password hashed. So I can trust the app with my personal information.

Challenges:

We integrated localStorage to ensure that the user's progress is preserved on the device each time the website is accessed.

5.7 Sprint 6 (July 18 – July 23)

Goal:

Finalize animations and transitions to ensure a smooth user experience.

User Stories:

- As a user, I want the website to be responsive so that it displays properly on both my laptop and my phone.

Challenges:

One of the main challenges we faced during this sprint was implementing a responsive design that works well across different screen sizes. Adapting our layout and interactive elements for mobile devices required adjustments to our CSS and testing on various viewports to ensure consistent usability.

6 Team Collaboration

All decisions were made collaboratively, but responsibilities were divided for efficiency.

6.1 Task Division

- **Lea Sophy Göser:**
 - Events
 - To-dos
 - Login file
 - Register file
 - Backend
 - Home page add ons
- **Maliha Haque:**

- Home page base
- Notes

- **Enkhjin Erkhembayar:**

- Focus mode
- Presentation design and animation
- LaTeX documentation

6.2 Joint Tasks

All team members worked together on:

Documentation

- Contents

Code

- Idea development
- Web Design

Presentation

- Presentation Contents