

# Design Presentation: KnowTime



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# Elevator Pitch

Students often struggle with time management, fail to track progress effectively, and underestimate what can be accomplished during a work session. Our time management and study skills tool will address these issues by providing those who struggle with time management a community of support and various studying tools.

This tool is poised to revolutionize how individuals manage their time and enhance their study habits.

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# The Problem

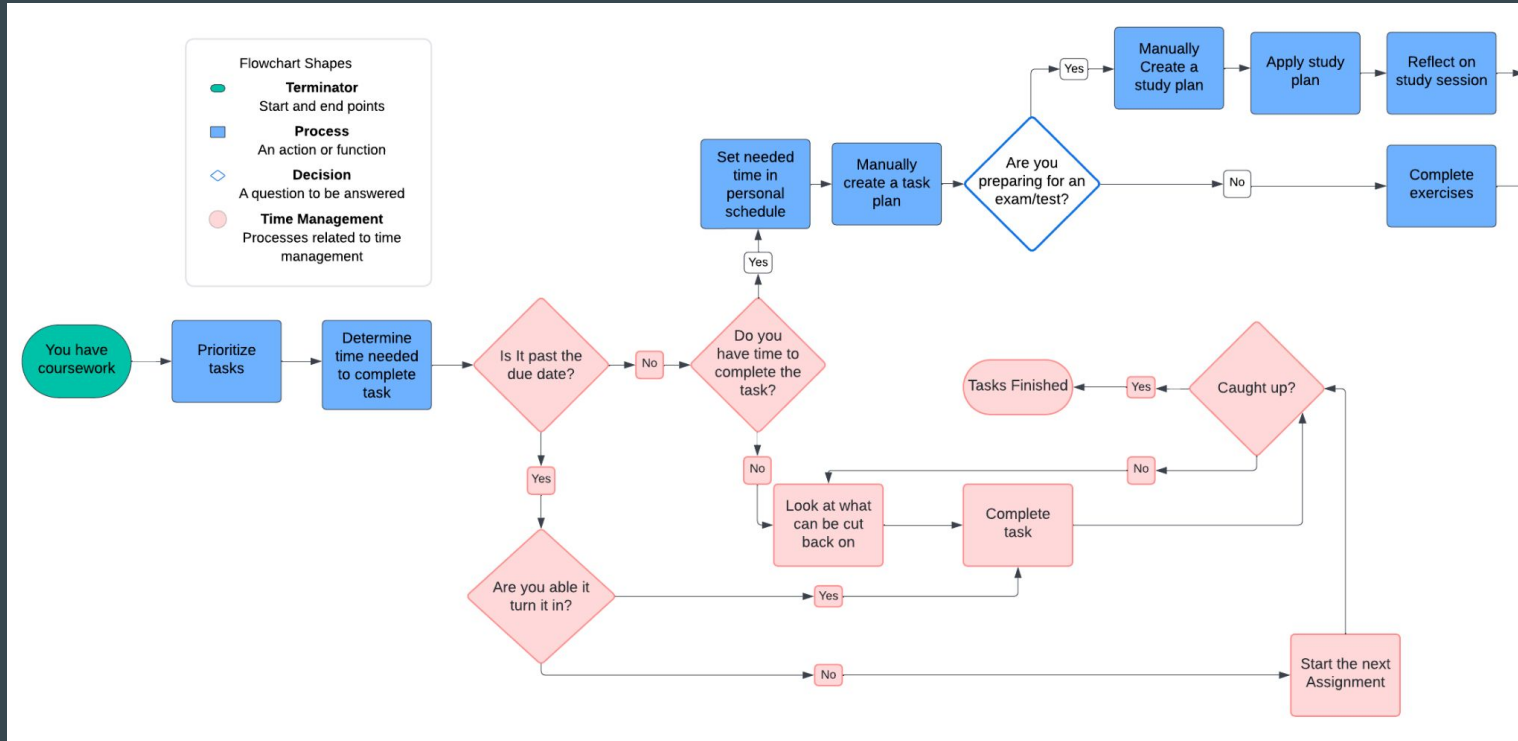
82% of people struggle with time management and only 20% believe they are successfully managing their workload (Ariella 2022). This struggle with time management is something many students struggle with. Some individuals also fail to track progress effectively and often underestimate what can be accomplished during a work session.

Without a community of support, these struggles can lead to burnout, feeling overwhelmed, and a lack of motivation (T. Kennedy, personal communication, February 13, 2024).

# Problem Characteristics

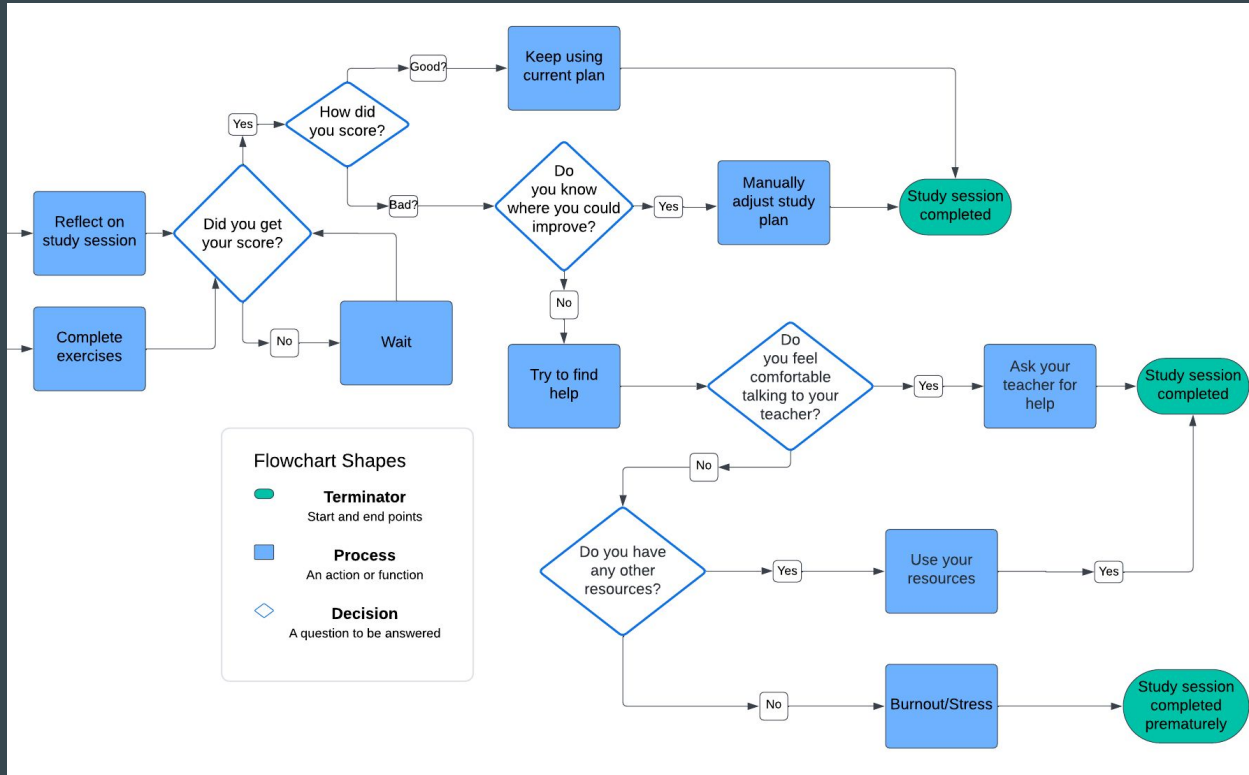
- **Time Management:**
  - 78% of students struggle during their time in college, with 9% claiming to always struggle with time management, and professors believe that about 80% of their students struggle most of the time with time management. (“Where Has the Time Gone?,” n.d.)
- **Effects of a Lack of Time Management:**
  - Losing sleep, procrastination, decreasing academic performance, and the possibility of dropping out of school. (“Where Has the Time Gone?,” n.d.)

# Current Process Flow: Assignment Tracking





# Current Process Flow: Performance Feedback

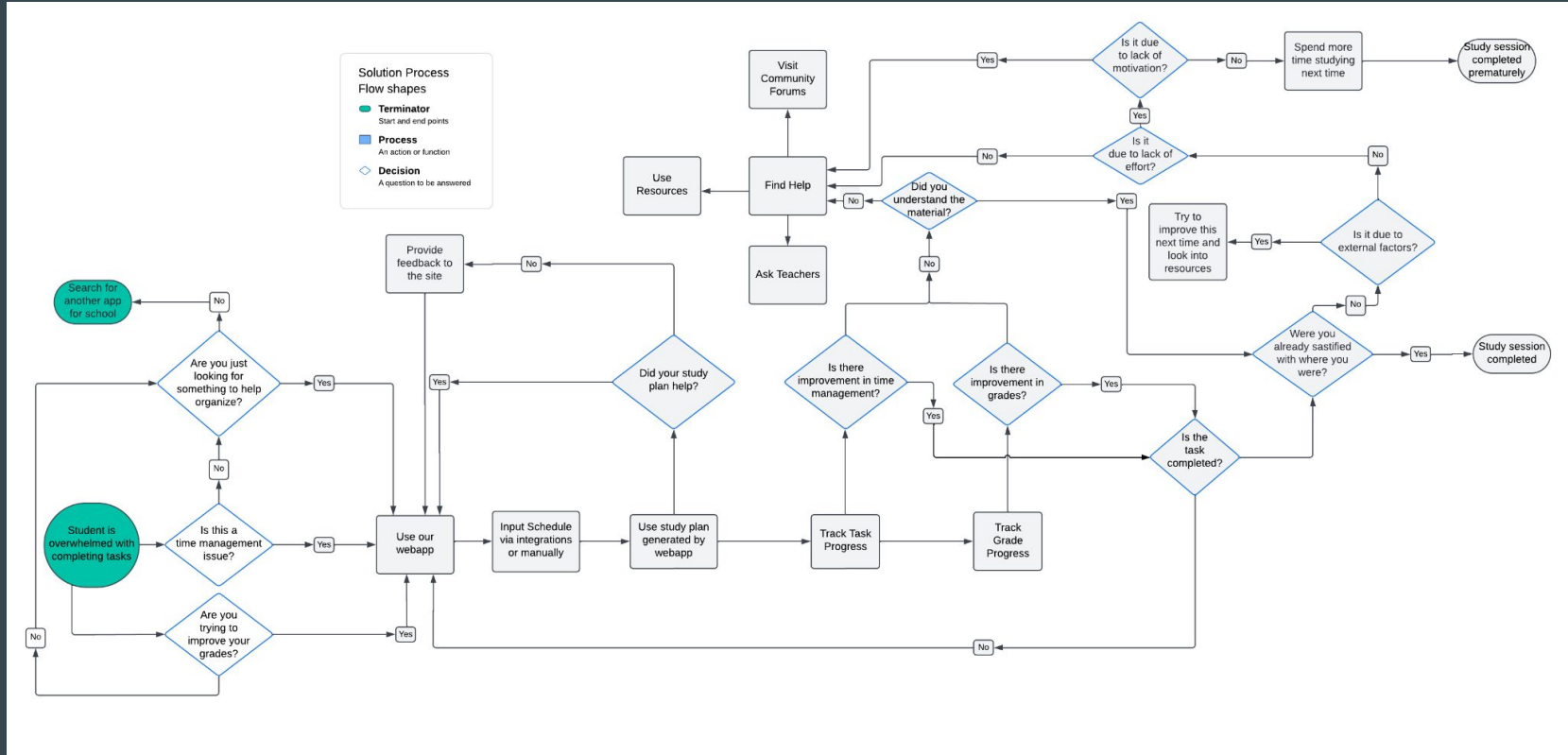


# The Solution

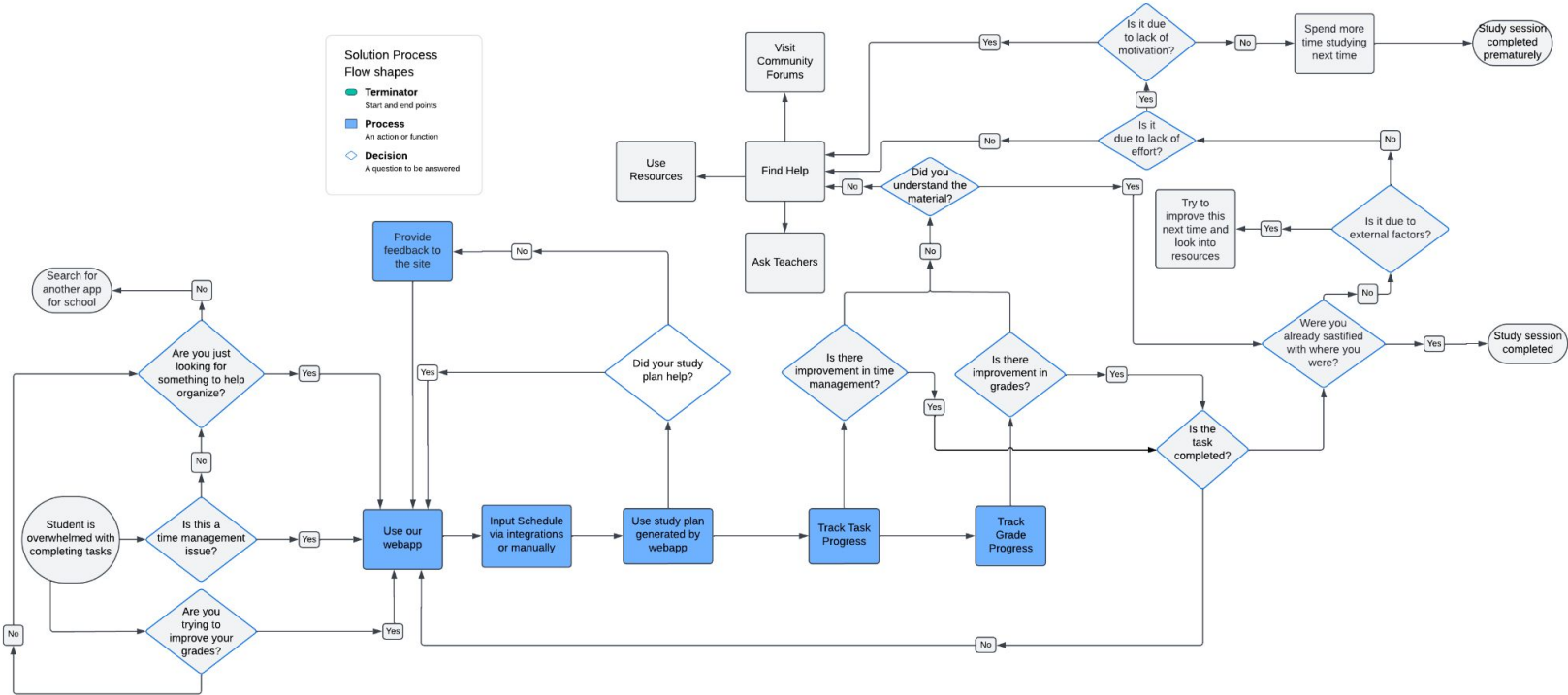
Our web application will include: a Pomodoro Timer to help with productivity and time management, a grade tracker to keep users up-to-date on their current grade status, a progress tracker to assist with monitoring time spent on completing tasks, a community forum for collaboration and support, and a points system to keep users motivated while they are studying.

These features will help students develop study skills and stay focused, organized, and engaged.

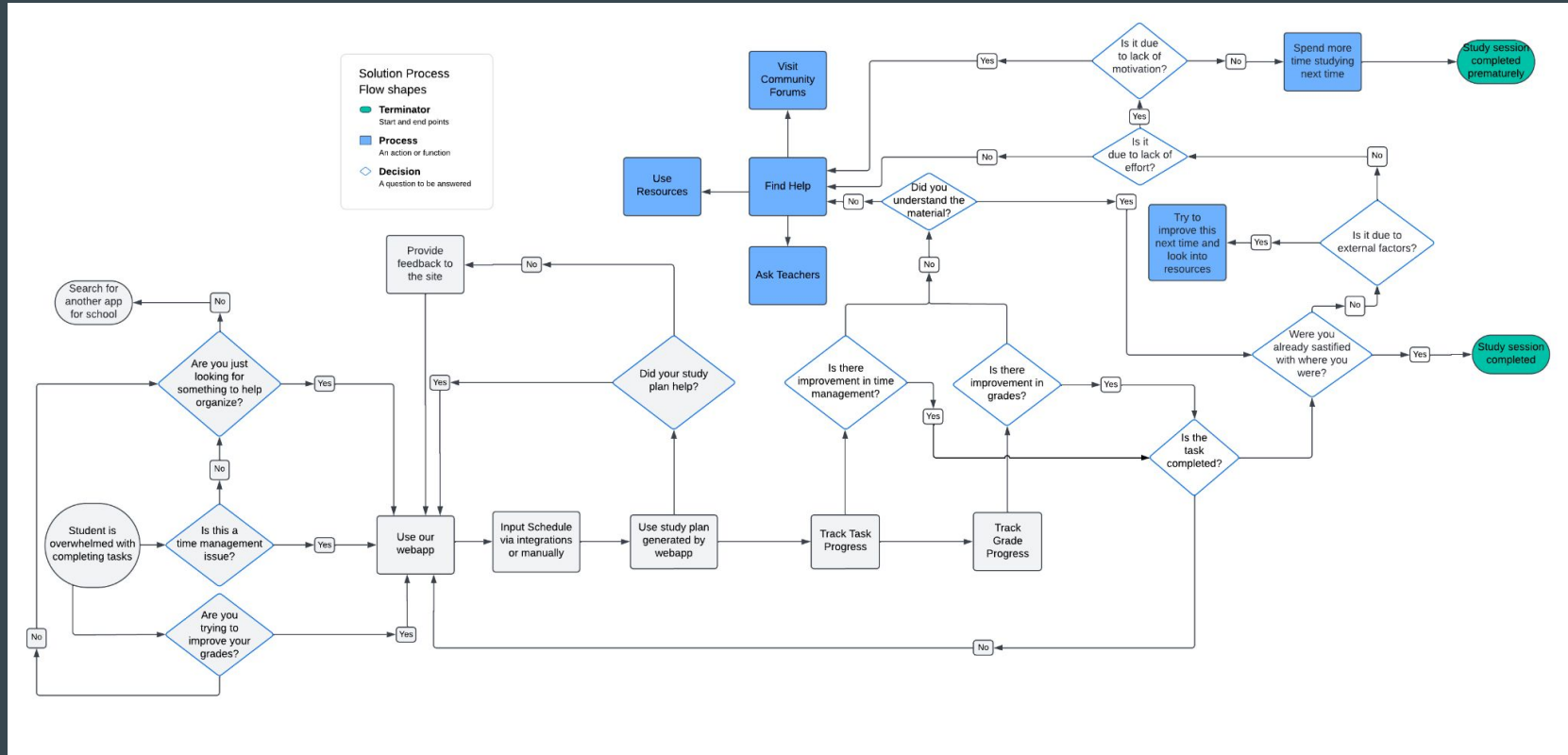
# Solution Process Flow



# Solution Process Flow



# Solution Process Flow



# What it Will Do

- **Pomodoro Timer & Customizable Study Sessions:** Customizable timer can be modified to fit students' needs or follow default Pomodoro Timer Technique
- **Task Board for Progress and Task Tracking:** Monitor time spent on tasks, tag tasks for organization, due dates, schedule reminders, and email notifications
- **Points System:** Earn points for completed sessions to unlock fun avatars
- **Grade Tracker:** Input and monitor grades over time with our graphing system

# What is a Pomodoro Timer?

The pomodoro timer technique was created by Francesco Cirillo in the 1980's while he was a university student. To follow this technique, the student sets a timer for 25 mins to complete a task. Once the timer goes off, the student takes a 5 minute break, and then continues to work again for another 25 mins. After four sessions, the student takes a 15-30 minute break (Scroggs 2022).

This technique helps with preventing burnout and encourages better focus (Alves 2023)

# What is Grade Tracking?

Grade tracking will be based on user-inputted grades. It will look at their grades, and the time spent studying, which may be entered by the student or automatically generated if the task was completed during a study session within the website.

It will then generate a graph correlating time spent studying with the grade they received. They will also be able to filter this graph by tags. This will allow students to view a particular class to determine how they can improve.

The student will be able to set a goal for the grade, and view how they are progressing overtime.



# What it Will Do

- **Import School Calendars:** Import calendars from apps like Canvas or Blackboard
- **Community Forum:** Share study tips, motivational stories, and provide support for one another. Create threads for different sites such as Khan Academy or HackerRank for people to discuss progress and ask questions.
- **Study Plan Generation:** Analyze input data and generate study plan
- **Responsive Design:** Accessibility across various platforms to encourage consistent usage

# What is a Study Plan?

A study plan will be generated based on various factors that will be entered by the student. Examples of information entered that will be considered are:

- Assignment due dates
- Exam dates
- Times that the student has specified they are busy

The application will also take into account:

- Time spent on similarly tagged tasks
- The need for breaks between tasks

# What it Will Do

- **Study Resources:** Direct students to technical support and academic support services, such as tutoring and writing centers
- **Mental Health Resources:** Direct students to resources for mental health issues, such as depression and anxiety.

## 4 Academic Support Services

ODU provides an overwhelming number of resources... especially at first glance. However, these resources can be extremely useful. At the very least... take a look at tutoring services and the [Computer Science Undergraduate Resource Center \(CSURC\)](#).

### Academic Success

- [Academic Advising](#)
- [Academic Development](#)
- [Academic Resources Center](#)
- [Academic Success Center](#)

### Career Development

- [Career Development Services](#)

### Educational Accessibility

- [Educational Accessibility](#)

### Registration & Financial Aid

- [Registering for Classes](#)
- [Financial Aid](#)

### Military & Veteran

- [Military Services](#)

### Tutoring & Supplemental Resources

- [The Writing Center](#)
- [Tutoring and Academic Support Central](#)
- [University Libraries](#)

### Counseling & Student Success

- [Office of Counseling Services](#)
- [Student Outreach and Support](#)
- [Tools for Your Success](#)

### ODUGlobal

- [Online Experience](#)

# What it Will Not Do

- **Mental Health Assistance:** While we will direct students to resources and aim to reduce burnout, we are not professionals.
- **Note Taking:** There are already plenty of good note taking apps available, and we do not feel this could reduce burnout and stress, which is the main goal of our app.
- **AI Assistant:** The app is not intended to be a learning app, rather a study habit app with maintainable study plans.

# Competition Matrix

| Features                    | Our Product | Notion | Remember the Milk | Evernote | iStudiez Pro | MyStudyLife | Forest: Focus for Productivity |
|-----------------------------|-------------|--------|-------------------|----------|--------------|-------------|--------------------------------|
| Pomodoro Timer              | ✓           |        |                   |          |              |             | ✓                              |
| Customizable Study Sessions | ✓           |        |                   |          |              |             |                                |
| Progress and Task Tracking  | ✓           | ✓      | ✓                 | ✓        | ✓            | ✓           |                                |
| Points System               | ✓           |        |                   |          |              |             | ✓                              |

# Competition Matrix Cont.

| Features        | Our Product | Notion | Remember the Milk | Evernote | iStudiez Pro | MyStudyLife | Forest: Focus for Productivity |
|-----------------|-------------|--------|-------------------|----------|--------------|-------------|--------------------------------|
| Grade Tracker   | ✓           |        |                   |          | ✓            |             |                                |
| Community Forum | ✓           |        |                   |          |              |             |                                |
| AI Assistant    |             | ✓      |                   |          |              |             |                                |
| Note Taking     |             | ✓      |                   | ✓        |              |             |                                |

# Competition Matrix Cont.

| Features                | Our Product | Notion | Remember the Milk | Evernote | iStudiez Pro | MyStudyLife | Forest: Focus for Productivity |
|-------------------------|-------------|--------|-------------------|----------|--------------|-------------|--------------------------------|
| Responsive Design       | ✓           | ✓      | ✓                 | ✓        | ✓            | ✓           | ✓                              |
| Study Plan Generation   | ✓           |        |                   |          |              |             |                                |
| App Integration         | ✓           | ✓      | ✓                 |          | ✓            |             |                                |
| Calendar with Reminders | ✓           | ✓      | ✓                 |          | ✓            | ✓           |                                |

# Development Tools & Model

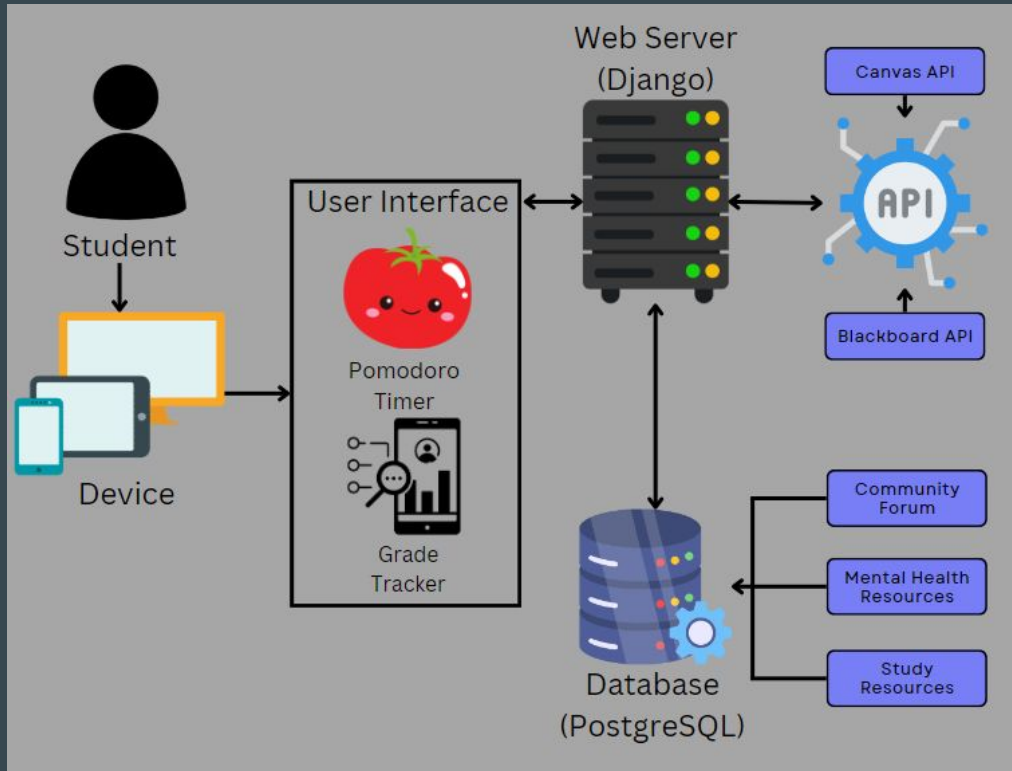
- **Integrated Development Environment (IDE):** Visual Studio Code
- **Version Control:** Git through GitHub
- **Continuous Integration (CI) and Continuous Deployment (CD) :** GitHub Actions and Workflows
- **Backend:** Python with Django
- **Frontend:** HTML5/CSS, Javascript, and Bootstrap 5
- **Testing Frameworks:** PyTest and Jest
- **Documentation Tool:** Pydoc and JSDoc
- **Development Model:** Agile Development



# Major Functional Components

- **Server Side Language:** Python
- **Database:** PostgreSQL
- **Web Server:** Django
- **Operating System:** Docker will be used, decreasing the importance of the specific operating system

# Major Functional Components Diagram



# Customer Risks

## Customer Risks

**CR1:** Student does not use task board or timer

**CR2:** Student starts using application at the start of the semester, but study time goes up while grades go down

**CR3:** Student starts using application in the middle of the semester, but study time goes up while grades go down

**CR4:** Student getting annoyed with notifications

## Customer Risk Mitigation

**CRM1:** Student will be given a generic study plan and be able to use other features, such as the community forum.

**CRM2:** Offer targeted study tips at the beginning of the semester to ensure students are equipped with the effective study techniques from the start.

**CRM3:** Provide immediate access to resources as the student starts using the application.

**CRM4:** Enable notifications to turn on/off

|             |   | Impact |   |              |             |     |
|-------------|---|--------|---|--------------|-------------|-----|
|             |   | 1      | 2 | 3            | 4           | 5   |
| Probability | 5 |        |   |              |             |     |
|             | 4 |        |   |              |             |     |
|             | 3 |        |   |              |             | CR3 |
|             | 2 | CR4    |   | CRM1<br>CRM2 | CR1<br>CRM3 | CR2 |
|             | 1 | CRM4   |   |              |             |     |

# Technical Risks

## Technical Risks

**TR1:** Connecting to server

**TR2:** Errors in comparing different time zone

**TR3:** Not receiving notifications

## Technical Risk Mitigation

**TRM1:** Data will be stored offline and updated

**TRM2:** Store all timestamps and dates in database using Coordinated Universal Time

**TRM3:** Send confirmation messages to users when they successfully subscribe to notifications

|             |   | Impact |      |      |     |     |
|-------------|---|--------|------|------|-----|-----|
|             |   | 1      | 2    | 3    | 4   | 5   |
| Probability | 5 |        |      |      |     |     |
|             | 4 |        |      |      |     |     |
|             | 3 |        |      |      |     | TR1 |
|             | 2 |        | TRM1 | TRM3 | TR3 |     |
|             | 1 | TRM2   | TR2  |      |     |     |

# Security Risks

## Security Risks

**SR1:** Account being leaked

**SR2:** SQL injection attack

**SR3:** Cross-site scripting attack

## Security Risk Mitigation

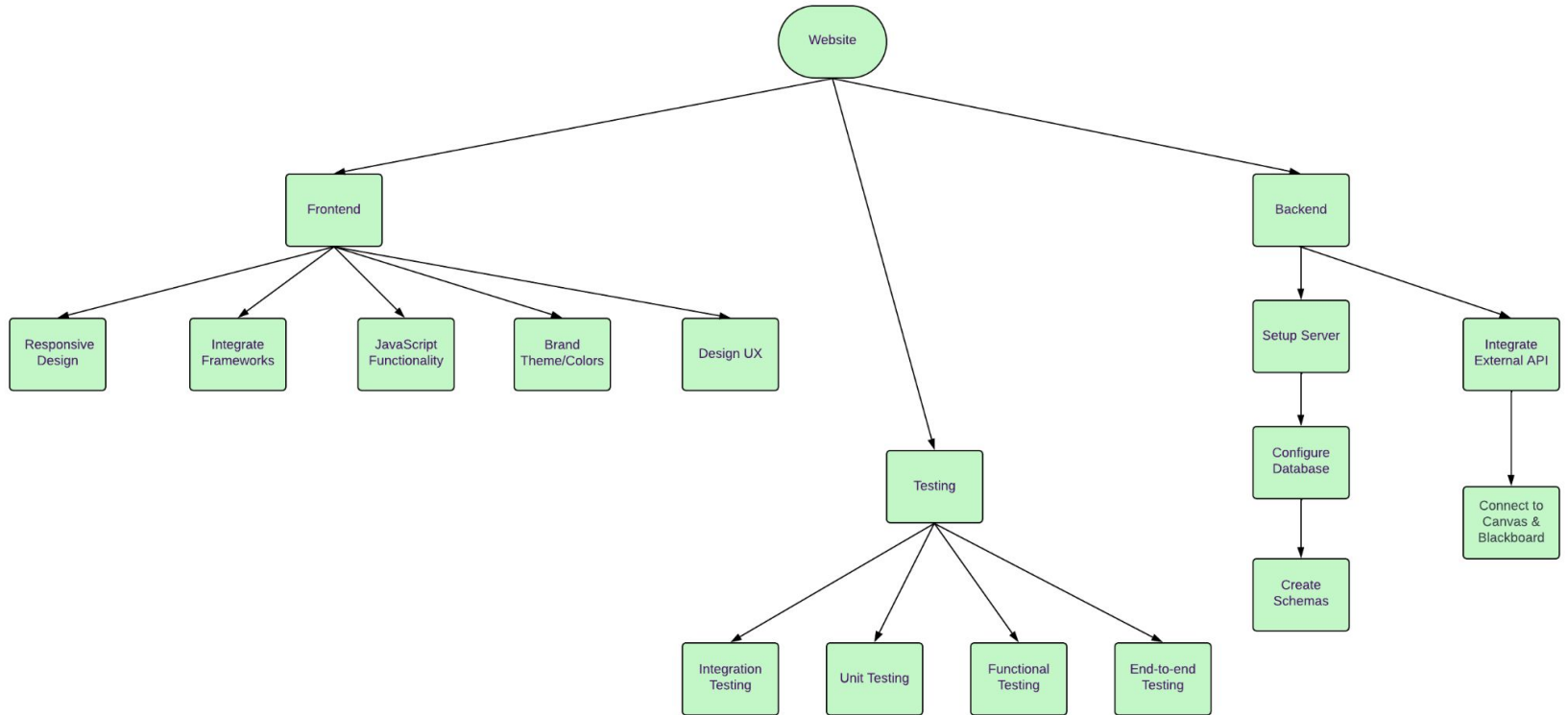
**SRM1:** Encryption and Authentication

**SRM2:** Validate and sanitize all user inputs before using them in SQL queries

**SRM3:** Encode user-generated content using HTML entity encoding before displaying it in web pages.

|             |   | Impact |      |      |     |     |
|-------------|---|--------|------|------|-----|-----|
|             |   | 1      | 2    | 3    | 4   | 5   |
| Probability | 5 |        |      |      |     |     |
|             | 4 |        |      |      |     |     |
|             | 3 |        |      |      |     |     |
|             | 2 |        |      | SRM1 |     | SR1 |
|             | 1 |        | SRM3 | SRM2 | SR3 | SR2 |

# Work Breakdown Structure



# Algorithms

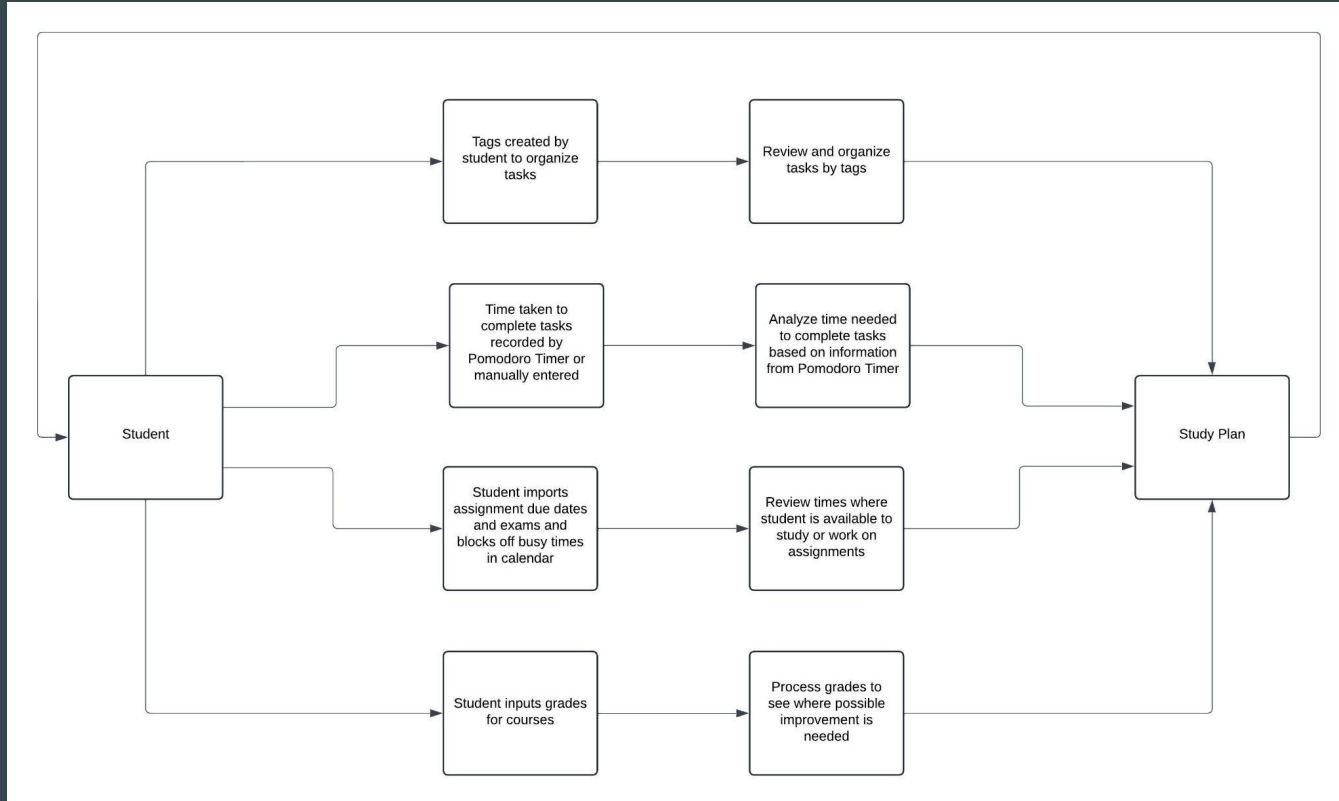
- Our app will require us to have an algorithm to generate user study plans based on user data.
- We will also need to be able to view user data, such as their grades and time spent studying and generate grade tracking graphs from this student data. We will be able to determine the efficiency of our app from this information.

# Required Libraries, Tools, & Technologies

- **Languages:** Python and Javascript
- **Frameworks:** Django and Bootstrap 5
- **Database:** PostgreSQL
- **Libraries:** Requests



# Dataflow Diagram



# Data Representation & Management

- Data Sources
  - Student Input
  - Canvas/Blackboard APIs
- Storage
  - PostgreSQL (Database)
- Data Collection
  - User Account Information
  - Community Forums
- Security
  - Data Security
    - Archive Data Periodically
    - Data Encryption
  - User Authentication
    - Two-factor Authentication
    - Unique Password

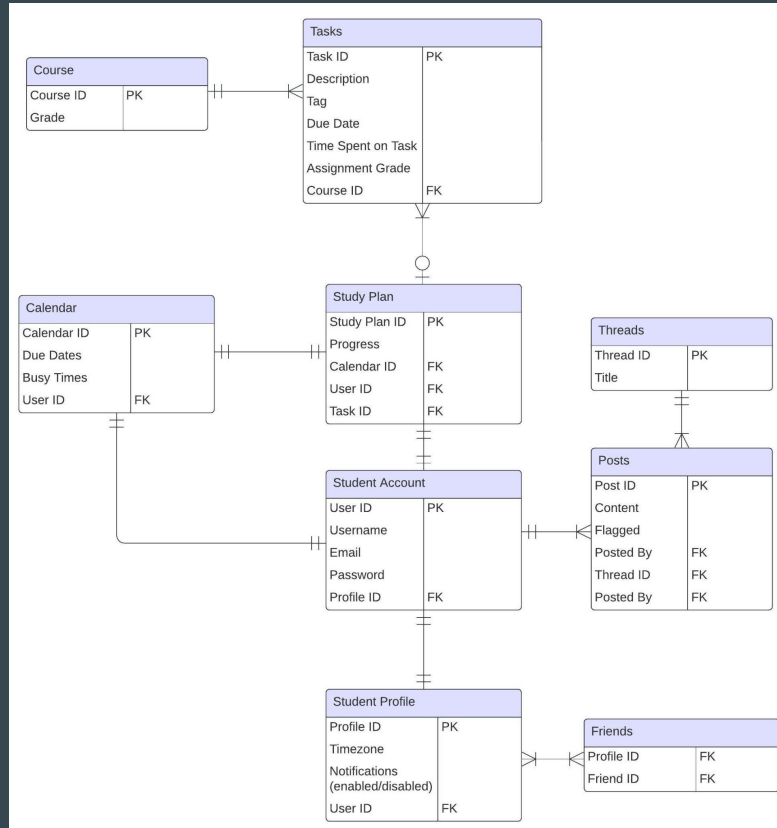
# Database Schema

| Student Account |                | Student Profile |             | Study Plan Table |               | Tasks              |           |
|-----------------|----------------|-----------------|-------------|------------------|---------------|--------------------|-----------|
| PK              | User ID        | PK              | Profile ID  | PK               | Study Plan ID | PK                 | Task ID   |
| FK              | Profile ID     | FK              | User ID     | FK               | User ID       | FK                 | Course ID |
| Email           |                | Notifications   |             | FK               | Task ID       | Description        |           |
| Password        |                | Timezone        |             | FK               | Calendar ID   | Tags               |           |
| Username        |                | Calendar        |             | Progress         |               | Due Date           |           |
| Friends         |                | PK              | Calendar ID | Course           |               | Time Spent on Task |           |
| FK              | User ID        | Due Dates       |             | PK               | Course ID     | Assignment Grade   |           |
| FK              | Friend User ID | Busy Times      |             | Course Name      |               |                    |           |
|                 |                |                 |             | Grade            |               |                    |           |

# Database Schema

| Threads Table |           | Posts Table |           |
|---------------|-----------|-------------|-----------|
| PK            | Thread ID | PK          | Post ID   |
| Title         |           | FK          | Thread ID |
|               |           | FK          | Posted By |
|               |           | Content     |           |
|               |           | Posted At   |           |
|               |           | Flagged     |           |

# Database Schema



# Real World Product Versus Prototype

| Categories         | Feature        | RWP        | Prototype   |
|--------------------|----------------|------------|-------------|
| Account Management | User Account   | Functional | Implemented |
|                    | Authentication | Functional | Partial     |
|                    | Access Control | Functional | Partial     |
| User Interface     | Canvas API     | Functional | Simulated   |
|                    | Blackboard API | Functional | Simulated   |
|                    | Calendar       | Functional | Implemented |
|                    | Pomodoro Timer | Functional | Implemented |
|                    | Grade Tracker  | Functional | Partial     |

# Real World Product Versus Prototype

| Categories | Feature                    | RWP        | Prototype       |
|------------|----------------------------|------------|-----------------|
| Community  | Content Search             | Functional | Not Implemented |
|            | Content Removal            | Functional | Not Implemented |
|            | Notifications              | Functional | Implemented     |
|            | Add/Delete Friends         | Functional | Implemented     |
|            | Report Users               | Functional | Not Implemented |
|            | Flag Inappropriate Content | Functional | Not Implemented |
|            | Hide Flagged Content       | Functional | Not Implemented |
|            | Block User                 | Functional | Implemented     |

# Real World Product Versus Prototype

| Categories      | Feature                          | RWP        | Prototype       |
|-----------------|----------------------------------|------------|-----------------|
| Community       | Direct Messaging                 | Functional | Not Implemented |
|                 | New Thread Activity Notification | Functional | Not Implemented |
|                 | New DM Notification              | Functional | Not Implemented |
| Community Forum | Subscribe to Thread              | Functional | Implemented     |
|                 | Create Discussion Thread         | Functional | Implemented     |
|                 | Reply to Thread                  | Functional | Implemented     |
|                 | View Discussion Thread           | Functional | Implemented     |
|                 | Like/Dislike Thread              | Functional | Implemented     |



# Real World Product Versus Prototype

| Categories     | Feature                 | RWP        | Prototype   |
|----------------|-------------------------|------------|-------------|
| User Interface | Study Plan              | Functional | Implemented |
|                | Mental Health Resources | Functional | Implemented |
|                | Study Resources         | Functional | Implemented |

# Mockup Pages

Please click link to view Mockup Pages

[https://www.canva.com/design/DAGB17R-ob0/HBARp05nbncV89\\_QWE9bAA/view](https://www.canva.com/design/DAGB17R-ob0/HBARp05nbncV89_QWE9bAA/view)

# Conclusion

Many students face challenges in managing their time effectively, and few feel proficient in handling their workload. The goal of our application, KnowTime, is to help students develop study habits and manage their time better. This will be accomplished by offering students various study and time management tools as well as directing students to academic and mental health resources.

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<https://collegesuccessplan.com/blog/where-has-the-time-gone>

# Appendix

## User Stories

- As a student, I would like to have a personalized study plan.
- As a student, I would like to be able to view my tasks on a calendar.
- As a student, I would like to have customizable tags for each of my tasks.
- As a student, I would like to be able to filter tasks by associated tags.
- As a student, I would like to be able to view the correlation between my study time and grades for a given class.
- As a student, I would like to keep track of how much time it takes me complete tasks.
- As a student, I would like help with ensuring I am taking breaks and staying focused while studying.
- As a student, I want to access and share resources that helped me while studying.
- As a student, I would like access to a community of support that can answer questions I have.
- As a student, I would like to import my calendar from Canvas/Blackboard.
- As a student, I would like to be able to access the app using any of my devices.
- As a student, I want to earn points to be used for avatars.