

# **CyDine**

By Asray Gopa, Issmale Bekri, Arjun Patel, Akhil Pallem

## Project Overview

Our project name is CyDine, and it aims to help students avoid unhealthy eating habits, particularly addressing the phenomenon known as the "Freshman 15." Many college students at the age of 18 are making decisions about food for the first time, and this often leads to unhealthy choices. CyDine will provide personalized meal plans based on the Iowa State University dining hall menus, helping students make healthier food choices based on their preferences, fitness goals, and dietary restrictions.

## User Groups

**We have identified three main user groups: Administrators, Message Board Moderators, and Users.**

### Actor 1: Administrator

The administrator will have full control over the app's functions, including meal plan management, user access, and oversight of the food combination message board. They will have access to user data and the ability to add, update, or remove dining options and menus. Administrators can also manage user accounts, reviewing and moderating posts on the message board to ensure appropriate use.

Tasks:

- Access user data and meal plans.
- Moderate and manage user content (meal plans and posts).
- Update or remove outdated menu items from the dining halls.
- Generate and configure meal plans for different user profiles based on predefined categories.

### Actor 2: Users

Users will interact with the app to receive meal plans, track their calorie intake, and engage with other users on the message board. They will have personalized experiences based on their dietary goals, such as eating healthier, cutting weight, or bulking up. Users will be able to log their physical activity and track water consumption, which will affect their recommended meal plans.

Tasks:

- Access personalized meal plans generated from dining hall menus.
- Modify meals according to their preferences or activity levels.
- Track daily calorie intake and physical activity.
- Interact with the community via a message board for sharing food ideas.

### Actor 3: Message Board Moderator

The Message Board Moderator is responsible for reviewing and managing the content on the message board, ensuring that posts adhere to the community guidelines. They have limited access compared to the Administrator but are primarily focused on moderation activities.

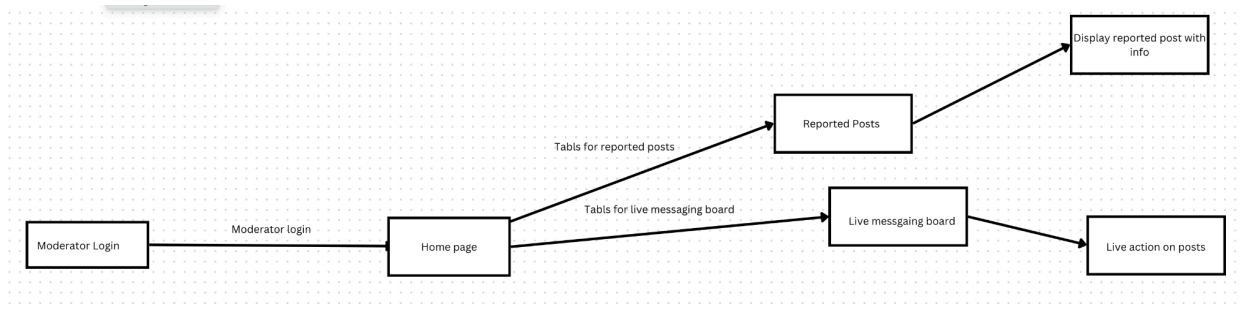
Tasks:

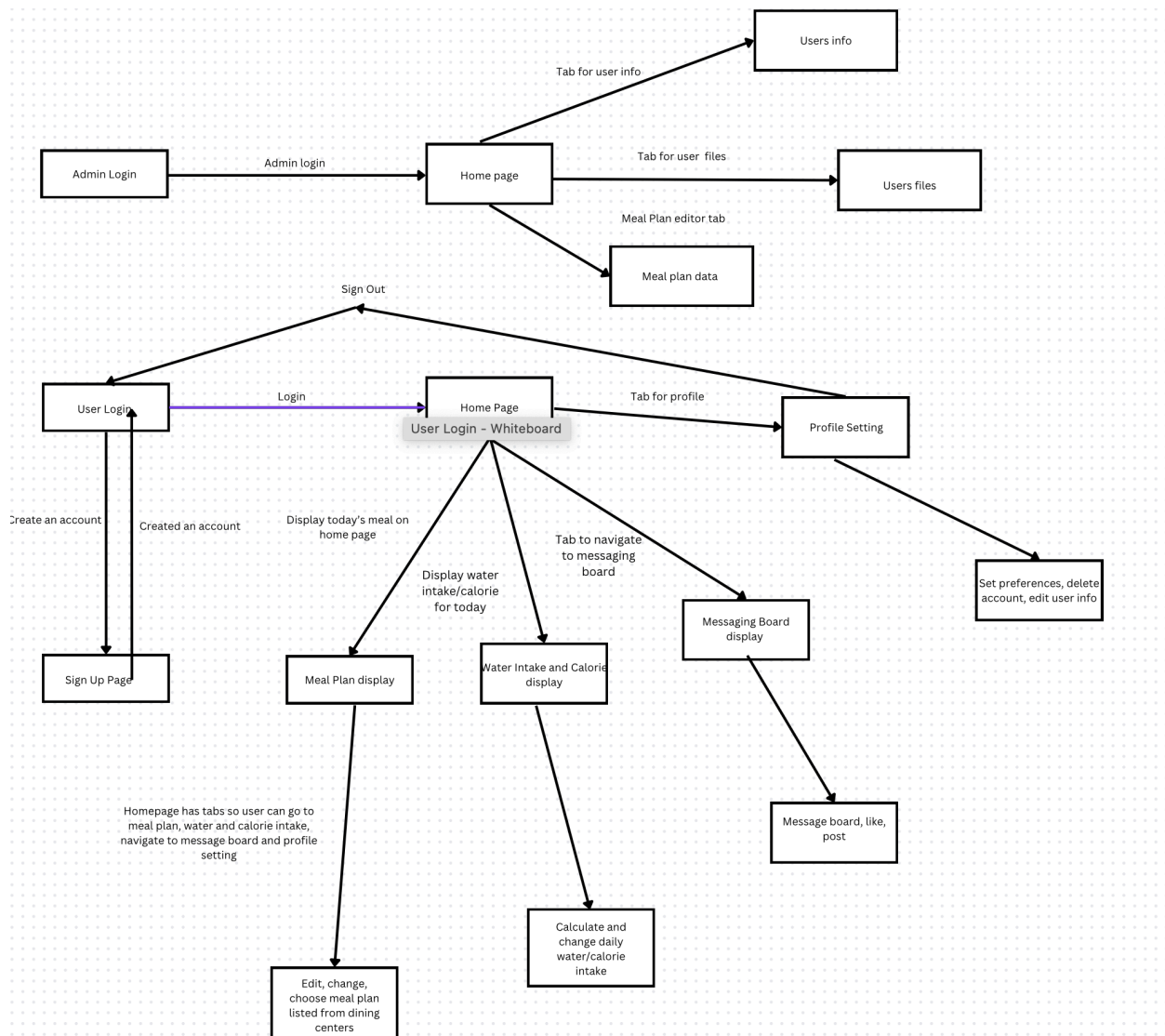
- Review Reported Posts: The moderator will view posts that have been flagged for inappropriate content and assess them against the app's guidelines.
- Approve/Dismiss Reports: After reviewing the content, the moderator can either approve or dismiss the report based on the findings.
- Ban Users (Limited Access): If a user has multiple violations, the moderator can request that an administrator ban the user, or can ban them based on certain permissions.
- Content Management: Remove inappropriate comments or posts without requiring a report if they spot something that violates guidelines.

### Flow of the CyDine App

The **CyDine** app is designed to be intuitive, providing a seamless user experience that helps college students create meal plans, track their nutrition, and engage with the community. Here's how a typical user would interact with the app:

Screen Flow Diagram by Issmale Bekri





## 1. User Onboarding and Setup:

When a new user downloads the app and opens it for the first time, they will be guided through a simple onboarding process:

- **Sign-Up/Login:**

Users will be prompted to either sign up or log in using their credentials. They can choose to sign up using their email or an OAuth provider like Google or Facebook for quick access. For returning users, they can log in immediately or use the "Remember Me" feature for faster access next time.

- **Profile Setup and Preferences:**

After logging in, users will be prompted to set up their dietary preferences, fitness goals, and any dietary restrictions they may have (e.g., vegetarian, vegan, gluten-free). Users

will also input basic information like weight, height, and activity level to tailor their nutrition recommendations.

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## 2. Viewing and Customizing Meal Plans:

Once setup is complete, users are directed to the **Home Screen** where their personalized daily meal plan is displayed. The meal plan is based on the Iowa State dining hall menus and adapted to their dietary preferences and goals.

- **Meal Plan Overview:**

The home screen provides an overview of the meals for breakfast, lunch, dinner, and snacks. For each meal, users can see calorie and nutrient breakdowns, ensuring they stay within their daily targets.

- **Meal Modification:**

Users can customize their meal plans by clicking the “Modify Meal” button. This allows them to replace a suggested meal with other options from the dining hall menu, offering flexibility based on cravings or availability.

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## 3. Tracking Physical Activity and Water Intake:

To help users meet their fitness goals, CyDine integrates activity and hydration tracking:

- **Logging Activity:**

Users can navigate to the **Activity and Water Tracker Screen** to log their physical activities, such as running, gym workouts, or sports. The logged activities automatically adjust their daily calorie needs, ensuring their meal plan reflects their energy expenditure.

- **Tracking Water Intake:**

The app also allows users to log their water intake. A visual progress bar on the **Home Screen** helps users track how much water they’ve consumed throughout the day.

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## 4. Engaging with the Community:

CyDine fosters a community-driven approach by providing a **Message Board**, where users can interact and share food ideas:

- **Posting and Browsing Ideas:**

Users can share creative meal combinations or tips, such as how to make healthier snacks or protein-rich meals from available dining hall options. They can also browse

through posts made by others and filter them by category (e.g., Healthy, Vegetarian, High-Protein).

- **Liking and Commenting:**

Users can engage with posts by liking or commenting on them, which allows for idea-sharing and encouragement among the community.

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## 5. Updating Profile and Preferences:

At any time, users can navigate to the **Profile Screen** to update their preferences:

- **Adjusting Goals:**

If a user decides to change their fitness goals (e.g., transitioning from bulking to cutting), they can update their profile to reflect these changes. The app will automatically adjust future meal plans to match their new goals.

- **Dietary Restrictions:**

Users can also update any dietary restrictions they may have (e.g., removing or adding vegan options), which will affect their future meal suggestions.

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## 6. Administrator Actions (Admin Role):

Administrators who have special access can manage meal plans, oversee user activities, and moderate the message board:

- **Moderation and Management:**

Admins can remove inappropriate content from the message board, update dining hall menus, or ban abusive users. They also have control over user meal plans, allowing them to update or add new dining options and ensure that the nutritional data is accurate and up-to-date.

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## User Journey Example:

### **Scenario:**

Emma, a college freshman, is worried about the "Freshman 15" and wants to make sure she stays healthy while enjoying her meals in the dining hall.

- **Step 1:** Emma downloads the **CyDine** app, signs up with her Google account, and fills out her profile by setting her goal to "Cutting Weight" and noting that she is vegetarian.
- **Step 2:** Each morning, Emma opens the app to see her personalized meal plan. Today, the app suggests a healthy breakfast of oatmeal with fruit from the dining hall. She

decides to modify her lunch to swap a salad with a veggie burger based on what's available at the dining hall.

- **Step 3:** After a workout at the gym, Emma logs her physical activity, which updates her remaining calorie allowance for the day. She also logs her water intake throughout the day to stay on top of her hydration goals.
  - **Step 4:** In the evening, Emma visits the message board to look for creative snack ideas and comes across a post about combining dining hall cookies with ice cream for a treat. She likes the post and decides to try it out later in the week.
  - **Step 5:** Over time, Emma's meal plans adjust based on her logged activities and preferences, ensuring that she is consistently making progress towards her goal of maintaining a healthy weight.
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The **CyDine** app offers a simple, personalized approach to maintaining a healthy diet for college students, adapting to their needs and goals in real-time while providing community support and engagement.

## Screen Sketches

### User Screens

Screen 1: Login Screen by Issmale Bekri

Purpose: To allow users to log into the app.

Loading Event: This screen will load when the app starts.

Screen Labels:

1. User: where user login
2. Admin: where admin login
3. Mod: where moderator login
4. Email Field: Field where users input their email.
5. Password Field: This field is where users input their password.
6. Forgot Password Link: Link to reset the password.
7. Login Button: Button to submit login credentials and enter the app.
8. Sign Up Link: Link to create a new account for first-time users.
9. First Name: Input the user's first name
10. Last Name: Input the user's last name
11. Already have an account? Login: Redirects to login
12. Don't have an account? Sign up: Redirects to sign up

# CyDine

USER

ADMIN

MOD

CyDine

Log in

Email

Password

Log in

Don't have an account? [Sign up](#)

[Forgot Password](#)

CyDine

Sign Up

First Name

Last Name

Email

Password

Confirm Password

Sign Up

Already have an account? [Log In](#)

Screen 2: Home/Welcome Screen by Issmale Bekri

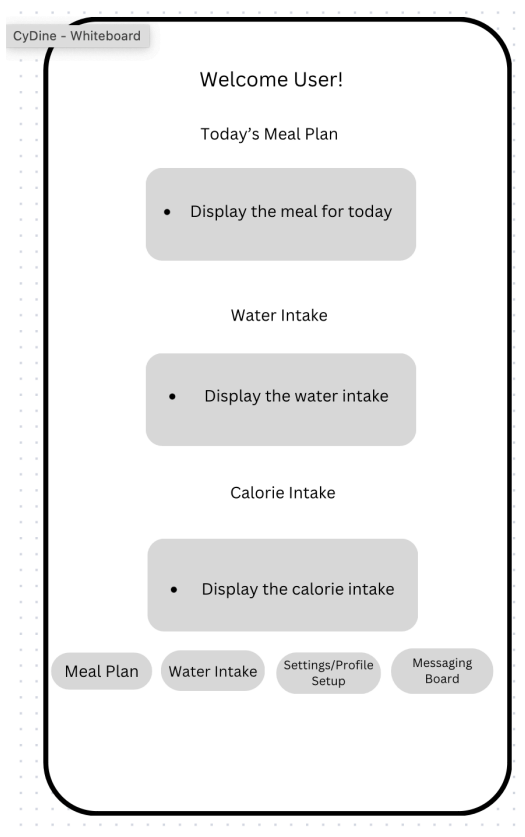


Purpose: To provide users with access to their meal plan and other primary features.

Loading Event: This screen loads after login or when navigating to the home tab.

#### Screen Labels:

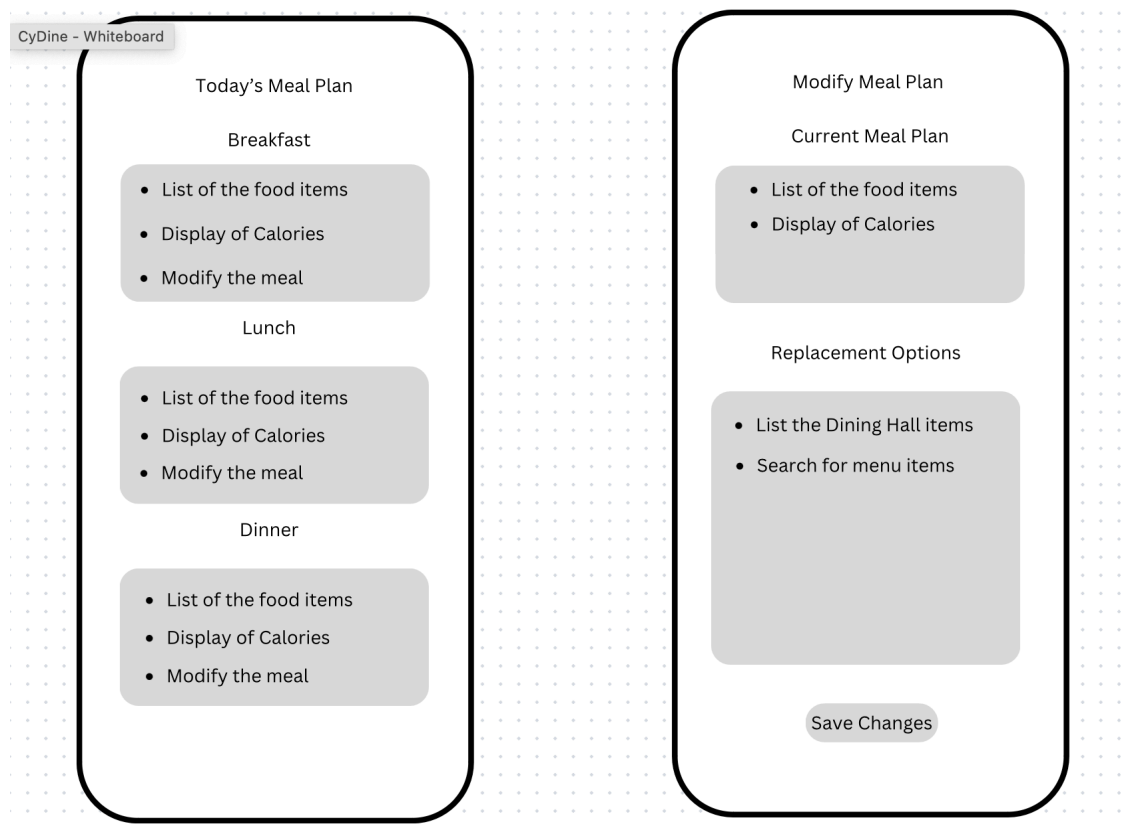
1. Navigation Bar (Meal Plan, Water Intake, Settings/Profile, Messaging board): Allows users to switch between home, meal plans, activity tracker, message board, and profile.
2. Welcome Message: Personalized message greeting the user.
3. Today's Meal Plan Section: Displays meal options from the dining hall based on user goals.
4. Daily Calorie Summary: A summary of daily calorie intake and calories left to consume based on the user's input.
5. Water log Section: A quick view of the user's logged water intake and how it impacts their calorie needs.



Purpose: To display detailed meal plans for each day, customized based on user preferences.  
Loading Event: This screen loads when the user navigates to the meal plan tab.

Screen labels:

1. Meal Plan List: Lists meals for breakfast, lunch, dinner.
2. Breakfast, lunch, dinner: Break down of the food items and contents. With the option to modify
3. Modify Meal Option: Takes to the next page (from Today's meal plan to Modify meal plan) Button to replace a suggested meal with another available from the dining hall menu.
4. Daily Nutrient Breakdown: A chart displaying the breakdown of calories, proteins, fats, and carbs for the day.
5. Save and Adjust Button: Saves current meal preferences and adjusts future plans accordingly.



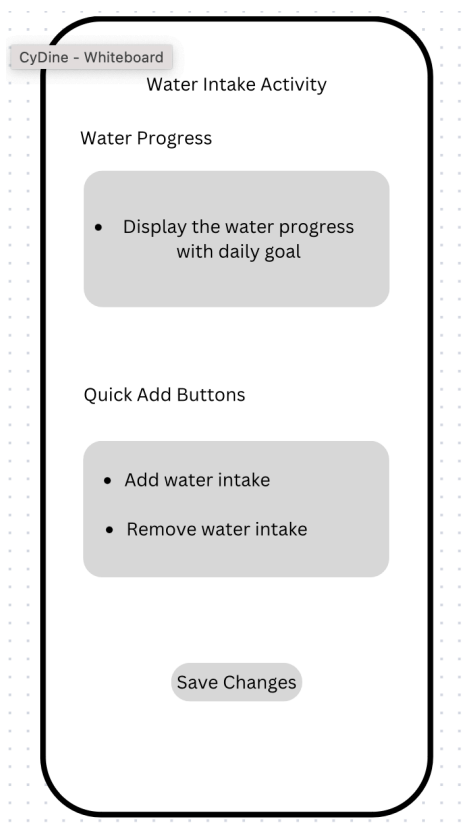
#### Screen 4: Water Tracker Screen by Issmale Bekri

Purpose: To allow users to log their physical activities and water consumption.

Loading Event: This screen loads when the user navigates to the tracker tab.

Screen Labels:

1. Water Progress: displays current progress
2. Add/Remove: add water intake or remove if incorrectly added.
3. Save: Save changes.



## Screen 5: Profile Screen by Issmale Bekri

Purpose: To allow users to manage their personal information and preferences.

Loading Event: Loads when the user navigates to the profile tab.

### Screen Labels:

1. User Info Section: Displays user details like name, email, and profile picture.
2. Goal Settings: Users can select or update their dietary goals (e.g., cutting, bulking).
3. Dietary Restrictions Section: Users can input any dietary restrictions (e.g., vegetarian, vegan).
4. Save Preferences Button: Saves any updates made to the profile or preferences.
5. Review Profile: Gives a list of changes made before saving then confirm it

The image shows two wireframe screens for a mobile application, both labeled 'CyDine - Whiteboard' in the top left corner.

**Left Screen: Profile Setup**

- Header: Profile Setup
- Profile Picture: A circular icon with a pencil edit button.
- Name: A text input field containing 'Name: Asray Gopa' with a pencil edit button.
- Email: A text input field containing 'Email: asray@lastate.edu' with a pencil edit button.
- Section: Your Dietary Preferences
- Options: Four radio buttons labeled 'Vegan', 'Vegetarian', 'Omnivore', and 'Pescatarian'.
- Section: Any Dietary Restrictions
- Options: Three radio buttons labeled 'Gluten-free', 'Lactose Intolerant', and 'Nut allergies'.
- Bottom Right: A 'Next' button.

**Right Screen: Review Your Profile**

- Header: Fitness Goal
- Options: Four radio buttons labeled 'Weight Loss', 'Muscle Gain', 'Maintenance', and 'General Health'.
- Section: Review Your Profile
- Summary: A list of three items, each with a dot icon and a description: 'Dietary Preferences (displayed as selected options with the ability to edit)', 'Dietary Restrictions (checkbox summary with an option to edit)', and 'Fitness Goals (displayed with an option to edit)'.
- Bottom Center: A 'Confirm' button.
- Bottom Left: A 'Back' button.

## Screen 6: Message Board by Asray Gopa

Purpose: A space where users can share meal ideas, food combinations, and tips.

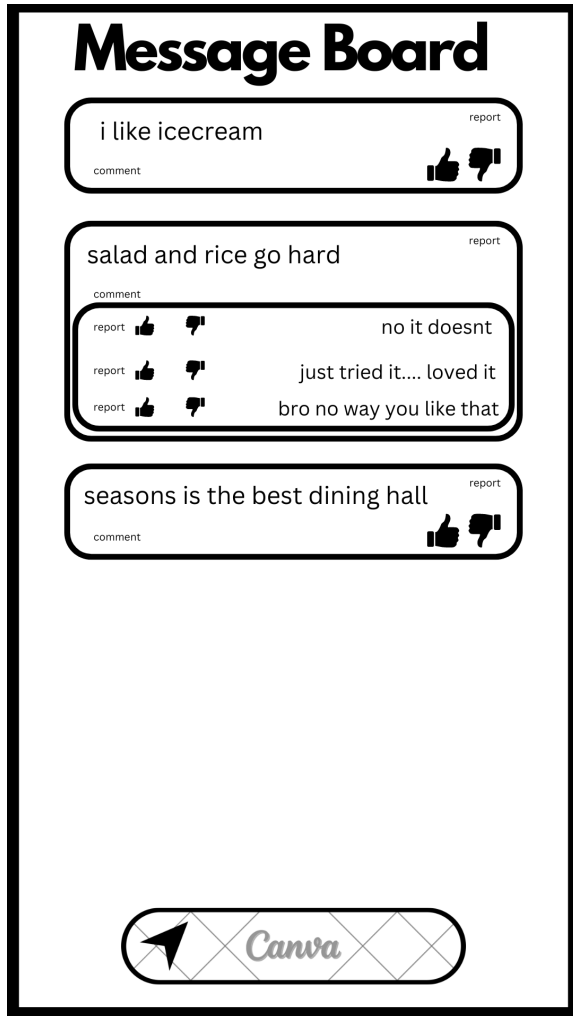
Loading Event: Loads when the user navigates to the message board.

Interface Items:

1. Post List: Displays posts from other users about meal ideas.
2. Like and Comment Button: Allows users to like or comment on a post.
3. New Post Button: Opens a form where users can share their own food ideas.
4. Report Button: Allows users to report inappropriate content.

Screen Labels:

1. **Message Input Field:** Allows users to write messages or post comments (e.g., "I like ice cream").
2. **Report Button:** Allows users to flag or report inappropriate comments or posts.
3. **Upvote/Downvote Buttons:** Users can like (upvote) or dislike (downvote) a post or comment.
4. **Comment Button:** Enables users to respond or leave comments on the post.
5. **Nested Comments:** Display responses to the main post, showing conversations (e.g., multiple comments in response to "salad and rice go hard").
6. **Message Board Title:** The title for the section where users can post and comment on discussions.
7. **Submit Button:** The button at the bottom to post the message after typing



## Admin Screens

Screen 1: Admin Dashboard Screen by Asray Gopa

Purpose: The central hub for administrators to view system stats, manage users, oversee message board content, and update dining hall data.

Loading Event: This screen loads after successful login.

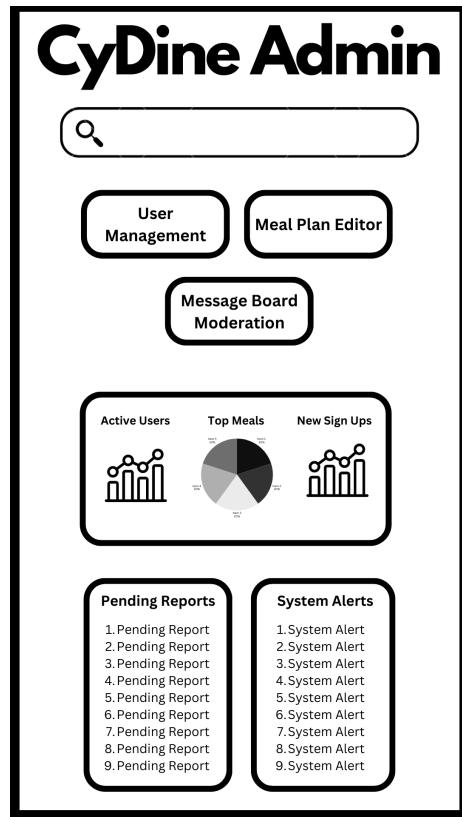
Interface Items:

1. Navigation Bar: Quick access to user management, meal plan editor, message board moderation, and dining hall data.

2. **User Activity Summary:** A section displaying metrics such as the number of active users, new sign-ups, and top meal plan interactions.
3. **Pending Reports:** A list of reported posts or users that require review by the admin.
4. **System Alerts:** Notifications related to updates, server status, or potential system issues.
5. **Search Bar:** A search tool to quickly find specific users, meals, or reports.

Screen Labels:

1. **Search Bar:** Allows admins to search for specific users, meals, or other data within the admin panel.
2. **User Management Button:** Opens the user management section, where admins can manage user profiles, permissions, and activity.
3. **Meal Plan Editor Button:** Provides access to the meal plan editing interface, allowing admins to update or create new meal plans.
4. **Message Board Moderation Button:** Directs to the section for moderating user posts and comments on the message board.
5. **Analytics Section:**
  - **Active Users Icon:** Displays data on the number of active users.
  - **Top Meals Pie Chart:** Visualizes the top selected meals among users.
  - **New Sign-Ups Icon:** Displays statistics on newly registered users.
6. **Pending Reports Section:** Lists pending user reports that require moderation or action by the admin.
7. **System Alerts Section:** Displays any system alerts or issues that require admin attention, such as system outages or errors.



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## Screen 2: User Management Screen by Asray Gopa

**Purpose:** To allow administrators to view, edit, and manage user accounts.

**Loading Event:** This screen loads when the admin clicks on the "User Management" section of the dashboard.

### Interface Items:

1. **User List:** A table displaying usernames, email addresses, and account status (active, suspended, etc.).
2. **Search Function:** Allows the admin to search for a specific user by username or email.
3. **User Profile Button:** Clicking on a username opens a detailed profile view where the admin can see the user's preferences, meal plans, and history.
4. **Suspend/Unsuspend Button:** A button to temporarily suspend or reactivate a user's account.
5. **Delete Account Button:** This permanently deletes the user's account, with a confirmation dialog to prevent accidental deletions.
6. **Reset Password Button:** A button to reset a user's password, sending them an email with instructions.




## Screen Labels:

1. **Search Bar:** Allows admins to search for users by name, email, or other identifying information.
2. **User Selection Checkbox:** Enables the selection of specific users for management actions.
3. **User Table:**
  - **Select:** Checkbox for selecting individual users.
  - **Name:** Displays the user's full name.
  - **Email:** Shows the user's email address.
  - **Phone No:** Displays the user's phone number.
  - **Preference:** Lists the user's dietary or fitness preference (e.g., "Cut," "Vegan").
4. **User Profile Display:** Shows the detailed profile of the selected user, including:
  - **Profile Picture:** Placeholder for the user's profile image.
  - **User Details:** Displays user's email, phone number, academic year, weight, height, and other relevant details.
5. **Suspend/Unsuspend Button:** Allows the admin to suspend or unsuspend the selected user's account.
6. **Delete Button:** Provides the option to delete the selected user's account.
7. **Reset Password Button:** Allows the admin to reset the password for the selected user.

# User Management

Select	Name	Email	Phone No	Preference
<input checked="" type="checkbox"/>	Asray	asr@iastate.edu	7147879947	Cut
<input type="checkbox"/>	Ish	ish@iastate.edu	3867928829	Vegan
<input type="checkbox"/>	Arjun	arj@iastate.edu	26317288229	Vegetarian



## Asray Gopa

Email: Testtest  
Phone Number: Testtest  
Academic Year: Testtest  
Weight: Testtest  
Height: Testtest

Suspend/  
Unsuspend

Delete

Reset  
Password

### Screen 3: Message Board Moderation Screen by Asray Gopa

**Purpose:** To allow administrators to manage posts and comments on the message board and moderate reported content.

**Loading Event:** This screen loads when the admin clicks "Message Board Moderation" in the dashboard.

**Interface Items:**

1. **Reported Posts List:** A list of posts that have been flagged by users for review. Each post will display the reason for reporting and the number of reports it has received.
2. **Review Post Button:** Clicking this button opens a detailed view of the reported post, allowing the admin to read it and assess whether it violates the app's guidelines.

3. **Approve/Dismiss Button:** After reviewing a reported post, the admin can either approve it (if it doesn't violate guidelines) or dismiss it (if it does).
4. **Ban User Button:** If a user repeatedly posts inappropriate content, the admin can ban their account with this button.
5. **Message Board Feed:** A live feed of the message board for quick review of the most recent posts and user interactions.

#### Screen Labels:

1. **Reported Messages Table:**
  - **Review Checkbox:** Checkbox for selecting a specific message for moderation.
  - **Name of Poster:** Displays the username of the person who posted the message.
  - **Reported By:** Shows the name of the user who reported the message.
2. **Message Details:**
  - **Reported Message:** Shows the content of the reported message.
  - **Number of Times Reported:** Displays how many times the message has been flagged by users (e.g., "25 times").
3. **Moderation Actions:**
  - **Approve Button:** Confirms that the message is acceptable and will not be removed.
  - **Dismiss Button:** Dismisses the report, leaving the message as is.
  - **Ban User Button:** Bans the user who posted the message from the platform.
4. **Live Message Feed:** Displays a real-time feed of the most recent messages posted on the message board for quick review and monitoring.

# Message Board Moderation

Review	Name of poster	Reported by
<input checked="" type="checkbox"/>	Asray	Ish
<input type="checkbox"/>		
<input type="checkbox"/>		

## Message Details

hejrwejhfwbjkdwebjkhqebhjcwbheqjbewbjkwej  
kdjkejwkwjqknedwbvrlwejqjhbsdncabjhrwfejhdf  
wfejfewejevfwjfeioifveijowfjdoefjjwjedjocdww

Number of times reported: 25

Approve

Dismiss

Ban User

## Live Message Feed

## Moderator Screens

Screen 1: Moderator Dashboard by Akhil Pallem

Purpose: This screen is the central hub for the message board moderators to manage reported posts and monitor community activity.

## Interface Items:

1. **Navigation Bar:** Allows quick access to reported posts, moderation history, and the live message board feed.
2. **Reported Posts Summary:** A list of posts flagged by users for review, showing reasons for the report, the number of reports, and a timestamp.
3. **Ban User Request Button:** Option to request a user ban, which will notify the administrator.
4. **Live Feed:** A real-time feed of new message board activity for spot-checking posts.

Purpose: Moderator help when navigating and seeing everything such as reports or live messaging board

## Screen Labels:

1. Button to review reported posts and take you to that screen
2. Button to see more moderation history, which takes you to other reports
3. Live messaging board button to see messages in real time and how it is progressing



Screen 2: Post Review Screen by Akhil Pallem

Purpose: This screen allows moderators to review and assess individual posts that have been flagged by users.

Interface Items:

Post Content: Displays the full content of the reported post, including images, text, and any comments.

Reports Summary: Shows the number of reports, the reasons for reporting, and the users who reported the post.

Approve/Dismiss Buttons: Allows the moderator to decide the outcome of the post (approve or dismiss).

Comment Box (Optional): A box where the moderator can leave comments about their decision for future reference or admin review.

Ban User Option: If permissions allow, the moderator can ban a user directly from this screen or request a ban from the administrator.

By Akhil Pallem

Purpose

- To review reported posts and moderate or remove them.

Screen Labels

Top Bar:

- Displays the name of the reported message.

Report Details:

- Who reported the post
- Who is being reported
- Action Buttons:

## Dismiss

- Ban and Remove Message
- Reported Messages: Lists all reported messages for review.



## Screen 3: Moderation History by Arjun Patel

Purpose: This screen provides a log of all moderation actions taken by the message board moderators.

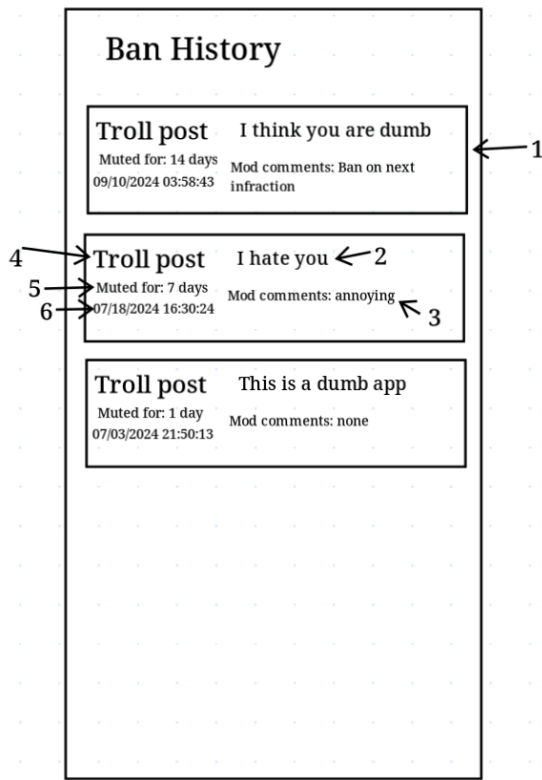
### Interface Items:

1. Moderation Actions List: Displays a list of actions taken by the moderator.
2. Report Summary: For each action, provides a quick overview of the post's content, the decision made, and the time it occurred.

### Screen Labels:

1. Moderation box
2. Message
3. Mod comment
4. Reason for action
5. Mute length

## 6. Date



### Screen 4: Live Message Board Monitoring by Arjun Patel

Purpose: This screen provides moderators with a real-time feed of new posts being added to the message board so they can actively monitor content.

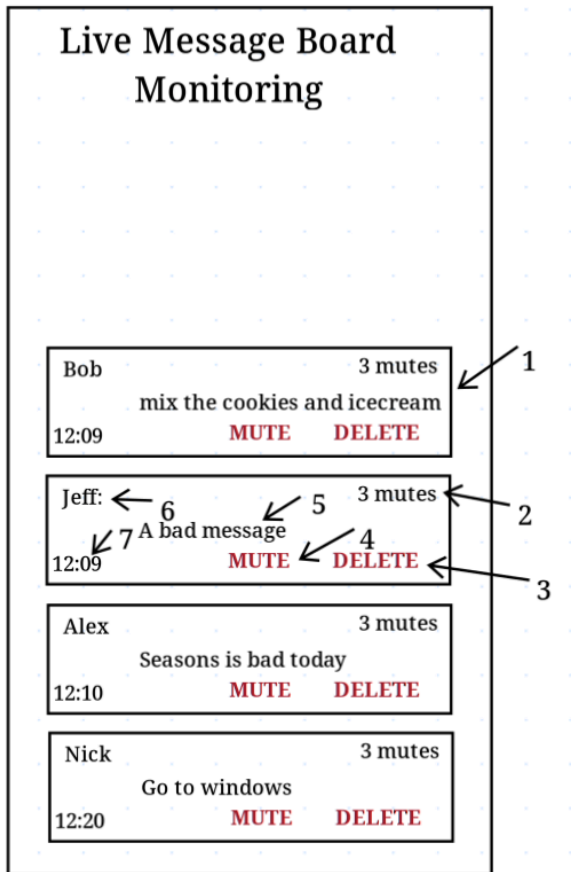
#### Interface Items:

1. Live Post Feed: A chronological feed of new posts, including content and usernames.
2. Quick Action Buttons: Delete message or mute user.

#### Screen Labels:

1. Message box
2. Number of mutes
3. Delete message
4. Mute user
5. Message
6. Username
7. Time posted





Screen 5: Account deletion confirmation by Arjun Patel

Purpose: This screen provides a confirmation that the user wishes to delete their account, as well as provides a reason so we can improve the app.

Screen Labels:

1. Deletion reasons
2. Password confirmation
3. Permanently delete account

The image shows a mobile app screen for account deletion. It has a title 'Account Deletion' at the top. Below the title are five radio button options: 'Privacy Concerns', 'Lack of Use', 'Bugs or crashes', 'Hard to use', and 'Other'. A number '1' with an arrow points to the 'Bugs or crashes' option. Below these options is a text input field labeled 'Enter Password:'. A number '2' with an arrow points to this field. At the bottom of the form is a red rectangular button with the text 'DELETE ACCOUNT' in white. A number '3' with an arrow points to this button.

Account Deletion

☐ Privacy Concerns

☐ Lack of Use

1 → ☐ Bugs or crashes

☐ Hard to use

☐ Other

2 → Enter Password: \_\_\_\_\_

3 → **DELETE ACCOUNT**

## Non-Functional Requirements

### 1. Performance:

#### - Scalability:

The system must be able to handle at least 500 concurrent users without a noticeable decrease in performance, ensuring that meal plans and recommendations are generated quickly (within 1 seconds of user request).

#### - Response Time:

The meal plan generation feature should complete within 1-2 seconds for 99% of users. Requests for nutritional information and meal plan suggestions should have a maximum response time of 300ms from the OpenAI API and Nutritionix API.

### 2. Availability:

#### - Redundancy and Failover:

The app should use multi-region deployment across cloud services like AWS to ensure high availability. Databases and APIs should have geographical redundancy, with automatic failover mechanisms to reroute traffic in the event of a regional outage.

### 3. Security:

- Authentication and Authorization:

User authentication will be managed via OAuth 2.0 with providers like Google, ensuring that user data is protected through secure login methods. All communication between client and server must use HTTPS.

#### 4. Data Management and Storage:

- Data Integrity:

All user data must be stored in a SQL database, including meal plans and tracking information. Data consistency will be enforced through referential integrity in the database schema.

- Caching Mechanism:

To improve performance and reduce the load on external APIs like Nutritionix, frequently accessed data (such as dining hall menus and pre-configured meal plans) will be cached in H2. This will reduce the number of external API calls and improve response times for commonly requested data.

#### 7. Reliability and Fault Tolerance:

- Resilience:

The system should be resilient to failures at any layer of the stack. For example, if the OpenAI API is temporarily unavailable, users should still be able to access previously generated meal plans from the cache or receive fallback options from local logic until the service is restored.

#### 9. API Rate Limiting:

- API Usage Limits:

The OpenAI and Nutritionix APIs have usage limits, so rate limiting and request throttling should be implemented to avoid exceeding the quotas. Each user request will be throttled to ensure the API limits are not exceeded, and priority should be given to active users.

## Tables and Fields

User: All information connected to the user

- Id -Primary Key
- Name
- Email
- Password
- Login token
- Height
- Weight
- age

- IsMod
- IsAdmin
- IsBanned
- previous moderation
- Meals
- Meal plans
- Dietary preference
- Dietary restrictions
- Fitness goal

Day meal: Each day's meals

- Day -Primary Key
- Calories
- Protein
- Carbohydrates
- Fat
- Water
- Breakfast
- Lunch
- dinner

Food: Food items at dining halls

- Id -Primary Key
- Name
- Calories
- Protein
- Carbohydrates
- Fat
- Allergens

Meal plan: daily meal plan

- Id - Primary Key
- Calories
- Proteine
- Carbohydrates
- Fat
- water

Post:

- Id - Primary Key
- User
- Comment
- Time
- Likes

- dislikes

Comment: Comments on posts

- Id - Primary Key
- User
- Comment
- Time
- Likes
- dislikes