Trello Task Management App

* Function-based API Task.
* This Task management will handle all users' tasks on one Main Task Board and will be able to add/assign their team members to and create a Project task environment
* The Trello Task Management allows users to manage boards, tasks, and collaborate with team members.

Models Explanation

1. User Model

* Extends Django's AbstractUser
* Fields:
  + user\_id: Auto-increment primary key
  + username: Unique username
  + email: User email
  + password: Hashed password (max 15 chars)
  + full\_name: Optional full name
  + profile\_image: Optional profile picture
  + is\_admin, is\_superadmin: Boolean flags for permissions
  + created\_at, updated\_at: Timestamps

2. ForgotPasswordOTP Model

* Stores OTPs for password reset functionality
* Fields:
  + user: ForeignKey to User
  + otp: 6-digit OTP code
  + created\_at: Timestamp
  + is\_used: Flag to prevent OTP reuse

3. Board Model

* Represents a task board (like Trello board)
* Fields:
  + board\_id: Auto-increment primary key
  + title: Board title
  + description: Optional description
  + visibility: "private" or "public"
  + created\_by: Creator (User FK)
  + members: Many-to-many relationship with Users
  + Timestamps and updater information

4. TaskCard Model

* Represents a task card (like a Trello card)
* Fields:
  + task\_id: Auto-increment primary key
  + board: ForeignKey to Board
  + Title, description, due date
  + is\_completed: Status ("pending", "doing", "completed")
  + Creator, updater, assignee information
  + Timestamps

5. TaskImage Model

* Stores images attached to tasks
* Fields:
  + task\_image\_id: Auto-increment primary key
  + task\_card: ForeignKey to TaskCard
  + task\_image: Image file
  + Uploader and timestamp information

6. TaskAttachment Model

* Stores file attachments for tasks

Functionality Overview

Authentication Flow

1. **User Registration**
   * Endpoint: /register\_user/
   * Anyone can register
   * Required fields: username, email, password, full\_name
   * Validates unique username and email
2. **User Login**
   * Endpoint: /login\_user/
   * Uses JWT authentication
   * Returns access and refresh tokens
3. **Password Reset**
   * /forgot\_password\_sent\_email/: Sends OTP to email
   * /reset\_password/: Verifies OTP and updates password
4. **Profile Management**
   * /update\_profile/: Update user details
   * /delete\_profile/: Delete user account
   * /view\_my\_profile/: View current user's profile
   * /view\_all\_users/: Admin-only view of all users

Board Management

1. **Board Operations**
   * /create\_board/: Create new board (default private)
   * /update\_board/: Modify board details
   * /delete\_board/: Delete a board
   * /get\_my\_board/: View board with all tasks and details
   * /search\_boards/: Search/filter boards
2. **Board Membership**
   * /add\_member\_to\_board/: Add user to board by email
   * /remove\_member\_from\_board/: Remove user from board
   * /view\_board\_members/: List all board members

Task Management

1. **Task Operations**
   * /create\_task/: Create new task card
   * /update\_task/: Modify task details
   * /delete\_task/: Delete a task
   * /task\_get/: View task details
   * /search\_tasks/: Search/filter tasks
   * /mark\_task\_complete/: Update task status
2. **Task Media Management**
   * /add\_media\_files/: Add images/attachments to task
   * /delete\_task\_mediafile/: Remove specific media file
   * /replace\_task\_mediafiles/: Replace all media files

User Roles and Permissions

Regular User

* Can register, login, manage their profile
* Can create boards (becomes owner)
* Can create/update/delete their own tasks
* Can be added to other boards as member
* Can view boards they are members of
* Can update task status for tasks in their boards

Board Owner (Creator)

* All regular user permissions
* Can update board details
* Can add/remove board members
* Can delete the board

Super Admin

* All regular user permissions
* Can view all users (/view\_all\_users/)
* Can perform actions on any board/task

Key Business Rules

1. **Board Visibility**
   * Private boards are only visible to members
   * Public boards are visible to all users (implementation needed)
2. **Task Assignment**
   * Tasks can be assigned to any board member
   * Unassigned tasks are allowed
3. **Media Files**
   * Multiple images/attachments per task supported
   * Files can be added, deleted, or replaced
4. **Data Ownership**
   * Users can only modify their own boards/tasks
   * Board owners can manage membership
   * Exception: Super admins have full access