Overview:

Build a Trello/Asana-like project management tool where users can collaborate in real-time, manage tasks, communicate, and analyze project performance. It must support multi-tenant architecture, different roles, and advanced features like notifications, real-time updates, and analytics.

Backend Django Rest Framework

1. User System

- JWT-based authentication (djoser or custom).
- Roles: Admin, Manager, Member.
- Multi-tenancy: Users belong to Organizations. One user can be part of multiple orgs with different roles.

2. Projects and Tasks

- Projects belong to an organization.
- Tasks are organized in boards -> columns -> cards (Kanban style).
- Task features: description (Markdown), attachments, due dates, assigned members, comments (threaded), labels, priorities.

3. Notifications

- Push/email notifications when:
  - A task is assigned to a user.
  - A deadline is missed.
  - A comment is added.
- Use Celery + Redis for background task execution.

4. Activity Logs & Audit Trail

- Log every user action (task created, comment edited, etc.).
- Allow filtering by date/user/project/task.

5. Analytics API

- API to generate reports:

  - Tasks completed per day/week.

  - Member productivity.

  - Missed deadlines.

  - Burn-down chart data.

6. API Throttling & Permissions

- Rate limit APIs using throttling classes.

- Fine-grained permissions using DRF permissions and custom decorators.

7. WebSocket Integration

- Use Django Channels for real-time updates on:

  - New task creation.

  - Comment additions.

  - Notifications.

Frontend (React.js)

1. Authentication & Routing

- JWT-based auth with role-based route protection.

- React Router for multi-page navigation.

- Login, Signup, Forgot Password.

2. Project Dashboard

- Kanban-style task board (react-beautiful-dnd).

- Drag-and-drop support for moving cards.

- Filters for task labels, assignees, status.

3. Task Details Page

- Show full task info with Markdown preview for description.

- Threaded comments (reply to comment).

- Add/remove assignees, due date, priority.

4. Real-time Features

- WebSocket-based real-time UI updates for tasks and comments.

- Live user presence (show who's viewing the board).

5. Notification Center

- Sidebar modal for unread/read notifications.

- Mark as read, redirect to relevant task.

6. Reports & Charts

- Integrate Chart.js or Recharts for analytics.

- Show performance charts, member productivity, deadline heatmaps.

7. Responsive UI + Dark Mode

- Mobile-first design.

- Toggle light/dark themes.

- Use TailwindCSS or Material-UI for consistency.