Maplewood Academic Scheduling System Frontend Documentation

This frontend is a React-based single-page application designed to support an academic scheduling and enrollment system. It provides role-specific interfaces for Admins, Teachers, and Students, enabling tasks such as schedule visualization, enrollment management, analytics review, and resource utilization. The UI uses custom components built on top of Bootstrap and follows a consistent design system (Buttons, Inputs, Selects, Cards, PageHeader, Timetable).

1. System Overview

The backend is built using Java and Spring Boot, following a layered architecture. It manages academic scheduling, course offerings, student enrollment, teacher assignments, academic records, progress tracking and resource utilization.

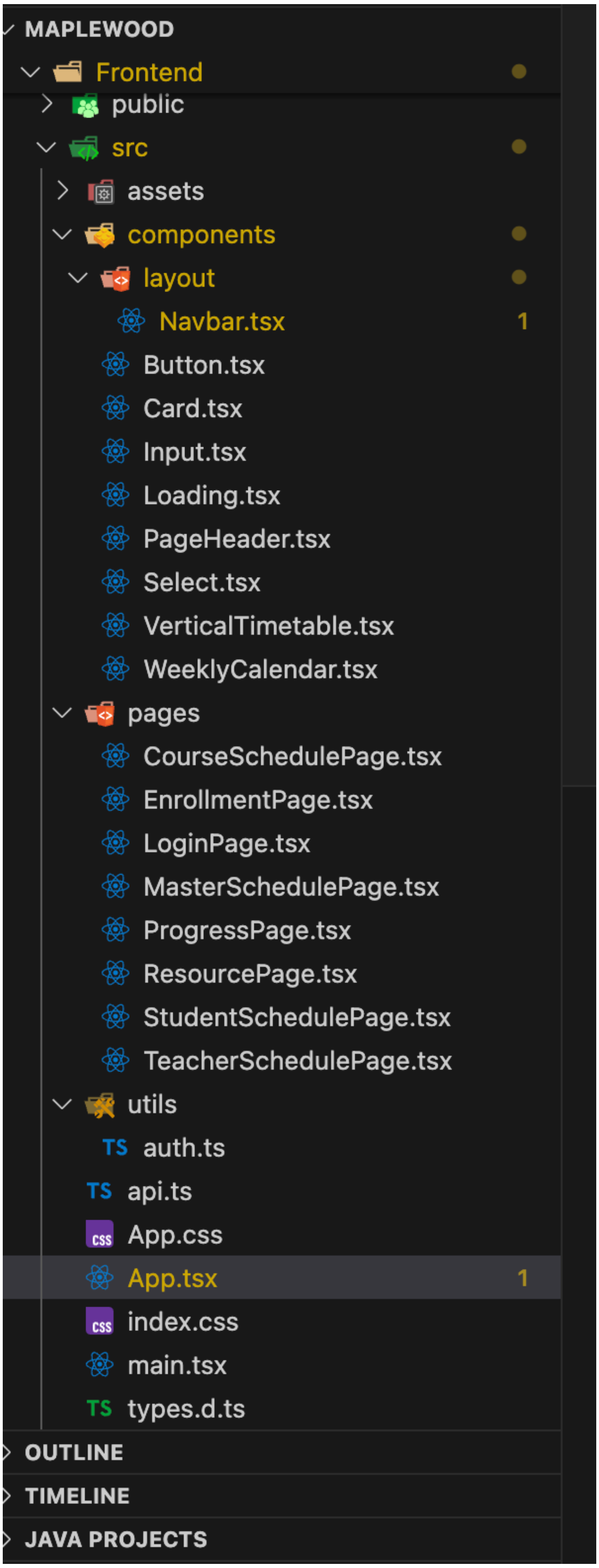
2. High-level Architecture

The system follows a modular, component-driven architecture using:

- **React (Functional Components + Hooks)** for UI logic
- **React Router** for client-side routing
- **API abstraction layer (api.ts)** for backend communication
- **UI component library (/components/ui/*)** for consistent styling
- **Role-based logic** using authentication (getUser) and conditional rendering
- **State management** using React's useState and useEffect

The app is structured around major "pages" backed by reusable components, utilities, and layout elements.

3. Folder Structure



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MAPLEWOOD
  Frontend                          ●
    public
    src                             ●
      assets
      components                    ●
        layout                      ●
          Navbar.tsx                1
        Button.tsx
        Card.tsx
        Input.tsx
        Loading.tsx
        PageHeader.tsx
        Select.tsx
        VerticalTimetable.tsx
        WeeklyCalendar.tsx
      pages
        CourseSchedulePage.tsx
        EnrollmentPage.tsx
        LoginPage.tsx
        MasterSchedulePage.tsx
        ProgressPage.tsx
        ResourcePage.tsx
        StudentSchedulePage.tsx
        TeacherSchedulePage.tsx
      utils
        auth.ts
      api.ts
      App.css
      App.tsx                       1
      index.css
      main.tsx
      types.d.ts
OUTLINE
TIMELINE
JAVA PROJECTS
```

5. Key Pages and Components

Key Pages

- **LoginPage** — Handles authentication and redirects based on role.
- **EnrollmentPage** — Shows available sections and allows students to enroll.
- **CourseSchedulePage** — Displays courses grouped with sections and timetable.
- **MasterSchedulePage** — Admin-only page to generate and view global schedules.
- **StudentSchedulePage** — Student/admin view of an individual's schedule.
- **TeacherSchedulePage** — Teacher/admin view of teaching schedule.
- **ResourcePage** — Analytics graphs (teachers & room usage).
- **ProgressPage** — Student progress or grade tracking (if applicable).

Key Components

- **PageHeader** — Standardized page title + actionable toolbar.
- **Button** — Consistent button with height = 42px and variant/size props.
- **Input** — Uniform text/number input component.
- **Select** — Styled dropdown matching UI design.
- **Card** — Common container block for grouping UI elements.
- **VerticalTimetable** — Visual weekly schedule grid.
- **Loading** — Spinner displayed during async operations.

6. Page and Component Summary

LoginPage

Handles user login and role-based redirection.

- Uses Input + Button
- Calls authentication API

EnrollmentPage

Students browse available sections and enroll.

- Uses Card, Button, Select
- Displays enrollment status and section metadata

CourseSchedulePage

Admin view of course → section → timetable structure.

- Split layout: course list (left), schedule (right)
- Supports CSV export
- Heavy use of Card, VerticalTimetable

MasterSchedulePage

Admin-only schedule generator.

- Semester selection
- Generate + Load buttons
- Displays timetable in Card

StudentSchedulePage

Student's weekly schedule based on semester. Student / admin view of schedule.

- Admin: dropdown + Load
- Student : auto-loaded schedule
- Student info card
- Uses Input (admin only), Select, VerticalTimetable

TeacherSchedulePage

Teacher/admin view of teaching schedule.

- Admin: dropdown + Load
- Teacher: auto-loaded schedule
- Includes teacher info card

ResourcePage

Displays analytics using Chart.js.

- Bar charts centered inside Cards
- CSV export
- Uses PageHeader + Button + Card

Shared Components

- Button/Input/Select enforce consistent height & Bootstrap theme
- PageHeader unifies page-level layout
- VerticalTimetable shows visual time blocks