TIMETABLE GENERATOR

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PROJECT ID	**23**
PROJECT TITLE	**TIMETABLE GENERATOR**

1. INTRODUCTION

Overview of the Timetable Generator:

The Timetable Generator is a web application designed to automate the scheduling of classes for educational institutions. It addresses the complex task of creating conflict-free schedules for students, faculty, and classrooms. The target audience includes school administrators, teachers, and students. Key features include automatic scheduling, conflict detection, and an easy-to-use interface for viewing and managing timetables.

Purpose and Scope of the Documentation:

This documentation is intended for end users, administrators, and developers. It covers the installation, configuration, usage, and extension of the timetable generator. The documentation is organized into sections that provide detailed instructions and explanations for different aspects of the application.

2. SOFTWARE REQUIREMENTS

FRONT END	Angular
BACK END	Node.js with Express.js
DATABASE	MongoDB
API	RESTful API

3. USER GUIDE

User Interface Overview

The user interface includes the following components:

- **Menus:** Navigation menu for different sections (Courses, Faculty, Rooms, Timetables).
- **Toolbars:** Action toolbars for adding, editing, and deleting entries.
- **Main Windows:** Display content such as timetables, forms for data entry, and reports.

Creating a New Timetable

1. Navigate to the Timetable section.
2. Click on "Create New Timetable".
3. Fill in the required information (e.g., courses, faculty, rooms, times).
4. Click "Generate Timetable".

Adding, Editing, and Deleting Events

- **Add Event:** Go to the specific section (Courses/Faculty/Rooms), click "Add New", fill in the details, and save.
- **Edit Event:** Select the event from the list, click "Edit", modify the details, and save.
- **Delete Event:** Select the event and click "Delete".

Importing and Exporting Data

1. **Import:** Navigate to the relevant section, click "Import", select the file (CSV format), and upload.
2. **Export:** Navigate to the relevant section, click "Export", and select the desired format (e.g., CSV, PDF).

Generating Reports

1. Go to the Reports section.
2. Select the type of report (e.g., weekly schedule, faculty schedule).

3. Customize the report parameters (e.g., date range, specific faculty).
4. Click "Generate Report" and download the report in the desired format.

4. Features and Functionality

Scheduling Algorithms

The timetable generator uses optimization algorithms to allocate time slots for classes, ensuring no conflicts and optimal usage of resources.

Conflict Detection and Resolution

The system automatically detects scheduling conflicts (e.g., overlapping classes, double-booked rooms) and provides options to resolve them by suggesting alternative time slots or rooms.

Notifications and Reminders

Users can set up notifications and reminders for upcoming classes or changes in the schedule via email or in-app alerts.

Timetable Display

1. **Students:** View their personal class schedules.
2. **Faculty:** View their teaching schedules.
3. **Administrators:** View and manage overall schedules.

5. Administrative Functions

User Management (Roles, Permissions)

Administrators can manage users, assign roles (e.g., admin, faculty, student), and set permissions for accessing different parts of the application.

Data Backup and Restoration

Instructions for backing up and restoring data:

1. Navigate to the Admin panel.
2. Click on "Backup Data" and select a backup location.

3. To restore, click on "Restore Data", select the backup file, and upload.

Configuration Settings

Overview of configuration settings available to administrators, including application settings, notification preferences, and data management options.

6. Advanced Usage

Integrating with Other Systems (API Usage)

Instructions on integrating the timetable generator with other systems using its API:

1. Obtain an API key from the Admin panel.
2. Use the provided endpoints to interact with the system (e.g., retrieve timetable data, update events).

Automation Scripts

Examples of automation scripts for common tasks such as daily backups or data synchronization with other systems.

Custom Scheduling Rules

Guide on defining and applying custom scheduling rules:

1. Navigate to the Settings section.
2. Click on "Custom Rules" and define new rules based on your institution's requirements.

7. Scope

Architecture Overview

Detailed explanation of the software's architecture and design principles, focusing on the MEAN stack.

Development Setup

Instructions for setting up a development environment:

1. Clone the repository.
2. Install dependencies using npm install.
3. Set up MongoDB and configure connection strings.
4. Start the development server using npm start.

Testing and Debugging

Instructions for testing and debugging the software:

1. Use Jasmine and Karma for Angular unit tests.
2. Use Mocha or Jest for Node.js tests.
3. Debug using built-in tools like Chrome DevTools for frontend and Node.js debugger for backend.

Contributing to the Project

Guidelines for contributing to the project, including coding standards, branching strategy, and submission processes:

1. Fork the repository.
2. Create a new branch for your feature or bug fix.
3. Commit your changes and push to your branch.
4. Submit a pull request for review.

8. API Documentation

Overview of the API

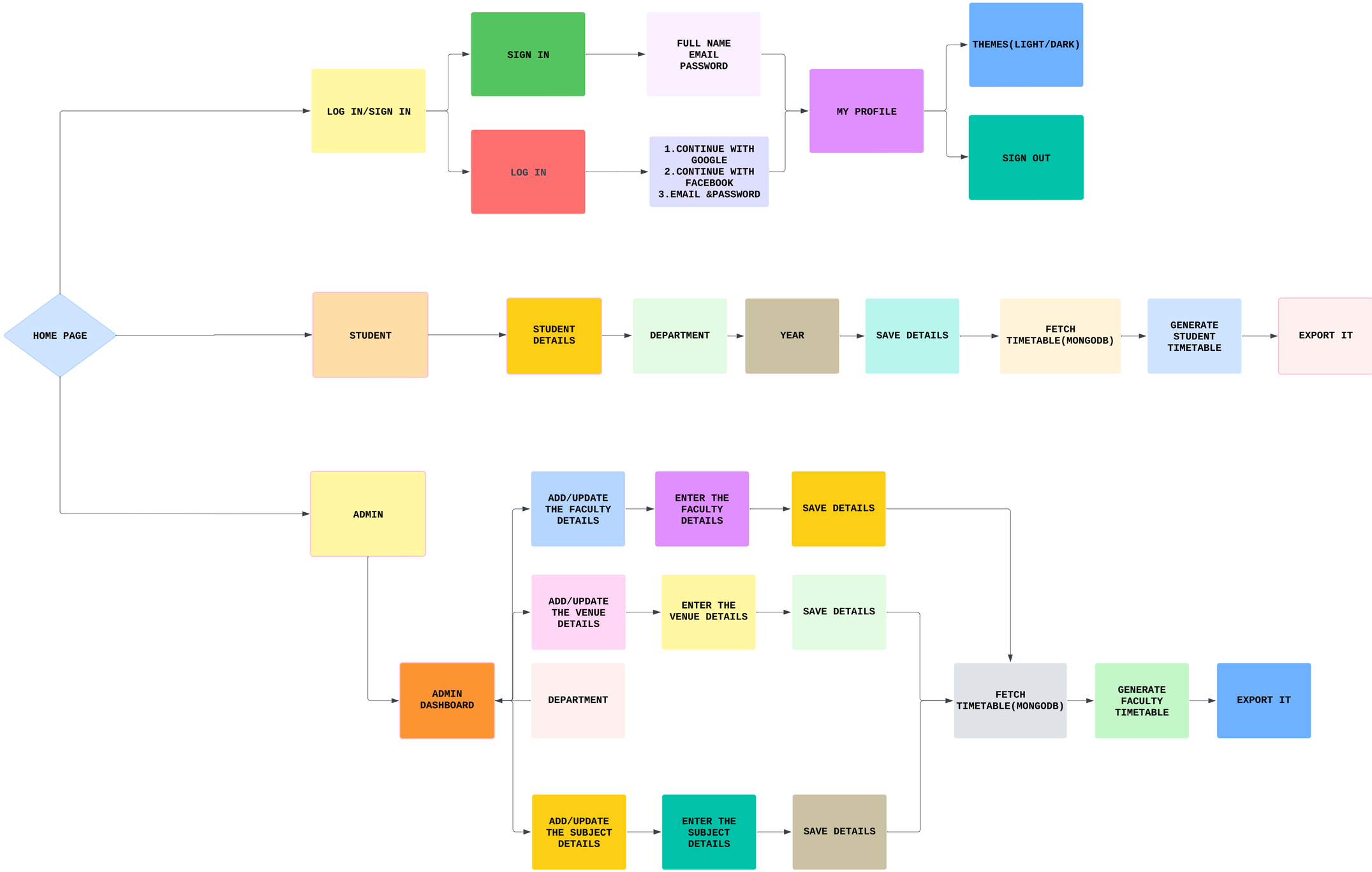
General information about the API, including its purpose and capabilities. The API allows interaction with the timetable generator for tasks such as retrieving, creating, and updating timetable data.

Authentication and Authorization

Instructions on how to authenticate and authorize API requests:

1. Obtain an API key from the Admin panel.
2. Include the API key in the Authorization header of your requests.

FLOW CHART:


HOME PAGE
LOG IN/SIGN IN
SIGN IN
LOG IN
FULL NAME
EMAIL
PASSWORD
1.CONTINUE WITH GOOGLE
2.CONTINUE WITH FACEBOOK
3.EMAIL &PASSWORD
MY PROFILE
THEMES(LIGHT/DARK)
SIGN OUT
STUDENT
STUDENT DETAILS
DEPARTMENT
YEAR
SAVE DETAILS
FETCH TIMETABLE(MONGODB)
GENERATE STUDENT TIMETABLE
EXPORT IT
ADMIN
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ADD/UPDATE THE FACULTY DETAILS
ENTER THE FACULTY DETAILS
SAVE DETAILS
ADD/UPDATE THE VENUE DETAILS
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