

STAGE 1: PLANNING AND REQUIREMENT GATHERING

PROJECT ID : 23

PROJECT NAME : TIME TABLE GENERATION

STACK : PYTHON

FEATURE OF THE TASK:

Admin Feature:

- **Admin Input Interface:**
 - Input teacher details, classroom numbers, subjects, and available time slots.
 - Input constraints like maximum hours per day and preferred time slots.
- **Database Storage:**
 - Store timetable data, teacher schedules, and classroom availability in a database (e.g., SQLite, MySQL).
- **Conflict Checker:**
 - Function to check if a teacher is double-booked at the same time.
- **User-Friendly Interface:**
 - Web-based or desktop GUI for easy admin input and timetable management.
 - Display current timetables for reference.
- **Scheduling Algorithm:**
 - Implement algorithms to generate the timetable considering constraints like teacher availability and classroom capacity.
- **Optimization:**
 - Optimize the timetable to minimize gaps for teachers and balance class distribution throughout the week.
- **Reports and Notifications:**
 - Generate and distribute reports of the final timetable.

- Send notifications about schedules and changes to teachers and admins.
- **Scalability:**
 - Design the system to handle a large number of classes, teachers, and classrooms, and ensure easy extension or modification.
- **Backup and Recovery:**

Implement periodic backups and a recovery mechanism.

Teacher Interaction

1. **Login:**
 - Teachers log into the system using secure credentials.
2. **View Schedule:**
 - Teachers can view their schedules for the current term/semester.
 - Teachers can see any updates or changes to their timetable.
3. **Notifications:**
 - Teachers receive notifications about their schedules and any changes.
 - Teachers get alerts for conflicts and important updates.

User-Friendly Interface

- **Web-Based GUI:**
 - Admin and teachers access the system via a web browser.
 - The interface includes forms for inputting data, dashboards for overview, and tables/charts for timetable display.
- **Desktop GUI:**
 - Alternatively, the system can be accessed via a desktop application with similar functionalities.

INTERACTION WORKFLOW

1. Login Screen:

- Both admin and teachers enter their credentials to access the system.

2. Dashboard (Admin):

- Admin sees an overview of the current timetable status, pending conflicts, and other important information.

3. Input Forms (Admin):

- Admin inputs or updates data for teachers, classrooms, and subjects through structured forms.

4. Timetable Generation (Admin):

- Admin clicks a button to generate the timetable.
- System processes the data and displays results, highlighting any conflicts.

5. Conflict Resolution (Admin):

- Admin views conflict details and options for resolution.
- Admin makes necessary adjustments.

6. Review and Finalization (Admin):

- Admin reviews the timetable on a detailed screen.
- Admin finalizes the timetable with a confirmation action.

7. Schedule View (Teacher):

- Teachers log in to view their schedules.
- Interface displays daily, weekly, and monthly views.

FLOWCHART:



