Assignment - Timetable

Role   Java Full Stack Developer

Experience Range   1 - 4 Years

Problem Statement -

We have to create an application to generate timetable for an institute (school/college).

Summary -

Here is a detailed explanation of the problem you have to solve.

The institute consisting of **n classes/batches** and **m sections/branches** wants to create a timetable for the given session/semester from the pool of teachers (**x teachers**) it has.

Given are following assumptions you have to take -

1. Each day will have 8 periods of 45 minutes each with a 30 minutes break after 4 periods.
2. A institute session/semester has to defined in advance (a period of 6 months or a year should be considered for creating timetable).
3. No Classes on Sunday, public and government holidays. Saturday has be configurable depending on institute (Use some dynamic setting for this).
4. A teacher can not take more than 8 periods in a day. Also there should be at least 1 free period for each teacher (for backup in case of absent teachers).
5. Each class/section must have period of each subject daily only once. Typical 8 subjects for a school class 9th can be - English, Hindi, Maths, Science, Social Science, Computers, Communication Skills, Games.
6. If there are not enough teachers to arrange periods for all classes and subjects in day, then an error should be shown with minimum number of teachers required to arrange classes.
7. In case of schools, teachers will have their levels - PRT, TGT, PGT and a pool of every type of teachers should be maintained separately.
8. Timing of period or period number can be different everyday for every subject. It should be dynamic.

Expectations -

Here is what we are expecting you to deliver.

Complete time-table for all classes, sections and teachers for the complete session/semester.

Front End - Required Pages for -
1. Add/Remove/View Classes in my institute.
2. Add/Remove/View Sections of each class in my institute.
3. Add/Remove/View Teachers in my institute.
4. Add/Remove/View Subjects in my institute.
5. Add/Remove/View Holidays/Working/Non-Working days of a session in my institute.
6. Timetable create/view/update for all classes/any one class/section.
7. Search in timetable on the basis of Class/Section/Date/Teacher/Time.

Back End -
1. REST APIs to Add/Remove/View Classes
2. REST APIs to Add/Remove/View Sections
3. REST APIs to Add/Remove/View Mapping of sections to classes
4. REST APIs to Add/Remove/View Teachers
5. REST APIs to Add/Remove/View Subjects
6. REST APIs to Add/Remove/View Subjects to Classes & Sections
7. REST APIs to configure session/semester
8. REST APIs to Add/Remove/View Holidays/Working/Non-Working days of a session
9. REST APIs to Create/Update/Remove Timetable for one class/section or all classes/sections in a session
10. REST APIs to Search in timetable on the basis of Class/Section/Date/Teacher/Time

Other than the business logic, we expect you to have proper logging, exception handling and error message, comments, naming conventions and application design in your code.

Your Code is Your Image