

# Music School Course Management System

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## Client Background

This project involves a small music school with a student population ranging between 300-500 and a part-time teaching staff of 10-30. The school offers instruction in various instruments, including piano, violin, cello, guitar, and drums, as well as composition. Courses are categorized into group lessons (2-6 students) and one-on-one private lessons.

Currently, the school manages courses manually using Excel, which is time-consuming and error prone. This course management task is crucial for the school's daily operations, and they are seeking to implement an IT system for more efficient management. The school previously attempted to use a SaaS system but abandoned it due to a lack of customization options and high costs for tailored features.

## Project Objectives

The primary objective of this project is to design and implement a course management system tailored to the school's specific needs, with the capability to provide data to their financial system.

## Requirements Overview

1. The current system is designed for single-user use, but it needs to be prepared for expansion to a multi-user system.
2. The system must be able to manage a variety of courses:
  - 1) Course Categories: Group lessons and one-on-one lessons; piano, violin, cello, guitar, drums, and composition; fixed-schedule recurring courses and on-demand booking courses.
  - 2) Weekly Summary Schedule: Ability to generate a weekly summary schedule.
  - 3) Course Management: Ability to add, modify, and cancel each class.

3. The system must be able to manage teachers and handle tasks such as teacher onboarding, leave, vacations, class cancellations, substitutions, and resignations.
4. The system must be able to manage students and handle tasks such as student registration, leave, class cancellations, and bookings.
5. The system must be able to manage classrooms.
6. The system must be able to export data for financial use.

## Architecture

The system development will utilize the following technologies:

- **Frontend (React.js):**
  - Construct the user interface using React.js.
  - Communicate with the backend RESTful API via Axios.
- **Backend (Node.js):**
  - Build RESTful API using Node.js.
  - Handle frontend requests and perform business logic.
  - Interact with the MySQL database for data storage and retrieval.
- **Database (MySQL):**
  - Store application data.
  - Perform data insertion, updating, deletion, and querying through SQL.

## Week 2 report

### Tasks for This Week

1. Complete the setup of the development environment.
2. Learn React.js and Node.js.
3. Start functional design.
4. Start Database design.

### Challenges This Week

1. **Limited Knowledge of React.js and Node.js:** Need to spend time reading documentation and watching tutorial videos to learn.
2. **Analysis of Original Requirements:** There are ambiguities in the definitions, which need to be addressed based on experience.

### Plans for Next Week

1. Continue learning React.js and Node.js.
2. Complete the main functional design.
3. Complete the main database design.
4. Start coding.

## Week 3 report

### Tasks for This Week

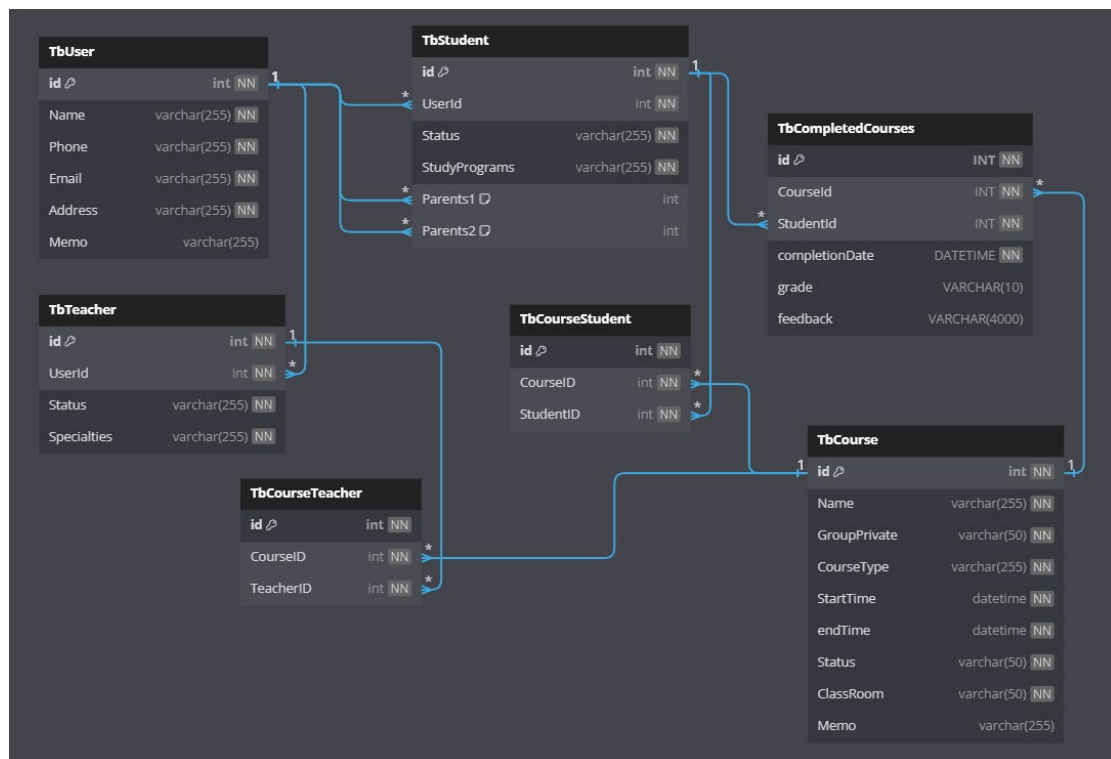
- According to Sapna's suggestion, I will first focus on database design, then proceed with backend development, and finally work on frontend development. Therefore, I have adjusted my plan. After discussing with Sapna this week, I have basically completed the design of the main database tables. Learn React.js and Node.js.

### Challenges This Week

- There were some confusions in the design of the database abstraction for the requirements, but they have been corrected after discussion.

### Plans for Next Week

- Developing backend code while learning Node.js and related technologies.
- The remaining details of the database design will be refined during the development process.



## Week 4 report

### Tasks for This Week

- Completed part of the backend code, primarily the modules for teachers, students, and guardians. And complete the corresponding test scripts in Postman.

### Challenges This Week

- Develop while getting familiar with Node.js technology.

### Plans for Next Week

- Next week, I plan to finish the coding sections for courses and completed courses.
- And complete the automatic generation function for long-term courses.
- Develop database stored procedures to automate daily course settlements.

```

/***** teacher routes *****/
const CTeacher = require("../controllers/teacher.controller");
app.get('/teacher', CTeacher.getAllTeachers);

// Search teachers for the specified string in name, ph
app.get('/teacher/search/:searchstring', CTeacher.getTe

app.get('/teacher/:id', CTeacher.getTeacherById);

app.post('/teacher', CTeacher.addNewTeacher);

app.put('/teacher/:id', CTeacher.updateTeacherById);

/***** student routes *****/
const CStudent = require("../controllers/student.contro
app.get('/student', CStudent.getAllStudents);

// Search students for the specified string in name, ph
app.get('/student/search/:searchstring', CStudent.getSt

app.get('/student/:id', CStudent.getStudentById);

app.post('/student', CStudent.addNewStudent);

app.put('/student/:id', CStudent.updateStudentById);

// set parents1 and parents2
app.put('/student/guardian/:id', CStudent.setStudentGua

/***** guardian routes *****/
const CGuardian = require("../controllers/guardian.cont
app.get('/guardian', CGuardian.getAllGuardians);

// Search guardians for the specified string in name, p
app.get('/guardian/search/:searchstring', CGuardian.get

app.get('/guardian/:id', CGuardian.getGuardianById);

app.post('/guardian', CGuardian.addNewGuardian);

app.put('/guardian/:id', CGuardian.updateGuardianById);

```

#### Music'School

POST Add a new teacher

PUT update teacher information

GET all teachers

GET get teacher by id

GET searched teachers

POST Add a new student

PUT update student information

PUT set guardian to student

GET all students

GET get student by id

GET searched students

POST Add a new guardian

PUT update guardian information

GET all guardians

GET get guardian by id

GET searched guardians

## Week 5 report

### Tasks for This Week

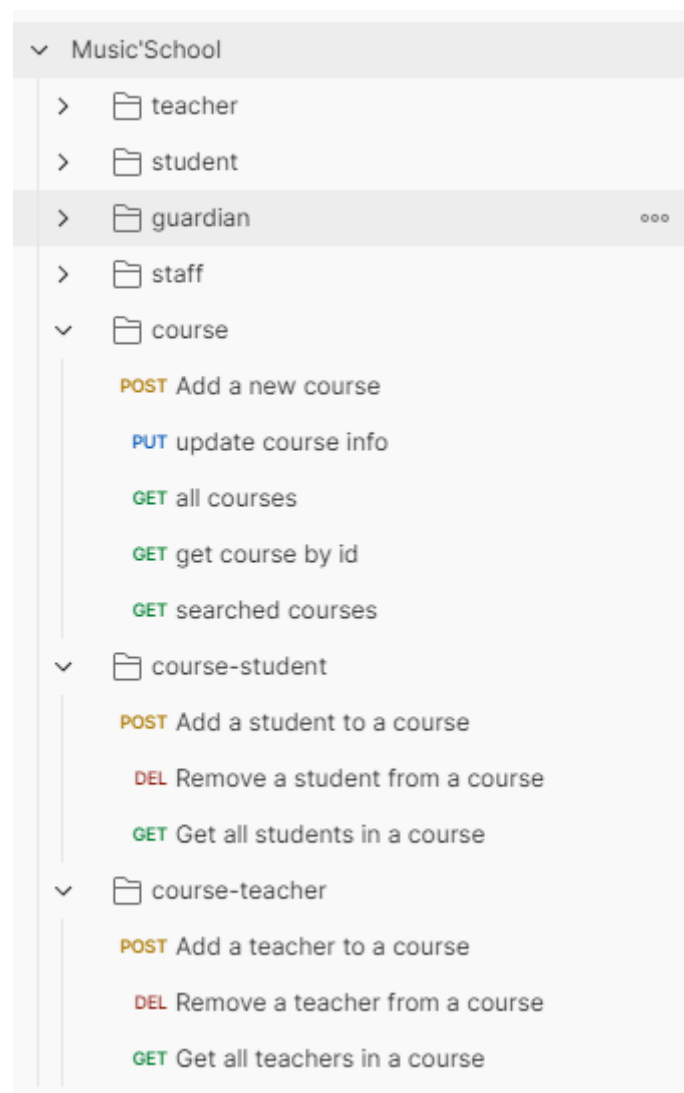
- Completed all of the backend code, and complete the corresponding test scripts in Postman(Rearranged the postman request with sub-folders).

### Challenges This Week

- Develop while getting familiar with Node.js technology.

### Plans for Next Week

- Next week, I plan to start the coding sections for frontend, and finish the client code of the first feature.
- Start to learn some lessons for bootstrap



## **Week 6 report**

### **Tasks for This Week**

- Learn to develop frontend applications using React and Bootstrap, and practice by following online tutorials.

### **Challenges This Week**

- Since I have never worked with Bootstrap before and have limited knowledge of React, I need to start learning from scratch and gradually get up to speed during the development process. Progress has been slow this week, but I expect to gradually pick up the pace next week.

### **Plans for Next Week**

- Next week, I plan to complete a full set of interfaces for create, read, update, and delete (CRUD) functionalities.
- Continue learning and practicing Bootstrap.

## Week 7 Report

### Tasks Completed This Week


- Successfully set up and debugged the development environment.
- Completed a significant portion of the frontend development, including functional interfaces for listing, adding, and editing operations.

### Challenges Faced This Week

- Encountered difficulties in designing visually appealing user interfaces due to limited experience and a lack of proficiency in sourcing relevant online resources.

### Plans for Next Week

- Continue working on the development of remaining frontend features.
- Focus on deepening knowledge of the technical details needed to address more complex functional requirements.

 Irvine School of Music

Home About

Student

Course

Teacher

Guardian

Staff

Teacher List

+ Add New Teacher

Search teacher...

Name	Phone	Email	Status	Specialties	Actions
David Doe	123-456-7890	john.doe@example.com	suspend	piano,guitar,drum	<div>Edit</div>
Julia Roberts	223-456-7890	julia@example.com	onleave	voice,flute-saxophone-clarinet	<div>Edit</div>
update teacher name 2	test phone 2	test@email	resigned	piano,violin,drum,flute-saxophone-clarinet	<div>Edit</div>
test newteacher 1	test phone 1	test@email	active	drum,guitar	<div>Edit</div>

10

Edit Teacher

Name

David Doe

Phone

123-456-7890

Email

john.doe@example.com

Address

123 Main St

Memo

Experienced music teacher

Status

Suspend

Specialties

☒ Piano

☐ Voice

☐ Violin

☒ Drum

☒ Guitar

☐ Flute/Saxophone/Clarinet

Update Teacher

Cancel



## **Week 8 Report**

### **Tasks Completed This Week**

- The development of all major front-end functionalities has been successfully completed. This includes the implementation of essential features and ensuring that the user interface is fully functional, responsive, and aligned with the project requirements. The core components of the front-end are now in place, ready for further testing and refinement.

### **Challenges Faced This Week**

- The customization of the front-end components' appearance still presents some challenges.

### **Plans for Next Week**

- Improve and optimize the code, enhance the appearance, and fix bugs.

## **Week 9 Report**

### **Tasks Completed This Week**

- This week, I integrated Google Firebase for user management, which handles system registration and login.
- I also completed the deployment of the system on AWS EC2, and it has been successfully tested for access. Additionally, I applied for Dynamic DNS, but access from the school's network is blocked.

### **Challenges Faced This Week**

- Solving various access and permission issues related to deployment has been a new experience to me.

### **Plans for Next Week**

- Prepare the presentation slides, prepare the report, and prepare the data for the demonstration.