IFSC 3360: System Analysis and Design
Final Project Report

Practice Log System

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Introduction

I took formal piano lessons starting when I was five and continuing through high school. In my early twenties, I became a professional musician, traveling the country and making my living playing music and entertaining crowds. Before I knew it, music provided me with opportunities I never expected and shaped my life in ways I never would have imagined. Music took me from my hometown of Boise, Idaho, through multiple cities, to Little Rock, Arkansas. I have now learned to sing and play piano, guitar, drums, bass guitar, and saxophone. Seeing myself as a lifelong student of music, I eventually began teaching piano lessons. I have taught as many as 17 students at a time, and my teaching career has spanned more than ten years. Though I started learning to play the piano over three decades ago, there is one obstacle that has always been there to threaten my progress. That threat left unaddressed, may have ended my musical journey. It is the need for organization.

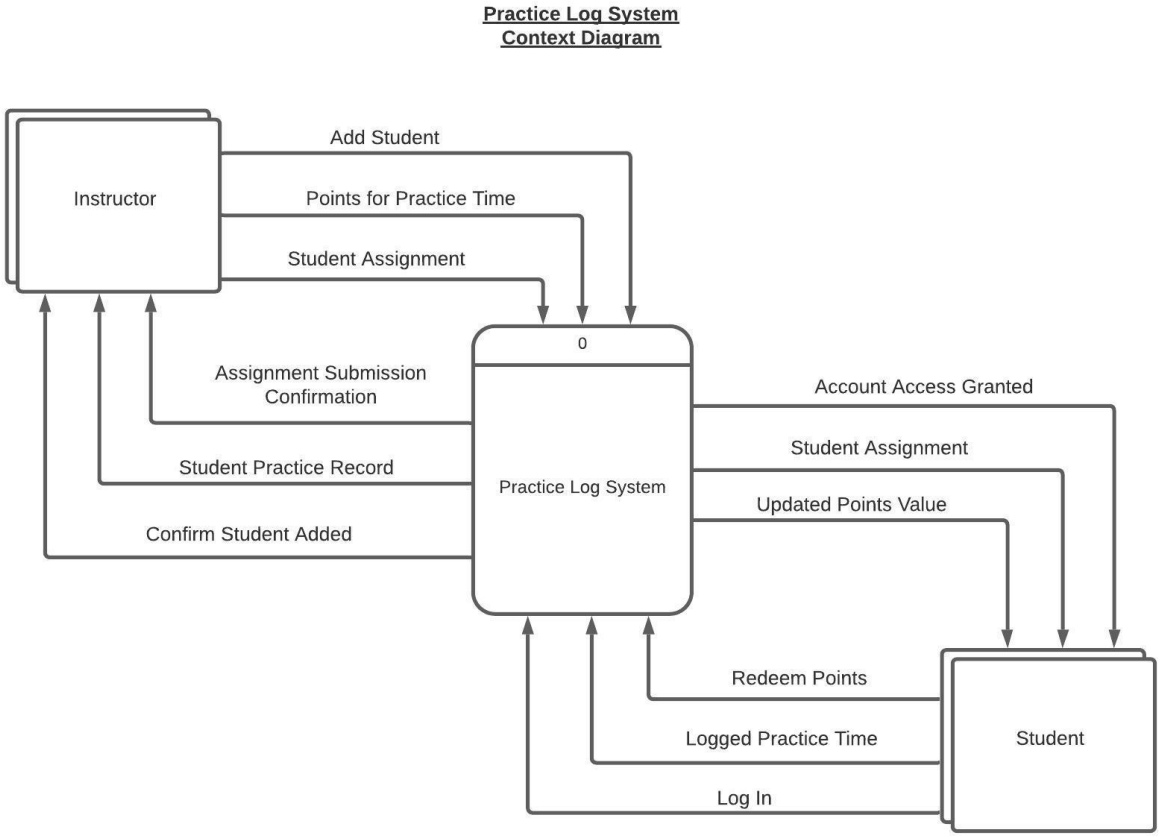
As a beginning piano student, I used a small paper notebook to track my weekly lesson assignments and my daily practice times. That little notebook came with many limitations. It would be easily lost, torn, and forgotten during my pursuit of musical knowledge. Print would often smudge. Some practice journal iterations were too bulky to add to a full instrument case. My notebook wasn't perfect, but it was my best chance for staying organized.

After decades of technological advancement, we now have other, more refined tools which help us address such needs. This new practice log system serves the purpose of a music notebook, but moved online where it won't be lost or destroyed. Rather than teachers writing musical scales, arpeggios and other exercises tediously, by hand, they can easily be added to an assignment with a click. A teacher can pull up previous weeks' student assignments and practice records during the lesson without the student lugging extra books to the lesson.

The online practice log system doesn't only remedy problems with paper notebooks that were apparent decades ago. It is a system that can be expanded to include features that could not be foreseen. It can be expanded, utilizing the internet to allow online payments and syncing lesson schedules for multiple students and teachers. As the capabilities of the system are expanded, it doesn't only serve as a replacement for a practice journal, but it manages most challenges associated with music lessons. This aids in minimizing distractions. The practice log system grants the ability for teachers to teach and students to learn.

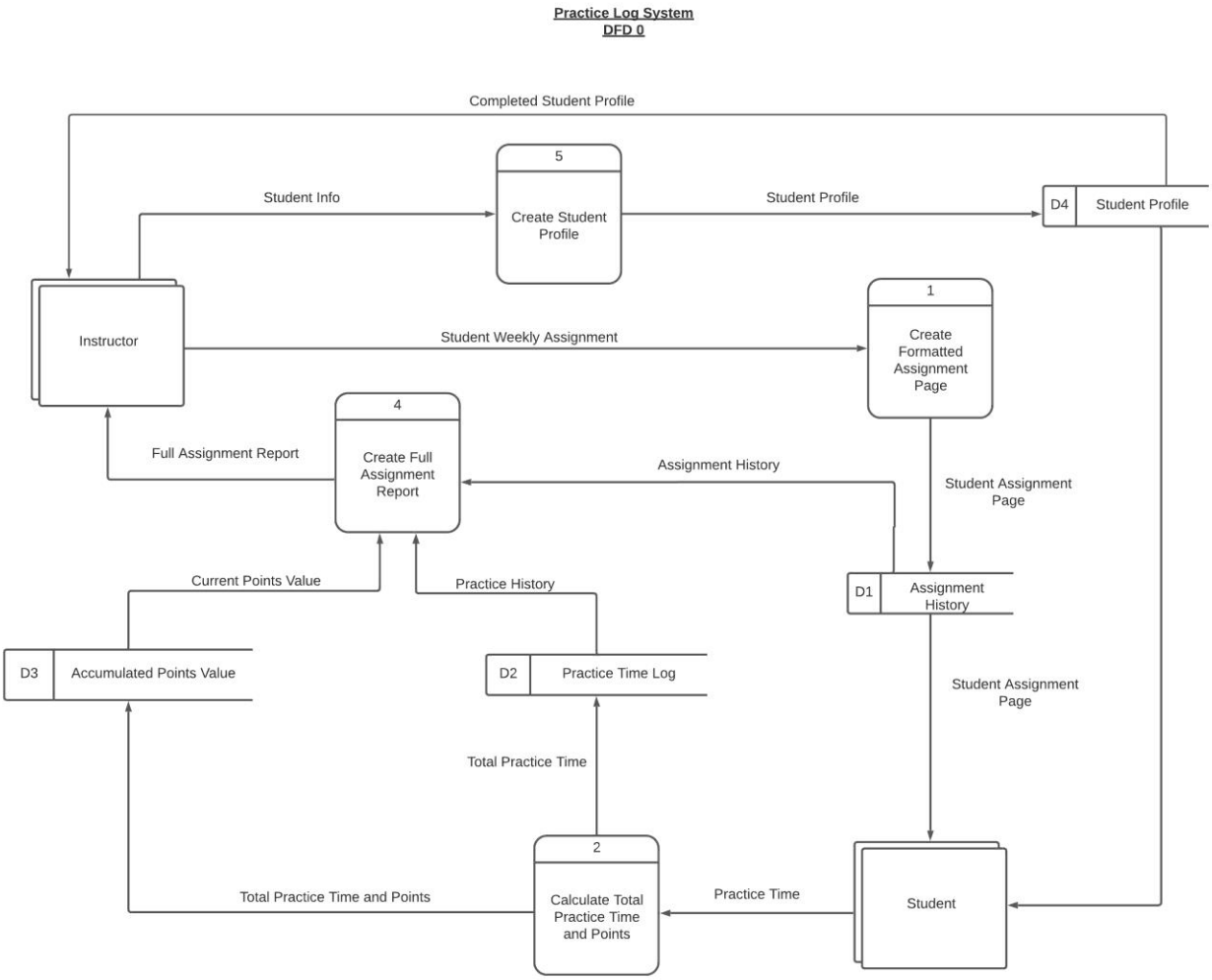
System Requirements Model

Context Diagram Description: Here we have two entities interacting with the practice log system. The instructor interacts with the system in the following ways. The instructor may add a student and receive confirmation of this action. The instructor may receive a student's practice record from the system, then assign points for the student's practice time. The instructor may also submit a student assignment to the system and receive a confirmation back. The second entity that interacts with the system is the student. The student can log in and receive access to their account in the system. They can view their assignment from their teacher through the system and input practice times to the system. They can also view their accumulated points value and redeem points in the system.

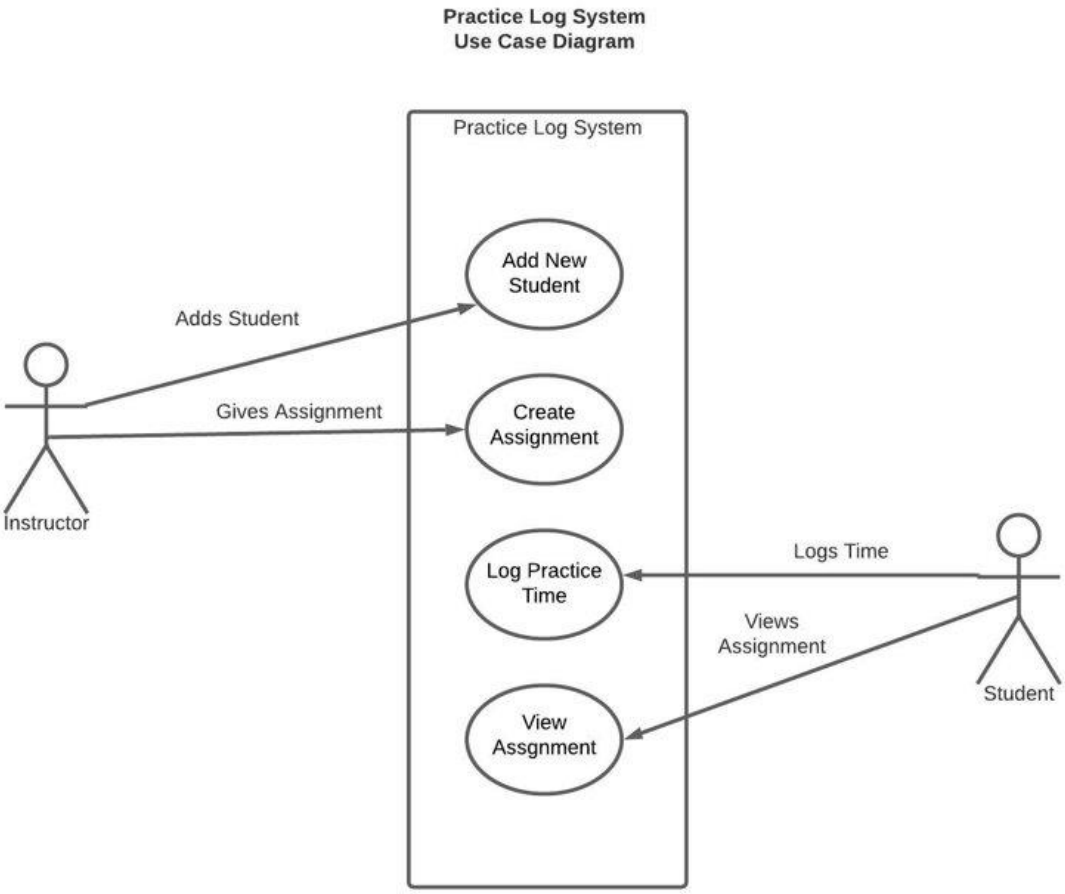


DFD 0 Description: Inside DFD 0 we have two actors, four processes, and four data stores. The instructor can send student information to the system which gets formatted in process 5 into a student profile. The student profile is then stored in D4 which can be later accessed by the student or the instructor. The instructor may also send student assignment information through

the process 1 where it is organized and then sent to be stored in data store D1. The full assignment as well as the student's full assignment history can be viewed by the student. That assignment history can also be viewed by the instructor. The student is able to submit their practice times to the system and a comprehensive assignment report is then available for the instructor after the points and practice times are saved in D3 and D2.



UML



System Sequence Diagram

System Sequence Diagram Description: There are two actors who interact with the Practice Log System. They are the Teacher/Instructor and the Student. The diagram shows the teacher may add a student and receive a confirmation of the action being completed successfully. The student can log in and is, in return, granted access to their account. The teacher can submit a student assignment to the system and get a confirmation back. Once logged in, the student is able to click a button to open their assignment and be granted access to that information by the system. The student can also log their practice time, receiving a confirmation, and redeem points, after which they will get an updated point value from the system.

Sequence Diagrams

Use Case - Add Student

In the Add Student use case's sequence diagram the teacher inputs the student's information and confirms it, then the system returns a confirmation that it received the new student information.

ADD NEW STUDENT Use Case

Name: Add New Student
Actor: Teacher
Description: Creates a profile and account for a new student that includes the name, phone number, address, email, birthdate, parent name(s), and password of a student.

Successful Completion:
1. Teacher logs into account.
2. Teacher clicks Add Student button.
3. Information is gathered in-person from the student and is added to the form.
4. Teacher clicks Add button.
5. New student account is created.

Alternative:
1. Teacher logs into account.
2. Teacher clicks Add Student
3. Teacher clicks Cancel button.
4. New student account is not created.

Precondition: Student arrives for first lesson with teacher and has no existing account.
Postcondition: Student has a new student account.

Use Case – Create Assignment

In the Create Assignment use case's sequence diagram the teacher inputs the student assignment information and the system returns a confirmation that the assignment was entered into the system.

CREATE ASSIGNMENT Use Case

Name: Create Assignment
Actor: Teacher
Description: The teacher creates an assignment for their student to view for practice sessions while the student and teacher are not together.

Successful Completion:
1. Teacher logs into their account.
2. Teacher clicks the student they would like to add and assignment for.
3. Teacher clicks the Add Assignment button.
4. Teacher types notes from the lesson in as an assignment.
5. Teacher clicks the Finish button to submit the assignment.
6. Teacher gets confirmation that the assignment was entered.

Alternative:
1. Teacher logs into account.
2. Teacher clicks the student they would like to add assignment for.
3. Teacher clicks Add Assignment.
4. Teacher clicks Cancel.
5. No assignment is created.

Precondition: There is a Student in the system and the Teacher needs to create an assignment for the student.

Postcondition: Student has an assignment in the system that they can access at home for their practice purposes.

Use Case - Student Log In

In the Student Log In use case's sequence diagram the student submits their log in information to the system and the system returns access to the student's account.

STUDENT LOG IN Use Case

Name: Student Log In
Actor: Student
Description: The student logs into the system so they can use it.

Successful Completion:
1. Student clicks Student Log In button.
2. Student enters username and password into fields.
3. Student clicks Log In button.
4. Student is allowed access to the system.

Alternative:
1. Student clicks Student Log In button.
2. Student enters incorrect username and password into fields.
3. Student clicks Log In button.
4. Student is prompted to try again with the correct username and password.

Precondition: The Student has an account and needs to log in to gain access to their account.
Postcondition: Student is logged in and can use the system.

Use Case – Student Access Assignment

In the Student Access Assignment use case's sequence diagram the student lets the system know they would like to access their assignment through a button click and the system returns the assignment access to the student.

STUDENT ACCESS ASSIGNMENT Use Case

Name: Student Access Assignment
Actor: Student
Description: Student has logged into their account and needs to view their assignment so they can practice.

Successful Completion:
1. Student clicks the My Assignment button.
2. Assignment page comes up.

Alternative:
1. Student clicks Log Out button
2. Student is signed out of their account and does not view the assignment.

Precondition: The Student is logged into their account and needs to see their assignment.
Postcondition: The Student is able to see their current practice assignment.

Class Diagram

Class Diagram Description: There are three classes in this diagram. The Teacher class has three attributes which are name, instrument, and students. The operations associated with the teacher class are to change the name of the teacher, change the instrument, add a student, create an assignment, and add points for a student. The student class has operations of name, instrument, practice time, and points. The possible operations a student can perform are logging practice time, view an assignment, and redeem points. The teacher has students, but students are complicated enough in their attributes and operations that they are their own class. Associated with the student class is the assignment class. It has attributes such as the student to which it is assigned, the instrument the assignment pertains to, a suggested practice time amount, scales, and arpeggios. The teacher class crates the assignment.

Desired Changes to the Project

Add online payment system
Add Schedule Accessible Online

Lessons Learned

Start small
Stay organized
Organize thoughts with rough draft