TAB2XML

Requirements Document

Group 6

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1. Functional Requirements

The application must allow the users to:

- Preview the tablatures in the form of a music sheet.
- Choose instrument: Guitar, Drum, Bass.
- Make changes in the tablature and observe them in the music sheet.
- Personalize the music notes (size, spacing, etc.).
- Print the music sheet by connecting to the printer.
- Save the music sheet in PDF form.
- Play the music notes starting from a selected measure to the end.
- Play at different tempos.
- Pause the playing when needed.
- Navigate to a specific Measure in the music sheet.
- Exit when Done.

2. Non-functional Requirements

The application should:

- Be available 24/7, anytime when users needed.
- Be intuitive to use, and user-friendly.
- Be updatable.
- Be able to handle multiple requests.
- Secure users' privacy.
- Be able to run locally without the internet.
- Perform effectively in different environments.
- Operate responsively in a timely manner.
- Operate smoothly without freezing.
- Operate properly with a very low rate of failures.

3. User Stories

1. As a music learner, I want to visualize a tablature; so I can learn how to play a specific tune.
2. As a musician, I want to have the ability to make changes in the tablature and have them reflected in the music sheet immediately to see how the music sheet will evolve.
3. As a musician, I want to listen to specific Measures in the music sheet; so that I can hear how they sound.
4. As a musician, I want to print or save the music sheet; so that I can obtain a copy of it for my collection.
5. As a casual user, I want to be able to adjust the music sheet visually (i.e. adjust note spacing, font size, etc.) according to my needs.
6. As a casual user, I want to be able to change the tempo of the music.
7. As a musician, I want to be able to navigate to specific measures on the music sheet.
8. As a music learner, I want to be able to see the notes that are currently being played highlighted on the music sheet.

4. Use Cases

4.1. Use Case 1

Title: Visualize a tablature as a music sheet
Primary actor: User (music learner)
Precondition: The system is open.
Scenario:
1. The user inserts the tablature in the application
2. The system identifies the tablature
3. The system translates the tablature into music XML (visible image of music)
4. The system translates the music XML into a music sheet based on the type of instrument (guitar, drum set, bass)
5. User previews the music sheet

Post condition: The system displays all elements of the tablature in correct format.
Exception:
1. User enters tablature for unsupported instruments
2. System notifies user that this instrument is not supported at the moment

4.2. Use Case 2

Title: Play the music notes
Primary actor: User (music learner)
Precondition: The user has already inserted and previewed the music sheet.
Scenario:
1. The system translates the music XML into a playable format
2. The user plays the music
   a. From the beginning to end
   b. Starting from a specific measure to end

Post condition: The system play the notes correctly based on the input information.
Alternative Scenarios:
a. User pauses the playing
   1. System pauses the playing
   2. When user decides to continue playing, the System continues the playing from the previous paused point.
b. User replays notes
   1. System plays the notes from beginning.

4.3. Use Case 3

Title: Highlighting music notes

Primary actor: User (music learner)

Precondition: The user has already inserted and previewed the music sheet.

Scenario:

1. User plays the music
2. The system highlights the notes being played
3. User can follow which notes are being played

Alternative Scenario:

a. User pauses playing
    1. The highlighting also pauses
    2. When users restart playing, the highlighting continues from previous point
b. User replays
    1. The highlighting stops
    2. The highlighting restarts from beginning

Postcondition: The notes are highlighted as they are played.

4.4. Use Case 4

Title: Print the music sheet

Primary actor: User (music learner)

Precondition: The user has already inserted and previewed the music sheet.

Scenario:

1. The system prepares the music sheet for printing
2. User prints the music sheet or saves it as a PDF file.

Postcondition: The music sheet is either printed on a piece of paper or saved as pdf file on user's device.

4.5. Use Case 5

Title: Navigate to a specific measure

Primary actor: User (music learner)

Precondition: The user has already inserted and previewed the music sheet.

Scenario:

1. The user navigates to a specific measure of music sheet by inputting a measure number
2. The System indicates the specified measure

Post condition: System gives some sort of indication on the specified measure.

4.6. Use Case 6

Title: Update tablature
Primary actor: User (music learner)
Precondition: The user has already inserted and previewed the music sheet.
Scenario:
1. User updates the tablature
2. The system reflects the change in the music sheet
3. The user views the updates in the music sheet and can compares them with the previous ones.

Post condition: System updates the music sheet correctly and displays it separately from the previous sheet music.

4.7. Use Case 7

Title: Personalized visualization
Primary actor: User (music learner)
Precondition: The user has already inserted and previewed the music sheet.
Scenario:
1. User can update the music sheet based on her/his preference by changing the spacings (between notes, staffs, music lines), font, and font size
2. The system reflects the change in the music sheet
3. The user views the updates in the music sheet

Post condition: The system reflects the correct changes in spacing, size, and font, and new music sheet is displayed to user.

4.8. Use Case 8

Title: Justifying music sheet
Primary actor: User (music learner)
Precondition: The user has already inserted and previewed the music sheet.
Scenario:
1. The system calculates the necessary spaces needed for justifying.
2. The system justifies the music sheet automatically

Post condition: System displays justified music sheet to user, with each staff being the same length.

5. Use Case Diagram