Da Capo

User Manual

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1. Introduction

1.1 System Overview

DA CAPO is a program that provides the user the ability to translate a guitar, bass or drum tablature into MusicXML, which is then saved as a file at a location of the user's choosing.

DA CAPO is the perfect software for any amateur musician looking to see what their tablatures look like on a staff, or for a music teacher looking to translate multiple tablatures to music notation, then editing them afterwards.

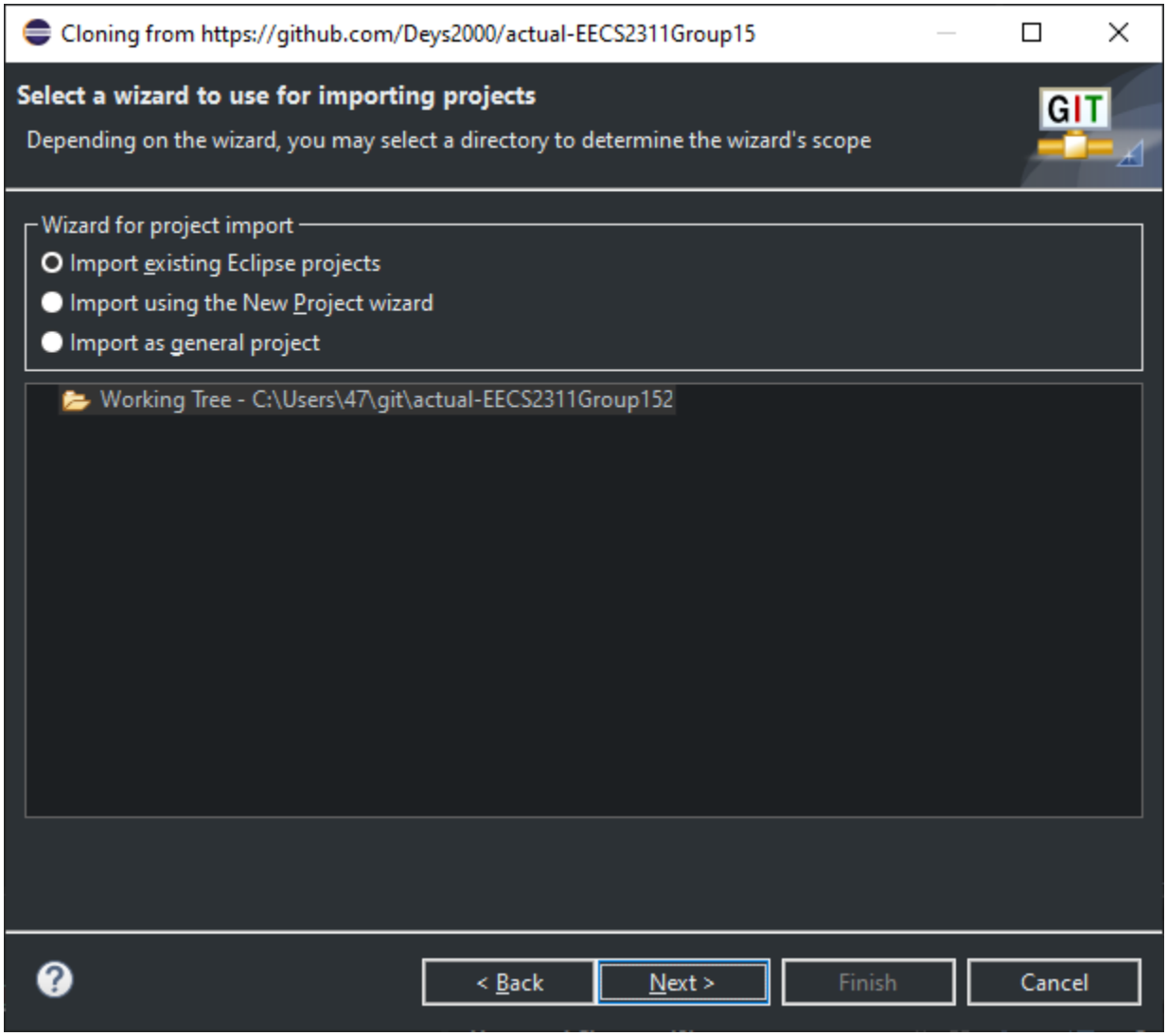
At the moment, Da Capo can only translate a basic formatted guitar tablature, with frets from 0-9 and no special symbols. The translation also has a number of errors. However, it will be able to translate more complex guitar tablature, as well as bass and drum tablatures, in the future.

2. Installation Instructions

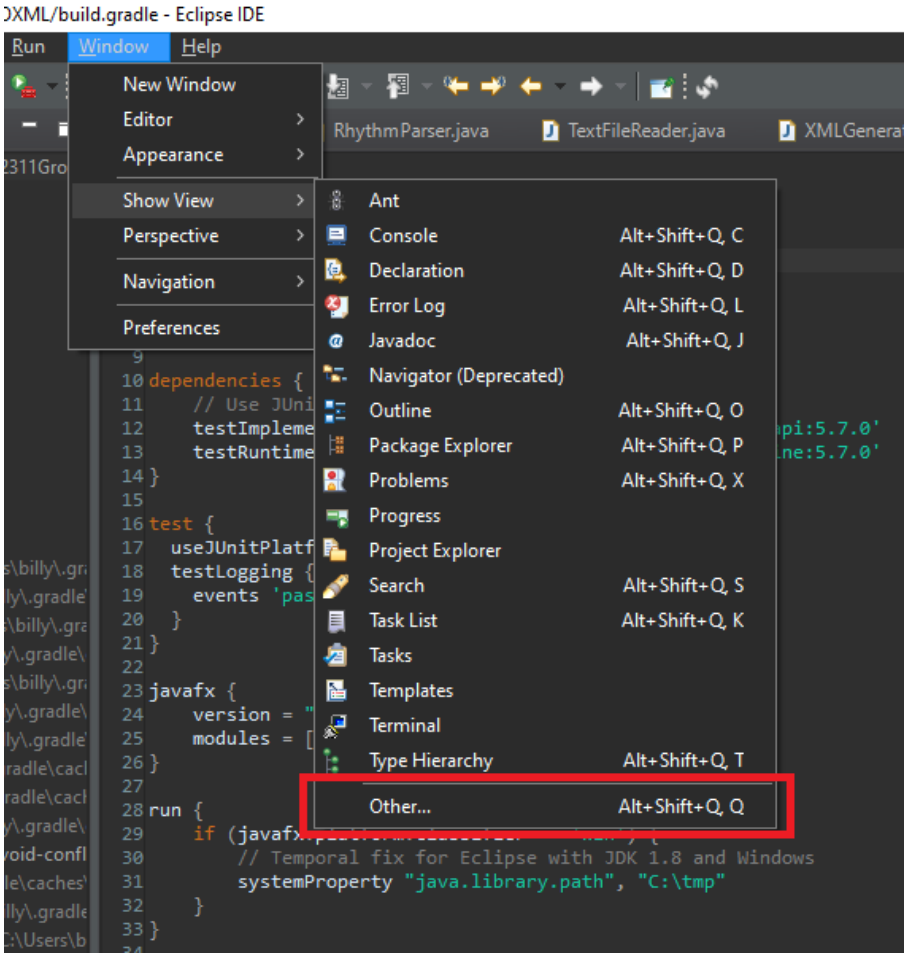
2.1 Setting Up Using Eclipse

1. Import project via git - using this link (https://github.com/Deys2000/actual-EECS2311Group15).

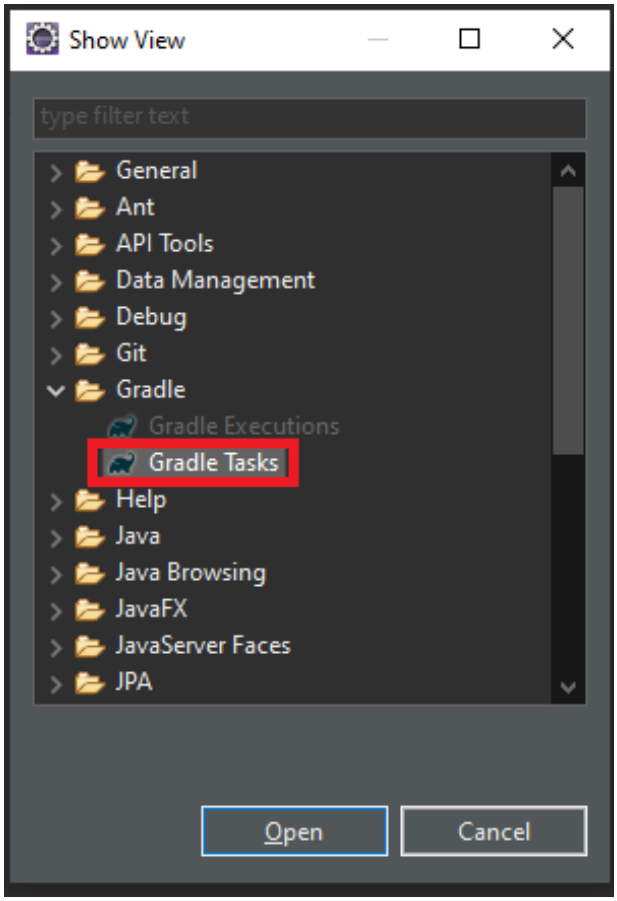
2. Make sure to select ***Import existing Eclipse projects*** while importing.



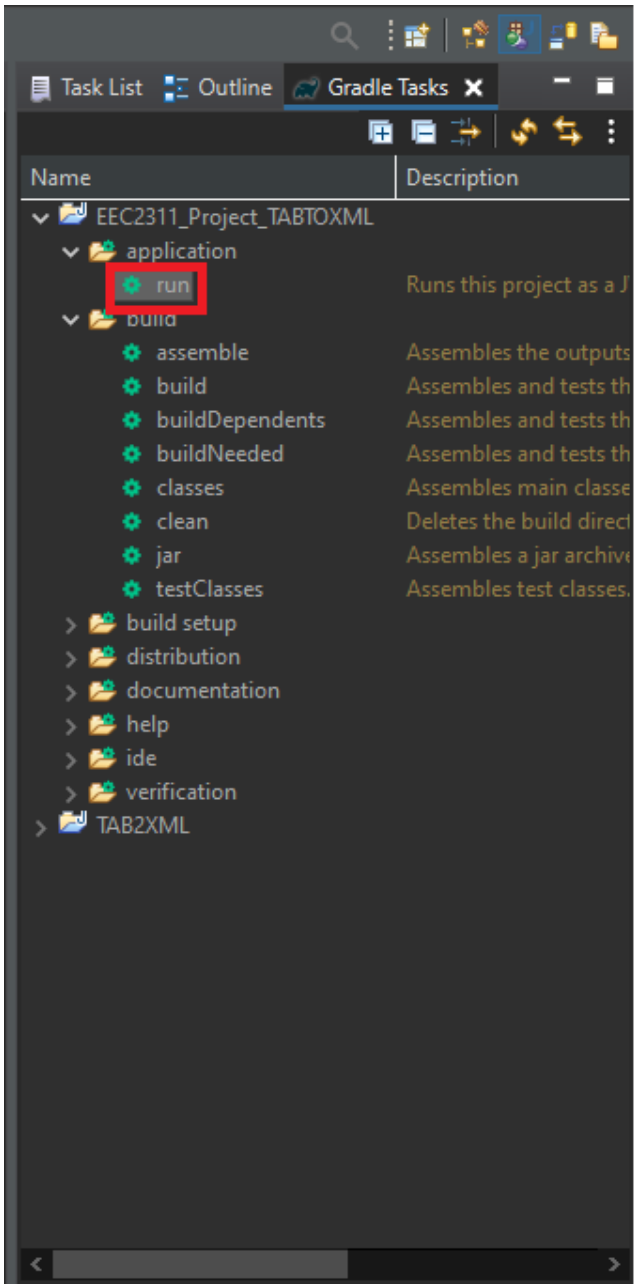
3. Once imported, navigate to the Window tab at the top, then Show View, and click on Other...



4. A new window called Show View will pop up. Scroll down to the Gradle folder, open it, select Gradle Tasks, then click Open.



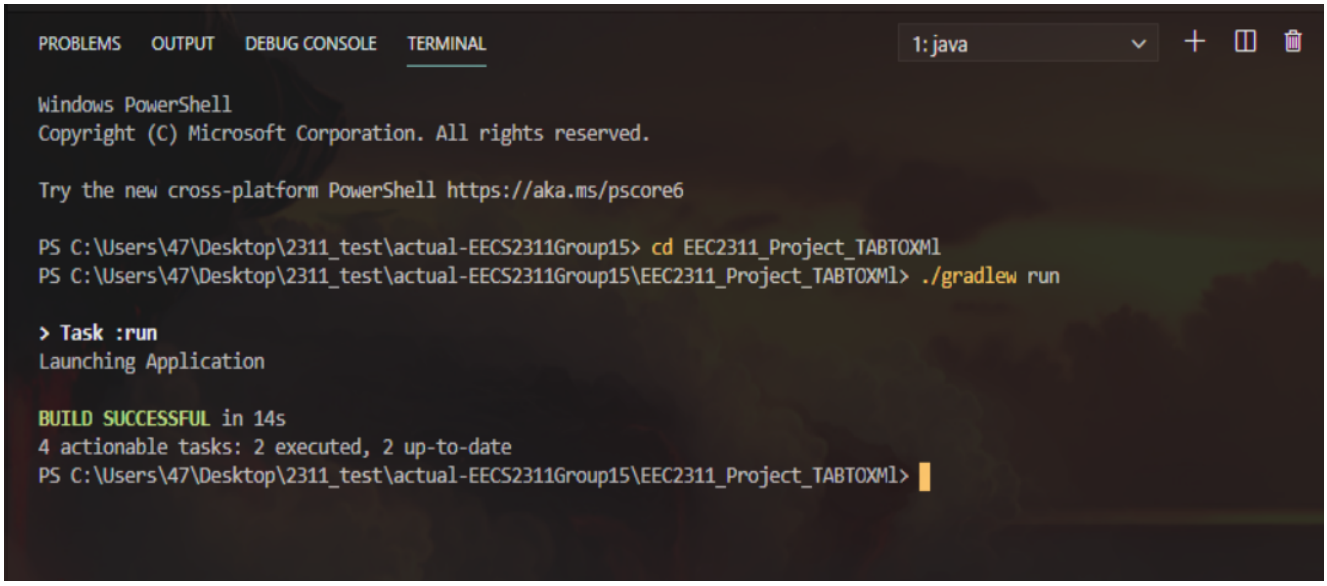
5. A new view called Gradle Tasks should be visible in the main screen of Eclipse. In that view, navigate to the project, open the application folder, then double click "run" to run the program!



2.2 Setting Up Using Visual Studio Code

1. Import project via git - using this link (https://github.com/Deys2000/actual-EECS2311Group15).

2. Open the directory in **VSC** and navigate to the terminal.



   i.
3. Next you want to change your working **PWD** using this command

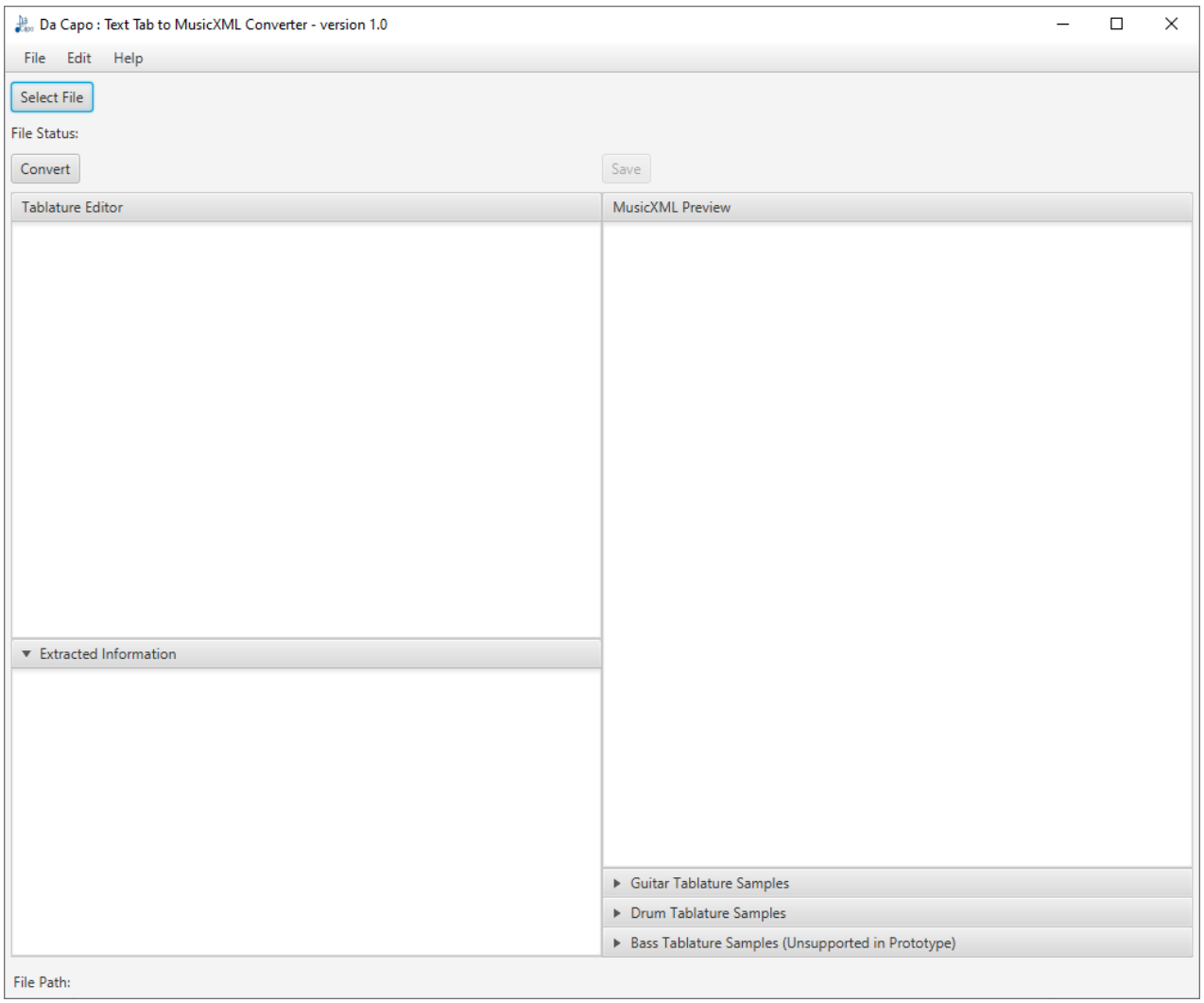
   cd EEC2311_Project_TABTOXMl

4. Now, to actually build and run the project. Execute the following command in the same terminal ***./gradlew run***

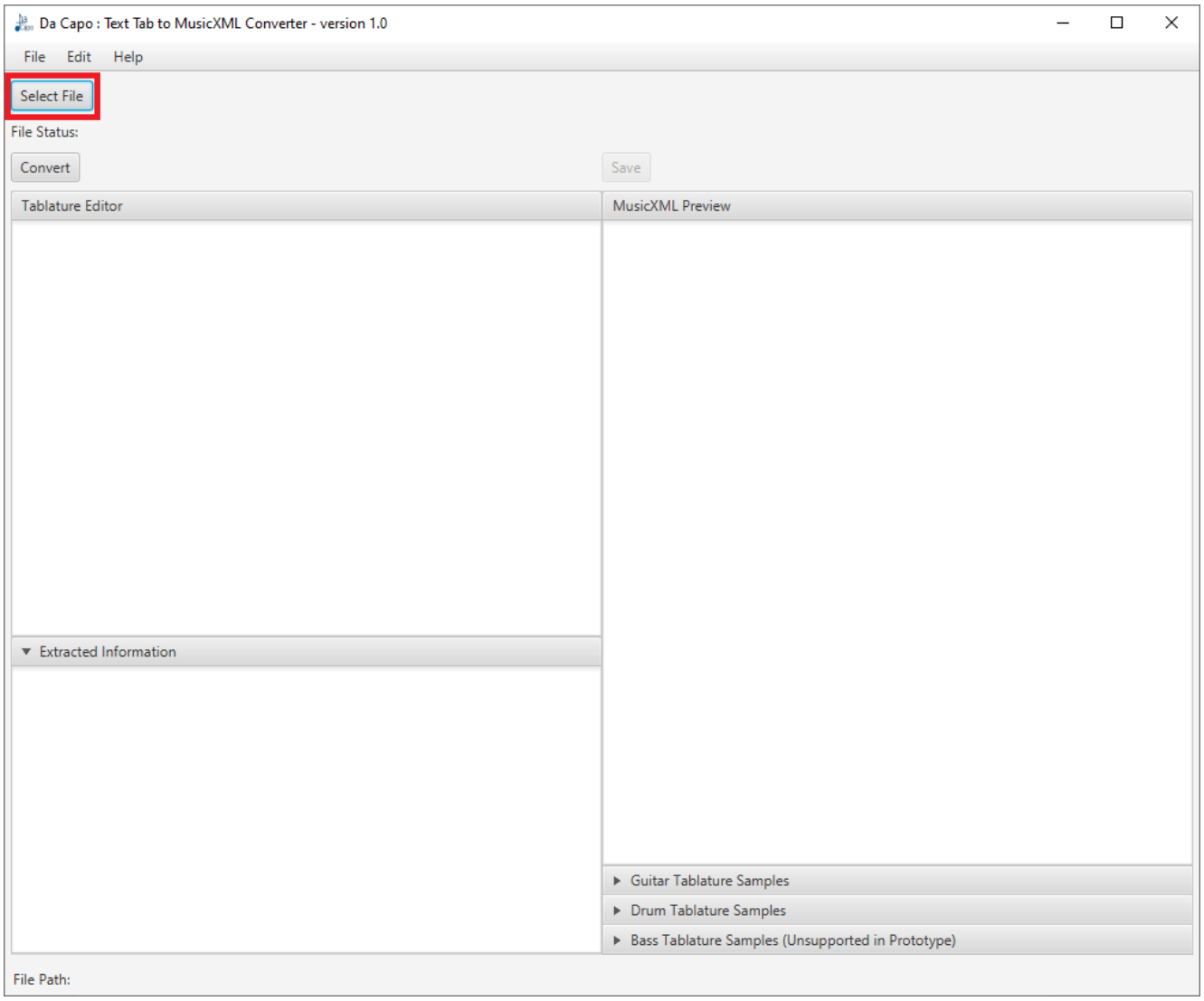
3. How To Get Started

3.1 System Walkthrough:

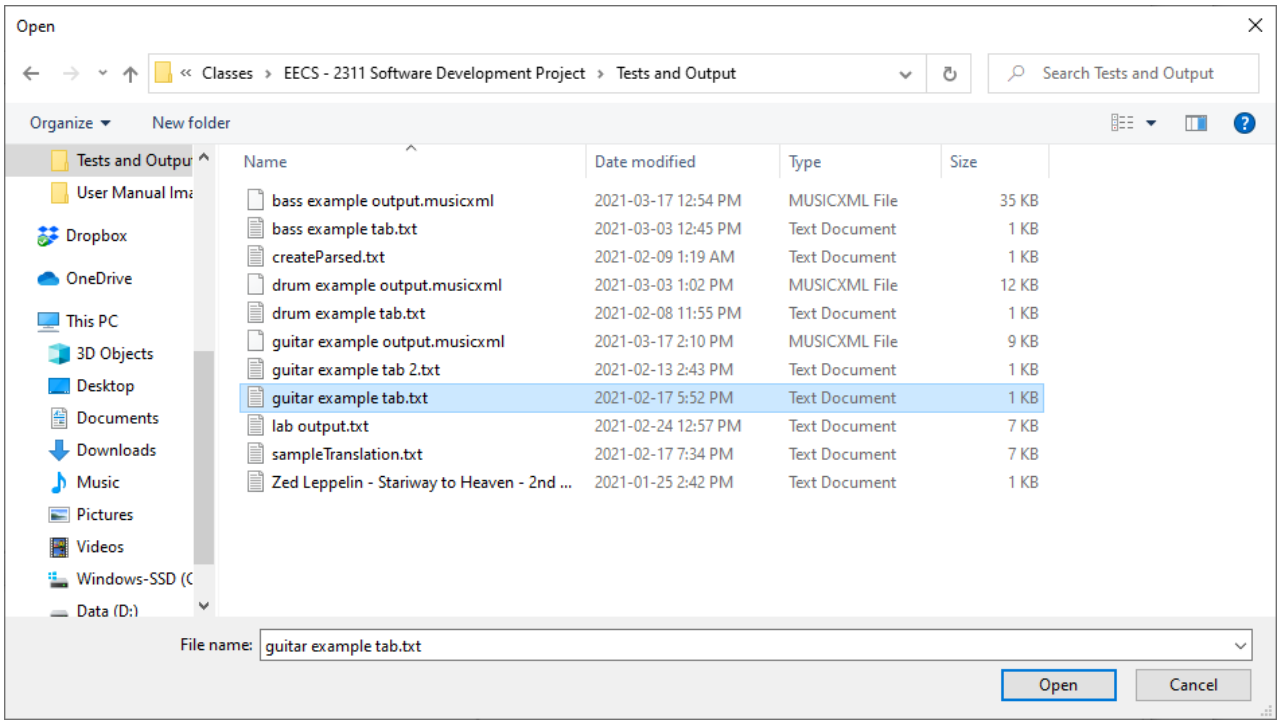
1. Run the program with Gradle and wait for the window to pop up, it should look like this:



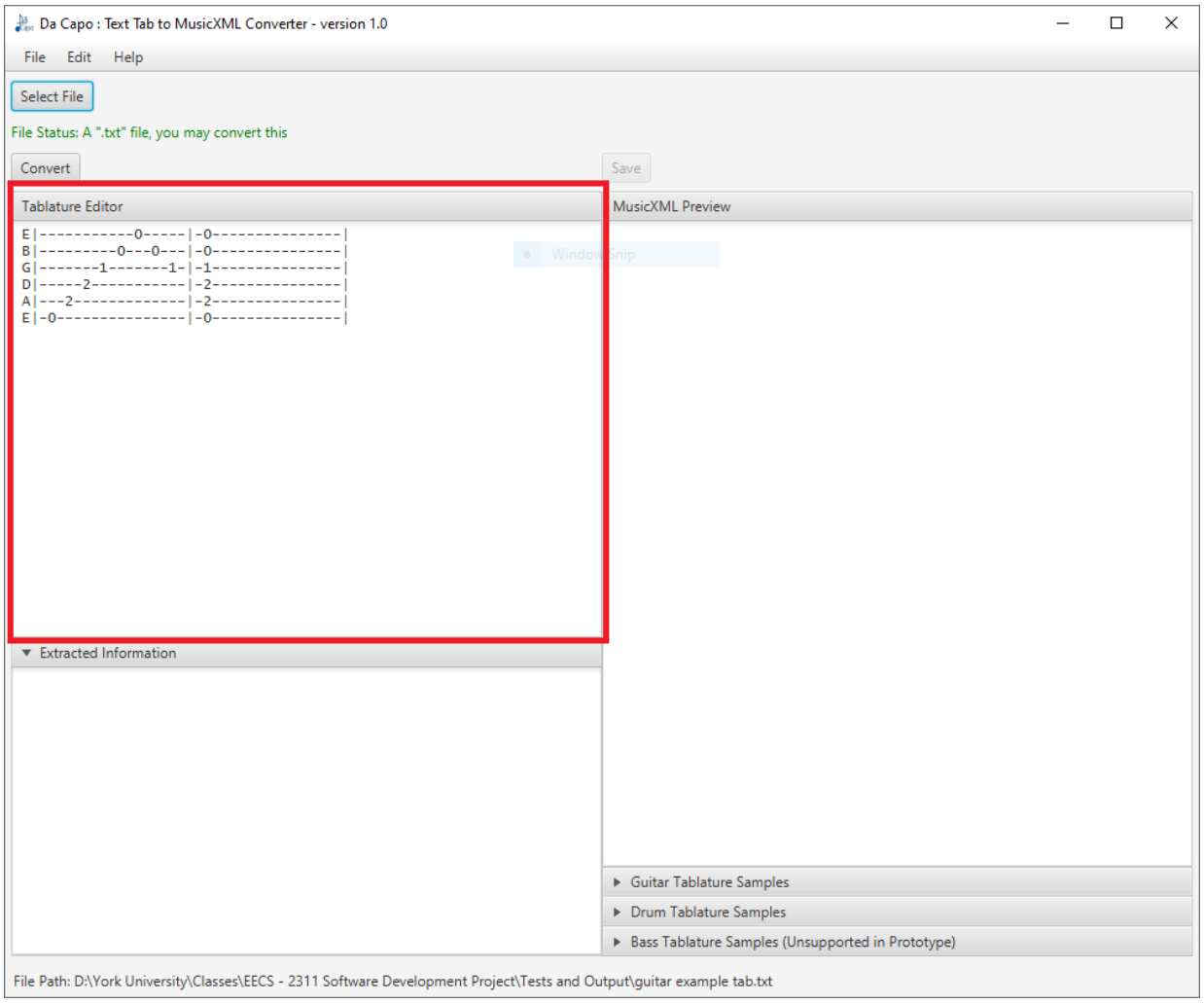
2. If you have a text file ready for the system to read, click the button on the top left that says “Select File”.



3. Now navigate to the file containing the tablature, select it, and click Open near the bottom right of the window.

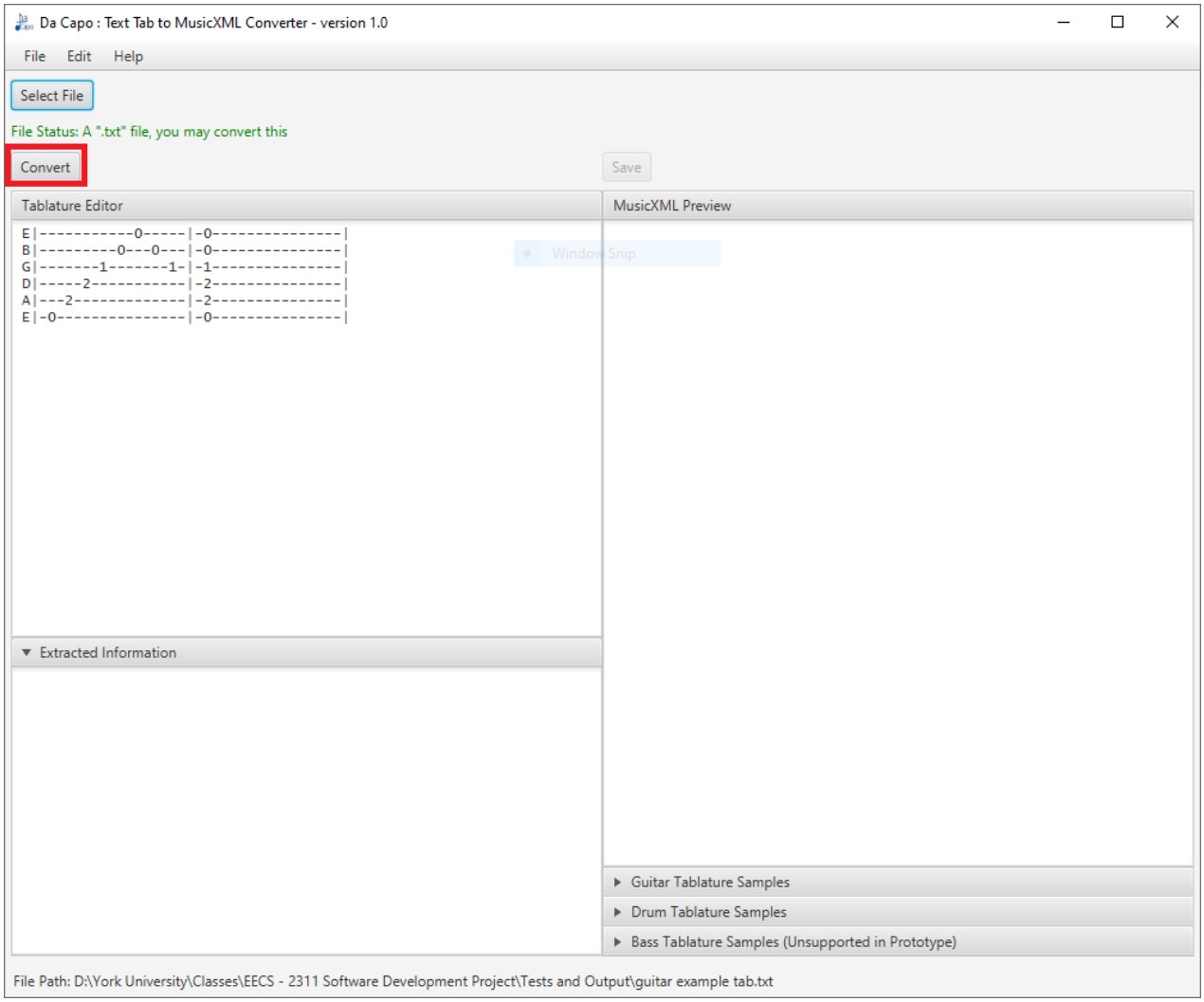


4. The tablature contained within the file will display on the left side of the original window, in the Tablature Editor display.

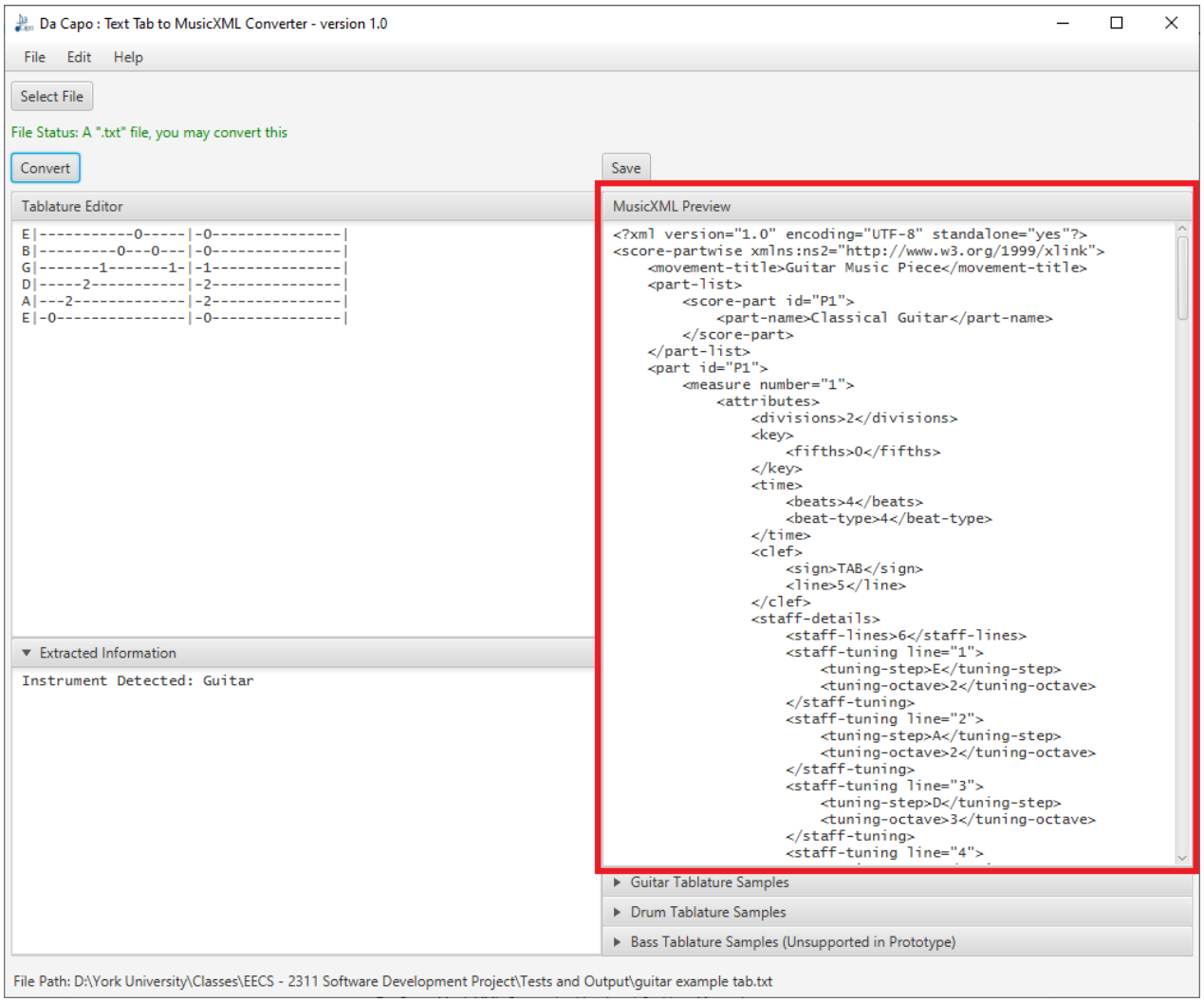


Special Note: You may also directly copy and paste a tab from a website into the Tablature Editor display instead.

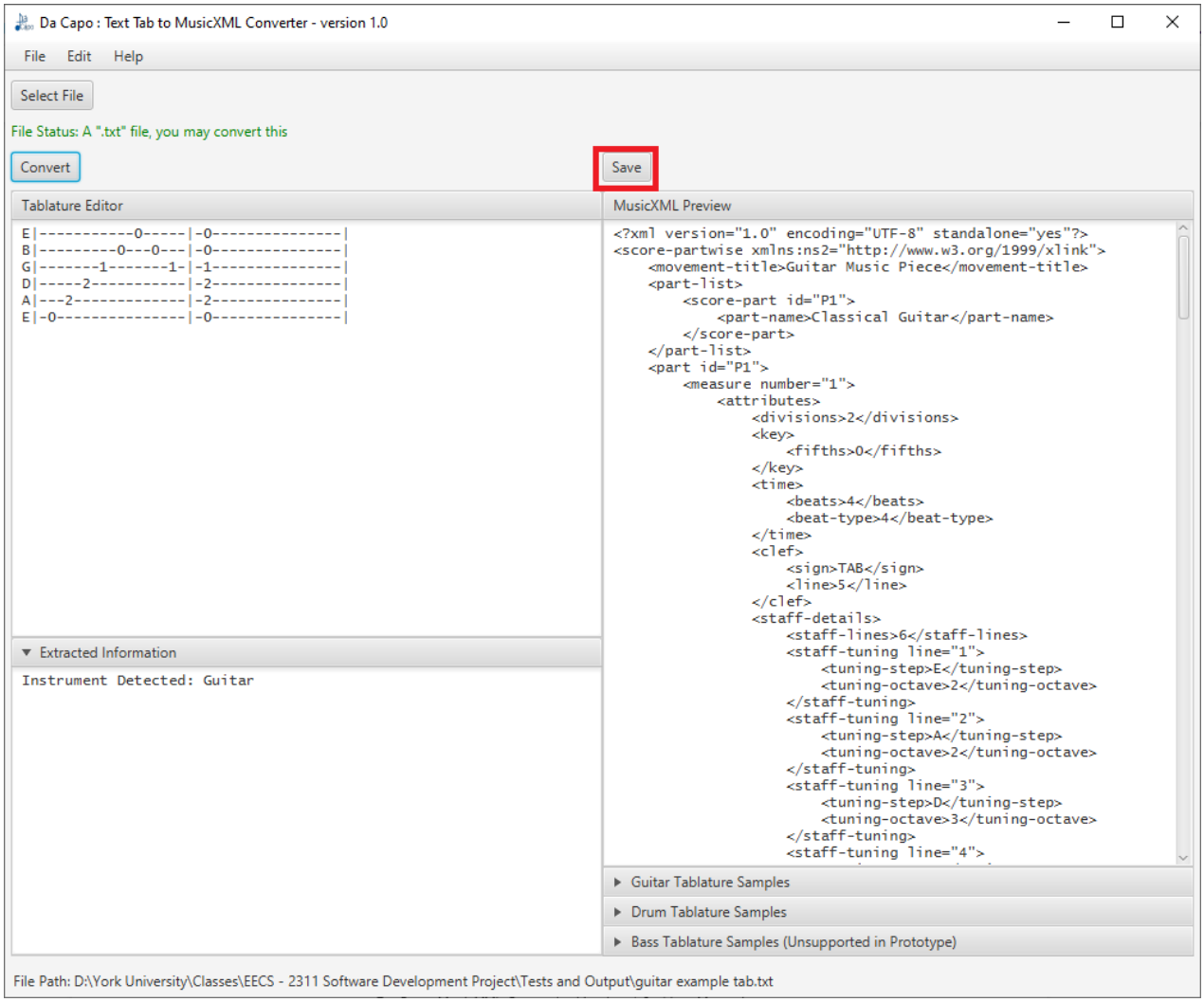
5. Then click on the “Convert” button.



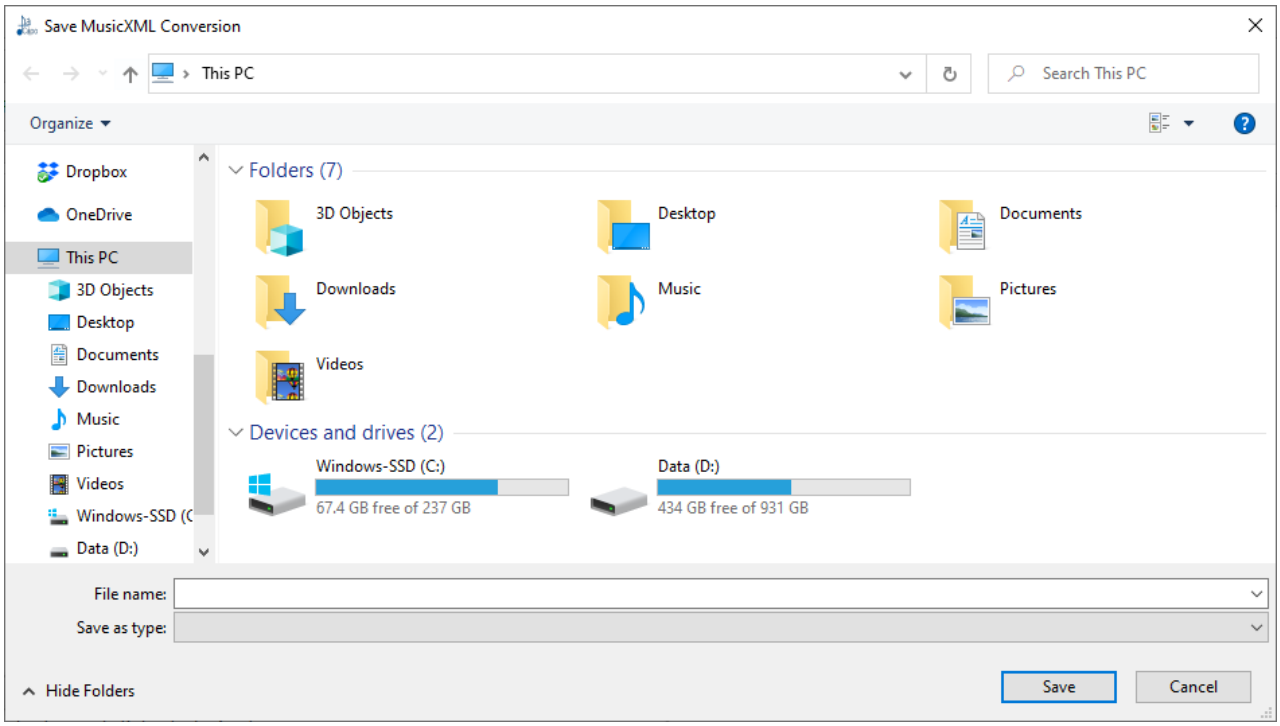
6. A preview of the translated file should appear in the MusicXML Preview display, along with information in the Extract Information display.



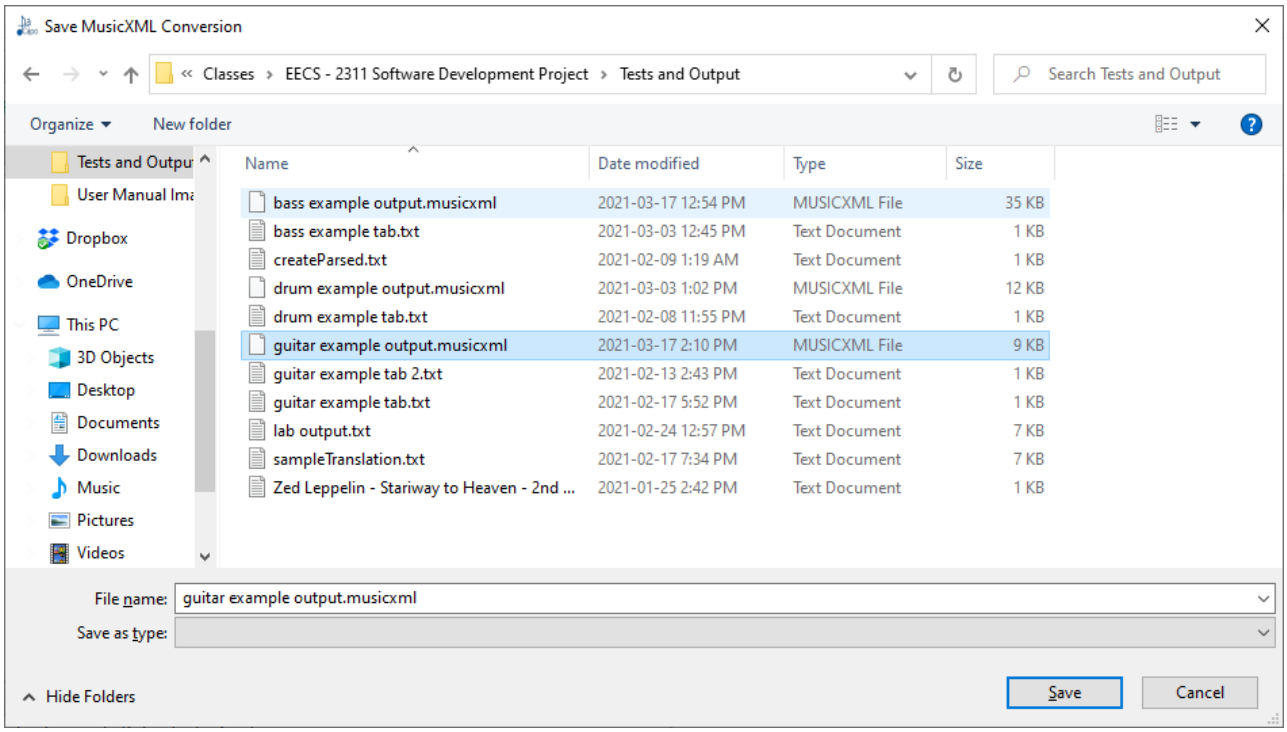
7. To save the XML file, click on the “Save” button.



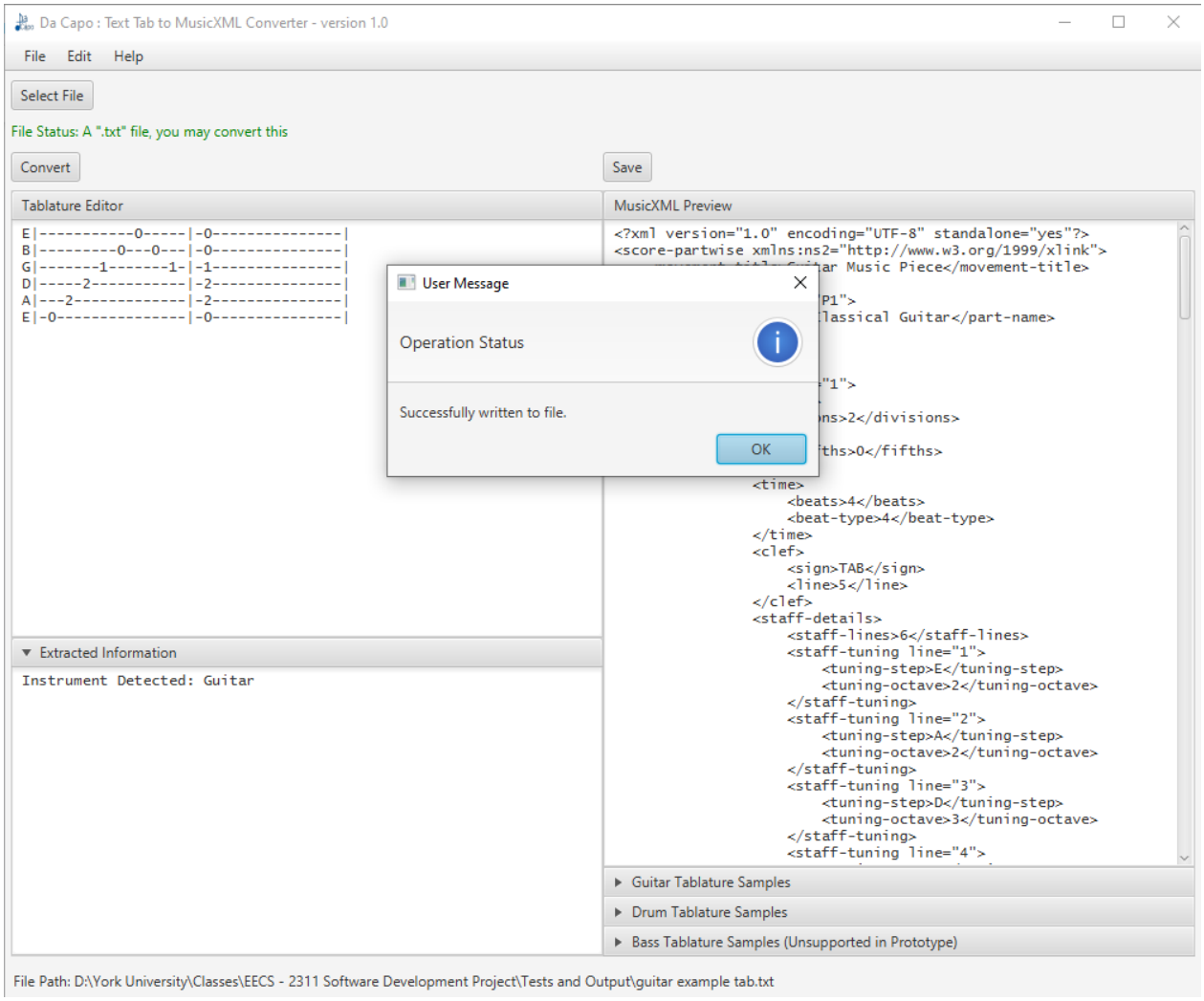
8. A new window called “Save MusicXML Conversion” will appear.



9. Select the location where you would like to save the converted file, name the file (with .musicxml extension), and click Save.



10. The translated file should appear at the specified location, and a confirmation message should appear. Click OK.

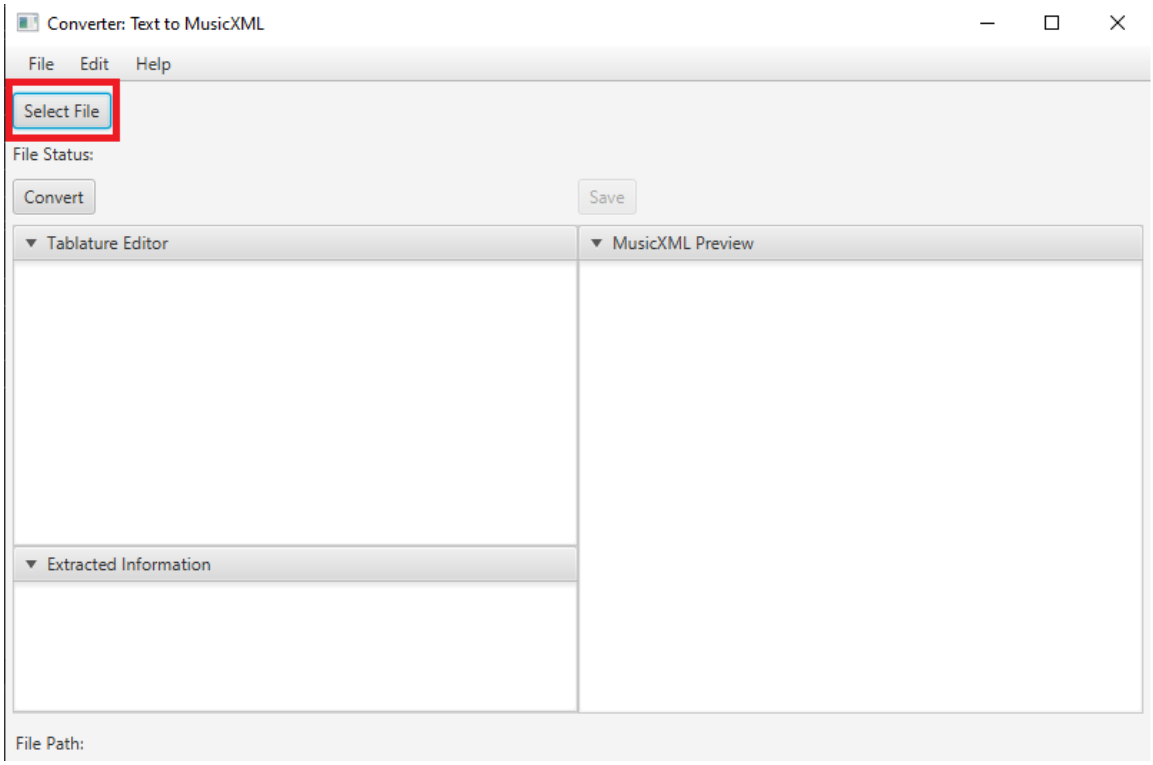


You may exit the program by clicking the X at the top-right corner, or continue to convert more tabs!

4. User Interface

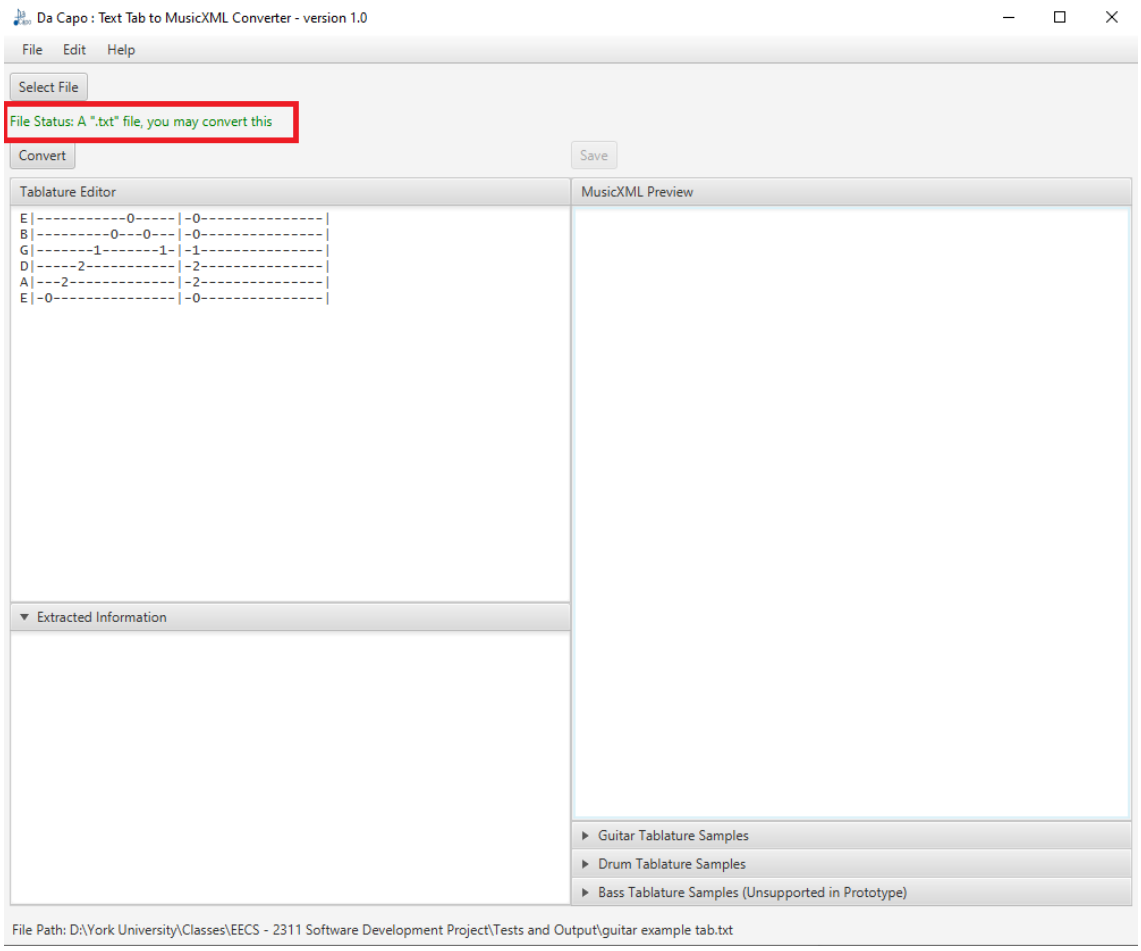
4.1 Main Interface

4.1.1 Select File Button



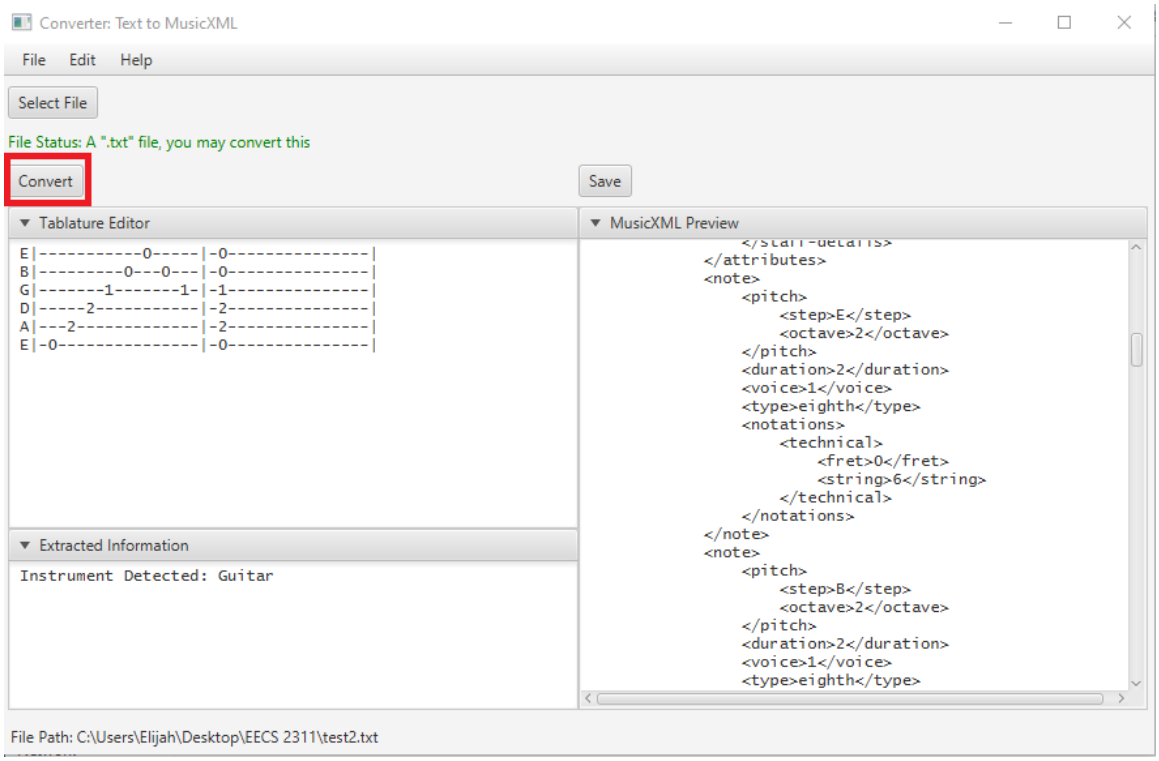
This button allows the user to navigate the file directory on their computer and to choose the Tablature file they would like to translate.

4.1.2 File Status Indicator



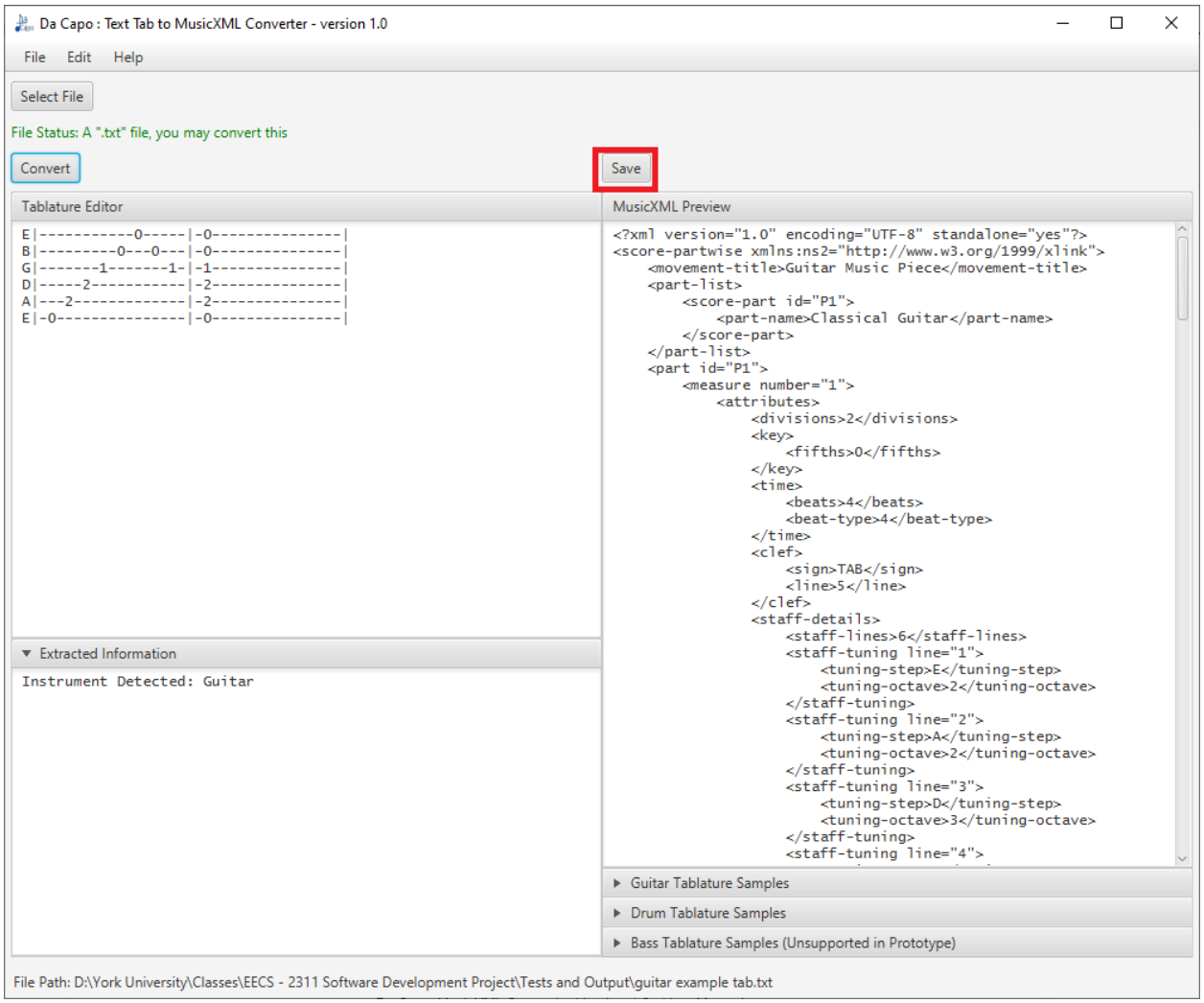
This indicator turns green if the file chosen is a valid file (.txt extension). It will turn red if the file is not a valid file.

4.1.3 Convert Button



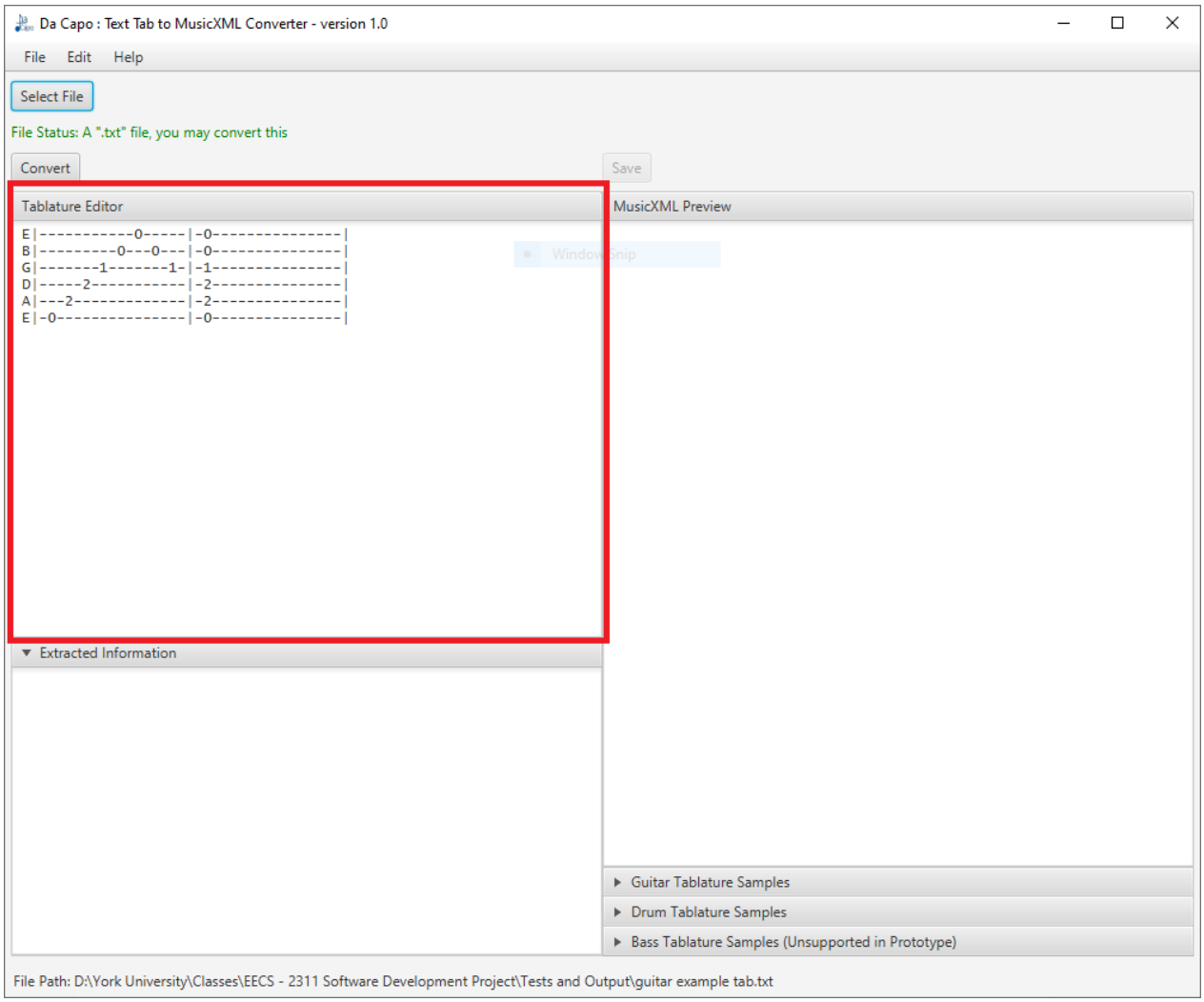
This button tells the software to translate the Tablature that is on the Tablature Editor at the time. The result is then displayed on the MusicXML Preview display.

4.1.4 Save Button



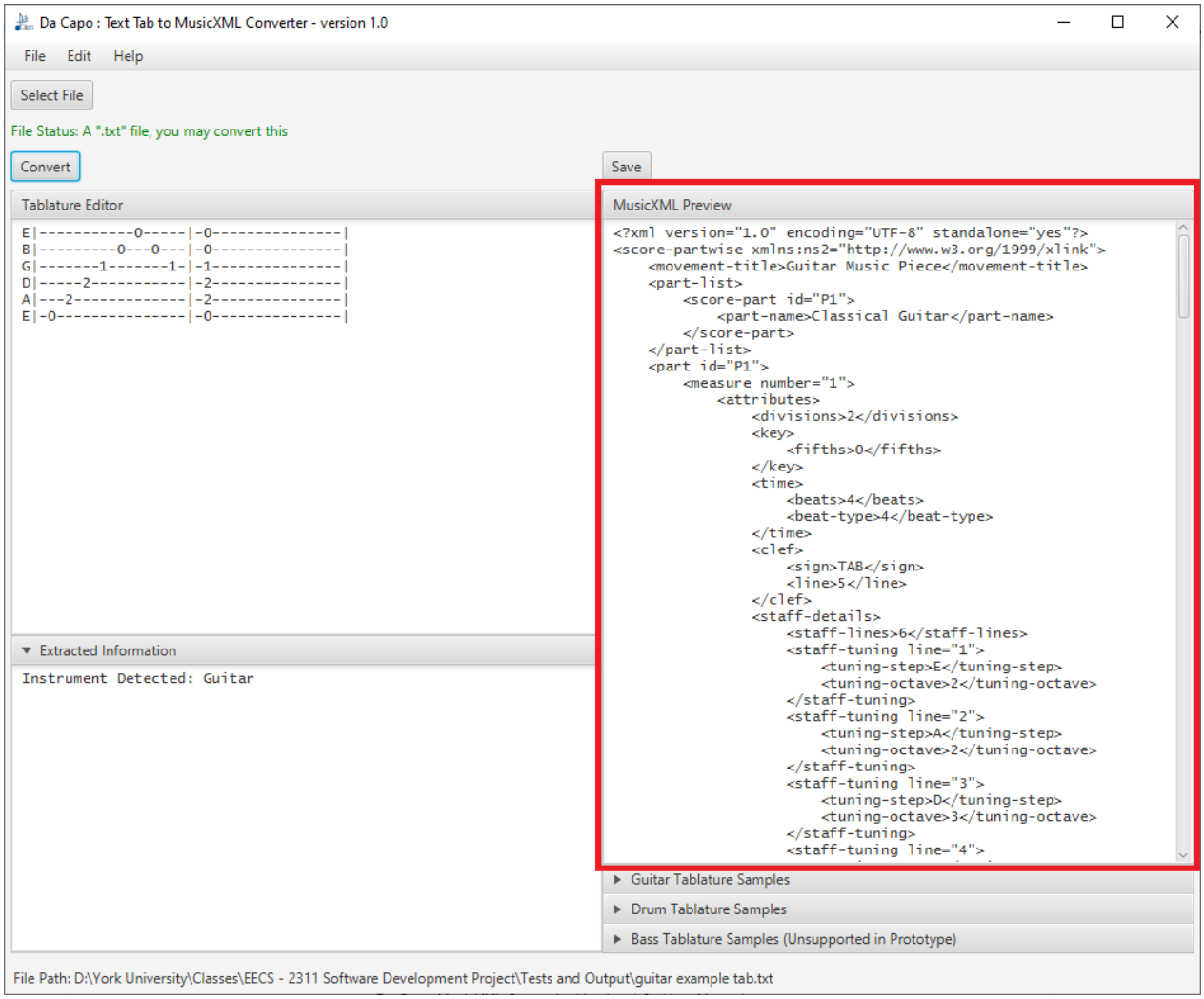
This button allows the user to save the content of the MusicXML Preview display on their local machine.

4.1.5 Tablature Editor



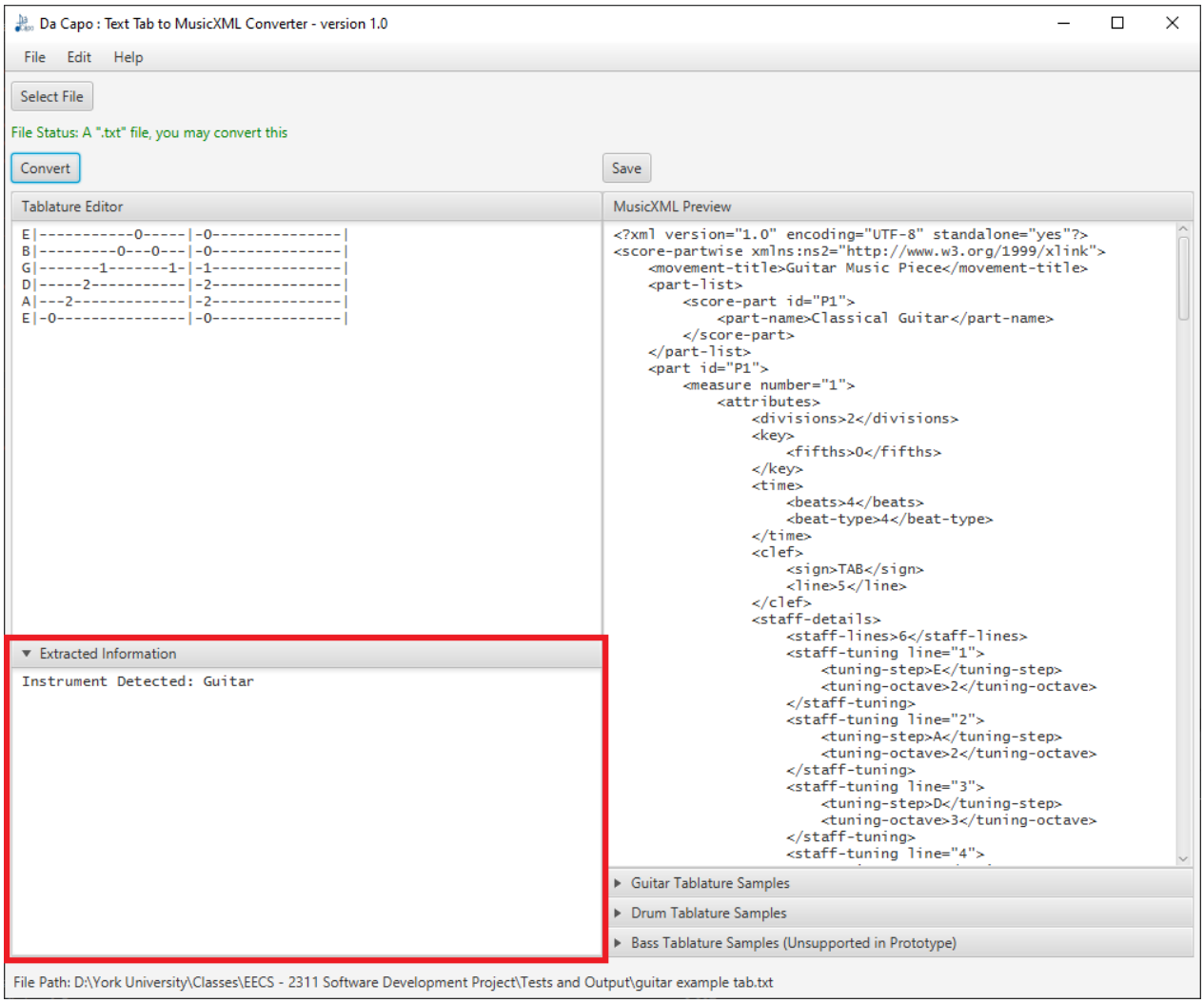
This display which is on the left hand side of the Da Capo screen shows the current Tablature that has been selected for translation. The content of this display can either be gotten by using the Select file button or by copy and paste.

4.1.6 MusicXML Preview



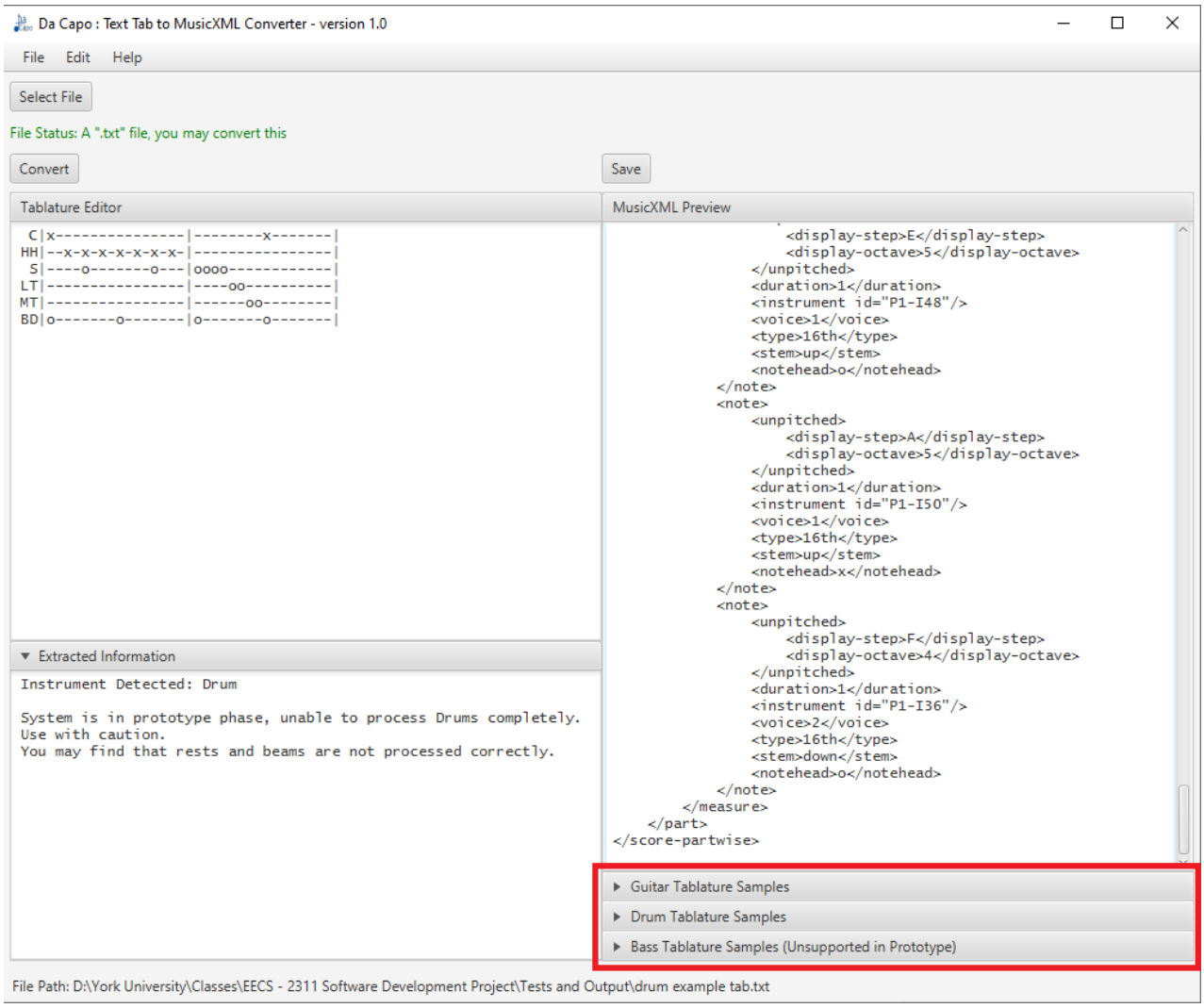
This display which is on the right hand side of the Da Capo screen shows the musicXML that has been translated for the Tablature on the left-hand side of the Da Capo screen.

4.1.7 Extracted Information



This display provides the user with information about the Tablature that has been translated. Currently, this display only shows the type of instrument that has been detected.

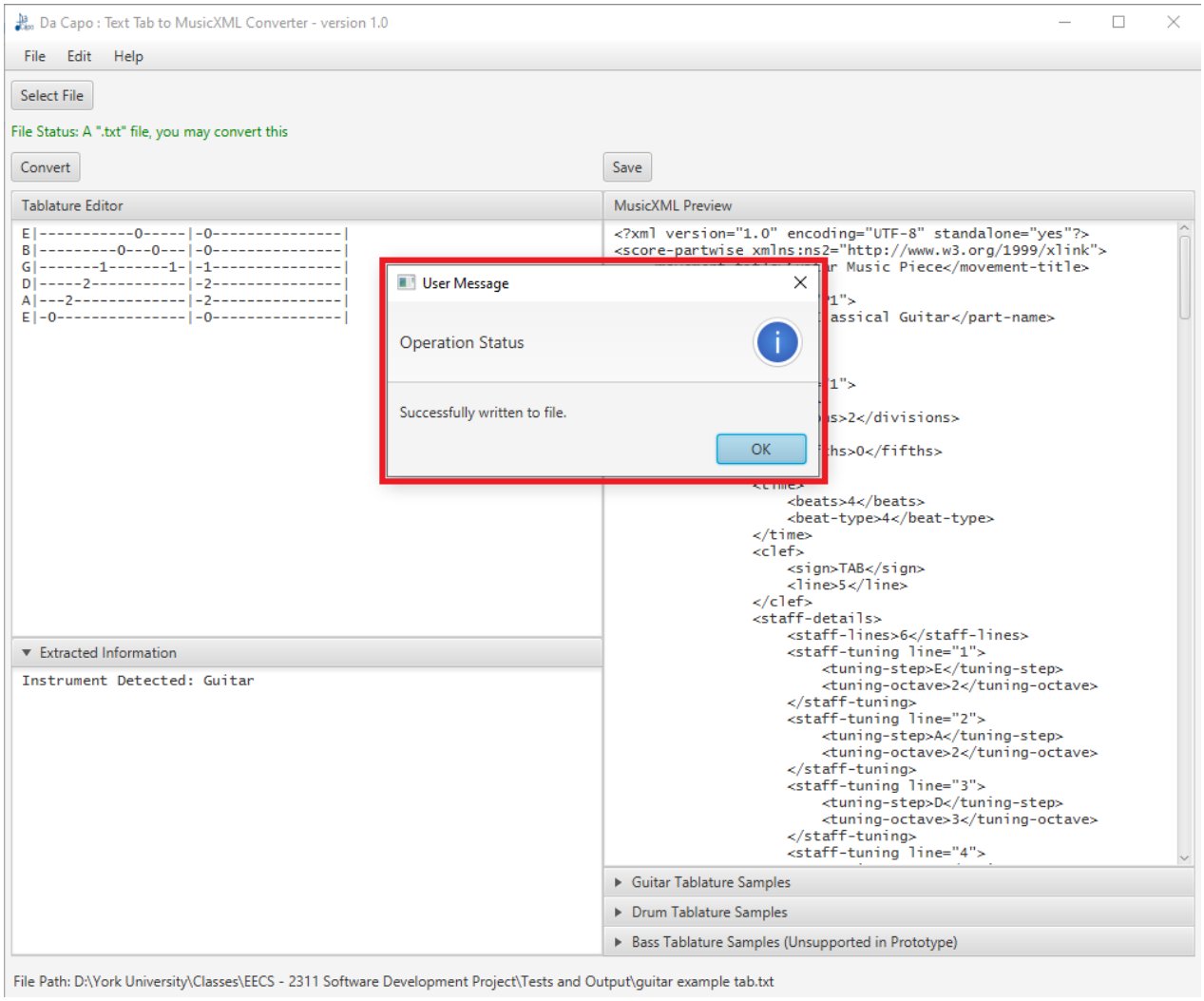
4.1.8 Tablature Samples



This display provides the user with sample tablatures that can be copy and pasted into the Tablature Editor.

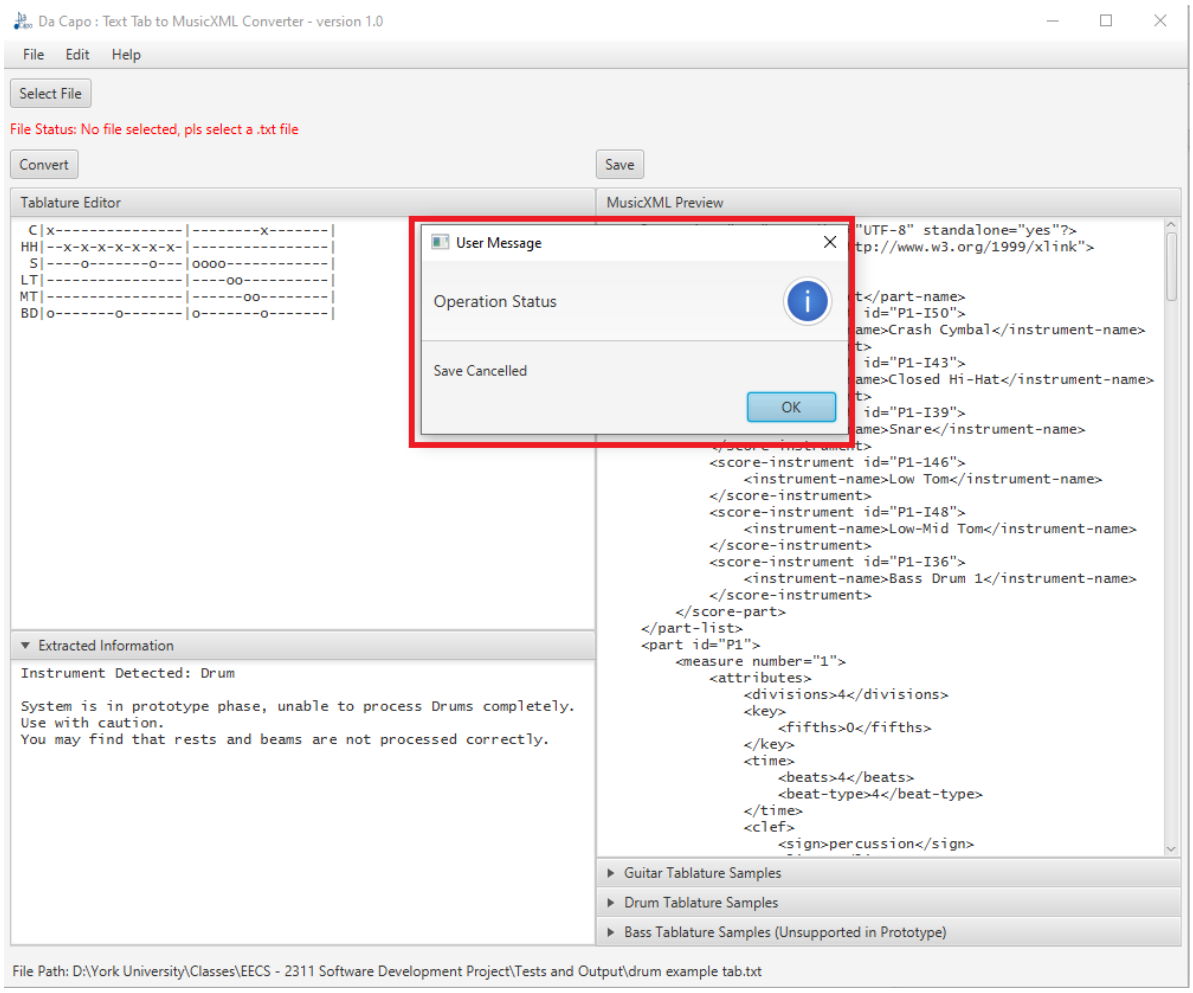
4.2 Secondary Interfaces

4.2.1 Successful Save Dialog Box



This box informs the user that text from the MusicXML Preview display has been successfully saved on the user's local machine. Pressing the OK button or the X on the top right will dismiss the Dialog Box.

4.2.2 Canceled Save Dialog Box



This box informs the user that the save action has been cancelled. Pressing the OK button or the X on the top right will dismiss the Dialog Box.

5. Usage scenarios

5.1 Usage Overview

The user interface for Da Capo has been designed to be easy to learn and intuitive to use. This software can be operated by users with different technical skills. It can also be used by users with different levels of expertise in music, usability and versatility are the two main design concepts that were captured during the design of Da Capo.

The program accepts two methods of input, which are:

- Selecting a plain text file of the tablature.
- Copying and pasting a tab from another source.

The program provides two types of output, which are:

- MusicXML displayed on the right side of the screen.
- A MusicXML in a text file that is saved in a directory chosen by the user.

5.2 Input Limitations

5.2.1 General Limitations

Da Capo does not convert empty tabs.

Da Capo does not convert tabs written using anything other than “|” as vertical bars between measures and “-” as horizontal lines on a staff.

Da Capo will ignore all information outside the text created staff while processing and generating the XML Document.

Da Capo recommends that for reliable results, the tablature in the editor section should be adjusted so that the vertical bar lines are parallel to one another. Although they will both be processed, there may be cases that the generated file is incorrect.

For Example:

DONT:	**DO:**
C|x---------------|--------x-------| HH|--x-x-x-x-x-x-x-|----------------| S|----o-------o---|oooo------------| LT|----------------|----oo----------| MT|----------------|------oo--------| BD|o-------o-------|o-------o-------|	C|x---------------|--------x-------| HH|--x-x-x-x-x-x-x-|----------------| S|----o-------o---|oooo------------| LT|----------------|----oo----------| MT|----------------|------oo--------| BD|o-------o-------|o-------o-------|

5.2.1 Guitar Tab Limitations

Da Capo can only properly convert simple Guitar tablatures into MusicXML. An example of a simple Guitar tablature can be found in Section 6 of the User Manual or in the bottom left section of the GUI. It contains only frets from 0-9, has 4/4 time signature, and may only contain note durations of whole, half, quarter, eighth and 16th. Any special symbols within the tab will be ignored, such as hammer-ons and pull-offs. The following special symbols cannot be processed in the current version of the Software. We plan on including them in future releases.

Special Symbol Reference

Symbol	**Musical Meaning**
“h” or “^” between lower to higher notes Ex. 7h9 or 7^9	Hammer On
“p” or “^” between higher to lower notes Ex. 9p7 or 9^7	Pull Off
Combination of “h” or “p” between three or more notes Ex. 0h5p0	Sequential Hammer Ons and Pull Offs
“b” between two notes	Bend

Ex. 4b6	
“r” between two notes Ex. 6r4	Release
“/” between two notes	Ascending Slide
“\” between two notes	Descending Slide
“/” before a note	Scoop
“s” between two notes	Legato Slide
“x” instead of a note	Muted Note
“t” between two notes	Tapping
“<” and “>” or “[“ and “]” or “(“ and “)” around a note	Natural Harmonic

Da Capo will not generate the XML alter tag.

Da Capo can only currently process guitars containing six horizontal staff lines. It will also only process the string tunings as E2, A2, D3, G3, B3, E4 (from bottom line to top)

5.2.2 Drum Tab Limitations

Da Capo can detect a Drum tablature, but cannot convert them into MusicXML with 100% accuracy. The attributes of the Drumset are unchangeable and the only recognizable instruments are the following:
C - Crash Cymbal
S - Snare
BD - Bass Drum
HH - High Hat
MT - Middle Tom
HT - High Tom

Da Capo will read only “x” and “o” as noteheads from the following

Drum Hits Reference:

Symbol	**Musical Meaning**
“o”	strike (normal hit)
“O”	accent (harder hit)
“g”	ghost (softer hit)
“d”	double stroke
“x”	strike (normal hit)
“X”	hit hard cymbal / loose hi-hat
“o”	hit open hi-hat
“#”	choke (hitting the cymbal then grabbing it)

5.2.3 Bass Guitar Tab Limitations

Da Capo can detect a Bass Guitar tablature, but cannot convert them into MusicXML.

6. Example Tabs and Outputs

6.1 Simple Guitar Tab:

Input:

```
E|-----------0-----|-0---------------|
B|---------0---0---|-0---------------|
G|-------1-------1-|-1---------------|
D|-----2-----------|-2---------------|
A|---2-------------|-2---------------|
E|-0---------------|-0---------------|
```

Output:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<score-partwise xmlns:ns2="http://www.w3.org/1999/xlink">
      <movement-title>Guitar Music Piece</movement-title>
      <part-list>
      <score-part id="P1">
            <part-name>Classical Guitar</part-name>
      </score-part>
      </part-list>
      <part id="P1">
      <measure number="1">
            <attributes>
            <divisions>2</divisions>
            <key>
                  <fifths>0</fifths>
            </key>
            <time>
                  <beats>4</beats>
                  <beat-type>4</beat-type>
            </time>
            <clef>
                  <sign>TAB</sign>
```

```
            <line>5</line>
      </clef>
      <staff-details>
            <staff-lines>6</staff-lines>
            <staff-tuning line="1">
                  <tuning-step>E</tuning-step>
                  <tuning-octave>2</tuning-octave>
            </staff-tuning>
            <staff-tuning line="2">
                  <tuning-step>A</tuning-step>
                  <tuning-octave>2</tuning-octave>
            </staff-tuning>
            <staff-tuning line="3">
                  <tuning-step>D</tuning-step>
                  <tuning-octave>3</tuning-octave>
            </staff-tuning>
            <staff-tuning line="4">
                  <tuning-step>G</tuning-step>
                  <tuning-octave>3</tuning-octave>
            </staff-tuning>
            <staff-tuning line="5">
                  <tuning-step>B</tuning-step>
                  <tuning-octave>3</tuning-octave>
            </staff-tuning>
            <staff-tuning line="6">
                  <tuning-step>E</tuning-step>
                  <tuning-octave>4</tuning-octave>
            </staff-tuning>
      </staff-details>
      </attributes>
      <note>
      <pitch>
            <step>E</step>
            <octave>2</octave>
      </pitch>
      <duration>2</duration>
      <voice>1</voice>
      <type>eighth</type>
      <notations>
            <technical>
                  <fret>0</fret>
```

```
                  <string>6</string>
            </technical>
      </notations>
      </note>
      <note>
      <pitch>
            <step>B</step>
            <octave>2</octave>
      </pitch>
      <duration>2</duration>
      <voice>1</voice>
      <type>eighth</type>
      <notations>
            <technical>
                  <fret>2</fret>
                  <string>5</string>
            </technical>
      </notations>
      </note>
      <note>
      <pitch>
            <step>E</step>
            <octave>3</octave>
      </pitch>
      <duration>2</duration>
      <voice>1</voice>
      <type>eighth</type>
      <notations>
            <technical>
                  <fret>2</fret>
                  <string>4</string>
            </technical>
      </notations>
      </note>
      <note>
      <pitch>
            <step>G</step>
            <octave>3</octave>
      </pitch>
      <duration>2</duration>
      <voice>1</voice>
```

```
            <type>eighth</type>
            <notations>
                  <technical>
                        <fret>1</fret>
                        <string>3</string>
                  </technical>
            </notations>
            </note>
            <note>
            <pitch>
                  <step>B</step>
                  <octave>3</octave>
            </pitch>
            <duration>2</duration>
            <voice>1</voice>
            <type>eighth</type>
            <notations>
                  <technical>
                        <fret>0</fret>
                        <string>2</string>
                  </technical>
            </notations>
            </note>
            <note>
            <pitch>
                  <step>E</step>
                  <octave>4</octave>
            </pitch>
            <duration>2</duration>
            <voice>1</voice>
            <type>eighth</type>
            <notations>
                  <technical>
                        <fret>0</fret>
                        <string>1</string>
                  </technical>
            </notations>
            </note>
            <note>
            <pitch>
                  <step>B</step>
```

```
            <octave>3</octave>
        </pitch>
        <duration>2</duration>
        <voice>1</voice>
        <type>eighth</type>
        <notations>
            <technical>
                <fret>0</fret>
                <string>2</string>
            </technical>
        </notations>
        </note>
        <note>
        <pitch>
            <step>G</step>
            <octave>3</octave>
        </pitch>
        <duration>2</duration>
        <voice>1</voice>
        <type>eighth</type>
        <notations>
            <technical>
                <fret>1</fret>
                <string>3</string>
            </technical>
        </notations>
        </note>
    </measure>
    <measure number="2">
        <note>
        <pitch>
            <step>E</step>
            <octave>4</octave>
        </pitch>
        <duration>16</duration>
        <voice>1</voice>
        <type>whole</type>
        <notations>
            <technical>
                <fret>0</fret>
                <string>1</string>
```

```
            </technical>
        </notations>
        </note>
        <note>
        <chord/>
        <pitch>
            <step>B</step>
            <octave>3</octave>
        </pitch>
        <duration>16</duration>
        <voice>1</voice>
        <type>whole</type>
        <notations>
            <technical>
                <fret>0</fret>
                <string>2</string>
            </technical>
        </notations>
        </note>
        <note>
        <chord/>
        <pitch>
            <step>G</step>
            <octave>3</octave>
        </pitch>
        <duration>16</duration>
        <voice>1</voice>
        <type>whole</type>
        <notations>
            <technical>
                <fret>1</fret>
                <string>3</string>
            </technical>
        </notations>
        </note>
        <note>
        <chord/>
        <pitch>
            <step>E</step>
            <octave>3</octave>
        </pitch>
```

```
<duration>16</duration>
<voice>1</voice>
<type>whole</type>
<notations>
      <technical>
            <fret>2</fret>
            <string>4</string>
      </technical>
</notations>
</note>
<note>
<chord/>
<pitch>
      <step>B</step>
      <octave>2</octave>
</pitch>
<duration>16</duration>
<voice>1</voice>
<type>whole</type>
<notations>
      <technical>
            <fret>2</fret>
            <string>5</string>
      </technical>
</notations>
</note>
<note>
<chord/>
<pitch>
      <step>E</step>
      <octave>2</octave>
</pitch>
<duration>16</duration>
<voice>1</voice>
<type>whole</type>
<notations>
      <technical>
            <fret>0</fret>
            <string>6</string>
      </technical>
</notations>
```

```
            </note>
      </measure>
      </part>
</score-partwise>
```

6.2 Simple Drums Tab:

Input:

```
 C|x---------------|--------x-------|
HH|--x-x-x-x-x-x-x-|----------------|
 S|----o-------o---|oooo------------|
LT|----------------|----oo----------|
MT|----------------|------oo--------|
BD|o-------o-------|o-------o-------|
```

Output:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<score-partwise xmlns:ns2="http://www.w3.org/1999/xlink">
      <part-list>
      <score-part id="P1">
            <part-name>Drumset</part-name>
            <score-instrument id="P1-I50">
            <instrument-name>Crash Cymbal</instrument-name>
            </score-instrument>
            <score-instrument id="P1-I43">
            <instrument-name>Closed Hi-Hat</instrument-name>
            </score-instrument>
            <score-instrument id="P1-I39">
            <instrument-name>Snare</instrument-name>
            </score-instrument>
            <score-instrument id="P1-146">
            <instrument-name>Low Tom</instrument-name>
            </score-instrument>
            <score-instrument id="P1-I48">
```

```
      <instrument-name>Low-Mid Tom</instrument-name>
      </score-instrument>
      <score-instrument id="P1-I36">
      <instrument-name>Bass Drum 1</instrument-name>
      </score-instrument>
</score-part>
</part-list>
<part id="P1">
<measure number="1">
      <attributes>
      <divisions>4</divisions>
      <key>
            <fifths>0</fifths>
      </key>
      <time>
            <beats>4</beats>
            <beat-type>4</beat-type>
      </time>
      <clef>
            <sign>percussion</sign>
            <line>2</line>
      </clef>
      </attributes>
      <note>
      <unpitched>
            <display-step>A</display-step>
            <display-octave>5</display-octave>
      </unpitched>
      <duration>1</duration>
      <instrument id="P1-I50"/>
      <voice>1</voice>
      <type>16th</type>
      <stem>up</stem>
      <notehead>x</notehead>
      </note>
      <note>
      <unpitched>
            <display-step>F</display-step>
            <display-octave>4</display-octave>
      </unpitched>
      <duration>1</duration>
```

```
<instrument id="P1-I36"/>
<voice>2</voice>
<type>16th</type>
<stem>down</stem>
<notehead>o</notehead>
</note>
<note>
<unpitched>
      <display-step>G</display-step>
      <display-octave>5</display-octave>
</unpitched>
<duration>1</duration>
<instrument id="P1-I43"/>
<voice>1</voice>
<type>16th</type>
<stem>up</stem>
<notehead>x</notehead>
</note>
<note>
<unpitched>
      <display-step>G</display-step>
      <display-octave>5</display-octave>
</unpitched>
<duration>1</duration>
<instrument id="P1-I43"/>
<voice>1</voice>
<type>16th</type>
<stem>up</stem>
<notehead>x</notehead>
</note>
<note>
<unpitched>
      <display-step>C</display-step>
      <display-octave>5</display-octave>
</unpitched>
<duration>1</duration>
<instrument id="P1-I39"/>
<voice>1</voice>
<type>16th</type>
<stem>up</stem>
<notehead>o</notehead>
```

```
            </note>
            <note>
            <unpitched>
                  <display-step>G</display-step>
                  <display-octave>5</display-octave>
            </unpitched>
            <duration>1</duration>
            <instrument id="P1-I43"/>
            <voice>1</voice>
            <type>16th</type>
            <stem>up</stem>
            <notehead>x</notehead>
            </note>
            <note>
            <unpitched>
                  <display-step>G</display-step>
                  <display-octave>5</display-octave>
            </unpitched>
            <duration>1</duration>
            <instrument id="P1-I43"/>
            <voice>1</voice>
            <type>16th</type>
            <stem>up</stem>
            <notehead>x</notehead>
            </note>
            <note>
            <unpitched>
                  <display-step>F</display-step>
                  <display-octave>4</display-octave>
            </unpitched>
            <duration>1</duration>
            <instrument id="P1-I36"/>
            <voice>2</voice>
            <type>16th</type>
            <stem>down</stem>
            <notehead>o</notehead>
            </note>
            <note>
            <unpitched>
                  <display-step>G</display-step>
                  <display-octave>5</display-octave>
```

```
            </unpitched>
            <duration>1</duration>
            <instrument id="P1-I43"/>
            <voice>1</voice>
            <type>16th</type>
            <stem>up</stem>
            <notehead>x</notehead>
            </note>
            <note>
            <unpitched>
                  <display-step>G</display-step>
                  <display-octave>5</display-octave>
            </unpitched>
            <duration>1</duration>
            <instrument id="P1-I43"/>
            <voice>1</voice>
            <type>16th</type>
            <stem>up</stem>
            <notehead>x</notehead>
            </note>
            <note>
            <unpitched>
                  <display-step>C</display-step>
                  <display-octave>5</display-octave>
            </unpitched>
            <duration>1</duration>
            <instrument id="P1-I39"/>
            <voice>1</voice>
            <type>16th</type>
            <stem>up</stem>
            <notehead>o</notehead>
            </note>
            <note>
            <unpitched>
                  <display-step>G</display-step>
                  <display-octave>5</display-octave>
            </unpitched>
            <duration>1</duration>
            <instrument id="P1-I43"/>
            <voice>1</voice>
            <type>16th</type>
```

```
      <stem>up</stem>
      <notehead>x</notehead>
      </note>
</measure>
<measure number="2">
      <note>
      <unpitched>
            <display-step>C</display-step>
            <display-octave>5</display-octave>
      </unpitched>
      <duration>1</duration>
      <instrument id="P1-I39"/>
      <voice>1</voice>
      <type>16th</type>
      <stem>up</stem>
      <notehead>o</notehead>
      </note>
      <note>
      <unpitched>
            <display-step>F</display-step>
            <display-octave>4</display-octave>
      </unpitched>
      <duration>1</duration>
      <instrument id="P1-I36"/>
      <voice>2</voice>
      <type>16th</type>
      <stem>down</stem>
      <notehead>o</notehead>
      </note>
      <note>
      <unpitched>
            <display-step>C</display-step>
            <display-octave>5</display-octave>
      </unpitched>
      <duration>1</duration>
      <instrument id="P1-I39"/>
      <voice>1</voice>
      <type>16th</type>
      <stem>up</stem>
      <notehead>o</notehead>
      </note>
```

```
<note>
<unpitched>
      <display-step>C</display-step>
      <display-octave>5</display-octave>
</unpitched>
<duration>1</duration>
<instrument id="P1-I39"/>
<voice>1</voice>
<type>16th</type>
<stem>up</stem>
<notehead>o</notehead>
</note>
<note>
<unpitched>
      <display-step>C</display-step>
      <display-octave>5</display-octave>
</unpitched>
<duration>1</duration>
<instrument id="P1-I39"/>
<voice>1</voice>
<type>16th</type>
<stem>up</stem>
<notehead>o</notehead>
</note>
<note>
<unpitched>
      <display-step>D</display-step>
      <display-octave>5</display-octave>
</unpitched>
<duration>1</duration>
<instrument id="P1-146"/>
<voice>1</voice>
<type>16th</type>
<stem>up</stem>
<notehead>o</notehead>
</note>
<note>
<unpitched>
      <display-step>D</display-step>
      <display-octave>5</display-octave>
</unpitched>
```

```
<duration>1</duration>
<instrument id="P1-146"/>
<voice>1</voice>
<type>16th</type>
<stem>up</stem>
<notehead>o</notehead>
</note>
<note>
<unpitched>
      <display-step>E</display-step>
      <display-octave>5</display-octave>
</unpitched>
<duration>1</duration>
<instrument id="P1-I48"/>
<voice>1</voice>
<type>16th</type>
<stem>up</stem>
<notehead>o</notehead>
</note>
<note>
<unpitched>
      <display-step>E</display-step>
      <display-octave>5</display-octave>
</unpitched>
<duration>1</duration>
<instrument id="P1-I48"/>
<voice>1</voice>
<type>16th</type>
<stem>up</stem>
<notehead>o</notehead>
</note>
<note>
<unpitched>
      <display-step>A</display-step>
      <display-octave>5</display-octave>
</unpitched>
<duration>1</duration>
<instrument id="P1-I50"/>
<voice>1</voice>
<type>16th</type>
<stem>up</stem>
```

```
            <notehead>x</notehead>
            </note>
            <note>
            <unpitched>
                  <display-step>F</display-step>
                  <display-octave>4</display-octave>
            </unpitched>
            <duration>1</duration>
            <instrument id="P1-I36"/>
            <voice>2</voice>
            <type>16th</type>
            <stem>down</stem>
            <notehead>o</notehead>
            </note>
      </measure>
      </part>
</score-partwise>
```