Music Xml to Braille Compiler
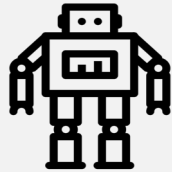
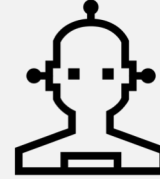<Scanning & Parsing by JAVA CC>

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INDEX

1

**Tokenize
Changed Thing**

2

**Structure of
Parsing MXML**

3

**Draft
MXML Parser**

4

**Jsoup
Treat XML in JAVA**

Need Some Change On Token

✓ **<u>Attributes in Token</u>**

```
-  <note default-y="-180.00" default-x="119.00">
    +  <pitch>
       <duration>2</duration>
       <voice>1</voice>
       <type>eighth</type>
    -  <time-modification>
           <actual-notes>3</actual-notes>
           <normal-notes>2</normal-notes>
       </time-modification>
       <stem>up</stem>
       <staff>2</staff>
       <beam number="1">begin</beam>
    -  <notations>
           <tuplet type="start" show-number="none" bracket="no"/>
           <slur type="start" number="1"/>
       </notations>
   </note>
```

In token note - default-x, default-y is existence

We are tokenizing MXML codes by tag of XML

But, some MXML tags contains attributes, name of tags are changed

Plan A: Consider attributes at Tokenizing
Plan B: Consider attributes at Parsing

3

About Plan A and Plan B

✓ Plan A: Tokenizing

```
void parse() :
{}
{
  "<"
 <MEASURE>
 (" " "default-x =" [0-9]+)?
 ">"
}
```

✓ Plan B: Parsing

```
TOKEN :
{
    <COORD : "default-x">
}

void parse() :
{}
{
    "<" <MEASURE>
(" " <COORD> "=" [0-9]+)? ">"
}
```

4

Need Some Change On Token Grouping

✓ **Grouping Should be deleted**

```
TOKEN :
{
    < _MEASURE : < PRINT >< ATTRIBUTES >< NOTE > >
    < _ATTRIBUTES : < DIVISIONS >< KEY >< TIME >< STAVES >< CLEF > >
    < _TIME : < BEATS >< BEATTYPE > >
    < _CLEF : < SIGN >< LINE > >
}

TOKEN :
{
    < PART : "part" >
    < MEASURE : "measure" >
    < PRINT : "print" >
    < ATTRIBUTES : "attributes" >
    < DIVISIONS : "divisions" >
    < KEY : "key" >
    < FIFTHS : "fifths" >
    < TIME : "time" >
    < BEATS : "beats" >
    < BEATTYPE : "beat-type" >
    < STAVES : "staves" >
    < CLEF : "clef" >
    < SIGN : "sign" >
    < LINE : "line" >
    < NOTE : "note" >
    < PITCH : "pitch" >
    < STEP : "step" >
    < OCTAVE : "octave" >
    < DURATION : "duration" >
    < TYPE : "type" >
}

TOKEN :
{
    < NUMBER : "number=\"[1-3]\"" >
    < NEWLINE : "new-system=\"yes\"" >
}
```
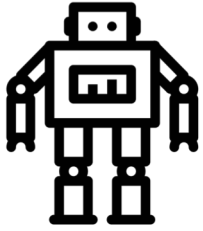
Grouping evoke some Error
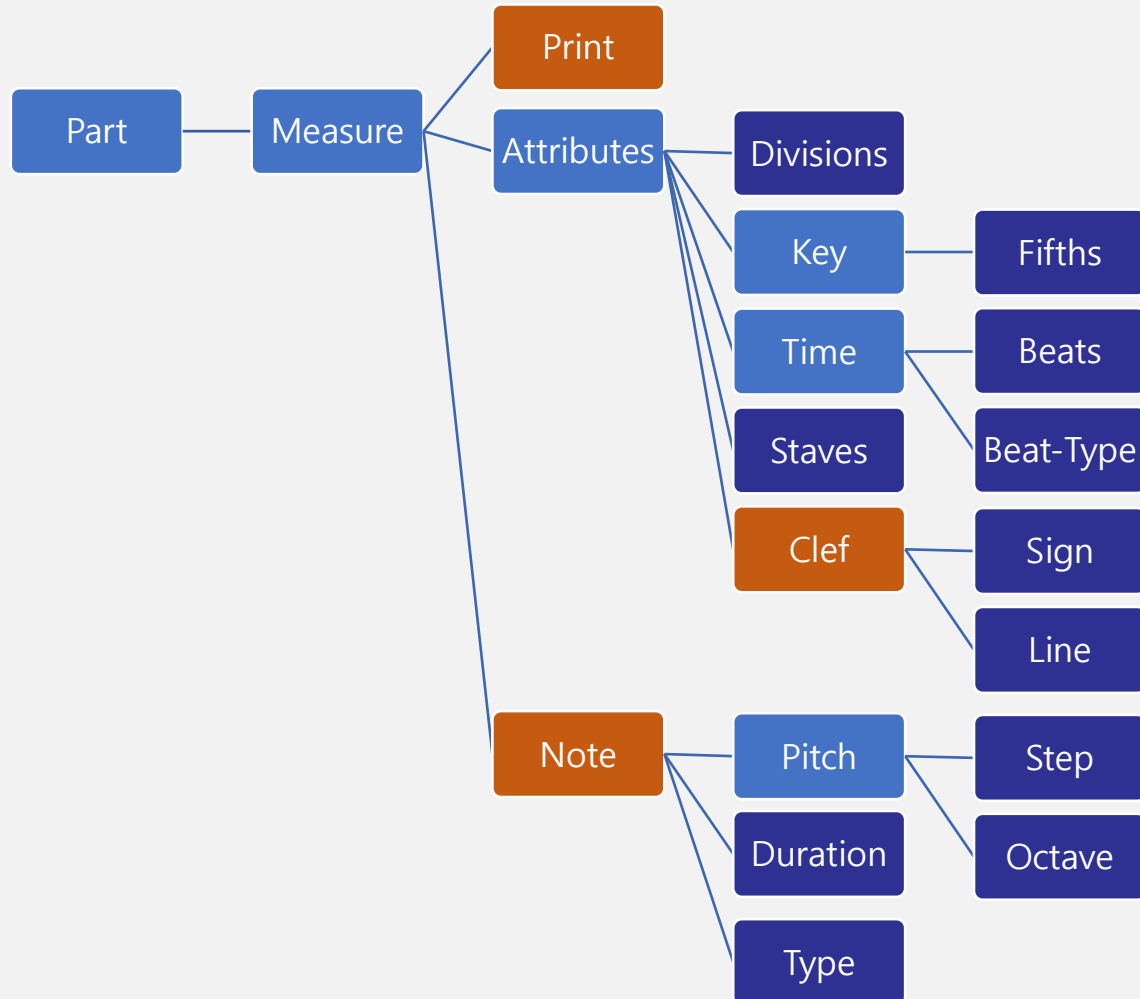
<_MEASURE>
        function1();
</_MEASURE>

**Upper Tokenizing can evoke error,
because it treats 9 tokenizing case at once**

Structure about Parser Tree

Part — Measure
- Print
- Attributes
  - Divisions
  - Key — Fifths
  - Time
    - Beats
    - Beat-Type
  - Staves
  - Clef
    - Sign
    - Line
- Note
  - Pitch
    - Step
    - Octave
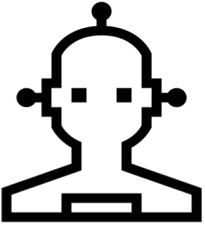 - Duration
  - Type

Specific information about our MXML parser Abstract Syntax Tree

Orange Token contains some attributes. We will deal with Plan A or B

Blue Token contains specific value. Integer, Character or string

6

Tokenizing Code In JAVACC

✓ Source Code of Parser.jj

```
101 }
102 {
103     "<"< PRINT >">"
104     "</"< PRINT >">"
105        { }
106 }
107
108 void parseAttributes() :
109 {
110 }
111 {
112     "<"< ATTRIBUTES >">"
113 //   ( parseDivisions() | parseKey() | parseTime() | parseStaves() | parseClef(
114     "</"< ATTRIBUTES >">"
115        { }
116 }
117
118 void parseNote() :
119 {
120 }
121 {
122     "<"< NOTE >">"
123 //   ( parsePitch() | parseDuration() | parseType() )+
       "</"< NOTE >">"
```

✓ Result of our parser

```
<part>
        <measure>
                <attributes>
                </attributes>
        </measure>
        <measure>
                <print>
                </print>
                <print>
                </print>
                <note>
                </note>
        </measure>
</part>
damn!!
```

7

How to import XML in JAVA => Jsoup

✓ **Input XML file in JAVA**

```java
1 package Jsoup;
2
3 import org.jsoup.Jsoup;
4 import org.jsoup.nodes.Document;
5 import java.io.*;
6
7 public class Test{
8     public static void main(String[] args) throws Exception{
9         File input = new File(
10             "C:/Users/user/Desktop/다운로드/Debussy_-_Deux_arabesques/lg-20474636
11         Document doc = Jsoup.parse(input, "UTF-8");
12
13         System.out.println(doc);
14     }
15 }
```

✓ **Result of input**

```xml
        <staff>
         1
        </staff>
       </note>
       <note>
        <rest />
        <duration>
         12
        </duration>
        <voice>
         1
        </voice>
        <type>
         half
        </type>
        <staff>
         1
        </staff>
       </note>
       <backup>
        <duration>
         24
        </duration>
       </backup>
       <note default-x="12.00" default-y="-205.00">
        <pitch>
         <step>
```

Make JAVA can read XML(UTF-8) File by upper code

There are XML Parser in Jsoup, but we can't use

8

Thank you