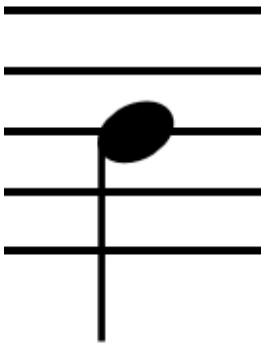
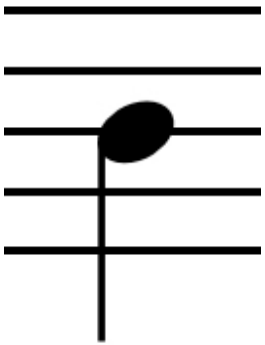
Basics of Encoding with MEI

Basic examples

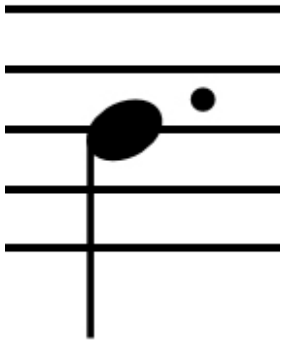


```
<note pname="b" oct="4" dur="4"/>
```

Basic examples

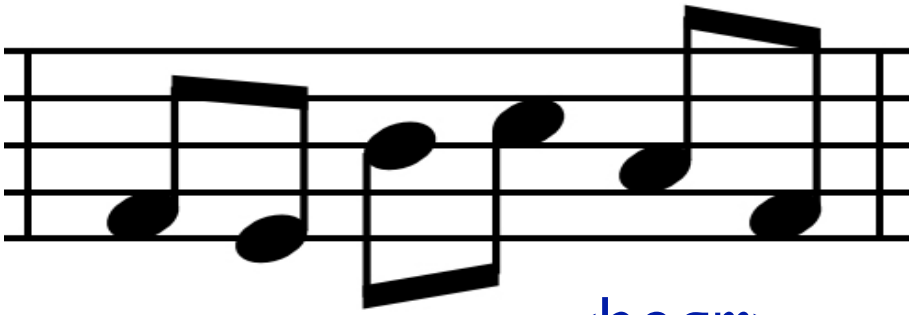


```
<note pname="b" oct="4" dur="4"/>
```



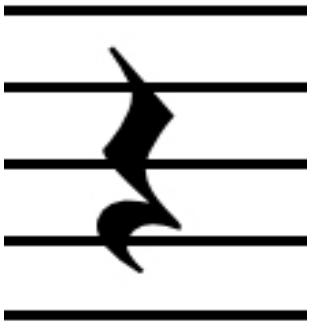
```
<note pname="b" oct="4" dur="4" dots="1"/>
```

Beams

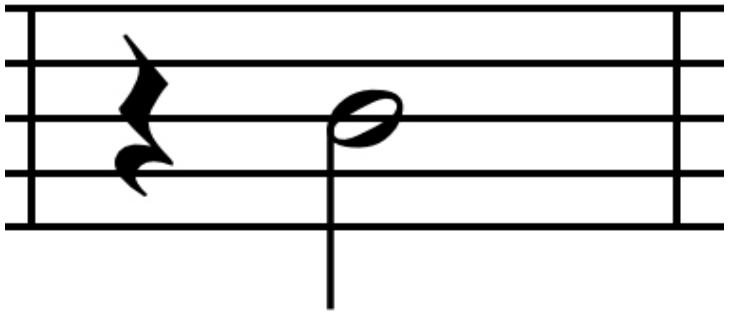


```
<beam>
    <note pname="f" oct="4" dur="8"/>
    <note pname="e" oct="4" dur="8"/>
</beam>
<beam>
    <note pname="b" oct="4" dur="8"/>
    <note pname="c" oct="5" dur="8"/>
</beam>
<beam>
    <note pname="a" oct="4" dur="8"/>
    <note pname="f" oct="4" dur="8"/>
</beam>
```

Rests

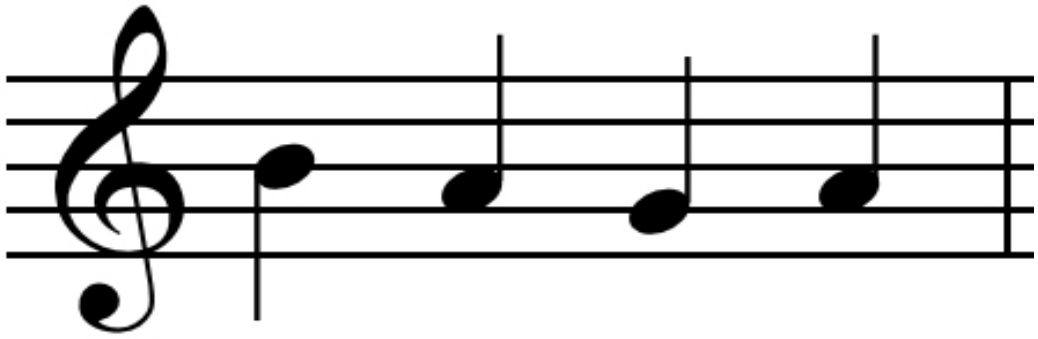


```
<rest dur="4"/>
```



```
<rest dur="4"/>
<note pname="b" oct="4" dur="2"/>
```

Mary had a little lamb

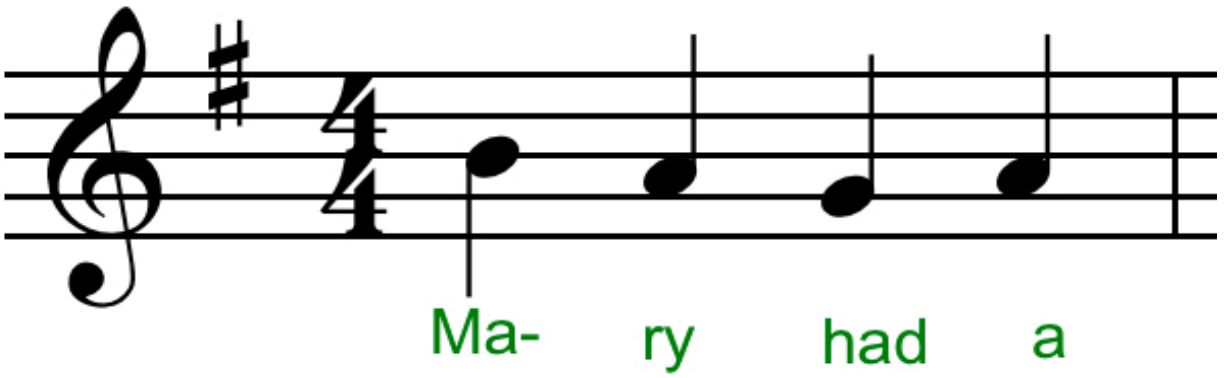


Please encode the notes within a layer-element!

Encoding

```
<layer>
    <note pname="b" oct="4" dur="4" stem.dir="down"/>
    <note pname="a" oct="4" dur="4" stem.dir="up"/>
    <note pname="g" oct="4" dur="4" stem.dir="up"/>
    <note pname="a" oct="4" dur="4" stem.dir="up"/>
</layer>
```

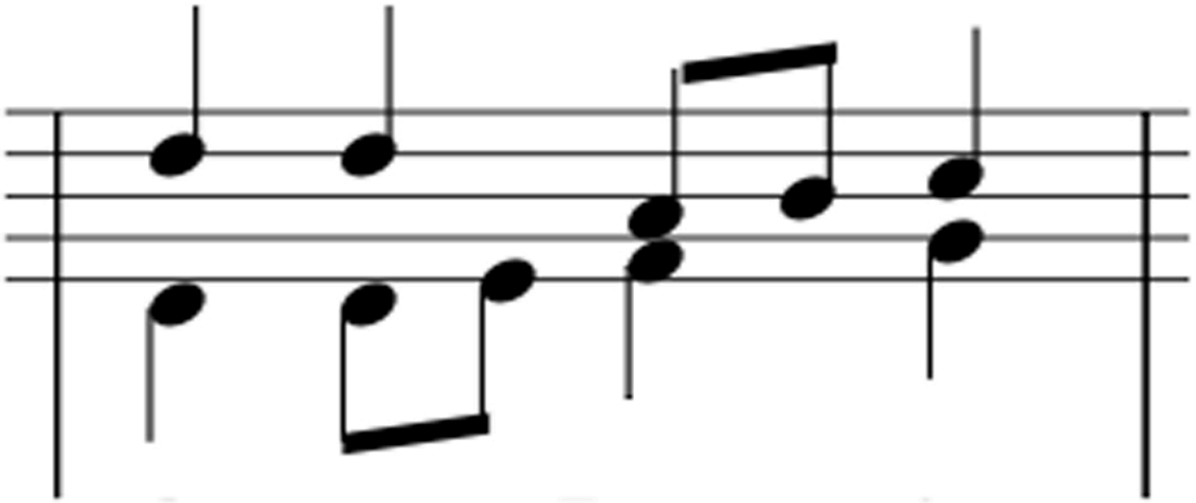
Mary had a second lamb



Encoding with lyrics

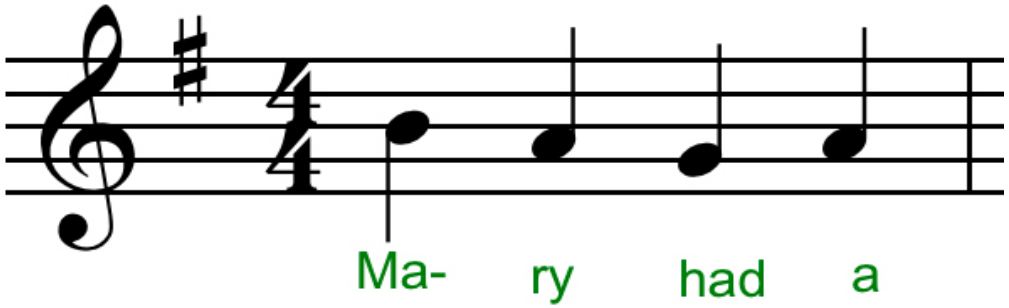
```
<layer>

    <note pname="b" oct="4" dur="4" stem.dir="down" syl="Ma-"/>
     <note pname="a" oct="4" dur="4" stem.dir="up" syl="ry"/>
     <note pname="g" oct="4" dur="4" stem.dir="up" syl="had"/>
     <note pname="a" oct="4" dur="4" stem.dir="up" syl="a"/>

</layer>
```

Example with two layers



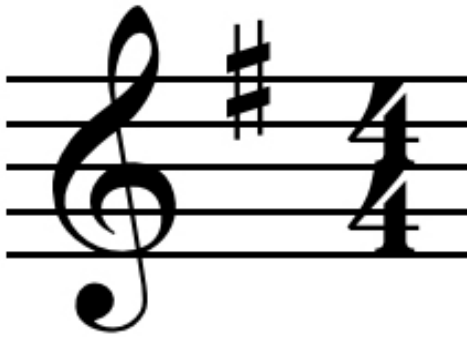
```
<staff>
    <layer n="1">
        <note pname="d" oct="5" dur="4" stem.dir="up"/>
        <note pname="d" oct="5" dur="4" stem.dir="up"/>
        <beam>
            <note/>
            <note/>
        </beam>
        <note/>
    </layer>
    <layer n="2">
        <note pname="d" oct="4" dur="4" stem.dir="down"/>
        <beam>
            <note/>
            <note/>
        </beam>
        <note/>
        <note/>
     </layer>
</staff>
```

Encoding a complete measure



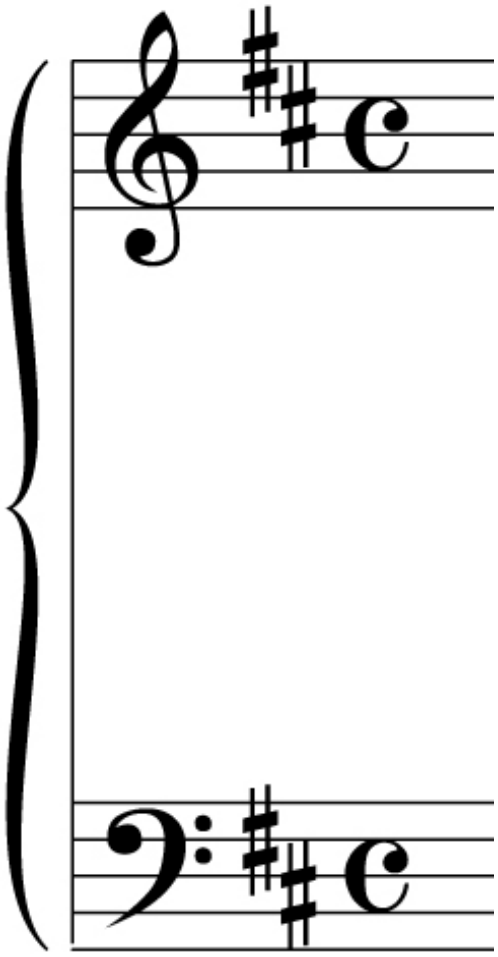

```
<measure n="1">
  <staff>
    <layer>
      <note pname="b" oct="4" dur="4" stem.dir="down" syl="Ma-"/>
      <note pname="a" oct="4" dur="4" stem.dir="up" syl="ry"/>
      <note pname="g" oct="4" dur="4" stem.dir="up" syl="had"/>
      <note pname="a" oct="4" dur="4" stem.dir="up" syl="a"/>
    </layer>
  </staff>
</measure>
```

staff definition



```
<staffDef n="1" lines="5" clef.line="2" clef.shape="G"
    meter.count="4" meter.unit="4" key.sig="1s"/>
```

score definition



```
<scoreDef meter.count="4" meter.unit="4"
      meter.sym="common" key.sig="2s"
      key.mode="major">
    <staffGrp symbol="brace">
        <staffDef n="1" lines="5"
              clef.line="2"  clef.shape="G"/>
        <staffDef n="2" clef.shape="F"
              clef.line="4" lines="5"/>
    </staffGrp>
</scoreDef>
```

Common structure

```
<mei xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns="http://www.music-encoding.org/ns/mei"
      meiversion="2012"> → root-element
      <meiHead> → container for metadata
          <fileDesc>
              <titleStmt>
                  <title>Title of the Sample</title>
              </titleStmt>
              <pubStmt/>
          </fileDesc>
      </meiHead>
      <music/> → container for musical texts
  </mei>
```

Container for the music

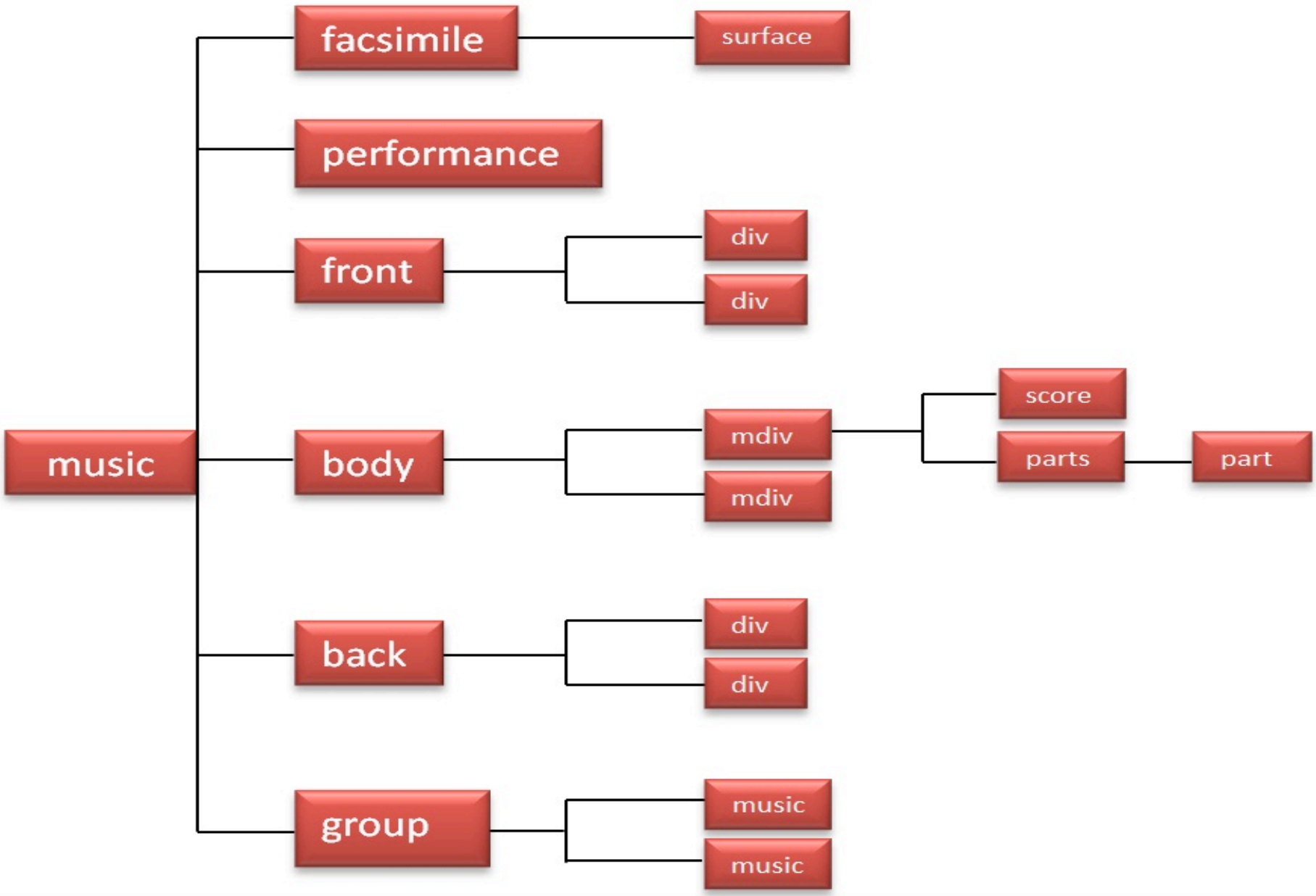
Score

```
<music>
    <body>
        <mdiv>
            <score>
            …
            </score>
        </mdiv>
    </body>
</music>
```

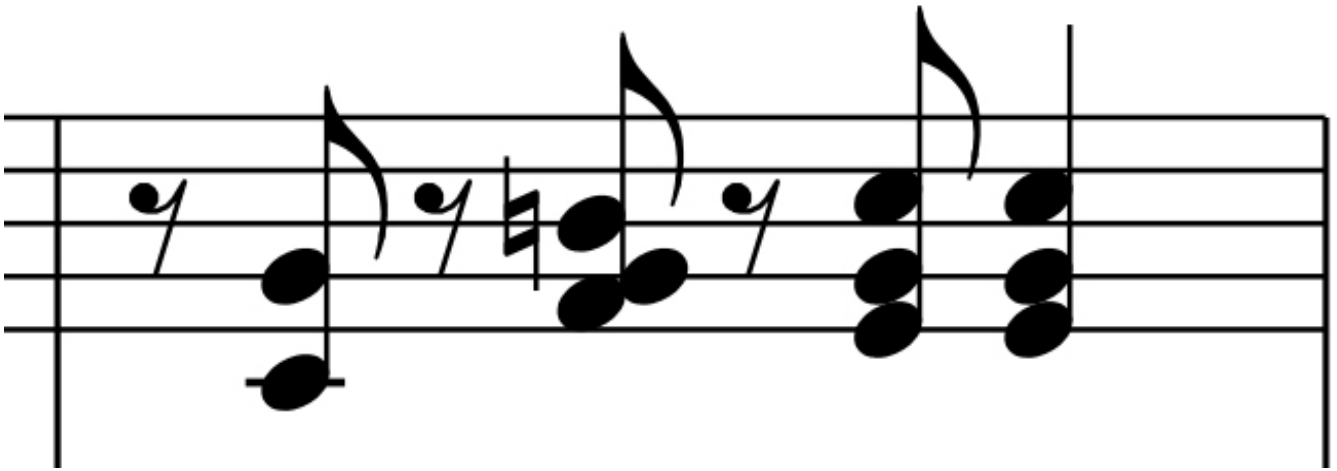
more than one mdiv

```
<music n="opera">
    <body>
        <mdiv n="act_1">
            <mdiv n="scene_1">
                <score/>
            </mdiv>
        </mdiv>
        <mdiv n="act_2">
             <score/>
        </mdiv>
        <mdiv n="act_3">
            <score/>
        </mdiv>
    </body>
</music>
```

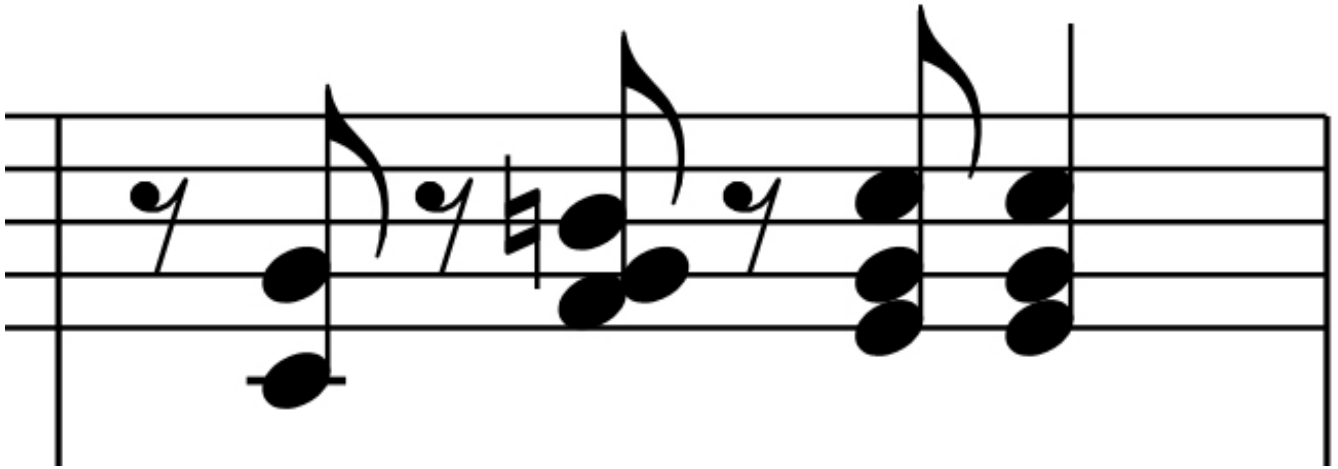
<music>


music
facsimile
surface
performance
front
div
div
body
mdiv
mdiv
score
parts
part
back
div
div
group
music
music

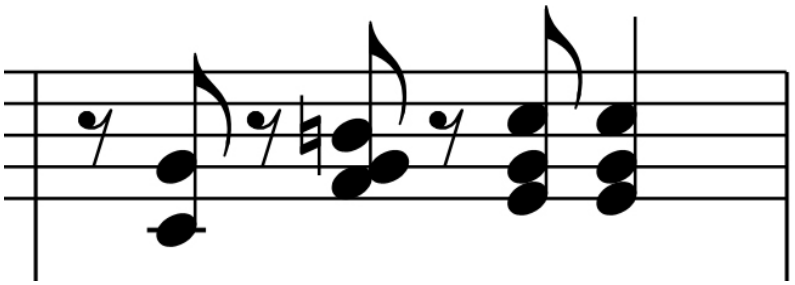
Rests and Chords



Rests and Chords

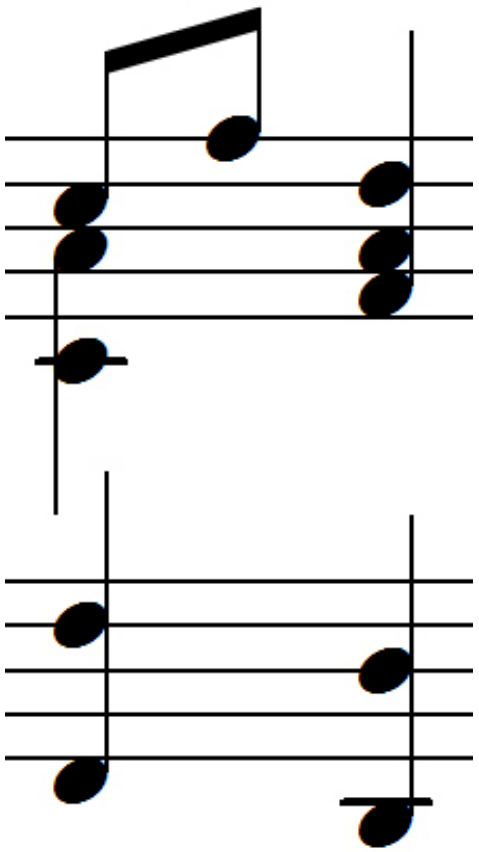


```
<chord dur="8" stem.dir="up">
  <note pname="c" oct="4"/>
  <note pname="g" oct="4"/>
</chord>
```



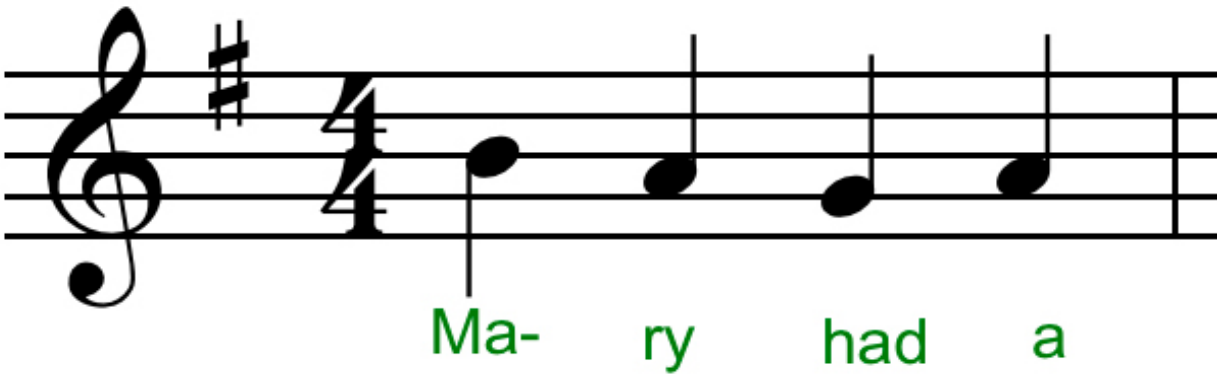
```
<layer>
    <rest dur="8"/>
    <chord dur="8" stem.dir="up">
        <note pname="c" oct="4"/>
        <note pname="g" oct="4"/>
    </chord>
    <rest dur="8"/>
    <chord dur="8" stem.dir="up">
        <note pname="f" oct="4"/>
        <note pname="g" oct="4"/>
        <note pname="b" accid="n" oct="4"/>
    </chord>
    <rest dur="8"/>
     <chord dur="8" stem.dir="up">
         <note pname="e" oct="4"/>
         <note pname="g" oct="4"/>
         <note pname="c" oct="5"/>
    </chord>
    <chord dur="4" stem.dir="up">
         <note pname="e" oct="4"/>
         <note pname="g" oct="4"/>
         <note pname="c" oct="5"/>
    </chord>
</layer>
```

Chord or layer?

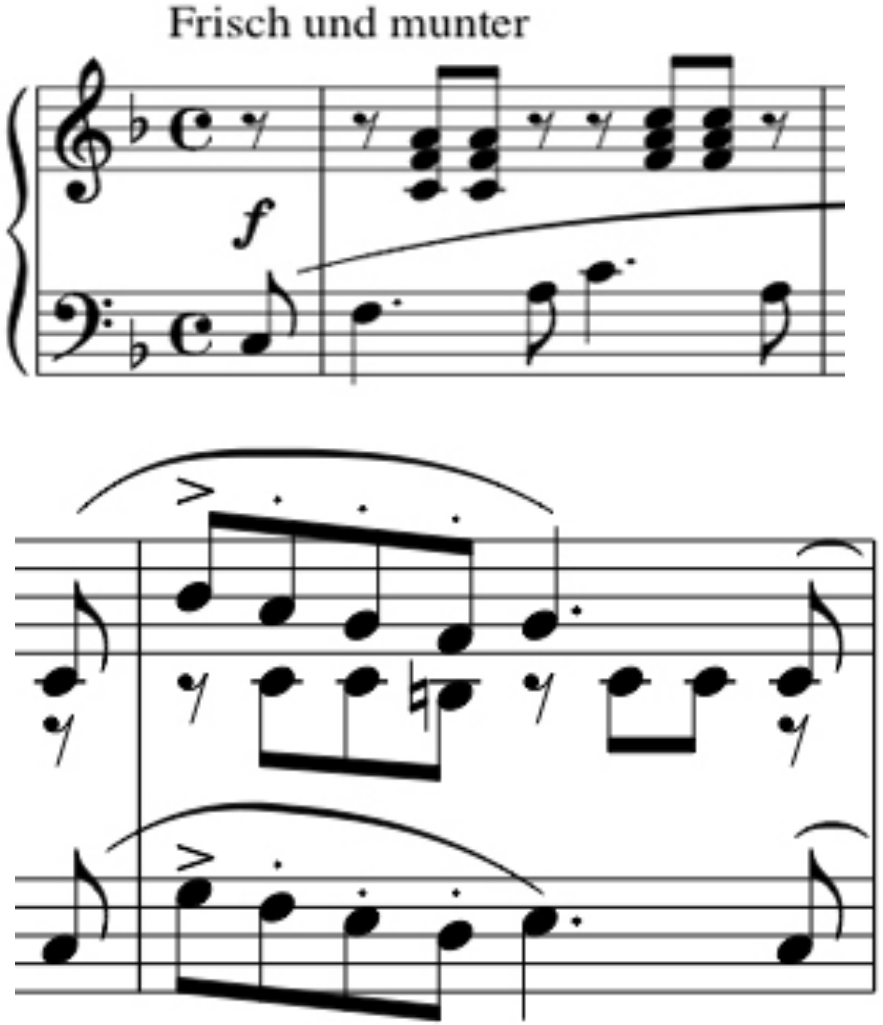


Encoding as a chord with three notes or encoding as two separate layers?

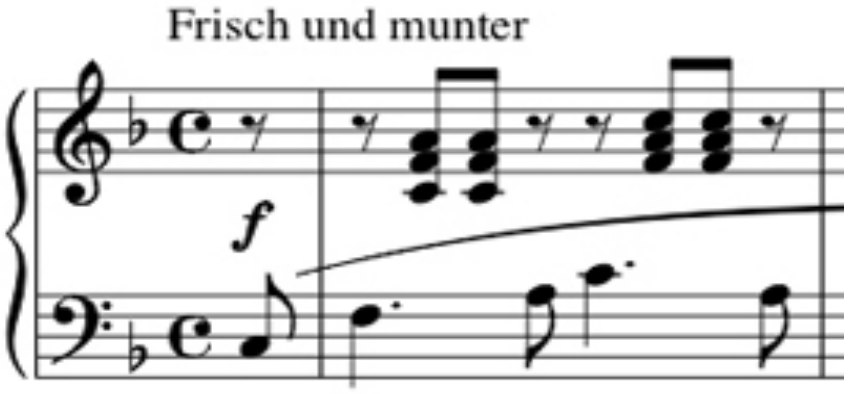
Complete Mary



Dynamic, text and articulation

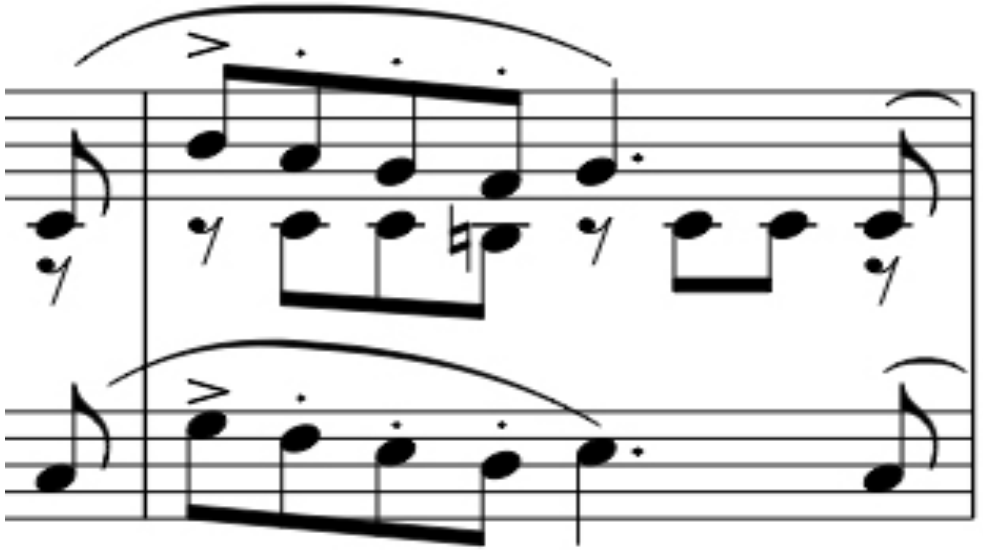


Dynamic and text




```
<measure>
    <!-- content of staves -->
</measure>
<measure>
    <!-- content of staves -->
    <dir place="above" staff="1" tstamp="0.5">Frisch und munter</dir>
    <dynam place="above" staff="2" tstamp="4.5">f</dynam>
</measure>
```

Articulation

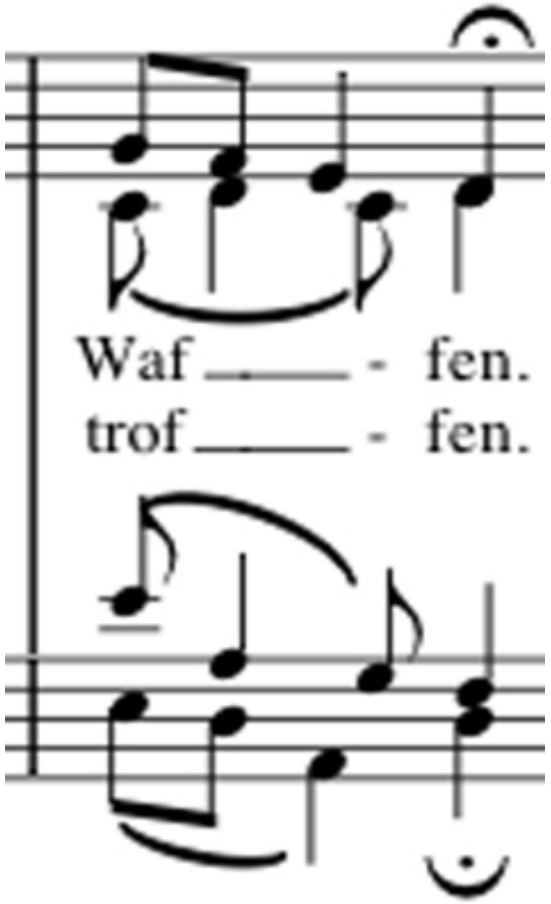


Possible encodings:

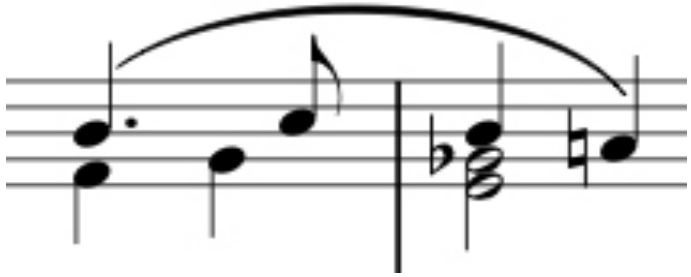
1. `<note artic="acc"/>`

2.
```
<note>
    <artic artic="acc"/>
</note>
```

Slurs and Ties



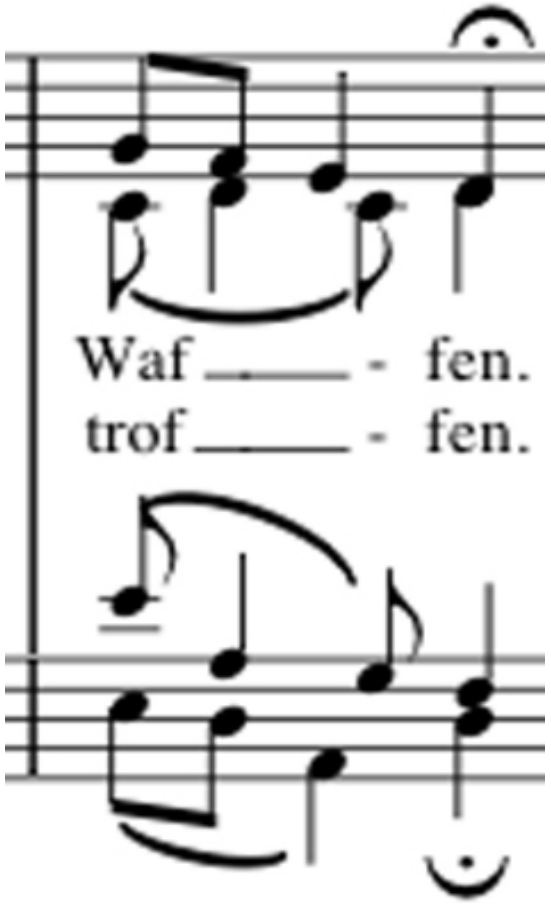
One-pass-encoding and standoff-markup



Slur across the barline

Possible encodings

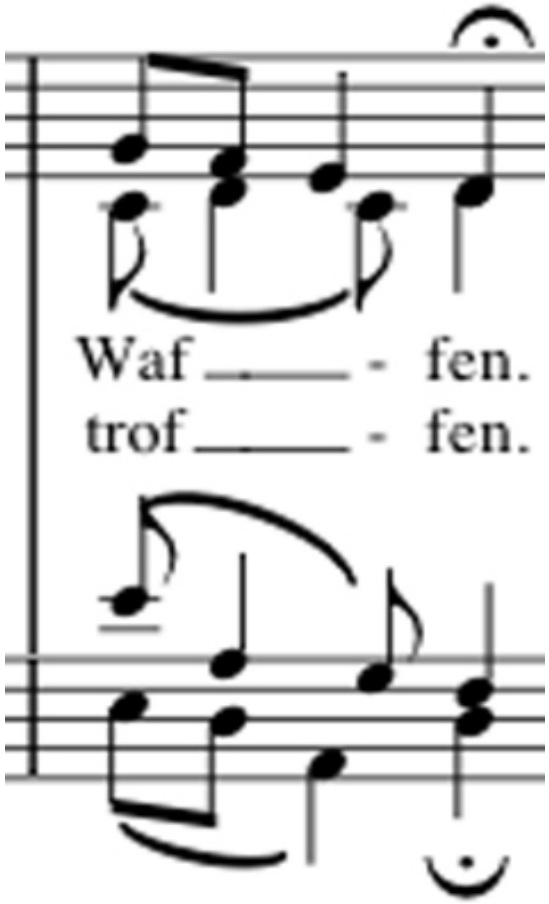
One-pass-encoding using attributes




```
<layer>
   <note pname="e" oct="4" dur="8"
         stem.dir="down" slur="i1"/>
   <note pname="d" oct="4" dur="4"
         stem.dir="down"/>
   <note pname="c" oct="4" dur="8"
         stem.dir="down" slur="t1"/>
</layer>
```

Possible encodings 2

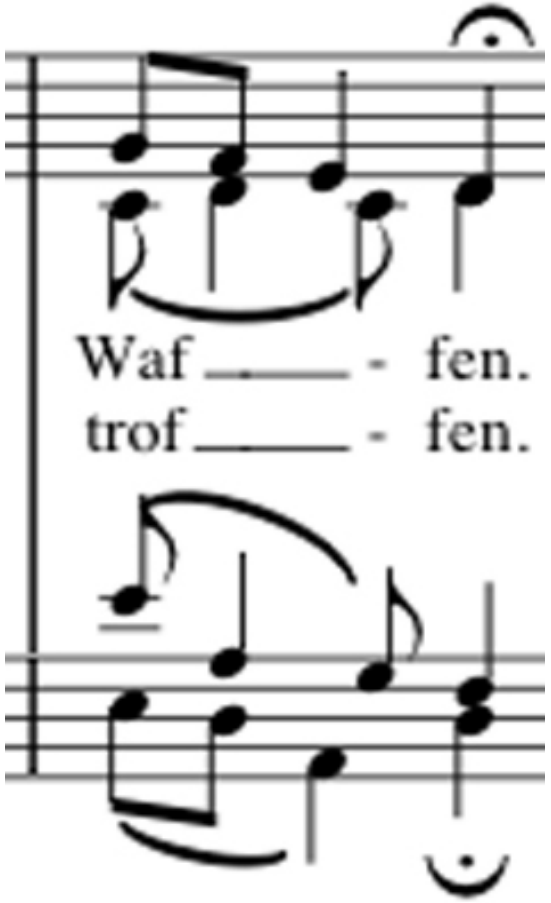
Standoff-markup using pointers




```
<staff>
   <layer>
      <note pname="e" oct="4" dur="8"
         stem.dir="down" xml:id="note1"/>
      <note pname="d" oct="4" dur="4"
         stem.dir="down"/>
      <note pname="c" oct="4" dur="8"
         stem.dir="down" xml:id="note2"/>
   </layer>
</staff>
<slur startid="#note1" endid="#note2"
   curvedir="below"/>
```

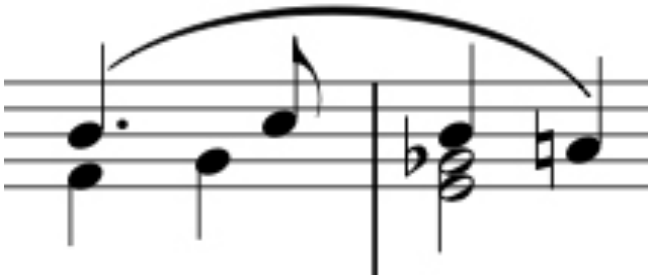
Possible encodings 3

Standoff-markup using semantic positioning



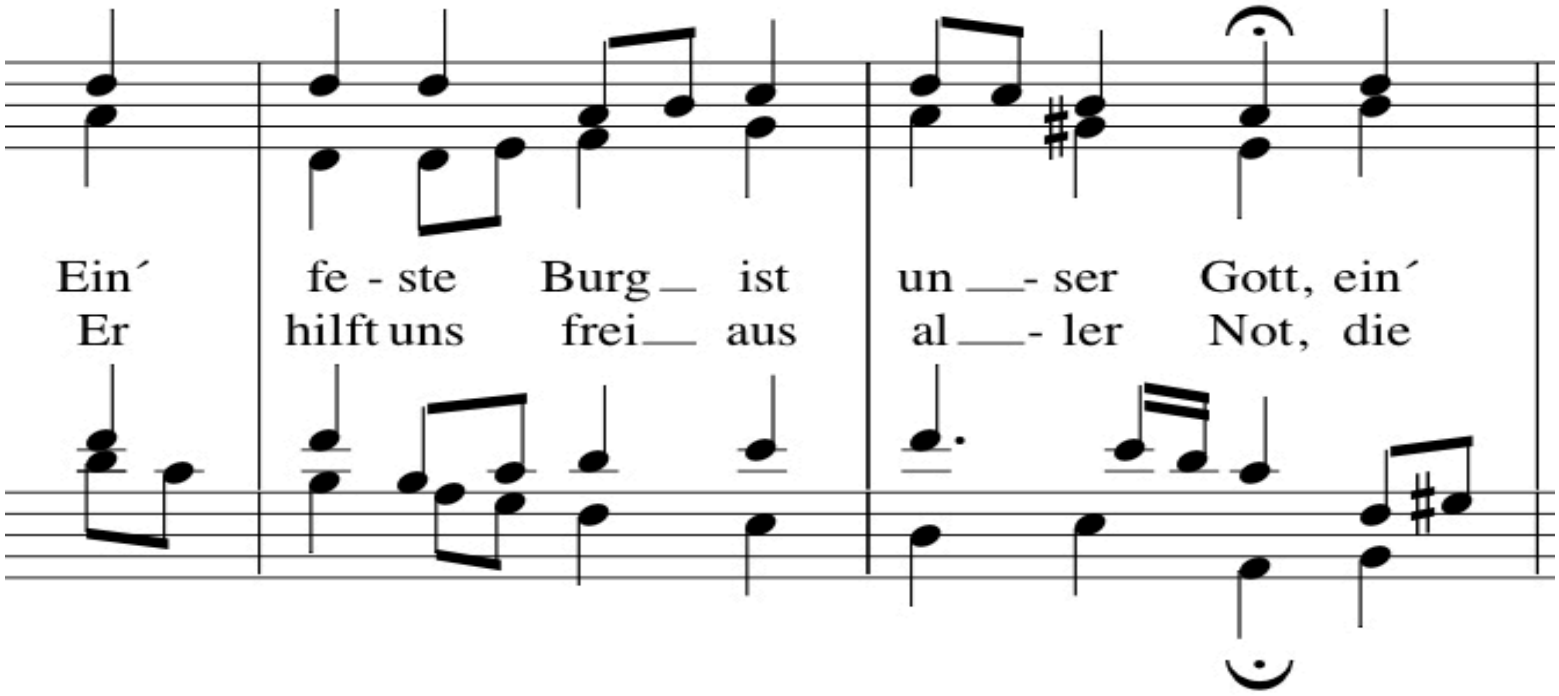

```
<staff>
   <layer>
      <note pname="e" oct="4" dur="8"
         stem.dir="down"/>
      <note pname="d" oct="4" dur="4"
         stem.dir="down"/>
      <note pname="c" oct="4" dur="8"
         stem.dir="down"/>
   </layer>
</staff>
<slur staff="1" layer="2"
      tstamp="1" dur="0m+2.5"
      curvedir="below"/>
```

Possible encodings 4



```
<measure>
   <staff>
      <layer>
         <note/>
         <note/>
      </layer>
   </staff>
   <slur staff="1" layer="1"
      tstamp="3" dur="1m+2"
      curvedir="above"/>
</measure>
<measure>
   <staff>
      <layer>
         <note/>
         <note/>
      </layer>
   </staff>
</measure>
```

Lyrics

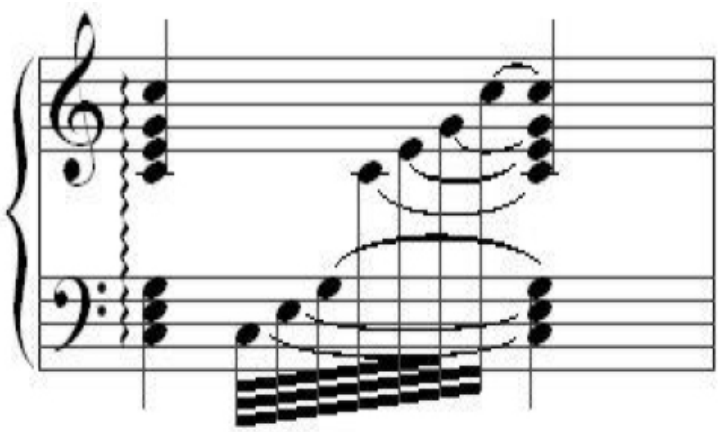


Encoding of two verses

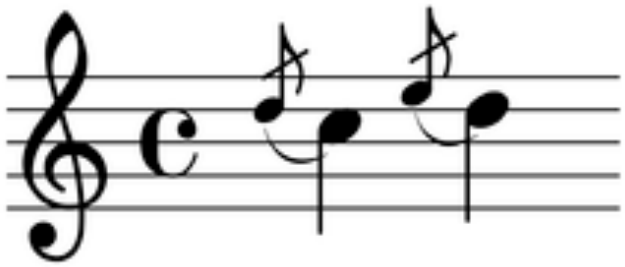
Two verses

```
<layer n="1">
   <note  pname="d" oct="5" dur="4" stem.dir="up">
      <verse n="1">
         <syl>Ein´</syl>
      </verse>
      <verse n="2">
         <syl>Er</syl>
      </verse>
   </note>
</layer>
```

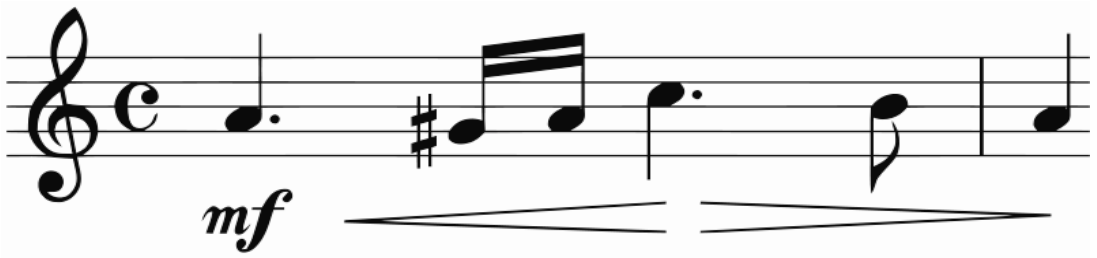
Others...



<arpeg/>

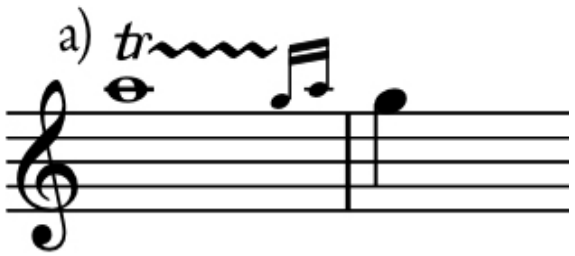


<note grace="unacc" size="cue"/>



<hairpin form="cresc"/>
<hairpin form="dim"/>

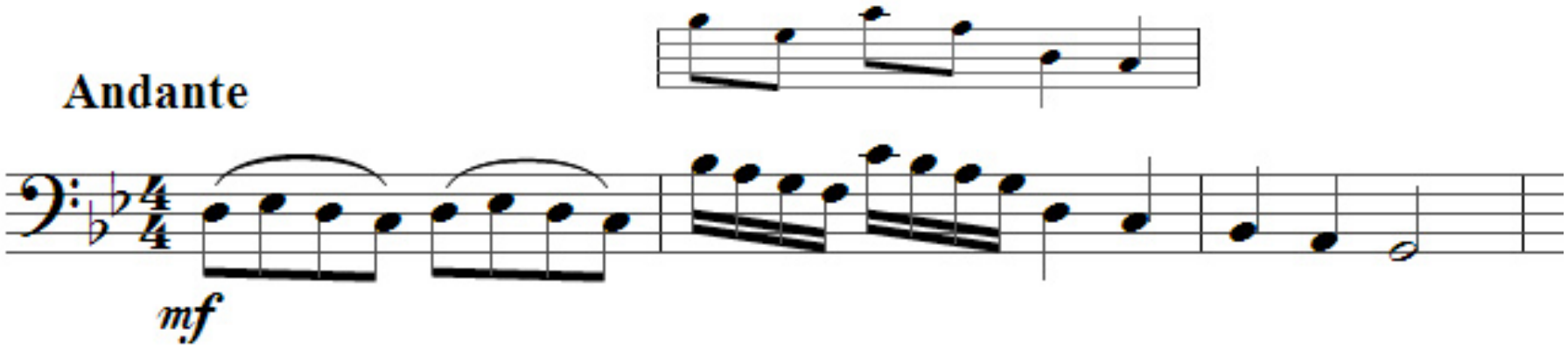
Others...




```
<trill staff="1" layer="1"
   tstamp="1" dur="0m+4"
   place="above"/>
```

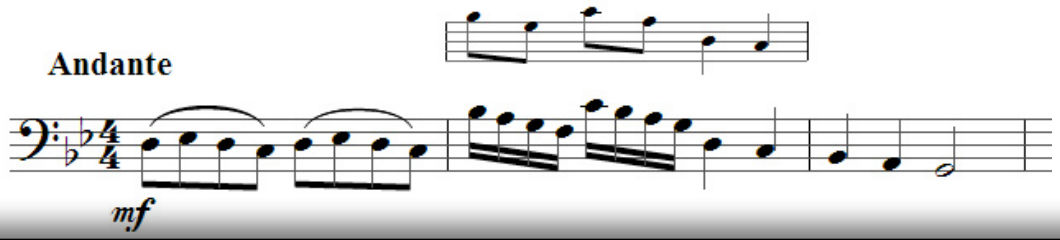

```
<tuplet num="3">
   <note/>
   <note/>
   <note/>
</tuplet>
```

Ossia



Ossia

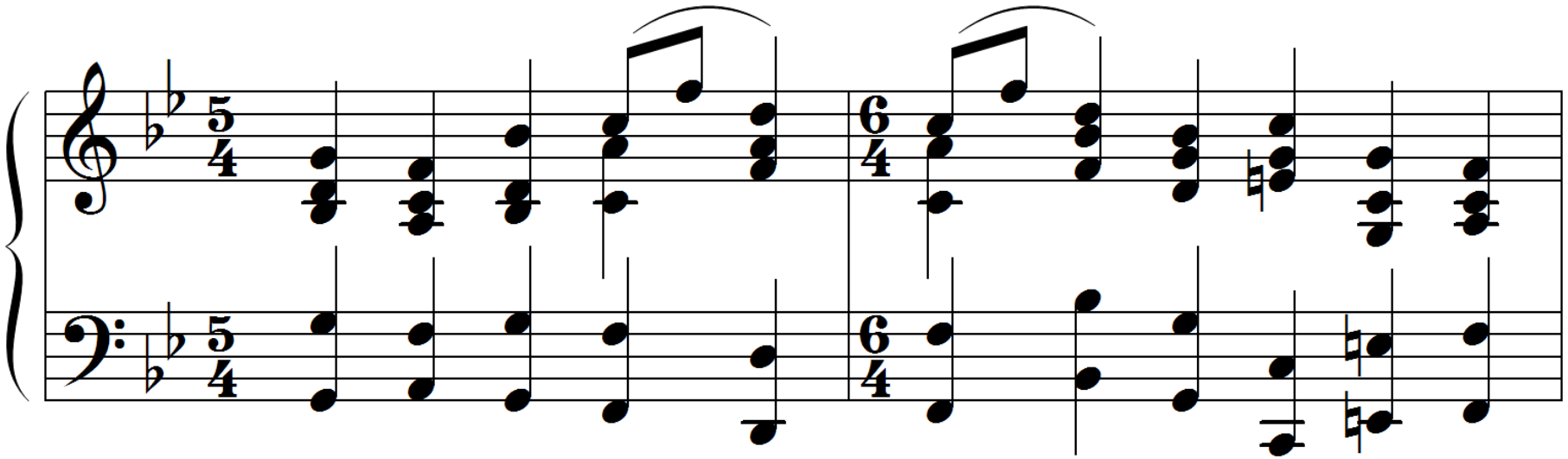
```
<measure>
   <ossia>
      <staff n="ossia">
         <!-- content of the alternative staff -->
         <layer>
            <note pname="e" oct="4" dur="4" stem.dir="up"/>
            <beam>
               <note pname="g" oct="4" dur="8" stem.dir="up"/>
               <note pname="f" oct="4" dur="8" stem.dir="up"/>
            </beam>
            <note pname="e" oct="4" dur="4" stem.dir="up"/>
         </layer>
      </staff>
      <staff n="1">
         <!-- content of the original staff -->
         <layer>
            <note pname="e" oct="4" dur="4" stem.dir="up"/>
            <note pname="f" oct="4" dur="4" stem.dir="up"/>
            <note pname="e" oct="4" dur="2" stem.dir="up"/>
         </layer>
      </staff>
   </ossia>
</measure>
```



Whats wrong?

```
<section>
    <measure>
        <staff>
            <note pname="e" oct="4" dur="4"/>
            <note pname="d" oct="4" dur="4"/>
            <note pname="f" accid="s" oct="4" dur="4"/>
            <note pname="a" oct="4" dur="4"/>
        </staff>
    </measure>
</section>
```

How to encode the meter change?

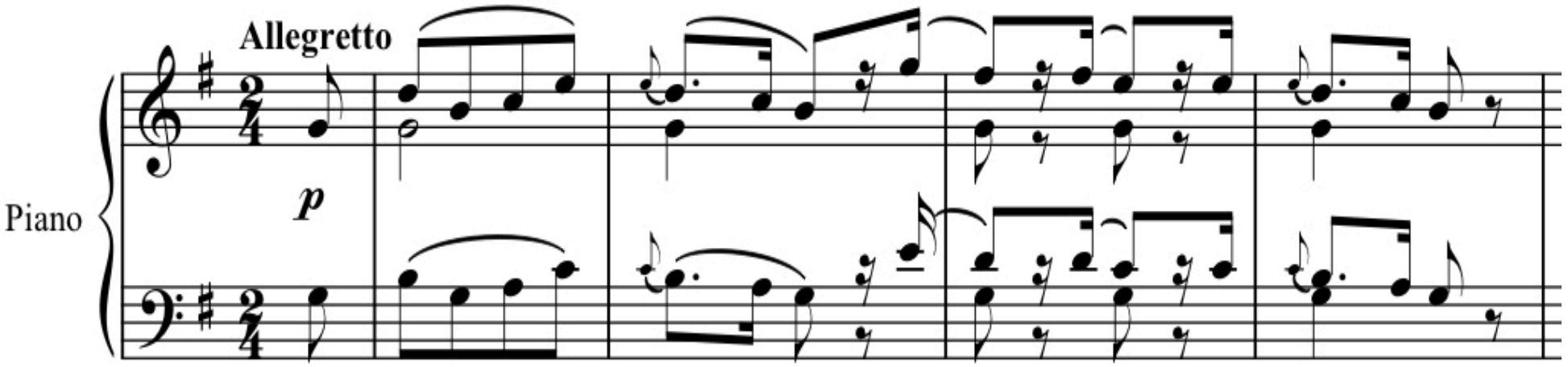


Which encoding is correct?

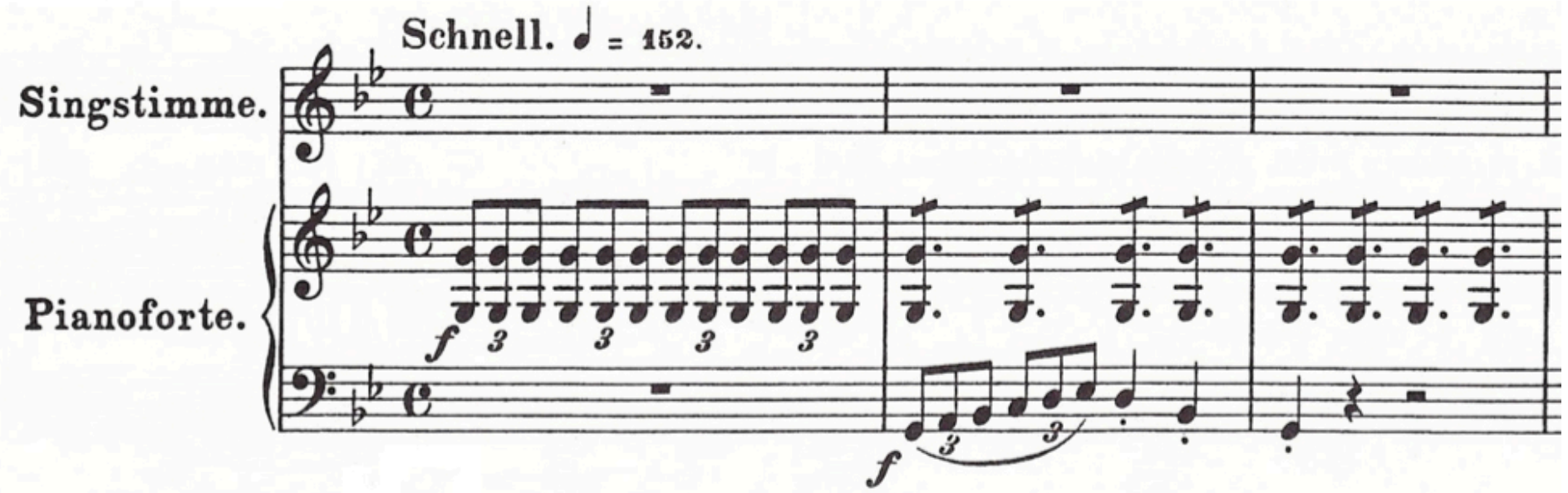
a)
```
<accid accid="s">
   <note pname="a" dur="1" oct="4"/>
</accid>
```

b)
```
<note pname="a" dur="1" oct="4">
   <accid accid="s"/>
</note>
```

c)
```
<note pname="a" dur="1" oct="4" accid="s"/>
```



1. How to encode the upbeat?
2. Which element do you choose for encoding „Allegretto“?
3. What solution do you choose for the slurs?
4. How do you encode the grace-notes?



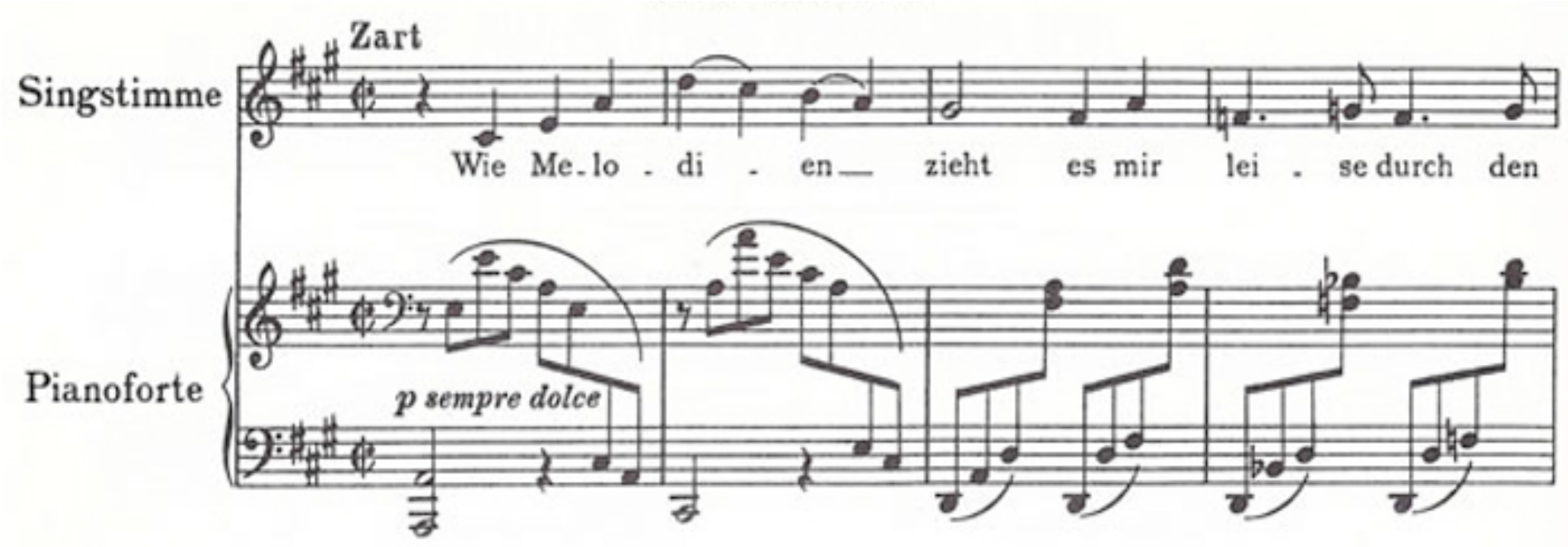
1. Define three staves

2. How do you encode the tuplets?

3. How do you encode the tremolos?

4. Where would you encode the labels?

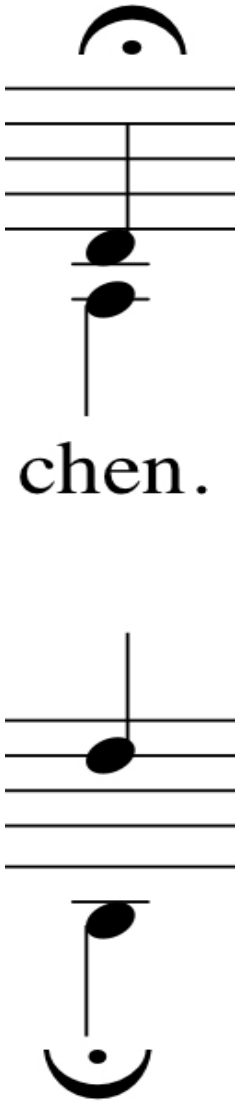
5. Which elements or attributes would you choose to encode the text above the first staff?



1. How to encode the beams?

2. How would you encode the clef in the second staff?

3. What about the meter sign?



How to encode the fermatas?

Further Material