Muzyka algorytmiczna, wykład 4

Maciej Grześkowiak

24 marca 2021

Przypomnienie i porównanie

```
type  Dur = Rational
data  Primitive a = Note Dur a | Rest Dur
```

```
data  Music a = Prim ( Primitive a )
       | ( Music a ) :+: ( Music a )
       | ( Music a ) :=: ( Music a )
       | Modify Control ( Music a )
```

```
type AbsPitch = Int

mel1 :: Music AbsPitch
mel1 = (note wn) 45

mel11 :: Music AbsPitch
mel11 = rest wn
```

```
type AbsPitch = Int
```

```
ps :: [AbsPitch]
ps = [56,89,45,87,55]

melodia :: Music AbsPitch
melodia = line (map (note en ) ps)
```

```
mel4 :: Music (AbsPitch, Volume)
mel4 = note wn (67,100)
```

```
vols :: [Volume]
vols = [40,60,80,100,120]

mel5 :: Music (AbsPitch , Volume)
mel5 = line (map (note wn ) (zip ps vols))
```

```
type Pitch = (PitchClass, Octave)
```

```
mel2 ::   Music Pitch
mel2  = c 4 wn


mm :: [Music Pitch]
mm = [c 5 wn, d 6 hn, e 5 wn]
mel3 :: Music Pitch
mel3 = line mm
```

Modify control

```
data  Music a = Prim ( Primitive a )
      | ( Music a )  :+:  ( Music a )
      | ( Music a )  :=:  ( Music a )
      |    Modify Control ( Music a )
```

Modify jest konstuktorem,
Control jest typem

```
data  Control =
                Tempo  Rational
              | Transpose  AbsPitch
              | Instrument  InstrumentName
              | Phrase  [PhraseAttribute]
              | KeySig  PitchClass  Mode
              | Custom  String
```

```
twinkle = line [c 5 en, e 5 en, c 5 qn, e 5 qn,
         g 5 en, fs 5 en, d 5 qn, f 5 en,
         e 5 en, c 5 en, e 5 en, c 5 qn, e 5 qn, g 5 hn]
```

```
twinkle2 = (Modify (Tempo 0.2) twinkle)
```

Control, Transpose

```
twinkle3 = (Modify (Transpose 3) twinkle)
```

```
twinkle4  = (Modify (Transpose (−3))
                   (Modify (Tempo 1.5) twinkle))
```

---

twinkle5 = (Modify (Instrument Marimba) twinkle)

: i InstrumentName

```
twinkle6
    = ( Modify ( Phrase [ Art $ Staccato 5.2 ] ) twinkle )
twinkle7
    = ( Modify ( Phrase [ Art $ Breath ] ) twinkle )
```

```
twinkle8
    = (Modify (Phrase [Dyn $ Diminuendo 100]) twinkle)
twinkle9
    = (Modify (Phrase [Dyn $ StdLoudness  P]) twinkle)
```

```
twinkle10
    = ( Modify ( Phrase [Tmp $ Accelerando 1.0]) twinkle
twinkle11
    = ( Modify ( Phrase [Tmp $ Ritardando  1.5]) twinkl
```

```
tempo :: Dur -> Music a -> Music a
tempo r m = Modify (Tempo r) m
```

```
transpose :: AbsPitch -> Music a -> Music a
transpose i m = Modify (Transpose i ) m
```

```
instrument :: InstrumentName -> Music a -> Music a
instrument i m = Modify (Instrument i) m
```

```
phrase :: [PhraseAttribute] -> Music a -> Music a
phrase pa m = Modify (Phrase pa) m
```