Vitry manual

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Introduction

Vitry is a functional programming language with an inline syntax and a simple, expressive type system. It is designed to simplify representation of compund musical structures.

The raison d'etre of Vitry is generation of music notation, but it can also be used for general procesing of musical structures, or act as as a bridge between notation and other media environments.

Vitry includes a powerful model of standard musical notation. It performs no graphical rendering of music on its own, but it built for seamless integration with standard score-editing tools, such as Sibelius and LilyPond. It also reads and generates standard file formats used for musical representation, such as MusicXML and standard MIDI files.

First steps

Download and install

Prerequirements

Vitry targets the Java Virtual Machine, and thus runs on most operating system.
On OS X, Java is preinstalled by default.

Download

You may download a pre-compiled version of Vitry from http://vitry.github.com/downloads.

To compile the latest version yourself, Git and ANT is required. In this case,
use the following commands to fetch the source code and build:

Using the interpreter

The simplest way to interact with Vitry is through the *interpreter*.

TODO starting a session, using repl

The language

Vitry programs consists of *expressions*. An expression is a series of values or other expressions that may be *evaluated* to produce a single value. Example expressions are

```
2 + 2
score pitch g#4
```

A value is simply our name for a piece of data that we can retrieve and manipulate. Types are a powerful concept that help us create and reason about or values. Every value and expression have an associated type. Types in turn have types, which are called kinds.

Booleans

The boolean type is written as `bool`.

The boolean values are written as `true` or `false`.

Numbers

Vitry supports bignum natural, integer and rational numbers, as well as floating-point real and complex numbers.

The types of these are writen as `nat`, `int`, `rat`, `float` and `complex` respectively.

Natural, integers and rational numbers are written as sequences of digits. Vitry will automatically convert integers to rationals and vice versa.

```
152
42
-8
3/2
```

Floating point numbers may be writen in several ways:

```
0.1
0.12e10
2e-5
0.5/2
```

We create a complex number by adding the imaginary unit `i` to the imaginary part:

```
2i
1 + 0i
22.4 + 32e4i
```

Strings

Strings are sequences of Unicode characters. The string type is written as `string`.

String values are written inside double-quotes:

```
"Beethoven day"
"What larks"
```

Functions

Sequences

Musical structures

Time

Pitch

The music type

An introduction to notations

Import and export

The Sibelius writer

The LilyPond writer

The MusicXML writer

The MIDI writer

Advanced features

Other languages

The evaluation model

Adding notations

Adding writers