Compiling Faust with Ondemand

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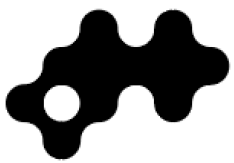

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Instructions

An *instruction* is an intermediate representation, of type SSA, for signals.

Definition

$$I \in \mathbb{I} ::= T \vdash t{:=}t+1 \mid T \vdash d{:=}M \mid T \vdash v[M_1, M_2]{:=}M_3$$

Where

- T is a time reference indicates when this instruction must be executed ;
- t is a memory reference used for the current value of the time reference ;
- d and v are memory references ;
- M is a signal in memory that is computed.

Time reference

A *time reference* is a non empty list of clock signals that indicates when an instruction should be executed.

Definition

$$T \in \mathbb{T} ::= 1 \mid S.T$$

Where

- $S \in \mathbb{M}$ is a clock signal $S : \mathbb{Z} \to \{0, 1\}$
- 1 is the top level clock signal (execution every sample)

Memory Destinations

A *memory destination* indicates where the writing of the result should take place. This can be an output buffer, a scalar variable, or a vector in the case of delay lines for example.

Definition

$$D \in \mathbb{D} ::= \mathtt{O}_n \mid t \mid m \mid v[M, M]$$

where $\mathtt{O}_n$ represents the audio buffer of the nth output channel, `t`, `m` and `v` are identifiers allocated at compile time.