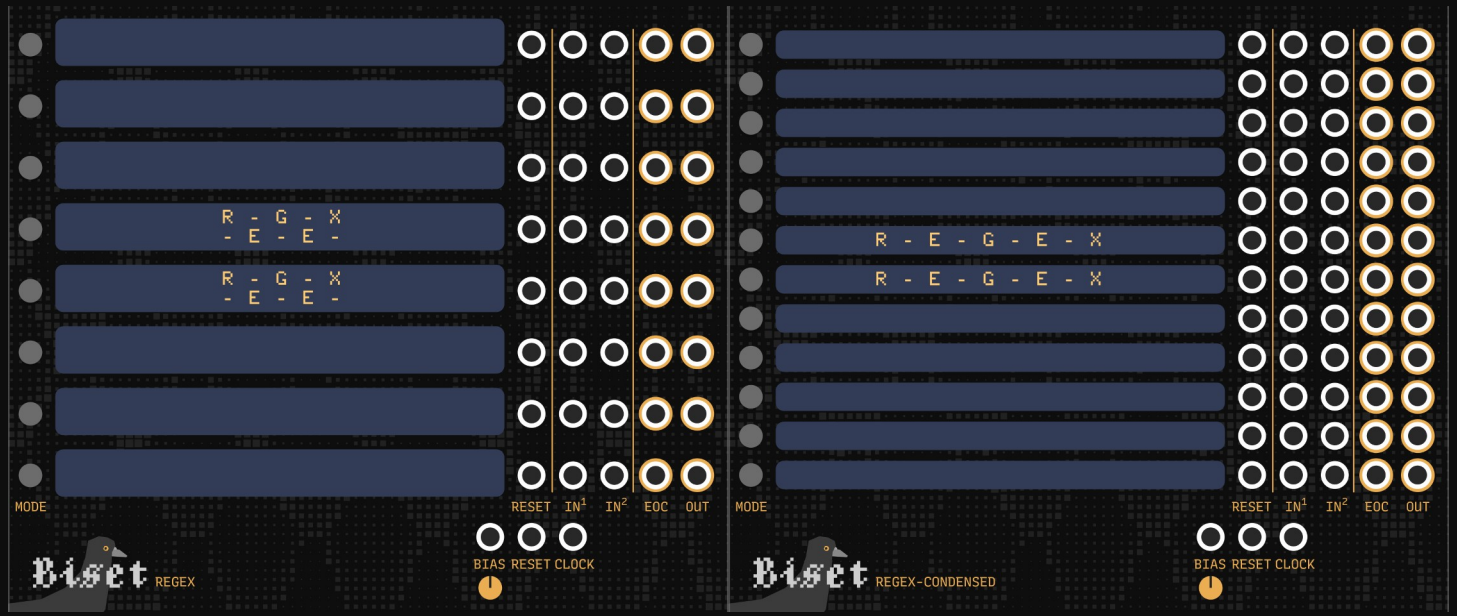

Biset
REGEX
VCV Rack manual

Biset REGEX

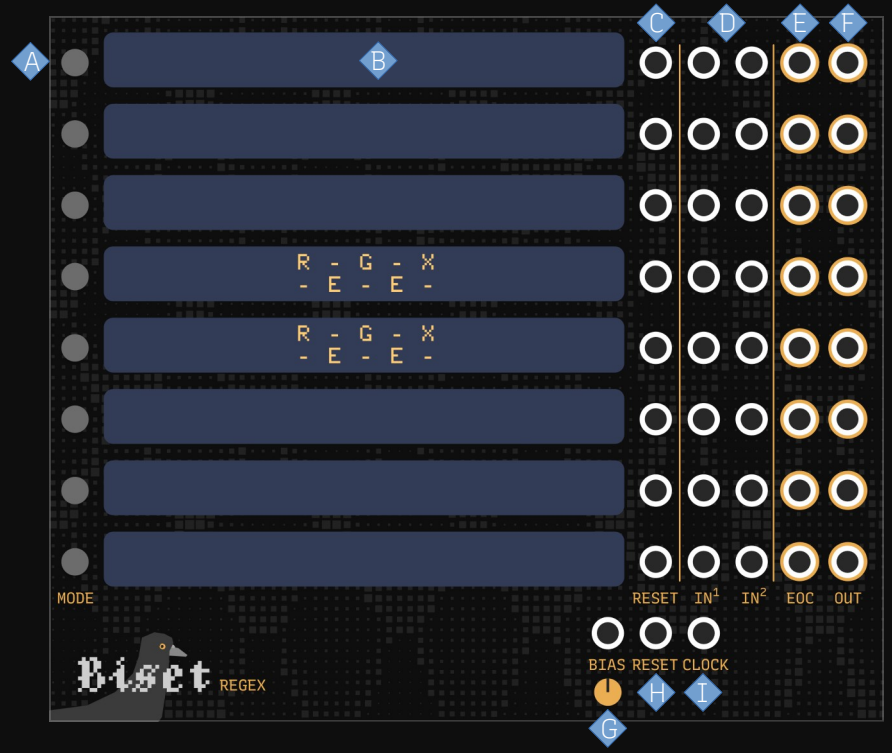
Regex is a **text based pattern sequencer**. It can generate both **clock** (rythm) and **pitch** (or modulation) sequences.

It has been thought for **performance** as a **live coding device**. You can easily build **sequences**, **rythm** and/or **pitch/cv** and **connect** them.

Regex-Condensed is simply the condensed version of **Regex** with less readability but **more lines** and **connection options**.



Biset REGEX



A	Mode switch
B	Expression editor
C	Individual reset input
D	Individual inputs
E	Individual EOC output
F	Individual output
G	Bias knob and input
H	Global reset input
I	Global clock input

Regex is made of 8 or 12 lines. A line is made of an **expression editor** where all the code is written, a **switch** allowing you to change the **expression type** (clock or pitch), **inputs** and **outputs**.
Inputs and **outputs** behavior depends on the expression type.

The **clock** mode generates rythm. It uses the **master clock input** or the individual **input 1** as **main clock** and can use the expression **Input 2** as **additional clock** for more complex rythms.

The sequence values acts as **clock dividers** on the input clock. The **reset** input **resets** and **restarts** the flow of the expression. Everytime the expression **loops**, the **EOC** outputs a trigger.

The **main output** outputs triggers according to the expression.

Here are a few clock valid expressions

>1,2	••-|
<1,2	•-•|
^1,2	••-•-•|
>1,2,3	••-•--|
>1,2,3%8	••-•--|••|
>1,2,3%16	••-•--|••-•--|•••-•|
>(1,2,((3,4))%1)%16	••-•--|••-•---|••-|

The **pitch mode** generates **pitch** on **each trigger** received via the **master clock input** or the individual **input 1**.

The expression **input 2** allows you to **combine pitch sequences**. It acts as an **offset** to the output pitch. The **reset** input **resets** and **restarts** the flow of the expression. Everytime the expression **loops**, the **EOC** outputs a trigger.

The **main output** outputs pitch (cv) according to the expression.

Here are a few pitch valid expressions

>c,b,d,e,f,g,a,b	*Outputs **major scale***
>(c,c,d#,?(f,g)%1)	*Outputs **c,c,d#,f** or **c,c,d#,g***
?(0,0,0,12,12,24)	*Outputs **c4** or **c5** or **c6**, useful to offset another expression by an octave*

An expression is a **string** defining a **pattern** generating **clock** (rythm) or **pitch** (or CV).

It is based on **sequences** that are made of :

- **Type** *The sequence type (foreward, backward, pingpong, etc.), optional (foreward by default)*
- **Values** *A series of values (number, pitch, another sequence) that can be enclosed in brackets for clarity*
- **Modulator** *Defining the sequence behavior through time, optional*

To run an expression, you should press **Enter** while focusing the corresponding **display**. You can also press **Ctrl + Enter** to run all expressions. If an expression is already running, it will waits for its end to update to the new expression. An expression can be stopped by pressing **Escape**. You can use **Ctrl + Arrow** to jump between expressions.

By default, a **sequence** is set to the **foreward** type.

Here are the available sequence types

- **>** *Foreward, read the sequence foreward*
- **<** *Backward, read the sequence backward*
- **^** *Ping-pong, read the sequence foreward and then backward*
- **@** *Shuffle, shuffle the sequence before reading it*
- **?** *Random, pick a random item of the sequence*
- **!** *X-Random, pick a random item of the sequence avoiding the last picked element*
- **$** *Walk, random walk in the sequence*

Expressions **values** can be **numbers** or **pitch** (with optionnal octave).
You can also use other sequences as values, allowing you to build complex patterns.

In **pitch mode**, values follow the **v/oct** rule, even for numerical values.
0 returns **0 volt** while **12** returns **1 volt**.
c4 returns **0 volt** while **c3** returns **-1 volt**.
In **clock mode**, pitch notation are accepted (though they do not really make sense).

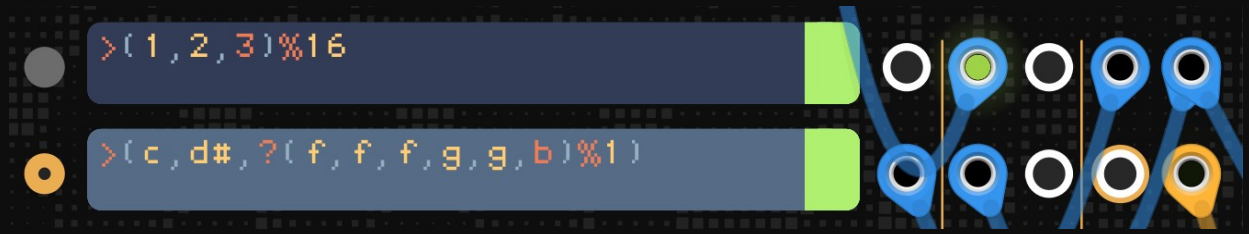
Here are a few valid values

C	c4
c	c4
c#	c4 sharp
cb	c4 flat
c5	c5
3	b4 or +3
16	e5 or +16
-5	g3 or -5

Modulator define the sequence **behavior through time**.
When no modulator is used, the sequence is read once (expressions are always looped).

xN modulator Asks for the sequence to be read N times
%N modulator depends on the **expression mode.**
On **clock mode**, it loops the sequence until **N clock triggers** have been reached on the input, allowing you to easily build "regular" rythms.
On **pitch mode**, it loops the sequence until **N values** have been output.

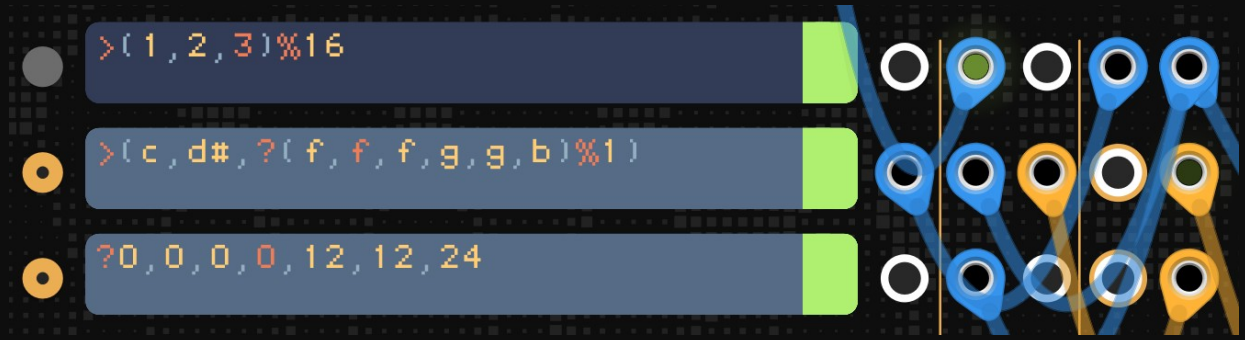
A **bias** knob and input are available on the bottom of the module (G). **Bias** is a variable that impacts **random sequences** (**?**, **!** and **$**). Moving bias knob **left** or **right** makes these sequences tend to choose random values on the corresponding **directions**. This can be used to add spice or, at the oposite, regularity, to your sequences by connecting it to an **LFO**. As an example, I like to have a random pitch sequence with notes sorted in pitch. By moving the bias knob on the left, the sequence will tend to play lower notes while moving it the right will tend to play higher notes.



Here, the **1st** expression is a **clock expression** while the **2nd** is a **pitch sequence**. A clock generator is connected to the **individual input 1** of the clock expression to make it run. Its output is connected to the **input 1** of the pitch expression, thus, connecting them. Its **EOC output** is also connected to the **reset input** of the pitch expression, thus, making them reset at the same time and **loop together.**

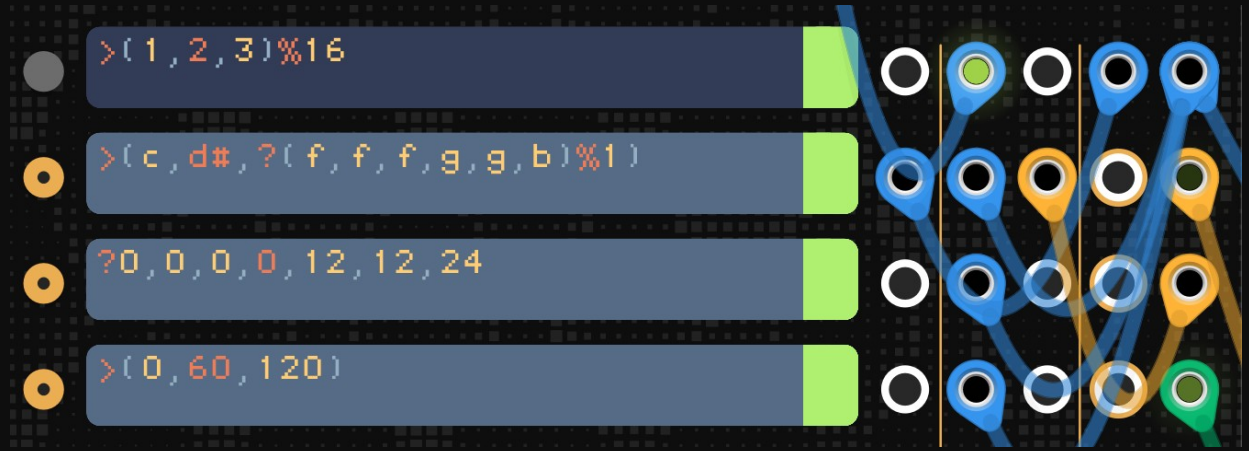
Clock cables are blue
Pitch cables are yellow
Modulation cables are green

Bias



Here, the first two expressions are the same. We introduce a 2nd pitch expression to make the sequence more interesting. This expression is also **driven** by the clock expression but its **output** is connected to the 1st pitch expression **input 2**, thus, **offseting its pitch value**. As this expression **outputs random octaves** (+0 semitone, +12 semitones or +24 semitones), it will offset the 1st pitch expression to build a pitch sequence that varies more.

Bias



This time, we introduce a 3rd "pitch" expression also **driven** by the clock expression. But, as we can see, this new "pitch" sequence outputs a forward sequence of really high values. It is here used as a modulation sequence to add spice to the melody. As said above, pitch is in **Volt Per Octave**, meaning that a value of **12** will result in a CV of **1 volt** and while value of **120** a CV of **10 volt**, this can then really easily be used to produce any modulation sequences !