TOUR OF MUSIC BLOCKS

Welcome to Music Blocks

Music Blocks is a collection of tools for exploring fundamental musical concepts in a fun way. The current version is 3.6.1

Meet Mr. Mouse!

Mr Mouse is our Music Blocks conductor. Mr Mouse encourages you to explore Music Blocks. Let us start our tour!

Palette buttons

This toolbar contains the palette buttons including Rhythm Pitch Tone Action and more. Click to show the palettes of blocks and drag blocks from the palettes onto the canvas to use them.

Play

Click the run button to run the project in fast mode.

New project

Initialize a new project.

Load project from file

You can also load projects from the file system.

Delete

To delete a block, just right-click on it, then you will be able to see the delete option

Copy

To copy a block, just right-click on it, then you will be able to see the copy option

Extract

To extract a block, just right-click on it, then you will be able to see the extract option

Save project

Save your project to a file.

Load samples from server

This button opens a viewer for loading example projects.

Cartesian/Polar

Show or hide a coordinate grid.

Clean

Clear the screen and return the mice to their initial positions.

Collapse

Collapse the graphics window.

Home

Return all blocks to the center of the screen.

Show/hide blocks

Hide or show the blocks and the palettes.

Expand/collapse collapsable blocks

Expand or collapse start and action stacks.

Decrease block size

Decrease the size of the blocks.

Increase block size

Increase the size of the blocks.

Expand/collapse option toolbar

Click this button to expand or collapse the auxillary toolbar.

Run slow

Click to run the project in slow mode.

Run step by step

Click to run the project step by step.

Wrap Turtle

Turn Turtle wrapping On or Off.

Restore

Restore blocks from the trash.

Switch mode

Switch between beginner and advance modes.

Select language

Select your language preference.

Keyboard shortcuts

You can type d to create a do block and r to create a re block etc.

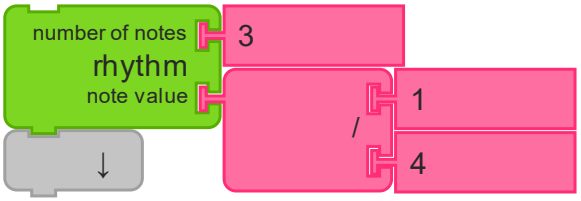
Help

Show these messages.

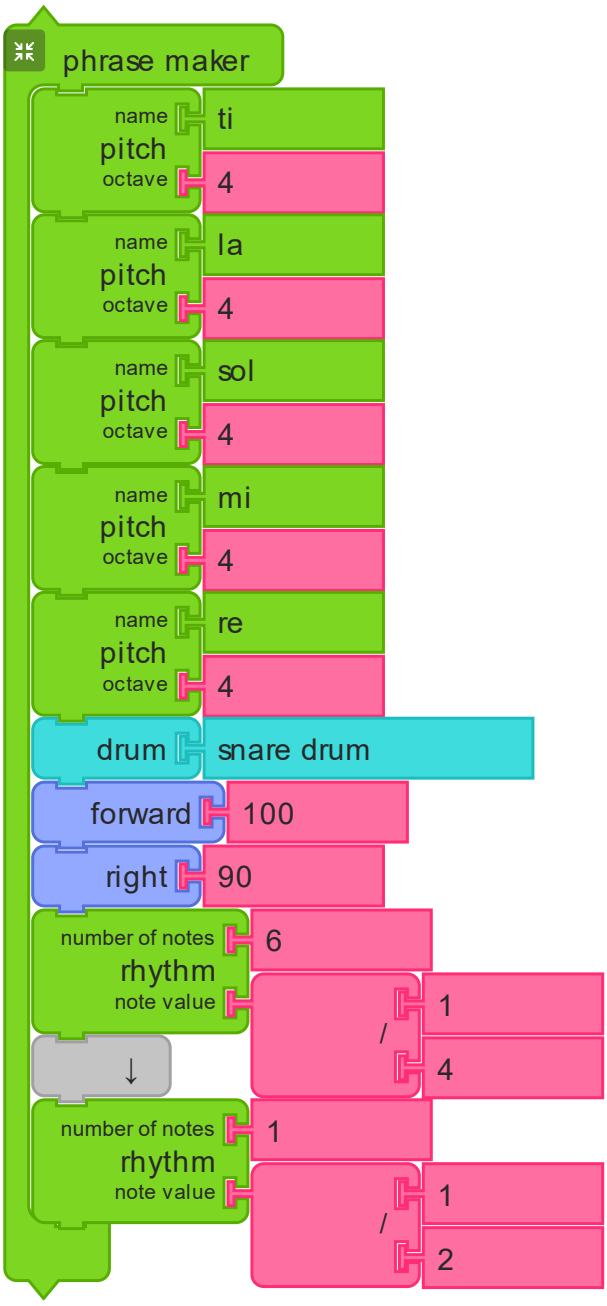
About

Music Blocks is an open source collection of tools for exploring musical concepts. A full list of contributors can be found in the Music Blocks GitHub repository. Music Blocks is licensed under the AGPL. The current version is 3.6.1

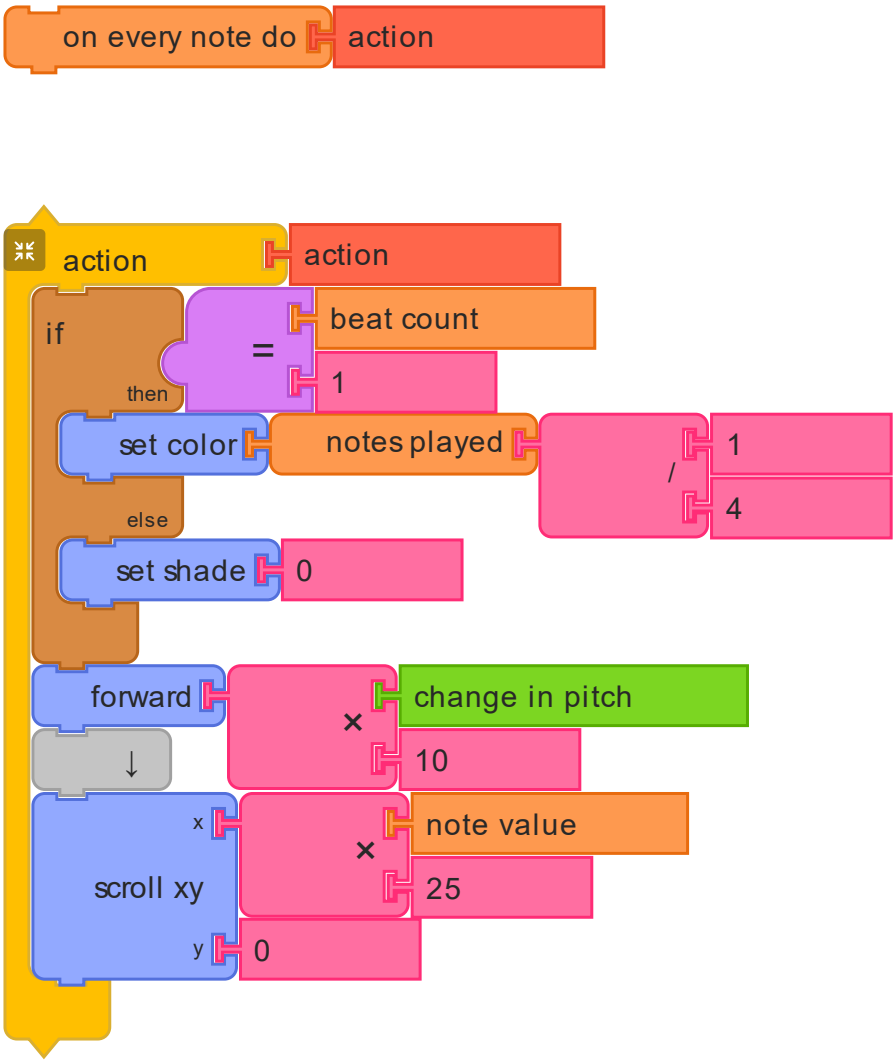
Blocks



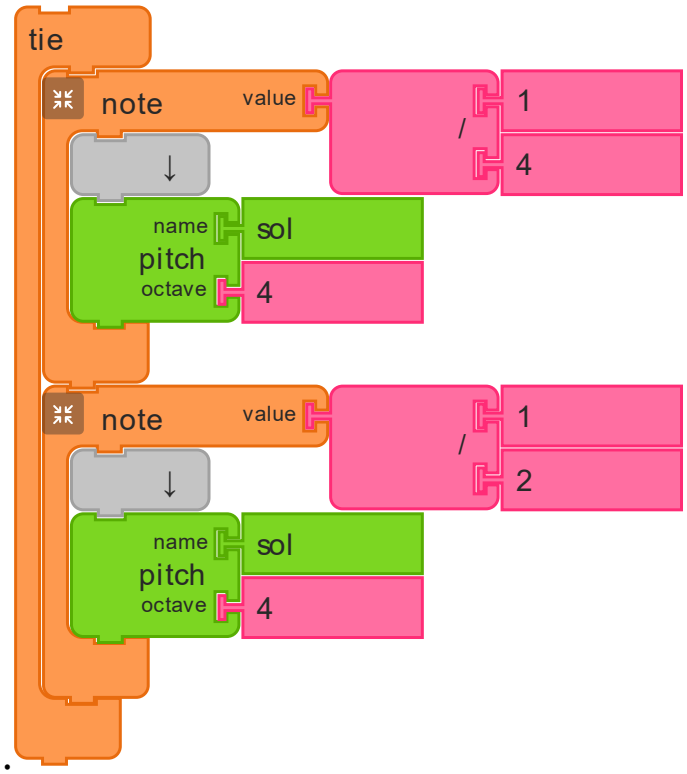
The Rhythm block is used to generate rhythm patterns.



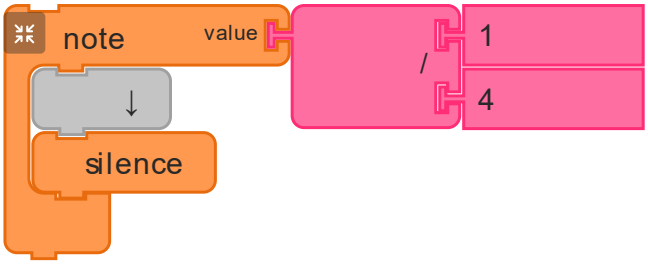
Tuplets are a collection of notes that get scaled to a specific duration. Using tuplets makes it easy to create groups of notes that are not based on a power of 2.



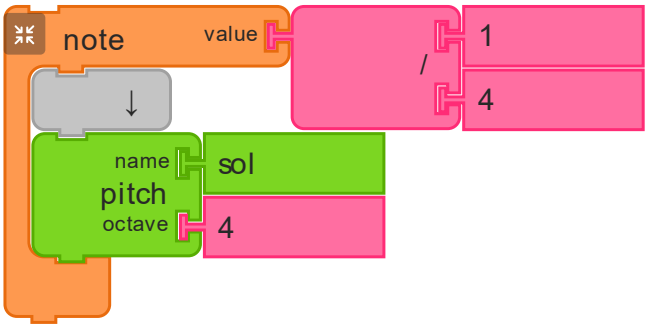
The Note value block is the value of the duration of the note currently being played.



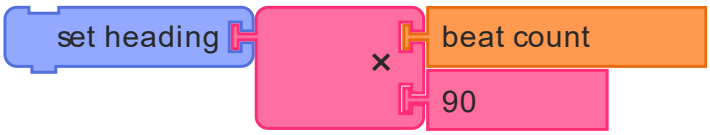
The Tie block works on pairs of notes, combining them into one note.



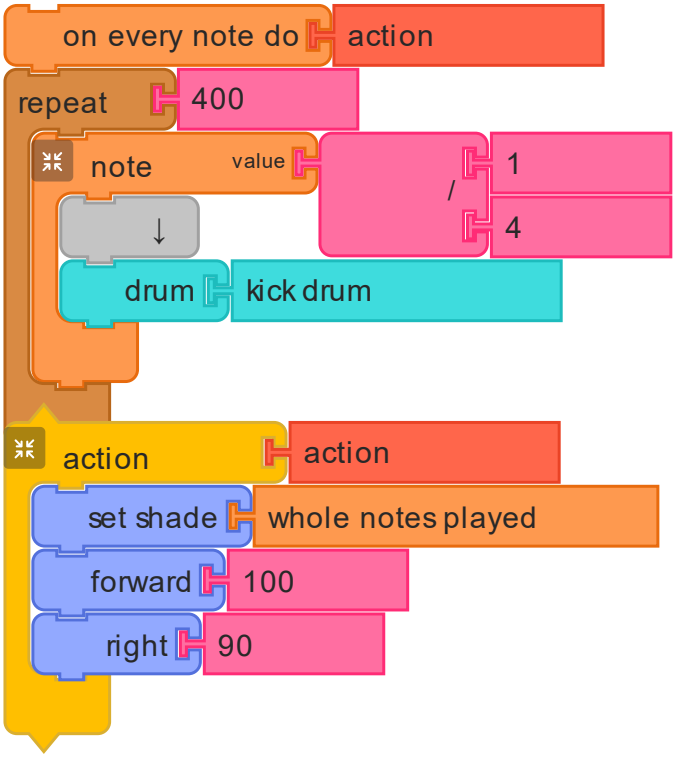
A rest of the specified note value duration can be constructed using a Silence block.



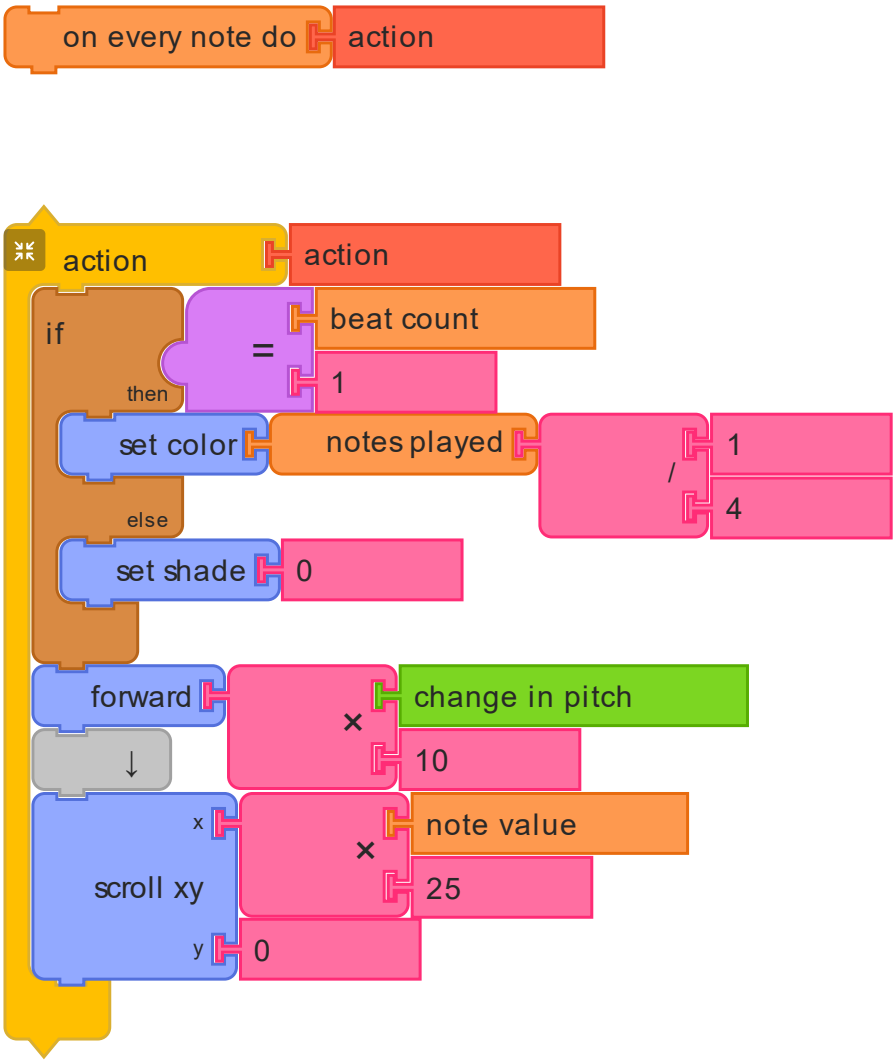
The Note block is a container for one or more Pitch blocks. The Note block specifies the duration (note value) of its contents.



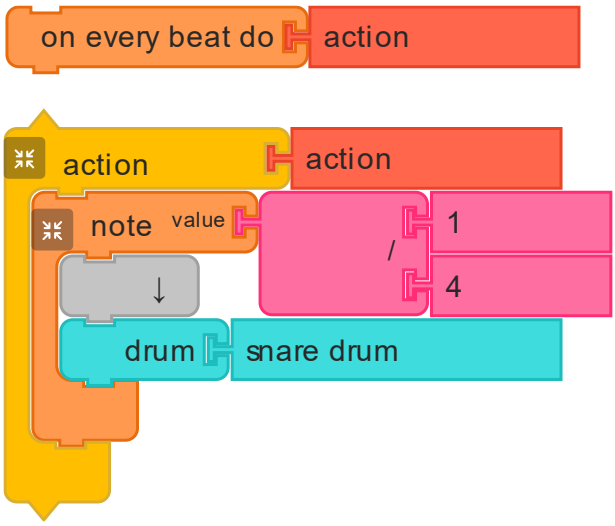
The Beat count block is the number of the current beat, eg 1, 2, 3, or 4. In the figure, it is used to take an action on the first beat of each measure.



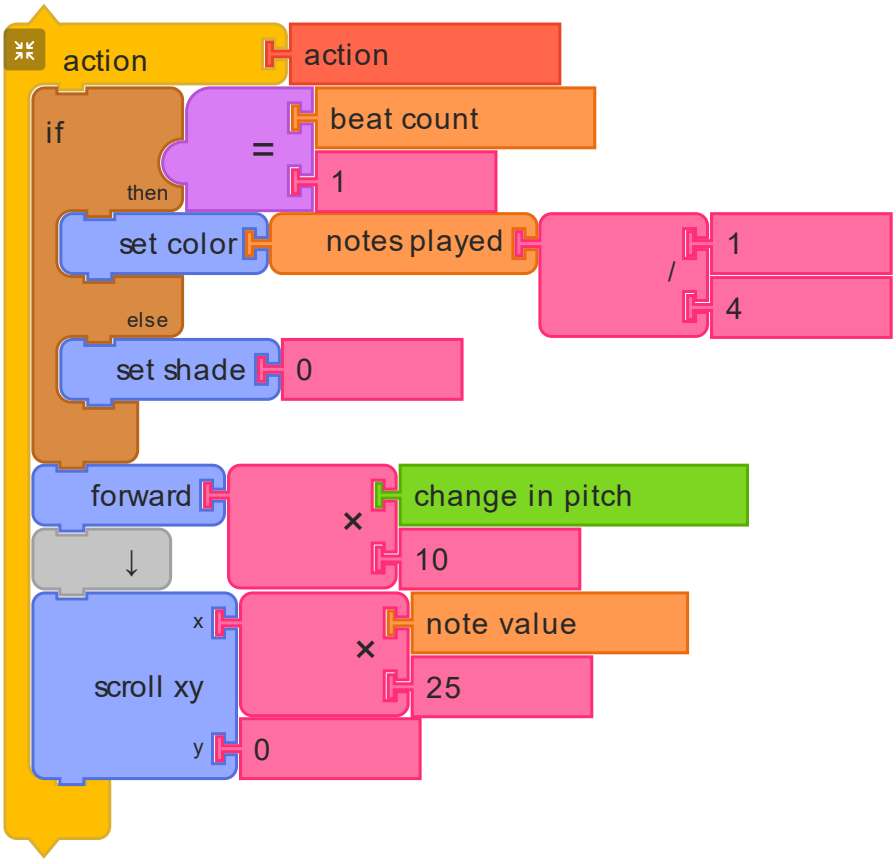
The Whole notes played block returns the total number of whole notes played.



The Beat count block is the number of the current beat, eg 1, 2, 3, or 4. In the figure, it is used to take an action on the first beat of each measure.



The On-every-beat block lets you specify actions to take on every beat.



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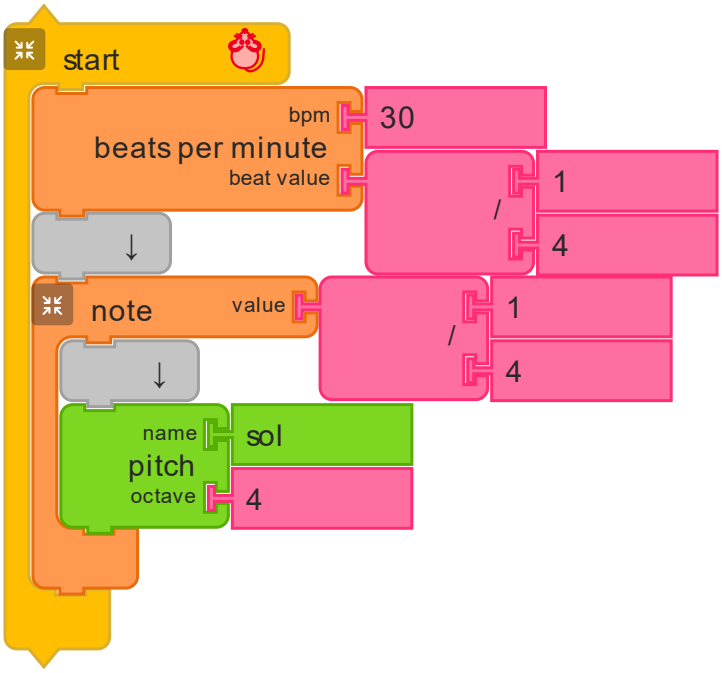
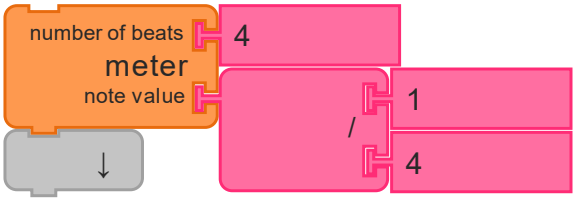
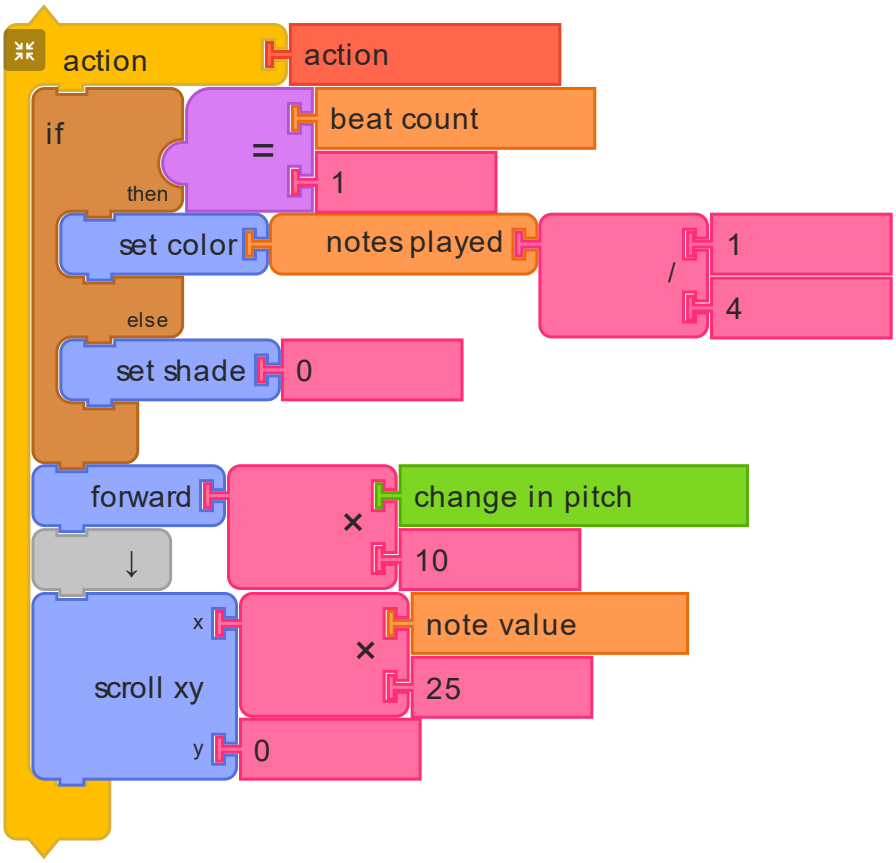


The Beats per minute block sets the number of 1/4 notes per minute.



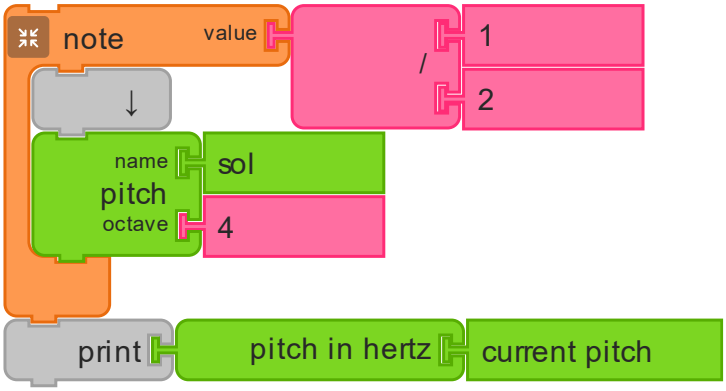
The beat of the music is determined by the Meter block (by default, 4 1/4 notes per measure).



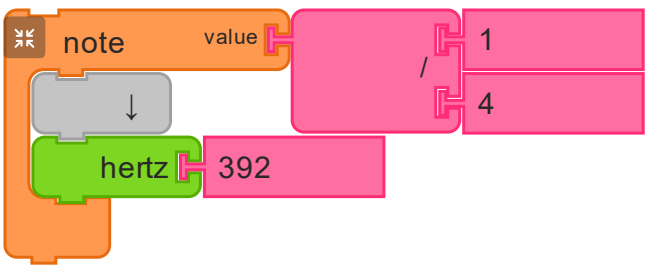
The Pitch number block is the value of the pitch of the note currently being played.

The Pitch in Hertz block is the value in Hertz of the pitch of the note currently being played.

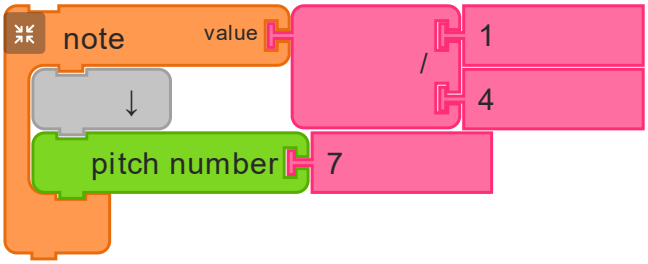
This block converts the pitch value of the last note played into different formats such as hertz, letter name, pitch number, et al.



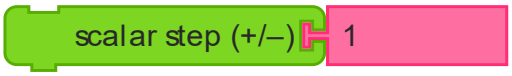
The Current Pitch block is used with the Pitch Converter block. In the example above, current pitch, sol 4, is displayed as 392 hertz.



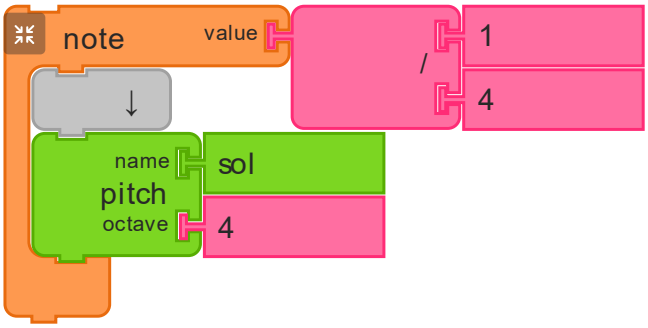
The Hertz block (in combination with a Number block) will play a sound at the specified frequency.



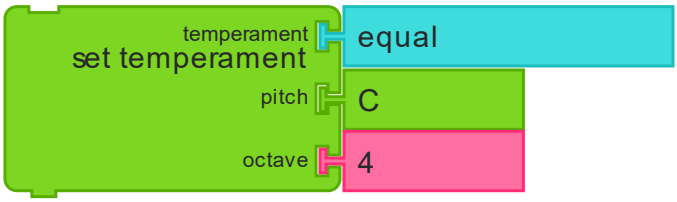
The Pitch Number block will play a pitch associated by its number, e.g. 0 for C and 7 for G.



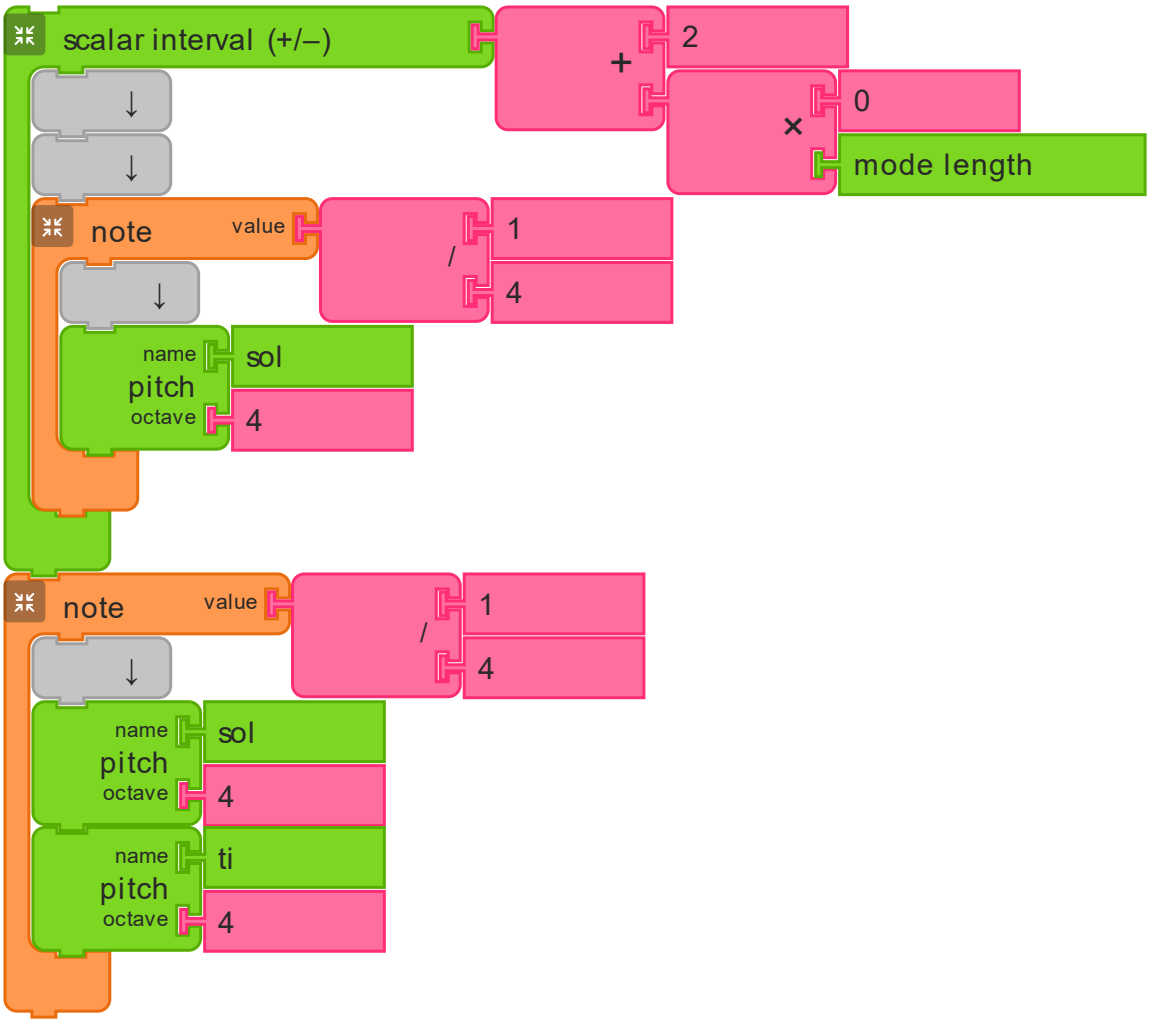
The Scalar Step block (in combination with a Number block) will play the next pitch in a scale, eg if the last note played was sol, Scalar Step 1 will play la.



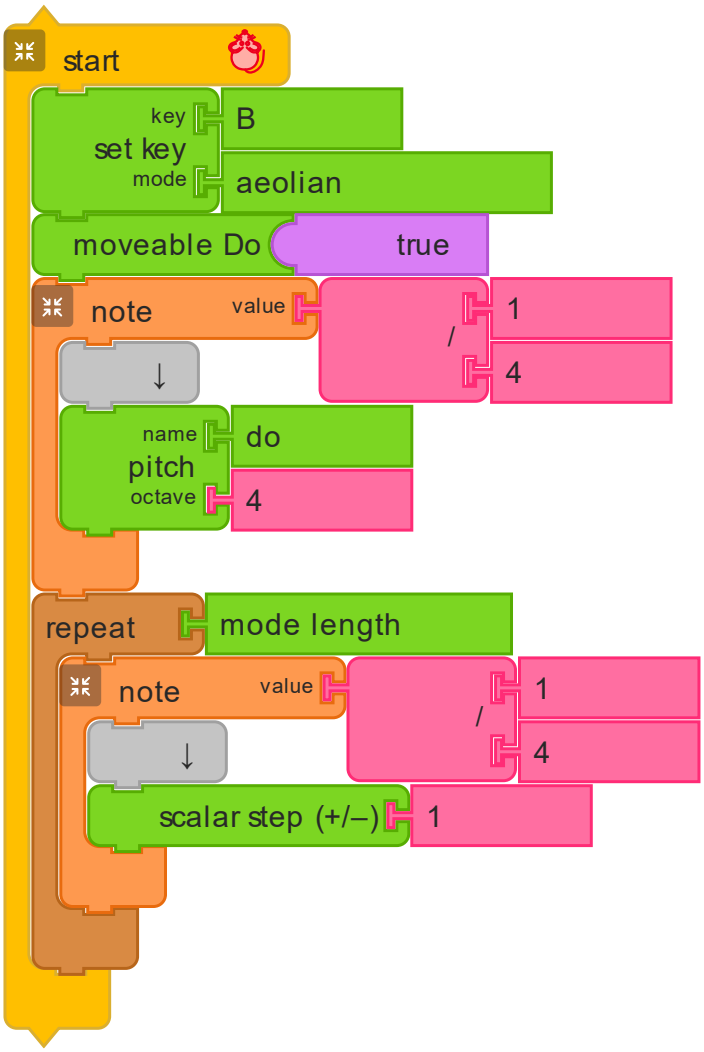
The Pitch block specifies the pitch name and octave of a note that together determine the frequency of the note.



The Set temperament block is used to choose the tuning system used by Music Blocks.

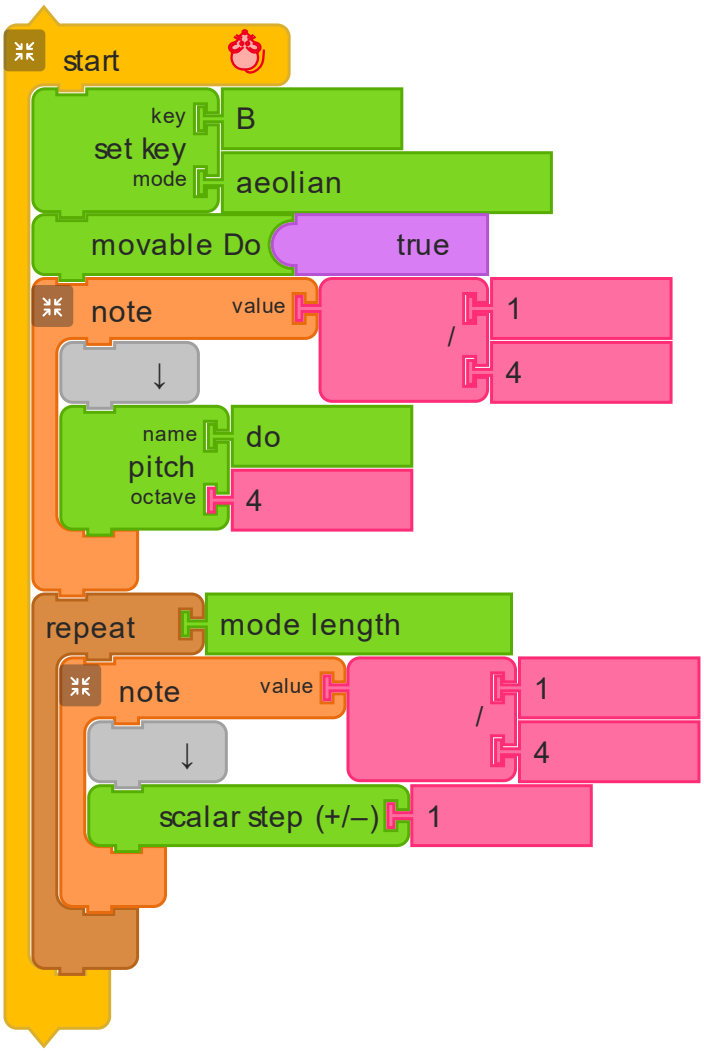


The Scalar interval block calculates a relative interval based on the current mode, skipping all notes outside of the mode. In the figure, we add la to sol.

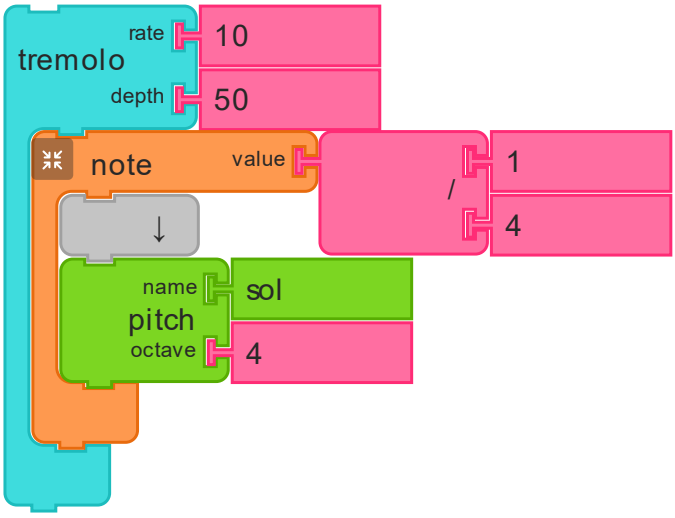


When Movable do is false, the solfege note names are always tied to specific pitches, eg "do" is always "C-natural" when Movable do is true, the solfege note names are assigned to scale degrees "do" is always the first degree of the major scale.

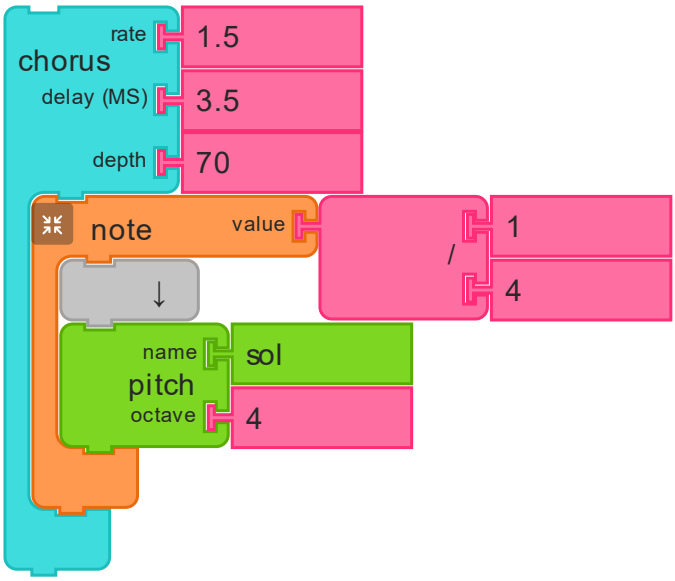
The Mode length block is the number of notes in the current scale. Most Western scales have 7 notes.



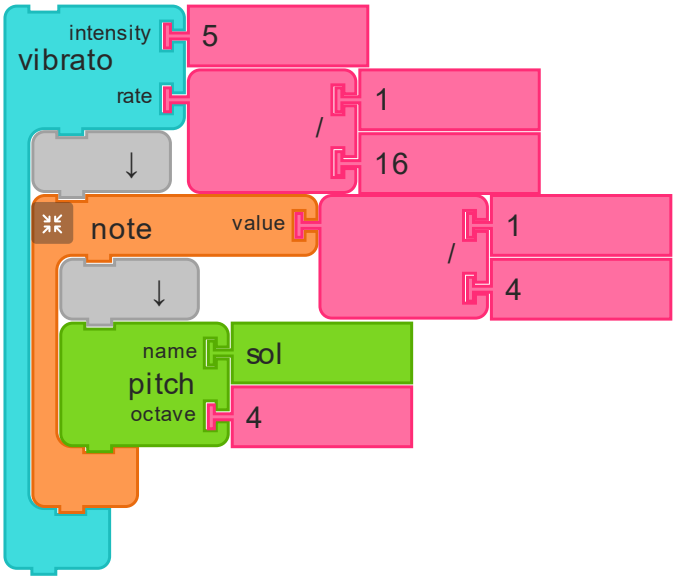
The Set key block is used to set the key and mode, eg C Major



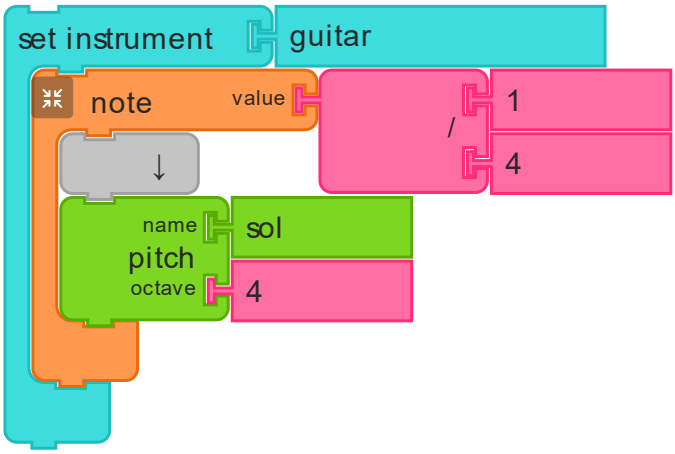
The Tremolo block adds a wavering effect.



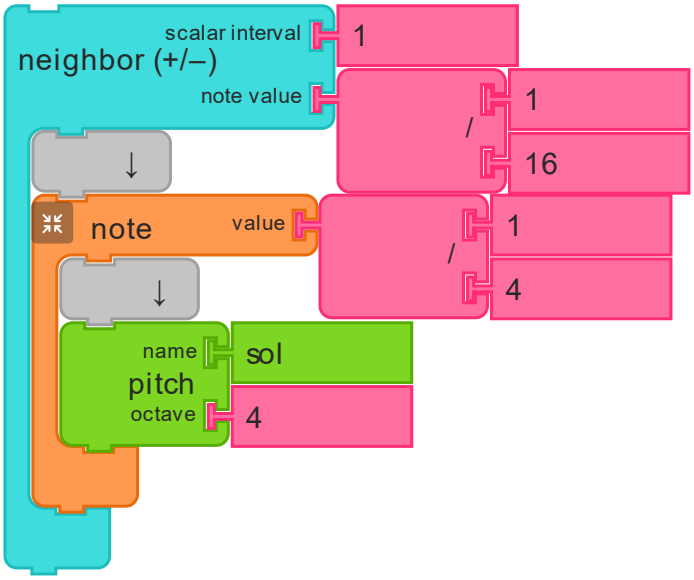
The Chorus block adds a chorus effect.



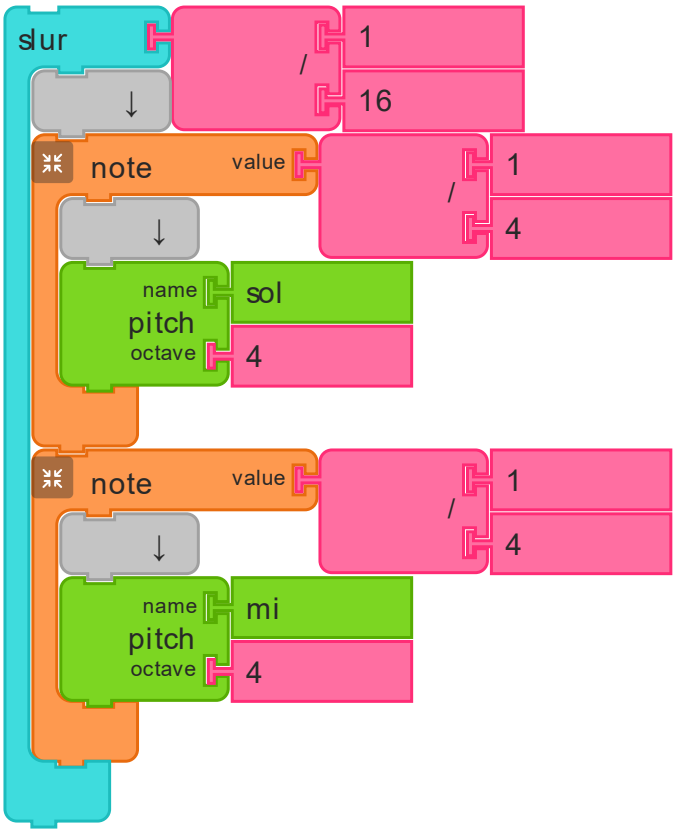
The Vibrato block adds a rapid, slight variation in pitch.



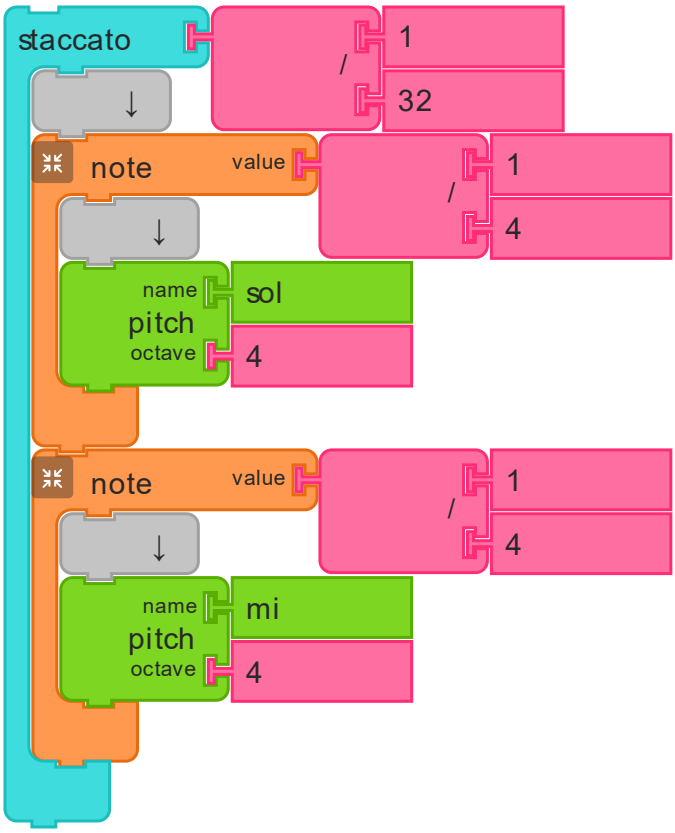
The Set instrument block selects a voice for the synthesizer, eg guitar piano violin or cello.



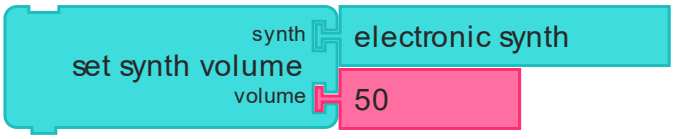
The Neighbor block rapidly switches between neighboring pitches.



The Slur block lengthens the sustain of notes while maintaining the specified rhythmic value of the notes.



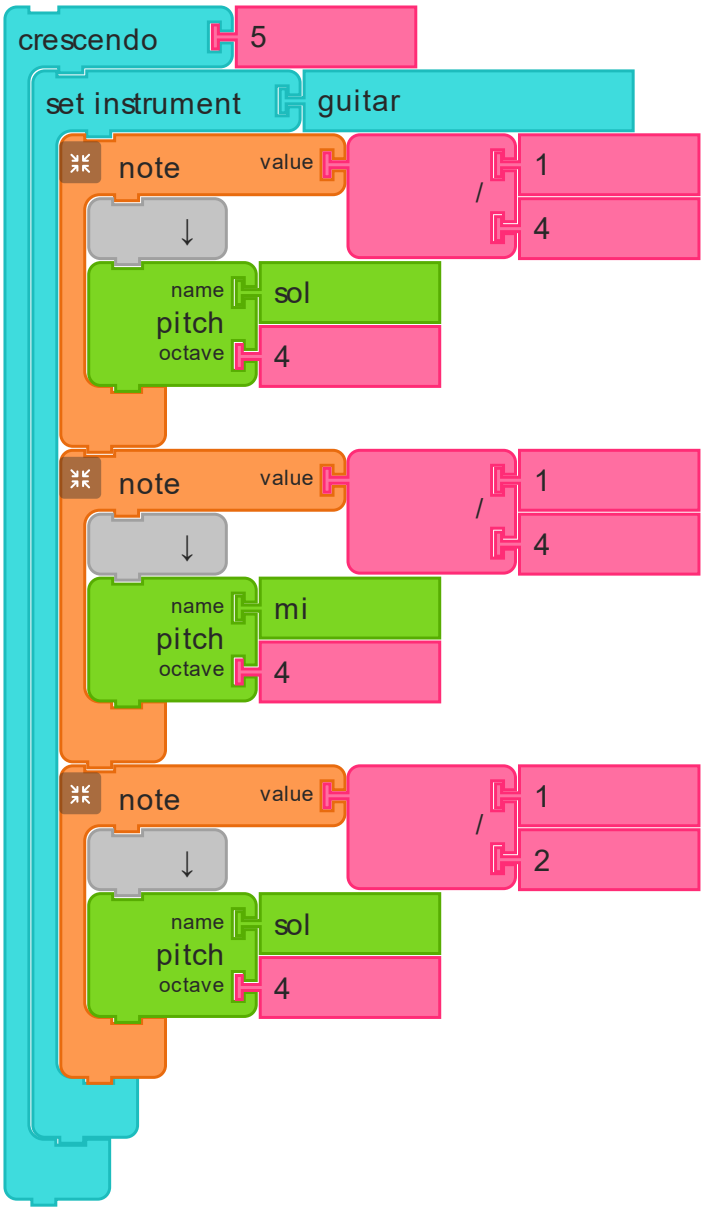
The Staccato block shortens the length of the actual note while maintaining the specified rhythmic value of the notes.



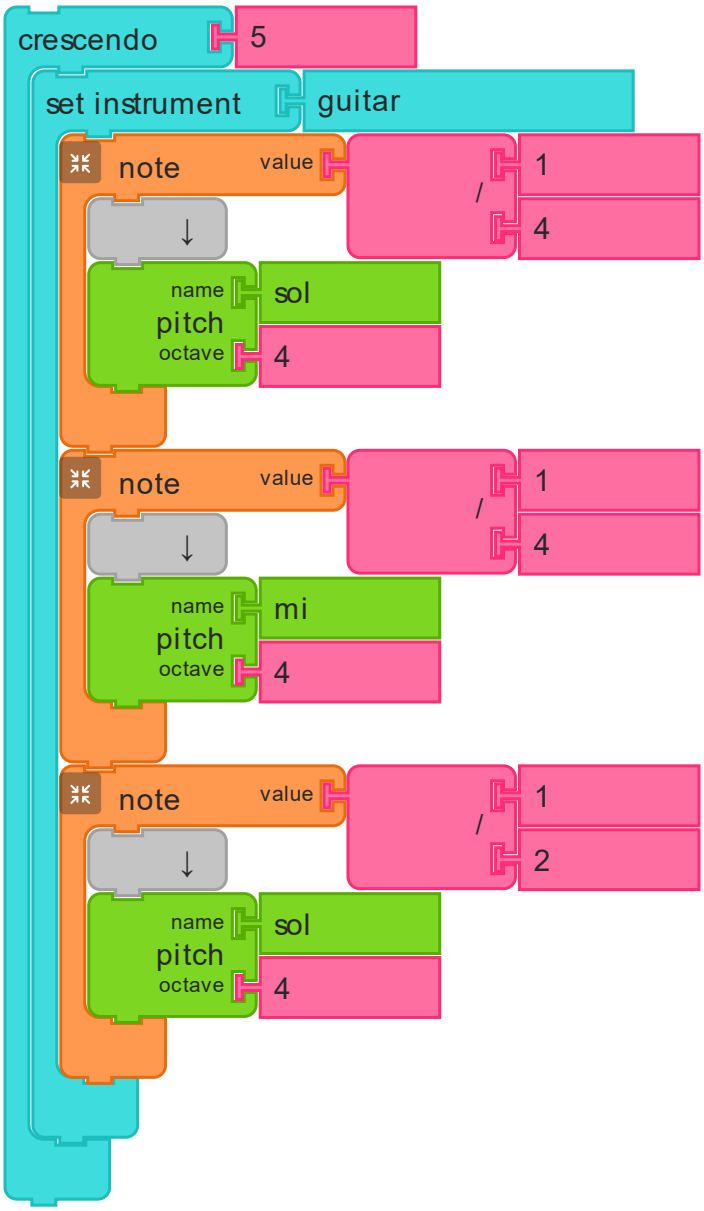
The Set synth volume block will change the volume of a particular synth, eg guitar violin snare drum etc. The default volume is 50. The range is 0 for silence to 100 for full volume.

The Set Panning block sets the panning for all synthesizers.

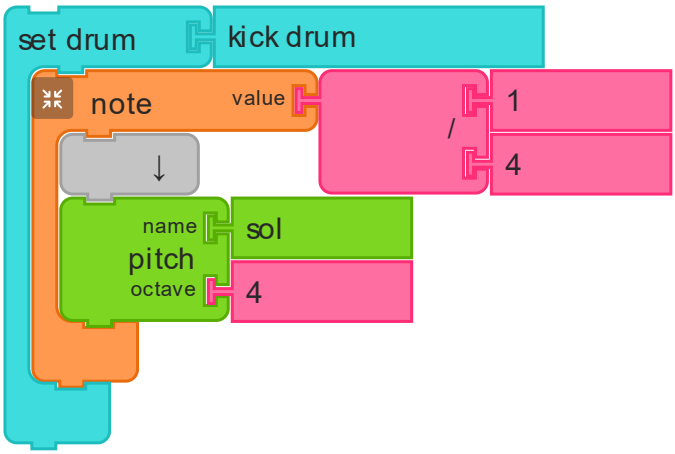
The Set master volume block sets the volume for all synthesizers.



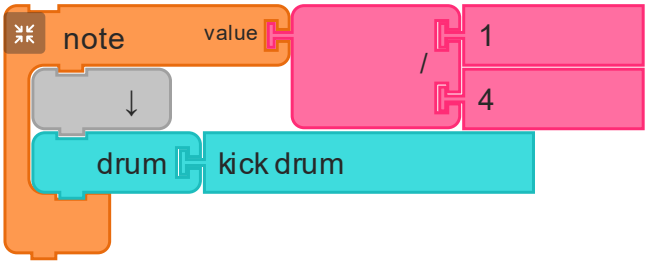
The Decrescendo block will decrease the volume of the contained notes by a specified amount for every note played. For example if you have 7 notes in sequence contained in a Decrescendo block with a value of 5 the final note will be at 35% less than the starting volume.



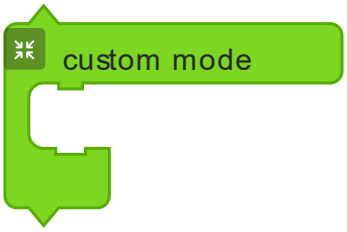
The Crescendo block will increase the volume of the contained notes by a specified amount for every note played. For example if you have 7 notes in sequence contained in a Crescendo block with a value of 5 the final note will be at 35% more than the starting volume.



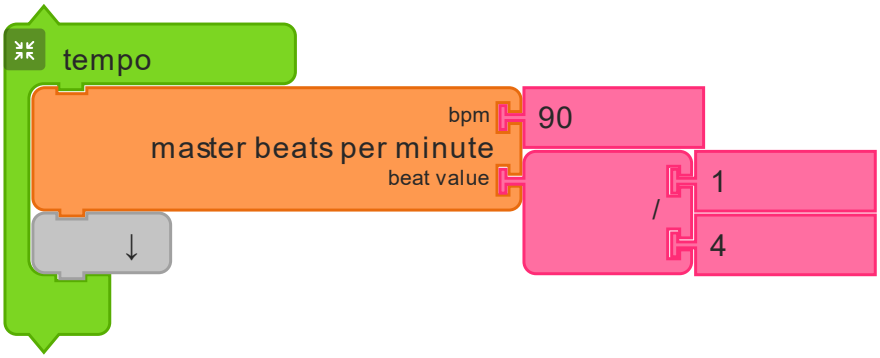
The Set drum block will select a drum sound to replace the pitch of any contained notes. In the example above, a kick drum sound will be played instead of sol.



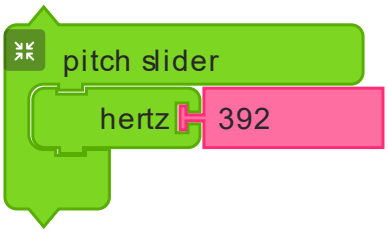
You can use multiple Drum blocks within a Note block.



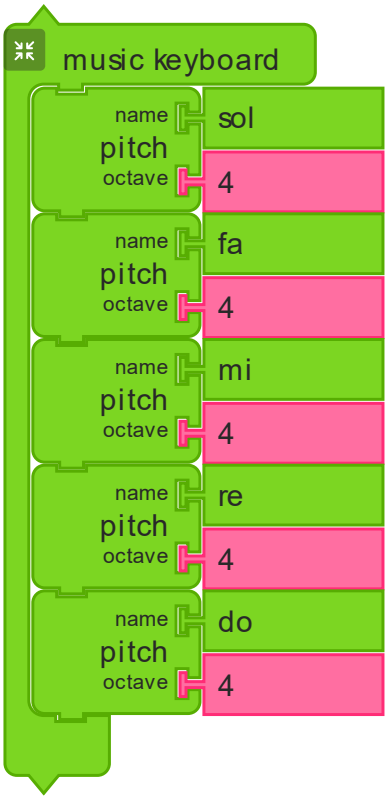
The Custom mode block opens a tool to explore musical mode (the spacing of the notes in a scale).



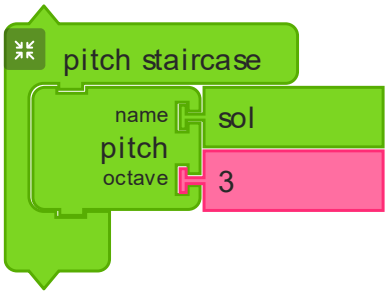
The Tempo block opens a metronome to visualize the beat.



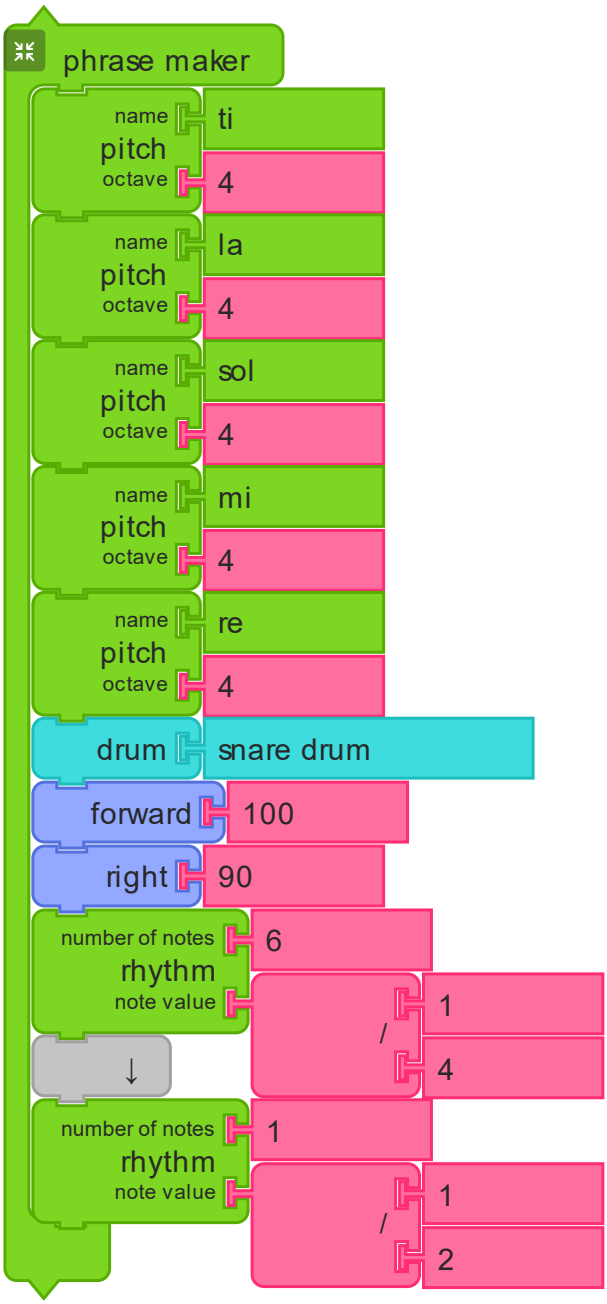
The Pitch slider tool to is used to generate pitches at selected frequencies.



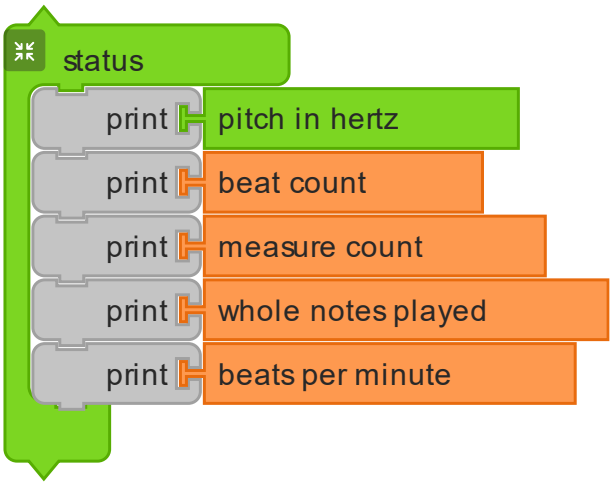
The Music keyboard block opens a piano keyboard that can be used to create notes.



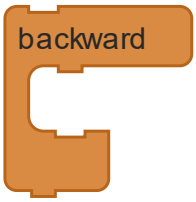
The Pitch staircase tool to is used to generate pitches from a given ratio.



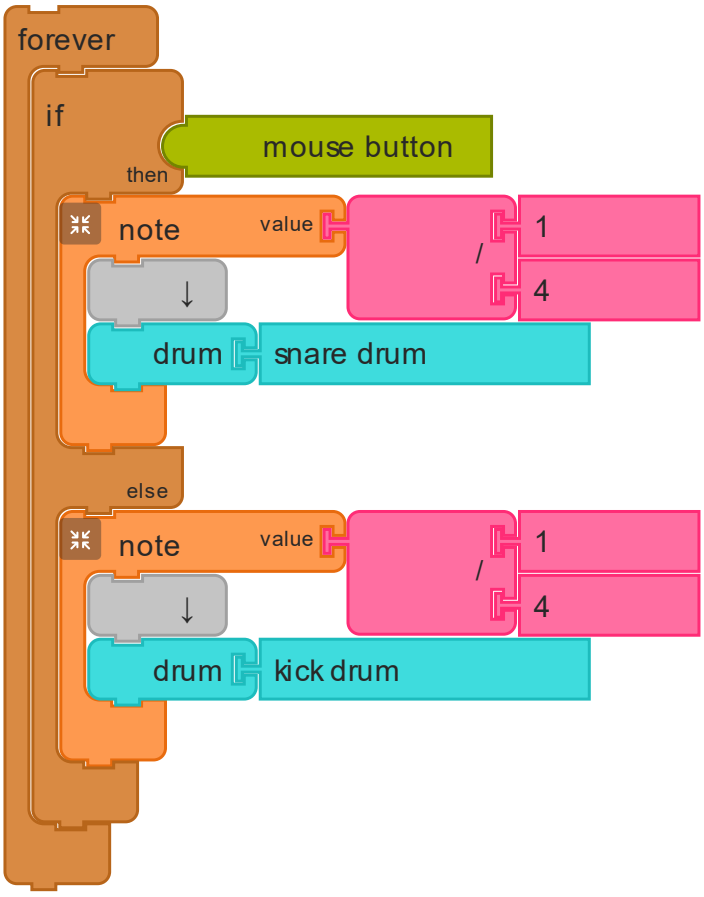
The Phrase Maker block opens a tool to create musical phrases.



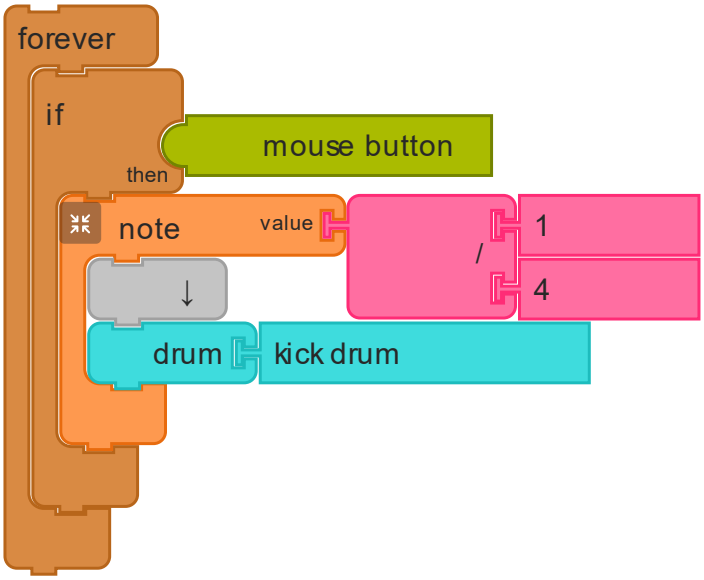
The Status block opens a tool for inspecting the status of Music Blocks as it is running.



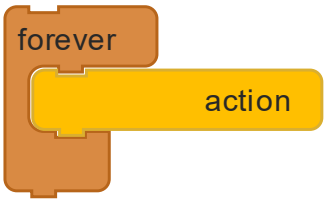
The Backward block runs code in reverse order (Musical retrograde).



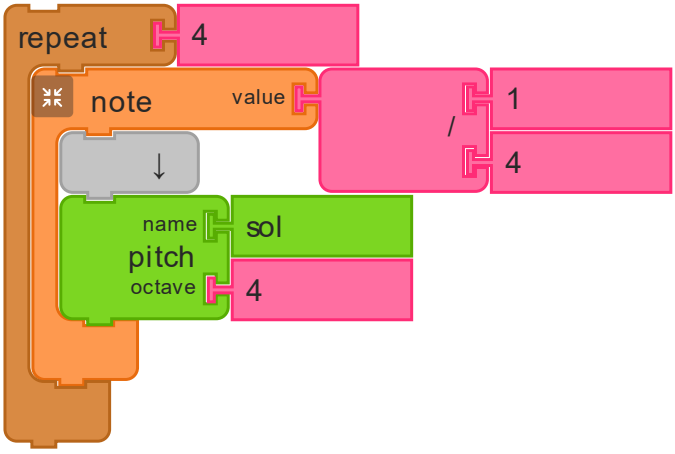
Conditionals lets your program take different actions depending on the condition. In this example if the mouse button is pressed a snare drum will play, else a kick drum will play.



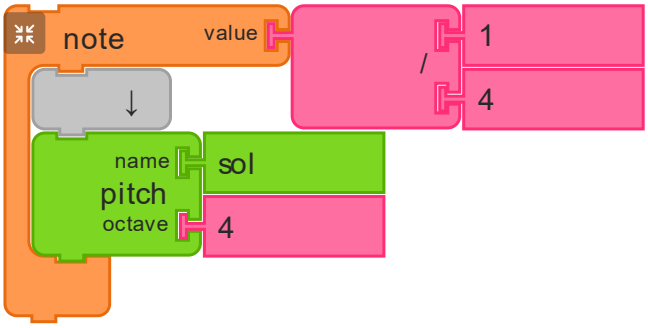
Conditionals lets your program take different actions depending on the condition. In this example if the mouse button is pressed a snare drum will play.



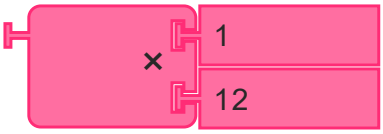
The Forever block will repeat the contained blocks forever. In this example of a simple drum machine a kick drum will play 1/4 notes forever.



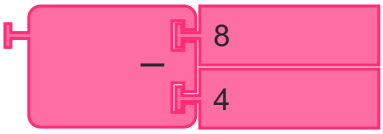
The Repeat block will repeat the contained blocks. In this example the note will be played 4 times.



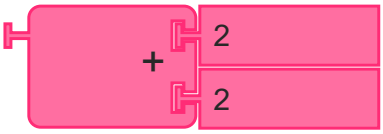
The Divide block is used to divide.



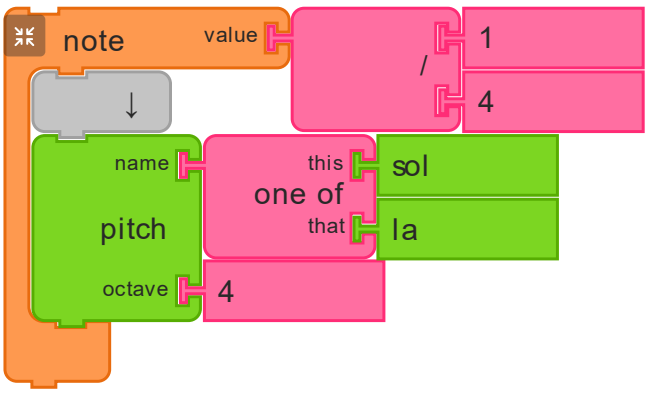
The Multiply block is used to multiply.



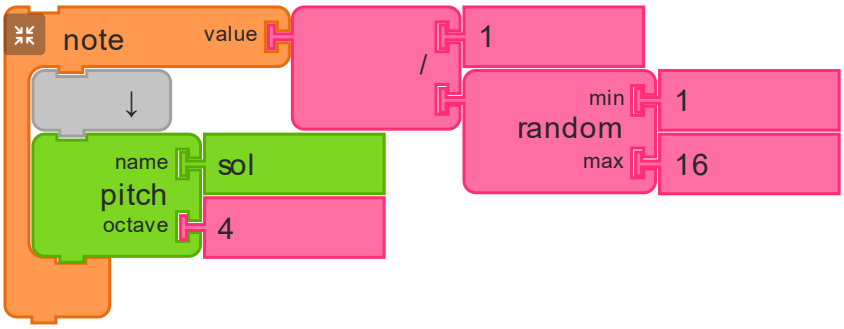
The Minus block is used to subtract.



The Plus block is used to add.

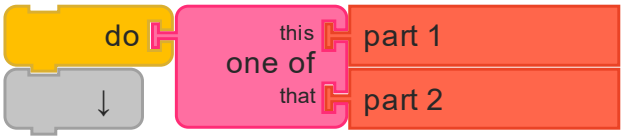


The One-of block returns one of two choices.

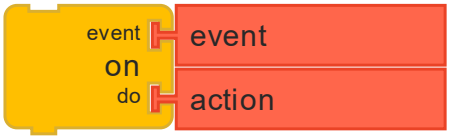


The Random block returns a random number.

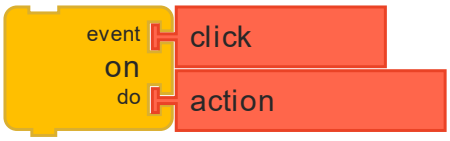
The Number block holds a number.

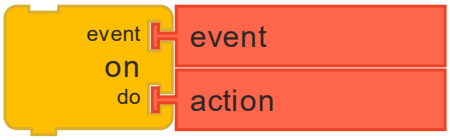


The Do block is used to initiate an action. In the example, it is used with the One of block to choose a random phase.

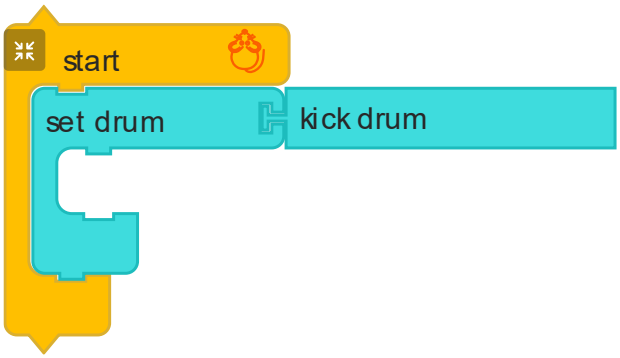


The Listen block is used to listen for an event such as a mouse click. When the event happens, an action is taken.

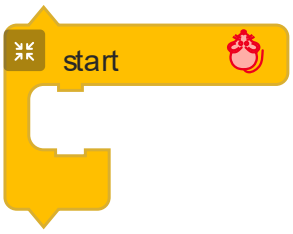




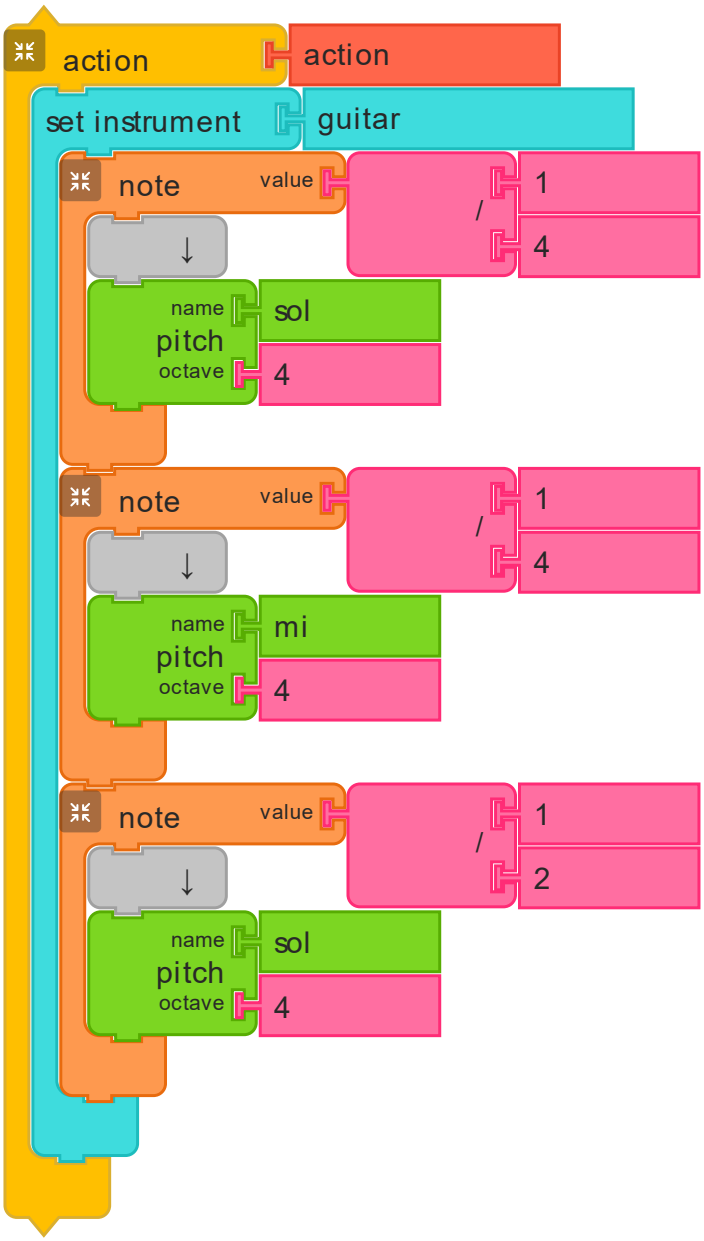
The Broadcast block is used to trigger an event.



Each Start block is a separate voice. All of the Start blocks run at the same time when the Play button is pressed.



Each Start block is a separate voice. All of the Start blocks run at the same time when the Play button is pressed.



The Action block is used to group together blocks so that they can be used more than once. It is often used for storing a phrase of music that is repeated.

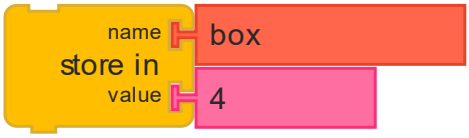
The Subtract-1-from block subtracts one from the value stored in a box.

The Add-1-to block adds one to the value stored in a box.

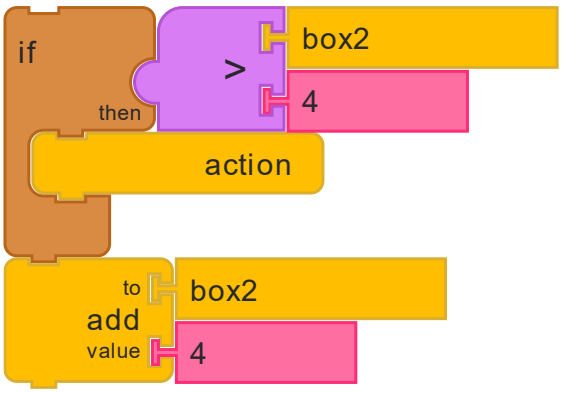
The Add-to block is used to add to the value stored in a box. It can also be used with other blocks such as Color and Pen size.

The Box block returns the value stored in a box.

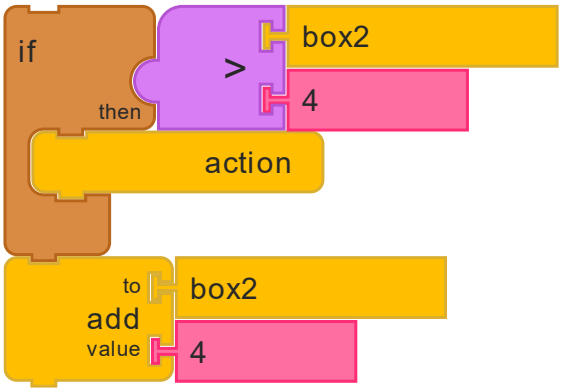
The Store in block will store a value in a box.



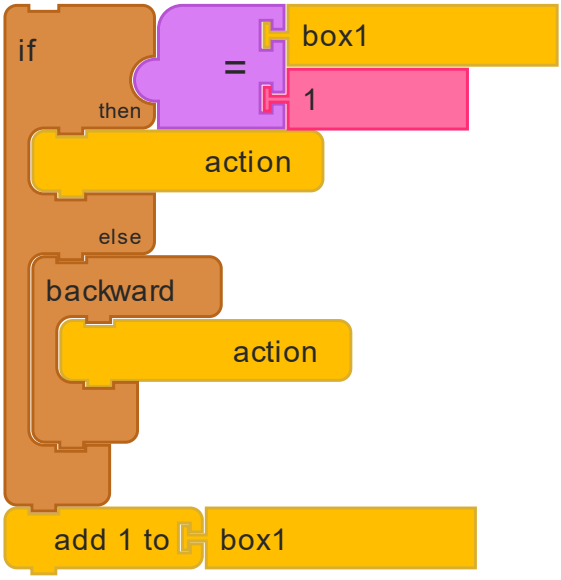
The Store in block will store a value in a box.



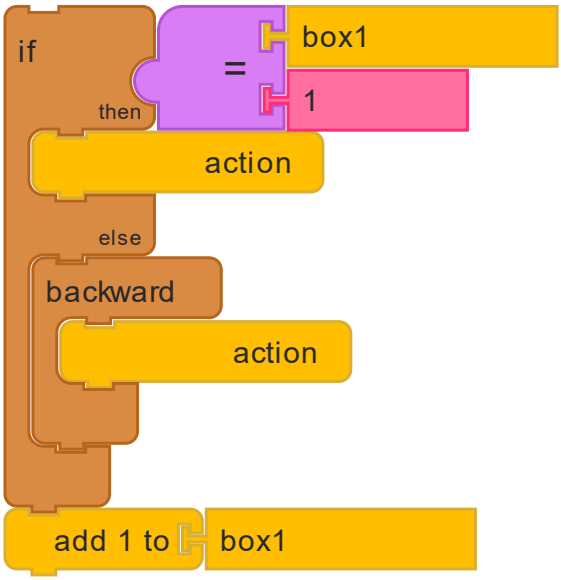
The Box2 block returns the value stored in Box2.



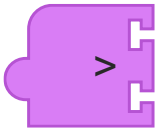
The Store in Box2 block is used to store a value in Box2.



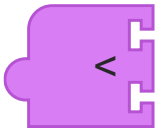
The Box1 block returns the value stored in Box1.



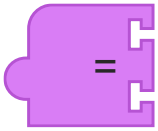
The Store in Box1 block is used to store a value in Box1.



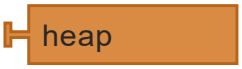
The Greater-than block returns True if the top number is greater than the bottom number.



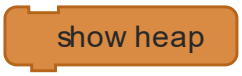
The Greater-than block returns True if the top number is greater than the bottom number.



The Equal block returns True if the two numbers are equal.



The Heap block returns the heap.



The Show-heap block displays the contents of the heap at the top of the screen.

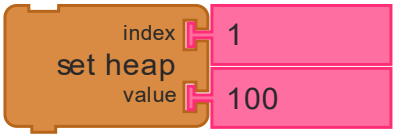
The Heap-length block returns the length of the heap.

The Heap-empty? block returns true if the heap is empty.

The Empty-heap block empties the heap.

The Reverse-heap block reverses the order of the heap.

The Index-heap block returns a value in the heap at a specified location.



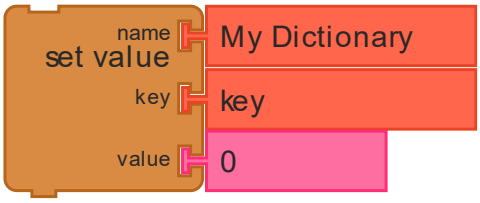
The Set-heap entry block sets a value in he heap at the specified location.

The Pop block removes the value at the top of the heap.

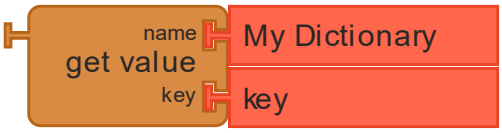
The Push block adds a value to the top of the heap.

The Dictionary block returns a dictionary.

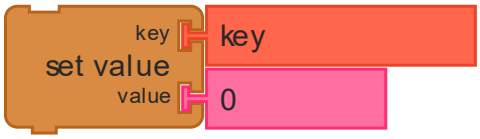
The Show-dictionary block displays the contents of the dictionary at the top of the screen.



The Set-dict block sets a value in the dictionary for a specified key.



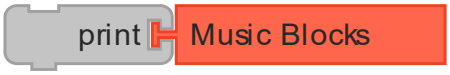
The Get-dict block returns a value in the dictionary for a specified key.



The Set-dict block sets a value in the dictionary for a specified key.

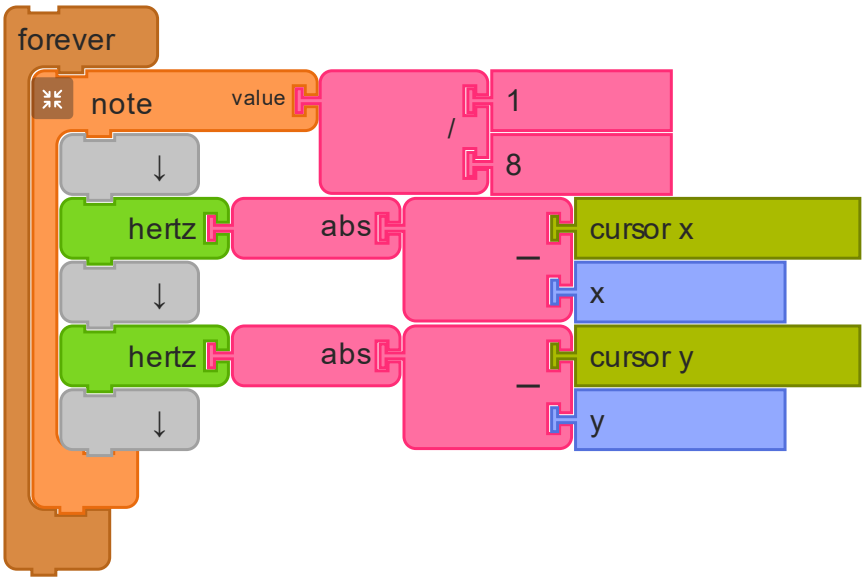
The Get-dict block returns a value in the dictionary for a specified key.

The Display Grid Block changes the grid type

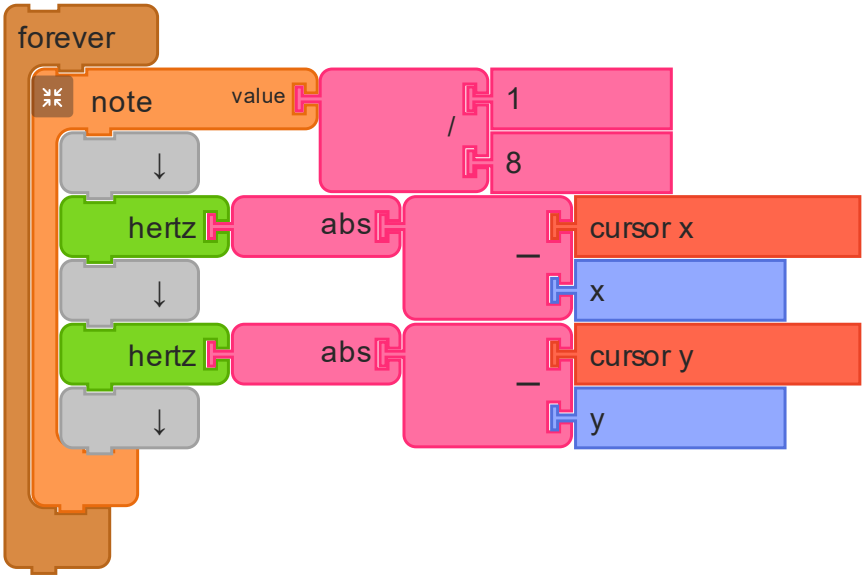


The Print block displays text at the top of the screen.

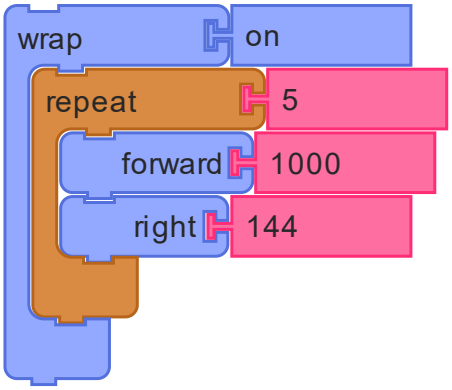
The Heading block returns the orientation of the mouse.



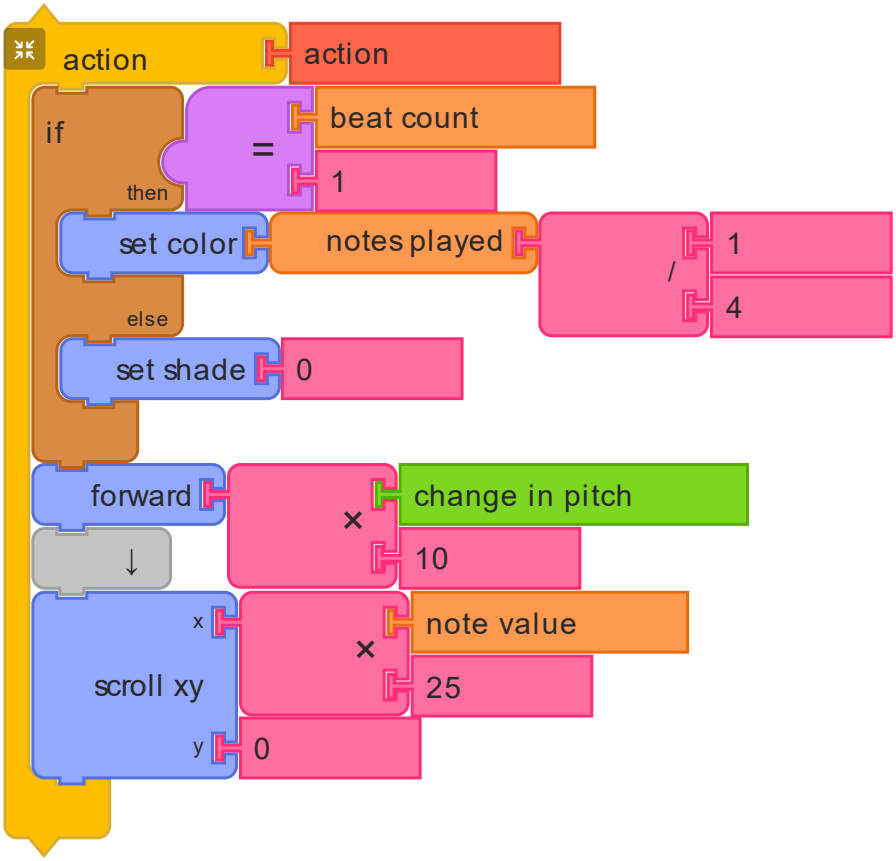
The Y block returns the vertical position of the mouse.



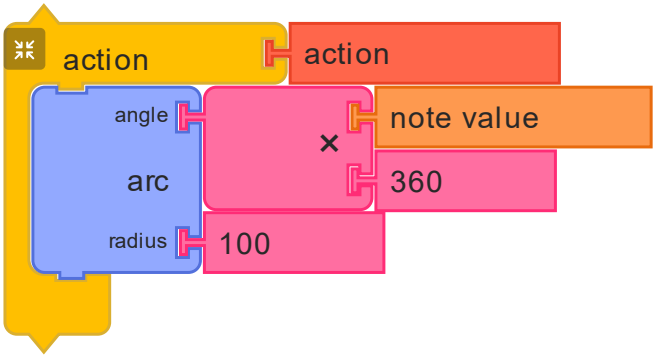
The X block returns the horizontal position of the mouse.



The Wrap block enables or disables screen wrapping for the graphics actions within it.

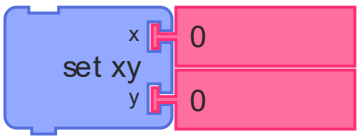


The Scroll XY block moves the canvas.

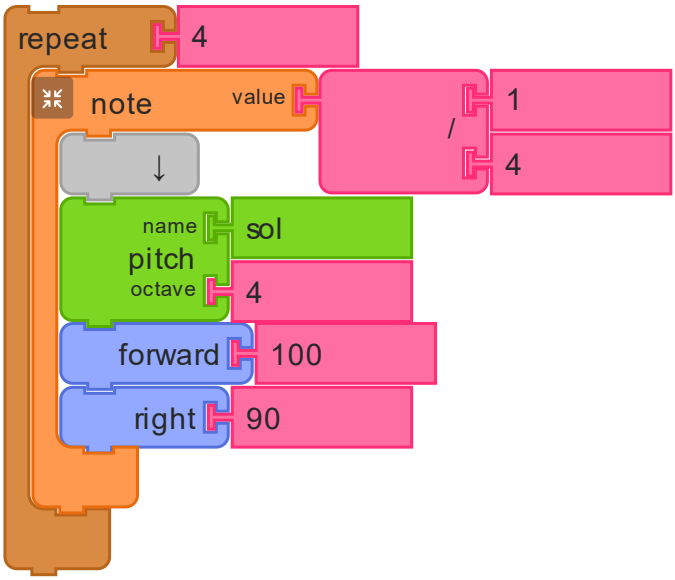


The Arc block moves the turtle in an arc.

The Set heading block sets the heading of the turtle.



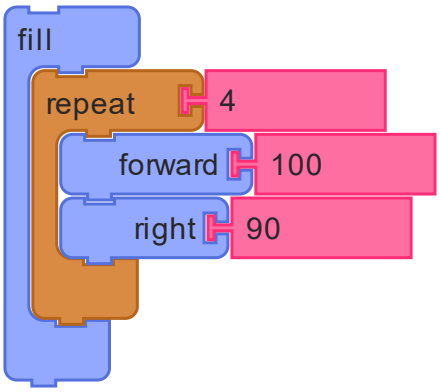
The Set XY block moves the mouse to a specific position on the screen.



The Right block turns the mouse to the right.

The Color block returns the current pen color.

The Background block sets the window background color.



The Fill block fills in a shape with a color.

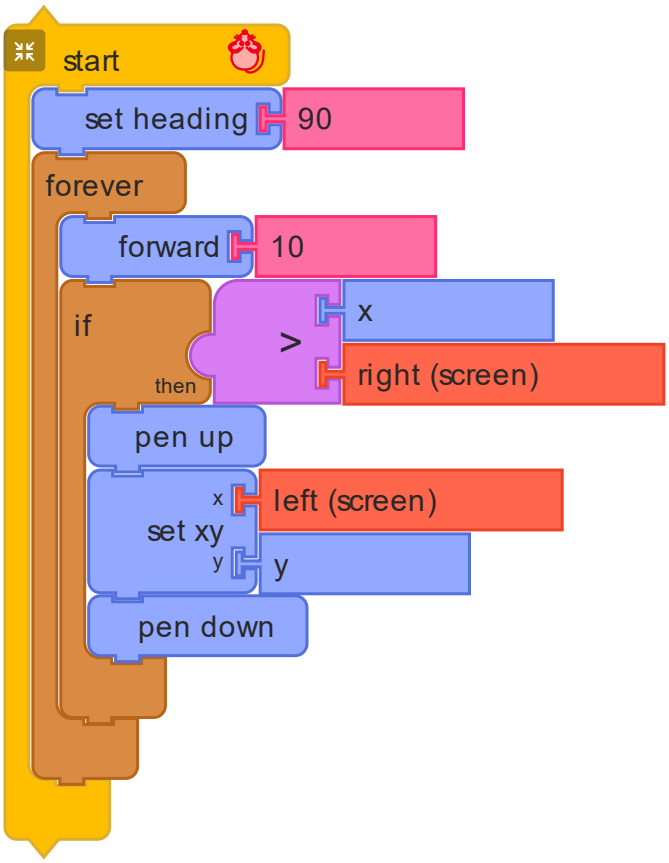
The Pen-down block lowers the pen so that it draws.

The Pen-up block raises the pen so that it does not draw.

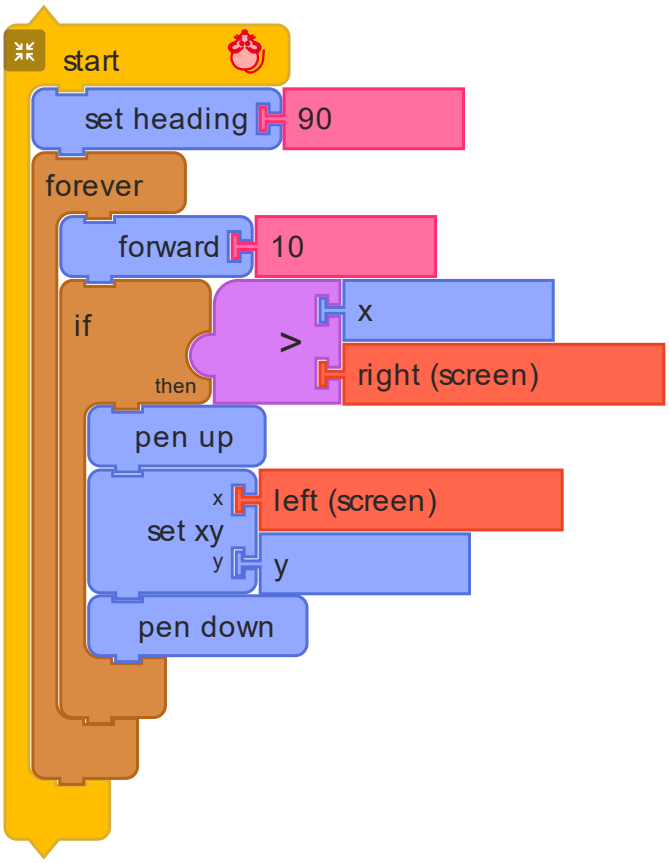
The Set-pen-size block changes the size of the pen.

The Set-shade block changes the pen color from dark to light.

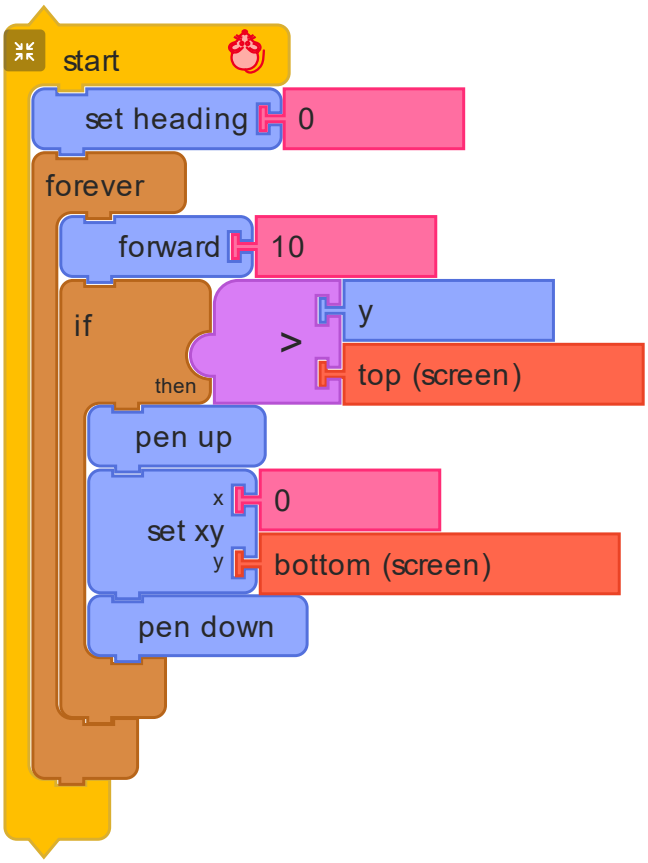
The Set-color block changes the pen color.



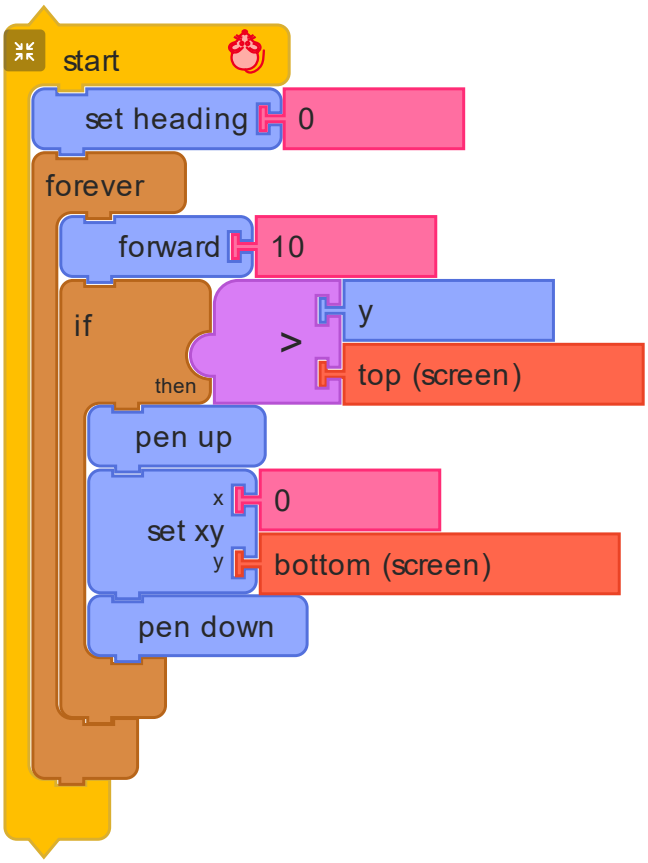
The Right block returns the position of the right of the canvas. In this example, the mouse moves right until it reaches the right edge of the canvas; then it reappears at the left of the canvas.



The Left block returns the position of the left of the canvas. In this example, the mouse moves right until it reaches the right edge of the canvas; then it reappears at the left of the canvas.



The Top block returns the position of the top of the canvas. In this example, the mouse moves upward until it reaches the top edge of the canvas; then it reappears at the bottom of the canvas.

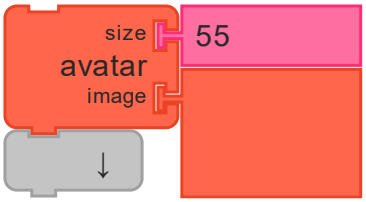


The Bottom block returns the position of the bottom of the canvas. In this example, the mouse moves upward until it reaches the top edge of the canvas; then it reappears at the bottom of the canvas.

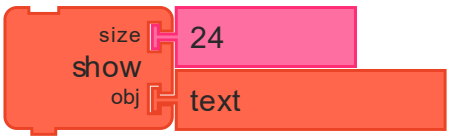
The Width block returns the width of the canvas.

The Height block returns the height of the canvas.

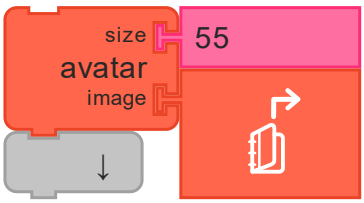
The Speak block outputs to the text-to-speech synthesizer



The Avatar block is used to change the appearance of the mouse.



The Show block is used to display text or images on the canvas.

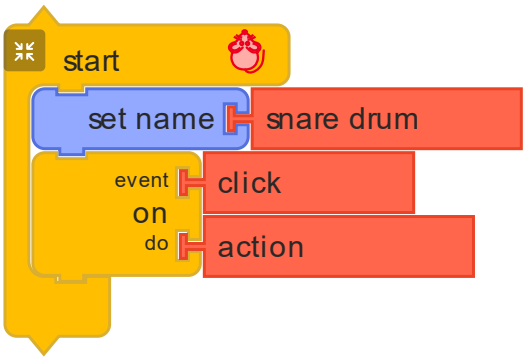


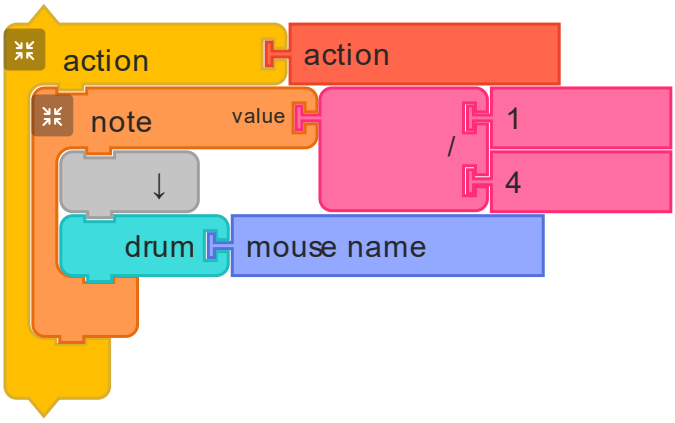
The Media block is used to import an image.

The Text block holds a text string.

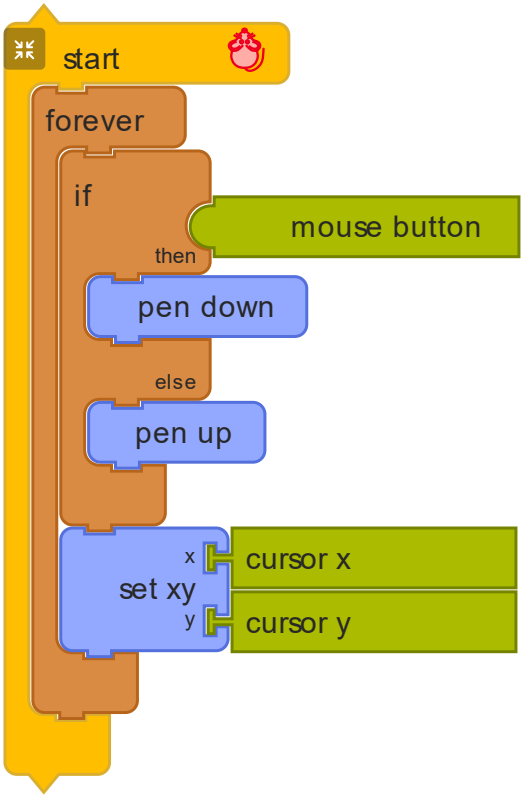
The Time block returns the number of seconds that the program has been running.

The Loudness block returns the volume detected by the microphone.





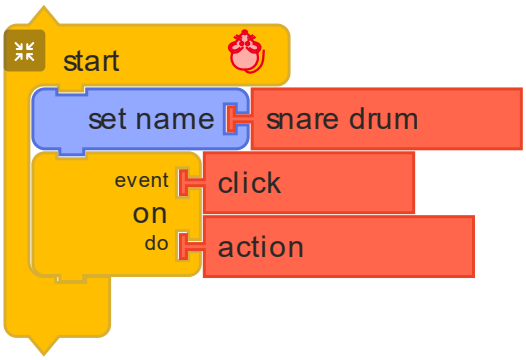
The Click block triggers an event if a mouse has been clicked.

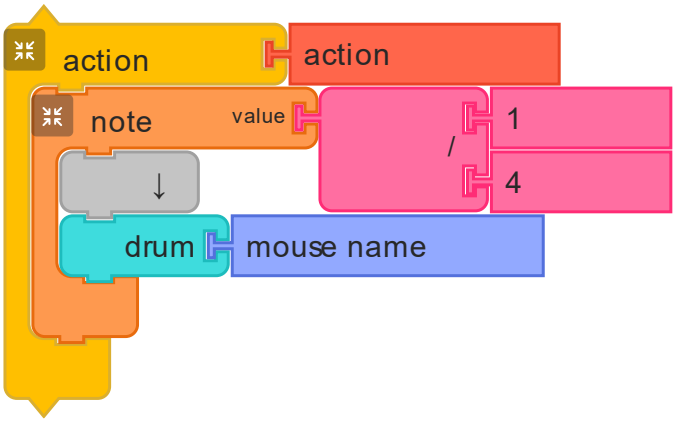


The Mouse-button block returns True if the mouse button is pressed.

The Cursor Y block returns the vertical position of the mouse.

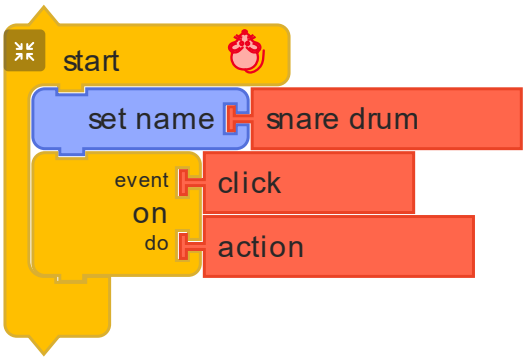
The Cursor X block returns the horizontal position of the mouse.

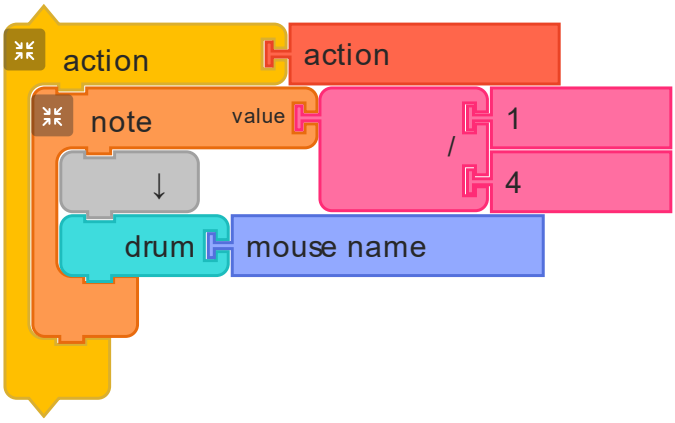




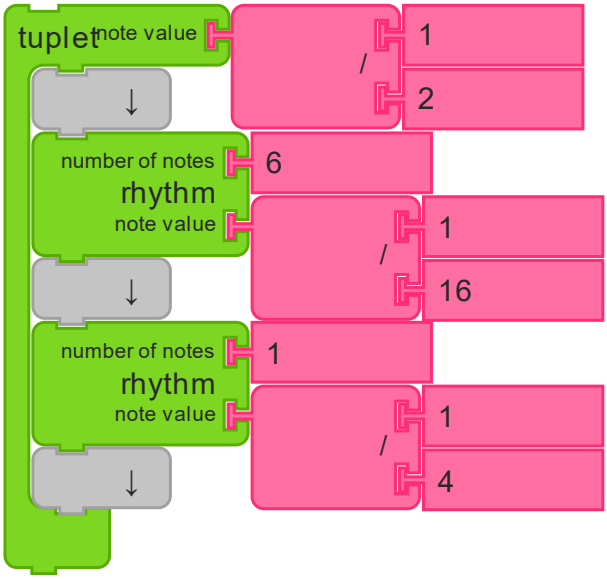
The Mouse-name block returns the name of a mouse.

The Set-mouse-color block is used to set the color of a mouse.

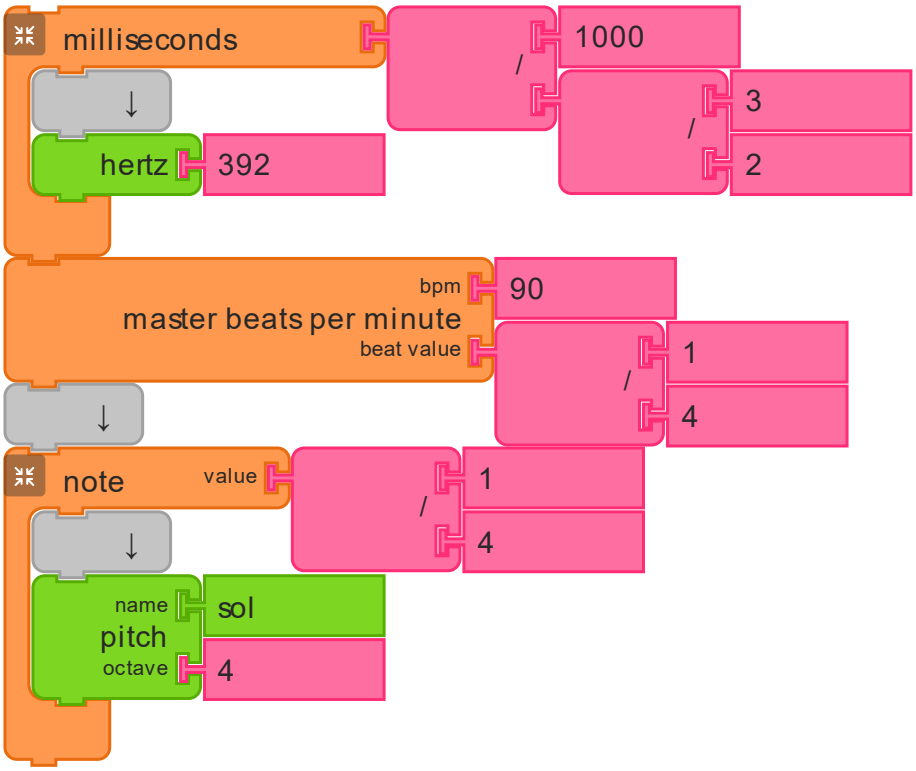




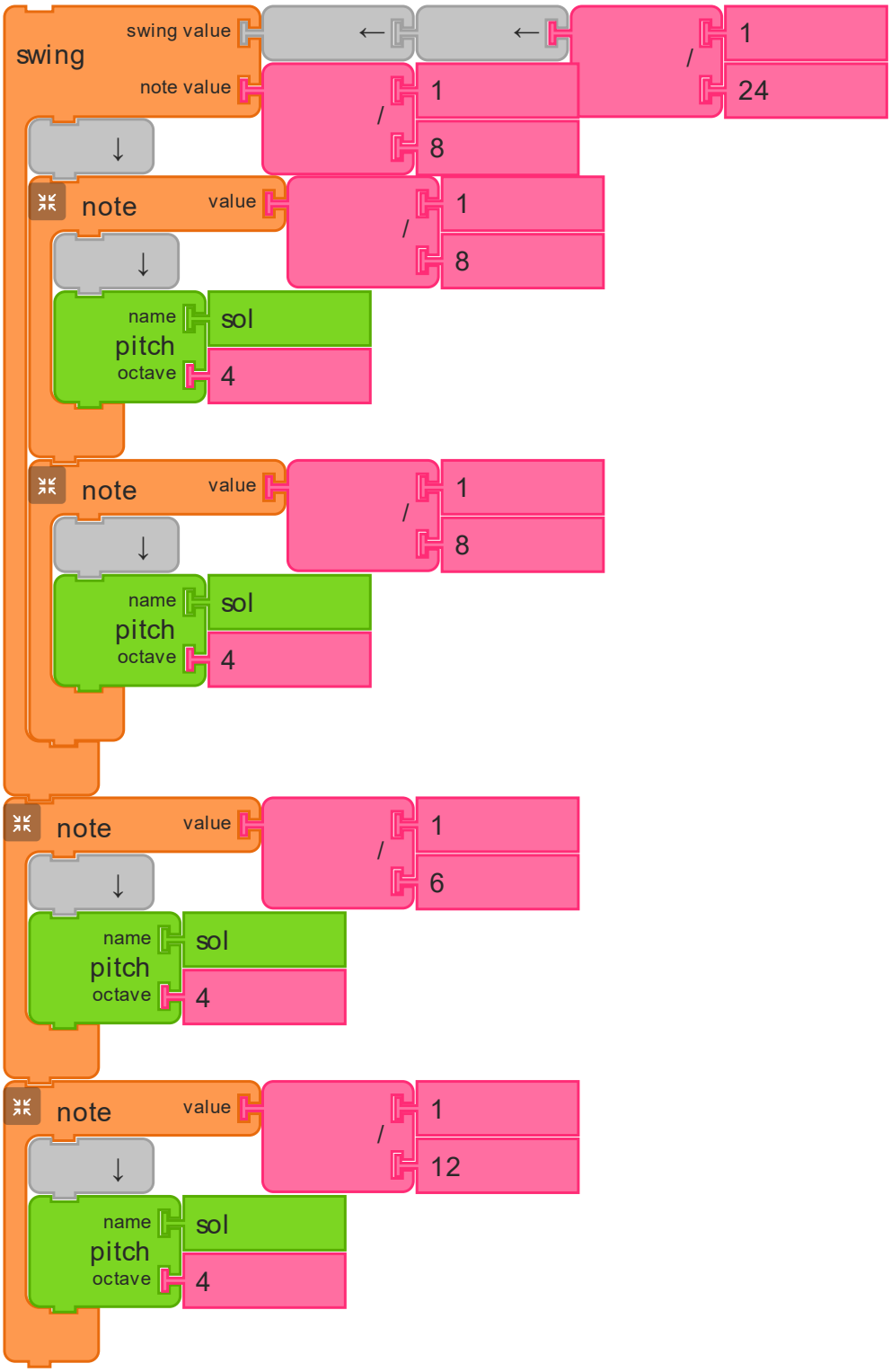
The Set-name block is used to name a mouse.



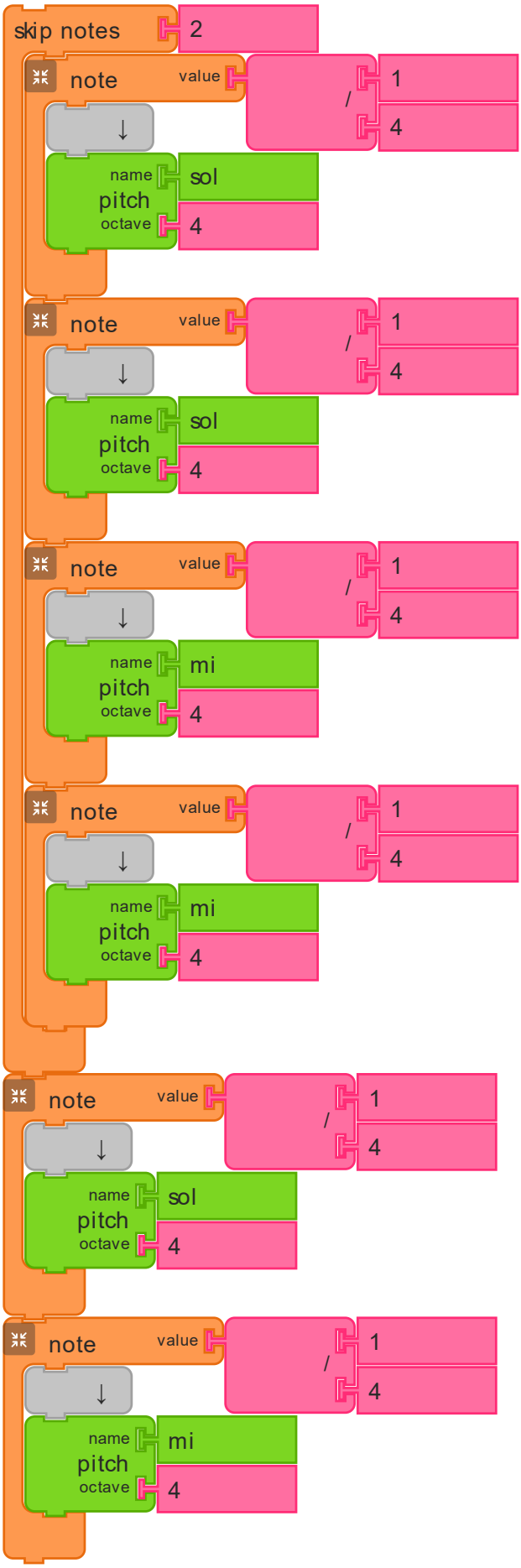
The Tuplet block is used to generate a group of notes played in a condensed amount of time.



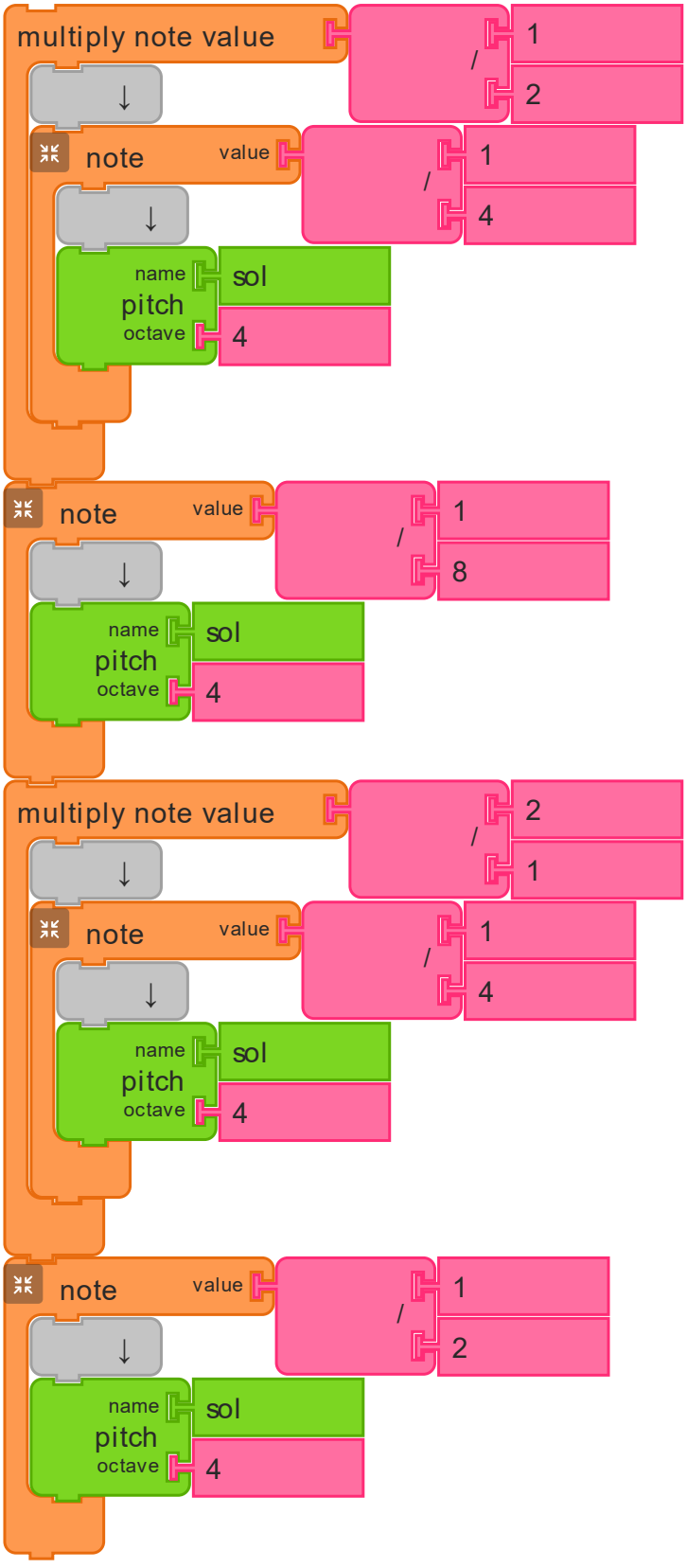
The Milliseconds block is similar to a Note block except that it uses time (in MS) to specify the note duration.



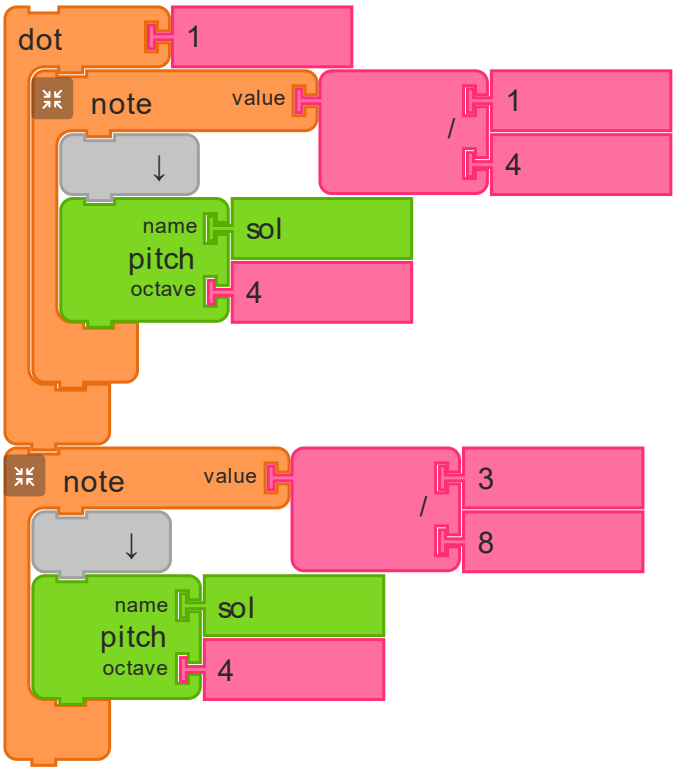
The Swing block works on pairs of notes (specified by note value), adding some duration (specified by swing value) to the first note and taking the same amount from the second note.


skip notes
2
note
value
/
1
4
name
pitch
octave
sol
4
note
value
/
1
4
name
pitch
octave
sol
4
note
value
/
1
4
name
pitch
octave
mi
4
note
value
/
1
4
name
pitch
octave
mi
4
note
value
/
1
4
name
pitch
octave
sol
4
note
value
/
1
4
name
pitch
octave
mi
4

The Skip notes block will cause notes to be skipped.



The Multiply note value block changes the duration of notes by changing their note values.

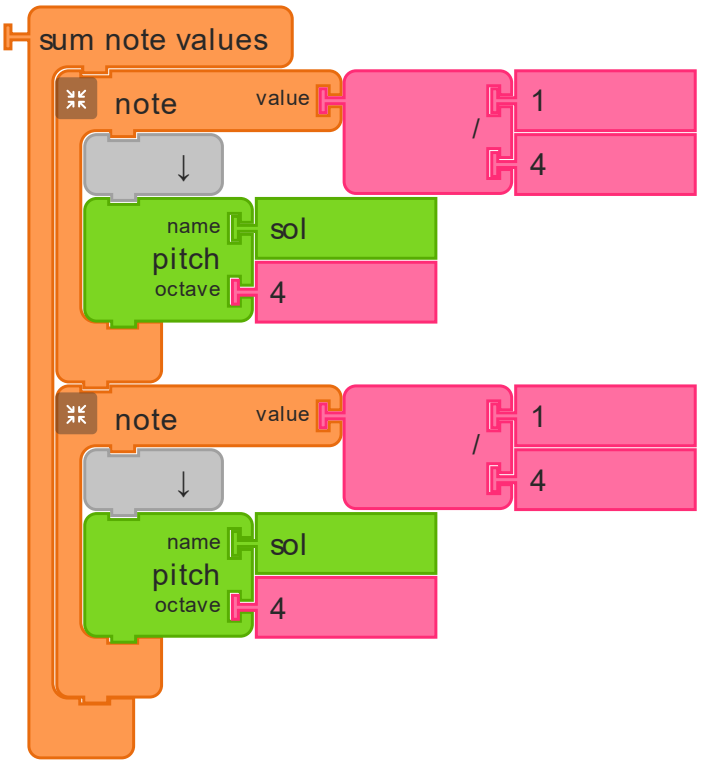


The Dot block extends the duration of a note by 50%. Eg a dotted quarter note will play for 3/8 (1/4 + 1/8) of a beat.

The Beat factor block returns the ratio of the note value to the meter note value.

The Beats per minute block returns the current beats per minute.

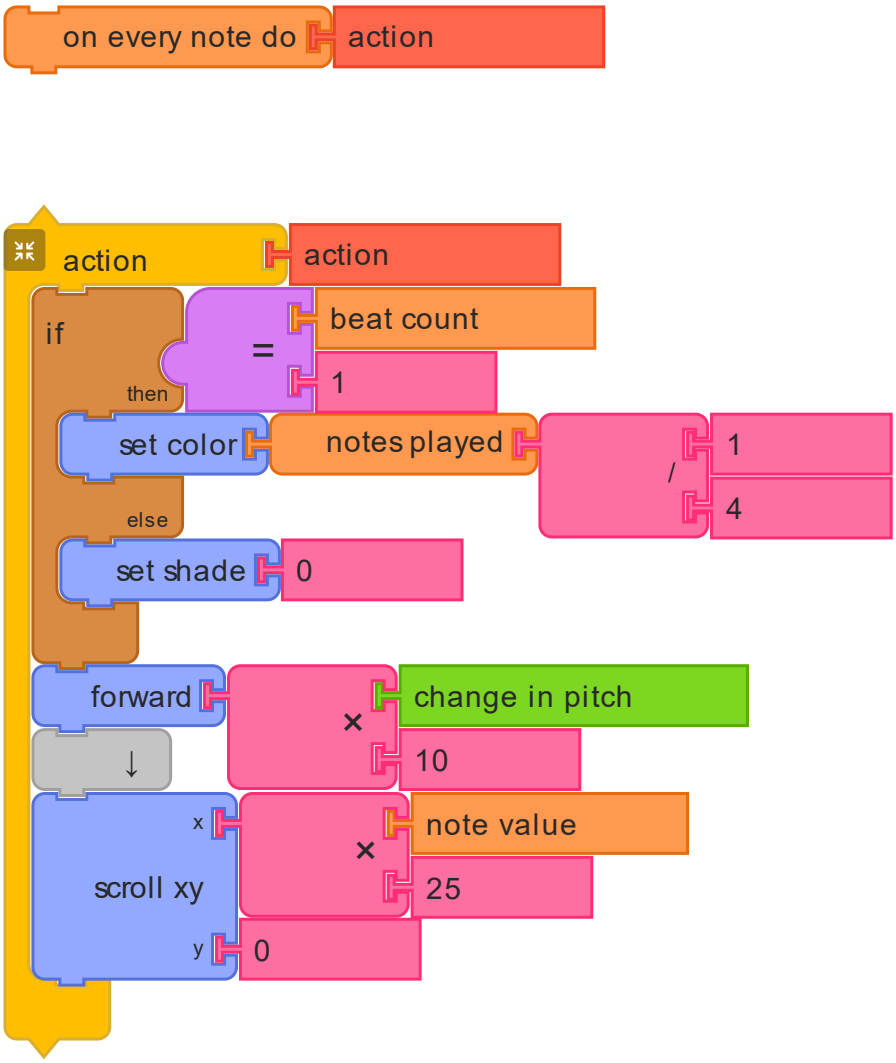
The Measure count block returns the current measure.



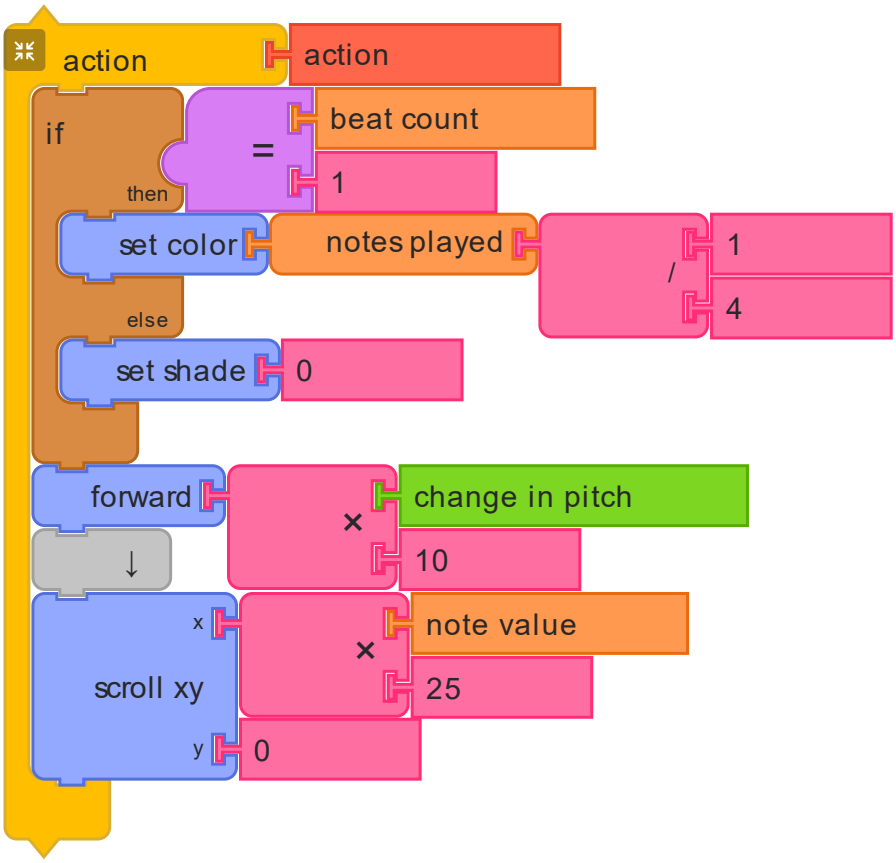
The Note counter block can be used to count the number of contained notes.

The Note counter block can be used to count the number of contained notes.

The No clock block decouples the notes from the master clock.



The On-weak-beat block lets you specify actions to take on weak (off) beats.



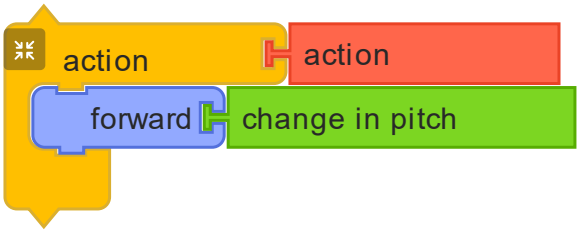
The On-weak-beat block lets you specify actions to take on weak (off) beats.

The On-strong-beat block lets you specify actions to take on specified beats.

The Pickup block is used to accommodate any notes that come in before the beat.

The Scalar step down block returns the number of semi-tones down to the previous note in the current key and mode.

The Scalar step up block returns the number of semi-tones up to the next note in the current key and mode.



The Change in pitch block is the difference (in half steps) between the current pitch being played and the previous pitch played.

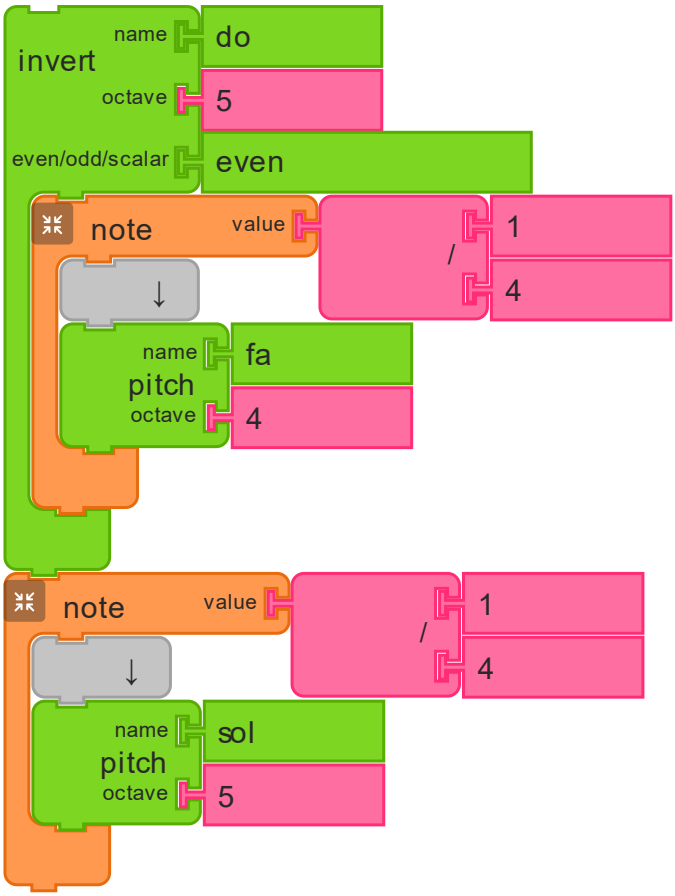
The Change in pitch block is the difference (in half steps) between the current pitch being played and the previous pitch played.

The Number to pitch block will convert a pitch number to a pich name.

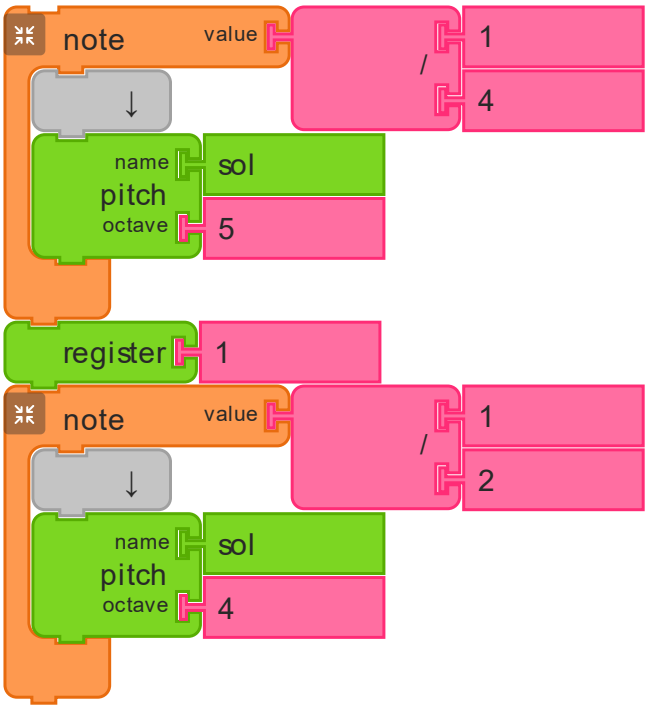
The Number to octave block will convert a pitch number to an octave.

Y to pitch block will convert a staff y position to corresponding pitch notation.

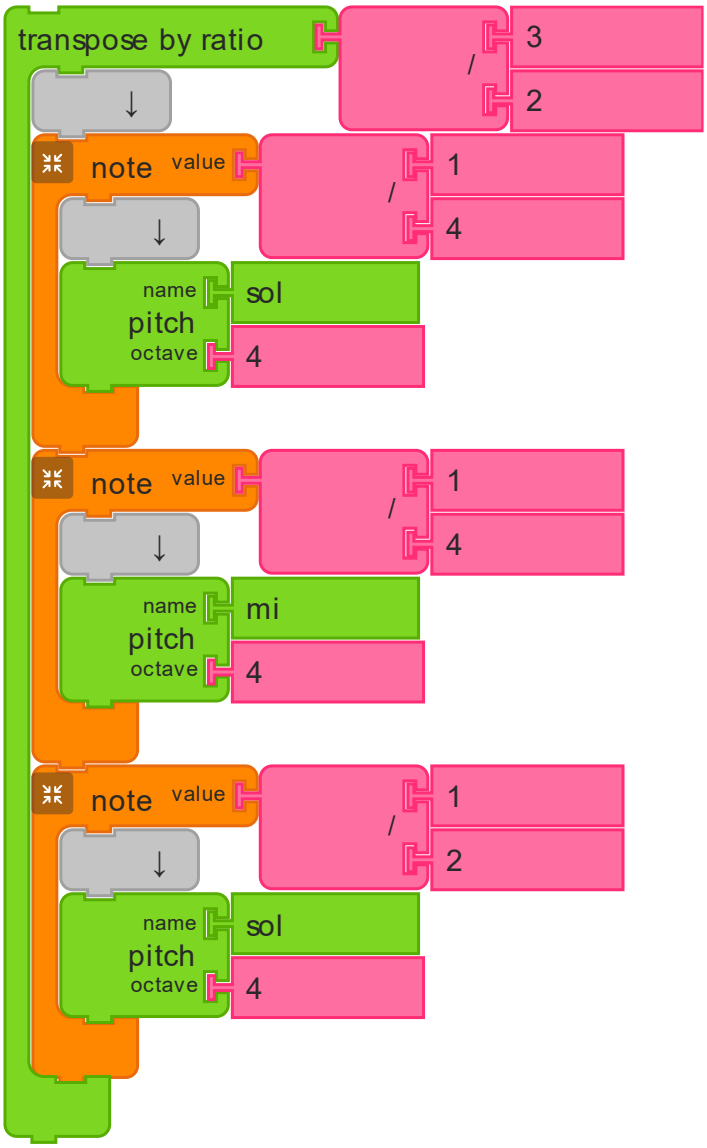
The Set pitch number offset block is used to set the offset for mapping pitch numbers to pitch and octave.



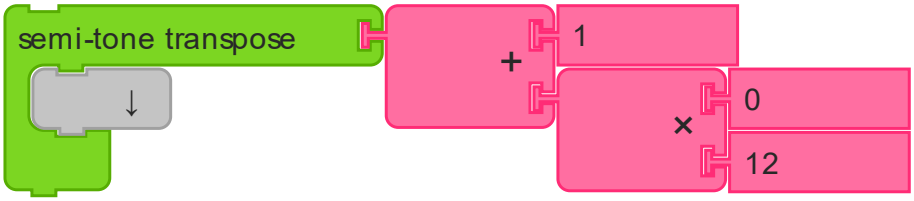
The Invert block rotates any contained notes around a target note.



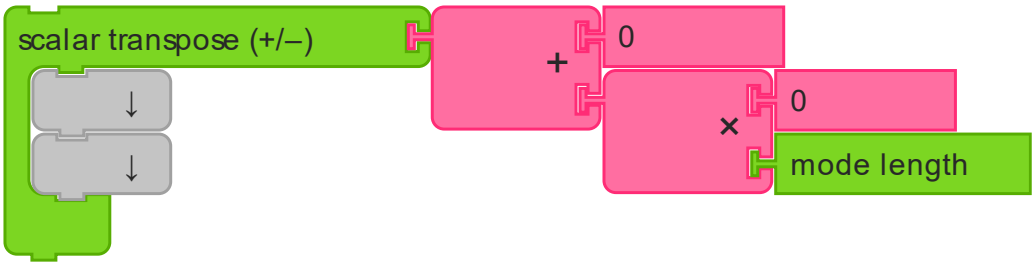
The Register block provides an easy way to modify the register (octave) of the notes that follow it.



The Transpose by Ratio block will shift the pitches contained inside Note blocks up (or down) by a ratio

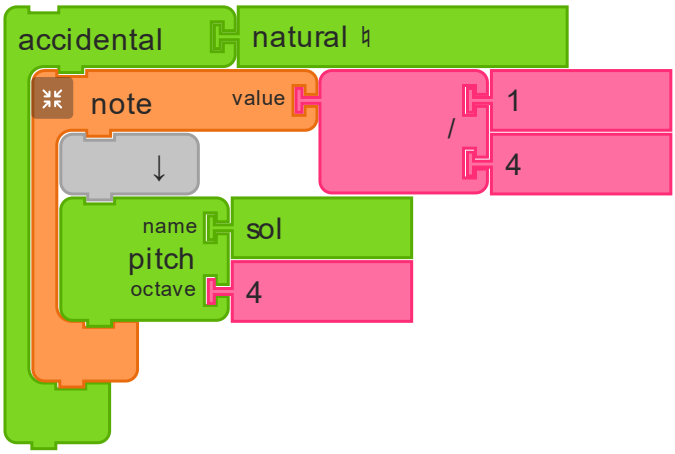


The Semi-tone transposition block will shift the pitches contained inside Note blocks up (or down) by half steps. In the example shown above, sol is shifted up to sol#.

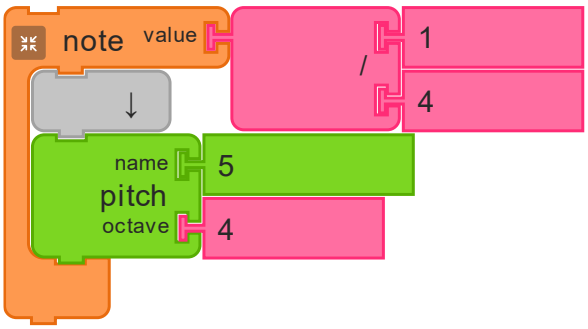


The Scalar transposition block will shift the pitches contained inside Note blocks up (or down) the scale. In the example shown above, sol is shifted up to la.

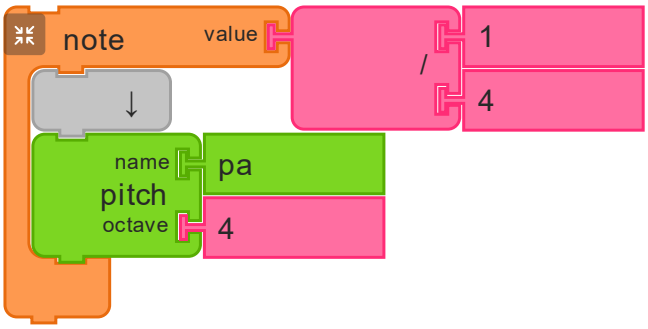
The Accidental selector block is used to choose between double-sharp, sharp, natural, flat, and double-flat.



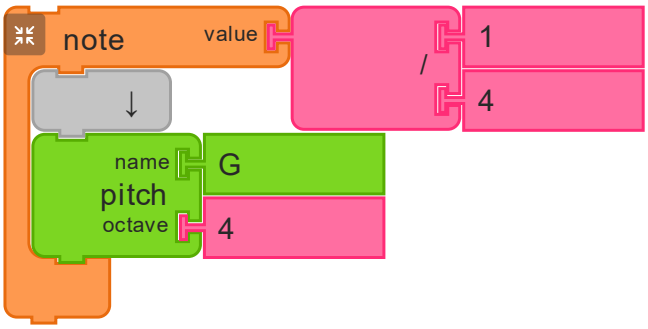
The Accidental block is used to create sharps and flats



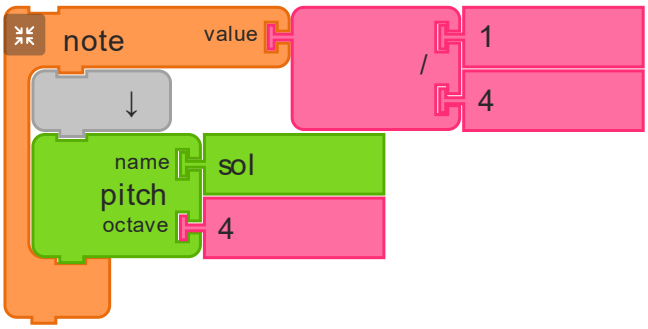
Scale Degree is a common convention in music. Scale Degree offers seven possible positions in the scale (1-7) and can be modified via accidentals. Scale Degree 1 is always the first pitch in a given scale, regardless of octave.



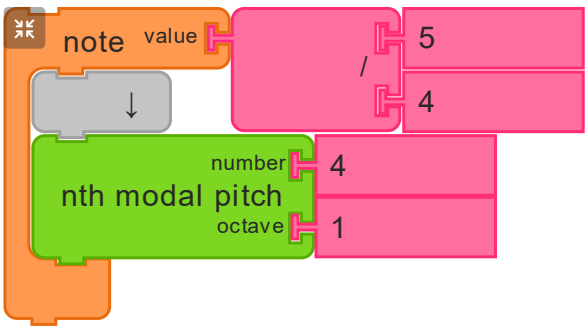
Pitch can be specified in terms of ni dha pa ma ga re sa.



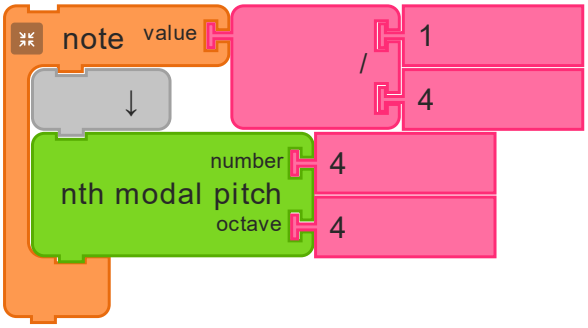
Pitch can be specified in terms of C D E F G A B.



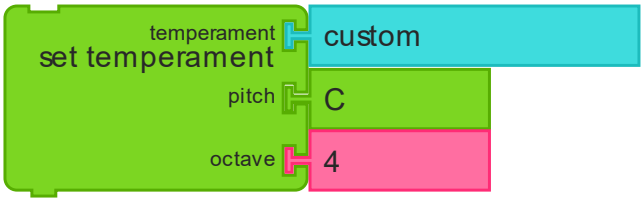
Pitch can be specified in terms of do re mi fa sol la ti.



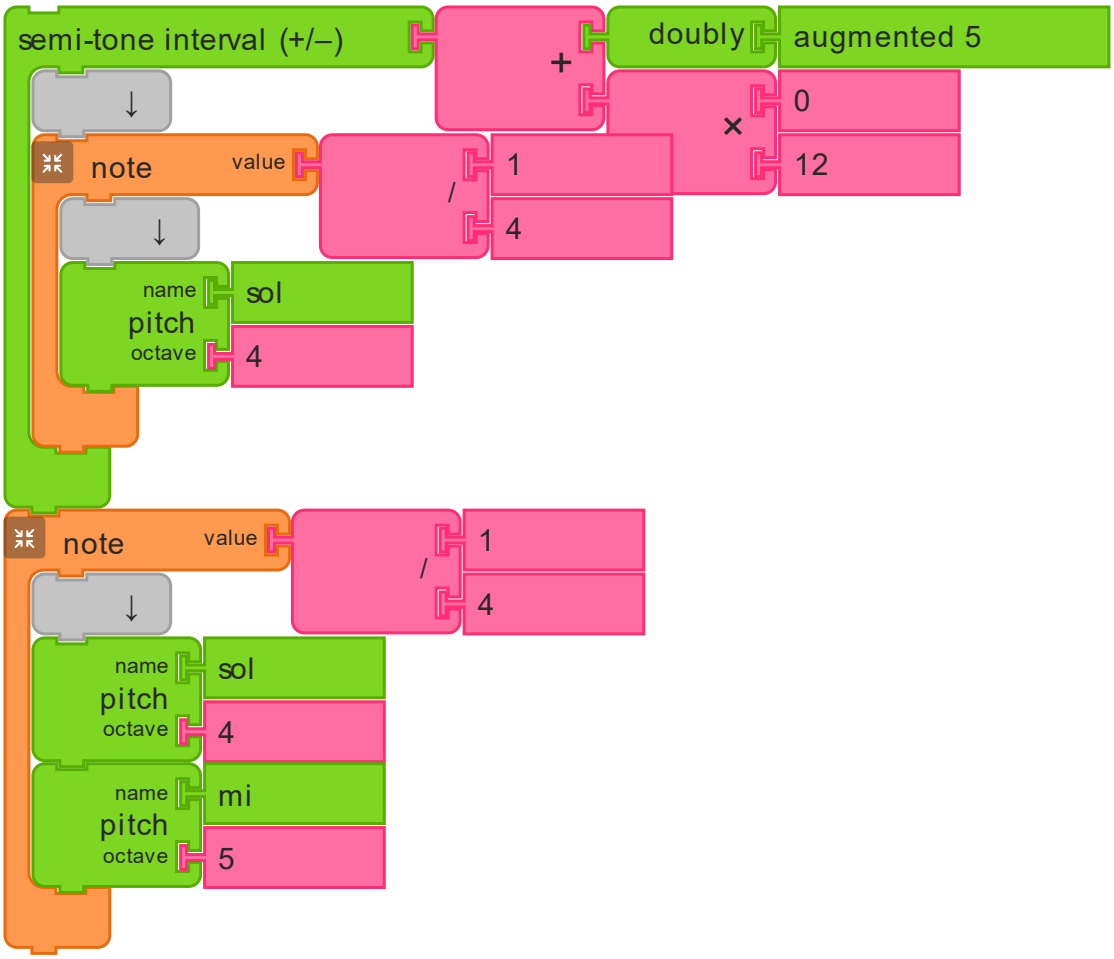
n^th Modal Pitch takes the pattern of pitches in semitones for a mode and makes each point a degree of the mode, starting from 1 and regardless of tonal framework (i.e. not always 8 notes in the octave)



N^th Modal Pitch takes a number as an input as the n^th degree for the given mode. 0 is the first position, 1 is the second, -1 is the note before the first etc. The pitches change according to the mode specified without any need for respellings.

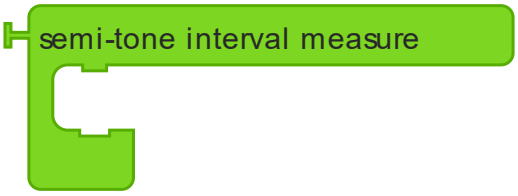


The Temperament name block is used to select a tuning method.

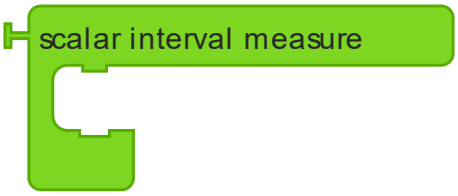


The Doubly block will double the size of an interval.

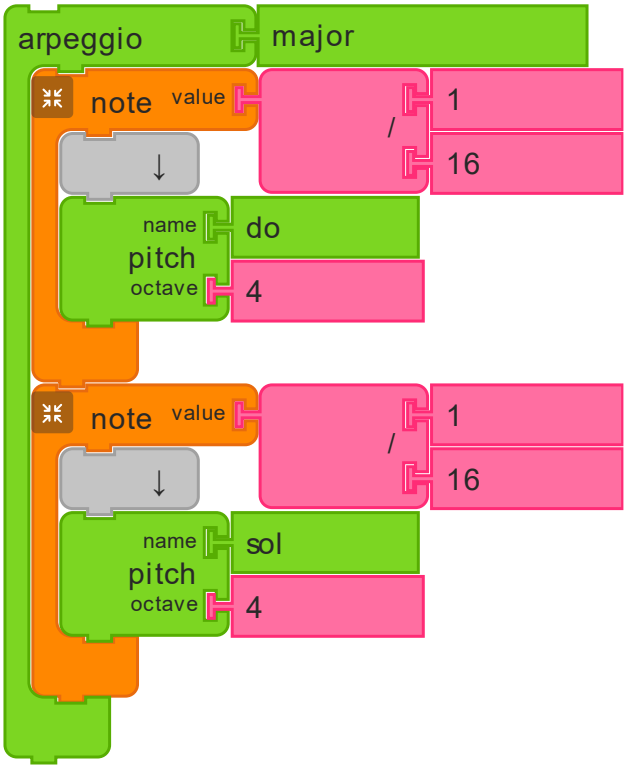
The Interval number block returns the number of scalar steps in the current interval.



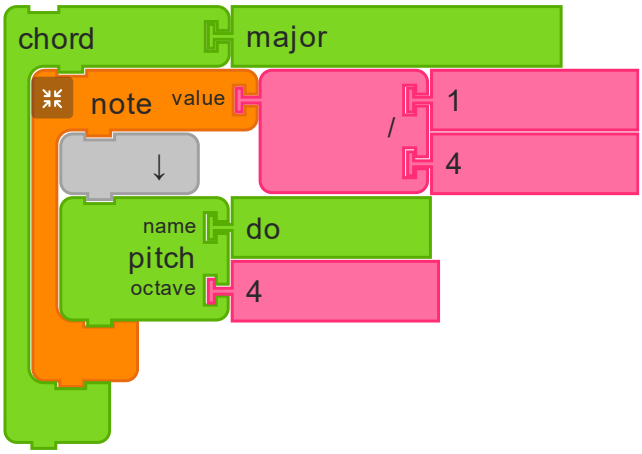
The Semi-tone interval block measures the distance between two notes in semi-tones.



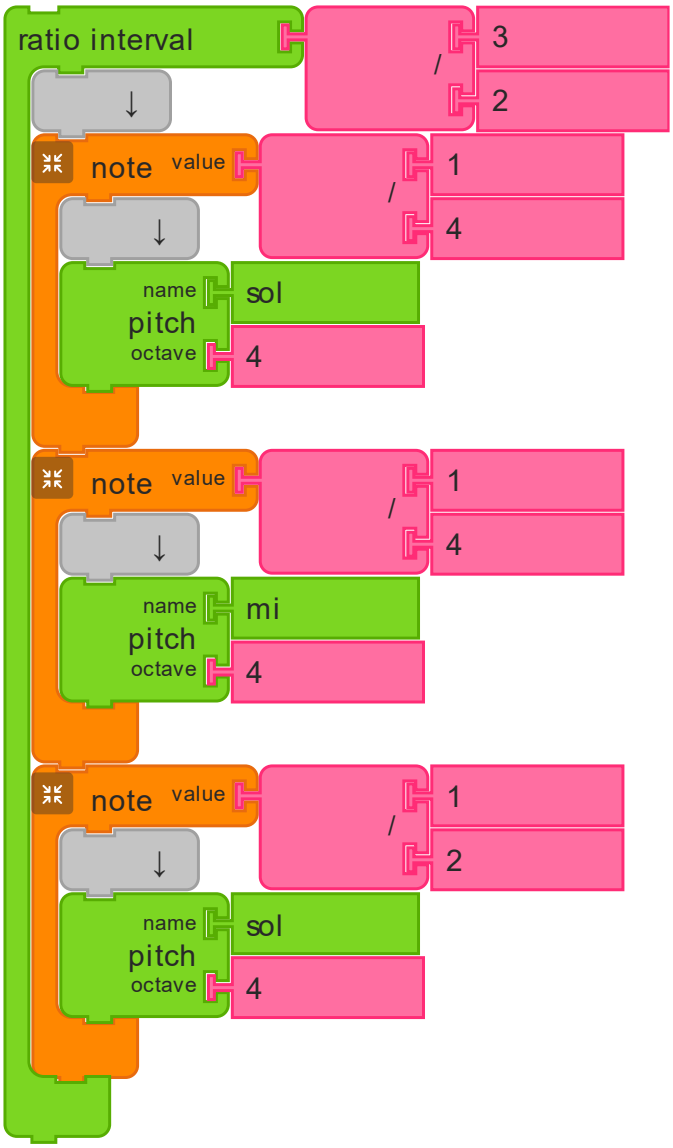
The Scalar interval block measures the distance between two notes in the current key and mode.



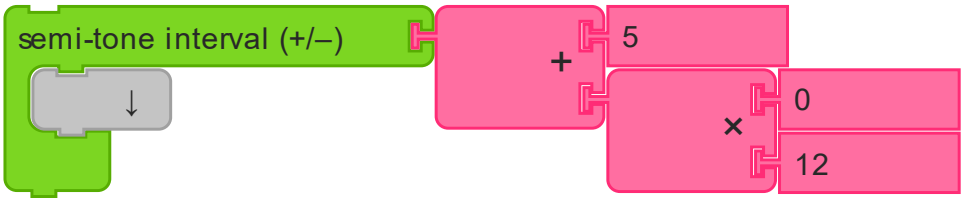
The Arpeggio block will run each note block multiple times, adding a transposition based on the specified chord. The output of the example is: do, mi, sol, sol, ti, mi



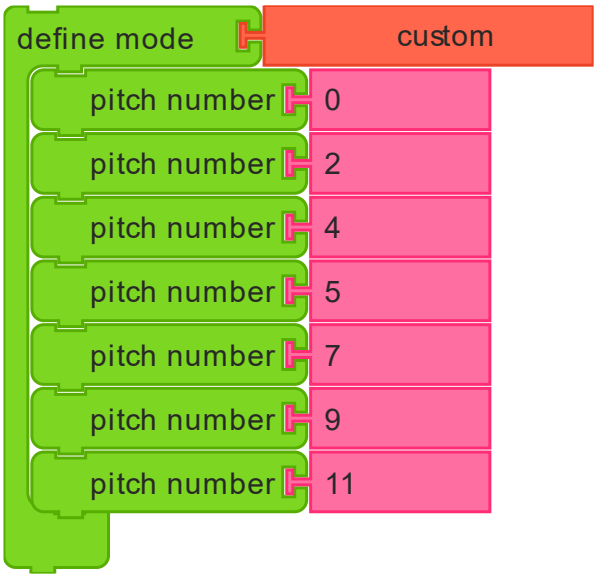
The Chord block calculates common chords. In the figure, we generate a C-major chord.



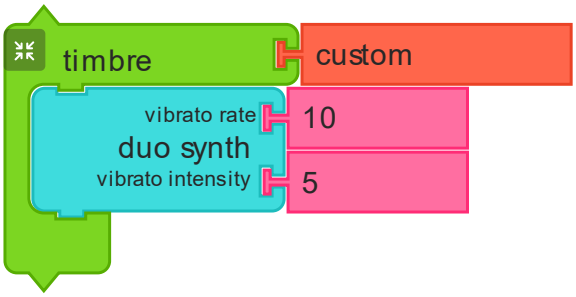
The Ratio Interval block calculates an interval based on a ratio.

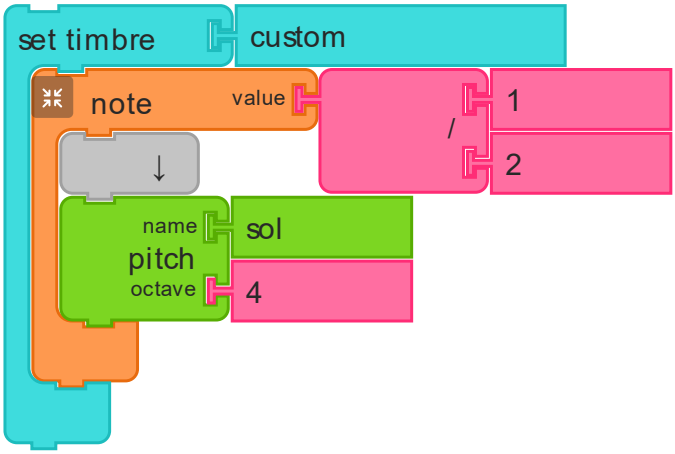


The Semi-tone interval block calculates a relative interval based on half steps. In the figure, we add sol# to sol.

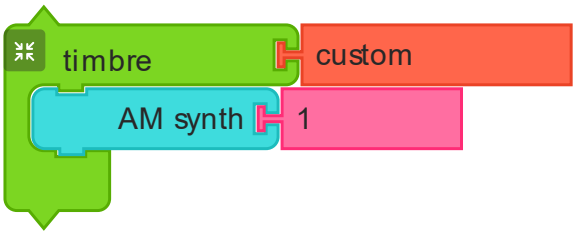


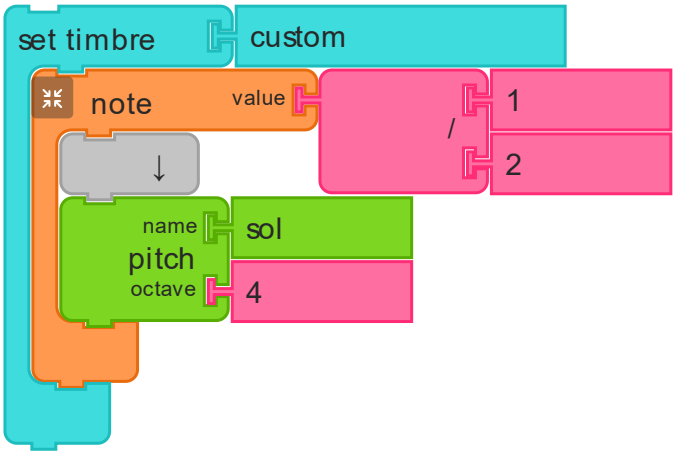
The Define mode block allows you to define a custom mode by specifying pitch numbers.



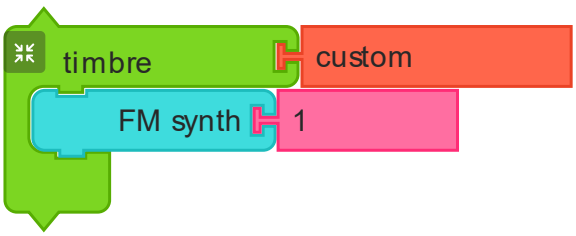


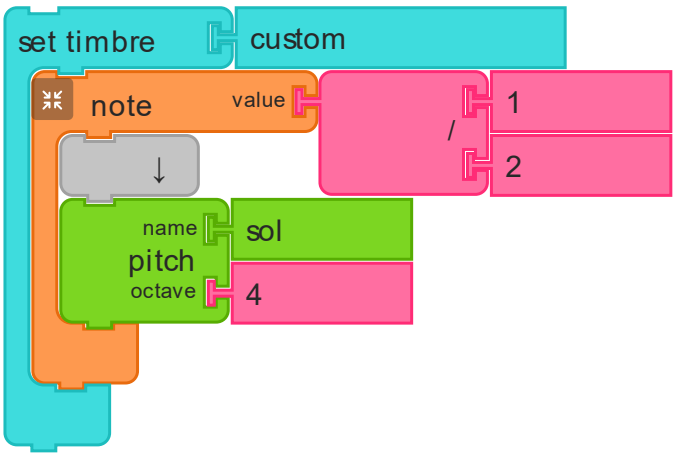
The Duo synth block is a duo-frequency modulator used to define a timbre.





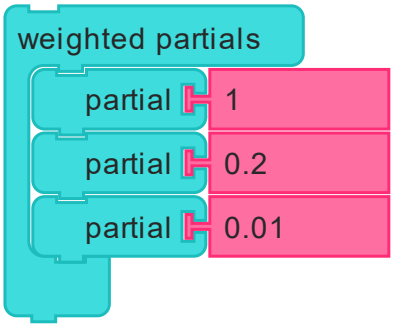
The AM synth block is an amplitude modulator used to define a timbre.



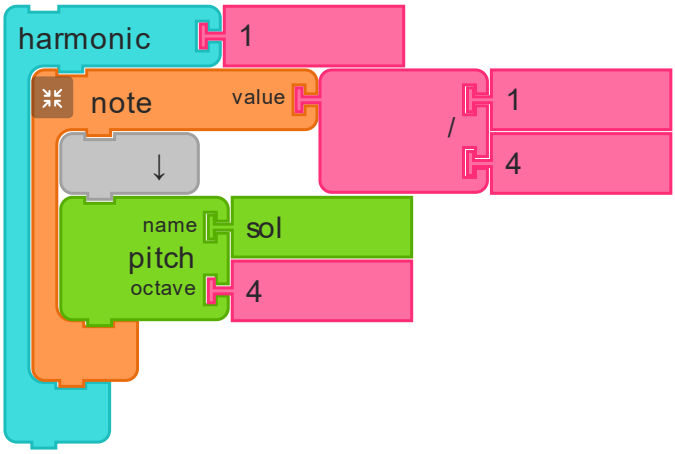


The FM synth block is a frequency modulator used to define a timbre.

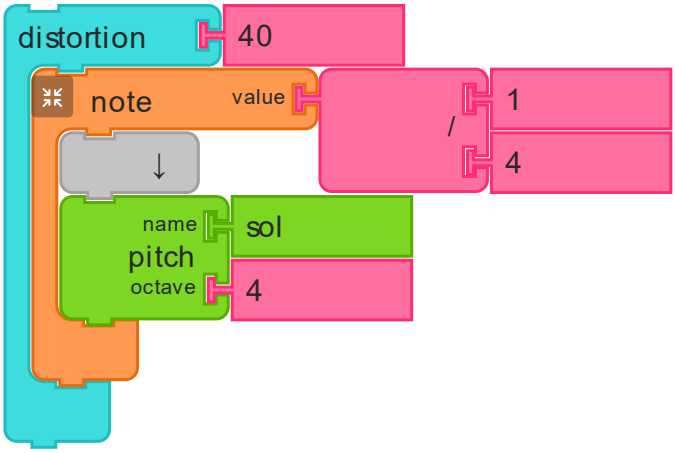
The Partial block is used to specify a weight for a specific partial harmonic.



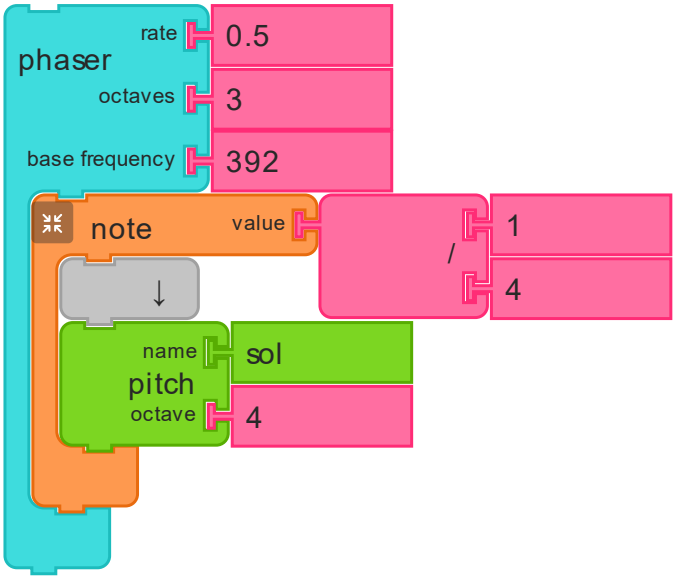
The Weighted partials block is used to specify the partials associated with a timbre.



The Harmonic block will add harmonics to the contained notes.

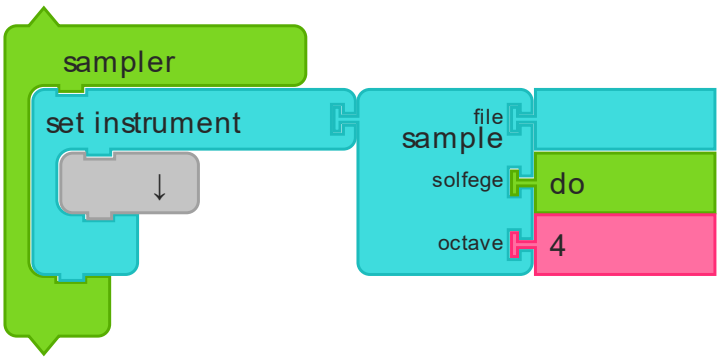


The Distortion block adds distortion to the pitch.

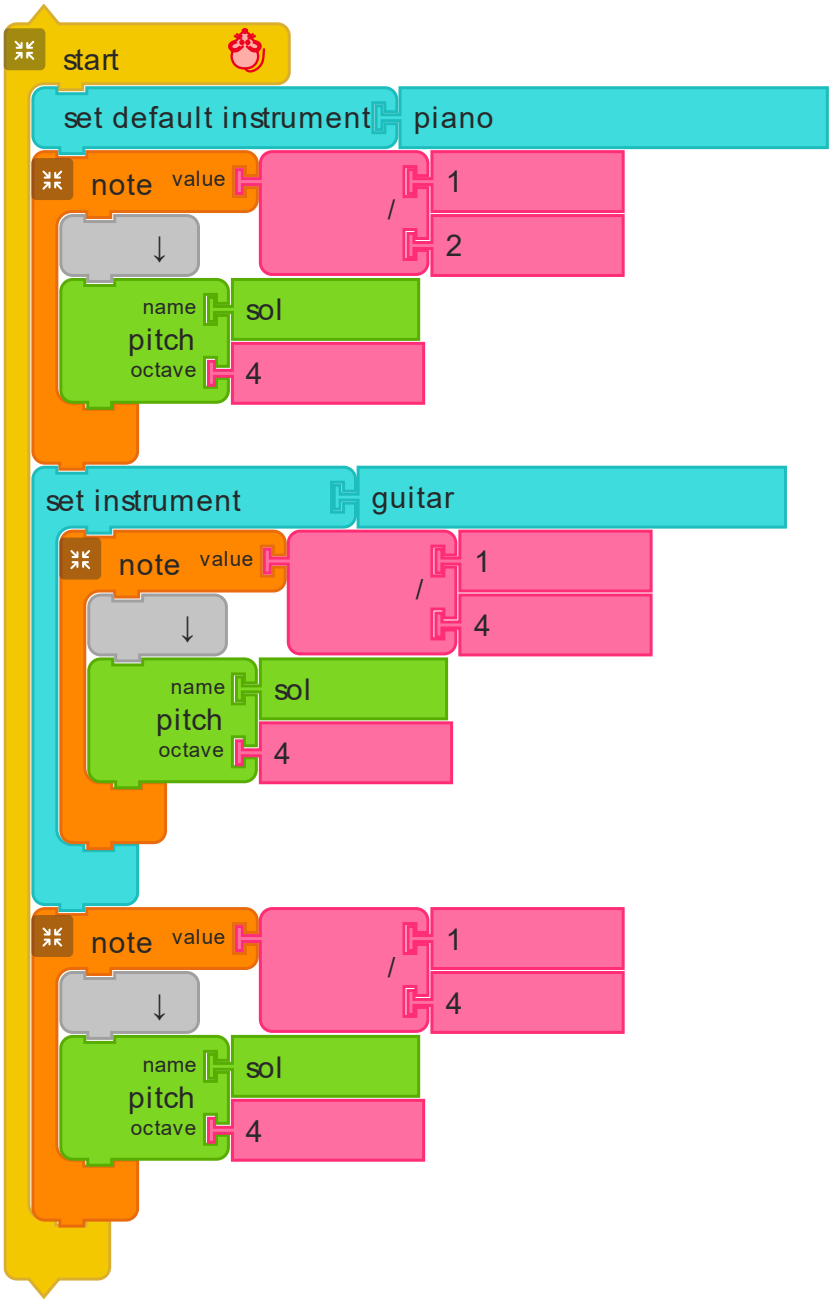


The Phaser block adds a sweeping sound.

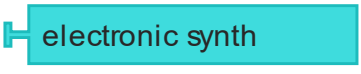
Upload a sound file to connect with the sample block.



Import a sound file to use as an instrument and set its pitch center.



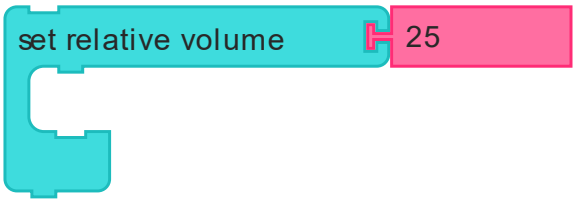
The set default instrument block changes the default instrument from electronic synth to the instrument of your choice.



The Set instrument block selects a voice for the synthesizer, eg guitar piano violin or cello.

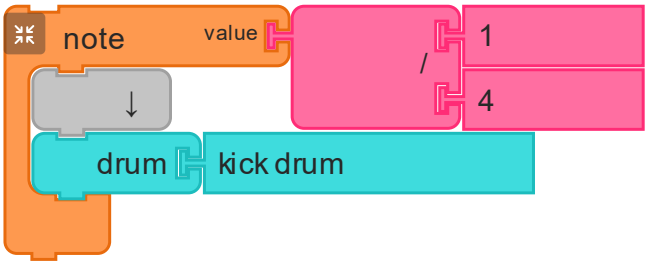
The Master volume block returns the master volume.

The Synth volume block returns the current volume of the current synthesizer.

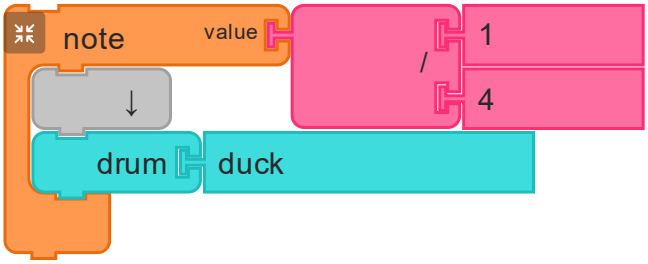


The Set relative volume block changes the volume of the contained notes.

The Noise name block is used to select a noise synthesizer.

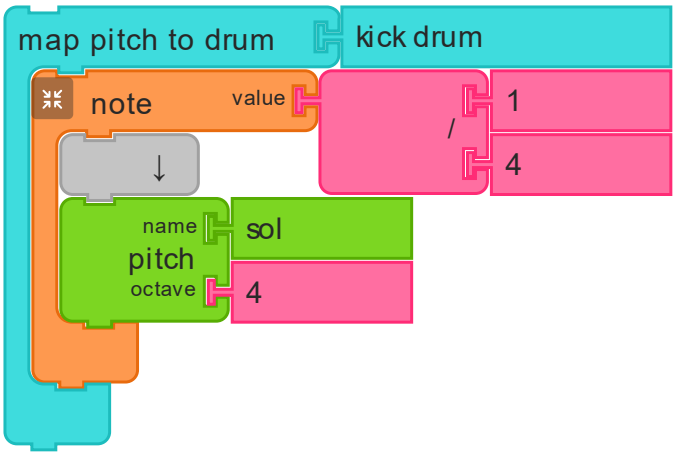


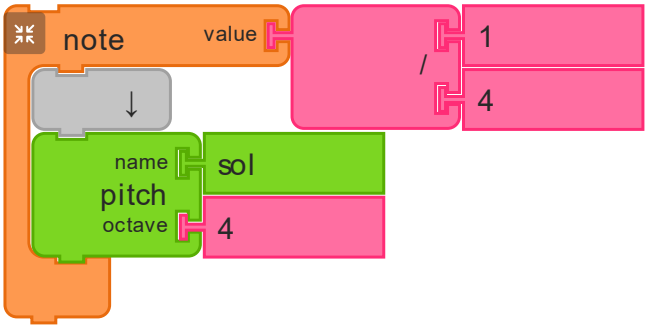
The Drum name block is used to select a drum.



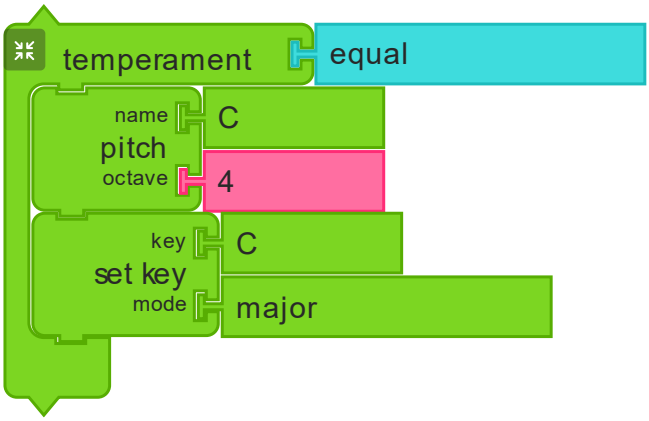
The Effects name block is used to select a sound effect.

The Play noise block will generate white, pink, or brown noise.

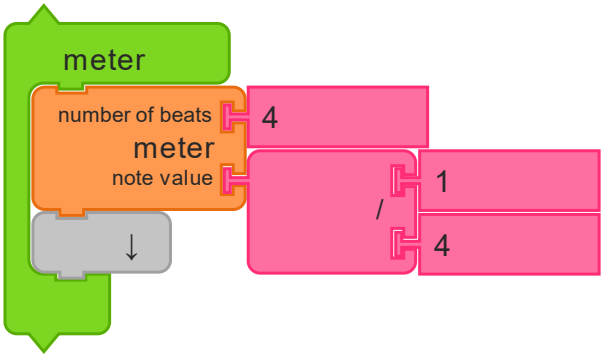




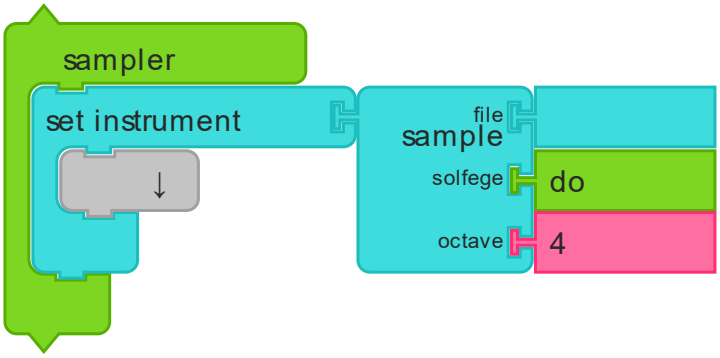
Replace every instance of a pitch with a drum sound.



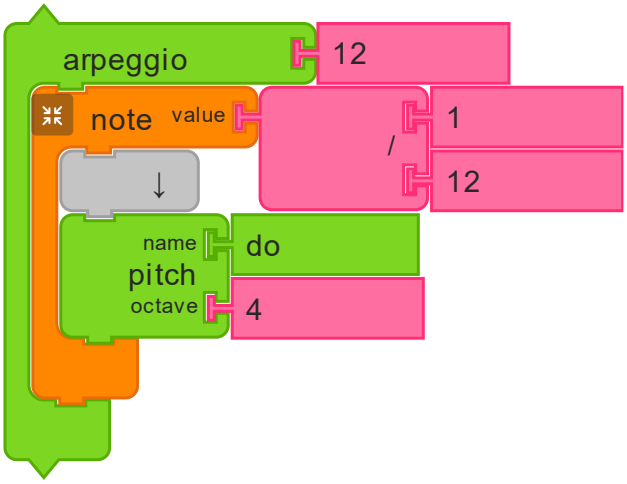
The Temperament tool is used to define custom tuning.



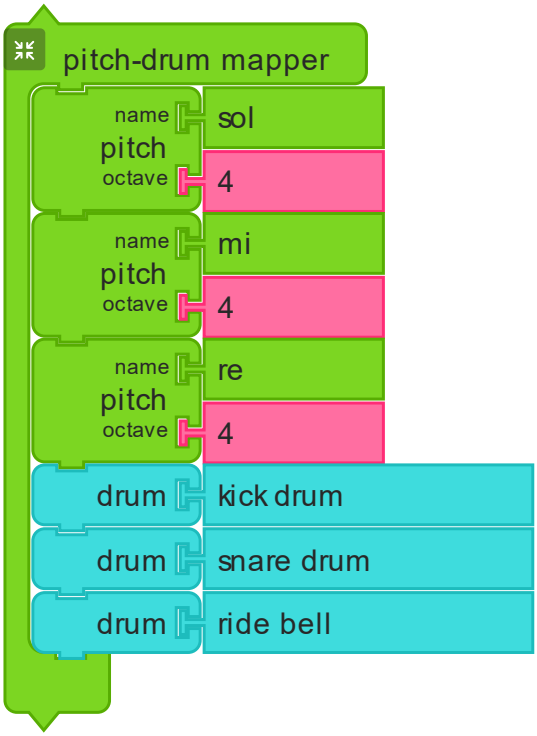
The Meter block opens a tool to select strong beats for the meter.



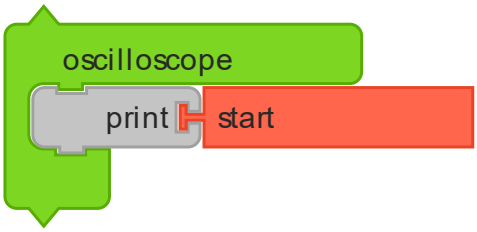
Upload a sample and adjust its pitch center.



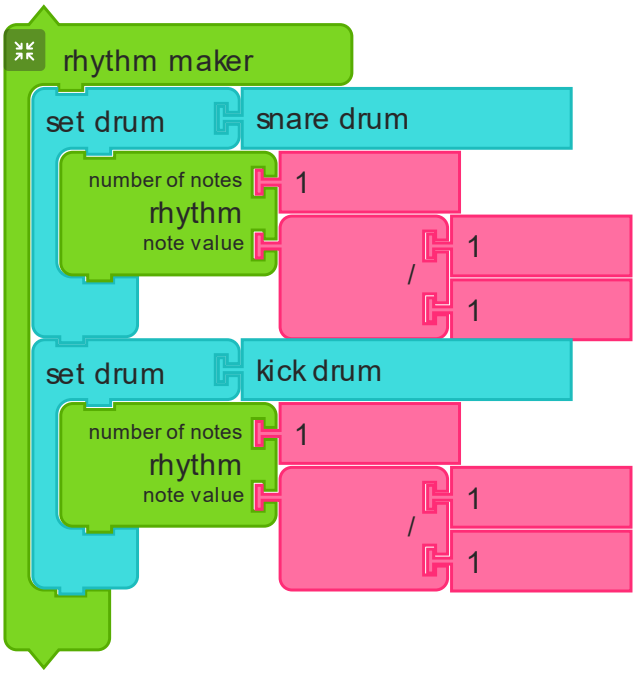
The Arpeggio Widget is used to compose chord sequences.



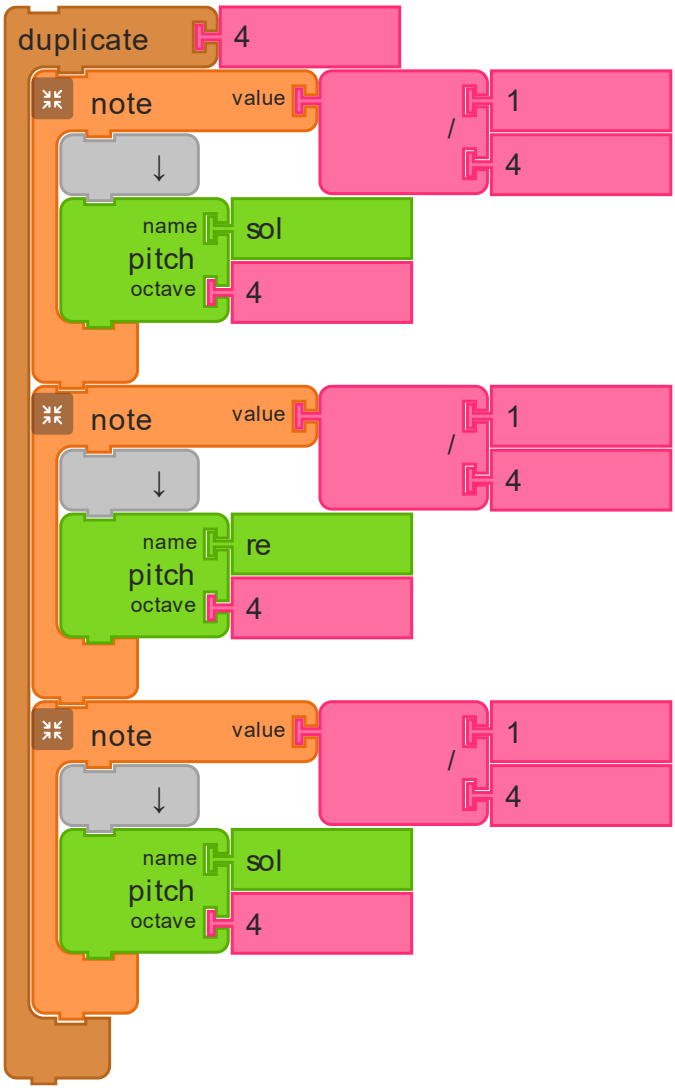
The Pitch drum matrix is used to map pitches to drum sounds.



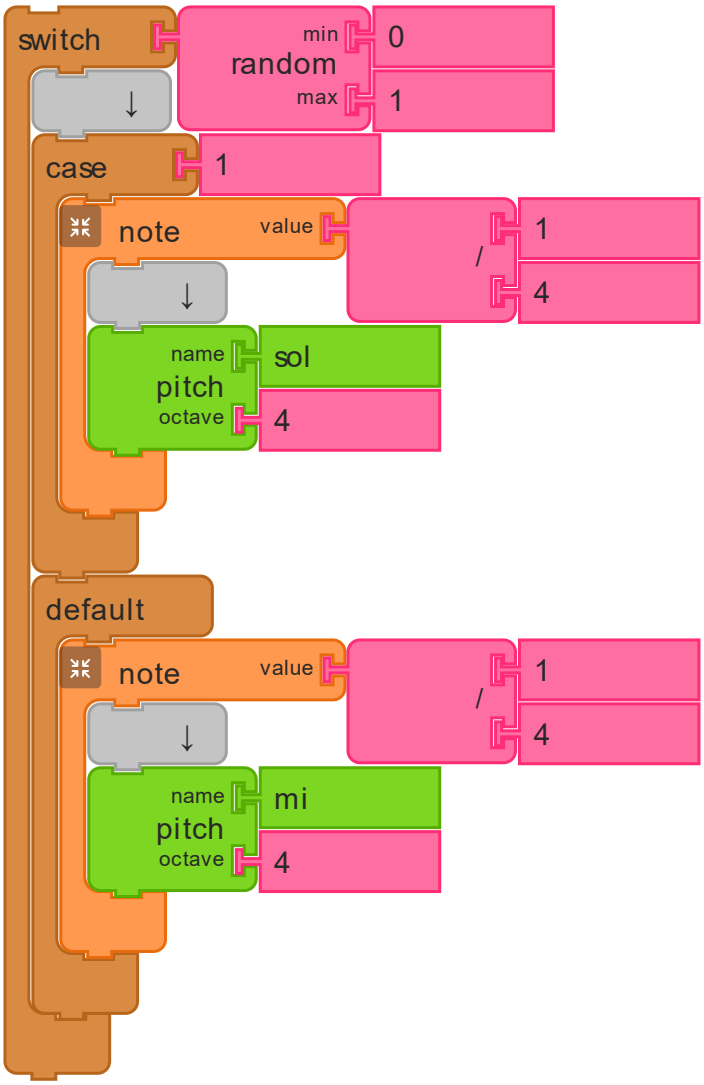
The oscilloscope block opens a tool to visualize waveforms.



The Rhythm Maker block opens a tool to create drum machines.



he Duplicate block will run each block multiple times. The output of the example is: Sol, Sol, Sol, Sol, Re, Re, Re, Re, Sol, Sol, Sol, Sol.



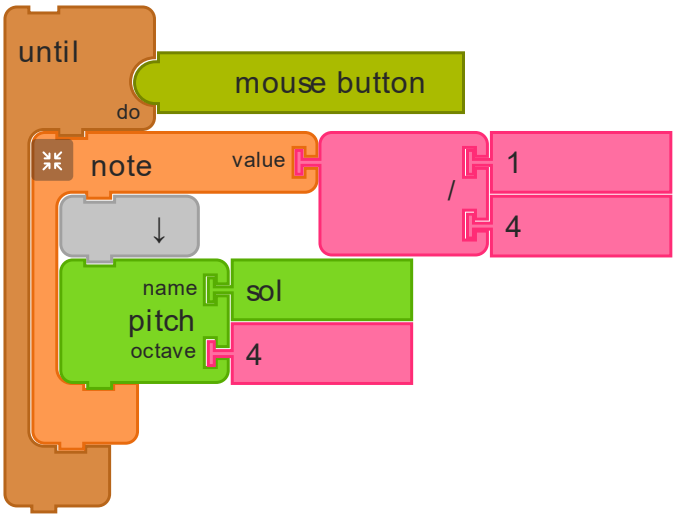
The Default block is used inside of a Switch to define the default action.

The Case block is used inside of a Switch to define matches.

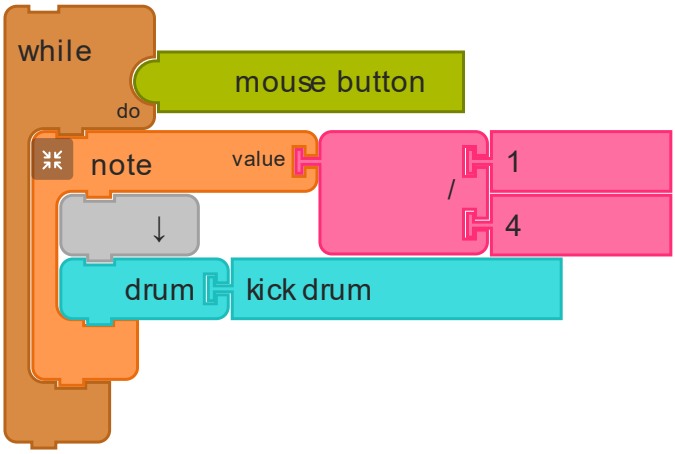
The Switch block will run the code in the matching Case.

The Stop block will stop a loop: Forever, Repeat, While, or Until.

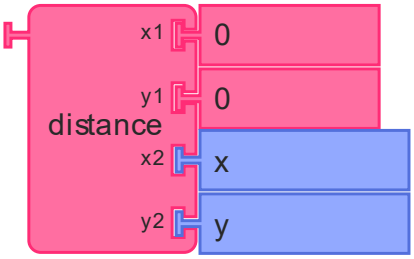
The Waitfor block will wait until the condition is true.



The Until block will repeat until the condition is true.

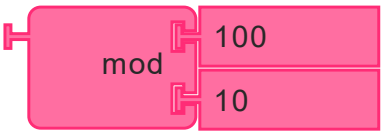


The While block will repeat while the condition is true.

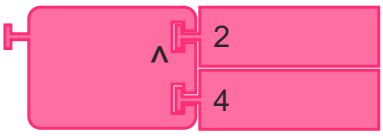


The Distance block returns the distance between two points. For example, between the mouse and the center of the screen.

The Int block returns an integer.



The Mod block returns the remainder from a division.



The Power block calculates a power function.

The Sqrt block returns the square root.

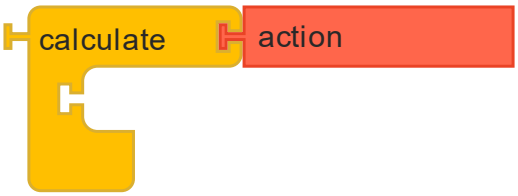
The Abs block returns the absolute value.

The Return block will return a value from an action.

The Return to URL block will return a value to a webpage.

The Calculate block returns a value calculated by an action.

The Do block is used to initiate an action.



The Calculate block returns a value calculated by an action.

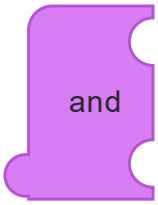
The Arg block contains the value of an argument passed to an action.

The Arg block contains the value of an argument passed to an action.

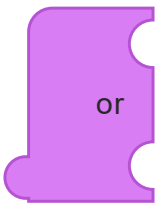
The Box block returns the value stored in a box.

The Not block is the logical not operator.

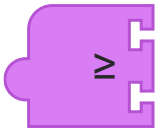
The XOR block is the logical XOR operator.



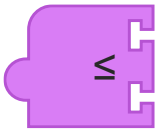
The And block is the logical and operator.



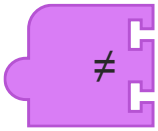
The XOR block is the logical XOR operator.



The Greater-than-or-equal-to block returns True if the top number is greater than or equal to the bottom number.

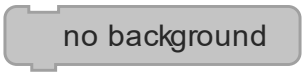


The Less-than-or-equal-to block returns True if the top number is less than or equal to the bottom number.

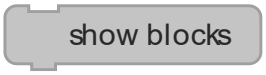


The Not-equal-to block returns True if the two numbers are not equal to each other.

The Boolean block is used to specify true or false.



The No background block eliminates the background from the saved SVG output.



The Show blocks block shows the blocks.

The Hide blocks block hides the blocks.

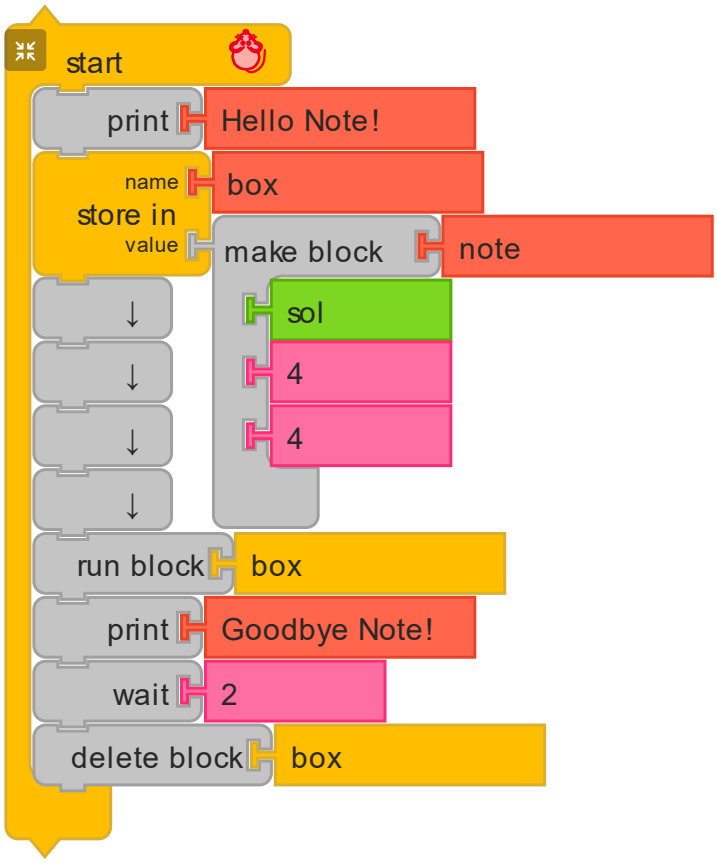
Convert a float to a fraction 0.5 -> ½

The Space block is used to add space between blocks.

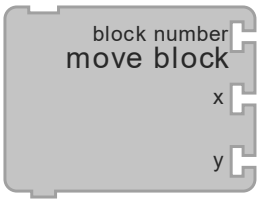
The Space block is used to add space between blocks.

The Wait block pauses the program for a specified number of seconds.

The Comment block prints a comment at the top of the screen when the program is running in slow mode.

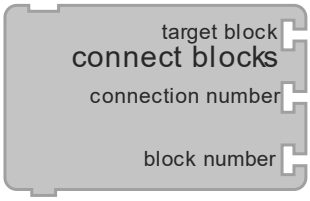


The Delete block block removes a block.

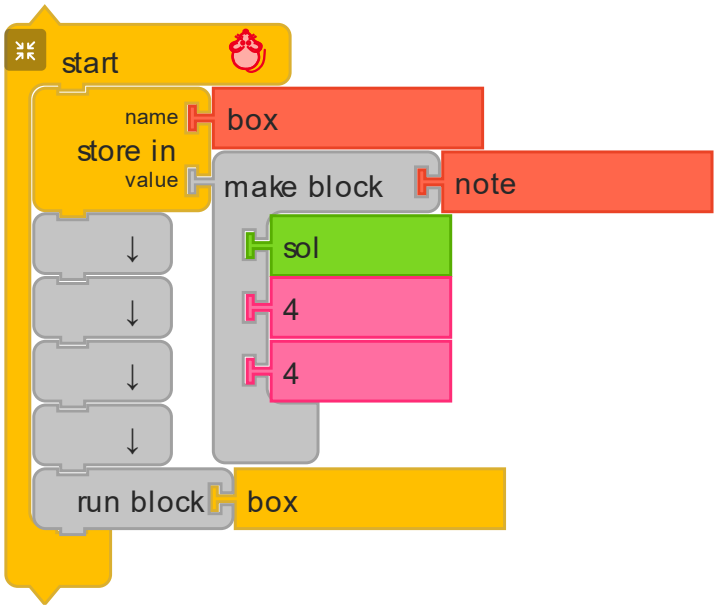


The Move block block moves a block.

The Run block block runs a block. It accepts two types of arguments: block number or block name.



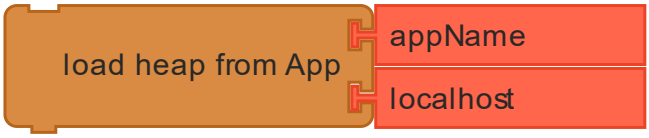
The Dock block block connections two blocks.



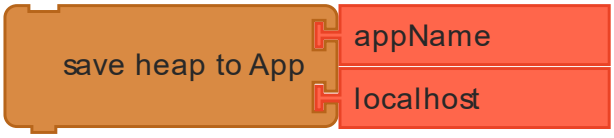
The Make block block creates a new block.

The Open project block is used to open a project from a web page.

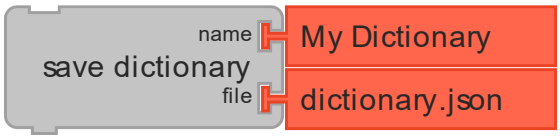
The Open palette block opens a palette.



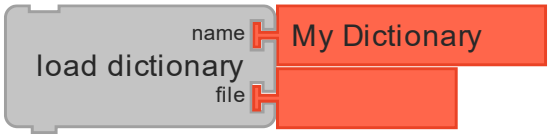
The Load-heap-from-app block loads the heap from a web page.



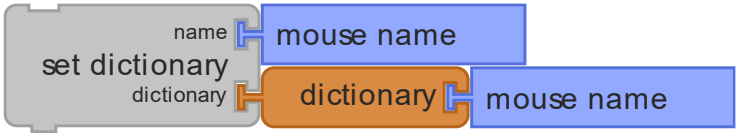
The Save-heap-to-app block saves the heap to a web page.



The Save-dictionary block saves a dictionary to a file.



The Load-dictionary block loads a dictionary from a file.

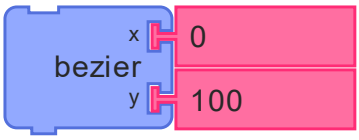


The Set-dictionary block loads a dictionary.

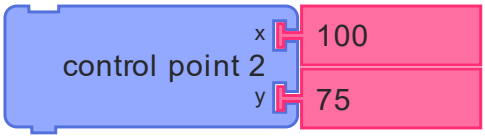
The Save-heap block saves the heap to a file.

The Load-heap block loads the heap from a file.

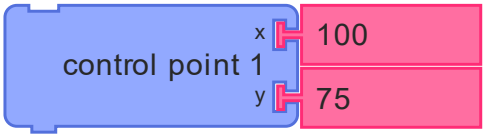
The Set-heap block loads the heap.



The Bezier block draws a Bezier curve.



The Control-point 2 block sets the second control point for the Bezier curve.



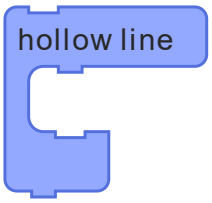
The Control-point 1 block sets the first control point for the Bezier curve.

The Grey block returns the current pen grey value.

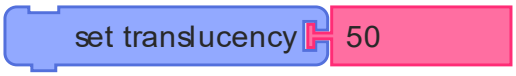
The Shade block returns the current pen shade value.

The Pen size block returns the current pen size value.

The Set font block sets the font used by the Show block.



The Hollow line block creates a line with a hollow center.



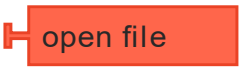
The Set translucency block changes the opacity of the pen.

The Set hue block changes the color of the pen.

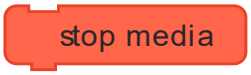
The Set grey block changes the vividness of the pen color.

The Camera block connects a webcam to the Show block.

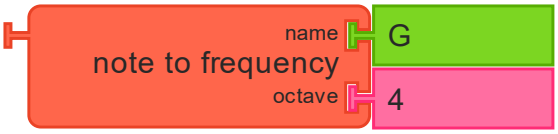
The Video block selects video for use with the Show block.



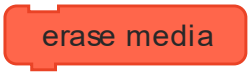
The Open file block opens a file for use with the Show block.



The Stop media block stops audio or video playback.



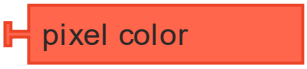
The To frequency block converts a pitch name and octave to Hertz.



The Erase Media block erases text and images.

The Get blue block returns the blue component of the pixel under the mouse.

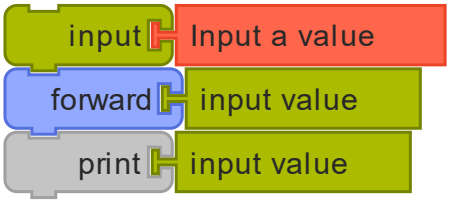
The Get green block returns the green component of the pixel under the mouse.



The Get pixel block returns the color of the pixel under the mouse.

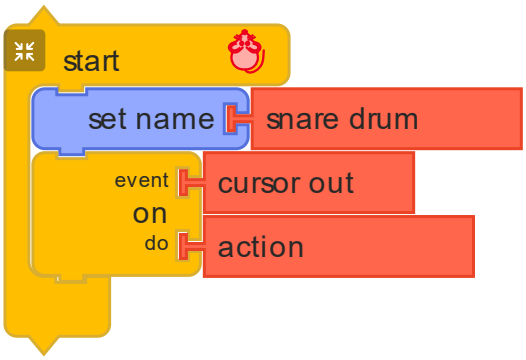
The To ASCII block converts numbers to letters.

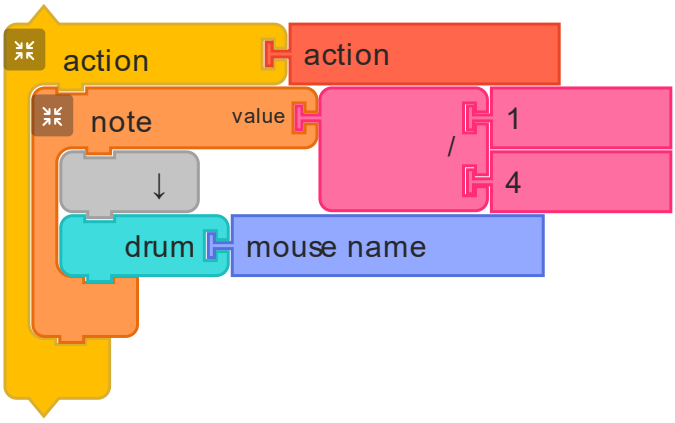
The Keyboard block returns computer keyboard input.



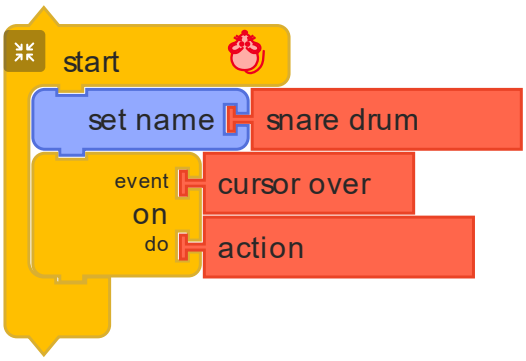
The Input-value block stores the input.

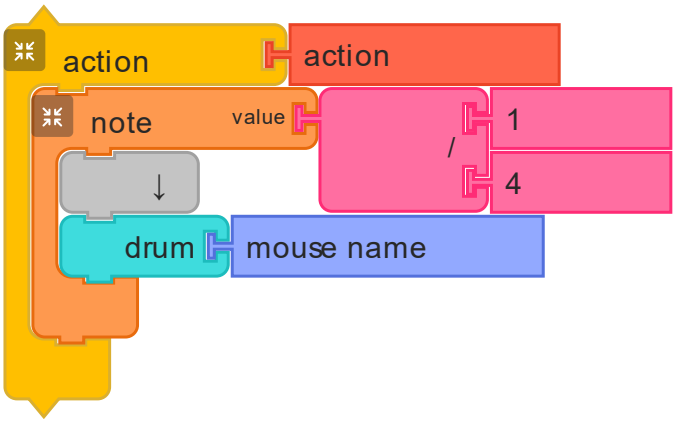
The Input block prompts for keyboard input.



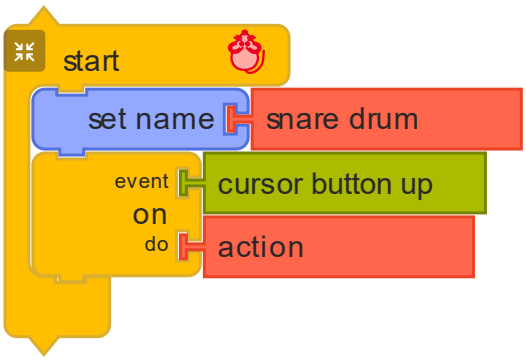


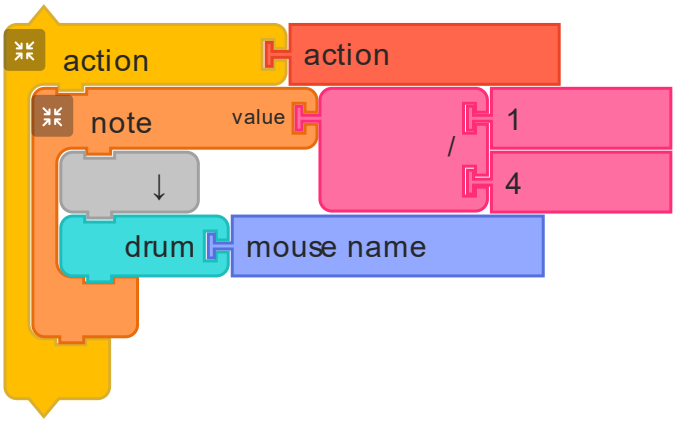
The Cursor out block triggers an event when the cursor is moved off of a mouse.



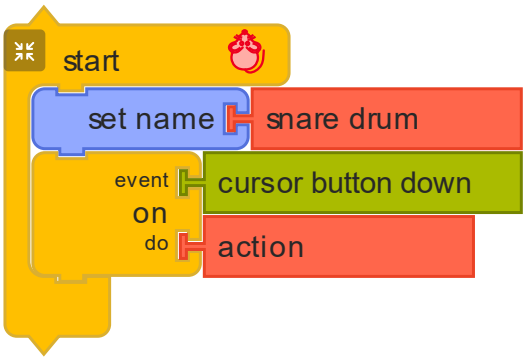


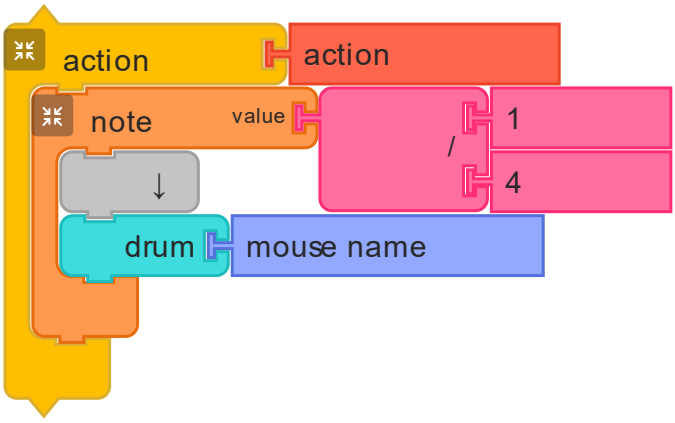
The Cursor over block triggers an event when the cursor is moved over a mouse.



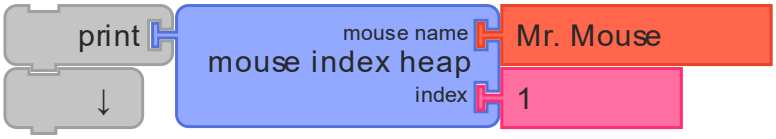


The Cursor button up block triggers an event when the cursor button is released while over a mouse.





The Cursor button down block triggers an event when the cursor button is pressed on a mouse.



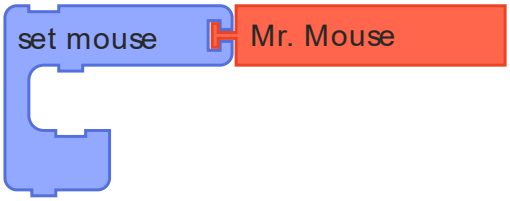
The Mouse index heap block returns a value in the heap at a specified location for a specified mouse.

The Stop mouse block stops the specified mouse.

The Start mouse block starts the specified mouse.

The Mouse color block returns the pen color of the specified mouse.

The Mouse heading block returns the heading of the specified mouse.

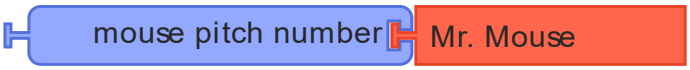


The Set mouse block sends a stack of blocks to be run by the specified mouse.

The Y mouse block returns the Y position of the specified mouse.

The X mouse block returns the X position of the specified mouse.

The Mouse elapse notes block returns the number of notes played by the specified mouse.



The Mouse pitch block returns the current pitch number being played by the specified mouse.

The Mouse sync block aligns the beat count between mice.

The Nth-Mouse name block returns the name of the nth mouse.

The Mouse-count block returns the number of mice.

The Found mouse block will return true if the specified mouse can be found.

The New mouse block will create a new mouse.