Interactive Sequencer in Max – Documentation

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**Project Overview:**

The Interactive Sequencer in Max/MSP is real-time graphical patch that allows users to play with and view musical sequences and interact with them. This project comprises three separate note sequences that are stored in the coll objects with each of them concomitant with the pitch, velocity, and duration. It’s possible to set the auto cycling mode on/off, or program the required sequence with the help of metro, counter, sel, and gate objects: The patch contains a multi-slider; it has to display the sequence data in Real-time as the show is being performed; zl.scramble has been added to insert random variations in every three bangs. Also, there is a real-time working view that provides direct manipulation capabilities where one can change the note values and also playback flexibility. Using the makenote object, MIDI notes are created while using noteout to output the notes for an audible experience. This gadget combines timing, interaction, and randomization into one powerful sequencer and tool for creative experimentation and performances.

**Features:**

1. **Dynamic Sequence Playback:**

The sequencer comes with three individual note sequences obtained from the three coll objects which further subdivided into data of pitch, velocity, and time. Users can toggle between sequences either automatically via cycling or manually, providing flexibility and control over playback. Sequencing is controlled with metro, counter, sel, and gate objects that help manage its flow and provide needed transitions when applied.

1. **Randomization With Multi Slider:**

The active sequence is depicted in a multi-slider object that visually represents the active areas of the notes data in real time. The sequencer also brings more randomization features by shuffling the sequence elements with the help of zl.scramble every three bangs of this element. This feature adds variety and creative potential, allowing users to experiment with randomized playback patterns.

1. **Interactive Live Grid:**

The live grid enhances this interactivity by allowing users to adjust any sequences of notes in another grid interface. This affords a tactile and visual interaction with the sequencer, while updates to the playback are in real-time. Due to the live grid, the data is processed by a scale object that scales the data as needed before generating the MIDI notes.

1. **Playback Control:**

There are six toggles used for playback control where each toggle has a different purpose. There are two stages in the operating handle with the primary toggle activating the metro object which controls the timing and sequence cycling. Additional toggles allow users to manually select sequences and activate the multi-slider or live grid for further interaction. This level of control ensures an intuitive and customizable user experience.

1. **MIDI Note Generation:**

The sequencer generates MIDI notes using makenote, which combines pitch, velocity, and duration data from the selected sequence. The notes are then sent to noteout, providing auditory feedback via a synthesizer. This seamless integration of MIDI functionality makes the sequencer a versatile tool for musical performance and experimentation.

**Patch Structure:**

1. **Timing and Sequence Switching:**

* Toggle 1 (Activate Metro):
  + Starts the metro 500 object, triggering a bang every 500 ms.
  + Activates the counter 3, which cycles through indices 0, 1, and 2.
* sel 0 1 2:
  + Routes the output of counter 3 to three gate objects, corresponding to three sequences stored in coll.

1. **Sequence Playback:**

* Toggles 2, 3, and 4 (Choose Sequence):
* Each toggle corresponds to a sequence in a coll object (sequence1, sequence2, sequence3).
* A user can manually select a sequence, overriding the automatic cycling.
* Counter 4:
* Retrieves indices from the active coll, sending note data sequentially.
* zl.nth 1, zl.nth 2, zl.nth 3:
* Extracts individual note properties:
  + Pitch: MIDI note value (sent to makenote).
  + Velocity: Note intensity.
  + Duration: Length of the note.

1. **Multi-Slider and Randomization:**

* Toggle 5 (Multi-Slider Activation):
* Activates the multi-slider, which graphically represents sequence data.
* Applies zl.scramble every three bangs to shuffle values dynamically, introducing variation.
* zl.scramble:
* Rearranges the sequence values randomly for playback variation.

1. **Live Grid:**

* Toggle 6 (Live Grid Activation):
* Activates the live grid for additional user interaction.
* The live grid is connected to a scale object, which processes the output before sending it to makenote and noteout.

1. **MIDI Note Output:**

* makenote:

Combines the pitch, velocity, and duration data into MIDI notes.

* noteout:

Sends the generated MIDI notes to the built-in synthesizer for playback.

**User Guide:**

1. **Activating Playback:**

To begin playback, turn on the first toggle located at the top left of the patch. This activates the metro object, which starts generating bangs at a 500 ms interval. The metro feeds into a counter that cycles through indices 0, 1, and 2, selecting one of the three sequences stored in coll. This ensures continuous playback of the active sequence.

1. **Selecting a Sequence:**

You can choose which sequence to play using Toggles 2, 3, and 4, located beneath the gates. Each toggle corresponds to one of the three coll objects (sequence1, sequence2, and sequence3). By activating a toggle, the selected sequence's data is routed through the corresponding gate for processing. If multiple toggles are activated, the gate system ensures that only the selected sequence is played.

1. **Visualizing and Randomizing with Multi-Slider:**

To activate the multi-slider, turn on Toggle 5. The multi-slider provides a visual representation of the current sequence, showing note properties such as pitch, velocity, and duration. With zl.scramble integrated, the multi-slider shuffles the sequence values every three bangs, introducing random variations. This feature adds creative diversity to the playback.

1. **Using the Live Grid:**

Turn on Toggle 6 to activate the live grid interface. The live grid allows you to interact with and modify note sequences in a grid-based format. Adjustments made in the grid are processed through a scale object, mapping the values for playback. This feature enables real-time user control over the sequences.

1. **Adjusting Timing:**

To change the playback speed, adjust the interval of the metro object. This can be done by modifying the number attached to the metro (default is 500 ms). Faster intervals will result in quicker playback, while slower intervals will elongate the playback time.

1. **Hearing the Output:**

Once the sequences are processed, they are sent to the makenote object, where pitch, velocity, and duration are combined to generate MIDI notes. These notes are then routed to the noteout object, which plays them through the built-in synthesizer or an external MIDI device. Ensure your audio output is configured to hear the playback.

A screenshot of a computer

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