Lab 1.2

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Computational Music Creativity
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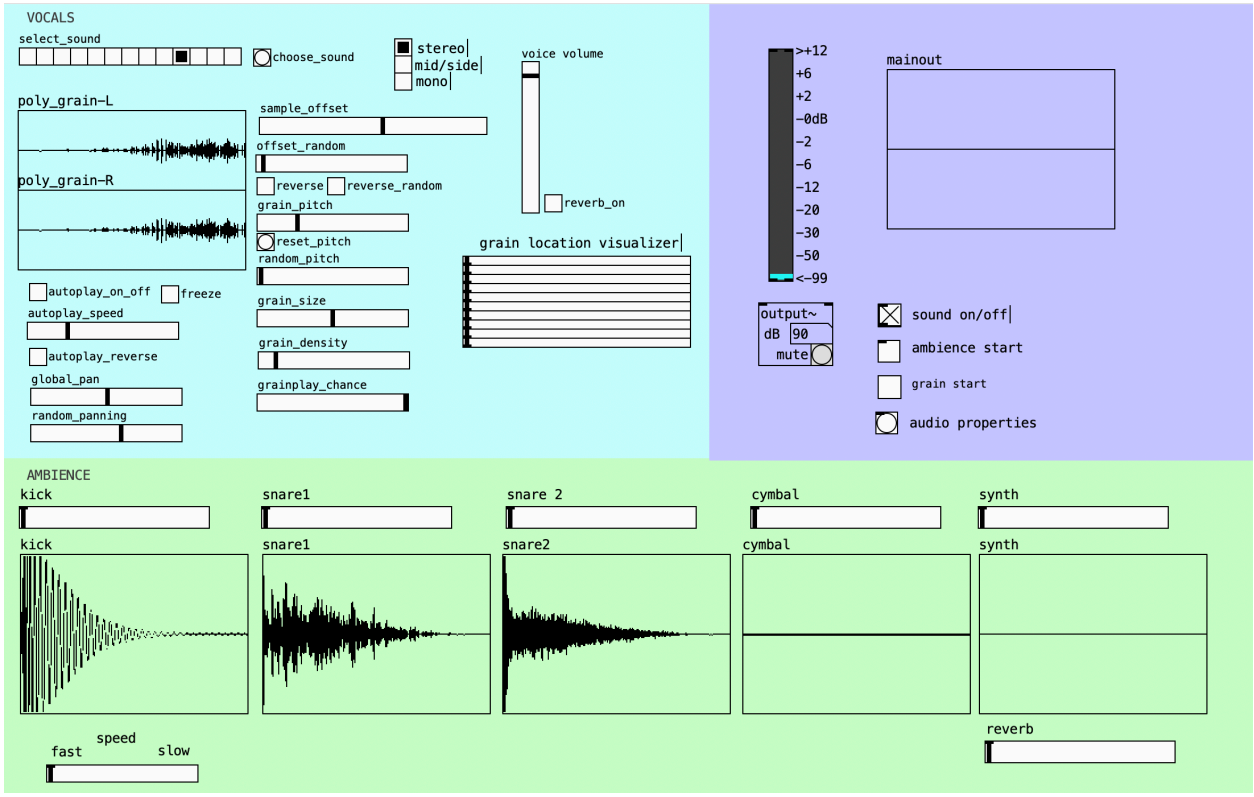
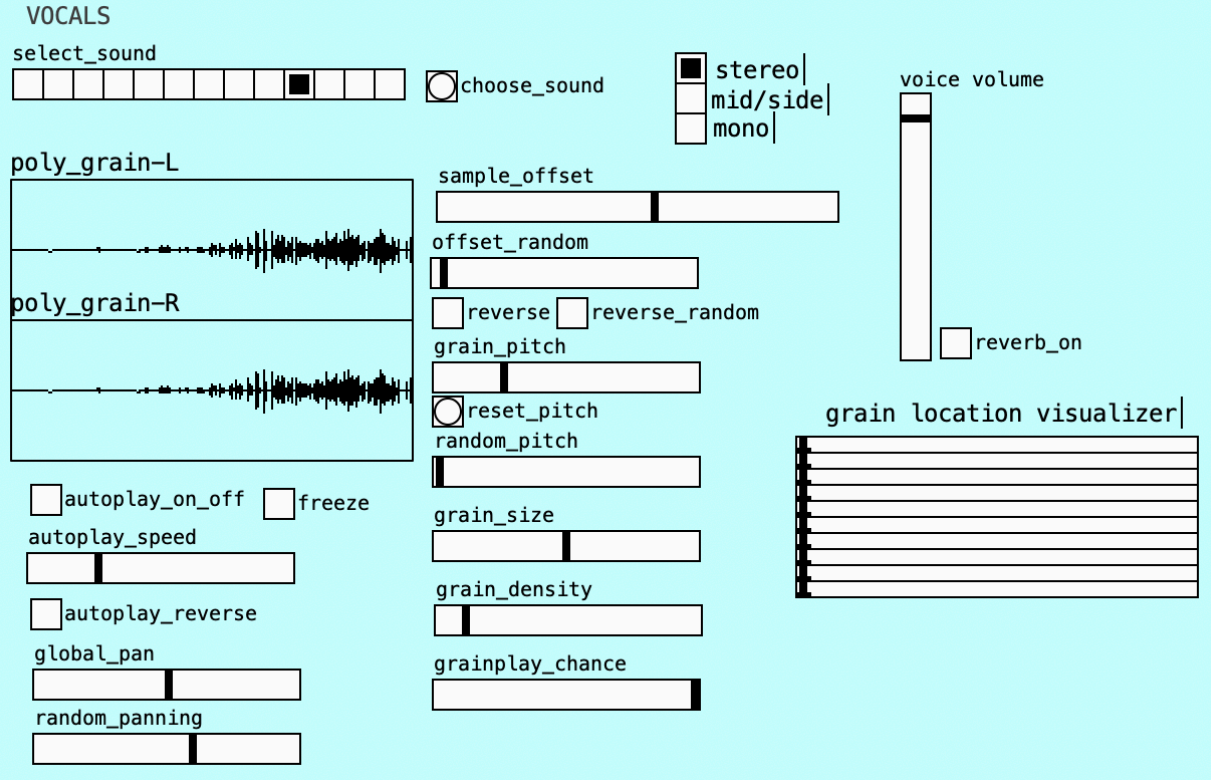
1. The Main Patch



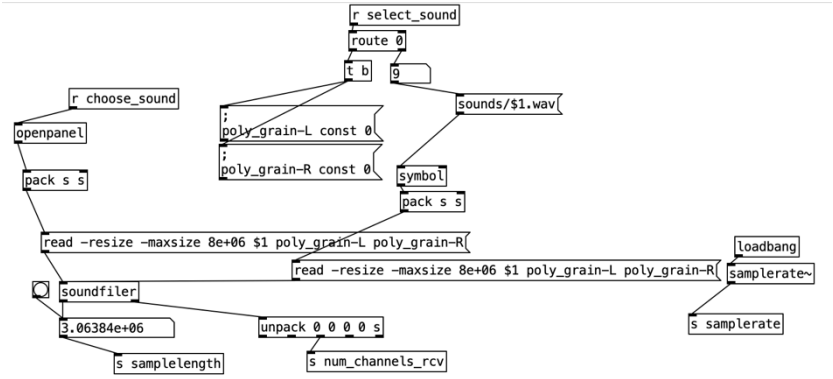
Initially, I had set out to develop a random synthesizer patch, but upon further evaluation, I recognized the need for a greater level of creative control. In light of this, I decided to create an ambient generator patch. The patch is comprised of a granular control system, which allows users to select from pre-loaded samples of simple vocalizations or upload their own samples. The user has the ability to adjust various parameters such as offset, randomness, pitch, grain size, density, panning, and chance of the grain, as well as the ability to auto-play the sample at varying speeds and to freeze it. Additionally, the patch includes a visual representation of the grain location, further enhancing the user experience. To complement the granular control system, a preset reverb effect is included to create an even more ambient sound. The second part of the patch is composed of random ambient background sounds, including a patch that generates random sounds from two chords, as well as pre-loaded samples of a kick, snare and cymbal/gong, to recreate a classic TR-808 sound.

2. Components

2.1 Vocals

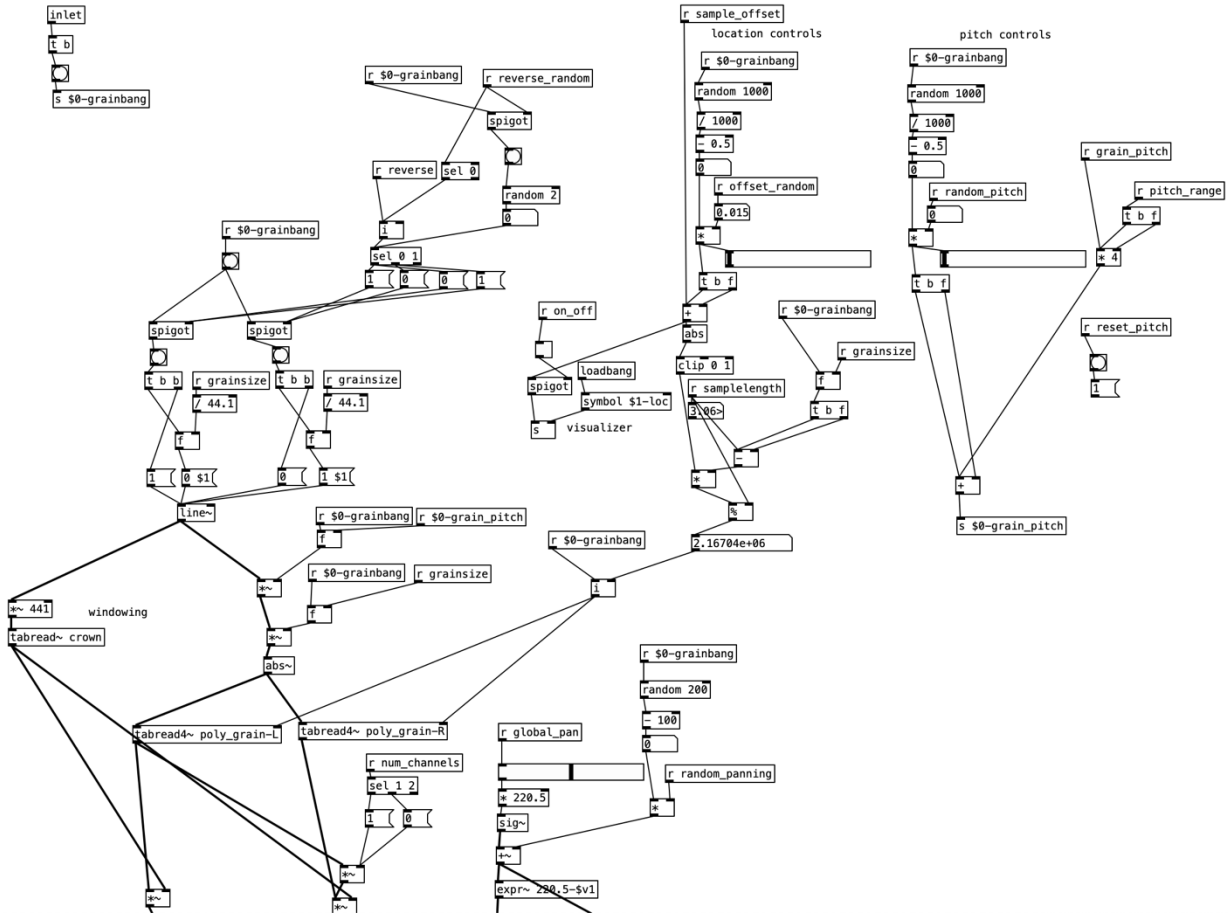


Loading the file for granular synthesis is the first step in this patch. The user can choose between twelve pre-selected sounds or upload their own sound file. Once the desired sound file is chosen, the patch can begin to process the audio. This will involve many different processes, such as granular synthesis, sample offset, and other types of sound manipulation. Depending on the patch's parameters, these processes will affect the sound in different ways. For example, the grain modulation is enabled, it can change the pitch of the grains. Once these different processes are carried out, the patch can then apply effects such as the preset reverb in the patch. These effects can be used to shape the sound and make it sound fuller, more balanced, and more interesting.

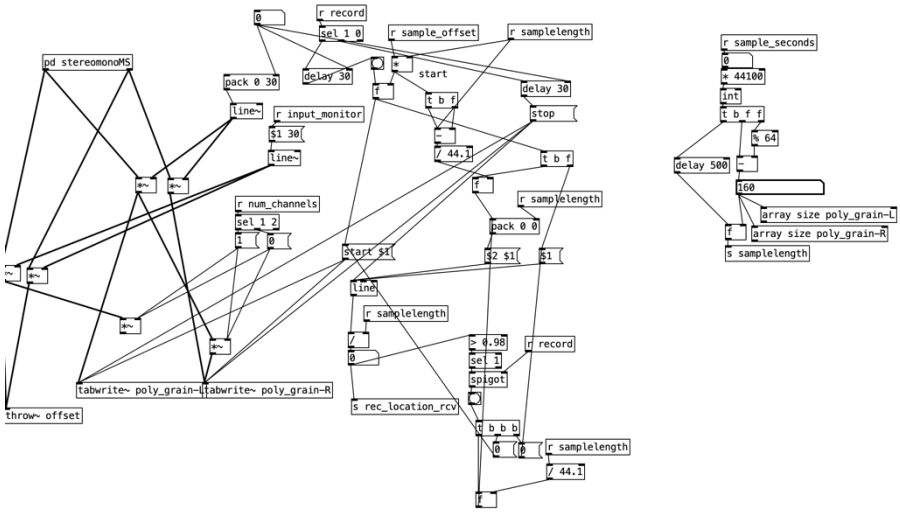


The initial step in utilizing this patch is the loading of the sound file for granular synthesis. The user has the option to choose from a selection of twelve pre-selected sounds or to upload their own sound file. Once the desired sound file has been selected, the patch proceeds to process the audio utilizing a variety of techniques, such as granular synthesis, sample offset, and other forms of sound manipulation. The specific parameters of the patch will influence how these processes affect the sound, for example, when grain modulation is enabled, it can alter the pitch of the grains. After these various sound manipulation techniques have been applied, the

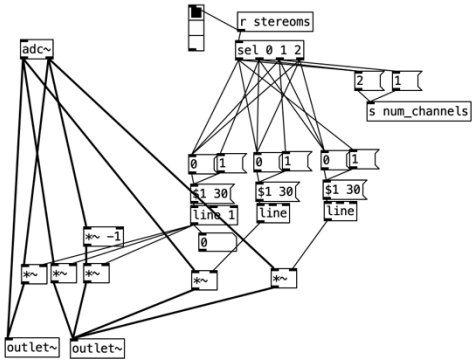
patch can then integrate effects such as a preset reverb, which can be used to shape the sound and enhance its overall quality, making it fuller, more balanced, and more engaging.



The idea of this grain synth is to allow the user to control the location, pitch, size, and density of each grain of the chosen sample. With the use of the offset presets, window type, and reverb, the grain can be used to produce a variety of creative and intricate sounds. Additionally, the grain is frequently used for sound effects, enabling producers to achieve a uniquely textured and complex sound. Whether used for a subtle layer of ambiance or a dramatic sonic effect, the grain provides a powerful tool for audio creators.

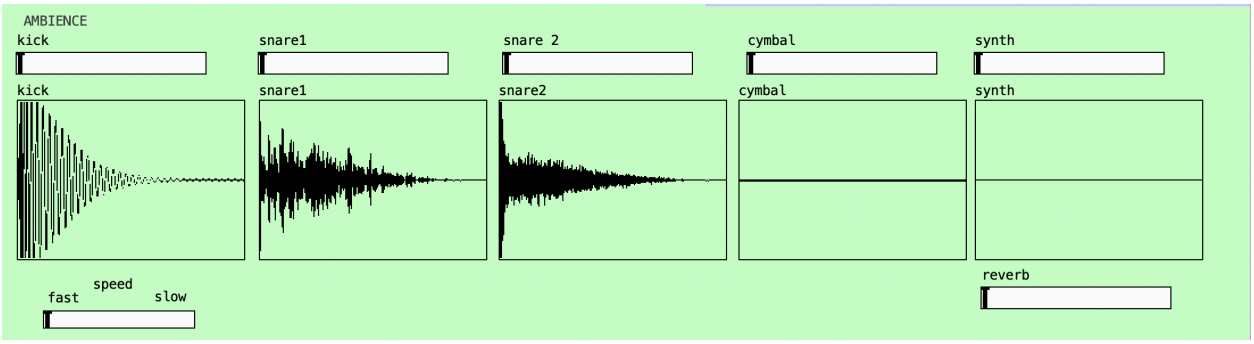


In the field of audio production, an offset refers to the designated starting point or position of a specific segment of audio within a larger audio file. This starting point is commonly quantified in samples or milliseconds and is utilized to establish the point of initiation for various audio processes such as playback, looping, and other forms of audio manipulation. In addition to its use in defining the starting point of an audio segment, the term "offset" can also be utilized to express the temporal discrepancy between two audio signals, as is often the case in the synchronization of audio and video in multimedia productions. In a patch, this offset can be achieved through the utilization of delay effects.

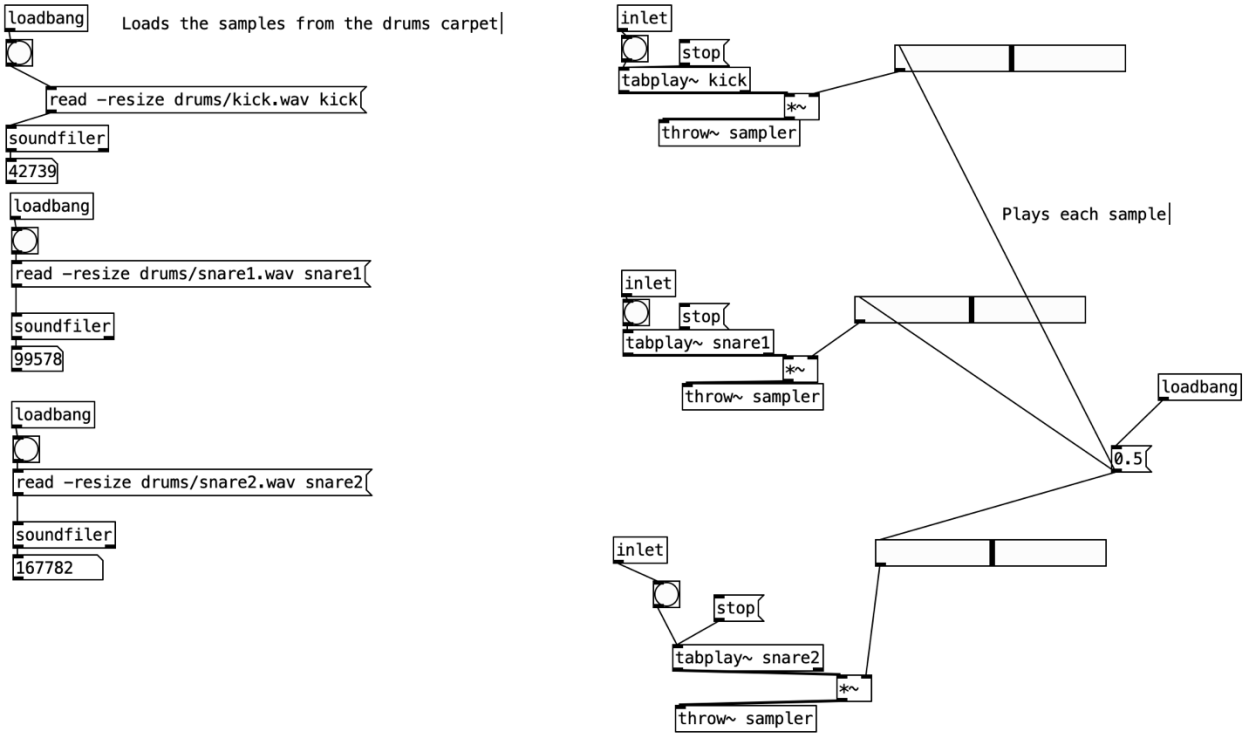


The implementation of stereo and mono audio options is currently based on user selection. However, additional development is required to ensure optimal functionality.

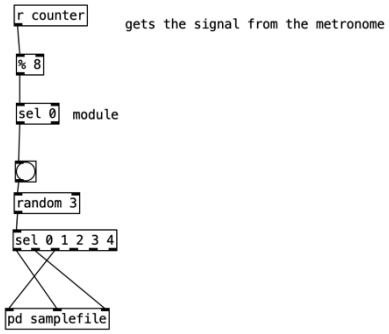
2.2 Ambience



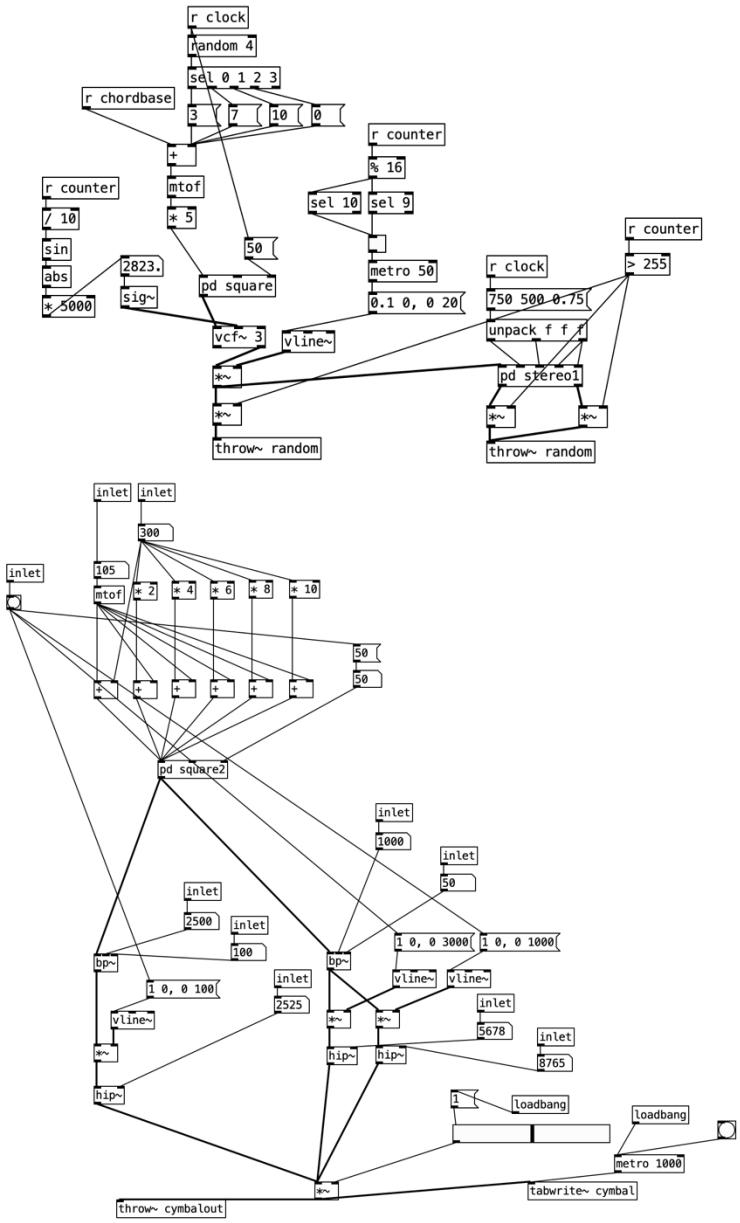
The ambience component of the audio is composed utilizing a random synthesizer generator and three pre-loaded samples. The user has the ability to adjust the volume and tempo of the component. Additionally, a basic preset reverb effect is also incorporated.



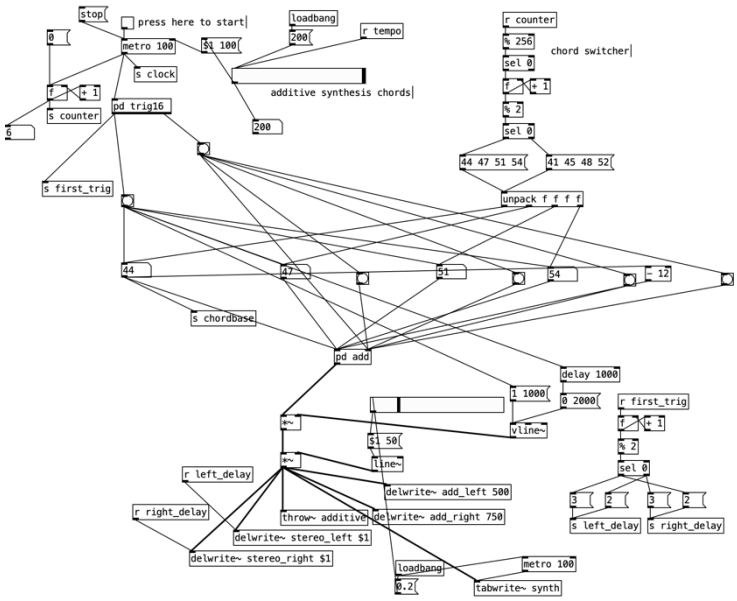
Initially, upon loading the patch, the samples are immediately loaded and displayed within the corresponding arrays on the graphical user interface.



A randomizer feature, which is synchronized with the metronome signal, is utilized to play the samples in a randomized manner, thereby providing a unique and dynamic audio experience for the user.



The implementation of the randomizer feature represents one of the most complex and time-consuming aspects of the audio production process. In addition to utilizing pre-loaded samples, this component also incorporates the use of phasors and oscillators to generate a variety of random sounds, adding a level of complexity and depth to the overall audio output.



To enhance the overall spatial quality of the audio output, a method of simple additive synthesis is employed at the final stage of the audio production process. This technique is based on the use of two chords, which are played randomly in accordance with a counter system. Additionally, to further enhance the ambient nature of the audio output, a series of simple delay and reverb effects are incorporated to provide a sense of depth and space.