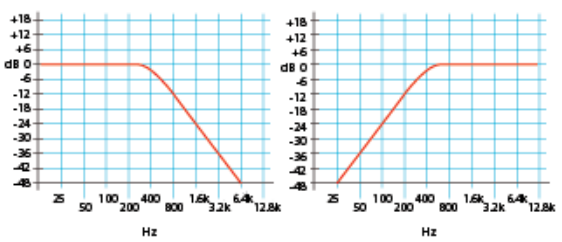
Synthesizers

This is a Roland synthesizer it is a electronic musical instrument, there are different types of synthesizers for example there's one for vocals and another for instruments. Synthesizers change the type of sound that is put through the machine; artist such as t-pain to change the effect of the voice. They also use instrument synthesizers to change the sound of the instrument. Now days they have virtual synthesizers on music software's such as Cubase, Fruity Loops, Reason and many more. This makes it much easier to use the synthesizers. These have developed from old time pedal synthesizers to virtual programmed synthesizers.

All synthesizers have an electronic oscillator inside it. This is an electronic circuit that produces a repetitive electronic signal, often a sine wave or a square wave.

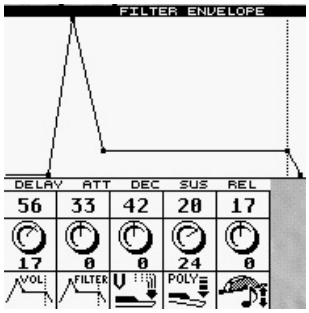
A low-frequency oscillator (LFO) is an electronic oscillator that generates an AC waveform at a frequency below 20 Hz. This term is typically used in the field of audio synthesizers, to distinguish it from an audio frequency oscillator. Many producers would use this to create their own sounds and so that they can be unique. Many synthesizers have a filter which is one of the key elements in the sound of any Synthesizer, new or old. Filters have other uses, too: they can add character to recorded acoustic-instrument tracks, for instance.

A filter is a signal processor. When it's fed an input, which might come from the synthesizer's own oscillators, a recorded track, or a live microphone, it changes the signal in some way. It could apply to any effects device. When a signal passes through a filter, the amplitudes of some of its component frequencies will be reduced, or attenuated. A filter can also increase the amplitudes of some frequencies and leave others unaffected.

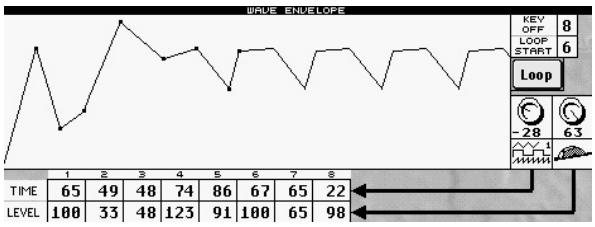


This diagram shows the frequency response of a lowpass filter (left) and a highpass filter (right).

It's important to understand that a filter can't add components to a sound that wasn't there to begin with. The filter cuts or boosts only those frequencies that are already present. Some filter modules also have a distortion stage, which can be used to add new frequencies, but adding distortion is not the same as filtering.
There are two types of envelopes that are contained inside synthesizers: A dynamic Module which forms a continuous movement. The envelope can change the sounds and make it sound percussive or with a long fade-in and fade-out. The standard Envelope form is “ADSR”, which start with attack time (A) from Minimum level to Maximum, then falls back to Sustain level (S) with Decay (D) time. After key release with Release time ® the signal will go back to 0 (if Sustain level was at 0 nothing happens after Decay time has passed).



A Multisegment Envelope allows to set times and levels, the best and most flexible forms are time-level envelopes, the more segments they have the more complex it can be, the most complex envelopes can be found in software like “Absynth” or “FM8”



Samplers

This is an electronic musical sampler, it's called an akai mpc 2000; a type of sampler. This is closely related to a synthesizer but it generates sounds from scratch instead of putting sounds through the device. However they usually use sample sounds then plays it back on how it is configured. Now days there are much more updated ones; there are different ones with great technology as where you can put sample CD's in it. Now you can get software samplers which are inside the programme itself and you can do the exactly the same as if you had it externally. The beauty of samplers is that you can either create your own drum kit or you can sample different songs to make a remix, this may not be making your own sounds/music, however you will gain fun out of it.