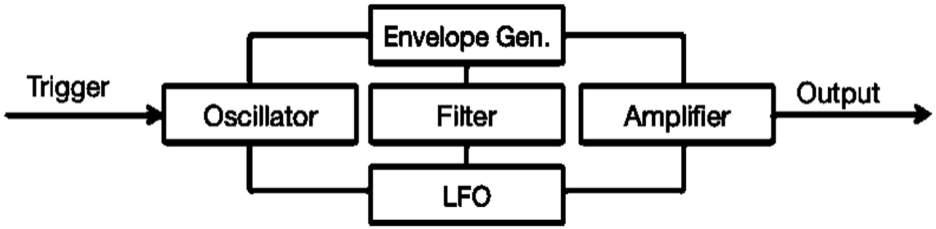
Synthesis - Knowledge Organiser

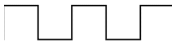
GLOSSARY	
Synthesiser	An electronic sound generator capable of creating and manipulating synthetic sounds
Oscillator	A device that generates waveforms used for sound generation and modulation
Monophonic	A synthesiser that can only play one note at a time
Polyphonic	A synthesiser than can play more than one note at a time
Glide/Portamento	A control used to make one note slide smoothly into another when played in succession
LFO	Low Frequency Oscillator - A control signal used to alter a parameter over time

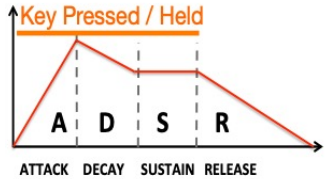
SOFTWARE VS. ANALOGUE SYNTHESISERS

Benefits of Software Synthesisers	Benefits of Analogue Synthesisers
• Can be automated, MIDI controlled and easily sequenced • DAWs with global tempo allow for the synchronisation of LFOs and arpeggiators • Better signal-to-noise ratio • Wide variety of pre-sets available • Can create multiple instances of a pre-set • Stays in tune (analogue synth can go out of tune when they heat up) • Has access to more envelope stages, waveform and filter types	• Analogue sounds 'warmer' due to the imperfection associated with it • It is possible to sync analogue equipment using CV/gate systems • Less reliant on pre-sets and sounds more unique • 'Hands-on' interface making it simple to adjust settings 'on-the-fly'

SYNTHESISER WORKFLOW



WAVEFORMS	
	**Sine** – Pure tone
	**Triangle** – Slightly harsher tone compared to sine
	**Sawtooth** – Even and 'edgy' sound
	**Square** – 'Hollow' and 'woody'
	**Pulse** – 'Nasal' sounding

ENVELOPES		
Attack	The time taken for the parameter to increase from 0 to the max level	
Decay	The time taken for the parameter to decrease from the max level to the sustain level	
Sustain	The level at which the parameter is held whilst the key is pressed down	
Release	The time taken for the parameter to decrease to 0 one the key is released	

TYPES OF SYNTHESIS	
Additive Synthesis	Multiple simple waveforms (sine waves) are combined to create a more complex waveform
Subtractive Synthesis	A harmonically rich waveform is shaped using filters to remove specific frequencies
FM Synthesis	One oscillator (modulator) is used to modulate the frequency of another oscillator (carrier)
Granular Synthesis	A waveform/sample is split up into 'grains' and manipulated