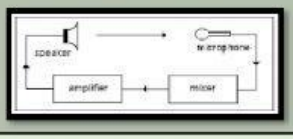
Nat 4

Technological terms/ processes/controls & effects

National 4	apps arrange window arrangement clipping feedback file management frequency response intro/outro lead vocal polar patterns (cardioid and omnidirectional) popping and blasting proximity effect sibilance take tempo	click track copy, cut and paste dry mix/wet mix effects pedals final mix general MIDI (GM) guide vocal input/output mute overdub peak sequencer signal path synchronisation (sync) WAV/AIFF file	compression/expansion effects (FX) fader line level microphone level tone control transport bar/controls	

LIVEWORKSHEETS

Nat 4 Technological Terms

apps	An app is a software application that runs primarily on mobile devices such as smartphones and tablet computers.
Arrange window	The window in a digital audio workstation where the recorded information is accessed.
arrangement	How a song or piece of music is structured.
clipping	This is where a threshold level has been passed. In digital recording, any signal above the 0db threshold will cause clipping. It can be a severe and potentially damaging form of distortion that happens when a signal is too high for the piece of equipment it is being fed into. This can be particularly damaging to loudspeakers. Manufacturers include many safeguards to avoid clipping in their equipment. It is very important to monitor meters and input lights. Above is what a good signal should look and sound like, with no clipping or distortion. *Notice the above signal is much stronger resulting in the track being "clipped." Notice also the difference in sound quality.*
feedback	This is a sound loop where the signal into an input device such as a microphone is amplified through loudspeakers. This is again picked up by the microphone and amplified further through the loudspeaker. Feedback is usually characterised by a high-pitched whine, although several factors affect the sound, for example type of microphone, acoustic properties of the room, loudspeaker type, microphone placement etc. 
File management	This refers to how all data from a recording project is stored. It is important that folders are labelled and all associated files are sited within that folder enabling easier location of all the tracks within a project.
Frequency response	Frequency response is the range of frequencies that a microphone will reproduce at a similar level. Some microphones have switches that alter their frequency response, such as a low-cut filter.
Intro/outro	Not all songs and pieces of music have an intro or an outro, but the intro is a section of music at the start and an outro is a section of music found at the end of a song or piece of music.

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Nat 4 Technological Terms

Lead vocal	The main vocal part in a song.
Popping and blasting	Caused through a blast of air from a plosive sound such as a 'b' or a 'p' type sound. This sudden rush of air close to the diaphragm of a microphone is low-frequency energy, causing the typical low-frequency thumping sound. This can be overcome by either moving a little further from the microphone or using a pop shield. *1. Without pop guard.* 2. *With pop guard.*
Proximity effect	A low-frequency boost that occurs in cardioid dynamic microphones when they are placed particularly close to the sound source. This unnaturally colours the sound and can be detrimental to the overall signal, but in some live situations it can help lift a vocal out of the mix slightly. Proximity effect is an inherent characteristic of a dynamic microphone, resulting in a rise of low frequencies when the microphone is used at very close working distances. The SM58 dynamic microphone is the most commonly used live microphone due to the warm sound it creates, its robust handling and its price.
sibilance	A sound with exaggerated 's' and 'sh' sounds caused by a rise in the frequency response around 4 kHz to 7 kHz. Noticeable on **vocal sounds and cymbals**. It can cause problems and often depends on a number of factors, such as microphone choice and the proximity of the microphone to the singer. There are several ways of correcting sibilance involving microphone choice and placement, or post-recording using a de-esser, which is a compressor-type processor designed to react to frequencies rather than sound level. *1. Silly sentence without any sibilance reduction.* *2. Same sentence with sibilance reduced. Notice the slight shortening, and volume reduction of the "s" sound.*
take	A performance recorded on a single pass.
tempo	The speed of a piece of music.

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Nat 4 Processes

USB (port)	A Universal Serial Bus (USB) port is a communication protocol between electronic devices. It was developed in the mid-1990s and allows much faster transfer of data between a range of devices. USB ports are standard on most computers and allow a range of MIDI, audio, storage and other devices to be connected and recognised. USB ports can also send power to some peripheral devices.	
click track	A metronome track recorded onto one track of a multitrack recorder to provide a guide tempo and count-in for the performers. Click tracks are usually generated electronically and so ensure that performers don't slow down or speed up. Care must be taken not to include the click track in the final mix of the music.	
copy, cut and paste	Useful tools when editing both audio and MIDI. These functions enable the movement of data from one part of the recording to another.	
dry mix/wet mix	**Dry** – opposed to **Wet** where effects have been a signal with no effects applied, as applied. **Wet** - A signal that has been processed in some way.	Clean "DRY" sound. Distorted "WET" sound.
effects pedals	Often used in live settings, effects pedals cover a range of different effects from reverbs, distortions and delays to vocal processing. These can be switched on and off via a pedal (stompbox) on the floor.	
final mix	The version of the mixdown that will be submitted as a stereo master. The final mix features a balance of instruments that all involved are happy with, additional effects that enhance the overall production and perhaps the application of some dynamic processors, usually equalisers and compressors, to the overall mix.	
general MIDI (GM)	A digital language that enables devices to talk to one another in a standardised format. While MIDI was originally devised for keyboards and musical instruments, more and more effects processors and devices are responding to it and may be programmed using MIDI. General MIDI became an industry standard set of sounds and controllers which promoted a greater degree of compatibility across equipment.	

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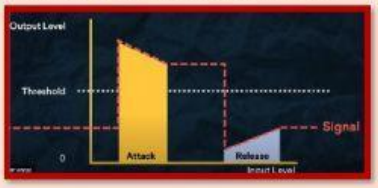
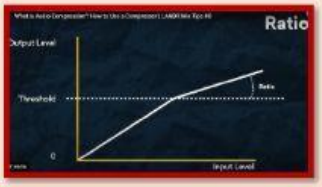
Nat 4 Processes (cont)

guide vocal	A vocal track that is recorded in the early stages of the project to give the performers an indication of the progression of the song. This will generally be replaced later in the project by a more carefully performed and recorded lead vocal track.	
input/output	The connection in an audio device which receives a signal (input) or from which its signal comes (output).Inputs should always be connected (either physically or digitally) to outputs and vice versa.	
mute	To turn a channel or a track off totally. Muting is mainly used in mixdown to either eliminate unwanted parts of a track or reduce the noise from an unused channel or track.	
overdub	In multitrack recording, the act of playing a new track of material in synchronisation with any previously recorded tracks.	
peak	The maximum level of any signal.	
sequencer	A sequencer can record, edit and play back music. Sequencers have been around for a long time. Early examples includes the player piano which would have a sequence of notes punched onto a roll of paper, which would be 'read' by the piano. Nowadays sequencer generally refers to software used to record music, but it can also refer to the step sequencer where the user inputs data over a series of 'steps', normally subdivided into semiquavers.	
signal path synchronisation (sync)	When two or more tracks or devices play, or function, at the same time, in time with each other.	
WAV/AIFF file	.wav and .aiff file formats are both ways of storing uncompressed audio data. Both are compatible with Windows and Mac-based systems.	

LIVEWORKSHEETS

Nat 4 Controls & Effects

compression	A dynamic process that allows the engineer to reduce the level of loud passages and increase the level of soft passages, thus compressing the dynamic range.	
Compressor https://blog.landr.com/how-to-use-a-compressor/	A dynamic processor that can automatically control the gain of a signal. Your **threshold** sets the signal level where your compressor will start working. **Threshold** is measured in dB, so any signal above your threshold dB will be compressed. Once the incoming signal has reached a predetermined **threshold,** the compressor reduces the output of the signal by an amount determined by the ratio control. A higher threshold only affects the most extreme peaks. **Ratio** determines how much gain reduction your compressor applies when the signal goes above your threshold. Effectively this is like a fraction, so if a ratio of 2:1 is set the amount of signal above the threshold will be halved, a ratio of 4:1 means it is quartered and so on. Compressors also have an **attack** control, which determines how quickly the compressor reacts, https://youtu.be/Q8f1vvdyjlE and a **release** control, which determines how quickly the compressor stops compressing once the signal has gone below the threshold again. **Attack** and **Release** define whether the compressor reaches its full range of gain reduction right away or more gradually. 	 
expansion	A dynamic process that allows the engineer to increase the level of loud passages and/or decrease the level of soft passages, thus **expanding the dynamic range.**	
expander	A dynamic processor that is the opposite of compression. Designed to decrease the level of low-level signals and increase the level of high-level signals, thus increasing (expanding) the dynamic range of the signal.	
effects (FX)	Effects recreate an environment and can alter the sound. Common FX include reverbs, delays, chorus, compression, noise gates, phaser, etc.	

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Nat 4 Controls & Effects

fader	**The linear sliding control that adjusts a channel's output.** A fader is not a volume control, it is a variable attenuator *(reducer).* When the fader is fully down, it is at maximum attenuation *(reduction)* , and when it is fully up, it is at minimum attenuation. The signal, therefore, is always present, the fader just determines how much of the signal is allowed to pass through. This can be seen as similar to a sluice gate in a lock. While the gate is shut or down, no water is allowed to flow. When the gate is raised, the water may flow. Opening the gate further lets more water flow.	
line level	**The output from a purely electronic source**, for example a keyboard or any processing device. The actual output level is set by the manufacturer to industry standards depending on the standing of the equipment as 'semi-professional' (–10 dBV) or 'professional' (+4 dBu).	
microphone level	**The level or voltage of a signal produced by a microphone.** Typically mic-level signals are considerably lower than line-level signals, so a pre-amplifier must be used to boost their output. In dynamic microphones the output of their built-in preamplifier is high enough not to require any more boosting. Condenser microphones need 48v (Phantom Power) to power the microphone pre-amp.	
tone control	**A basic form of equalisation on basic devices.** The tone control will not have the sophistication of studio equalisers and will in general have only three controls – bass, mid and treble – to boost or reduce a range of pre-assigned frequencies. Bass guitars and electric guitars often have tone controls.	
transport bar/controls	Common in digital audio workstations (DAWs). The transport bar is a floating tool which contains the main functions required for recording onto a DAW, such as record, play, rewind, return-to-start, stop, etc.	

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