NesTracker Guide

Latest version: 1.0.2 (1-Jan-2009)

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Overview of the NES Sound Chip 4 Aug 2007

NESTracker contains a fully featured NES sound chip emulator used for realtime playback. You'll be forced to deal with the limitations of this primitive hardware, although, limitations are the essence of creativity, so no wanking about it.

The NES has five channels:

Square1	Square wave. Can control volume, pitch and duty cycle (waveform). Duty 0 sounds nasally, and Duty 2 sounds very open. This and Square2 are your melodic workhorse channels.
Square2	Identical to square 1. Twice the fun!
Triangle	A pure sounding tone that can be a bit like a bass or whistle. For this kind of purity, you give up volume control and can only turn it on or off.
Noise	You can set the noise frequency to make TV static sounds or dirty rumbles. You can also change the duty cycle to make it buzz. Volume control is included.
DMC	Remember those NES games that had actual speech? Well this is how they did it… You can load your own WAV file and hear how it sounds coming out of the NES. The awesome power of this channel means you give up volume control, and you have a limited number of pitches to choose from.

Pattern Editor

Pattern Layout 13 Aug 2008

Each channel has the following data:

Note & Octave Instrument Volume Delay

- Note & Octave: Pitch for Square and Triangle channels. For Noise and DMC channels, index into "pitch table"
- Instrument (A-Z): Sets the current instrument. Does not have to be associated with a note.

- Volume (0-8): Sets the channel volume. Only used on Square and Noise channels (ignored for Triangle and Dmc channels). Like Instrument, can be set independently of note events.
- Delay (0-9): Number of frames to delay before the data gets processed in this channel. (This can be used for triplets.)

Speed Control: Channel 6 13 Aug 2008

This column has only one character, which sets the speed of the song at that row. This is useful for tempo changes, swing beats, or if you need finer control for particular parts of a song, such as a run of 64th notes.

You can enter a Note Off command (~ key) to cut the pattern at this point.

Instrument Editor

Instrument Commands 4 Aug 2007

An instrument is a sequence of specialized commands to influence the NES sound chip. You can make very simple and conventional sounds, or really complex, glitchy outlandish sounds.

Like pretty much everything else, they are executed at the top when the note starts and run to the bottom, where they stop. Experiment a bit and you'll get the hang of it.

Commands

Key	***Command***	***Description***	***Scaled***
0	(empty)	does nothing	
1	Wait	Waits for x frames	yes
2	NoteOn	Starts the note and resets any glide, vibrato, fade effects, sets volume to maximum. Arg = Duty cycle. **If arg is greater than 3, the note will not be reset, and all current settings for waveform, glide, and fading will be remain from the previous note.** (See below for special notes on Square Channel.)	
3	SetVolume	Sets volume immediately to x, 0-15	
4	FadeOut	Starts a fade-out effect at rate x (higher = faster)	yes
5	FadeIn	Like above, but fades volume in slowly	yes
6	Glide	Changes the rate at which it moves from one pitch to the other (0 = instant, higher = slower) *Totally awesome!!*	yes
7	AddPitch	Transpose pitch up by x semitones	
8	SubPitch	Transpose pitch down by x semitones	
9	LoopStart	Defines the point at which to loop back to, if there is a LoopEnd (argument is unused	
A	LoopEnd	Loops back to the beginning of the instrument, or if there is a LoopStart defined, goes back there (argument is unused)	

B VibeRate Sets vibrato rate to x (higher = faster) Get operatic!!

C VibeDepth sets vibrato depth to x (higher = larger range)

More information on NoteOn for Square channels:

You may want to set the duty without resetting the waveform. You can do this by setting the NoteOn value to 4-7, which will change the duty **without** clicking for a "new note" sound.

Values of x

For **scaled** commands, there is a much greater range, without much fine control in the larger numbers. This is so x can still be in the range 0-15, but represent a range up to 192.

x:	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
unscaled:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
scaled:	0	1	2	3	4	6	8	12	16	24	32	48	64	96	128	192

DMC Channel (Channel 5) Instruments 13 Aug 2008

This channel produces sampled audio in a primitive "delta modulation" format. You can load Wav files and the data will be converted into this format for use in your song.

Notes

- To play a sample in the song, set the note in channel 5. The Instrument column is the index of the sample you would like to play. (Note: this is different in version 1.1, prior versions referenced instruments in the DMC channel.)
- Only 16 different pitches are supported, mapped across the normal note scale. Experiment a bit to find the pitch you want.
- The *Oversampling* slider increases the file size, as well as lowers the pitch of the sample. It may increase the quality of some small samples. Experiment with different settings to get the sound you want.

DMC Channel: Frequencies Table

Use your WAV editor to set to the frequency to one of these values. When you play back with the following pitch (0-15), you will match the pitch of the sample.

Duty	Note	Frequency
0	C-0	4182
1	C#0	4711
2	D-0	5265
3	D#0	5594
4	E-0	6259
5	F-0	7047

6	F#0	7920
7	G-0	8365
8	G#0	9421
9	A-0	11188
10	A#0	12606
11	B-0	13985
12	C-1	16887
13	C#1	21310
14	D-1	24861
15	D#1	33149

Known Issues - to be fixed

GUI

Pattern editor doesn't refresh properly after playing a song
Maximizing, minimizing, resizing or moving window might cause skips in audio
Text metrics are a bit off (cursor box clips with text in some places)
Low speeds when the computer cannot cope with the low latency will cause bizarre speed problems, and at high speeds may even crash the program.
playing a song with F5 when the sequence is empty will cause the pattern editor to display incorrectly (sometimes) until you press F8

NSF Export

Pitch bending is not working properly in NSF (bend rates are different from tracker)
Some inconsistencies between NSF and NesTracker playback (to be ironed out)

File operations

Output.wav is created on program open even when wav is not logged
Until a file is loaded from the dialog, a file save will occur in the program folder
The WaveOut driver does not work with Vista 64-bit, and the program will crash on load.
Cannot open file directly from web browser: permissions error with loading from user's temp folder
All files are saved into "C:\users\[user name]\AppData\Local\VirtualStore\Program Files\NESTracker\Examples" instead of specified directory

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