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# TSB Music Info

By jstout, May 9, 2008 in Hacking Documentation

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# jstout

Tecmo Super Champion



Members 92 537 posts

Posted May 9, 2008

Here is the music data for the NES TSB. I'm not very musical so if anyone can give me proper terms for descriptions it would be appreciated.

Music Pointer Table: x36EC0-x36F4F

Music:

SONG 1: x37998 SONG 2: x3A5A7 SONG 3: x37C7D SONG 4: x3A155 SONG 5: x392D9 SONG 6: x38AAC SONG 7: x38F53 SONG 8: x3969B SONG 9: x37D66 SONG 10: x399F7 SONG 11: x39CF7 SONG 12: x38010 SONG 13: x38133 SONG 14: x3BF03 SONG 15: x3AAAF SONG 16: x3ABFB SONG 17: x3AA36 SONG 18: x3AC6A SONG 19: x3A665 SONG 20: x3A72A SONG 21: x3A7E3 SONG 22: x3A8D5 SONG 23: x3A9A8 SONG 24: x3ACE8 SONG 25: x3AE83 SONG 26: x3BC00 SONG 27: x3B2CD SONG 28: x3AF2B SONG 29: x3B34E SONG 30: x3B8DA SONG 31: x3B4C6 SONG 32: x3B9E2 SONG 33: x3BE15 SONG 34: x3BACA SONG 35: x3A010 SONG 36: x3A0B9

#### Sound Effects:

EFFECT 37: x37211 EFFECT 38: x3723A EFFECT 39: x3725D EFFECT 40: x372 EFFECT 41: x372C1 EFFECT 42: x372E7 EFFECT 43: x37307 EFFECT 44: x373 EFFECT 45: x3735D EFFECT 46: x37374 EFFECT 47: x371EB EFFECT 48: x371 EFFECT 49: x37143 EFFECT 50: x3716A EFFECT 51: x36FBB EFFECT 52: x371

```
EFFECT 53: x36FD1 EFFECT 54: x36FE0 EFFECT 55: x37043 EFFECT 56: x376 EFFECT 57: x373CA EFFECT 58: x373D0 EFFECT 59: x373D6 EFFECT 60: x375
```

The locations go to the info for each track where it lists the sound channel and the pointer to the music data for that channel. For those that don't know: Square = Lead Instruments, Triangle = Bass, Noise = Drums and Misc. Sounds.

Effects: 00 = Square 1, 01 = Square 2, 02 = Triangle, 03 = Noise

Music: 04 = Square 1, 05 = Square 2, 06 = Triangle, 07 = Noise

Example:

SONG 4: 04 75 A2 05 5C A4 06 52 A1 07 F2 A4 FF

SONG 4: Square 1 at \$A275, Square 2 at \$A45C, Triangle at \$A152, Noise at \$A4F2, FF Music Data Commands:

81-C0 = Length for following Notes (81 = Very Quick to C0 = Very Long)

E0 XX = Smoothness (00-43 lower values blend notes and higher values have choppier notes)

E1 = ??

E2 XX = Decay (20-2F = Note Dies and 30-3F = Note Carries)

E3 XX = Volume (00 = High to 0F = Low)

E4 XX = Shift (80-83)

E5 XX = Pitch

E7 = ??

E8 XXXX = Repeat at Pointer

E9 XXXX = Goto Pointer

EA = Return from xE9

EB XX = Loop following (XX = Number of times to loop)

EC = End of xEB Section

ED XX = Wavering of following notes (XX = Waver value) NOTE: Pitch increase with certain test values

EF = End of xED Section

F3 = Slur following notes NOTE: Tests had decay of notes with certain conditions

F4 = End of xF3 Section

FF = End Sound Channel

Music Notes:

Order of Notes:

C C# D D# E F F# G G# A A# B for each Octave

Square and Triangle Channels:

LOW PITCH

70-7B = Octave 1

00-0B = Octave 2

10-1B = Octave 3

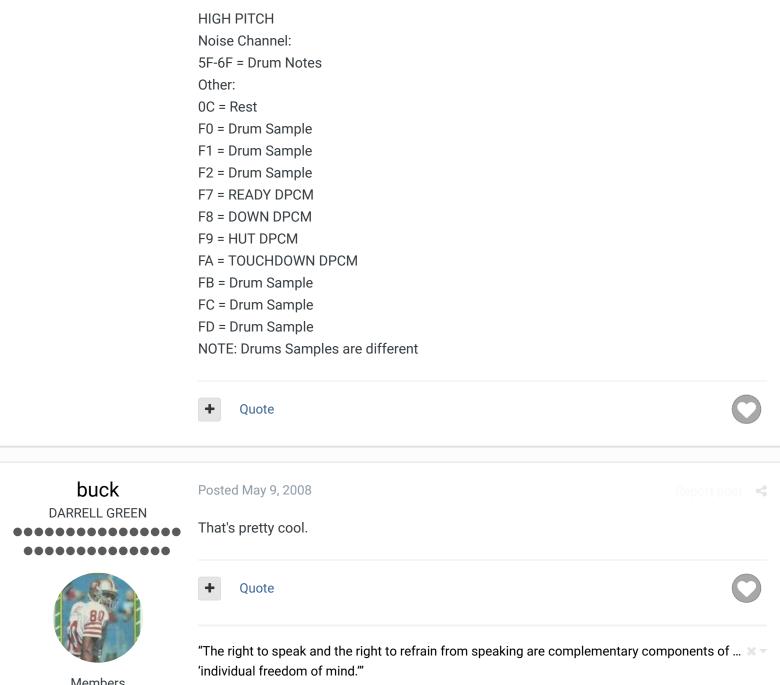
20-2B = Octave 4

30-3B = Octave 5

40-4B = Octave 6

50-5B = Octave 7

60-6B = Octave 8





Location: Tecmo Super

Street

Tecmo Titles: Lincoln V

(2015)

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**Promising Rookie** 



Posted May 10, 2008

Nice find, jstout.

Looks like it's possible now to recompose the in-game music. But the problem is the length.







**DARRELL GREEN** 



Members **2**,060

6,332 posts Location: Tecmo Super

Street Tecmo Titles: Lincoln V

(2015)

Posted May 12, 2008

istout, how tough would it be to code 'random' notes and stuff like that for a song? Like random noise splashes and drum samples (the stuff that's already there)...just trigger random things?

I think it would be cool to have a random type song (bleeps and drums) while on-field.



Quote



"The right to speak and the right to refrain from speaking are complementary components of ... \*\* \*\* 'individual freedom of mind.""

link to change one's signature

# Knobbe

Tecmo Godfather







**3**,244 17,597 posts

**Tecmo Titles: 1** Founder of T-Borg Posted May 12, 2008



Actually, that is what the pointer table is for. You just change the pointers based on the

If you had music source code from other games, it'd be very easy to cut and paste into TSB



length.

#### Vanisher said:

Nice find, jstout.

Looks like it's possible now to recompose the in-game music. But the problem is the length.



Quote



Elsewhere



- @Tecmogodfather
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- Join us on Discord
- Tecmobowl Twitch
- Youtube

"You fail all of the time. But you aren't a failure until you start blaming someone else" - Bum **Phillips** 

## buck

**DARRELL GREEN** 





Members **2**,060 6,332 posts

Location: Tecmo Super

Street Tecmo Titles: Lincoln V

(2015)

Posted February 21, 2010

I'm starting to mess with this stuff - I've got a nice hardcore-DEVO remix going on, just switching pointers around (like a pulse channel sequence driving the triangle wave). But I want to get in and program some sequences/loops myself. But, I'm kinda stuck.

#### Quote

SONG 4: Square 1 at \$A275, Square 2 at \$A45C, Triangle at \$A152, Noise at \$A4F2, FF how do I get to \$a275 in the ROM (address) so I can change stuff, (the pointer value of Square 1, in the above quote)? and then, what is the Music Pointer Table and how do you use it?



#### Quote



"The right to speak and the right to refrain from speaking are complementary components of ... 🗶 🔻 'individual freedom of mind.""

link to change one's signature

## buck

**DARRELL GREEN** 



Members **2**,060

6,332 posts

Location: Tecmo Super

Street

Tecmo Titles: Lincoln V

(2015)

Posted February 21, 2010



I figured out you take the pointer, flip it, add x10, and put a 3 in front. so for 75a2, the location is x3a285.

I've been able to go in and modify basslines and melodies...shit is tedious.

Still don't know what the Music Pointer Table is.

Been reading up on transferring NES music, looks like different games use different "sound engines" - so there would have to be some translation done, no thanks. Maybe other "Tecmo" games use the same type of music code? For now, I'm going to spend a little time trying to write some different songs (probably just one, because - like I said, it's a slowprocess.)



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and then, what is the Music Pointer Table and how do you use it?



"The right to speak and the right to refrain from speaking are complementary components of ... \*\* \*\* 'individual freedom of mind.""

link to change one's signature



Tecmo Legend



Members **O** 12 2,004 posts Location: Indiana

Posted February 22, 2010

Go Buck go! It would be cool just to have any new music in there. It would be something unique in any rom.



Quote



<u>sigs.php?player=dajabec</u>

**Tecmo Tunes** Tecmo-themed song parodies

# **BO FB Offtackle** Left

Tecmo Legend



Members **Q** 253 3,135 posts Location: New York Posted February 22, 2010





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I've noticed the Mega Man games sound a lot like Tecmo. Maybe they use the same engine?



Quote



- Kenny Stabler

"There's nothing wrong with reading the game plan by the light of a jukebox."

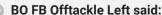
Yak

Tecmo Fanatic



Posted February 22, 2010







Members **1,541** 5,286 posts

Location: Boston, MA

#### Quote

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I've noticed the Mega Man games sound a lot like Tecmo. Maybe they use the same engine?

Funny you mention that. Ever since Jstout posted this info I've wondered if Mega Man 2 tracks could be plugged into TSB somewhere.



Quote



## buck

**DARRELL GREEN** 



Posted February 22, 2010

Report post

I will look into the Mega Man idea.



Members **2,060** 

6,332 posts **Location:** Tecmo Super

Street

Tecmo Titles: Lincoln V

(2015)

+

Quote



"The right to speak and the right to refrain from speaking are complementary components of ... \*\* "
'individual freedom of mind."

link to change one's signature

# BO FB Offtackle Left

Tecmo Legend



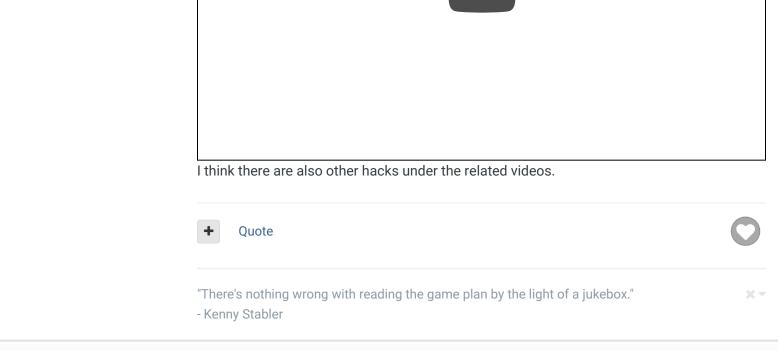
Members 253

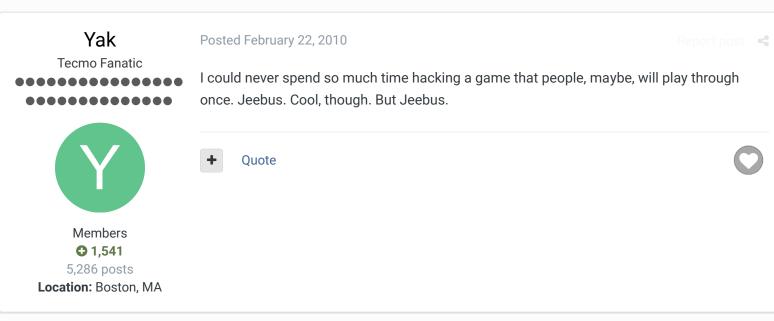
3,135 posts **Location:** New York Posted February 22, 2010

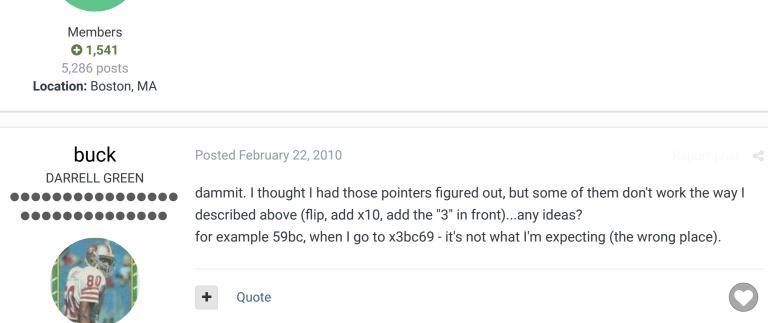
Report post

I also always thought it might be cool to make charatters from other video games players in TSB. It probably wouldn't be too hard to change the player sprites into Mega Man or Mario, though I think it's beyond me. Someone has already put the graphics from different Mario games into Mega Man I. Check it out:

Megaman in the Mushroom Kingdom

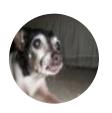








Member



Posted March 17, 2010

I have no idea how to use this hex information. Can anyone point me to some Tecmo hex editing tutorials, I have looked on the forum, but I haven't found anything. Does anyone have any hex editor recommendations? I would REALLY love to swap some of the music around.

+

Quote



"That woman who knew I had Dyslexia, I never interviewed her".

-George W. Bush, Sept. 16, 2000

# TomTupa

Tecmo Legend



Members

12
2,004 posts

Location: Indiana

Posted March 18, 2010

This reminds me. Does any of this help us get the "hut hut hut" back into the 32 team rom?

+

Quote



<u>sigs.php?player=dajabec</u>

**Tecmo Tunes** Tecmo-themed song parodies

## Yak

Tecmo Fanatic



Members **◆ 1,541** 5,286 posts

Location: Boston, MA

Posted March 18, 2010



This reminds me. Does any of this help us get the "hut hut hut" back into the 32 team rom?

I was under the impression that the 'hut hut hut' was squeezed out of the game by CX\_ROM's changes. Or, at least, I recall that being said somewhere.

+







Members

253
3,135 posts

Location: New York

## JobDodger said:

I have no idea how to use this hex information. Can anyone point me to some Tecmo hex editing tutorials, I have looked on the forum, but I haven't found anything. Does anyone have any hex editor recommendations? I would REALLY love to swap some of the music around.

There's a hex editor here. You should download all this stuff anyway, lots of good things here. I think the hex editor comes with a how-to:

viewtopic.php?f=5&t=5320



Quote



"There's nothing wrong with reading the game plan by the light of a jukebox."

- Kenny Stabler

# **CXTOM**Veteran

veterar



Members
19
373 posts
Location: Phoenix, AZ

Posted March 18, 2010





## ▼ TomTupa said:

This reminds me. Does any of this help us get the "hut hut hut" back into the 32 team rom?

Nope. Those qb soundfx are <u>DMC</u> samples, and not created by the sound driver (other then telling the hardware to play them). The starting address for DMC samples has to be located in the fixed bank (\$C000- \$FFFF).



Quote



## Knobbe

Tecmo Godfather





Founder



**3,244**17,597 posts
Tecmo Titles: 1

Posted March 18, 2010

Report post



Can you further explain how the pointers relate to the music? I'm not really grasping this.

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```
      SONG 9: x37D66
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      SONG 11: x39CF7
      SONG 12: x38010

      SONG 13: x38133
      SONG 14: x3BF03
      SONG 15: x3AAAF
      SONG 16: x3ABFB

      SONG 17: x3AA36
      SONG 18: x3AC6A
      SONG 19: x3A665
      SONG 20: x3A72A

      SONG 21: x3A7E3
      SONG 22: x3A8D5
      SONG 23: x3A9A8
      SONG 24: x3ACE8

      SONG 25: x3AE83
      SONG 26: x3BC00
      SONG 27: x3B2CD
      SONG 28: x3AF2B

      SONG 29: x3B34E
      SONG 30: x3B8DA
      SONG 31: x3B4C6
      SONG 32: x3B9E2

      SONG 33: x3BE15
      SONG 34: x3BACA
      SONG 35: x3A010
      SONG 36: x3A0B9
```

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```
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ED XX = Wavering of following notes (XX = Waver value) NOTE: Pitch increase with certain test values

EF = End of xED Section F3 = Slur following notes NOTE: Tests had decay of notes with certain conditions F4 = End of xF3 Section FF = End Sound Channel Music Notes: Order of Notes: C C# D D# E F F# G G# A A# B for each Octave Square and Triangle Channels: LOW PITCH 70-7B = Octave 1 00-0B = Octave 2 10-1B = Octave 3 20-2B = Octave 4 30-3B = Octave 5 40-4B = Octave 6 50-5B = Octave 7 60-6B = Octave 8 HIGH PITCH Noise Channel: 5F-6F = Drum Notes Other: 0C = Rest F0 = Drum Sample F1 = Drum Sample F2 = Drum Sample F7 = READY DPCM F8 = DOWN DPCM F9 = HUT DPCM FA = TOUCHDOWN DPCM FB = Drum Sample FC = Drum Sample FD = Drum Sample

NOTE: Drums Samples are different





Elsewhere

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Tecmobowl Twitch

Youtube

## jstout

Tecmo Super Champion



Members

• 92

537 posts

Posted April 30, 2010

Report post

Here is a simple test song for those having problems (the commas in the hex below are just to help those see some breakup of the parts and notes). I'll find my notes and answer some of the questions in this thread soon.

POP GOES THE WEASEL: (Put at x3A155 and play sound 4 on the sound test screen)

\$A145: (SET SONG DATA POINTERS)

04 52A1, 05 90A1, 06 20A2, 07 20A2, FF

\$A152: (SET SQUARE 1 VARIABLES)

E2 30, E3 01, E0 1E

\$A158: (SQUARE 1 MUSIC)

E9 77A1, 8E 20, 88 20, 8E 22, 88 22, 92 24, 92 20, E9 77A1, 92 29, 8E 22, 88 25, 92 24, 92 20,

E8 58A1

\$A177: (COMMON MELODY)

8E 20, 88 20, 8E 22, 88 22, 88 24 27 24, 92 20, EA

\$A186: (FILLER)

FF FF FF FF FF FF FF FF

\$A190: (SET SQUARE 2 VARIABLES)

E2 30, E3 01, E0 1E

\$A196: (SQUARE 2 MUSIC)

E9 F8A1, E9 FFA1, EB 03, E9 F8A1, EC, E9 FFA1, EB 03, E9 F8A1, EC, E9 FFA1, EB 02, E9

F8A1, EC, 88 F3 10 15 19, F4, E9 FFA1, EB 02, E9 F8A1, EC, E9 06A2, E9 12A2, EB 02, E9

06A2, EC, E9 12A2, EB 03, E9 06A2, EC, E9 12A2, EB 02, E9 06A2, EC, 88 10, 84 F3 15 19, F4,

F3 15 19, F4, E9 12A2, EB 02, E9 06A2, EC, E8 96A1

\$A1F8: (COMMON MELODY)

88 F3 10 14 17, F4, EA

\$A1FF: (COMMON MELODY)

88 F3 0B 15 17, F4, EA

\$A206: (COMMON MELODY)

88 10, 84 F3 14 17, F4, F3 14 17, F4, EA

\$A212: (COMMON MELODY)

88 0B, 84 F3 15 17, F4, F3 15 17, F4, EA

\$A21E: (FILLER)

FF FF

\$A220: (SET TRIANGLE AND NOISE VARIABLES)

E2 30, E3 0F, E0 1E

\$A226: (TRIANGLE AND NOISE MUSIC)

88 00, E8 26A2







DARRELL GREEN





Members **◆ 2,060** 6,332 posts

Location: Tecmo Super

Street **Tecmo Titles:** Lincoln V

(2015)

Posted April 30, 2010

Jstout, how did you keep all the timing ("lengths" x81-C0) in order? My problem is keeping all the channels working together and staying in time (with length). I know how it works, but it's hard for me to "visualize".



Quote



Report post 🖪

"The right to speak and the right to refrain from speaking are complementary components of ... \* 'individual freedom of mind."

link to change one's signature

## Yak

Tecmo Fanatic





Members **◆ 1,541** 5,286 posts

Location: Boston, MA

Posted April 30, 2010

Report post



I'm glad you guys are refreshing your knowledge of this stuff. I haven't read up on any sound data yet.

There are several sound effects that would benefit being changed in TSB, which also drive me crazy. Changed, in that they need to be altered so that either the sound itself is executed later, or to give it a 'pause' of some sort at the beginning of the sound string, so that the effect that follows is better synced with the action onscreen. I'll get to more specific examples when I arrive at that point in this season's ROM creation(s). Maybe the easiest way for some of them is to be removed altogether, but I have faith that the TSB Savants will have an idea or two up their sleeves.

One of these sound effects, as a single example, is when the cut screen of the WR making the falling backwards grab (not diving) is played. That sound effect always fires up too early on the non-cinema screen, which totally gives away the result (complete or incomplete) when the cinema screen happens. There are a few of these sound errors.



Quote



# jstout

Tecmo Super Champion



Posted April 30, 2010

Report post



#### buck said:

Jstout, how did you keep all the timing ("lengths" x81-C0) in order? My problem is keeping all the channels working together and staying in time (with length). I know how it works, but it's hard for me to "visualize".

The sound lengths match to:

A5 = Quadruple Whole Note



9E = Double Whole Note

96 = Whole Note

8E = Half Note

88 = Quarter Note

84 = Eighth Note

82 = Sixteenth Note

81 = Thirty-second Note

I'm not musical so if there are inbetween notes then let me know and I can see if anything that will match up exactly.



Quote



## buck

**DARRELL GREEN** 





Members **Q** 2,060

6,332 posts

Location: Tecmo Super Street

Tecmo Titles: Lincoln V

(2015)

Posted April 30, 2010





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81 = Thirty-second Note

I'm not musical so if there are inbetween notes then let me know and I can see if anything that will match up exactly.

awesome! thanks jstout!

any "inbetween" timing intervals would be to add "shuffle" or "swing".



Quote



"The right to speak and the right to refrain from speaking are complementary components of ... \*\* \*\* 'individual freedom of mind.""

link to change one's signature



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SBlueman

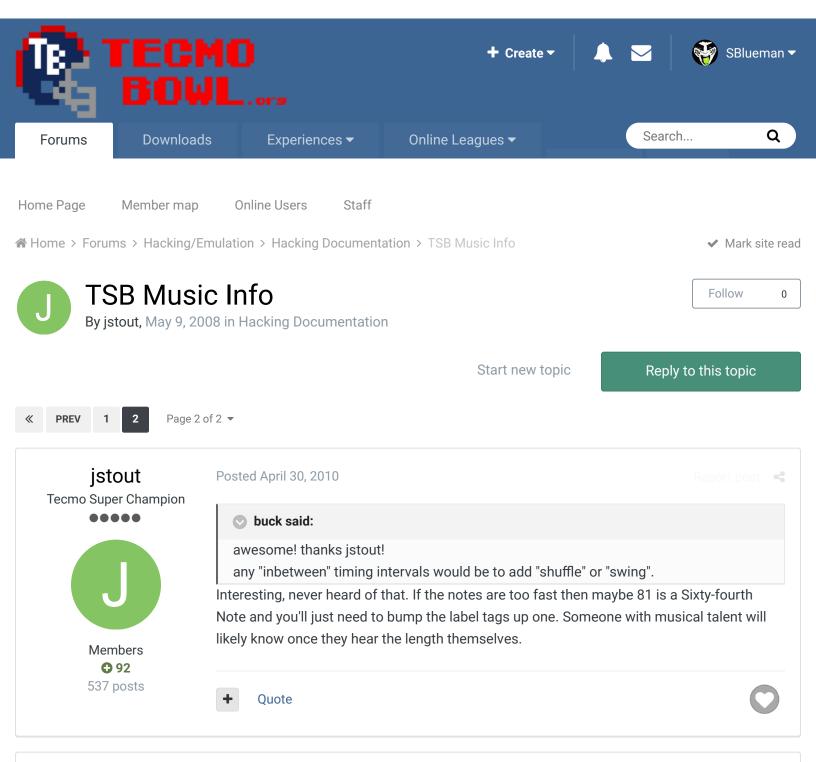
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TecmoBowl.org Powered by Invision Community







Members

1
347 posts

347 posts **Location:** Holland

#### Posted April 30, 2010

How do I know what sound or effect matches up with what? Just guess? Also lets say I have a nsf file that I want to put in the game. Can I do this? Yes I know each game is different and it is not as simple as just putting it in. I just thought that I could break down the nsf file to get some data that can be used in the game.





# JohnnyLaRue

Veteran



Members **Q** 1 347 posts Location: Holland Posted May 2, 2010

I figured out the sounds from the sound sample trick. I tried to insert one sound for another but no luck. I even tried to change the hex numbers from square to triangle and still not working.



Quote



# jstout

Tecmo Super Champion 00000



Members **Q** 92 537 posts Posted May 2, 2010



# Rod Woodson said:

Can you further explain how the pointers relate to the music? I'm not really grasping

Sound Test Song/Effect Table: x346D1-x3470C (In order of sound 1 to 60)

To get the Song/Effect in the Music Pointer Table (x36EC0-x36F4F), multiple the

Song/Effect by 2 then add the music pointer table start address (x36EC0).

The location and pointers are:

Song/Effect x00-x1F = located in x36010-x3800F (\$8000-\$9FFF)

Song/Effect x20-x3C = located in x3A010-x3C00F (\$A000-\$BFFF)

Song/Effect x3D-x47 = located in x38010-x3A00F (\$A000-\$BFFF)

Examples:

Song 4 = x3C

x3C\*2 = x78

x78+x36EC0 = x36F38

In the rom x36F38 = \$A145

\$A145 = x3A155

Song 5 = x3D

x3D\*2 = x7A

x7A + x36EC0 = x36F3A

In the rom x36F3A = \$B2C9

B2C9 = x392D9

For the song data pointers it will be located as above (pointers will add x10 for the header).

Examples:

Song 4 - x3A155

04 \$A275 05 \$A45C 06 \$A152 07 \$A4F2 FF

SQUARE 1 = x3A285, SQUARE 2 = x3A46C, TRIANGLE = x3A162, NOISE = x3A502

Song 5 - x392D9

04 \$B3A4 05 \$B46B 06 \$B2D6 07 \$B57F FF



Quote



# bruddog

Down with button mashing





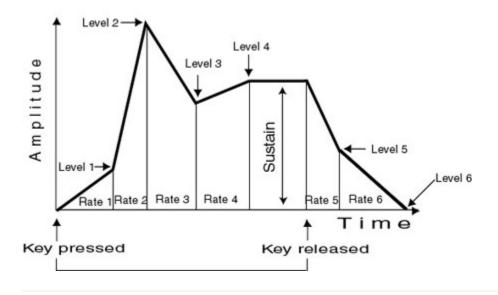
Moderators

**3,074**11,466 posts **Location:** Ca

#### Posted October 4, 2016

The E0 command is really like an instrument envelope setting... though smoothness is a somewhat accurate setting.

The **XX** in the E0 XX command is an index into a pointer table. The pointers point to volume envelope data. This controls the envelope through the sustain phase.



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