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Former Home of SpinCAD Designer

Skip to content

Search…	Search

Advanced search

[Moderator Control Panel]

Program Select Bug(?)

Post a reply

Search this topic…	Search

7 posts • Page **1** of **1**

- Edit post (./posting.php?mode=edit&f=42&p=3152)
- Delete post (./posting.php?mode=delete&f=42&p=3152)
- Report this post (./report.php?f=42&p=3152)
- Warn user (./mcp.php?i=warn&mode=warn_post&f=42&p=3152&sid=d6d1dcc4501596550704606791e62b4c)
- Information (./mcp.php?i=main&mode=post_details&f=42&p=3152&sid=d6d1dcc4501596550704606791e62b4c)
- Reply with quote (./posting.php?mode=quote&f=42&p=3152)

Program Select Bug(?) (#p3152)

by **Zerikin** » Sun Jun 03, 2018 4:04 am

I've been working on a tremolo block with multi waves selected by a pot. It works fine except for one baffling issue. The ramp waves click, but only if they are selected with a pot. If I drop all the code but one of the ramp waves it functions as expected, if I make if the final jump (jumping after a clear with ZRO) it works. In the code below RAMP_DOWN has weird noise when flashed but RAMP_UP works fine. I can switch them in the select code and it would be the opposite. They all work fine in the simulator as well. Any idea what the heck is going on?

```
@name Tremolo
@color "0x24f2f2"
@audioInput input Input
@audioOutput output1 Output
@controlInput rateIn Rate
@controlInput depthIn Depth
@controlInput waveIn  WaveSelect

equ   output1       reg0
equ   lfo_freq_max  reg1
equ   volume        reg3
equ   depth         reg4
equ   unity         reg5
equ   fade          reg6
equ   ramp          reg7
equ   floor         reg8
equ   filter        reg9

skp   run, START

sof   0, -1
sof   -1, 0
wrax  volume,  1
wrax  depth,   1
wrax  unity,   0

or $100
wrax  lfo_freq_max, 0

or $30000
wrax  fade, 0

wlds SIN0,  51,   32767
wldr 0,     10,   4096
wldr 1,     10,   4096

START:

@isPinConnected Input

@isPinConnected Rate
ldax  lfo_freq_max
```

```
rdax   rateIn, 1
sof    1, 0.001
wrax   SIN0_RATE, 1
wrax   RMP0_RATE, 0.5
wrax   RMP1_RATE, 0
@endif

rdax   depthIn, -1
wrax   depth,   1
sof    1, 0.999
wrax   floor,   0

rdax   waveIn, 1
rdfx   filter, 0.01
wrax   filter, 1
sof    1, -0.2
skp    NEG, SINE
sof    1, -0.2
skp    NEG, RAMP_DOWN
sof    1, -0.2
skp    NEG, TRIANGLE
clr
skp    ZRO, RAMP_UP

// Sine Wave
SINE:
cho rdal, SIN0
sof    0.5, 0.5
mulx   depth
rdax   unity,   1
wrax   volume,  0
skp    ZRO, OUTPUT

// Triangle Wave
TRIANGLE:
// Create 0 to .25 triangle
cho rdal, RMP1
sof    1, -0.25
absa
// Make it 0 to 1
sof    -2, 0
sof    -1.999, 0
mulx   depth
rdax   unity,   1
wrax   volume,  0
skp    ZRO, OUTPUT

// Ramp Up
RAMP_UP:
cho rdal, RMP0
sof    1.999, 0
wrax   ramp, 1
sof    -1, 0.02
skp    GEZ, FADE_OUT
ldax   ramp
mulx   depth
rdax   unity,   1
wrax   volume,  0
skp    ZRO, OUTPUT

// Ramp Down
RAMP_DOWN:
cho rdal, RMP0
sof    1, -0.5
absa
sof    1.999, 0
wrax   ramp, 1
```

```
sof   1, -0.02
skp   NEG, FADE_IN
ldax  ramp
mulx  depth
rdax  unity,    1
wrax  volume,   0
skp   ZRO, OUTPUT

// Square Wave
SQUARE:
ldax  depth
sof   1, 0.5
wrax  depth, 0
wrax  floor, 0
cho rdal, SIN0
rdax  depth, -2
skp   GEZ, FADE_IN

FADE_OUT:
ldax  volume
rdax  fade, -1
wrax  volume,  1
rdax  floor, -1
skp   GEZ, OUTPUT
ldax  floor
wrax  volume,  0
skp   ZRO, OUTPUT

FADE_IN:
ldax  volume
rdax  fade, 1
wrax  volume,  1
sof   1, -1
skp   NEG, OUTPUT
ldax  unity
wrax  volume,  0

// Handle Audio I/O
OUTPUT:
ldax  input
sof   1.999, 0 // Gain to raise average volume
mulx  volume
wrax  output1,0

@setOutputPin Output output1
@endif
```

Top
- Edit post (./posting.php?mode=edit&f=42&p=3153)
- Delete post (./posting.php?mode=delete&f=42&p=3153)
- Report this post (./report.php?f=42&p=3153)
- Information (./mcp.php?i=main&mode=post_details&f=42&p=3153&sid=d6d1dcc45015965550704606791e62b4c)
- Reply with quote (./posting.php?mode=quote&f=42&p=3153)

Re: Program Select Bug(?) (#p3153)
by **Digital Larry** » Sun Jun 03, 2018 11:54 am

Looks like this is some hand edited code not created entirely in SpinCAD. Debugging this sort of thing is real work which I cannot do for free I am sorry to say.

My suggestion (if nobody here can pitch in to help) would be to post the code over at the Spin forum.

Top
- Edit post (./posting.php?mode=edit&f=42&p=3154)
- Delete post (./posting.php?mode=delete&f=42&p=3154)
- Report this post (./report.php?f=42&p=3154)
- Warn user (./mcp.php?i=warn&mode=warn_post&f=42&p=3154&sid=d6d1dcc45015965550704606791e62b4c)
- Information (./mcp.php?i=main&mode=post_details&f=42&p=3154&sid=d6d1dcc45015965550704606791e62b4c)
- Reply with quote (./posting.php?mode=quote&f=42&p=3154)

Re: Program Select Bug(?) (#p3154)
by **Zerikin** » Sun Jun 03, 2018 12:12 pm

Never heard of a bug like that before huh? Ok. I can't post in on the spin forum since they stopped approaching new members months ago sadly.

Top
- Edit post (./posting.php?mode=edit&f=42&p=3155)
- Delete post (./posting.php?mode=delete&f=42&p=3155)
- Report this post (./report.php?f=42&p=3155)
- Information (./mcp.php?i=main&mode=post_details&f=42&p=3155&sid=d6d1dcc45015965550704606791e62b4c)
- Reply with quote (./posting.php?mode=quote&f=42&p=3155)

Re: Program Select Bug(?) (#p3155)
by **Digital Larry** » Sun Jun 03, 2018 1:53 pm

You could also try diystompboxes forum DSP section.

Top
- Edit post (./posting.php?mode=edit&f=42&p=3156)
- Delete post (./posting.php?mode=delete&f=42&p=3156)
- Report this post (./report.php?f=42&p=3156)
- Information (./mcp.php?i=main&mode=post_details&f=42&p=3156&sid=d6d1dcc45015965550704606791e62b4c)
- Reply with quote (./posting.php?mode=quote&f=42&p=3156)

Re: Program Select Bug(?) (#p3156)
by **Digital Larry** » Sun Jun 03, 2018 2:15 pm

I see you are using the SpinCAD Builder code, which hardly anyone ever asks questions about. I don't look at it unless I have to. Yes, I wrote it, but it doesn't mean I remember it very well two years later.

I would start by writing your block completely in Spin ASM and make sure it works OK in that environment.

Then, after you have made it into a SpinCAD block and then a patch, generate the Spin ASM and go over it with a fine toothed comb comparing it to the original. I have not done any blocks with pot skip routines in them so at this point I can't say whether there might or might not be a problem. Check any SKP instructions to make sure they are correct.

What's odd is that you say the simulation works OK but the actual chip does not. I did not write the simulator part of SpinCAD so again that's a matter of diving down into the ElmGen Java source possibly (even though it works OK, it should work the same as the chip). The simulator code was reverse engineered by Andrew Kilpatrick and I did fix a few bugs in the SIN/COS LFO simulation.

You might also wish to run SpinCAD in debug mode (i.e. at the command line, java -jar spincad-988.jar) and see if any exceptions fly out when you try to use this block.

Top
- Edit post (./posting.php?mode=edit&f=42&p=3163)
- Delete post (./posting.php?mode=delete&f=42&p=3163)
- Report this post (./report.php?f=42&p=3163)
- Warn user (./mcp.php?i=warn&mode=warn_post&f=42&p=3163&sid=d6d1dcc45015965550704606791e62b4c)
- Information (./mcp.php?i=main&mode=post_details&f=42&p=3163&sid=d6d1dcc45015965550704606791e62b4c)
- Reply with quote (./posting.php?mode=quote&f=42&p=3163)

Re: Program Select Bug(?) (#p3163)
by **lutop** » Tue Jul 10, 2018 2:14 am

I would say,... generate the spinasm code and review what is wrong.

I had some bad experience with the block builder and skip instructions. You need to be very careful with your conditions (like @ispinconnected), because it's not always calculating properly the jumps. I had also to correct some blocks that were generating errors and not compiling.

I'm not saying this is the case, but the only way you will be able to see what happens is to generate the code that works and the one that doesn't and try to find where the issue is in spinASM. And take special attention to the skp jumps and see if they are jumping to the right place.

Mat

Top
- Edit post (./posting.php?mode=edit&f=42&p=3165)
- Delete post (./posting.php?mode=delete&f=42&p=3165)
- Report this post (./report.php?f=42&p=3165)
- Information (./mcp.php?i=main&mode=post_details&f=42&p=3165&sid=d6d1dcc45015965550704606791e62b4c)
- Reply with quote (./posting.php?mode=quote&f=42&p=3165)

Re: Program Select Bug(?) (#p3165)
by **Digital Larry** » Tue Jul 10, 2018 12:27 pm

The skip calculation code is a bit wonky and interleaved skips may not work correctly. For this reason I've written several blocks in less than ideal code to avoid interleaving blocks. Now, as I am fond of saying, all of this code is open source, all you have to do is learn Java and Xtext and Xtend, it will enhance your overall quality of life immensely and I do recommend it! 😄

Top

Display posts from previous: All posts　Sort by Post time　Ascending　Go

Post a reply
7 posts • Page **1** of **1**
Return to Developer's Corner

Jump to:　Developer's Corner　　　Go

Quick-mod tools: Lock topic　　　Go

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