Using GTKWave or Scansion

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May 11, 2020

When debugging hardware that you've described in RTL, its often helpful to be able to see a waveform representation of what its doing.

One of the most common waveform viewers is GTKWave. Scansion is also a really good waveform viewer(but its only available for Mac).

I prefer to use Scansion when on my Mac because it supports Mac gestures as well as HiDPI displays.

Installing GTKWave

Ubuntu

```
apt install gtkwave
```

By default, you cannot view the display in bash for windows. To remedy this, do the following in bash for windows :

```
export DISPLAY=:0
```

You'll also need to download, install, and open Xming. Once you open Xming, it should start a process in the backgroung.

Now, go ahead and type `gtkwave`. A new window should open like the one in the image below.

MacOS

Download the GTKWave app for MacOS: Once the app has downloaded, drag the app from your `Downloads` folder to your `Aplications` folder.

Viewing a Waveform with GTKWave

To open a waveform with GTKWave on Linux, run `gtkwave /path/to/wave.vcd`.

On Mac, if you're using GTKWave, you can open the GTKWave application, and then use **file** → **open new window** to access the file.

Download this VCD and complete the following steps.

Drag some signals from pane 2 to pane 3 as shown below.

You can also import all signals at once as shown below.

GTKWave tends to zoom all the way in on signals at first. You must click the icon below multiple time to zoom out properly.

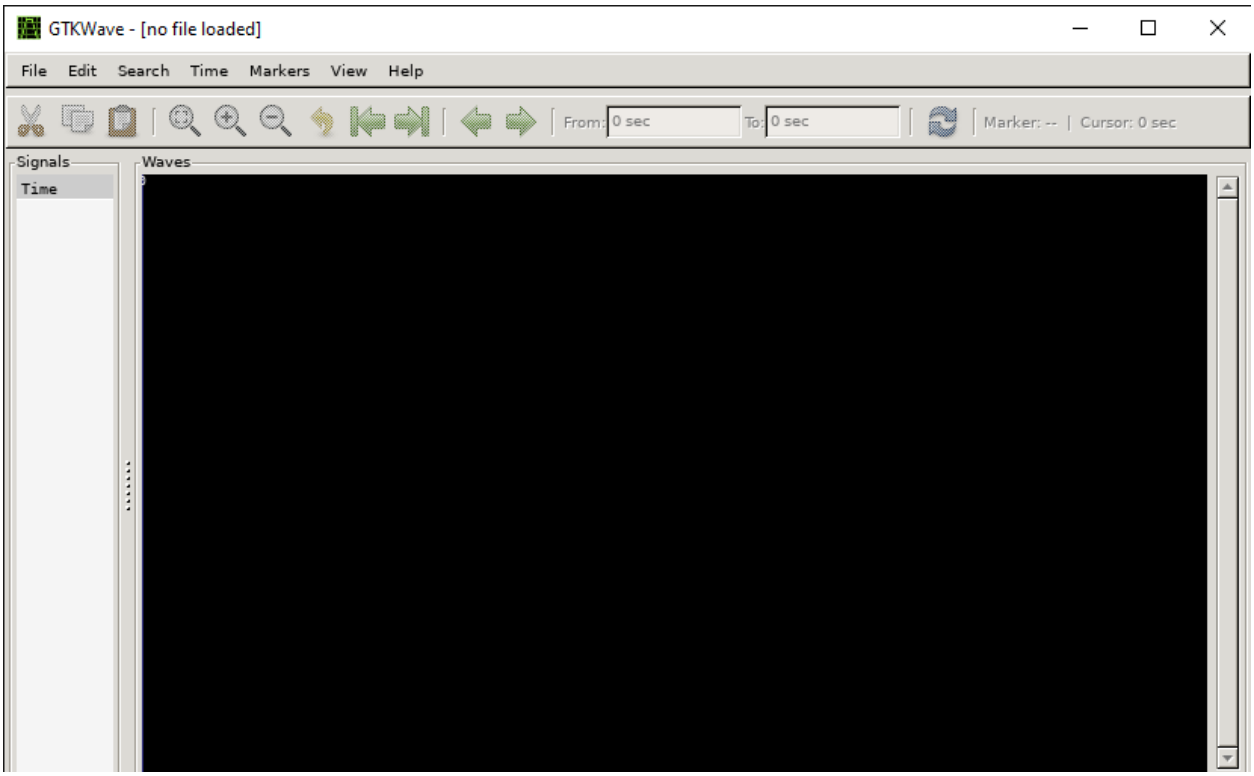

Figure 1: GTKWave Running on WSL

Using Scansion instead of GTKWave on Mac

You can download Scansion from here.

Drag it to the `/Applications` folder. Once you've opened Scansion, you can drag a VCD file from finder onto the Scansion icon as shown below.

A new Scansion window should show up.

You can view signals by dragging them from 2 to 3 as shown below.

You can also view all the signals at once for a selected module from pane 1 by clicking the browse button.

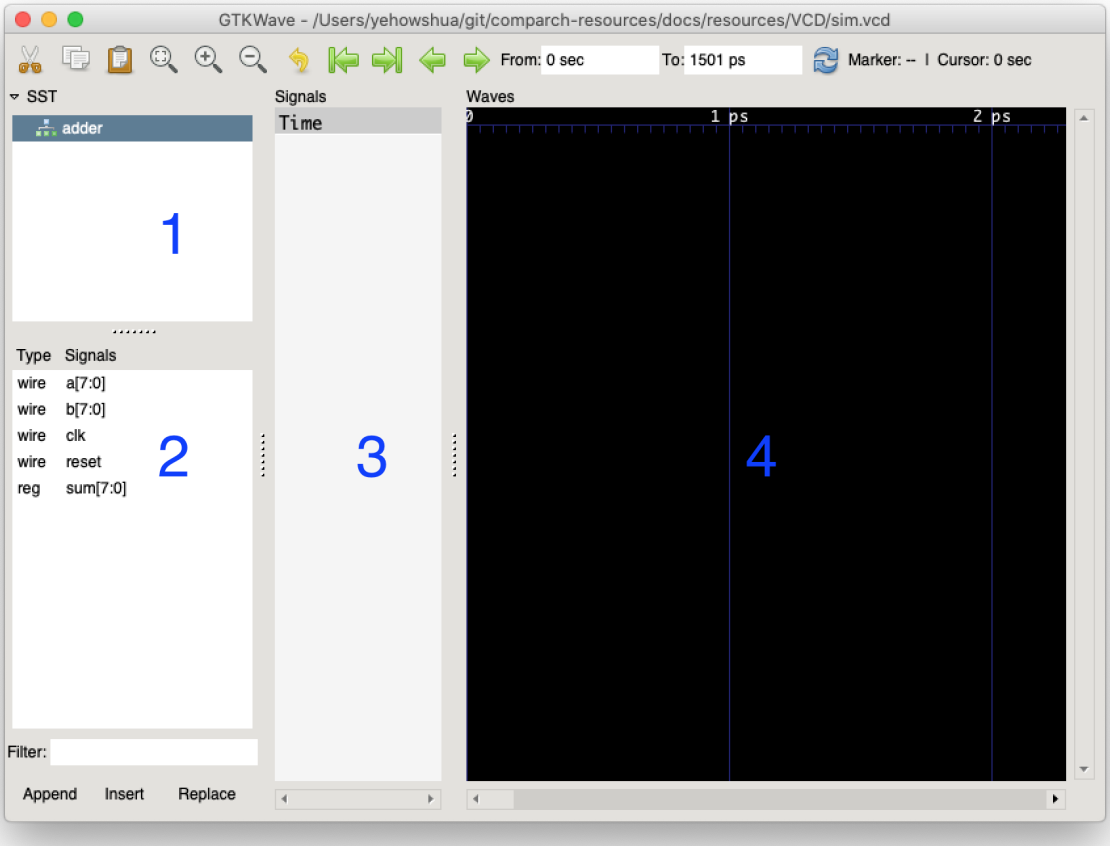

Figure 2: GTKWave Divided into panes

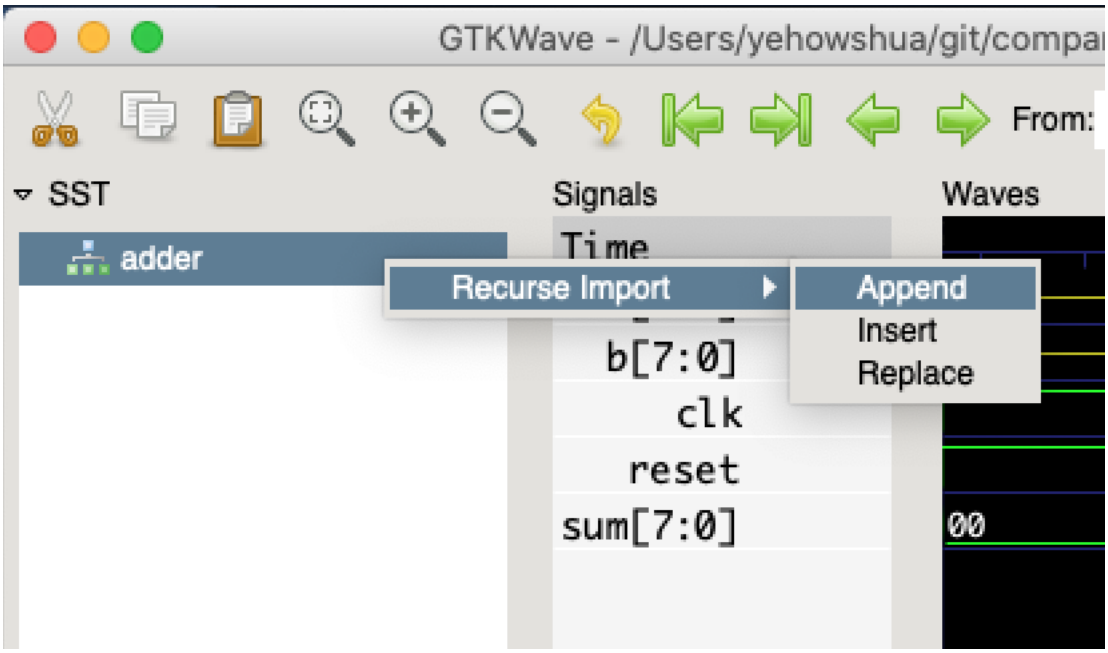

Figure 3: Importing All Signals Into GTKWave

Figure 4: Zooming Out

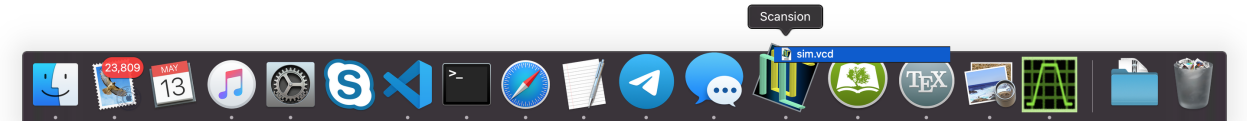

Figure 5: Drag File

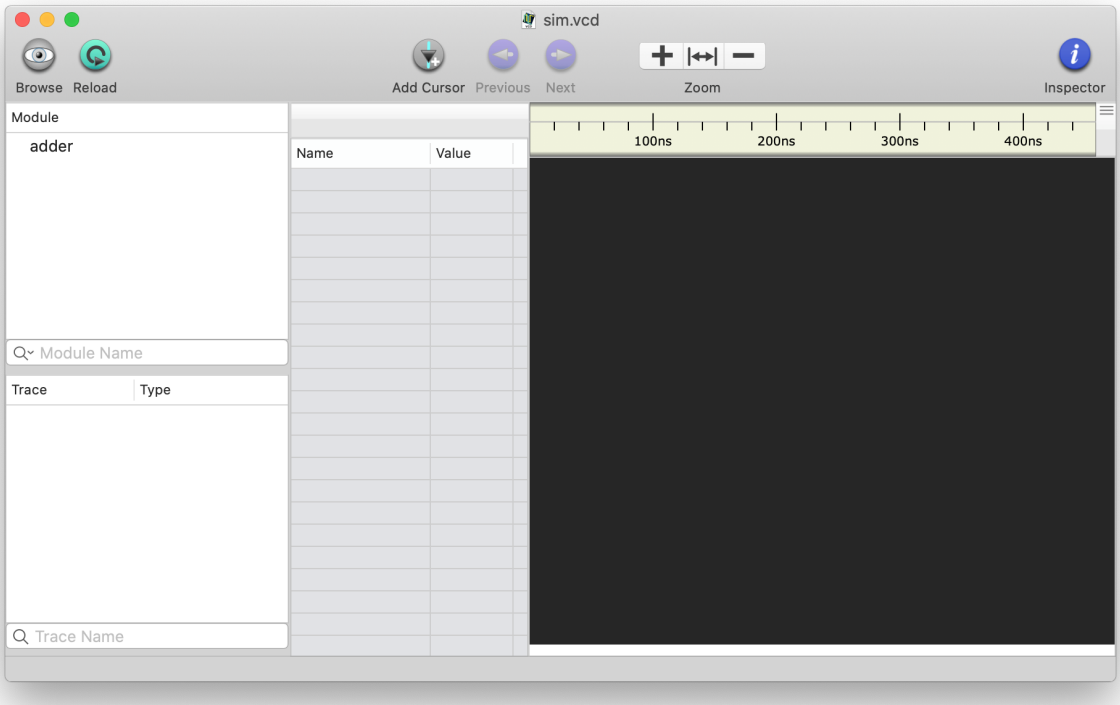

Figure 6: New Scansion Window

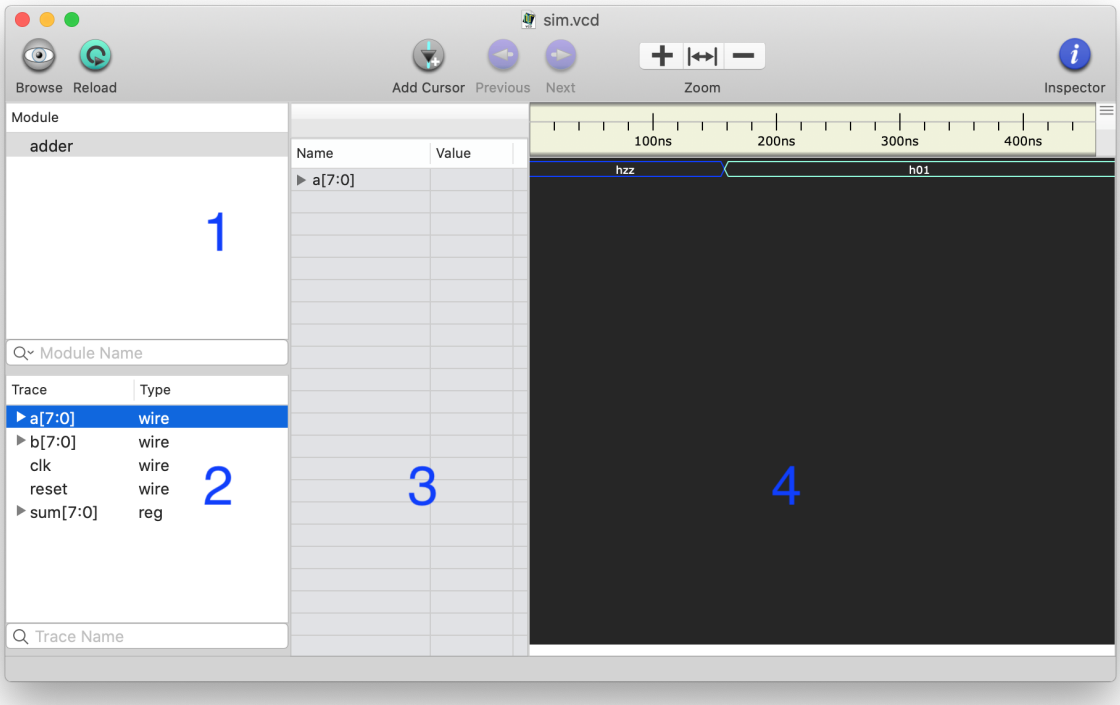

Figure 7: Dragging in Signals

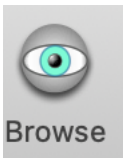

Figure 8: Viewing Signal in Browse Mode