Checklist for debugging most common errors

1. When there is no hardware sink present then a throttle block is required in the flowgraph to limit the flow of samples otherwise the gnuradio software starts processing samples as fast as it can which consumes all the hardware resources and the machine stops responding.

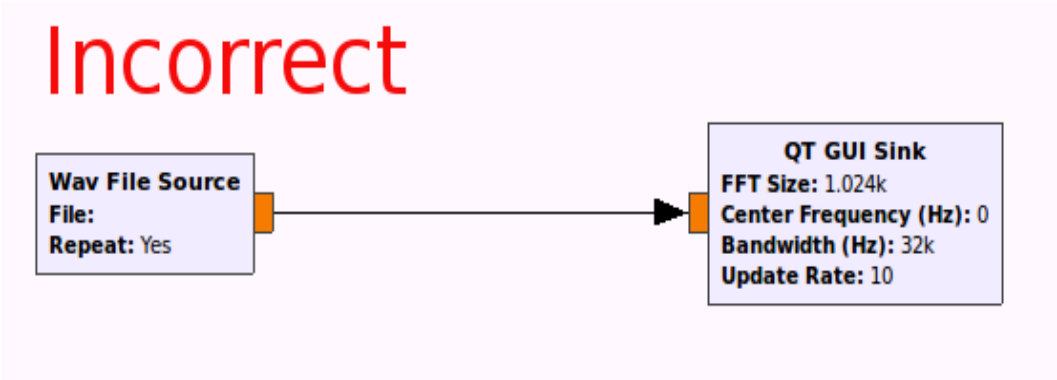

Fig 1.1 (No throttle or hardware sink present)

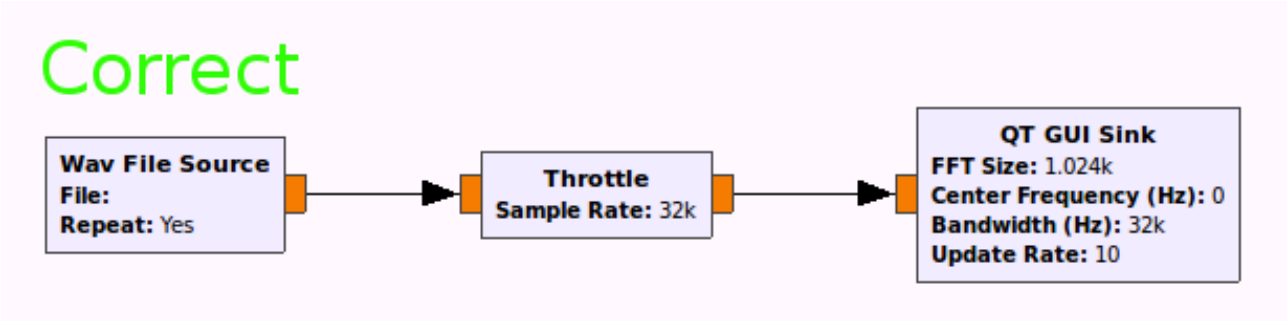

Fig 1.2 (Throttle Present)

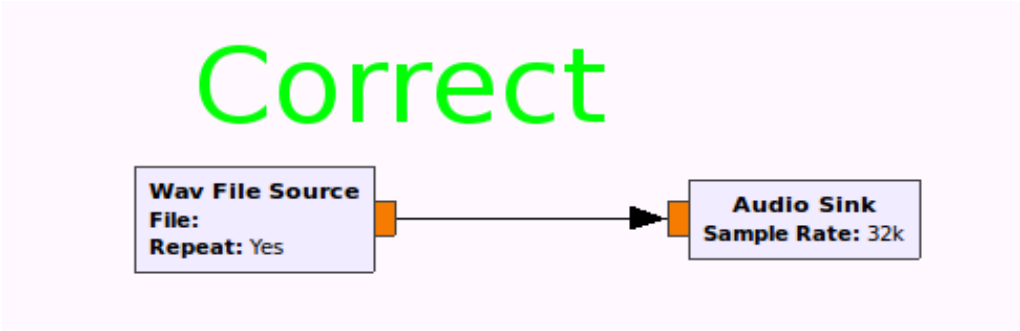

Fig 1.3 (Hardware sink is present so throttle is not necessary)

□ Make sure that a throttle block (with appropriate sample rate) is present in your flowgraph if there is nothing to limit the flow of samples.

2. When you are implementing a lowpass or a bandpass filter using inbuilt block and the transition band of the filter is too narrow (approaching ideal) then the flowgraph fails to run with an error ‘insufficient extremals’.

□ Increase the width of transition band (e.g The difference between highest allowed frequency and lowest completely attenuated frequency for a lowpass filter) when you see an error ‘insufficient extremals’.

3. When the letters ‘aU’ appear repeatedly in the output window, it means that audio sink is not receiving samples at a sufficient rate and audio underrun warning is being generated.

□ Adjust the sample rates in your flowgraph so that audio sink can receive samples at the required rate.

□ For audio sink select the sample rate from options available in the block and don’t enter a value manually.

4.
□ Make sure that the value of sample rate for each block is well above nyquist rate corresponding to the signal being processed by that block.

5.
□ Sample rate value for RTL-SDR block should preferably be more than 900k.

6.
□ Make sure that the type of GUI Sink (QT or WX) used is same as the option (QT or WX) selected in generate option field of options block (usually present in upper left corner of screen) of your flowgraph.

7.
□ When tuning to a frequency using RTL-SDR dongle, make sure to use a range variable (add to the value of frequency to be tuned) to counter for the offset (almost always present) in the frequency of channel you are tuning to.

8.
□ When reading audio from a wav file, use the block named ‘wav file source’ and not the block ‘audio source’.