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Everyone should be using something like this, as well as maybe not many other related things. But you probably don't know what this is, so have fun. (ie. rewrite this placeholder text later)

# Usage

```
./ubiquitous_bash.sh
```

# Standards

input.rrf  
framed.rrf  
output.rrf

Any automation of the preprocessing/postprocessing step by 'gr-pipe' may use a separate 'flowgraph' pointing to 'framed.rrf' .  
Similarly, shell/batch files may perform this step.

# Design

# Conclusions

\*) Framing arbitrary size files with stock GNURadio is not possible, due to 'Stream to Tagged Stream', at least with the stock version, blocking output until a multiple of the specified length for tagging.

\*) Cygwin installation of GNURadio may be possible. Possibly also gr-pipe .

# Safety

# Reference

[https://wiki.gnuradio.org/index.php?title=QPSK\\_Mod\\_and\\_Demod](https://wiki.gnuradio.org/index.php?title=QPSK_Mod_and_Demod)

'might have an ambiguity of 90 degrees in the constellation. Luckily, we avoided this problem by transmitting differential symbols.'

<https://discuss-gnuradio.gnu.narkive.com/KrFwQ9Fz/why-no-phase-ambiguity-in-digital-bert>

'scrambler/descrambler pair is insensitive to the phase ambiguity'

[https://www.gnuradio.org/grcon/grcon17/presentations/building\\_a\\_moderately\\_complex\\_mode\\_with\\_spare\\_parts/Dan-CaJacob-Building-a-Moderately-Complex-Modem-with-Spare-Parts.pdf](https://www.gnuradio.org/grcon/grcon17/presentations/building_a_moderately_complex_mode_with_spare_parts/Dan-CaJacob-Building-a-Moderately-Complex-Modem-with-Spare-Parts.pdf)

'Correlation estimator and 2nd Costas Loop clean up the ambiguity'

<https://github.com/greatscottgadgets/hackrf/issues/1159>

MAJOR - SEVERE - 'Possible solution: at TX startup, have the M4 not run baseband\_streaming\_enable until the first two 16KB transfers have arrived from the host, meaning that the M0 has a full buffer ready to transmit.'

[https://www.reddit.com/r/RTLSDR/comments/o7owrl/hackrf\\_frequency\\_drift/](https://www.reddit.com/r/RTLSDR/comments/o7owrl/hackrf_frequency_drift/)

<https://imgur.com/a/ggsuPTm>

<https://stackoverflow.com/questions/54946638/punctured-convolutional-codes-in-gnu-radio>

'Gnu Radio Puncture pattern' 'Puncture size' 'Delay values'

[https://aaronscher.com/GNU\\_Radio\\_Companion\\_Collection/Audio\\_modem.html](https://aaronscher.com/GNU_Radio_Companion_Collection/Audio_modem.html)

<https://wiki.gnuradio.org/index.php?title=CygwinInstallMain>

[https://wiki.gnuradio.org/index.php/Packet\\_Communications](https://wiki.gnuradio.org/index.php/Packet_Communications)

MAJOR - 'Functionally it replaces a 'File Source' block and a 'Stream to Tagged Stream' block. The advantage of this block is that when the input file size is not an exact multiple of the selected packet length, the remainder at the end of the file is not lost in the 'Stream to Tagged Stream' buffer. This precludes the need for a pre-processor such as the text padding program above.'

[https://raw.githubusercontent.com/gnuradio/gnuradio/master/gr-digital/examples/ofdm/ofdm\\_loopback.grc](https://raw.githubusercontent.com/gnuradio/gnuradio/master/gr-digital/examples/ofdm/ofdm_loopback.grc)

[https://wiki.gnuradio.org/index.php/Packet\\_Communications](https://wiki.gnuradio.org/index.php/Packet_Communications)

MAJOR - 'Header Format Object' .

MAJOR - 'Using Header Format Default and Correlate Access Code' .

[https://wiki.gnuradio.org/images/f/fd/Pkt\\_7\\_base\\_fg.png](https://wiki.gnuradio.org/images/f/fd/Pkt_7_base_fg.png)

'Protocol Formatter' 'Format Obj'

'Header/Payload Demux'

[https://wiki.gnuradio.org/images/8/89/Pkt\\_7\\_base.grc](https://wiki.gnuradio.org/images/8/89/Pkt_7_base.grc)

Format Obj.: hdr\_format

[https://github.com/gnuradio/gnuradio/blob/master/gr-digital/examples/ofdm/tx\\_ofdm.grc](https://github.com/gnuradio/gnuradio/blob/master/gr-digital/examples/ofdm/tx_ofdm.grc)

Format Obj.: header\_formatter.base()

[https://www.gnuradio.org/doc/doxygen/classgr\\_1\\_1digital\\_1\\_1packet\\_\\_header\\_\\_default.html](https://www.gnuradio.org/doc/doxygen/classgr_1_1digital_1_1packet__header__default.html)  
'packet\_header\_default'

<https://www.youtube.com/watch?v=RnAgqGR-D-8>  
<https://www.youtube.com/watch?v=VR0mej2o-SM>  
Windows... HackRF...

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