

AD9361_with_ZedBoard Tutorial I

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<> Code

Issues 5

Pull requests 0

Projects 0

Wiki

Insights

MATLAB bindings for libiio

iio

matlab

45 commits

1 branch

0 releases

4 contributors

View license

Branch: master

New pull request

Create new file

Upload files

Find file

Clone or download

tfcollins Fix load filter function to actually enable the FIR once loaded ...

.gitignore ignore vim swap files

LICENSE.txt Create LICENSE.txt

iio.h clarify iio.h macros that break with MATLAB on Linux

iio_sys_obj.m Fixed variable naming error

iio_sys_obj_matlab.m Fix load filter function to actually enable the FIR once loaded

libiio_if.m Fixed attribute search

libiio_if_daq2.m Added a temporary fix for the DAQ2 board.

Clone with HTTPS ?

Use SSH

Use Git or checkout with SVN using the web URL.

https://github.com/analogdevicesinc/li



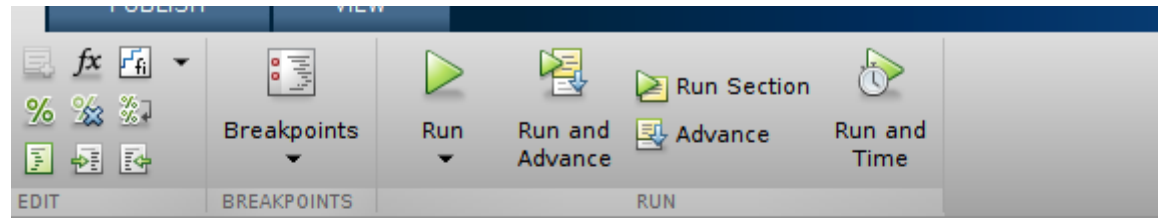
Download ZIP

```

Terminal File Edit View Search Terminal Help
appdata  help          patents.txt  settings    ui
bin      java            polyspace   simulink     VersionInfo.xml
cefcient license_agreement.txt remote       src
etc      licenses        resources   sys
examples mcr             rtw         toolbox
extern   MCR_license.txt runtime      trademarks.txt

sdr@sdr-Samsung-DeskTop-System:/opt/MATLAB/R2018a$ cd ~/sw/addon_matlab/
sdr@sdr-Samsung-DeskTop-System:~/sw/addon_matlab$ ls
armcortexr.mlpkginstall
sdr@sdr-Samsung-DeskTop-System:~/sw/addon_matlab$ git clone https://github.com/analogd
evicesinc/libiio-matlab.git
Cloning into 'libiio-matlab'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 157 (delta 0), reused 1 (delta 0), pack-reused 154
Receiving objects: 100% (157/157), 174.90 KiB | 153.00 KiB/s, done.
Resolving deltas: 100% (84/84), done.
Checking connectivity... done.
sdr@sdr-Samsung-DeskTop-System:~/sw/addon_matlab$ ls
armcortexr.mlpkginstall  libiio-matlab
sdr@sdr-Samsung-DeskTop-System:~/sw/addon_matlab$ cd libiio-matlab/
sdr@sdr-Samsung-DeskTop-System:~/sw/addon_matlab/libiio-matlab$ ls
iio.h          iio_sys_obj_matlab.m  libiio_if.m
iio_sys_obj.m  libiio_if_daq2.m      LICENSE.txt
sdr@sdr-Samsung-DeskTop-System:~/sw/addon_matlab/libiio-matlab$ cd /opt/MATLAB/R2018a/
bin/
sdr@sdr-Samsung-DeskTop-System:/opt/MATLAB/R2018a/bin$ cp -r ~/sw/addon_matlab/libiio-
matlab ./
sdr@sdr-Samsung-DeskTop-System:/opt/MATLAB/R2018a/bin$ █

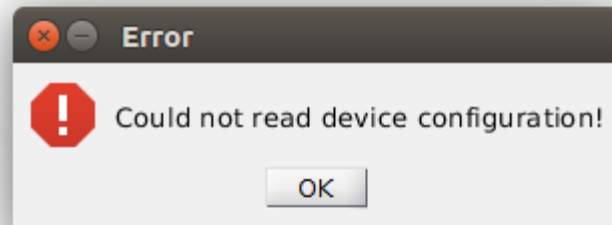
```



bio-matlab

Editor - /home/sdr/matlab_exam/ad9361_matlab.m

```
ad9361_matlab.m  x  iio_sys_obj_matlab.m  x  +
1 - clear;
2 - clc;
3
4 - s = iio_sys_obj_matlab; % Constructor
5 - s.ip_address = '10.66.99.200';
5 - s.dev_name = 'ad9361';
7 - s.in_ch_no = 2;
3 - s.out_ch_no = 2;
9 - s.in_ch_size = 8192;
9 - s.out_ch_size = 8192;
1
2 - s = s.setupImpl();
3
4 - input = cell(1, s.in_ch_no + length(s.iio_dev_cfg.cfg_ch));
5 - Fs = 30.72e6;
5 - Fc = 1e6;
7 - t = 1/Fs:1/Fs:s.in_ch_size/Fs;
3 - for i=1:s.in_ch_no
9 -     input{i} = sin(2*pi*Fc*t+(i-1)*pi/2)*1024;
9 - end
1 - input{s.in_ch_no+1} = 2.4e9;
2 - input{s.in_ch_no+2} = 30.72e6;
3 - input{s.in_ch_no+3} = 18.0e6;
4 - input{s.in_ch_no+4} = 'slow_attack';
5 - input{s.in_ch_no+5} = 0;
5 - input{s.in_ch_no+6} = 'slow_attack';
```



Ifconfig 를 통해 Target 의 IP 주소를 확인한다.




```
Editor - /home/sdr/matlab_exam/ad9361_matlab.m
Terminal File Edit View Search Terminal Help
Cloning into 'libio-matlab'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 157 (delta 0), reused 1 (delta 0), pack-reused 154
Receiving objects: 100% (157/157), 174.90 KiB | 153.00 KiB/s, done.
Resolving deltas: 100% (84/84), done.
Checking connectivity... done.
sdr@sdr-Samsung-DeskTop-System:~/sw/addon_matlab$ ls
armcortexr.mlpkginstall  libio-matlab
sdr@sdr-Samsung-DeskTop-System:~/sw/addon_matlab$ cd libio-matlab/
sdr@sdr-Samsung-DeskTop-System:~/sw/addon_matlab/libio-matlab$ ls
io.h          io_sys_obj_matlab.m  libio_if.m
io_sys_obj.m  libio_if_daq2.m      LICENSE.txt
sdr@sdr-Samsung-DeskTop-System:~/sw/addon_matlab/libio-matlab$ cd /opt/MATLAB/R2018a/
bin/
sdr@sdr-Samsung-DeskTop-System:/opt/MATLAB/R2018a/bin$ cp -r ~/sw/addon_matlab/libio-
matlab ./
sdr@sdr-Samsung-DeskTop-System:/opt/MATLAB/R2018a/bin$ ping 192.168.219.114
PING 192.168.219.114 (192.168.219.114) 56(84) bytes of data.
64 bytes from 192.168.219.114: icmp_seq=1 ttl=64 time=180 ms
64 bytes from 192.168.219.114: icmp_seq=2 ttl=64 time=111 ms
64 bytes from 192.168.219.114: icmp_seq=3 ttl=64 time=65.2 ms
64 bytes from 192.168.219.114: icmp_seq=4 ttl=64 time=83.1 ms
64 bytes from 192.168.219.114: icmp_seq=5 ttl=64 time=95.2 ms
^C
--- 192.168.219.114 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4005ms
rtt min/avg/max/mdev = 65.283/107.059/180.531/39.673 ms
sdr@sdr-Samsung-DeskTop-System:/opt/MATLAB/R2018a/bin$
```

Ping 테스트를 수행한다.

File Explorer: / > opt > MATLAB > R2018a > bin > libiiio-matlab

Current Folder

Name	Git
iio.h	●
iio_sys_obj.m	●
iio_sys_obj_matlab.m	●
libiiio_if.m	●
libiiio_if_daq2.m	●
LICENSE.txt	●

Editor - /home/sdr/matlab_exam/ad9361_matlab.m

```
1 - clear;
2 - clc;
3
4 - s = iio_sys_obj_matlab; % Constructor
5 - s.ip_address = '192.168.219.114';
6 - s.dev_name = 'ad9361';
7 - s.in_ch_no = 2;
8 - s.out_ch_no = 2;
9 - s.in_ch_size = 8192;
10 - s.out_ch_size = 8192;
11
12 - s = s.setupImpl();
13
14 - input = cell(1, s.in_ch_no + length(s.
15 - Fs = 30.72e6;
16 - Fc = 1e6;
17 - t = 1/Fs:1/Fs:s.in_ch_size/Fs;
18 - for i=1:s.in_ch_no
19 -     input{i} = sin(2*pi*Fc*t+(i-1)*pi/
20 - end
21 - input{end} = 0.4e6;
```

```
1 data_in_device = cf-ad9361-dds-core-lpc
2 data_out_device = cf-ad9361-lpc
3 ctrl_device = ad9361-phy
4 channel = RX_LO_FREQ,IN,out_altvoltage0_RX_LO_frequency,
5 channel = RX_SAMPLING_FREQ,IN,in_voltage_sampling_frequency,
6 channel = RX_RF_BANDWIDTH,IN,in_voltage_rf_bandwidth,
7 channel = RX1_GAIN_MODE,IN,in_voltage0_gain_control_mode,
8 channel = RX1_GAIN,IN,in_voltage0_hardwaregain,
9 channel = RX1_RSSI,OUT,in_voltage0_rssi,
10 channel = RX2_GAIN_MODE,IN,in_voltage1_gain_control_mode,
11 channel = RX2_GAIN,IN,in_voltage1_hardwaregain,
12 channel = RX2_RSSI,OUT,in_voltage1_rssi,
13 channel = TX_LO_FREQ,IN,out_altvoltage1_TX_LO_frequency,
14 channel = TX_SAMPLING_FREQ,IN,out_voltage_sampling_frequency,
15 channel = TX_RF_BANDWIDTH,IN,out_voltage_rf_bandwidth,
```


Current Folder

Name	Git
ad9361.cfg	○
iio.h	●
iio_sys_obj.m	●
iio_sys_obj_matlab.m	●
libiio_if.m	●
libiio_if_daq2.m	●
LICENSE.txt	●

Editor - /home/sdr/matlab_exam/ad9361_matlab.m

```

ad9361_matlab.m  x  iio_sys_obj_matlab.m  x  +
28 -     input{s.in_ch_no+8} = 2.4e9;
29 -     input{s.in_ch_no+9} = 30.72e6;
30 -     input{s.in_ch_no+10} = 18.0e6;
31
32 -     output = cell(1, s.out_ch_no + length(s.iio_dev_cfg.mon_ch
33
34 -     for i = 1:5
35 -         output = stepImpl(s, input);
36 -         rssi1 = output{s.out_ch_no+1};
37 -         rssi2 = output{s.out_ch_no+2};
38 -     end
39
40 -     s.releaseImpl();
41
42 -     figure % new figure
43 -     ax1 = subplot(2,1,1); % top subplot
44 -     ax2 = subplot(2,1,2); % bottom subplot
45
46 -     plot(ax1,output{1});
47 -     title(ax1,'I');
48 -     xlabel('Sample');
49 -     ylabel('Amplitude');
50
51 -     plot(ax2,output{2});
52 -     title(ax2,'Q');
53 -     xlabel('Sample');
54 -     ylabel('Amplitude');

```

Command Window

New to MATLAB? See resources for [Getting Started](#).

```

libiio_if: Found 5 devices in the system
libiio_if: cf-ad9361-lpc was found in the system
libiio_if: Found 4 input channels for the device cf-ad9361-lpc
libiio_if: cf-ad9361-lpc input data channels successfully initi
libiio_if: Connected to IP 192.168.219.114
libiio_if: Remote libiio version: 0.15, (git-6ecff5d)
libiio_if: Local libiio version: 0.16, (git-bac1d5e)
libiio_if: Found 5 devices in the system
libiio_if: ad9361-phy was found in the system

```

Details

Select a file to view details

biio-matlab

Editor - /home/sdr/matlab

ad9361_matlab.m x iio_s

```
1 - clear;
2 - clc;
3
4 - s = iio_sys_obj_ma
5 - s.ip_address = '192.168.219.114';
6 - s.dev_name = 'ad9361';
7 - s.in_ch_no = 2;
8 - s.out_ch_no = 2;
9 - s.in_ch_size = 8192;
0 - s.out_ch_size = 8192;
1
2 - s = s.setupImpl();
3
4 - input = cell(1, s.in_ch_no + length(s.iio_dev_cfg.cfg_ch));
5 - Fs = 30.72e6;
6 - Fc = 1e6;
7 - t = 1/Fs:1/Fs:s.in_ch_size/Fs;
```



There was an error loading the library "libiio"
libiio.so: cannot open shared object file: No such file or directory

OK

```
Terminal File Edit View Search Terminal Help
sdr@sdr-Samsung-DeskTop-System:/opt/MATLAB/R2018a/bin/libiio-matlab$ sudo apt-get install libiio-dev
libxml2 libxml2-dev bison flex libcdk5-dev cmake
[sudo] password for sdr:
Reading package lists... Done
Building dependency tree
Reading state information... Done
bison is already the newest version (2:3.0.4.dfsg-1).
flex is already the newest version (2.6.0-11).
cmake is already the newest version (3.5.1-1ubuntu3).
libxml2 is already the newest version (2.9.3+dfsg1-1ubuntu0.6).
libxml2-dev is already the newest version (2.9.3+dfsg1-1ubuntu0.6).
libxml2-dev set to manually installed.
The following packages were automatically installed and are no longer required:
  linux-headers-4.15.0-33 linux-headers-4.15.0-33-generic linux-image-4.15.0-33-generic
  linux-modules-4.15.0-33-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libcdk5
The following NEW packages will be installed:
  libcdk5 libcdk5-dev
0 upgraded, 2 newly installed, 0 to remove and 226 not upgraded.
Need to get 372 kB of archives.
After this operation, 2,286 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

```
Terminal File Edit View Search Terminal Help
Selecting previously unselected package libcdk5-dev.
Preparing to unpack .../libcdk5-dev_5.0.20160131-1_amd64.deb ...
Unpacking libcdk5-dev (5.0.20160131-1) ...
Processing triggers for libc-bin (2.23-0ubuntu10) ...
Processing triggers for man-db (2.7.5-1) ...
Setting up libcdk5 (5.0.20160131-1) ...
Setting up libcdk5-dev (5.0.20160131-1) ...
Processing triggers for libc-bin (2.23-0ubuntu10) ...
sdr@sdr-Samsung-DeskTop-System:/opt/MATLAB/R2018a/bin/libiio-matlab$ sudo apt-get install l
ibaio-dev libusb-1.0-0-dev libserialport-dev libxml2-dev libavahi-client-dev doxygen graphv
iz
Reading package lists... Done
Building dependency tree
Reading state information... Done
doxygen is already the newest version (1.8.11-1).
libxml2-dev is already the newest version (2.9.3+dfsg1-1ubuntu0.6).
The following packages were automatically installed and are no longer required:
  linux-headers-4.15.0-33 linux-headers-4.15.0-33-generic linux-image-4.15.0-33-generic
  linux-modules-4.15.0-33-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libavahi-common-dev libcdt5 libcgraph6 libgvc6 libgvpr2 libpathplan4 libserialport0
  libusb-1.0-doc
Suggested packages:
  graphviz-doc
The following NEW packages will be installed:
  graphviz libaio-dev libavahi-client-dev libavahi-common-dev libcdt5 libcgraph6 libgvc6
  libgvpr2 libpathplan4 libserialport-dev libserialport0 libusb-1.0-0-dev libusb-1.0-doc
0 upgraded, 13 newly installed, 0 to remove and 226 not upgraded.
Need to get 1,875 kB of archives.
After this operation, 14.8 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

```
Terminal File Edit View Search Terminal Help
Unpacking libavahi-common-dev (0.6.32~rc+dfsg-1ubuntu2.2) ...
Selecting previously unselected package libavahi-client-dev
Preparing to unpack .../libavahi-client-dev_0.6.32~rc+dfsg-1ubuntu2.2_amd64.deb ...
Unpacking libavahi-client-dev (0.6.32~rc+dfsg-1ubuntu2.2) ...
Setting up libavahi-client-dev (0.6.32~rc+dfsg-1ubuntu2.2) ...

sdr@sdr-Samsung-DeskTop-System:~/sw$ ls
addon_matlab  iso          modelsim  qwt      road_data  vmware
cuda          matlab_2018  opencv    rfsdk    sdk

sdr@sdr-Samsung-DeskTop-System:~/sw$ git clone https://github.com/analogdevicesinc/libiio.git
Cloning into 'libiio'...
remote: Enumerating objects: 71, done.
remote: Counting objects: 100% (71/71), done.
remote: Compressing objects: 100% (38/38), done.
remote: Total 7059 (delta 35), reused 48 (delta 22), pack-reused 6988
Receiving objects: 100% (7059/7059), 2.96 MiB | 682.00 KiB/s, done.
Resolving deltas: 100% (4650/4650), done.
Checking connectivity... done.

sdr@sdr-Samsung-DeskTop-System:~/sw$

Setting up libusb-1.0-0-dev:amd64 (2:1.0.20-1) ...
Setting up libusb-1.0-doc (2:1.0.20-1) ...
Setting up libserialport-dev:amd64 (0.1.0-1) ...
Processing triggers for libc-bin (2.23-0ubuntu10) ...

sdr@sdr-Samsung-DeskTop-System:/opt/MATLAB/R2018a/bin/libiio-matlab$
```

```
Terminal File Edit View Search Terminal Help
sdr@sdr-Samsung-DeskTop-System:~/sw$ cd librio/
sdr@sdr-Samsung-DeskTop-System:~/sw/librio$ cmake ./
-- The C compiler identification is GNU 5.4.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Performing Test HAS_WPEDANTIC
-- Performing Test HAS_WPEDANTIC - Success
-- Looking for strdup
-- Looking for strdup - found
-- Looking for strerror_r
-- Looking for strerror_r - found
-- Looking for newlocale
-- Looking for newlocale - found
-- Looking for in6addr_any
-- Looking for in6addr_any - found
-- Found Git: /usr/bin/git (found version "2.7.4")
-- Looking for libusb-1.0 : Found
-- Looking for libusb_get_version
```

Finally, in the `librio` directory,


```
Terminal File Edit View Search Terminal Help
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ make all
Scanning dependencies of target iio
[ 2%] Building C object CMakeFiles/iio.dir/backend.c.o
[ 5%] Building C object CMakeFiles/iio.dir/channel.c.o
[ 7%] Building C object CMakeFiles/iio.dir/device.c.o
[ 10%] Building C object CMakeFiles/iio.dir/context.c.o
[ 13%] Building C object CMakeFiles/iio.dir/buffer.c.o
[ 15%] Building C object CMakeFiles/iio.dir/utilities.c.o
[ 18%] Building C object CMakeFiles/iio.dir/scan.c.o
[ 21%] Building C object CMakeFiles/iio.dir/sort.c.o
[ 23%] Building C object CMakeFiles/iio.dir/local.c.o
[ 26%] Building C object CMakeFiles/iio.dir/usb.c.o
[ 28%] Building C object CMakeFiles/iio.dir/network.c.o
[ 31%] Building C object CMakeFiles/iio.dir/xml.c.o
[ 34%] Building C object CMakeFiles/iio.dir/lock.c.o
[ 36%] Building C object CMakeFiles/iio.dir/iiod-client.c.o
[ 39%] Linking C shared library libiio.so
Generating API documentation with Doxygen
[ 39%] Built target iio
Scanning dependencies of target libiio-py
[ 39%] Built target libiio-py
Scanning dependencies of target iio_attr
[ 42%] Building C object tests/CMakeFiles/iio_attr.dir/iio_attr.c.o
[ 44%] Linking C executable iio_attr
../libiio.so.0.16: undefined reference to `libusb_set_auto_detach_kernel_driver'
collect2: error: ld returned 1 exit status
tests/CMakeFiles/iio_attr.dir/build.make:95: recipe for target 'tests/iio_attr' failed
make[2]: *** [tests/iio_attr] Error 1
CMakeFiles/Makefile2:249: recipe for target 'tests/CMakeFiles/iio_attr.dir/all' failed
make[1]: *** [tests/CMakeFiles/iio_attr.dir/all] Error 2
Makefile:129: recipe for target 'all' failed
```

```

sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ nm /lib/x86_64-linux-gnu/libusb-1.0.so.0 | gr
ep libusb_set_auto_detach_kernel_driver
nm: /lib/x86_64-linux-gnu/libusb-1.0.so.0: no symbols
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ ldd libiio.so.0.16
linux-vdso.so.1 => (0x00007fff52f61000)
librt.so.1 => /lib/x86_64-linux-gnu/librt.so.1 (0x00007f763b049000)
libusb-1.0.so.0 => /opt/Xilinx/Vivado/2015.4/lib/linux64.o/libusb-1.0.so.0 (0x00007
f763ae3b000)
libavahi-client.so.3 => /usr/lib/x86_64-linux-gnu/libavahi-client.so.3 (0x00007f7
63ac2a000)
libavahi-common.so.3 => /usr/lib/x86_64-linux-gnu/libavahi-common.so.3 (0x00007f7
63aa1e000)
libxml2.so.2 => /usr/lib/x86_64-linux-gnu/libxml2.so.2 (0x00007f763a663000)
libpthread.so.0 => /lib/x86_64-linux-gnu/libpthread.so.0 (0x00007f763a446000)
libc.so.6 => /lib/x86_64-linux-gnu/libc.so.6 (0x00007f763a07c000)
libdbus-1.so.3 => /lib/x86_64-linux-gnu/libdbus-1.so.3 (0x00007f7639e30000)
libdl.so.2 => /lib/x86_64-linux-gnu/libdl.so.2 (0x00007f7639c2c000)
libcucuc.so.55 => /usr/lib/x86_64-linux-gnu/libcucuc.so.55 (0x00007f7639898000)
libz.so.1 => /lib/x86_64-linux-gnu/libz.so.1 (0x00007f763967e000)
liblzma.so.5 => /lib/x86_64-linux-gnu/liblzma.so.5 (0x00007f763945c000)
libm.so.6 => /lib/x86_64-linux-gnu/libm.so.6 (0x00007f7639153000)
/lib64/ld-linux-x86-64.so.2 (0x00007f763b46c000)
libsystemd.so.0 => /lib/x86_64-linux-gnu/libsystemd.so.0 (0x00007f763b5d8000)
libicudata.so.55 => /usr/lib/x86_64-linux-gnu/libicudata.so.55 (0x00007f763769c00
0)
libstdc++.so.6 => /opt/Xilinx/Vivado/2015.4/lib/linux64.o/libstdc++.so.6 (0x00007f7
63731a000)
libgcc_s.so.1 => /opt/Xilinx/Vivado/2015.4/lib/linux64.o/libgcc_s.so.1 (0x00007f763
7104000)
libselinux.so.1 => /lib/x86_64-linux-gnu/libselinux.so.1 (0x00007f7636ee2000)
libgcrypt.so.20 => /lib/x86_64-linux-gnu/libgcrypt.so.20 (0x00007f7636c01000)
libpcrc.so.3 => /lib/x86_64-linux-gnu/libpcrc.so.3 (0x00007f7636991000)
libpgpg-error.so.0 => /lib/x86_64-linux-gnu/libpgpg-error.so.0 (0x00007f763677d000)
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$

```

```
Terminal File Edit View Search Terminal Help
-- Generating done
-- Build files have been written to: /home/sdr/sw/libiio
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ make all
[ 2%] Building C object CMakeFiles/iio.dir/backend.c.o
[ 5%] Building C object CMakeFiles/iio.dir/channel.c.o
[ 7%] Building C object CMakeFiles/iio.dir/device.c.o
[ 10%] Building C object CMakeFiles/iio.dir/context.c.o
[ 13%] Building C object CMakeFiles/iio.dir/buffer.c.o
[ 15%] Building C object CMakeFiles/iio.dir/utilities.c.o
[ 18%] Building C object CMakeFiles/iio.dir/scan.c.o
[ 21%] Building C object CMakeFiles/iio.dir/sort.c.o
[ 23%] Building C object CMakeFiles/iio.dir/local.c.o
[ 26%] Building C object CMakeFiles/iio.dir/usb.c.o
[ 28%] Building C object CMakeFiles/iio.dir/network.c.o
[ 31%] Building C object CMakeFiles/iio.dir/xml.c.o
[ 34%] Building C object CMakeFiles/iio.dir/lock.c.o
[ 36%] Building C object CMakeFiles/iio.dir/iiod-client.c.o
[ 39%] Linking C shared library libiio.so
Generating API documentation with Doxygen
[ 39%] Built target iio
[ 39%] Built target libiio-py
[ 42%] Building C object tests/CMakeFiles/iio_attr.dir/iio_attr.c.o
[ 44%] Linking C executable iio_attr
../libiio.so.0.16: undefined reference to `libusb_set_auto_detach_kernel_driver'
collect2: error: ld returned 1 exit status
tests/CMakeFiles/iio_attr.dir/build.make:95: recipe for target 'tests/iio_attr' failed
make[2]: *** [tests/iio_attr] Error 1
CMakeFiles/Makefile2:249: recipe for target 'tests/CMakeFiles/iio_attr.dir/all' failed
make[1]: *** [tests/CMakeFiles/iio_attr.dir/all] Error 2
Makefile:129: recipe for target 'all' failed
make: *** [all] Error 2
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ nm /lib/x86_64-linux-gnu/libusb-1.0.so.0 | gr
ep libusb set auto detach kernel driver
nm: /lib/x86_64-linux-gnu/libusb-1.0.so.0: no symbols
```

```

111 if ! shopt -oq posix; then
112     if [ -f /usr/share/bash-completion/bash_completion ]; then
113         . /usr/share/bash-completion/bash_completion
114     elif [ -f /etc/bash_completion ]; then
115         . /etc/bash_completion
116     fi
117 fi
118
119 # Enable Vivado 2015 & Petalinux 2015
120 # source /home/sdr/petalinux_zynq/petalinux-v2015.4-final/settings.sh
121 # source /opt/Xilinx/Vivado/2015.4/settings64.sh
122
123 # Enable Vivado 2017 & Petalinux 2017
124 # source /opt/Xilinx/Vivado/2017.4/settings64.sh
125 # source /opt/pkg/petalinux/settings.sh
126
127 # Enable QT5 QWT6
128 QT_PLUGIN_PATH="/usr/local/qwt-6.1.3/plugins:$QT_PLUGIN_PATH"
129 export QT_PLUGIN_PATH
130
131 # Enable LD_LIB_PATH
132 LD_LIBRARY_PATH=/usr/local/qwt-6.1.3/lib:$LD_LIBRARY_PATH
133 export LD_LIBRARY_PATH
134
135 # Enable Nvidia CUDA
136 export PATH=/usr/local/cuda-9.0/bin${PATH:+:${PATH}}
137 export LD_LIBRARY_PATH=/usr/local/cuda-9.0/lib64${LD_LIBRARY_PATH:+:${LD_LIBRARY_PATH}}
138
139 # Enable ModelSim
140 export PATH=$PATH:/opt/intelFPGA/16.1/modelsim_ase/bin
141
142 # Enable Matlab
143 export PATH=$PATH:/opt/MATLAB/R2018a/bin

```



```
0.30.1 - (0x00007f1132101000)
1  (libc.so.6+0x1132101000) (libc.so.6+0x1132101000)
0  x Terminal File Edit View Search Terminal Help
[ 47%] Building C object tests/CMakeFiles/iiio_genxml.dir/iiio_genxml.c.o
c[ 50%] Linking C executable iiio_genxml
[ 50%] Built target iiio_genxml
cScanning dependencies of target iiio_writedev
[ 52%] Building C object tests/CMakeFiles/iiio_writedev.dir/iiio_writedev.c.o
so[ 55%] Linking C executable iiio_writedev
ad[ 55%] Built target iiio_writedev
5 Scanning dependencies of target iiio_readdev
[ 57%] Building C object tests/CMakeFiles/iiio_readdev.dir/iiio_readdev.c.o
2[ 60%] Linking C executable iiio_readdev
s[ 60%] Built target iiio_readdev
[ 63%] Building C object tests/CMakeFiles/iiio_reg.dir/iiio_reg.c.o
so[ 65%] Linking C executable iiio_reg
5[ 65%] Built target iiio_reg
dScanning dependencies of target iiio_adi_xflow_check
ca[ 68%] Building C object tests/CMakeFiles/iiio_adi_xflow_check.dir/iiio_adi_xflow_check.c.o
[ 71%] Linking C executable iiio_adi_xflow_check
[ 71%] Built target iiio_adi_xflow_check
[ 73%] Building C object tests/CMakeFiles/iiio_info.dir/iiio_info.c.o
s[ 76%] Linking C executable iiio_info
ix[ 76%] Built target iiio_info
[ 78%] [FLEX][lexer] Building scanner with flex 2.6.0
so[ 81%] [BISON][parser] Building parser with bison 3.0.4
rScanning dependencies of target iiiod
de[ 84%] Building C object iiiod/CMakeFiles/iiiod.dir/iiiod.c.o
[ 86%] Building C object iiiod/CMakeFiles/iiiod.dir/ops.c.o
[ 89%] Building C object iiiod/CMakeFiles/iiiod.dir/thread-pool.c.o
[ 92%] Building C object iiiod/CMakeFiles/iiiod.dir/parser.c.o
[ 94%] Building C object iiiod/CMakeFiles/iiiod.dir/lexer.c.o
[ 97%] Building C object iiiod/CMakeFiles/iiiod.dir/usbd.c.o
[100%] Linking C executable iiiod
[100%] Built target iiiod
```

cc target

```
Terminal File Edit View Search Terminal Help

sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ sudo make install
[sudo] password for sdr:
[ 39%] Built target iio
[ 39%] Built target libiio-py
[ 44%] Built target iio_attr
[ 50%] Built target iio_genxml
[ 55%] Built target iio_writedev
[ 60%] Built target iio_readdev
[ 65%] Built target iio_reg
[ 71%] Built target iio_adl_xflow_check
[ 76%] Built target iio_info
[100%] Built target iiod
Install the project...
-- Install configuration: "RelWithDebInfo"
-- Installing: /usr/lib/x86_64-linux-gnu/pkgconfig/libiio.pc
-- Installing: /usr/lib/x86_64-linux-gnu/libiio.so.0.16
-- Installing: /usr/lib/x86_64-linux-gnu/libiio.so.0
-- Installing: /usr/lib/x86_64-linux-gnu/libiio.so
-- Set runtime path of "/usr/lib/x86_64-linux-gnu/libiio.so.0.16" to "/usr/lib/x86_64-linux-gnu"
-- Installing: /usr/include/iio.h
-- Installing: /usr/share/doc/libiio0-doc/html
-- Installing: /usr/share/doc/libiio0-doc/html/group__Device_ga4e5e9abbd5c0129826ab9a623a635c70_cgraph.map
-- Installing: /usr/share/doc/libiio0-doc/html/group__Device_ga30151c105a19b3fc3ad6376046d60bf9_cgraph.map
-- Installing: /usr/share/doc/libiio0-doc/html/group__Device_ga176d11776f916c8148c6dfa1368cea3c_cgraph.png
-- Installing: /usr/share/doc/libiio0-doc/html/group__TopLevel_ga55574e54de682499c5c08566c652114a_icgraph.md5
-- Installing: /usr/share/doc/libiio0-doc/html/group__Context_ga04957021a00fb18689b9d9ae6f95a928_cgraph.md5
-- Installing: /usr/share/doc/libiio0-doc/html/group__Buffer_ga000d2f4c8b72060db1c38ec905bf
```

being used


```
Terminal File Edit View Search Terminal Help
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ PATH=/usr/lib/:$PATH
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ git describe --tags
v0.16-12-gbac1d5e
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ iio_info
Library version: 0.16 (git tag: bac1d5e)
Compiled with backends: local xml ip usb
Unable to create IIO context: No such file or directory
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ strace -ofoo iio_info
Library version: 0.16 (git tag: bac1d5e)
Compiled with backends: local xml ip usb
Unable to create IIO context: No such file or directory
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ grep -e ^open foo | grep libiio
open("/usr/lib/x86_64-linux-gnu/tls/x86_64/libiio.so.0", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
open("/usr/lib/x86_64-linux-gnu/tls/libiio.so.0", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
open("/usr/lib/x86_64-linux-gnu/x86_64/libiio.so.0", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
open("/usr/lib/x86_64-linux-gnu/libiio.so.0", O_RDONLY|O_CLOEXEC) = 3
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ ls -l ./libiio.so.0
lrwxrwxrwx 1 sdr sdr 14 12월 2 20:35 ./libiio.so.0 -> libiio.so.0.16
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ ls -l ./libiio.so.0.16
-rwxrwxr-x 1 sdr sdr 489424 12월 2 20:35 ./libiio.so.0.16
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$
```

```
Terminal File Edit View Search Terminal Help
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ cd ~
sdr@sdr-Samsung-DeskTop-System:~$ strace -ofoo iio_info
Library version: 0.16 (git tag: bac1d5e)
Compiled with backends: local xml ip usb
Unable to create IIO context: No such file or directory
sdr@sdr-Samsung-DeskTop-System:~$ grep -e ^open foo | grep libiio
open("/usr/lib/x86_64-linux-gnu/tls/x86_64/libiio.so.0", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
open("/usr/lib/x86_64-linux-gnu/tls/libiio.so.0", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
open("/usr/lib/x86_64-linux-gnu/x86_64/libiio.so.0", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
open("/usr/lib/x86_64-linux-gnu/libiio.so.0", O_RDONLY|O_CLOEXEC) = 3
sdr@sdr-Samsung-DeskTop-System:~$ ls -l ./libiio.so.0
ls: cannot access './libiio.so.0': No such file or directory
sdr@sdr-Samsung-DeskTop-System:~$ ls -l ./libiio.so.0.16
ls: cannot access './libiio.so.0.16': No such file or directory
sdr@sdr-Samsung-DeskTop-System:~$ ls -l /usr/lib/x86_64-linux-gnu/libiio.so.0
lrwxrwxrwx 1 root root 14 12월  2 20:39 /usr/lib/x86_64-linux-gnu/libiio.so.0 -> libiio.so.0.16
sdr@sdr-Samsung-DeskTop-System:~$ ls -l /usr/lib/x86_64-linux-gnu/libiio.so.0.16
-rw-r--r-- 1 root root 489424 12월  2 20:35 /usr/lib/x86_64-linux-gnu/libiio.so.0.16
sdr@sdr-Samsung-DeskTop-System:~$
```

```
Terminal File Edit View Search Terminal Help
sdr@sdr-Samsung-DeskTop-System:~/sw/libiio$ cd ~
sdr@sdr-Samsung-DeskTop-System:~$ strace -ofoo iio_info
Library version: 0.16 (git tag: bac1d5e)
Compiled with backends: local xml ip usb
Unable to create IIO context: No such file or directory
sdr@sdr-Samsung-DeskTop-System:~$ grep -e ^open foo | grep libiio
open("/usr/lib/x86_64-linux-gnu/tls/x86_64/libiio.so.0", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
open("/usr/lib/x86_64-linux-gnu/tls/libiio.so.0", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
open("/usr/lib/x86_64-linux-gnu/x86_64/libiio.so.0", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
open("/usr/lib/x86_64-linux-gnu/libiio.so.0", O_RDONLY|O_CLOEXEC) = 3
sdr@sdr-Samsung-DeskTop-System:~$ ls -l ./libiio.so.0
ls: cannot access './libiio.so.0': No such file or directory
sdr@sdr-Samsung-DeskTop-System:~$ ls -l ./libiio.so.0.16
ls: cannot access './libiio.so.0.16': No such file or directory
sdr@sdr-Samsung-DeskTop-System:~$ ls -l /usr/lib/x86_64-linux-gnu/libiio.so.0
lrwxrwxrwx 1 root root 14 12월  2 20:39 /usr/lib/x86_64-linux-gnu/libiio.so.0 -> libiio.so.0.16
sdr@sdr-Samsung-DeskTop-System:~$ ls -l /usr/lib/x86_64-linux-gnu/libiio.so.0.16
-rw-r--r-- 1 root root 489424 12월  2 20:35 /usr/lib/x86_64-linux-gnu/libiio.so.0.16
sdr@sdr-Samsung-DeskTop-System:~$ ldd
ldd: missing file arguments
Try 'ldd --help' for more information.
sdr@sdr-Samsung-DeskTop-System:~$ ldd config
ldd: ./config: No such file or directory
sdr@sdr-Samsung-DeskTop-System:~$ ldconfig
/sbin/ldconfig.real: Can't link /usr/lib/libusb-1.0.so.0 to libusb-1.0.so
/sbin/ldconfig.real: Can't create temporary cache file /etc/ld.so.cache~: Permission denied
sdr@sdr-Samsung-DeskTop-System:~$ sudo ldconfig
sdr@sdr-Samsung-DeskTop-System:~$ █
```

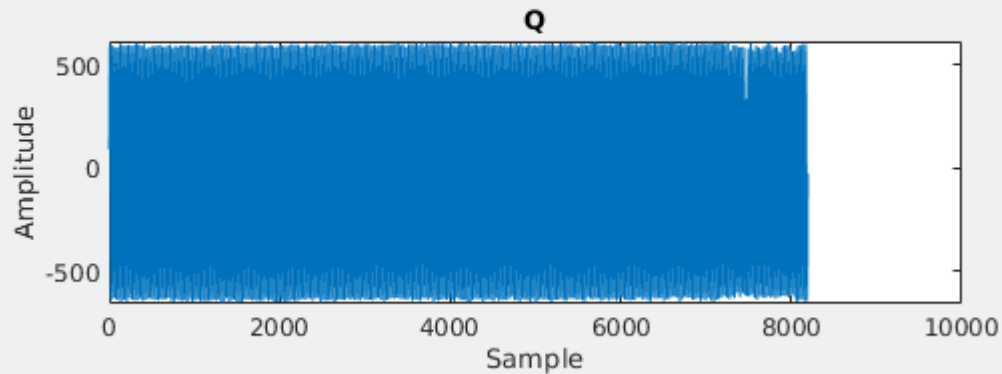
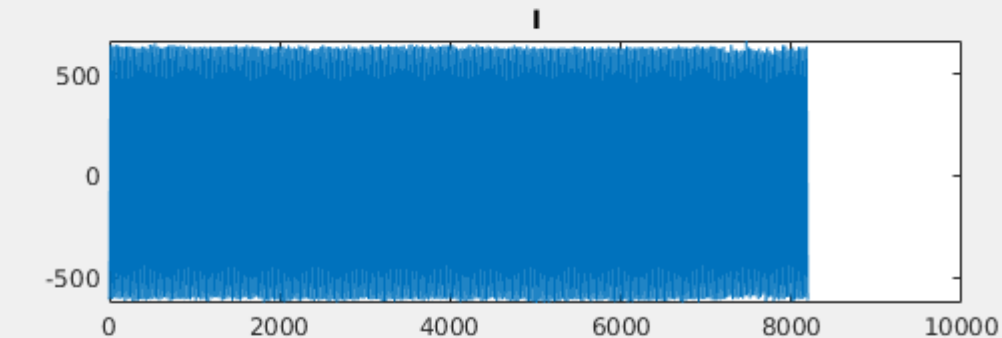
Editor - /home/sdr/matlab_exam/ad9361_matlab.m

ad9361_matlab.m x iio_sys_obj_matlab.m x +

```
1 - clear;
2 - clc;
3
4 - s =
5 - s.ip
6 - s.de
7 - s.in
8 - s.out
9 - s.in
10 - s.out
11
12 - s =
13
14 - input
15 - Fs =
16 - Fc =
17 - t =
18 - for
19
20 - end
21 - input
22 - input
23 - input
24 - input
25 - input
26 - input
27 - input
```

Figure 1

File Edit View Insert Tools Desktop Window Help



Command Window

New to MATLAB? See resources for [Getting Started](#)

libiio-matlab

Editor - /home/sdr/matlab_exam/ad9361_matlab.m

ad9361_matlab.m x iio_sys_obj_matlab.m +

```
7 - s.in_ch_no = 2;  
8 - s.out_ch_no = 2;  
9 -  
10 -  
11 -  
12 -  
13 -  
14 -  
15 -  
16 -  
17 -  
18 -  
19 -  
20 -  
21 -  
22 -  
23 -  
24 -  
25 -  
26 -  
27 -  
28 -  
29 -  
30 -  
31 -  
32 -  
33 -
```

Figure 1

File Edit View Insert Tools Desktop Window Help

