1. Install or Update RF24 Libraries and Repo on Raspberry Pi

@ https://github.com/nRF24/RF24/blob/master/docs/using_cmake.md#building-from-source-code

Did this on 4/25/2022

Following the step-by-step instructions under the '**Build From Source**' section (ignore the section above that about installing the package).

Uninstalled the prior-instlled rf24 .deb 'package:

```
pi@raspberrypi:/lib$ sudo dpkg -r rf24
(Reading database ... 45488 files and directories currently installed.)
Removing rf24 (1.4.2) ...
```

And I then checked usr/libs, usr/include, usr/local/lib, and usr/local/include to be sure there were no artifacts left. There were none.

Proceeded to follow the '**Build from Source**' instructions --

Step-1, I verified that **cmake** was already installed on my pi. Which it was.

Step-2, Make a directory to contain the RF24 library and possibly other RF24* libraries and enter it:

```
pi@raspberrypi:/home$ mkdir rf24libs
pi@raspberrypi:/home$ cd rf24libs
```

Step-3, Clone the RF24 repo and navigate to it:

```
pi@raspberrypi:/home/rf24libs$ git clone https://github.com/nRF24/RF24.git RF24
Cloning into 'RF24'...
remote: Enumerating objects: 7105, done.
remote: Counting objects: 100% (804/804), done.
remote: Compressing objects: 100% (252/252), done.
remote: Total 7105 (delta 668), reused 556 (delta 552), pack-reused 6301
Receiving objects: 100% (7105/7105), 8.48 MiB | 581.00 KiB/s, done.
Resolving deltas: 100% (4896/4896), done.
```

```
pi@raspberrypi:/home/rf24libs$ cd RF24
pi@raspberrypi:/home/rf24libs/RF24$
```

Step-4, Create a build directory inside the RF24 directory and navigate to it:

```
pi@raspberrypi:/home/rf24libs/RF24$ mkdir build
pi@raspberrypi:/home/rf24libs/RF24$ cd build
pi@raspberrypi:/home/rf24libs/RF24/build$
```

Step-5, Configure build environment:

```
pi@raspberrypi:/home/rf24libs/RF24/build$ cmake .. -D RF24_DRIVER=SPIDEV
-- The C compiler identification is GNU 10.2.1
-- The CXX compiler identification is GNU 10.2.1
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Check for working C compiler: /usr/bin/cc - skipped
-- Detecting C compile features
-- Detecting C compile features - done
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Check for working CXX compiler: /usr/bin/c++ - skipped
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Setting build type to 'Release' as none was specified.
-- RF24 library version: 1.4.2
CMake Warning at cmake/Cache.cmake:27 (message):
ccache is enabled but was not found. Not using it
Call Stack (most recent call first):
CMakeLists.txt:39 (include)

-- detected SoC: BCM2835
-- detected CPU type: armv6l
-- tool name being used: arm-linux-gnueabihf
-- Using driver: SPIDEV
-- linking to pigpio lib for interrupt functionality
-- ready to package: librf24-SPIDEV_1.4.2-1_armhf.deb
-- ready to package: librf24-SPIDEV-1.4.2-1.armhf.rpm
-- Using utility library: /usr/lib/libpigpio.so
-- Configuring done
-- Generating done
-- Build files have been written to: /home/rf24libs/RF24/build
pi@raspberrypi:/home/rf24libs/RF24/build$
```

Step-6, Build and install the library:

```
pi@raspberrypi:/home/rf24libs/RF24/build$ make
```

```
Scanning dependencies of target rf24
[ 16%] Building CXX object CMakeFiles/rf24.dir/RF24.cpp.o
[ 33%] Building CXX object CMakeFiles/rf24.dir/utility/SPIDEV/gpio.cpp.o
[ 50%] Building CXX object CMakeFiles/rf24.dir/utility/SPIDEV/spi.cpp.o
[ 66%] Building CXX object CMakeFiles/rf24.dir/utility/SPIDEV/compatibility.cpp.o
[ 83%] Building CXX object CMakeFiles/rf24.dir/utility/SPIDEV/interrupt.cpp.o
[100%] Linking CXX shared library librf24.so
[100%] Built target rf24
pi@raspberrypi:/home/rf24libs/RF24/build$
pi@raspberrypi:/home/rf24libs/RF24/build$ sudo make install
[100%] Built target rf24
Install the project...
-- Install configuration: "Release"
-- Installing: /usr/local/include/RF24/utility/SPIDEV/includes.h
-- Installing: /usr/local/include/RF24/utility/SPIDEV/gpio.h
-- Installing: /usr/local/include/RF24/utility/SPIDEV/spi.h
-- Installing: /usr/local/include/RF24/utility/SPIDEV/compatibility.h
-- Installing: /usr/local/include/RF24/utility/SPIDEV/RF24_arch_config.h
-- Installing: /usr/local/include/RF24/utility/SPIDEV/interrupt.h
-- Installing: /usr/local/lib/librf24.so.1.4.2
-- Installing: /usr/local/lib/librf24.so.1
-- Installing: /usr/local/lib/librf24.so
-- Installing: /usr/local/include/RF24/RF24.h
-- Installing: /usr/local/include/RF24/nRF24L01.h
-- Installing: /usr/local/include/RF24/printf.h
-- Installing: /usr/local/include/RF24/RF24_config.h
-- Installing: /usr/local/include/RF24/utility/includes.h
-- Updating ldconfig
pi@raspberrypi:/home/rf24libs/RF24/build$
```

Step-7, Build the examples:

```
pi@raspberrypi:/home/rf24libs/RF24/build$ cd ../examples_linux
pi@raspberrypi:/home/rf24libs/RF24/examples_linux$

pi@raspberrypi:/home/rf24libs/RF24/examples_linux/build$ cmake .. -D
RF24_DRIVER=SPIDEV
-- detected SoC: BCM2835
-- detected CPU type: armv6l
-- tool name being used: arm-linux-gnueabihf
-- Using driver: SPIDEV
-- using RF24 library: /usr/local/lib/librf24.so
-- Configuring done
-- Generating done
-- Build files have been written to: /home/rf24libs/RF24/examples_linux/build
```

```
pi@raspberrypi:/home/rf24libs/RF24/examples_linux/build$ make
Scanning dependencies of target scanner
[  7%] Building CXX object CMakeFiles/scanner.dir/scanner.cpp.o
[ 14%] Linking CXX executable scanner
[ 14%] Built target scanner
Scanning dependencies of target multiceiverDemo
[ 21%] Building CXX object CMakeFiles/multiceiverDemo.dir/multiceiverDemo.cpp.o
[ 28%] Linking CXX executable multiceiverDemo
[ 28%] Built target multiceiverDemo
Scanning dependencies of target interruptConfigure
[ 35%] Building CXX object CMakeFiles/interruptConfigure.dir
/interruptConfigure.cpp.o
[ 42%] Linking CXX executable interruptConfigure
[ 42%] Built target interruptConfigure
Scanning dependencies of target manualAcknowledgements
[ 50%] Building CXX object CMakeFiles/manualAcknowledgements.dir
/manualAcknowledgements.cpp.o
[ 57%] Linking CXX executable manualAcknowledgements
[ 57%] Built target manualAcknowledgements
Scanning dependencies of target acknowledgementPayloads
[ 64%] Building CXX object CMakeFiles/acknowledgementPayloads.dir
/acknowledgementPayloads.cpp.o
[ 71%] Linking CXX executable acknowledgementPayloads
[ 71%] Built target acknowledgementPayloads
Scanning dependencies of target streamingData
[ 78%] Building CXX object CMakeFiles/streamingData.dir/streamingData.cpp.o
[ 85%] Linking CXX executable streamingData
[ 85%] Built target streamingData
Scanning dependencies of target gettingstarted
[ 92%] Building CXX object CMakeFiles/gettingstarted.dir/gettingstarted.cpp.o
[100%] Linking CXX executable gettingstarted
[100%] Built target gettingstarted
pi@raspberrypi:/home/rf24libs/RF24/examples_linux/build$
```