

20D_radio_simulator_firmware

Firmware repo for [Design 20D_radio_simulator](#)

Simulated Design

- Compilation with `assist` GCC_ARM Pass ✓
- Compilation with `assist` ARMC6 Pass ✓
- Compilation with `mbed-studio` GCC_ARM Pass ✓

Non Simulated Design

- Compilation with `assist` GCC_ARM Pass ✓
- Compilation with `assist` ARMC6 Pass ✓
- Compilation with `mbed-studio` GCC_ARM Pass ✓

Compilation of the simulated Design using mBedStudio assist

```
C:\WINDOWS\system32\cmd.exe
Compile [ 96.1%]: lp_ticker.c
[Warning] lp_ticker.c@39,5: implicit declaration of function 'common_rtc_free'; did you mean 'common_rtc_init'? [-Wimplicit-function-declaration]
Compile [ 96.6%]: blink.cpp
Compile [ 97.1%]: stringformat.cpp
[Warning] stringformat.cpp@15,9: enumeration value 'OUTPUT_TYPE_ARRAY' not handled in switch [-Wswitch]
Compile [ 97.6%]: counter.cpp
Compile [ 98.1%]: stringserial.cpp
Compile [ 98.6%]: simulatedradio.cpp
Compile [ 99.0%]: ticker.cpp
Compile [ 99.5%]: fifo.cpp
Compile [100.0%]: nworkbench.cpp
Link: 20D_radio_simulator
Elf2Bin: 20D_radio_simulator
```

Module	.text	.data	.bss
[fill]	80(+80)	4(+4)	31(+31)
[lib]\c.a	31800(+31800)	2472(+2472)	89(+89)
[lib]\gcc.a	3392(+3392)	0(+0)	0(+0)
[lib]\misc	180(+180)	4(+4)	28(+28)
main.o	462(+462)	0(+0)	1132(+1132)
mbed-os\drivers	1470(+1470)	0(+0)	0(+0)
mbed-os\hal	1378(+1378)	4(+4)	65(+65)
mbed-os\platform	4198(+4198)	260(+260)	240(+240)
mbed-os\targets	8746(+8746)	8(+8)	615(+615)
nlib\Blink	312(+312)	0(+0)	0(+0)
nlib\Counter	112(+112)	0(+0)	0(+0)
nlib\StringFormat	168(+168)	0(+0)	0(+0)
nlib\StringSerial	160(+160)	0(+0)	0(+0)
nlib\Ticker	244(+244)	0(+0)	0(+0)
nlib\nworkbench.o	470(+470)	0(+0)	88(+88)
Subtotals	53172(+53172)	2752(+2752)	2288(+2288)

```
Total Static RAM memory (data + bss): 5040(+5040) bytes
Total Flash memory (text + data): 55924(+55924) bytes

Image: F:\prj_soft\mbed-studio\20D_radio_simulator\BUILD\NRF52_DK\GCC_ARM_noSIM\20D_radio_simulator.hex
F:\n-blocks\studio\assist
```

nBlocksStudio Assist

Functions

Translate

Compile

Flash with pyOCD

Copy to mbed-drive

main.cpp for the simulated Design, reviewed with mbed-studio IDE

```
main.cpp x
1
2  /* ===== *
3     *      Automatically generated by n-Blocks Studio 2.0      *
4     *                                                         *
5     *      www.n-blocks.net                                     *
6     * ===== */
7  #include "nlib\nblocks.h"
8  #include "nlib\BSP\bsp.h"
9  // Custom nodes:
10 #include "nlib\Ticker\ticker.h"
11 #include "nlib\Counter\counter.h"
12 #include "nlib\StringFormat\stringformat.h"
13 #include "nlib\StringSerial\stringserial.h"
14 #include "nlib\SimulatedRadio\simulatedradio.h"
15
16 // -*-*- List of node objects -*-*-
17 nBlock_Ticker      nb_nBlockNode0_Ticker      (1000);
18 nBlock_Counter     nb_nBlockNode1_Counter     (10);
19 nBlock_StringFormat nb_nBlockNode2_StringFormat ("d");
20 nBlock_StringSerial nb_nBlockNode3_StringSerial (P0_31, P0_2);
21 nBlock_SimulatedRadio nb_nBlockNode4_SimulatedRadio (RADIO_MODE_TX_ONLY, 20);
22 nBlock_SimulatedRadio nb_nBlockNode5_SimulatedRadio (RADIO_MODE_RX_ONLY, 20);
23
24 // -*-*- List of connection objects -*-*-
25 nBlockConnection  n_conn0( &nb_nBlockNode4_SimulatedRadio, 0,      &nb_nBlockNode5_SimulatedRadio, 0);
26 nBlockConnection  n_conn1( &nb_nBlockNode2_StringFormat, 0,      &nb_nBlockNode3_StringSerial, 0);
27 nBlockConnection  n_conn2( &nb_nBlockNode5_SimulatedRadio, 0,      &nb_nBlockNode2_StringFormat, 0);
28 nBlockConnection  n_conn3( &nb_nBlockNode1_Counter, 0,      &nb_nBlockNode4_SimulatedRadio, 0);
29
30
31 // -*-*- Main function -*-*-
32 int main(void) {
33     SetupWorkbench();
34     while(1) {
35         ProgressNodes();
36
37         // Your custom code here!
38     }
39 }
40
```

Compilation for the simulated Design, with mbed-studio

```
7  #include "nlib\nblocks.h"
8  #include "nlib\BSP\bsp.h"
9  // Custom nodes:
10 #include "nlib\Ticker\ticker.h"
11 #include "nlib\Counter\counter.h"
12 #include "nlib\StringFormat\stringformat.h"
13 #include "nlib\StringSerial\stringserial.h"
14 #include "nlib\SimulatedRadio\simulatedradio.h"
15
```

① Problems × Output × Libraries ×

Building project 20D_radio_simulator (NRF52_DK, GCC_ARM)

Scan: 20D_radio_simulator

Compile [99.5%]: main.cpp

Compile [100.0%]: simulatedradio.cpp

Link: 20D_radio_simulator

Elf2Bin: 20D_radio_simulator

Module	.text	.data	.bss
[fill]	82(-38)	12(+0)	31(+0)
[lib]\c.a	31988(+188)	2472(+0)	89(+0)
[lib]\gcc.a	3392(+0)	0(+0)	0(+0)
[lib]\misc	180(+0)	4(+0)	28(+0)
main.o	446(+76)	0(+0)	1396(+368)
mbed-os\drivers	2122(+0)	0(+0)	0(+0)
mbed-os\hal	1602(+0)	4(+0)	65(+0)
mbed-os\platform	5380(+0)	260(+0)	368(+0)
mbed-os\targets	11108(+0)	8(+0)	615(+0)
nlib\Counter	150(+0)	0(+0)	0(+0)
nlib\SimulatedRadio	222(+222)	0(+0)	0(+0)
nlib\StringFormat	216(+0)	0(+0)	0(+0)
nlib\StringSerial	186(+0)	0(+0)	0(+0)
nlib\Ticker	334(+0)	0(+0)	0(+0)
nlib\nworkbench.o	564(+0)	0(+0)	88(+0)
Subtotals	57972(+448)	2760(+0)	2680(+368)

Total Static RAM memory (data + bss): 5440(+368) bytes

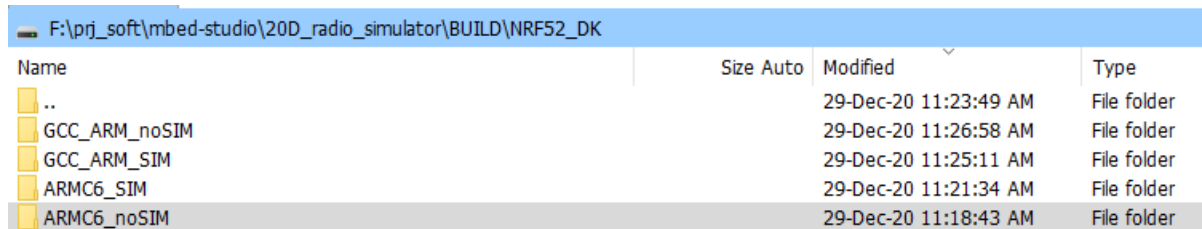
Total Flash memory (text + data): 60732(+448) bytes

Image: BUILD/NRF52_DK/GCC_ARM\20D_radio_simulator.hex

Compilation using nBlocksStudio `assist`

Four (4) BUILD directories are created compiling two (2) Designs (Simulated and nonSimulated) with 2 different compilers.

While mbed-studio is a nice IDE, with `assist` is easier to switch between different compilers and "BUILD directory" names.



F:\prj_soft\mbed-studio\20D_radio_simulator\BUILD\NRF52_DK			
Name	Size Auto	Modified	Type
..		29-Dec-20 11:23:49 AM	File folder
GCC_ARM_noSIM		29-Dec-20 11:26:58 AM	File folder
GCC_ARM_SIM		29-Dec-20 11:25:11 AM	File folder
ARMv6_SIM		29-Dec-20 11:21:34 AM	File folder
ARMv6_noSIM		29-Dec-20 11:18:43 AM	File folder