Programming Firebird-V from Linux Platform

E-Yantra Summer Internship Program

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Chapter 1

Firebird V ARM Linux Programming

1.1 Generation of bin files for ARM in Linux

1. Install GNU-arm toolchain by typing the following commands on the terminal:
   sudo add-apt-repository ppa:terry.guo/gcc-arm-embedded
   sudo apt-get update
   sudo apt-get install gcc-arm-none-eabi

2. Install and configure Eclipse and install the GNU-ARM-Eclipse plugins as shown on this webpage:
   http://gnuarmeclipse.livius.net/blog/plugins-install/

3. Open file menu and select New ¿ C Project. You will see a window shown in fig. 1.1.

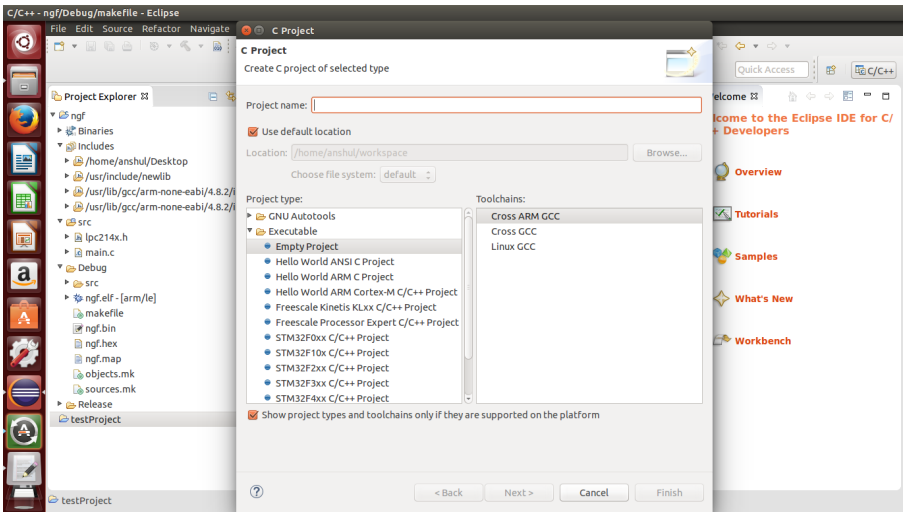

Figure 1.1: C Project

4. Give a project name and author name as shown in fig. 1.2.
5. Click Next to continue as shown in fig 1.3.
6. Select options as shown in fig. 1.4 and click on Finish.
7. Right Click on the project folder in the project explorer window of Eclipse and select properties.
8. Configure the target processor as shown in fig. 1.5.
9. Configure the output file format as shown in fig. 1.6.
10. Add the linker script file as shown in fig. 1.7.
11. Add the path to the 'lpc214x.h' header file as shown in fig. 1.8.
12. Write the program in main.c.

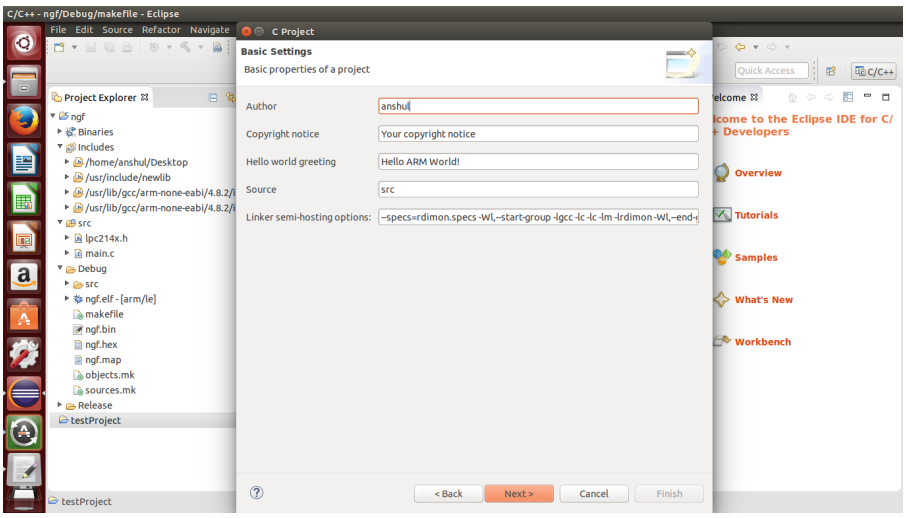

Figure 1.2: Basic Settings

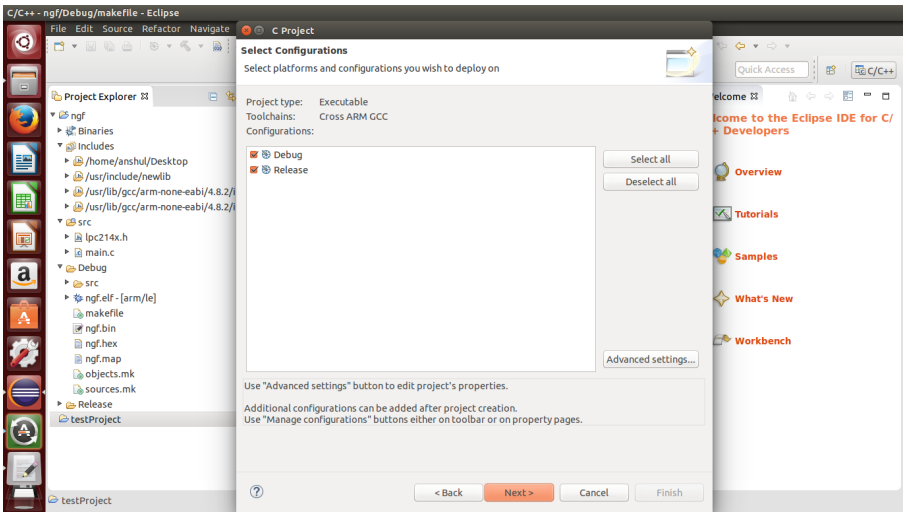

Figure 1.3: Select Configurations

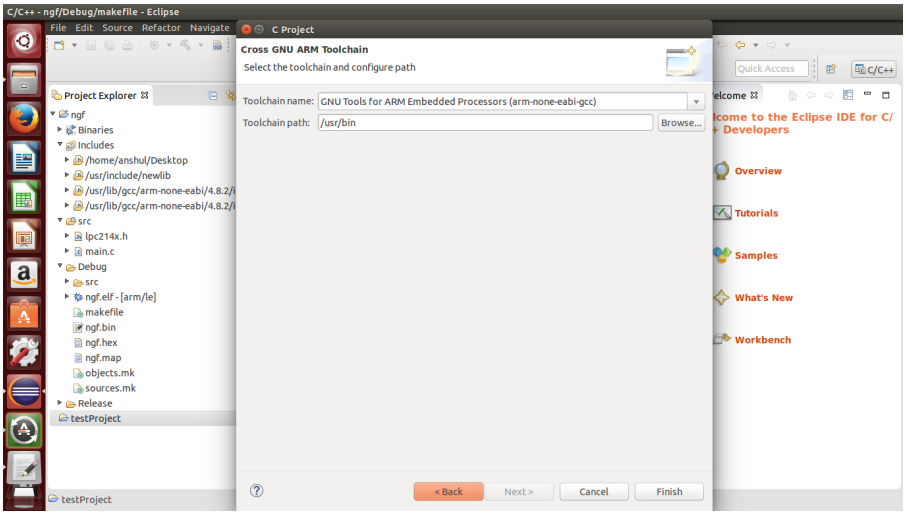

Figure 1.4: Cross GNU ARM Toolchain

13. You can then click on the hammer icon as shown in fig. 1.9 to build your program.

Bugs:

- Project cannot be built with the linker script, and without linker script it builds fine, but when loaded on

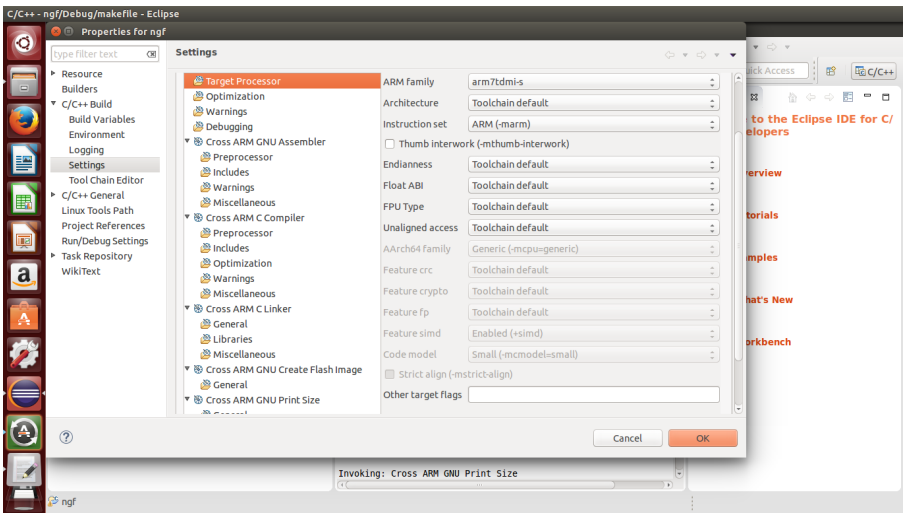

Figure 1.5: Configuring Target Processor

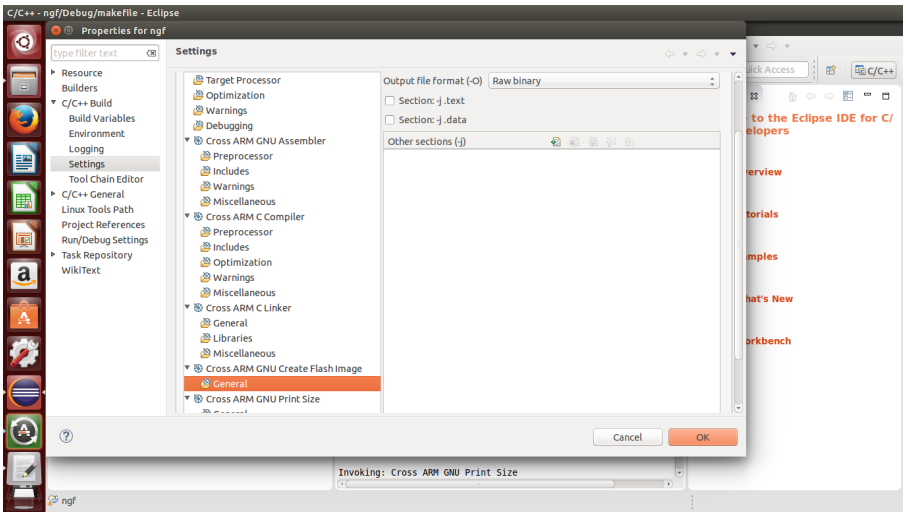

Figure 1.6: Configuring Output file format

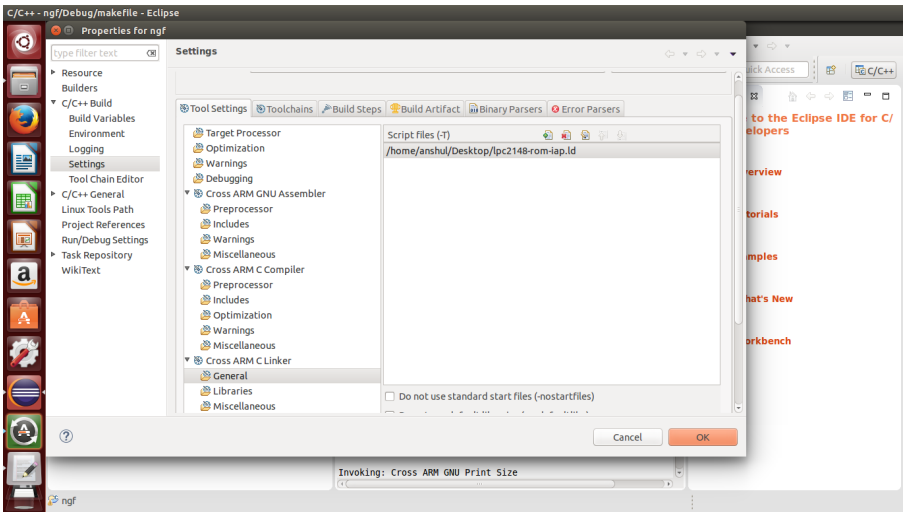

Figure 1.7: Adding a Linker Script file

the microcontroller, it won't work.

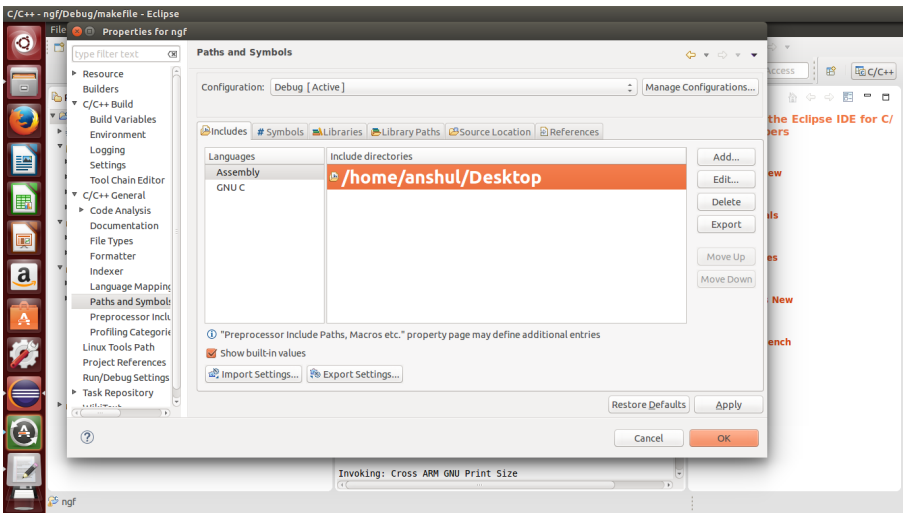

Figure 1.8: Adding the path to the lpc214x.h header file

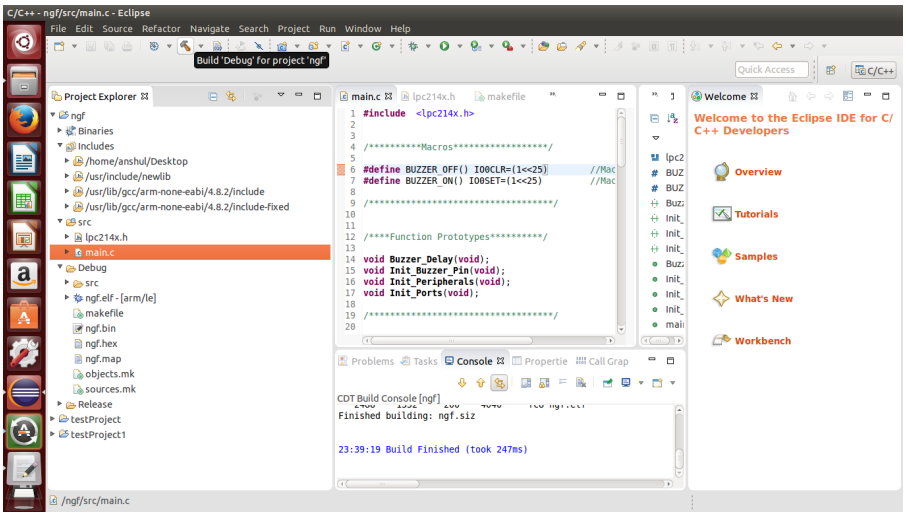

Figure 1.9: Building the project

1.2 Loading generated bin file for ARM with Linux

- Connect the LPC2148 firebird robot to USB port and enter the boot sequence for using IAP mode.
- Open a terminal window, and navigate to the directory containing the bin file using cd command and then enter the following command(Here the LPC2148 Firebird V was mounted at /media/CRP DISABLD and contained a firmware.bin file):

dd conv=nocreat,notrunc if=newfile.bin of=/media/CRP DISABLD/firmware.bin

References:

- http://gnuarmeclipse.livius.net/blog/
- http://sourceware-org.1504.n7.nabble.com/Problem-linking-with-static-libraries-for-arm-elf-td15249
  html
- https://groups.google.com/forum/#!topic/fabathome-forums/gwEFoVKh-hw
- https://github.com/jeffreyantony/pymite-lpc2148/blob/master/Makefile
- http://openlpc.com/4e26f1/reference