UCSC-Extension 4357
Embedded Firmware Essentials
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Homework 2
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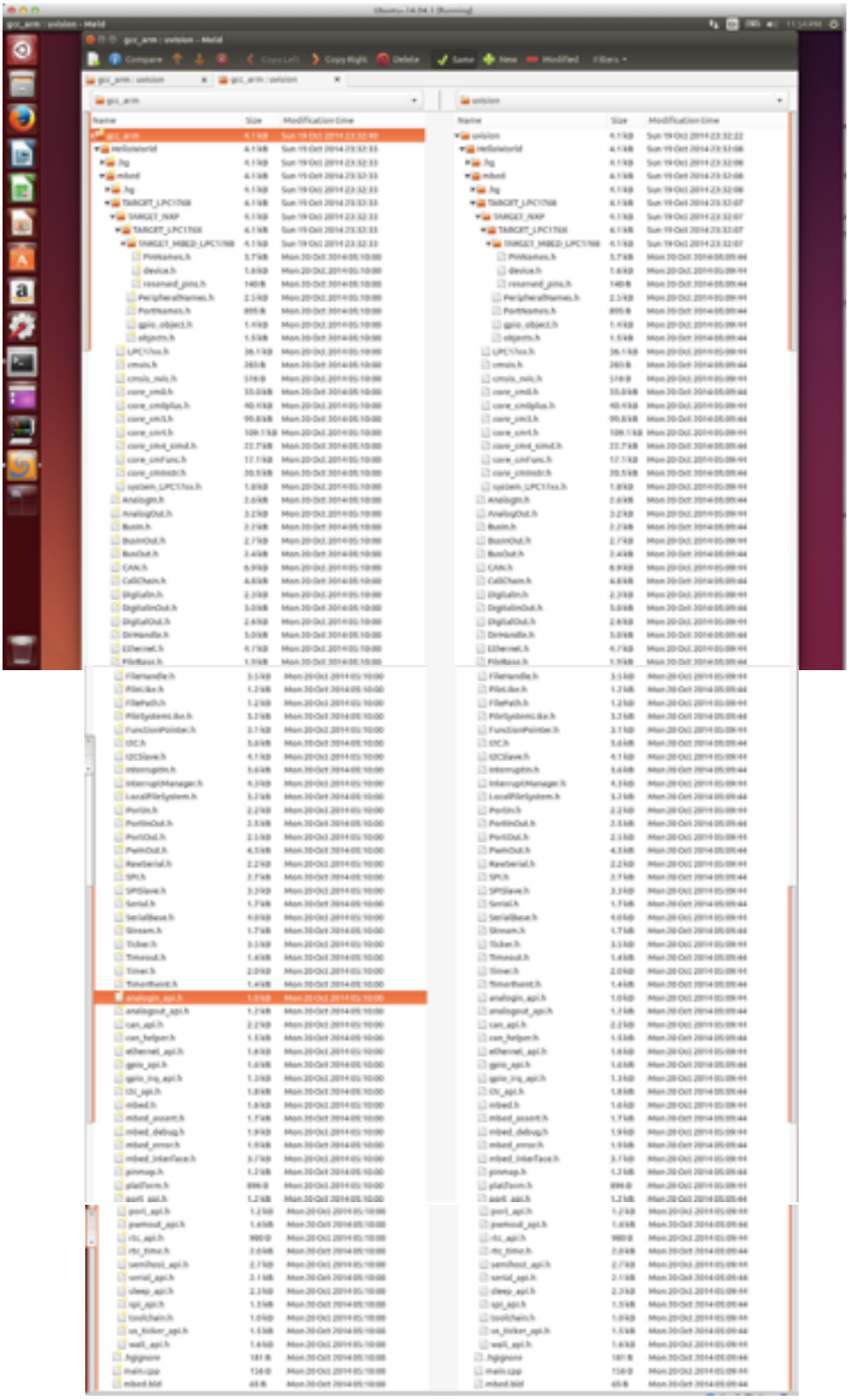
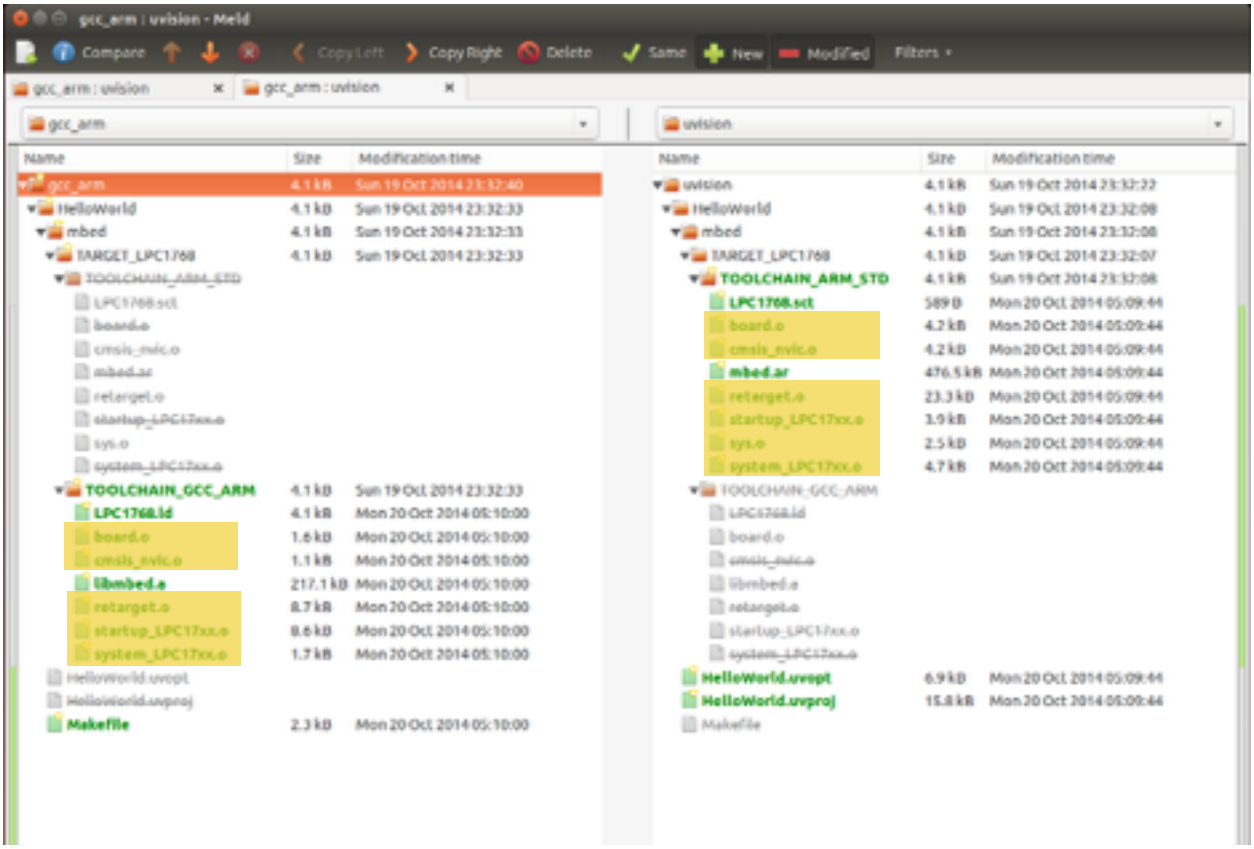
1. Here is a comparison of both unison and gcc_arm exported versions of “Hello World” showing files that are **identical** using the open-source utility *meld:*



Here are files that are **different**, including the binaries which are shown highlighted:



Files that are different (from the above GUI window) are

3 gcc_arm text files: LPC1768.ld, libmbed.a, Makefile

4 uvision text files: LPC1768.sct, mbed.ar, HelloWorlduvopt and HelloWorld.uvproj.

5 commonly-named binary files:

- board.o
- cmsis_nvic.o
- retarget.o
- startup_LPC17xx.o
- system_LPC17xx.o

uvision also has 1 unique binary file:

- sys.o

Here is a script *CompareFiles.sh* used for counting the number of text files in the project directory that are the same or different between the gcc_arm and uvision target builds:

From the script *CompareFiles.sh* the following information was determined:

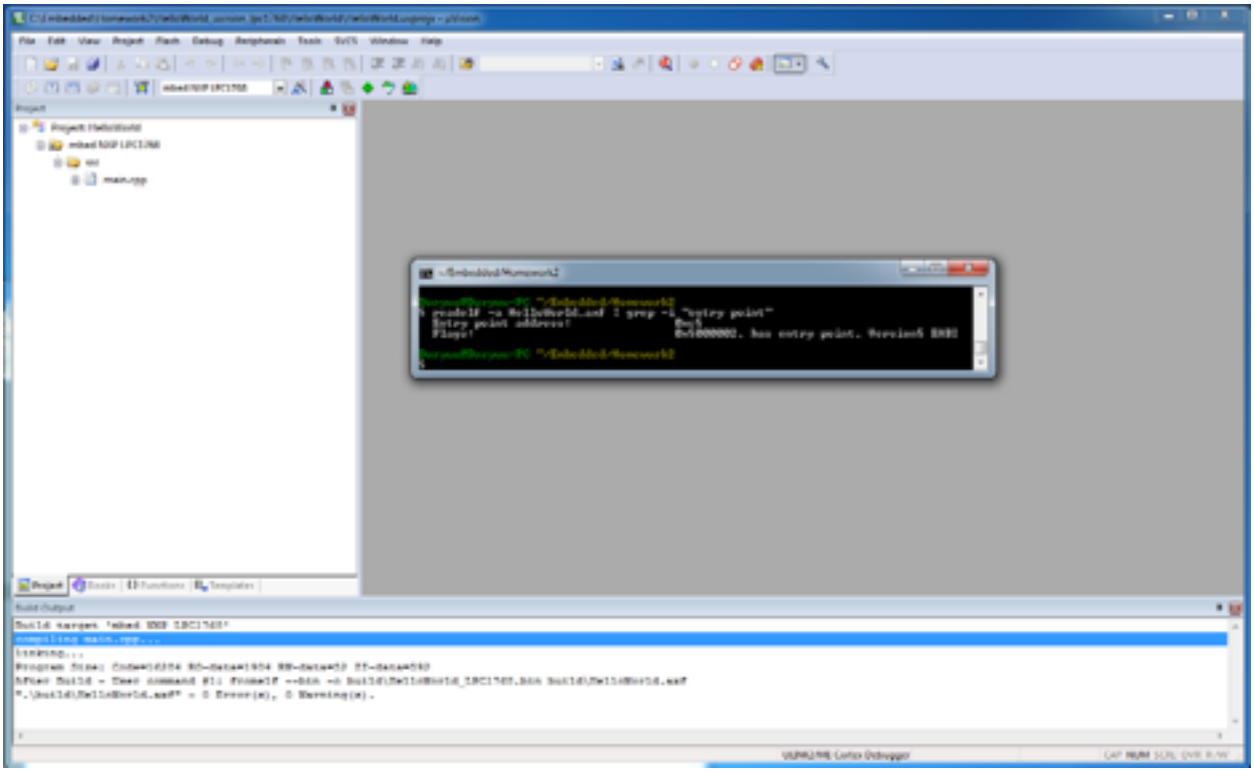
```
Total of 63 matching text files.
Total of 5549 lines in text files
```

After building the gcc_arm target (`make -all`), the following was observed as the entry point:

(from doing read elf -all

```
$readelf -a HelloWorld.elf  | grep -i "entry point"
  Entry point address:               0x5dd
  Flags:                             0x5000002, has entry point, Version5 EABI
```

Similarly after building the unison target using Keil on Windows 7 machine, and executing the read elf -a HelloWorld.axf command in cygwin:



Note the entry address (0xc5) for µvision is different from that (0x5dd) for the gcc_arm compiler.

2. binwalk exercise:

This has been installed, though I'm not sure what the function of this is…(still investigating.)

3. git clone exercise:

```
drew@drew-VirtualBox:~/Embedded/Repositories/mbed$ git clone git@github.com:mbedmicro/mbed
```

Here is a snapshot to show that I've done it: