

Keil uVision3 Setup for “uCdragon” Board

1. Select **Project > New uVision Project**
2. Select Device for Target ‘Target 1’ - **NXP LPC2292**
3. Copy LPC2xxx Startup Code to Project Folder and Add File to Project?
 - Simple assembly language test prog’s – **NO**
 - Other projects with C/assembly – **YES (copies startup.s)**
4. Add source code files to project
 - a. Existing files:
 - In Project Workspace pane, expand **Target 1**, right-click on **Source Group 1**, select **Add Files to Source Group 1**, and then browse to and select the files.
 - OR
 - Select **Project > Manage > Components, Environment and Books** from the menu bar, or click on **Components, Environment and Books** icon in the tool bar. Then click on **Add Files** in the Files pane, browse to your files, and select them.
 - b. New files: Select **File > New** from the menu bar, or click on the **New** icon in the tool bar. Type your source program, save the file, and then add it to the project as described in step (a) above.
5. Check your tool settings. Select **Project > Options for Source Group 1** from the menu bar, or click on the **Options for Target** icon in the tool bar. Check the following options tabs:
 - a. Device: LPC2292
 - b. Target: Xtal (Mhz) = 12.0
 - To debug in RAM enter address 0x40000000 and size 0x3000 for IROM1, and address 0x40003000 and size 0x1000 for IRAM1.
 - To program and run in flash, keep the default ROM/RAM addresses of 0x0 (size 0x40000) for IROM1 and 0x40000000 (size 0x4000) for IRAM1.
 - c. Output: Check **Create Executable** and **Debug Information**
 - d. Listing: Check **Assembler Listing** (*.lst) if you want a listing file to study.
 - e. C/C++: Keep default compiler settings.
 - f. Asm: Keep default assembler settings
 - To debug in RAM, in the “Define” box, enter: RAM_MODE, REMAP Also, on the Target tab, enter RAM memory addresses for IROM1 and IRAM1 as described under “Target” above.
 - To program and debug in flash, keep the default ROM/RAM addresses as described under “Target” above.
 - g. Linker: Check/modify starting addresses for code and data.
 - Simple assembly test programs:
 - R/O base: 0x40000000 (start of on-chip RAM, for code)
 - R/W base: 0x40003000 (RAM beyond end of code, for data)
 - In the box labeled “Misc controls”, enter
--entry 0x40000000
to define the “entry point”. Note that there are two dashes.

- Alternatively, if you entered on-chip RAM addresses on the Target tab, you may check “Use Memory Layout from Target Dialog”.
 - h. Debug: Check/modify Simulator and Hardware settings.
 - Check “Load Application at Startup” to load memory
 - Check “Run to main()” for C programs – only if you wish to debug from the first instruction in the main program (after startup code executes).
Don’t do this for simple assembly language test programs.
 - In the “hardware” section “Use” box, select either *Simulator* or *ULINK2/ME ARM* to use for debug.
- 6. To execute the program, on the Debug tab check either “Use Simulator” or, to debug on the uCdragon board, check “Use” and select ULINK2/ME ARM Debugger.
- 7. In the main window, click “**Build target**” or “**Rebuild all target files**” in the tool bar, or select these under **Project** in the menu bar. This compiles and links the project.
- 8. Run the program by clicking on the **Start/Stop Debug Session** icon in the tool bar, or select this under **Debug** in the menu bar.
- 9. To program and debug in the on-chip Flash memory:
 - a. In *Options for Target* (described in Step 5 above), select the *Utilities* tab.
 - b. Check *Use Target Driver for Flash Programming*
 - c. Under that, select ULINK2/ME ARM Debugger
 - d. Click the *Settings* button for Flash Download Setup
 - e. Check *Erase Sectors*, *Program* and *Verify*
 - f. Under Programming Algorithm, click the Add button, and from the displayed list, select LPC2000 IAP 256kB Flash, and click OK.
 - g. Click OK to close the *Options for Target* window.
 - h. After compiling the program, click the **Load** button (to the immediate left of the Target selector box), or from the menu bar select **Flash > Download**. This will erase and program the flash.
 - i. Debug as before.

Alternatively: After step c. above, check the box *Update Target before Debugging*. This will cause the flash to be programmed whenever entering the debugger. This eliminates the separate “Load” described in step h. above.
- 10. To restore the original “Blinky” demo program that came with the board:
 - a. Create a new project (in its own directory)
 - b. From the course web site, download the uCdragon demo program hex file to the new project directory (YL_LPC229X_BIOS.hex)
 - c. Select the NXP LPC2292 microcontroller

- d. Do NOT add the startup.s file, or any other source files
- e. On the *Options for Target*, select the *Output* tab, and enter the name of the hex file from step b. in the box *Name of Executable*.
- f. On the *Options for Target*, select the *Utilities* tab and configure flash programming as in step 9 above. (You can also access this from the menu bar: *Flash > Configure Flash Tools*).
- g. Click the *Load* button, or from the menu bar select *Flash > Download*. This will erase and program the flash.