This document briefly goes through how to setup and use Freescale's Code Warrior IDE tool.

Using Code Warrior

Version 10.2

Computer Architecture and Machine Language

Contents

About CodeWarrior …

CodeWarrior is an educational, free to use development environment that allows low-level (or embedded) Software Engineering students to develop, debug, simulate and try out their code on a number of different microprocessors and micro-controllers! As well, CodeWarrior when assembling code produces a downloadable version of the final code for transmission to an actual development board.

In our CAML labs we will be concentrating on the Motorola 6808 Micro-Controller chip. This is an early version of a micro-controller (8 bit) but it allows you to concentrate on the learning outcome of designing, developing and testing well written, structured assembly code. If you're interested in the downloadable version of the program that would be transmitted to a development board, you can do some reading here on **S19 records** or here on a **higher level** description.

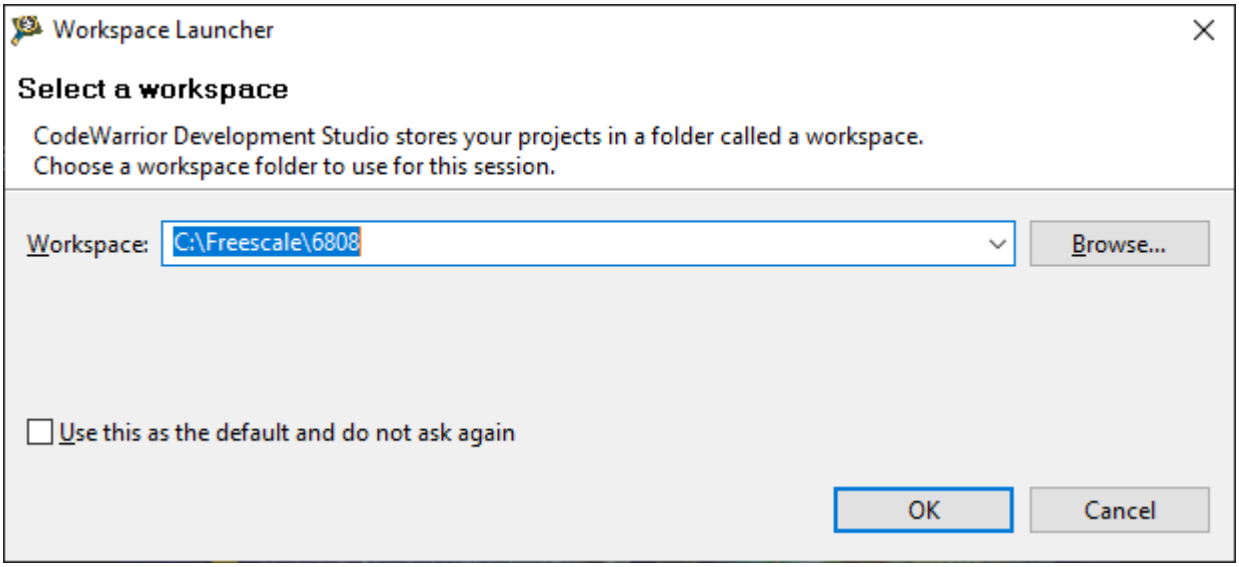
Installing CodeWarrior …

Simply download the CodeWarrior-v102-WindoesInstaller.zip file from the eConestoga course content, unzip and run the executable found within it. While installing, simply accept all installation defaults. And if the installation challenges you (or asks you) about installing certain drivers during the process – accept it and install them.

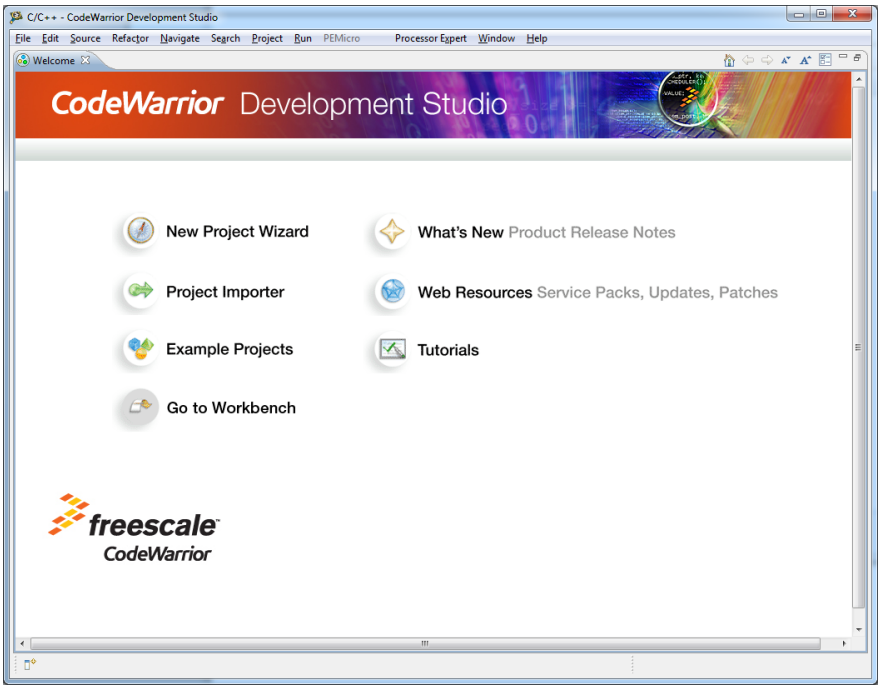
Using CodeWarrior v10.2

When You Initially Start

1. When you start CodeWarrior for the first time, you will be asked to select a default place where you intend on placing all of your 6808 code … I chose C:\Freescale\6808 as my default (see screen capture below)



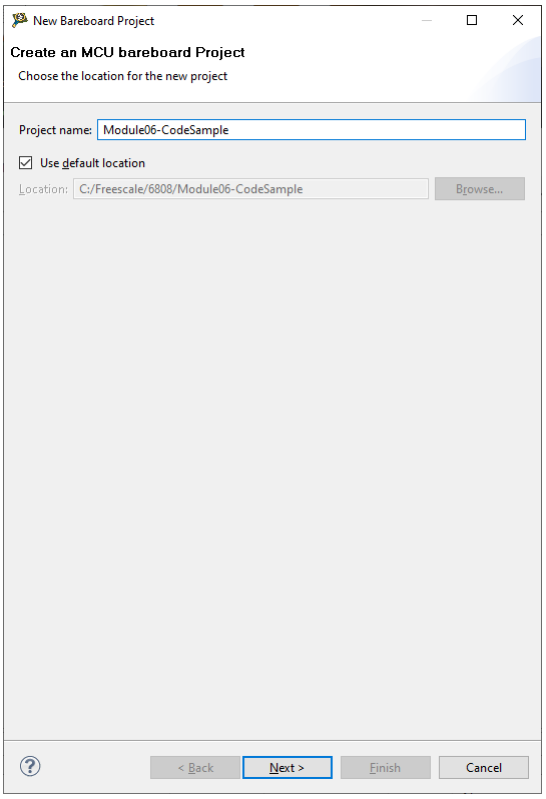
2. If this is the first time that you've entered CodeWarrior – you will be presented with the program splash screen



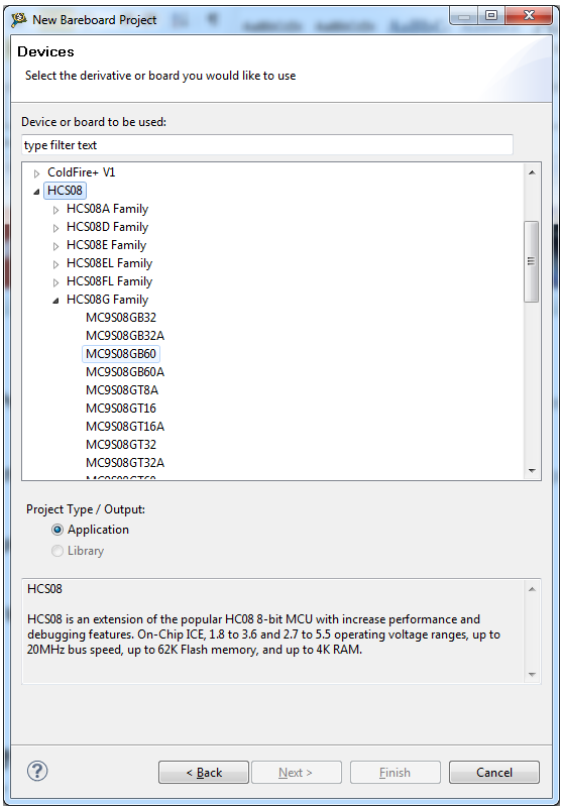
   - If challenged by Windows Defender (Firewall) about blocking certain applications – unselect "public networks" and select "private networks"

Starting a New Project

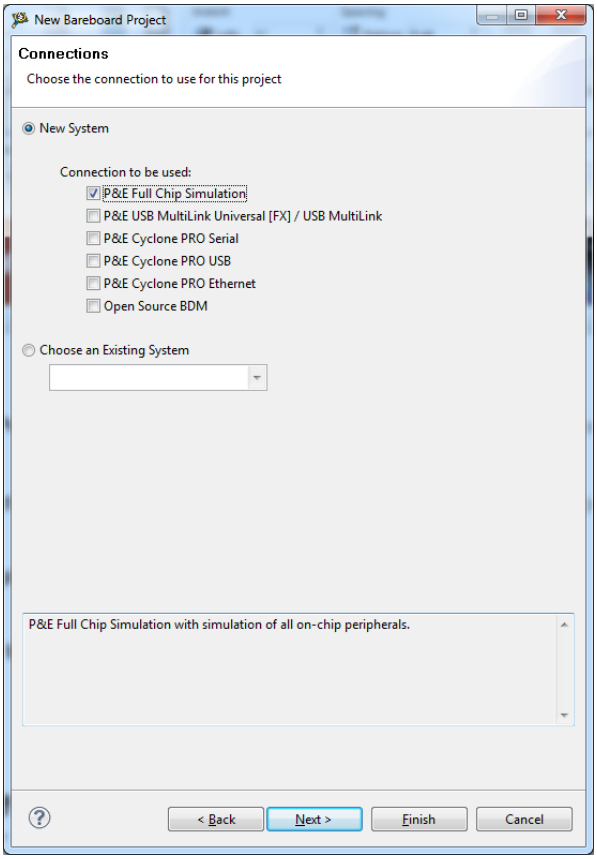
3. Click on New Project Wizard and the application will lead you through a series of information gathering screens as indicated below
    a. First, enter a project name (I entered Module06-CodeSample) and click next



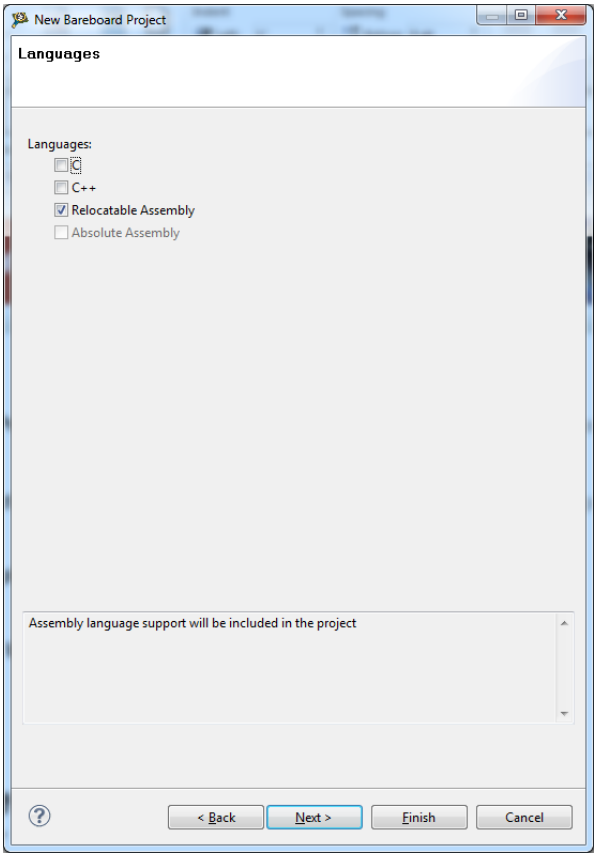
    b. Then select our device type – the **HCS08** board, the **HCS08G** Family and the **MC9S08GB60** specific board



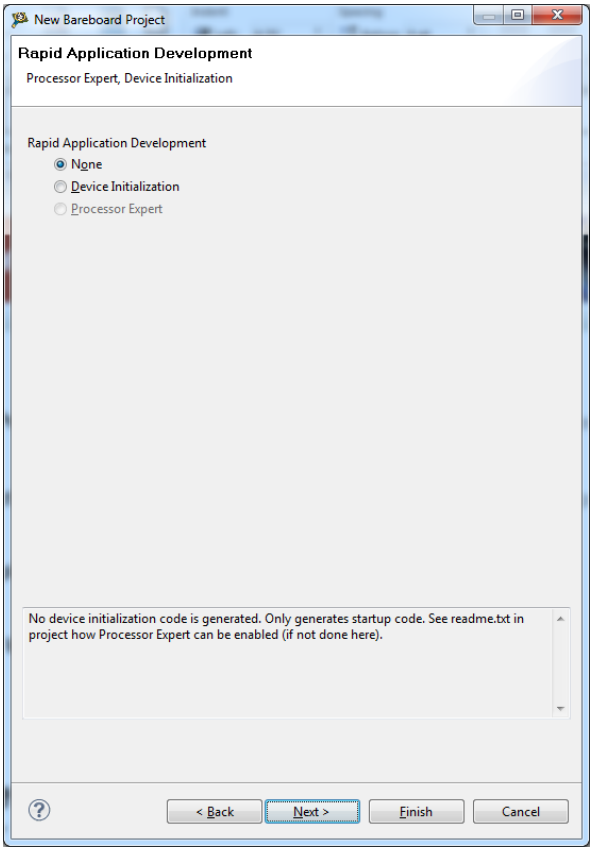
c. On the next screen of the wizard, select a new system and select only the **P&E Full Chip Simulation**



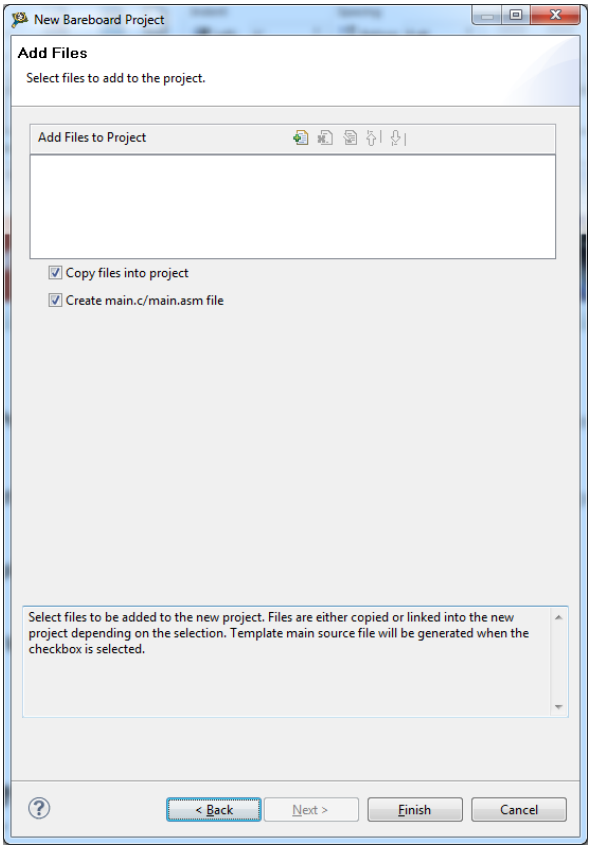
d. In choosing your language – make sure that you select **relocatable assembly**



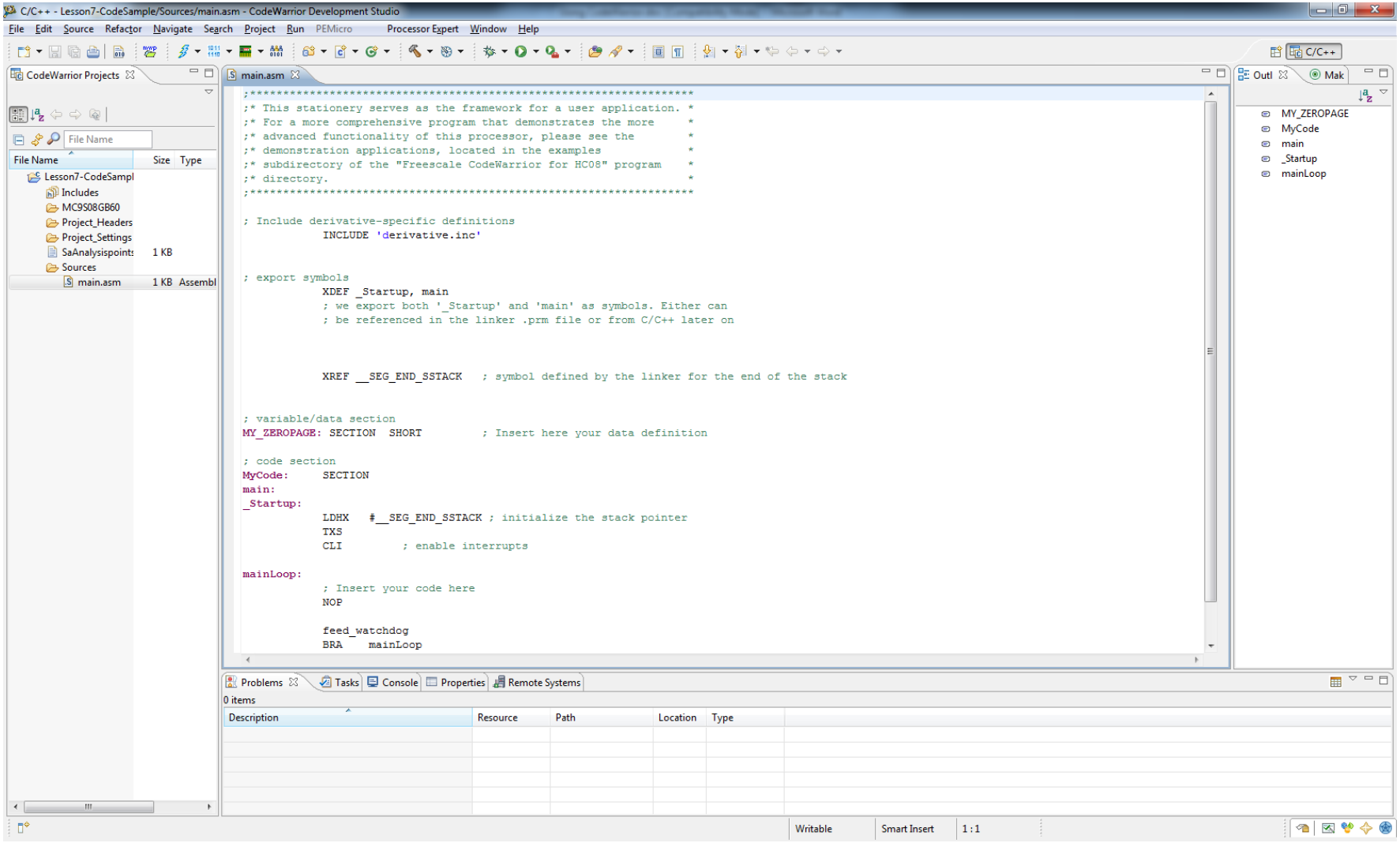
e. Finally choose **no** rapid application development (**RAD**) technique



f. Since we want to start with a blank project – we don't have anything to specify in the last window – so **click finish**.

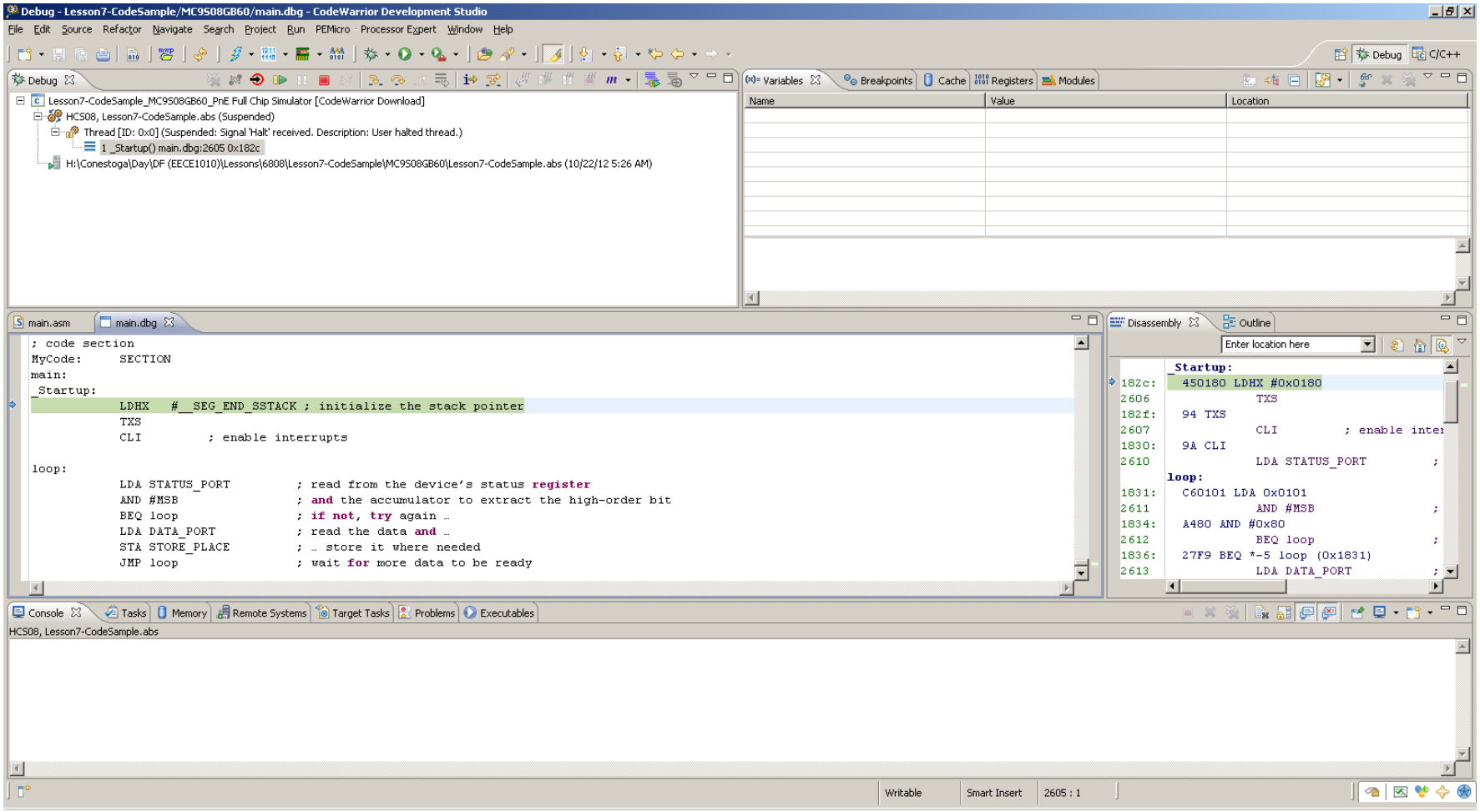


4. Finally you are launched into the CodeWarrior development environment … dig down in the project window to find the `main.asm` file … this will be your source assembly file.



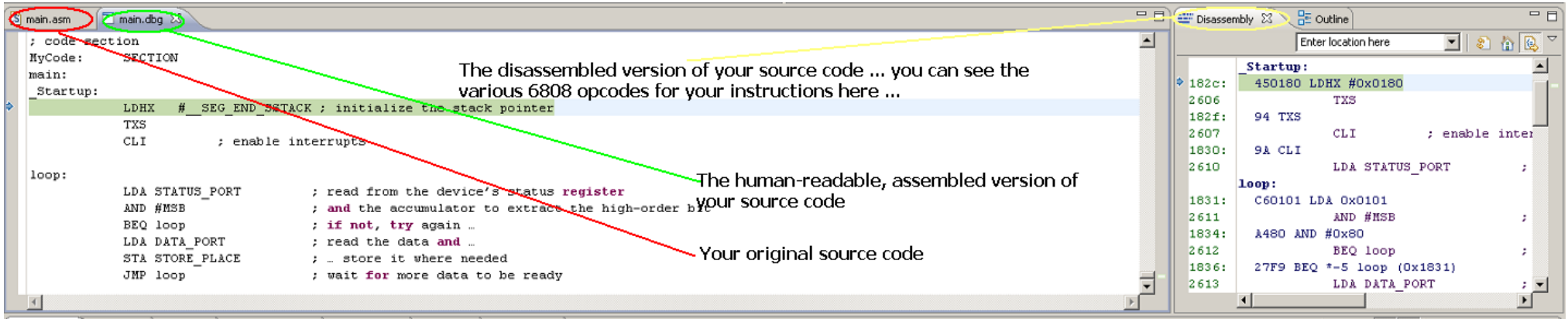
b. If you want / need to define any constants – place them on the line immediately after the `; variable/data section` marker in the code (starting on line 25)

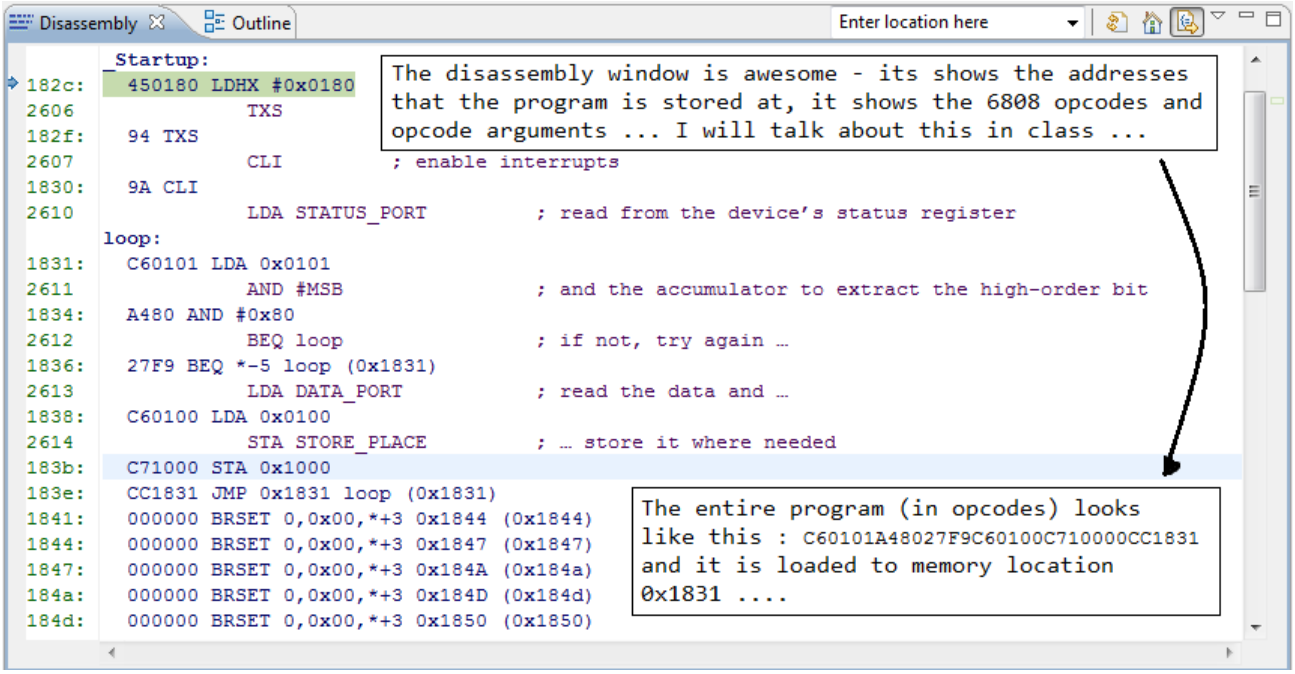
5. Now download and unzip the ***MainASM.zip*** file associated with the Module-06 lesson and open the main.asm file in a text editor (like Notepad). Highlight and copy the source code into the main.asm file in the CodeWarrior project (replacing what is there)
6. After you've entered your assembly code and are ready to run and debug your logic, I always like to set a breakpoint (a place where the execution of the assembly will stop) at the line before where my code begins. In this case, I would place a breakpoint on the `CLI` line. You can set a breakpoint using the Run menu and Toggle Breakpoint option (or the *Hot-Key* sequence CTRL-SHFT-B).
7. Now you can press F11 (or select option Debug within the Run menu) – you will see the information about your code being assembled and if there are no errors, you will see you window change to a debug view of the code running (as follows)



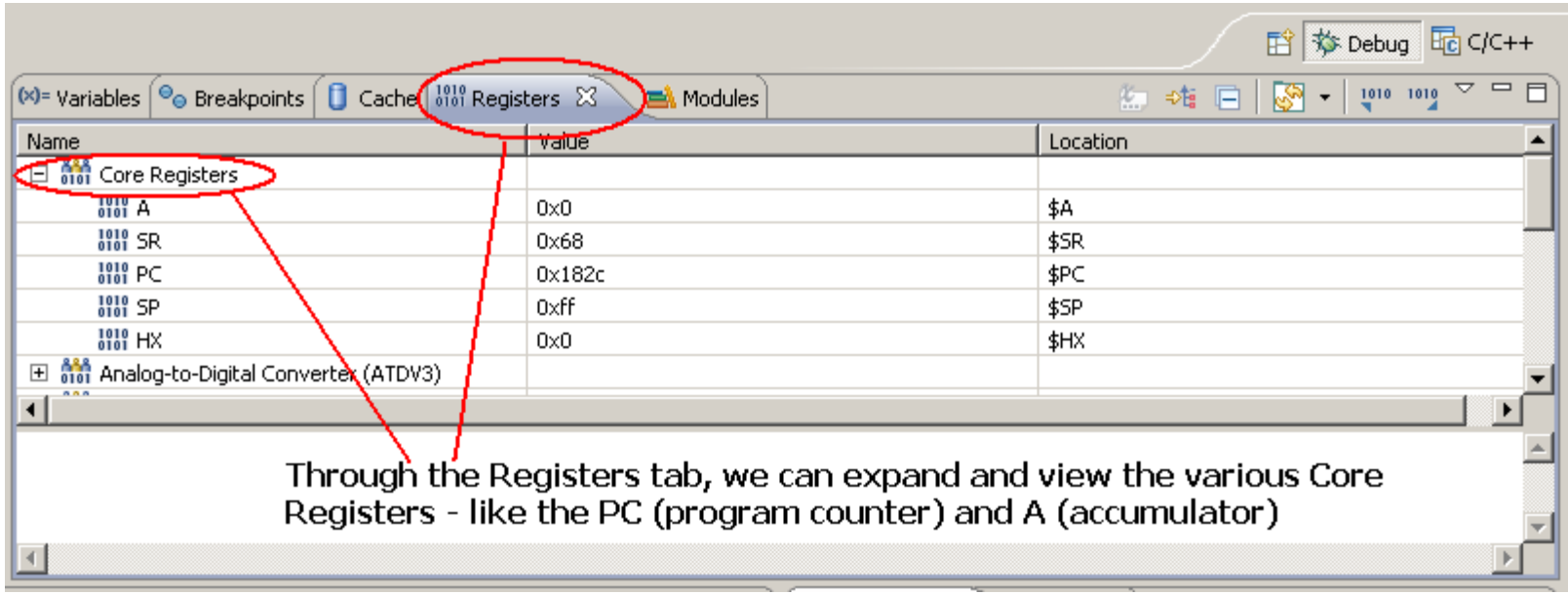
Running, Testing and the Various Windows

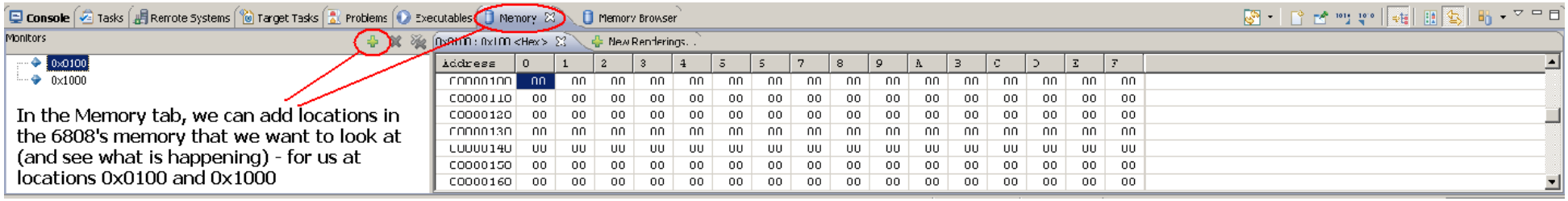
8. Ideally, I would like to have a software simulator for the MC9S08GB60 development board to use at this point, but we don't. We have CodeWarrior as our software-only version of the board. Let me point out some of the windows we care to use in the debugging (simulating) of the board and our code …
    a. In the middle of the debug window you can see your code





b. In the upper-right portion of the screen is the area that we will be able to see what is happening inside the 6808's registers. Click of the registers tab and you will see …





9. Once you assemble and launch your program into debug mode for testing purposes – it is important that you realize how to take CodeWarrior back to the main source code editing screens. This is easily done by clicking on the C/C++ icon in the upper right corner of the set of debug windows.
10. As well, it is important to remember to save your source code and CodeWarrior projects to a known location. When you want to reopen a CodeWarrior project, simply right-click on the main source module and open with the CodeWarrior IDE executable.
11. This will be covered and demonstrated in class and labs … so make sure to pay attention !