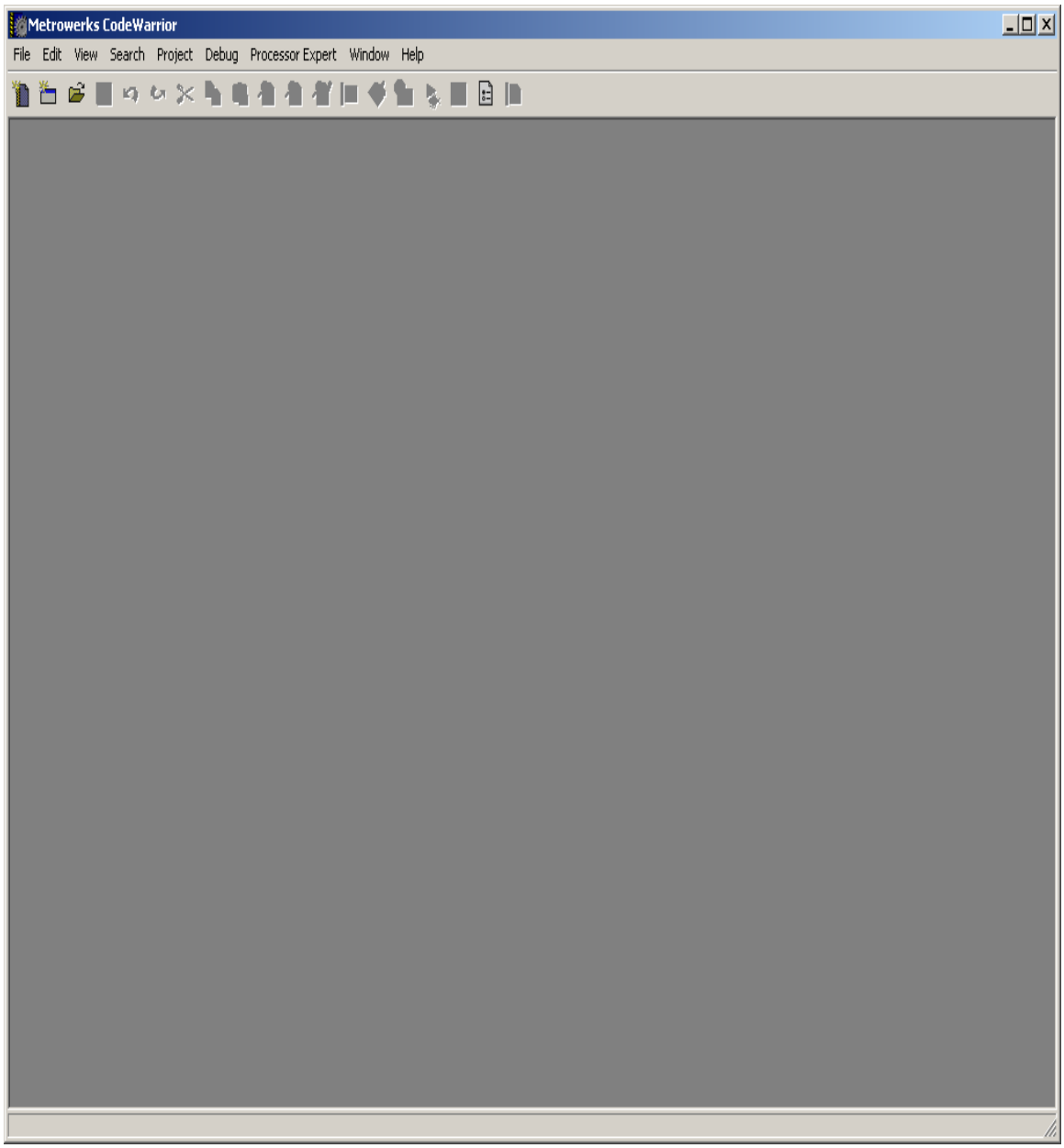
How to use CodeWarrior ASM with Adapt9S12 and Serial Monitor.doc

This document assumes that CW is already been installed. It further assumes that the user has all the necessary hardware and just need assistance in starting how to use CW.

Getting Started:

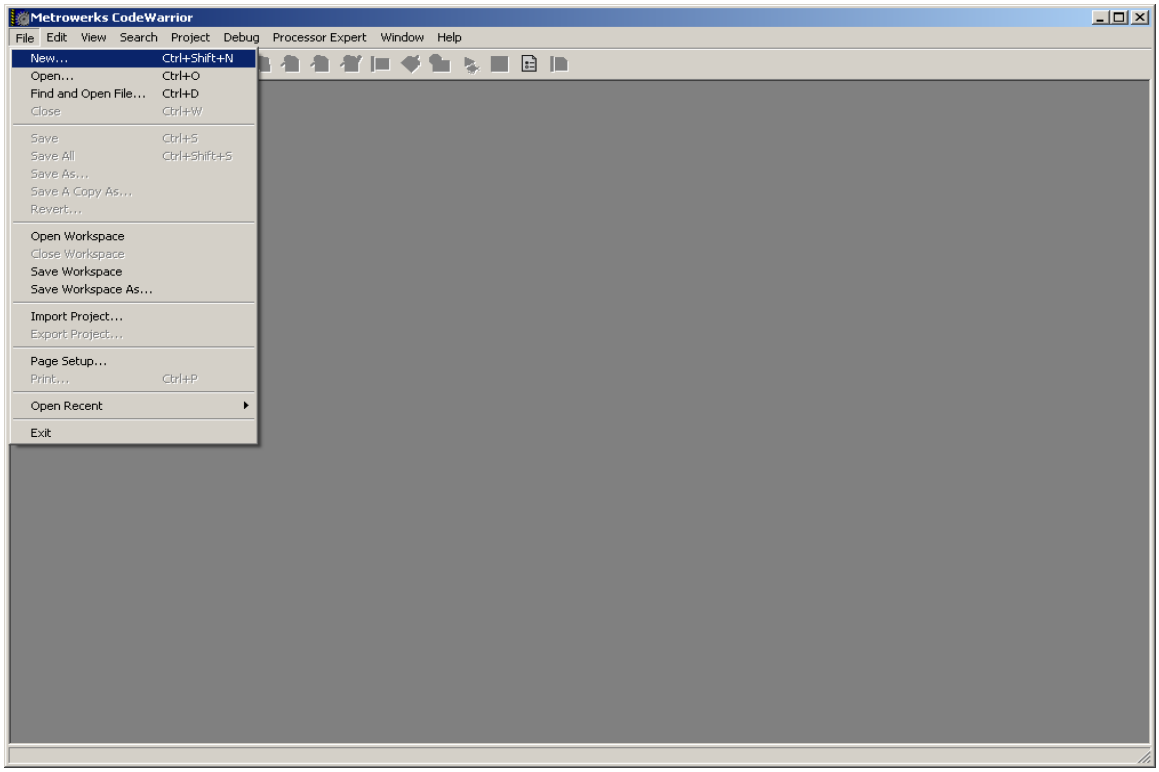
Click on the Metrowerks IDE icon 

to get started. Note that the IDE is greyed out to indicate a blank working space.

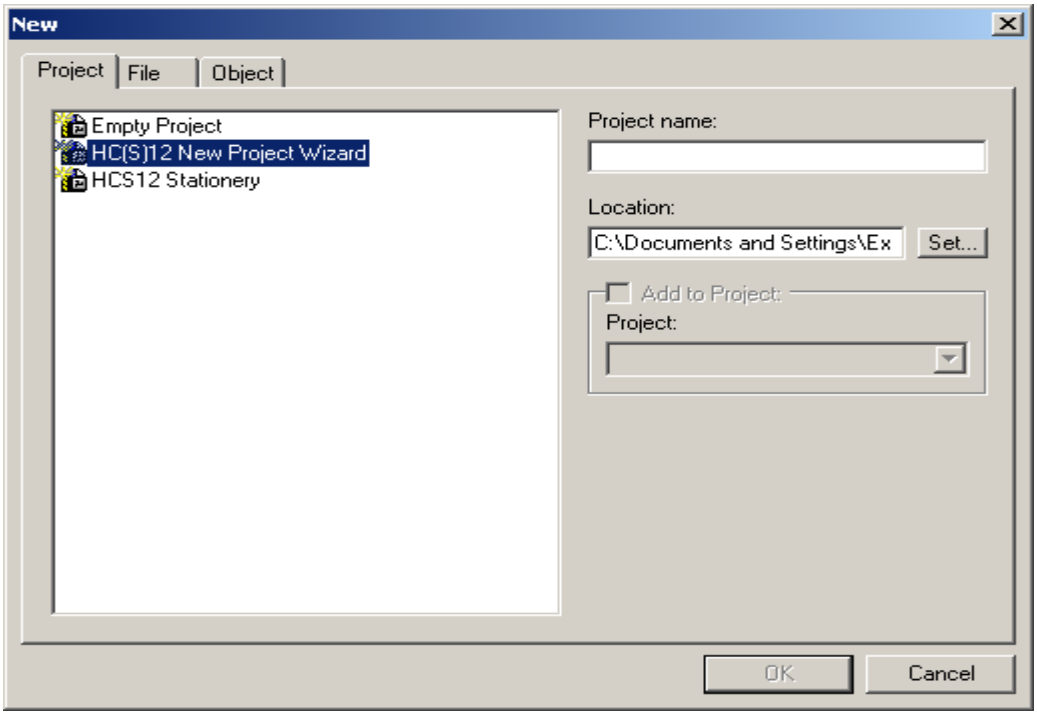


New Project:

Let create a new project by clicking on File menu. File-New as shown below.

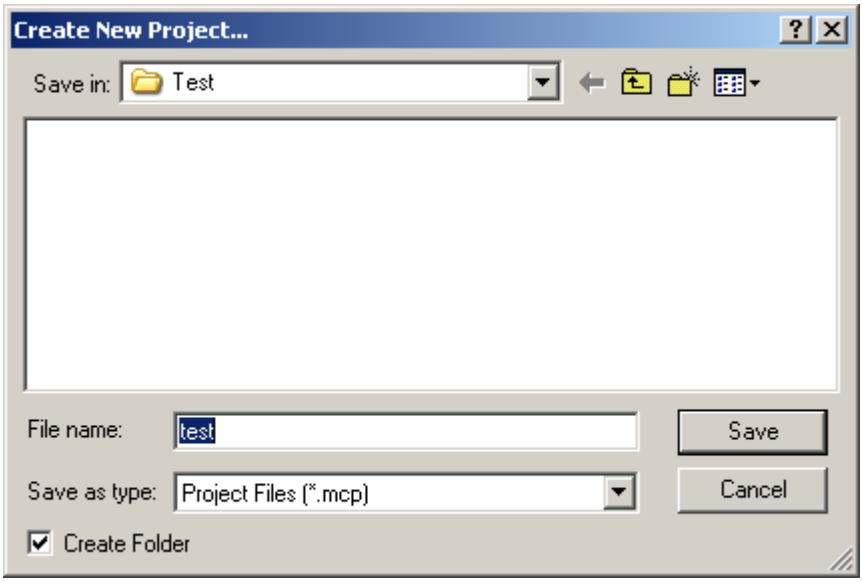


On the project tab select HC(S)12 New Project Wizard.

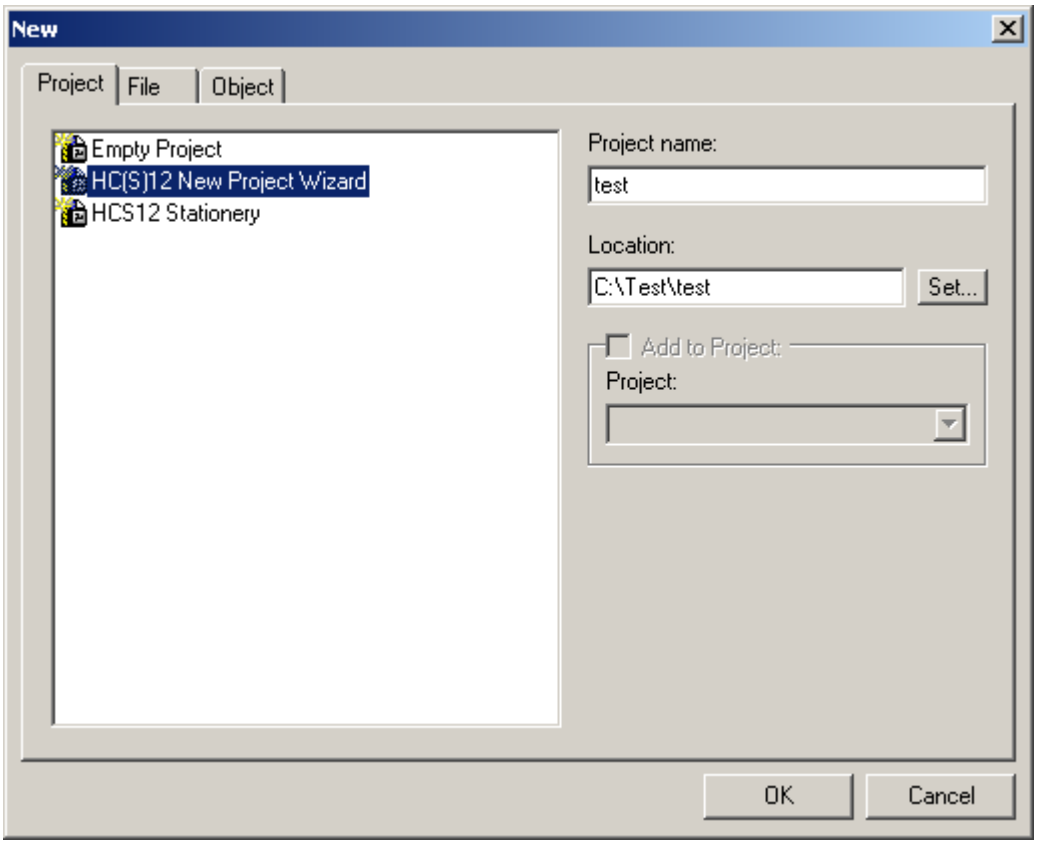


Project Name:

Type a project name called ***Test***. Press on the Set… button to create a Test subfolder to save the test.mcp file.

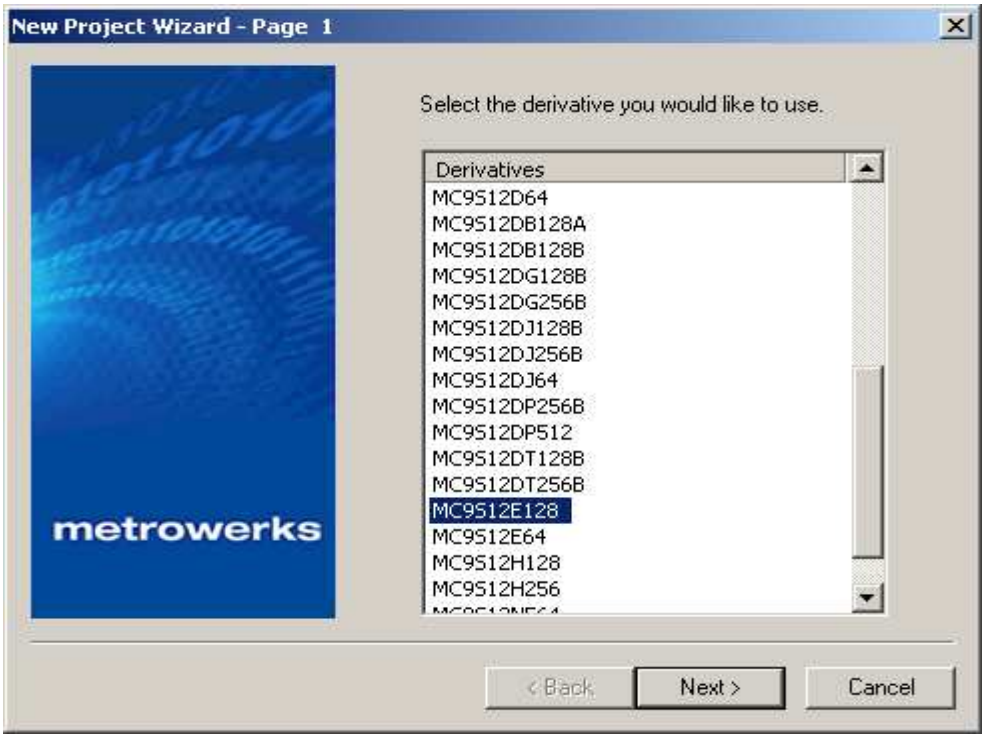


As can be seen below the setup for the folders are set. Press OK to continue.

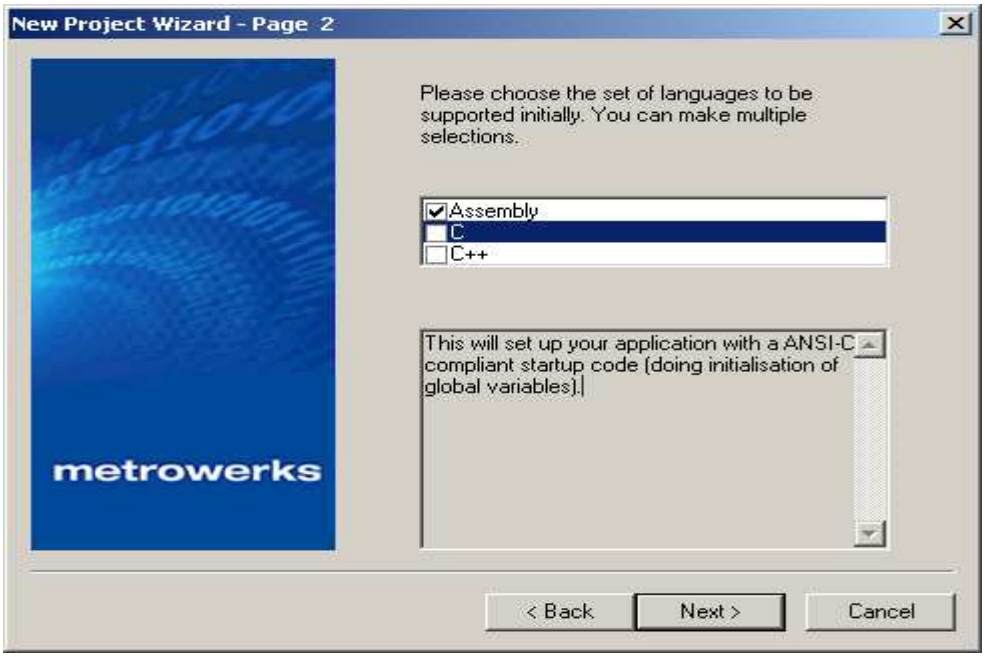


Selecting the MCU:

Scroll up or down to locate the MCU of interest. In this example the Adapt9S12E128 is used. Select the MCU type as MC9S12E128 then press Next button to continue.

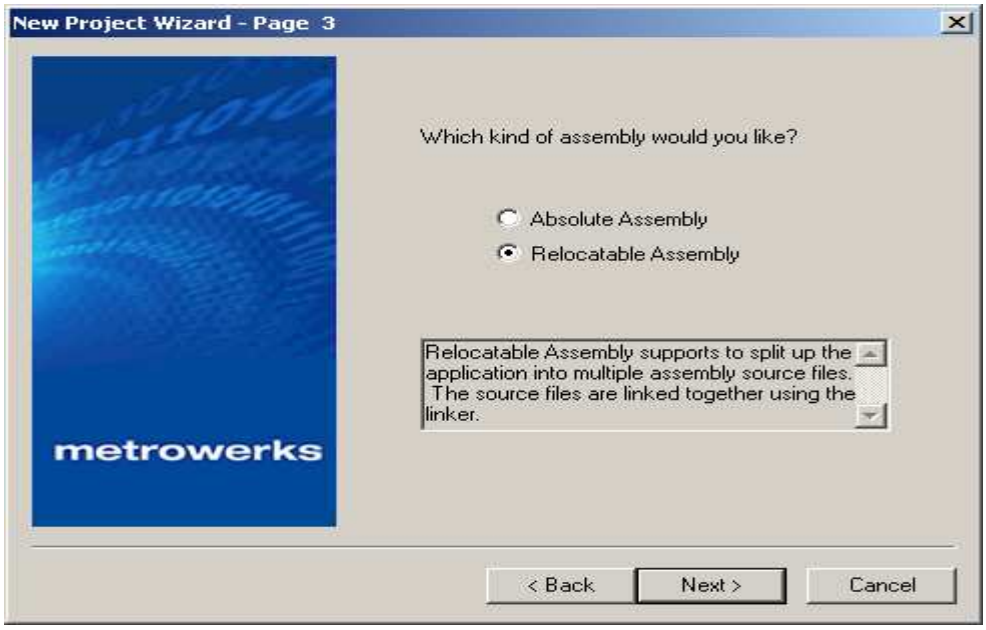


In this example the Assembly box is selected as shown. One may select C or C++ according the user's programming preference. Press Next button to continue.



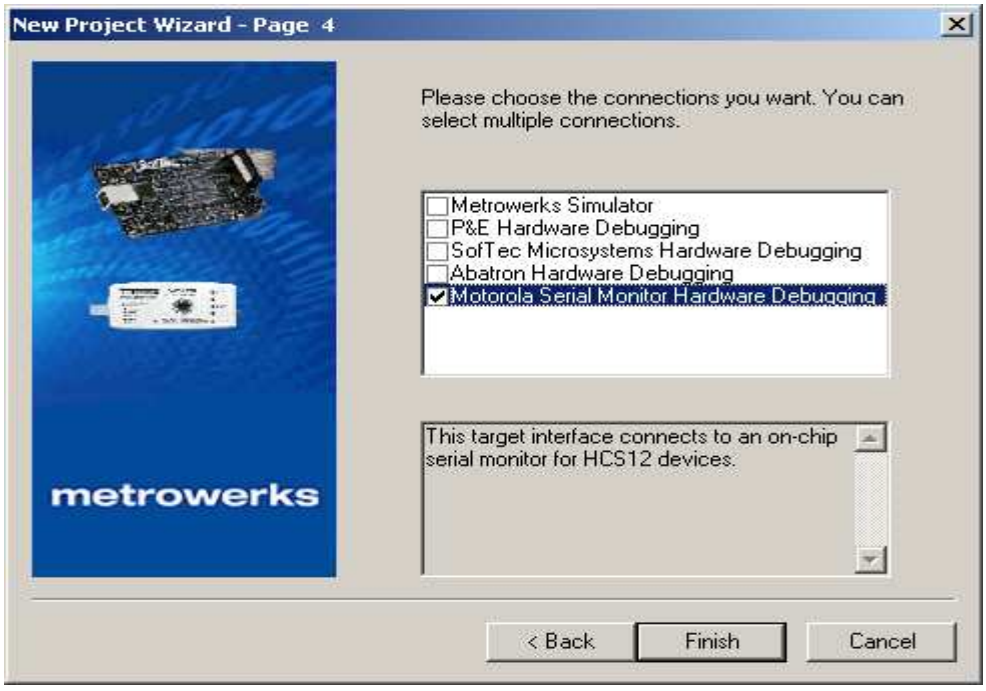
Absolute or Relocatable:

In this example the Relocatable assembly is selected as shown. Press next to continue.



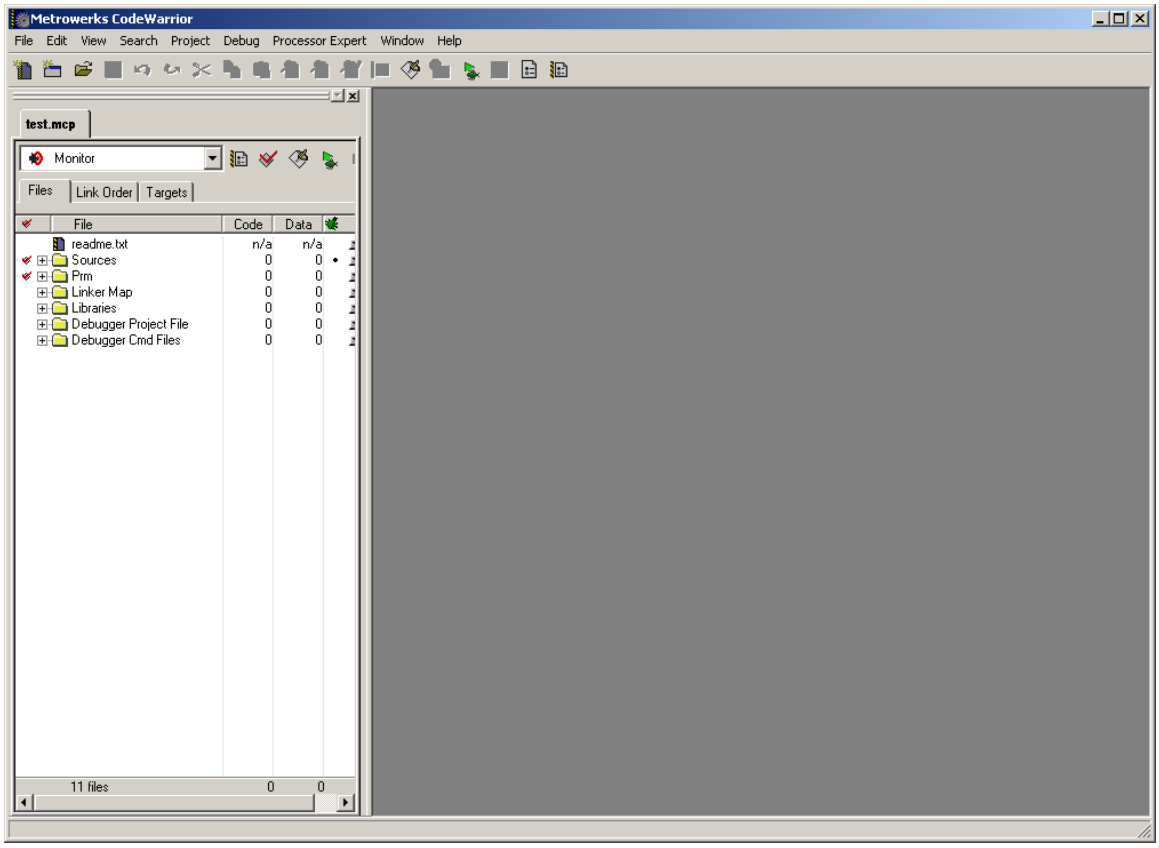
Serial Monitor:

The Adapt9S12E128 or EQ128 is pre-programmed with Freescale Serial monitor. Check boxed the Motorola Serial Monitor Hardware Debugging box as shown. Press ***Finish*** button to continue.



Setup Complete:

Below is the IDE after the setups are completed.



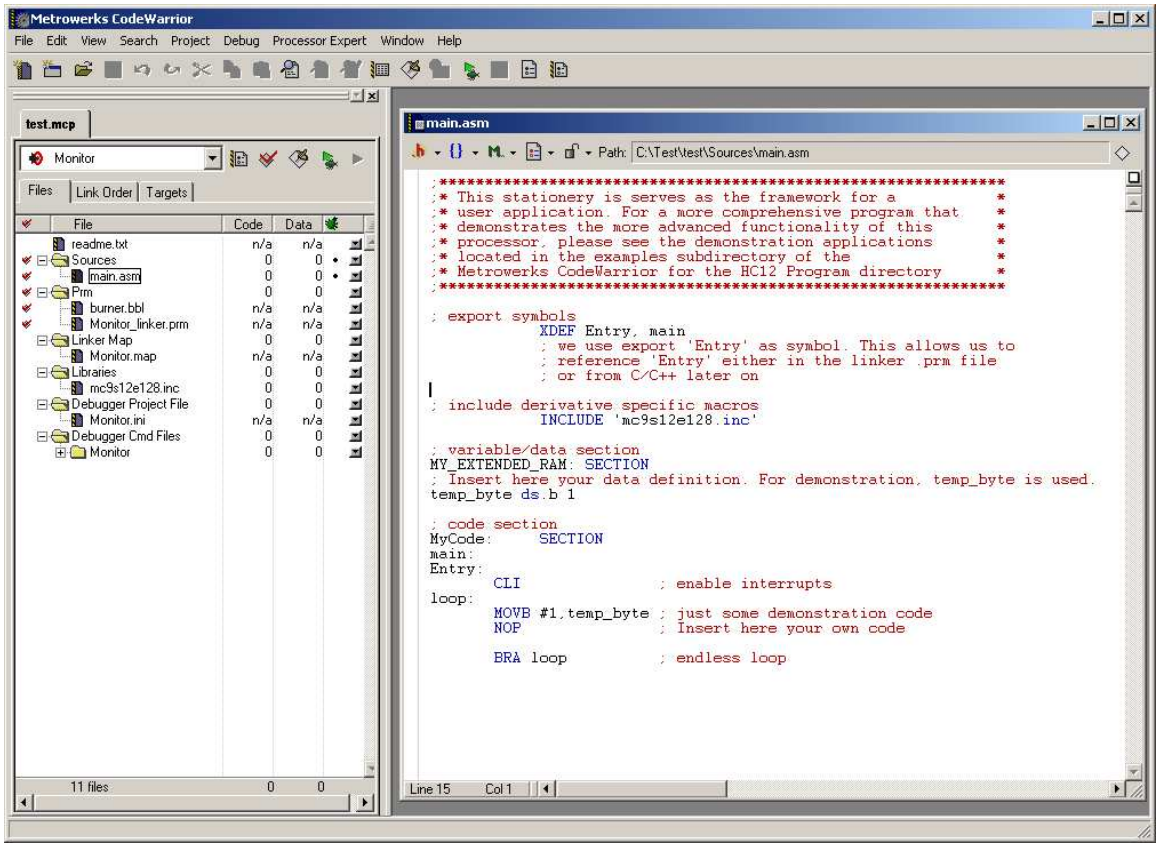
Files Tab:

Note that a new window pane is added. These contain the Files, Link Order and Targets Tab.

Files tab contain 6 subfolders called Sources, Prm, Linker Map, Libraries, Debugger Project File and Debugger Cmd Files.

By pressing on the + icon, one can see what are insider these subfolders. Sources folder contains the working files. By default CW creates a file called main.asm. Prm folder contains programming parameters. This document will only go thru the important aspects of the IDE. One should read up on the others.

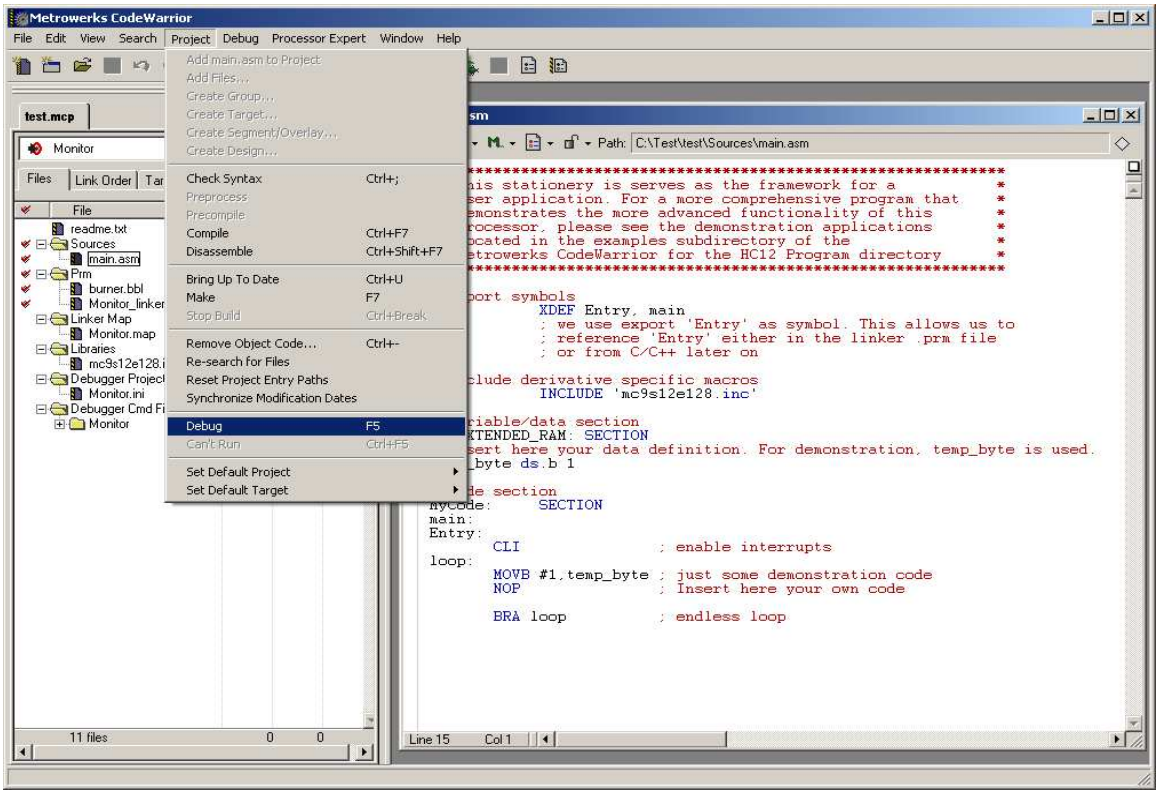
Double click on the main.asm to see what it contains.



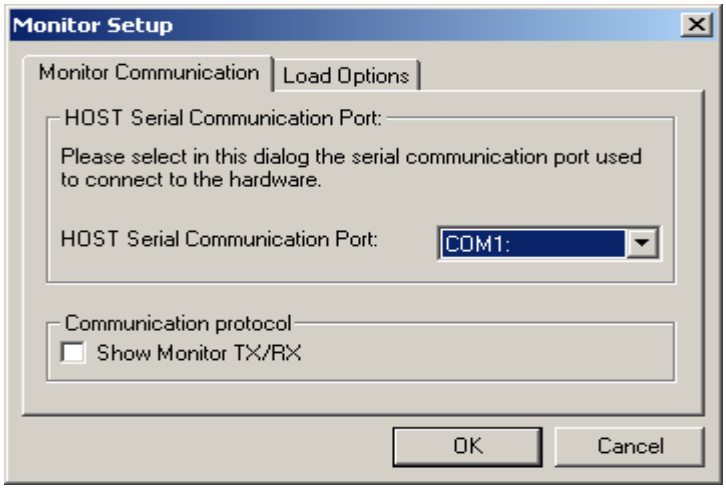
Debug:

Connect serial cable to PC COM 1 and the Adapt9S12 board. Make sure the Run/Load switch is in Load mode. Power up Adapt9S12 board making sure to see the PWR (Green) LED is ON.

Select the Project Menu. Project-Debug as shown below.



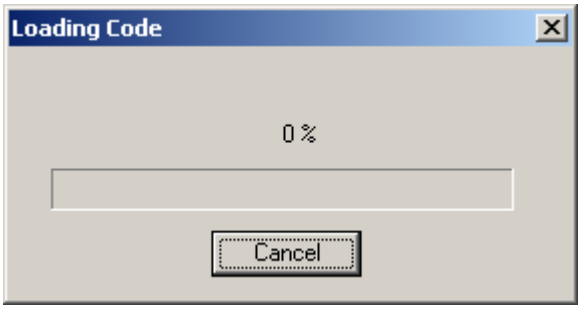
CW will immediately initiate the Debugger screen. Leave the Monitor setup as is and press OK button.

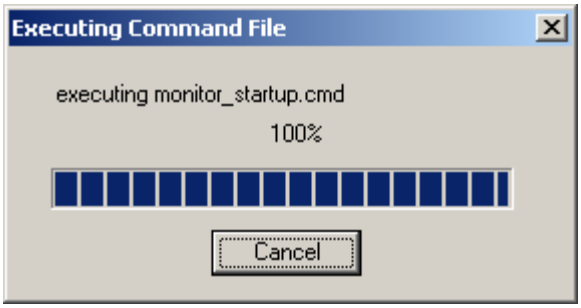


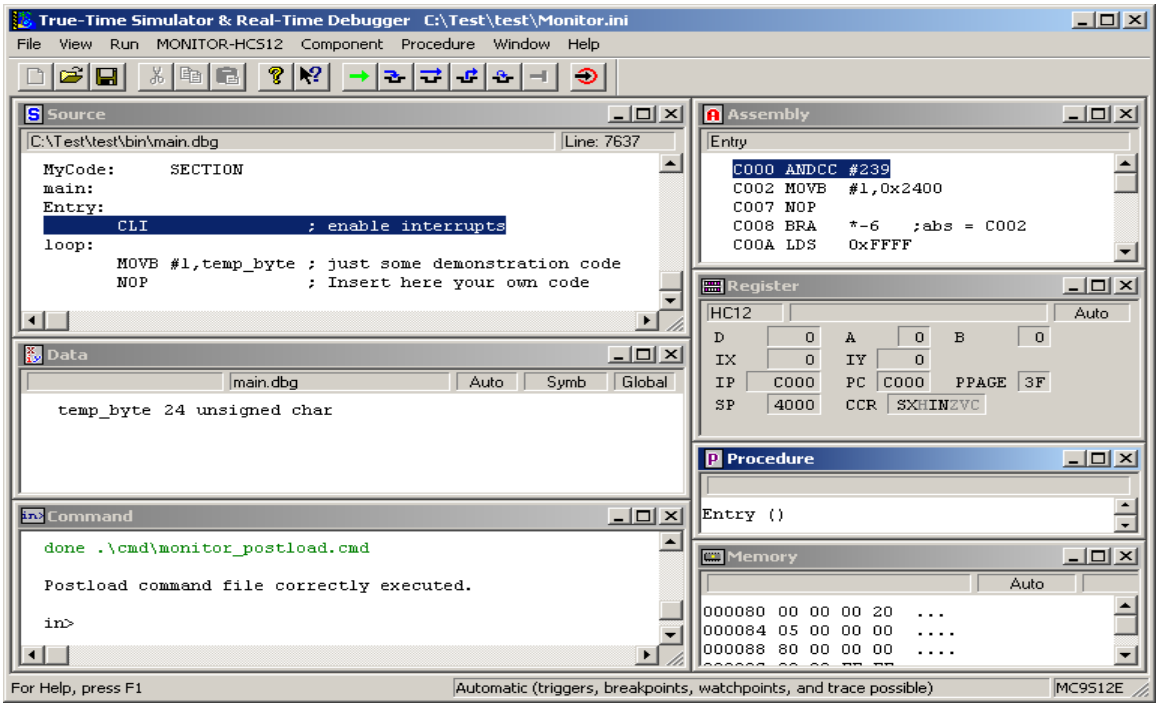
True Time Simulator and Real_Time Debugger:

By default the program will erase and program the Adapt9S12E128 or EQ128. This program allows the user to manipulate the MCU. This document will not thoroughly explain how to use the True Time Simulator and Real Time Debugger. It is merely to show how to start the program and its basic usage.

The following sequence happens – Loading, erasing and lastly, the debugger





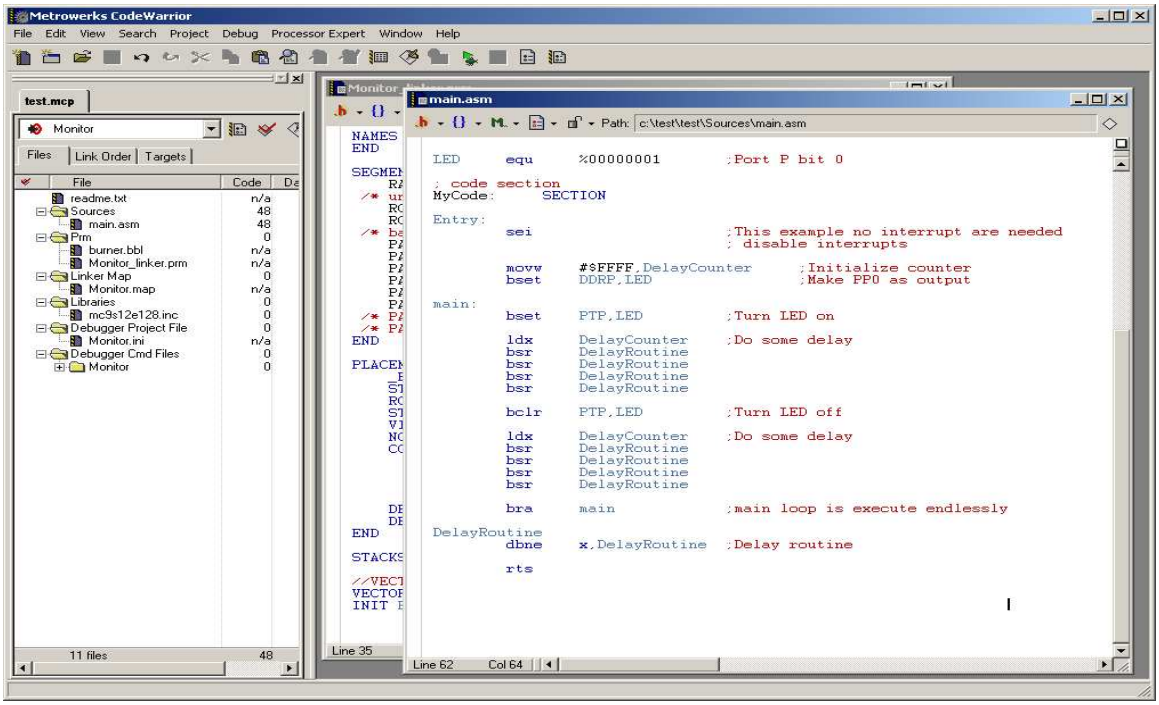


A simple program:

Lets start with a simple program of Blinking an LED connected to PP0.

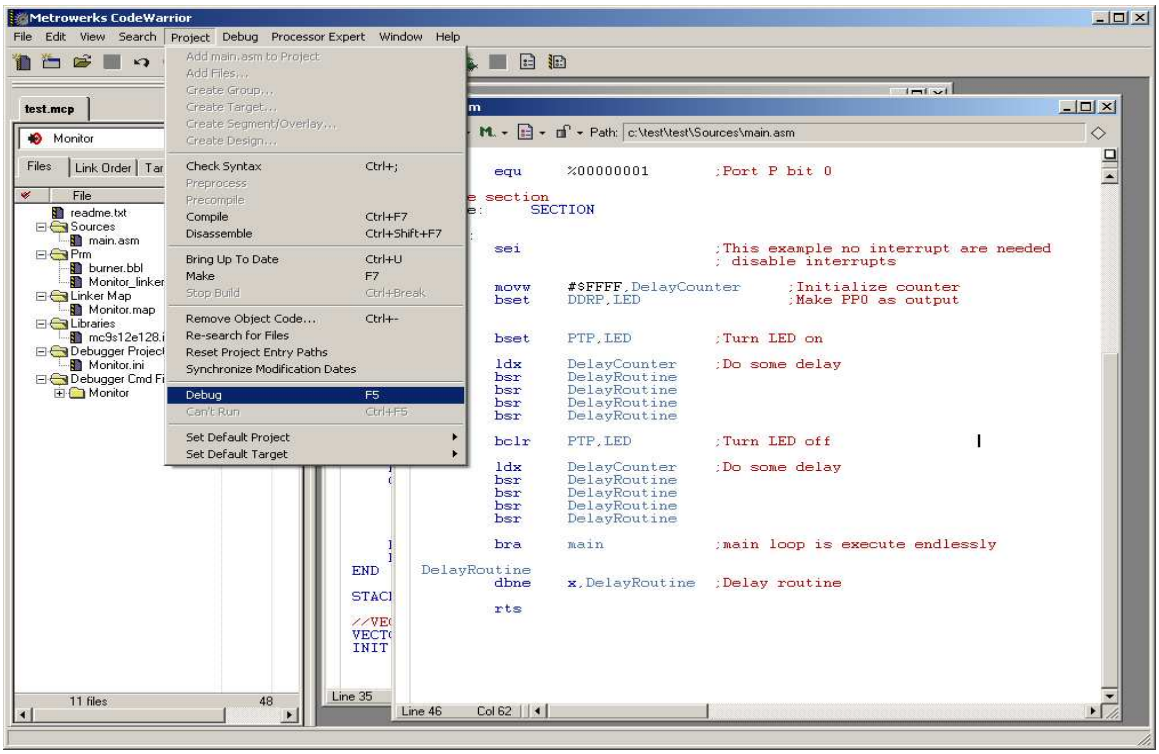
Edit the main.asm with the codes below.

```
DelayCounter ds.b 2

LED   equ   %00000001  ;Port P bit 0

; code section
MyCode:    SECTION

Entry:
      sei                  ;This example no interrupt are needed
                           ; disable interrupts

      movw #$FFFF,DelayCounter     ;Initialize counter
      bset  DDRP,LED           ;Make PP0 as output

main:
      bset  PTP,LED            ;Turn LED on

      ldx   DelayCounter       ;Do some delay
      bsr   DelayRoutine
      bsr   DelayRoutine
      bsr   DelayRoutine
      bsr   DelayRoutine

      bclr  PTP,LED            ;Turn LED off

      ldx   DelayCounter       ;Do some delay
      bsr   DelayRoutine
      bsr   DelayRoutine
      bsr   DelayRoutine
      bsr   DelayRoutine

      bra   main          ;main loop is execute endlessly

DelayRoutine
      dbne  x,DelayRoutine     ;Delay routine

      rts
```

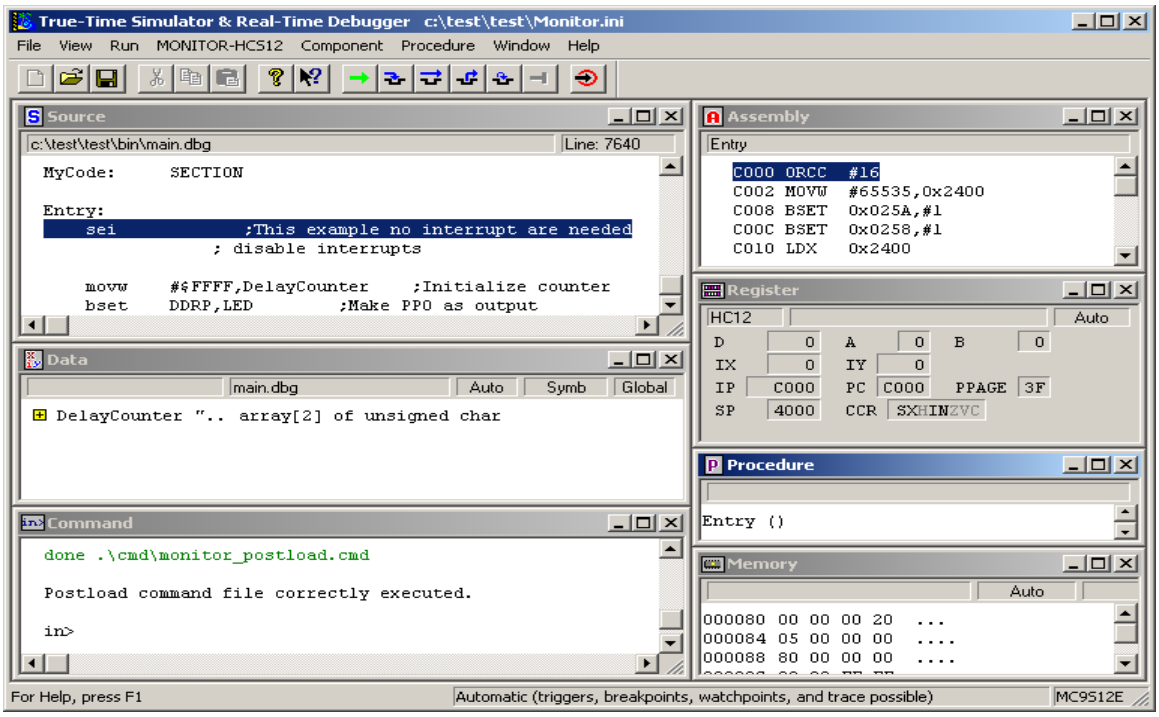


Programming Flash:

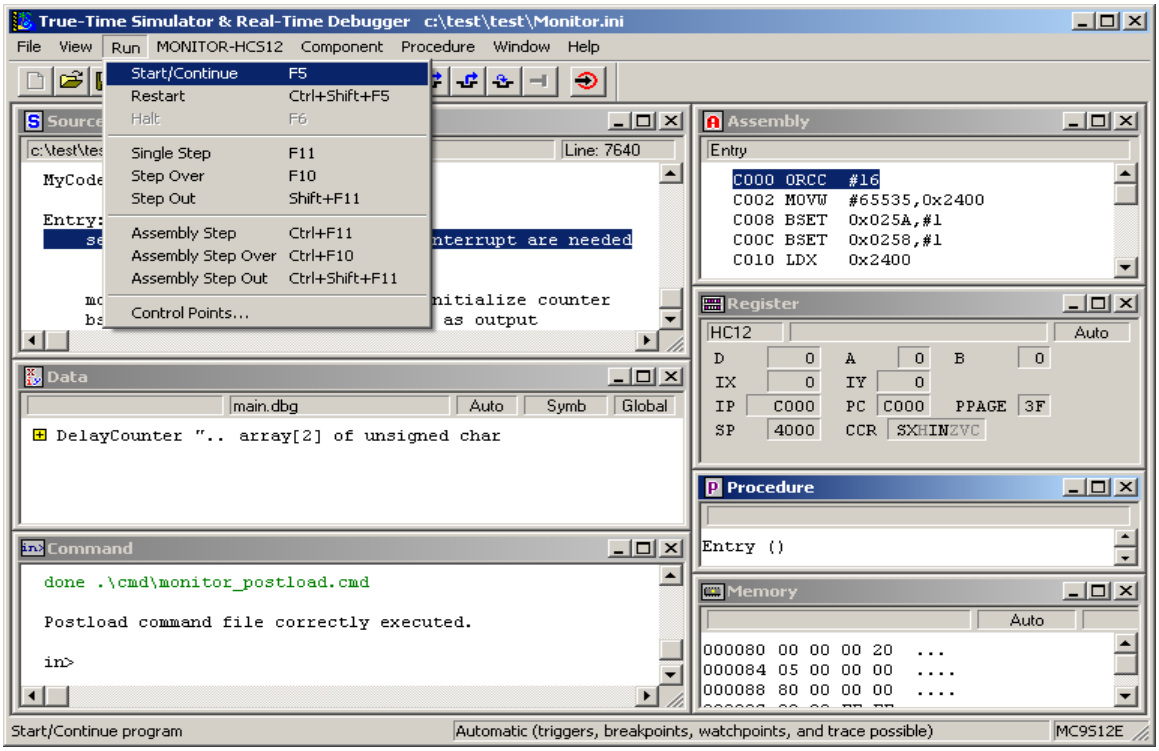
In this example, the True Time Simulator and Real-Time Debugger are used. Switch SW2 to Load mode and Power up Adapt9S12 or press the RESET button if already powered up. Under Project menu select Debug or F5 function key.



Codewarrior will immediately launch True Time Simulator and Real-Time Debugger as shown. Note that it will erase then program Flash in succession.



To run the program, select Run menu then Start/Continue or F5 function key as shown.



The LED connected at PP0 will immediately begins to Blink.

This concludes the example of using CW in assembly to using True-Time Simulator and Real-Time Debugger.