

1 Introduction

This laboratory is an introduction to the software development process that will be used in this course. You will:

- Edit and assemble a prewritten program using the CodeWarrior development system.
- Download and run the program on the 9S12UB.
- Use the D-Bug12 debugging and memory editing commands.

After finishing this lab you will have completed a typical development cycle and therefore be prepared to write your own programs for the remaining labs in this course.

2 Creating a Project Directory and CodeWarrior Project

The first step in every lab will be to create a project directory and a CodeWarrior project. For this class there is a custom project stationary, *AbsAsmWWU*, designed to simplify the project so it uses single assembly files with absolute locations defined with the *org* directive.

- 1) Create a new directory called *lab1* in your *et374* directory.
- 2) Open the Metrowerks CodeWarrior IDE from the start menu.
- 3) Select *File -> New...* and select *HCS12 Stationary*, enter the name of the project, and make sure the path points to your new project directory.
- 4) After selecting *Ok*, select *HCS12 Stationary* and choose *AbsAsmWWU* from the list.

3 Accessing Prewritten Source Code

The stationary creates a project that includes the source file *demo1.a12*. This is a simple demonstration program that can be used as a template for future labs. To open the file, double-click on the name in the folder view. It is located in the *Sources* folder.

4 Editing the Source Code

In this step, you will rename and edit the demo program. You will edit it to replace the demo code with the lab1 program.

Procedure. Complete the following items:

- 1) Open *demo1.a12*.
- 2) Use *Save As...* to rename it to *Lab1.a12*.
- 3) Open the prewritten source at: *y:/etec374/lab1/lab1.a12*
- 4) Select all of the code in the prewritten source copy it then paste it to replace all of the demo1 code.
- 5) Change the string, *Hello*, to your name.
- 6) Add your name and the date of last revision in the program header.
- 7) Save the file.

5 Assembling the Source File

In this step, you will assemble the your program and make a printout of the listing.

Procedure. Complete the following items:

- 1) To assemble your new source program, click on the *Make* button.
- 2) There should be no errors. If there are, open the source code, and find and correct the errors.
- 3) To open the listing file (*Lab1.lst*). Look in the *bin* folder. If it is not showing, right-click on the *bin* folder and select *Add Files...* and select the listing. Now that it shows up, click on it to open it up in the edit window.
- 4) To print the listing file, select *File->Print...* You should deselect the *Wrap Text Lines* check box when printing listing files.

6 Using the 912EVB Development Board

Now you will need to download the S-Record file, *monitor.abs.s19*, to the 912EVB. Once the program is correctly downloaded, it can be executed and the D-Bug12 debugging commands can be used. Refer to *D-Bug12 Reference Guide* for detailed information on the D-Bug12 commands.

Procedure for Step 5. Complete the following items:

1. Connect the 9S12UB Target serial connector to a PC COMM port.
2. Open the appropriate terminal emulator window and hit the target reset button on the board.
3. You should see the D-Bug12 information and prompt.
4. Download the S-Record file to the 9S12UB by using the *LOAD* command.
5. Run the program using the *G* command.
6. Start practicing using the 912EVB debugging commands: *BR*, *NOBR*, *MD*, *MM*, *RD*, *SO*, and *T*.

7 Submitting Edited Source Code

Once your edited source code works correctly, you will submit it to the instructor for grading. To submit labs you will email them to: *Todd.Morton@wwu.edu*.

Procedure. Complete the following items:

- 1) Send your edited source with *lab1* in the subject line. The source code (.a12 file) must be sent as an attachment.

8 Write-Up

A write-up is not required for this lab. The mail sent will be checked off for grading.

The program must be loaded onto your board and checked by the instructor before 2:00pm on the due date.

Due date: January 11, 2008