

SYSC-2003 Introduction to Real-Time Systems

Lab Tutorial : Assembly Program Development

MiniIDE is a Integrated Development Environment (IDE) for developing assembly programs for the HC12. We will be using it as an editor and a cross-assembler. Later, we will use its terminal program to download code to our target HC12 boards.

Getting MiniIDE

1. It is installed on the undergraduate lab in Rooms MC4233, AA507 and AA508.
2. The Huang textbook provides MiniIDE on its CD
3. It is offered as freeware on the following site : www.elektronikladen.de/hc12. Scroll down the page until you find the header : Freeware and Groupware.

Using MiniIDE

A fairly detailed demonstration of MiniIDE is given in Section 3.7 (page 85) of the Huang textbook. Only the key operations are mentioned here.

As mentioned before, MiniIDE will be used for two purposes at this point. First, miniIDE is an editor that provides minimal support for editing and formatting assembly files (eg. tabbing). You can open and save files through the normal “FILE” operations. Your files will be called : filename.asm

Secondly, the miniIDE is a cross-assembler. When you click on the Build button, your assembly program is assembled (ie. translated) into a Motorola executable, namely a S19 file (filename.S19). You can now run this executable either on an actual HC12 board or with the HC12 simulator.

Cross-assembly is an important point. Let’s make sure you understand it. When you “build” a program, you are running another program, called an assembler, that reads your file line-by-line converting the instructions into machine-level binary-encoded instructions (called the executable). These machine instruction are specific to the machine architecture. A Motorola executable will not run on a Intel PC, or vice versa. A Motorola assembler is then a Motorola program that produces Motorola code. But we are writing our programs on PCs and wanting to run them on Motorola chips. This is where the cross-assembler comes in. We are using a PC program that generates – or cross-assembles - Motorola executables.