



Quickstart

Introduction

Welcome to CodeSkin!

Our goal is to provide you with solutions for the Texas Instruments C2000™ MCUs that do not require an expensive (and often impractical) JTAG emulator.

CodeSkin is a collection of diagnostics and utility tools, which facilitates code development. Together with the popular Eclipse IDE, they offer an easy way of writing and compiling code, downloading the code into the target and trouble-shooting the code without the need of a JTAG emulator. Since all communication is based on RS-232 or CAN, CodeSkin lends itself for deployment in the field where the JTAG port is typically not accessible.

Currently, the following CodeSkin components are available:

- *CodeSkin C2000Prog* – stand alone flash programmer, with auto-sector detection, CRC checksum generation, encryption, and batch-programming capability.
- *CodeSkin C2000Console* – stand alone graphical user interface (GUI) for the maintaining, configuring and trouble-shooting of embedded software with strict real-time requirements.
- *CodeSkin Eclipse Plugin* – an extension to Eclipse/CDT, adding error parsing capabilities.

Getting Started

Software Setup

To fully exploit the CodeSkin capabilities, the following software must be installed on your PC:

- JAVA JRE
- Eclipse IDE
- CDT Eclipse plugin (adds C/C++ development capabilities to Eclipse)
- Subversion Eclipse plugin (adds a SVN client to Eclipse)
- CodeSkin Eclipse plugin (adds the CodeSkin error parser to Eclipse)
- TI Codegen Tools (part of CCS – requires valid license)
- C2000Prog (for programming the MCU)
- CodeSkin C2000Console (for viewing and editing variables in realtime)

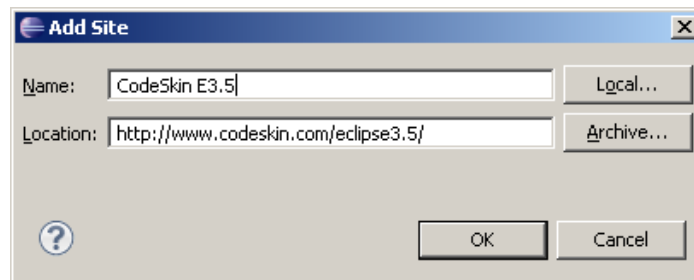
To install CodeSkin, follow these steps carefully:

1. Since all CodeSkin software components are based on JAVA, it is necessary that you install a JAVA Runtime Environment (JRE). An appropriate JRE can be downloaded from Sun Microsystems at the following address: http://java.sun.com/javase/downloads/index_jdk5.jsp

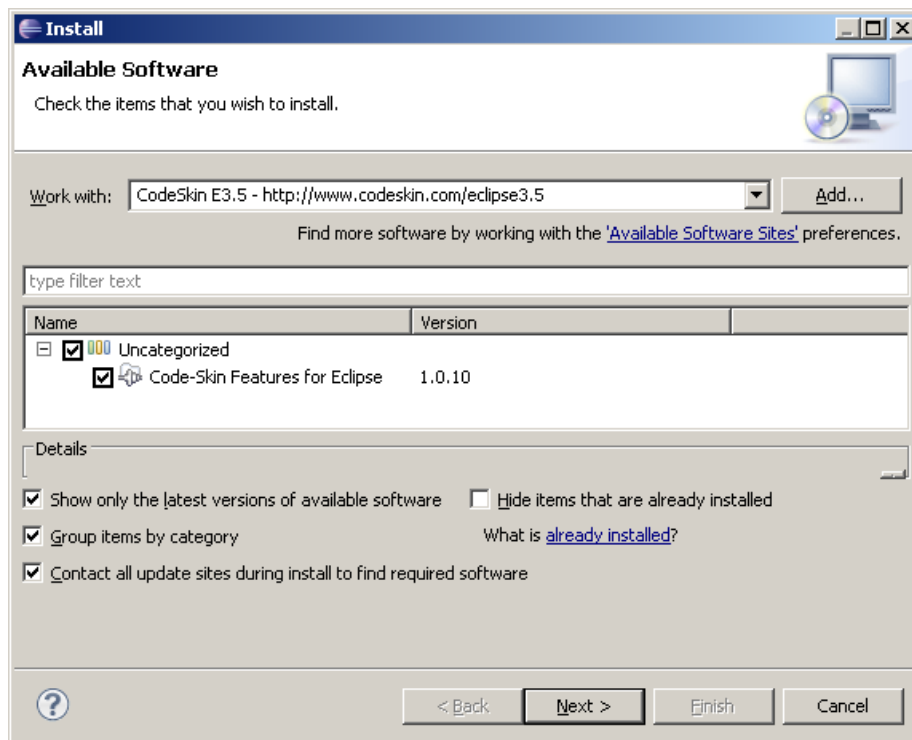
2. Install Eclipse 3.3 or 3.5 and plugins. If you are new to installing plugins read the paragraph below (*) on “How to install an Eclipse Plugin”.
 - a. Install Eclipse 3.5 (<http://www.eclipse.org/>). Select the “Eclipse IDE for C/C++ Developers” package”
 - b. Using the Eclipse “Install New Software” (*), install Subclipse (<http://subclipse.tigris.org/>)
 - c. Again, using the Eclipse “Install New Software” (*), install the CodeSkin plugins (<http://www.codeskin.com/eclipse.html>).
3. Install the C2000Prog flash programmer from this link: <http://www.codeskin.com/c2000Prog.html>.
4. Install C2000Prog from here: http://www.codeskin.com/console_download.html

*** How to install an Eclipse Plugin**

Eclipse plugins are installed by means of the “Install New Software” feature. This example shows the process for installing the CodeSkin plugins. Start with selecting “Help” and “Install New Software”. Then hit the “add” button and configure a new site, as shown below.



Eclipse can then retrieve the information from the CodeSkin update site and will present the following window. Select the CodeSkin features, click “Next” and follow the instructions until the installation completes.



Installing and Compiling an Example Project

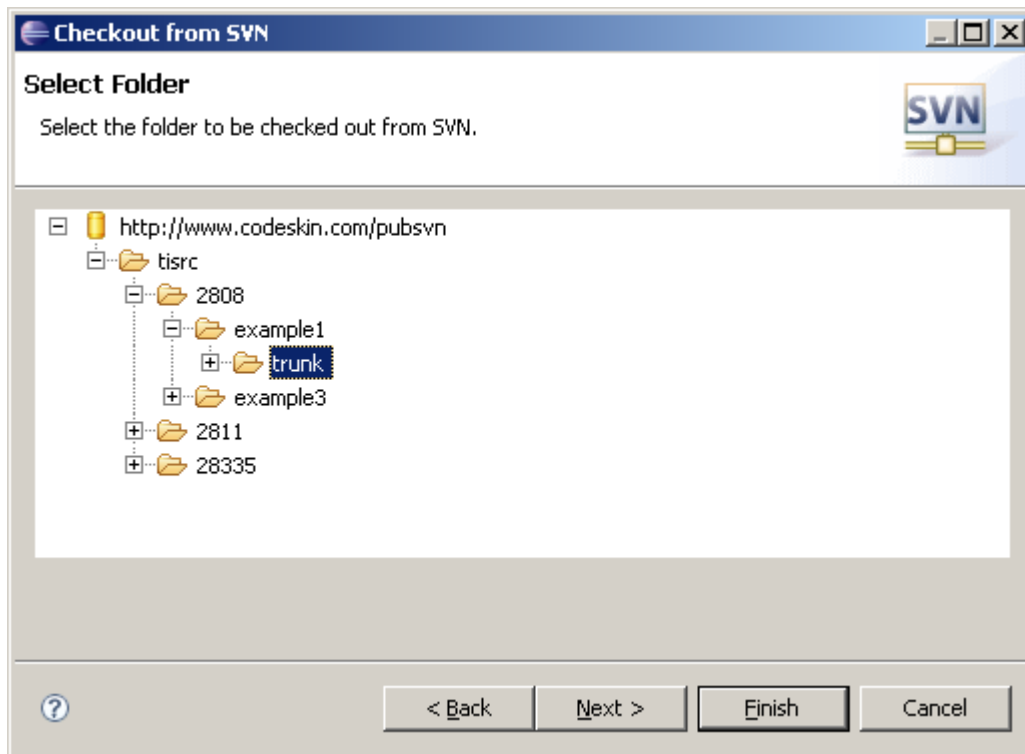
We are ready to try an example program that can be compiled and programmed into flash. The files are obtained using the Subversion (SVN) client that is part of the Subclipse plugin. For more information about SVN, please visit the following site: <http://subversion.tigris.org/>

In Eclipse, choose File->New->Project and select "Checkout Projects from SVN". You need to create a new repository location with the following address:

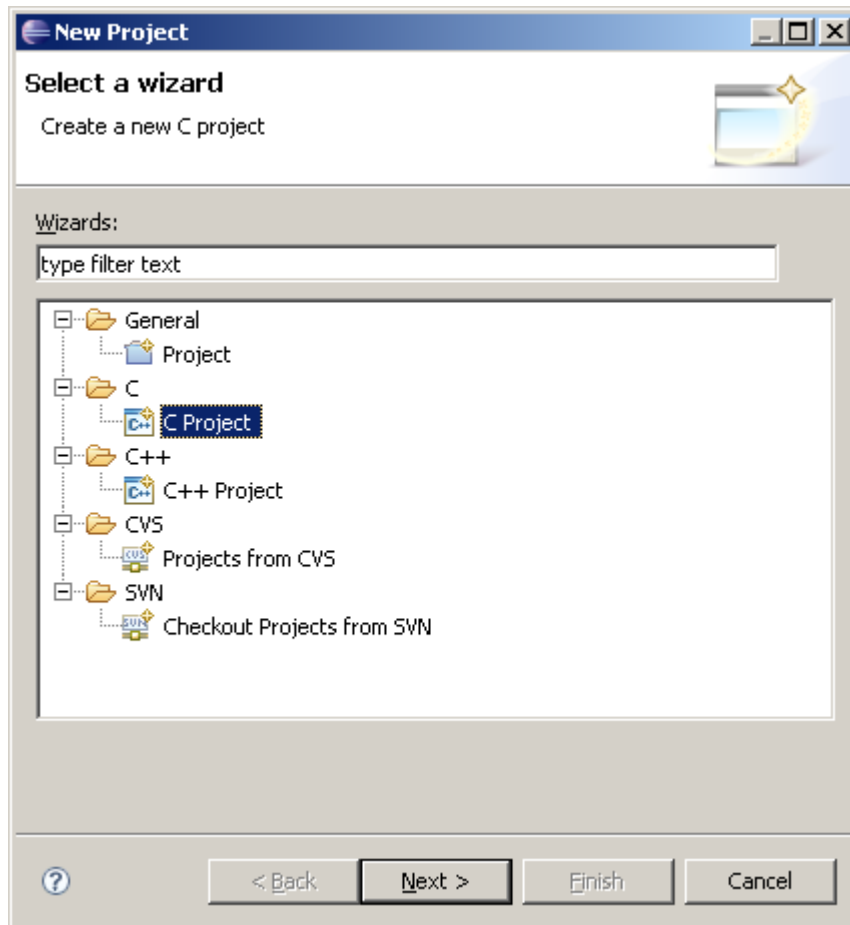
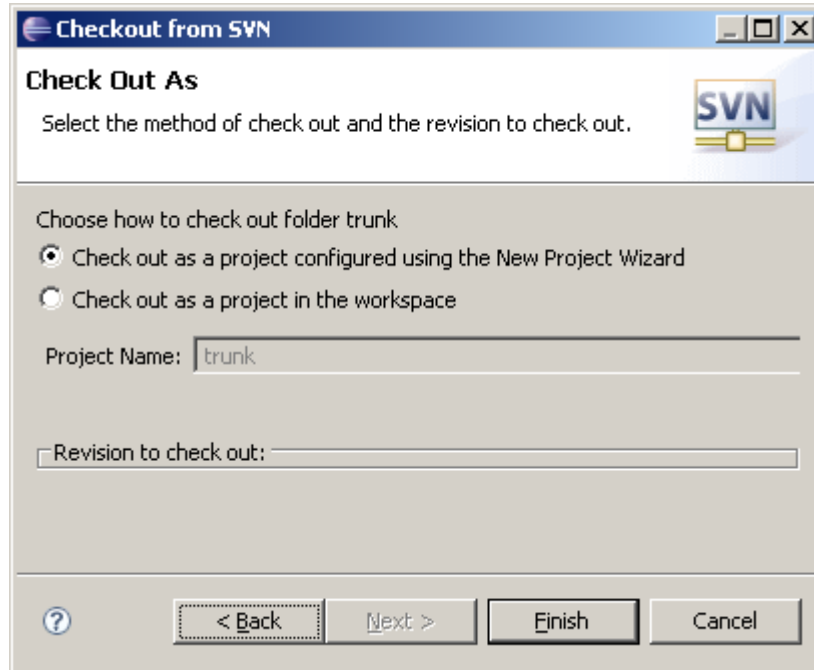
<http://www.codeskin.com/pubsvn/tisrc/>

Then, select one of the following "Example1" projects, depending on your hardware:

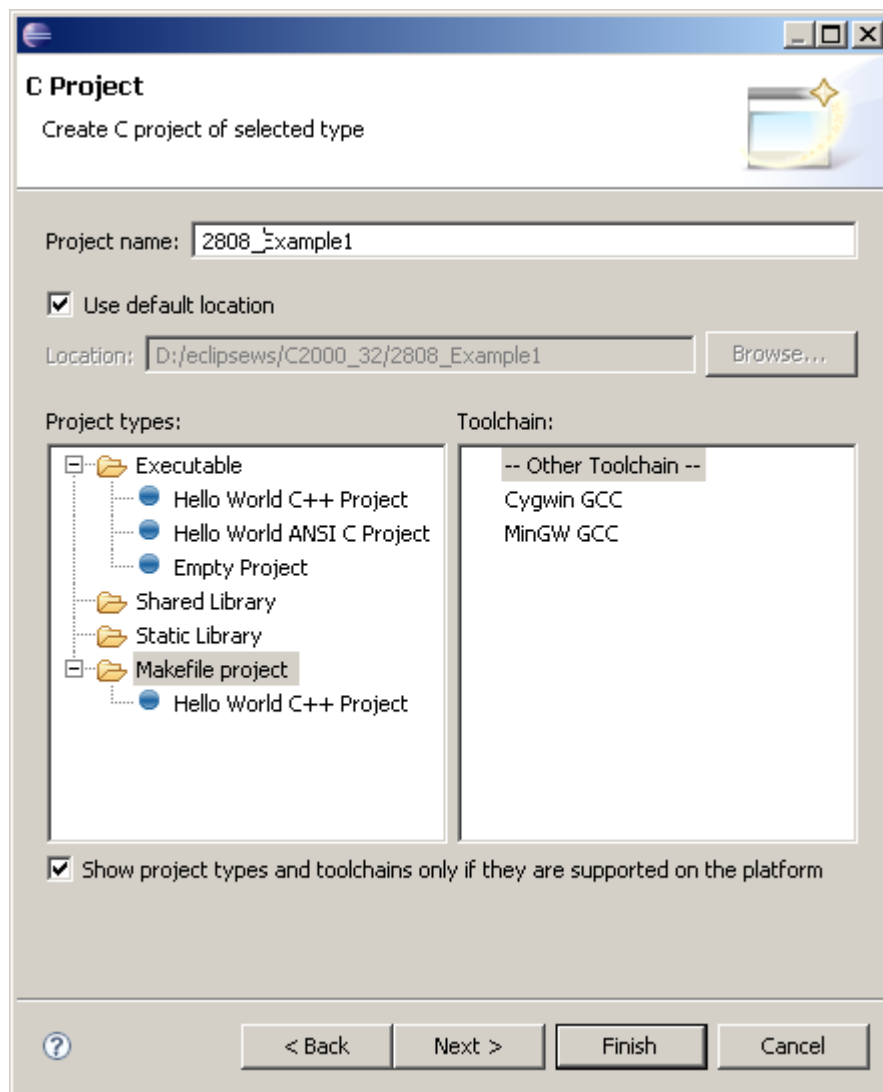
- TMS320F2808: tisrc/2808/example1/trunk
- TMS320F2811: tisrc/2811/example1/trunk
- TMS320F28335: tisrc/28335/example1/trunk
- TMS320F28027: tisrc/28027/example1/trunk
- TMS320F28035: tisrc/28035/example1/trunk



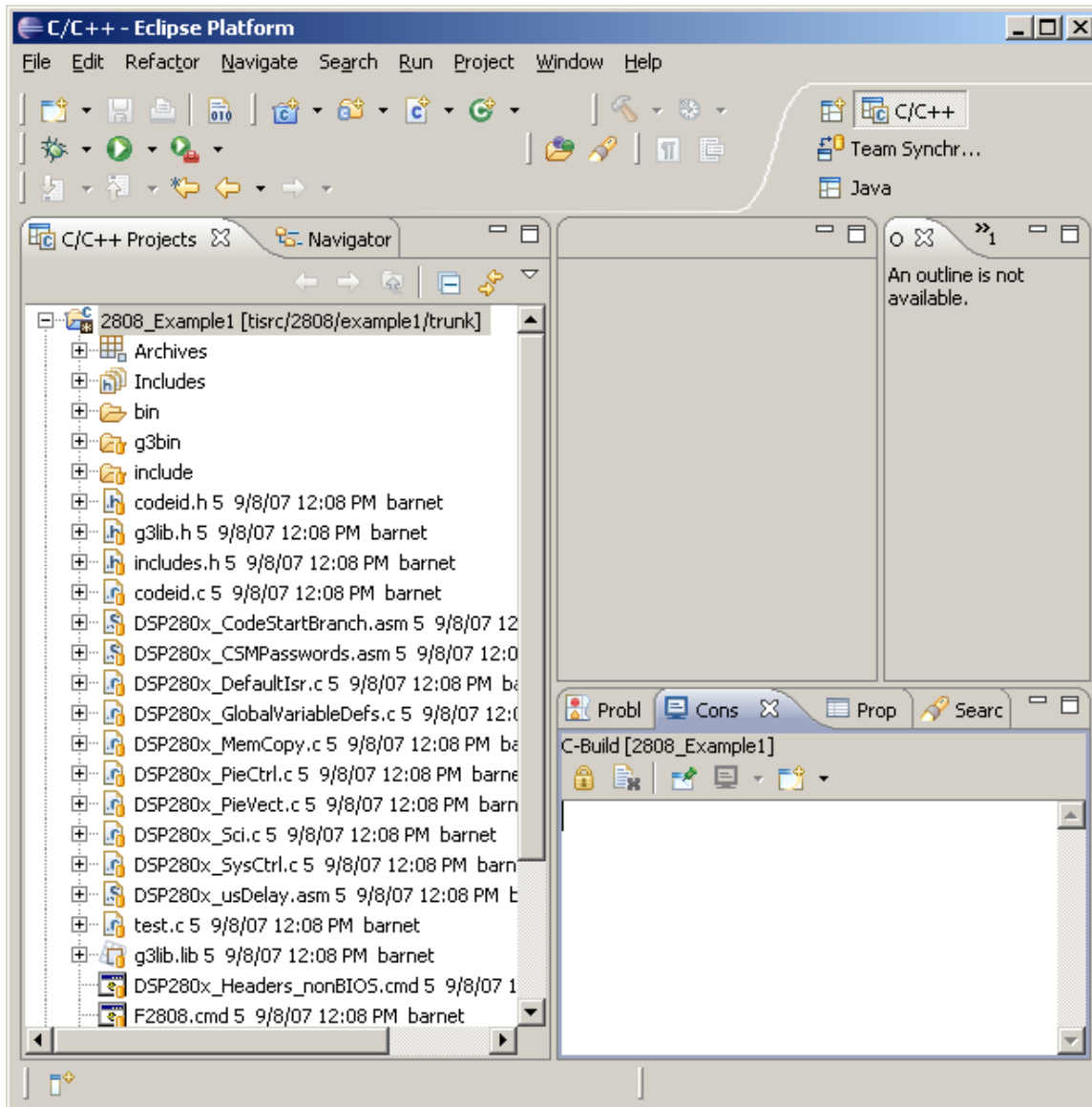
Select the New Project Wizard to configure the project and choose “C Project”.



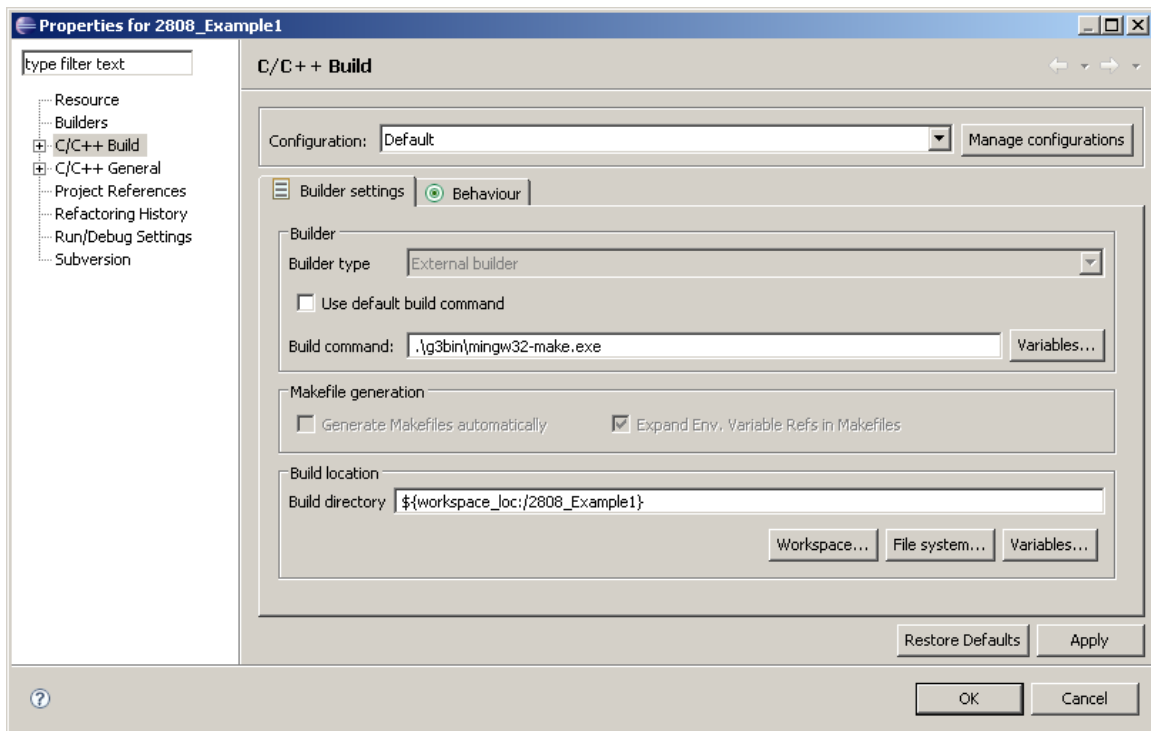
Now select "Makefile project" and click "Finish".



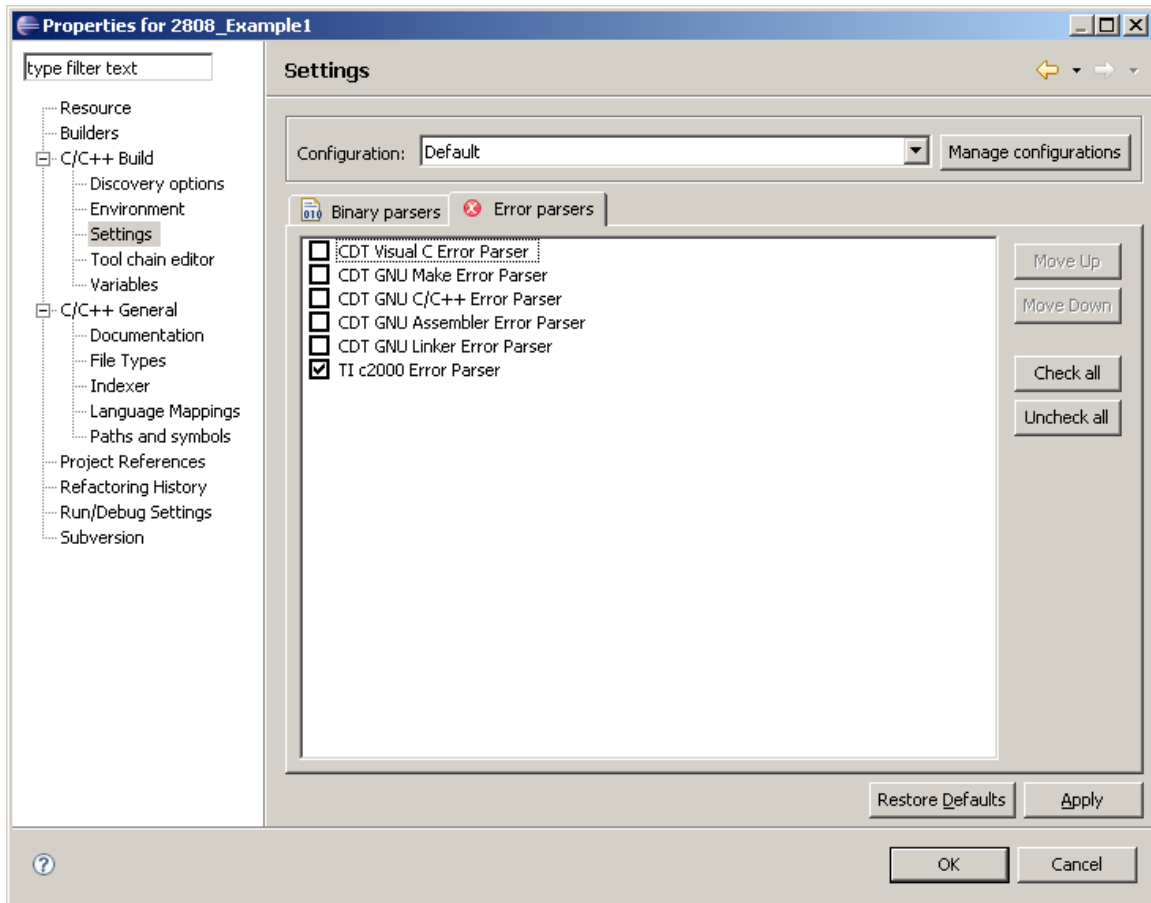
After this step, all files of the example project will be downloaded and the new project will appear in your Eclipse workspace, similar to the screen-shot below.




At this point, we need to make two configurations by selecting the project and choosing Project->Properties. Instead of using the default make (which varies from one computer to the next), we select the open source MinGW *make* which is located in the “g3bin” directory of the example project; type the following into the Build command field: `.\g3bin\mingw32-make.exe`



The second change is to select the TI c2000 Error Parser and uncheck all other available Error parsers, as shown below.



As a final step, the path to the TI Code Generation Tools needs to be updated in the makefile to reflect your local installation (search for TOOLS_PATH).

We are now ready to compile the project. Click on  or select Project->Build All. If the build process is successful, then the bottom of the console window will display the following text:

```
C:\ti\c2000\cgtools\BIN\hex2000 -romwidth 16 -memwidth 16 -i -o .\bin\test.hex
.\bin\test.out
Translating .\bin\test.out to Intel format...
  ".\bin\test.out" ==> .cinit
  ".\bin\test.out" ==> .text
  ".\bin\test.out" ==> ramfuncs
  ".\bin\test.out" ==> .econst
  ".\bin\test.out" ==> csm_rsvd
  ".\bin\test.out" ==> codestart
  ".\bin\test.out" ==> csmpasswd
mingw32-make[1]: Leaving directory `D:/eclipsews/C2000_32/2808_Example1'
```

This validates the successful installation of the CodeSkin tools.

Programming the Flash

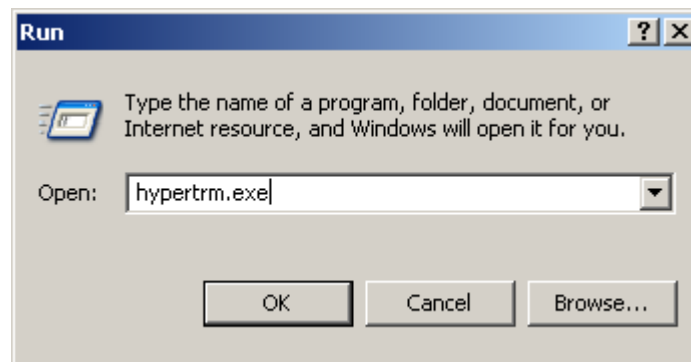
The MCU flash can be programmed over RS-232 using the CodeSkin C2000Prog tool. Please consult the manual of the programmer for more details:

http://www.codeskin.com/doc/C2000Prog_Manual.pdf

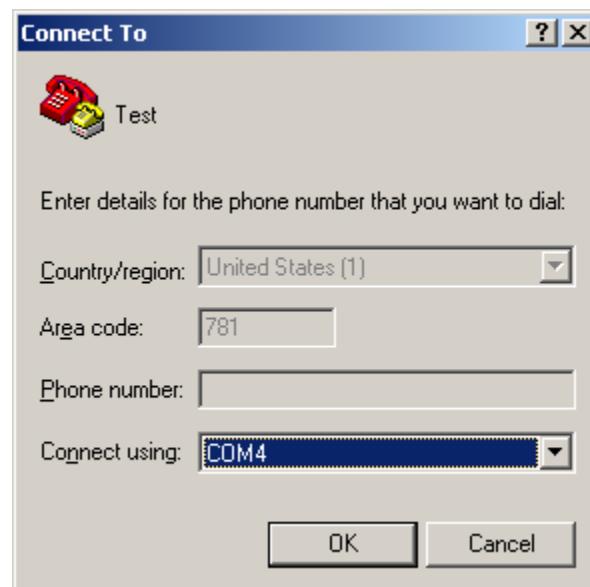
The programming has completed successfully when “You may now close this window and reset the target.” is displayed.

Verifying the Program Execution

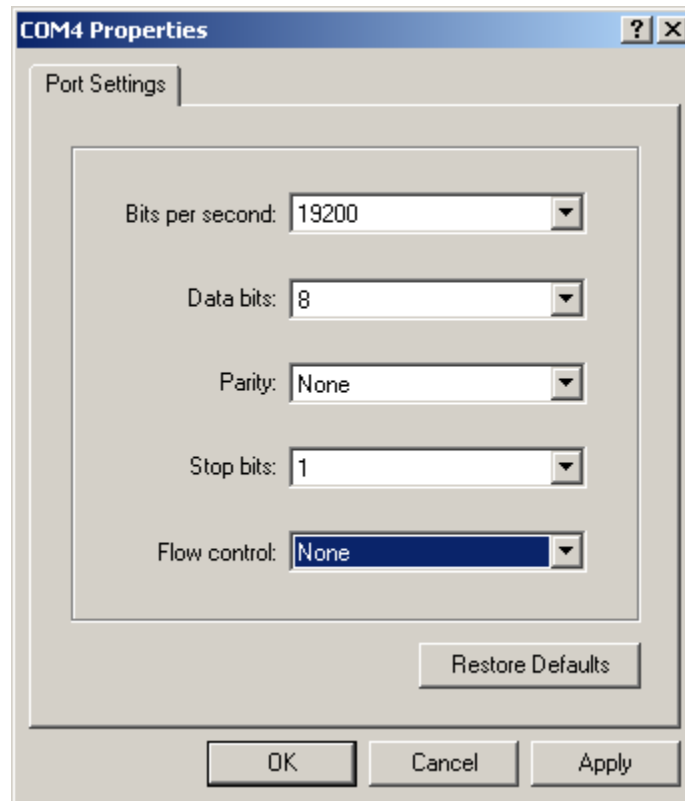
Open Hyperterminal using Windows Start Menu and Run:



Create a new connection pointing to the COM port to which your hardware is connected.



For the communication settings, enter 19200,8,N,1 with no flow control.



After the terminal window open, reset your hardware to execute from flash memory. If the program is running correctly, a start-up banner will be displayed in Hyperterminal:

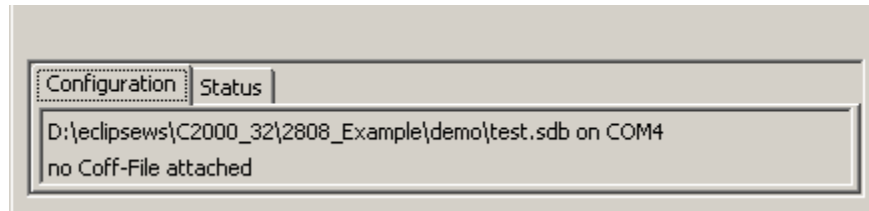
```
Starting G3 280X Example Software...  
Compiled: Thu Sep 13 20:28:44 2007, by: barnet
```

This concludes the verification of the software installation.

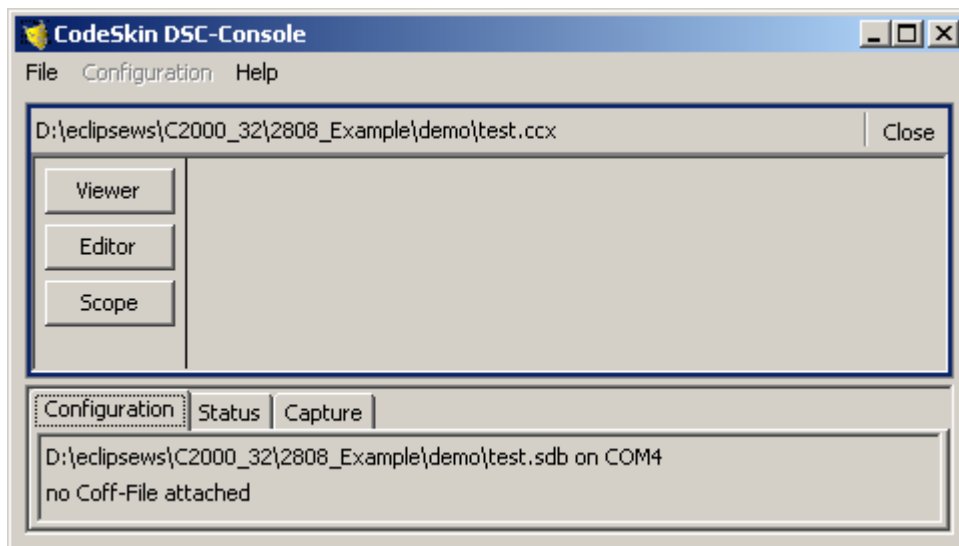
C2000Console

With the example software running, it is now possible to demonstrate CodeSkin's standalone GUI C2000Console for interfacing with the MCU over RS-232.

Launch C2000Console and select the appropriate communication port by means of the "Configuration->Com Configuration" menu. Then, select the symbol database file (test.sdb) located in the "demo" folder using the "Configuration->Select Symbol File" menu. At this point, the bottom portion of the C2000Console should look similar to this:



Now the communication with the MCU can be started by clicking "File->Open" and selecting the "test.ccx" file. If the link has been established successfully, the "view", "edit" and "scope" buttons become available.



Please refer to the C2000Console manual for further details:

<http://www.codeskin.com/doc/C2000Console Manual.pdf>