

EE/TE 4385

Lab 1: Introduction to Code Composer Studio and LabView

Lab Report Due: 8/30/06, 2PM

The lab is equipped with USB based TMS320C6713 DSK boards. You need to configure CCStudio (Code Composer Studio) for corresponding platform, i.e. C6713 DSK, before you can launch CCStudio. To do this, open "Configure CCStudio", then choose "DSK C6713 Map 1" from the scroll menu. This configuration should be done every time since the computers in the lab are protected with "Deep freeze" which resets all changes you made after the computer's reboot.

Getting Familiar with Code Composer Studio

Create lab01 directory in "C:\ti\myprojects". For this lab, download *.c and *.cmd files from "~\torlak\DSProject\lectures\labs\lab01" into "C:\ti\myprojects\lab01". Follow the instructions below (or lab 8 of text by Kehtarnavaz and Kim)

Summary:

1. Creating new project

- Double-click the CCS (Code Composer) icon on your desktop.
- From Project → New from the menu bar, bring up Project Creation dialog box, browse c:\ti\myprojects\lab01 and type lab01 as the project name and click finish.
- Add the linker command file (*.cmd file) into the project from the download files. The linker command file creates DSP executable file that conform the memory map of the DSP.
- Add source code (*.c file) into the project.
- We also need to add a library file from c:\ti\c6000\cgtools\lib. The file is rts6700.lib for the xC6713 DSK. Add this library file into the project.

2. Build project

- Select "Project → Build Options", then change target version to "C671x".
- Select "Project → Rebuild All" from the menu.

3. Load & Execute the program

- Before you load the program to DSP, it is always required to reset DSP. This is very important to avoid unexpected result caused by overwriting memory on the DSP from Debug → Reset CPU menu item. You can also halt DSP using Debug → Halt menu item.
- Load program
 - Select "File → Load Program" from the menu to load the program.
 - Select "Lab01.out" in the "Debug" folder.
- Run program
 - Select "Debug → Run" from the menu to execute the program.

4. View Graph

- Select "View → Graph → Time/Frequency" from the menu to show graphical display
- Type output in the field "Start Address."
- Change "Display Data Size" to 10.
- Change "DSP Data Type" to "16-bit signed integer."
- Press "OK" button
- Now change the frequency variable in sine_sum.c file and rebuild and reload your program. View the graph as you did earlier. What difference do you observe? Import the screen shots for your report.

6. Profiler

- Load program.
- Select "Profiler → Start New Session."
- Enter a name for the profile session.
- Locate cursor inside the function to profile, then right-click.
- Choose "Profile Function → in ... Session".
- Run the program
- Examine number of cycles of particular function

7. Code Optimization

- Select "Project → Build Options."
- Change optimization level in the file "Opt Level". (None, o0, o1, o2, and o3)
- Load the program
- Run the program
- Record number of cycles for different optimization levels for your report.

8. Others

- Examine other features of CCStudio such as Break Point, Watch window

Getting Familiar with Labview Part I and Part II

1. Start LabView 8.
2. Complete the chapter 1 and 3 of the "Getting Started with LabView" PDF document under New To LabView Menu of Resources Section of the LabView Getting Started window. Put the screen shots of the Front Panel and Block Diagram windows of your VIs from chapter 1 and chapter 3.
3. Go through the LabVIEW tutorial at NI's website before the next week's lab. The link is provided at <http://www.utdallas.edu/~torlak/courses/DSPProject/lectures/lecture01/index.html>