SBCTool Demo

Using SBCTool for MCF5208 EVB
Outline

• Overview of MCF5208 EVB
• Demo using Hyper Terminal (Assembly)
• Demo using SBCTools (C program)
• Useful References
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• **Overview of MCF5208 EVB**
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Overview of MCF5208 EVB

Evaluation boards available at K120!
MCF5208 Features

- 32-bit microprocessor based on V2 ColdFire microarchitecture
  - 16 KB SRAM
  - 8KB direct mapped cache
  - 16-channel DMA
  - 32MB DDR SDRAM
  - 2MB Flash
  - 2 RS232 Interfaces
  - MC13192 ZigBee Transceiver
  - Connectors for I2C, QSPI, GPIO, etc

Figure 1. MCF5208 Block Diagram
Software Development Tools

• SBCTools – Eclipse Edition
• Metroweeks’ CodeWarrior Special Edition
• Other Tools provided by M5208EVB kit
Two Kinds of Applications

• Standard
  – Applications that run directly from the serial dBUG monitor

• uClinux (linux kernel for microcontrollers without MMU)
  – uClinux user applications
  – MCF5208EVB has a preprogrammed uClinux kernel in the flash memory
dBUG is a traditional ROM monitor/debugger that offers a comfortable and intuitive command line interface that can be used to download and execute code.

<table>
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<tr>
<th>Command</th>
<th>Syntax</th>
<th>Description</th>
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<tr>
<td>GO</td>
<td>go &lt;addr&gt;</td>
<td>Execute</td>
</tr>
<tr>
<td>GT</td>
<td>gt addr</td>
<td>Execute To</td>
</tr>
<tr>
<td>HELP</td>
<td>help &lt;command&gt;</td>
<td>Help</td>
</tr>
<tr>
<td>IRMD</td>
<td>ird &lt;module.register&gt;</td>
<td>Internal Register Modify or Display</td>
</tr>
<tr>
<td>LR</td>
<td>lr&lt;width&gt; addr</td>
<td>Loop Read</td>
</tr>
<tr>
<td>LW</td>
<td>lw&lt;width&gt; addr data</td>
<td>Loop Write</td>
</tr>
<tr>
<td>MD</td>
<td>md&lt;width&gt; &lt;begin&gt; &lt;end&gt;</td>
<td>Memory Display</td>
</tr>
<tr>
<td>MM</td>
<td>mm&lt;width&gt; addr &lt;data&gt;</td>
<td>Memory Modify</td>
</tr>
<tr>
<td>RD</td>
<td>rd &lt;reg&gt;</td>
<td>Register Display</td>
</tr>
<tr>
<td>RM</td>
<td>rm reg data</td>
<td>Register Modify</td>
</tr>
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Development Procedure

• Hardware setup
• Writing your program (assembly, C/C++)
• Compile and debug the program
• Download your program to the target board
• Run your program
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Demo using SBCTools (C)

- Create a project using SBC Tools
- Import a project using SBC Tools
- Debug a program
Demo using SBCTools (C)

- Create a project using SBC Tools
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- Debug a program
Hardware and Software

• MCF5208EVB
• SBCTools V3
• Cables
Running SBC Tools

- On Windows XP, Start->All Programs->SBCToolsV3->SBCToolsV3
SBC Tools IDE
Create a demo C project
Give a name for new project
Finish the demo project
Create C source file
Give a name for source file

Create a new source file.

Source Folder: Demo
Source File: main.c

Finish | Cancel
Edit the source file
Compile the demo project
Download and run demo
Choose a object code to run
Show the results

#include <stdio.h>

int main()
{
    printf("Hello, World\n");
    return 1;
}
inline assembly code

```c
static void init_cache (void)
{
    /* Configured as split cache: 4 KByte instruction cache
     * ACRO: Memory region disabled
     * ACR1: Memory region disabled
     * CACR: Cache accesses to any memory address
     * /
    asm("move.l  #0x80800000, %d0\n\t");
    asm("movec  %d0,%CACR");
    asm("move.l  #0x00000000, %d0");
    asm("movec  %d0,%ACRO");
    asm("move.l  #0x00000000, %d0");
    asm("movec  %d0,%ACR1");
}
```
Demo using SBCTools (C)

- Create a project using SBC Tools
- Import a project using SBC Tools
- Debug a program
Import

Select

Create a new Project from an Eclipse project in the file system. This does not copy the project to the workspace.

Select an import source:
- Checkout Projects from CVS
- Existing Project into Workspace
- File system
- Team Project Set
- Zip file
Import Project From File System

Create a new Project from an Eclipse project in the file system. This does not copy the project to the workspace.

- Project name:
- Project contents:

Browse For Folder

Select the Project location.

- DemoIRQ
- DemoPIT
- DemoSMAC_Host
- .metadata
- Debug
- drivers
- src

Folder: DemoSMAC_Host

Make New Folder  OK  Cancel
/*

FILE: main.c
by - Graeme Roche
date - July 19, 2005.

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PURPOSE: Waits to receive a message from a SMAC remote. When a message is received, it acknowledges the remote and prints out some data.

NOTES: Depends on having a SMAC Remote, either a SARD board program, data remote program, or another M5208EVB programed with this program.

#include <stdio.h>      // Standard C Library for IO
#include <5208evb.h>    // All mcf5282 memory accessible peripheral registers
#include <smac_init.h>  // initialization code and functions for Host

// the Host has 2 possible states
#define WAIT_for_REMOTE 3
#define ACK_REMOTE 4
*/
 Demo using SBCTools (C)

- Create a project using SBC Tools
- Import a project using SBC Tools
- Debug a program
Debug A Program

• Refer to “SBCToolsV3 User Manual”
• Debug perspective provides
  – Views for control (stepping, breakpoints)
  – Viewing Registers and memory
  – Defining expressions, source
  – Disassembly
Debug A Program

![Image of a debugger interface displaying variables and registers]
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Websites:

• ELE408 course website
  – http://www.ele.uri.edu/courses/ele408/

• MCF5208EVB Product Summary Page

Documents:

• MCF5208EVB dBUG Firmware Manual
  – Location: MCF5208 Getting Started
    CD\Documentation\MCF5208\dBUG_5208.pdf
Useful References (Cont.)

Documents (Cont.):

- MCF5208 Reference Manual
  - Location: MCF5208 Getting Started
    CD\Documentation\MCF5208\MCF5208RefMan.pdf
  - Location: MCF5208 Getting Started
    CD\Documentation\MCF5208\CFProgRefMan.pdf
- SBCTools (dBUG) Quick Start
  - Location: C:\SBCToolsV3\documentation\SBCToolsV3QSdB.pdf
- SBCToolsV3 User Manual
  - Location: C:\SBCToolsV3\documentation\SBCToolsV3UM.pdf
- SBCToolsV3 Programmer Reference
  - Location: C:\SBCToolsV3\documentation\ProgrammerRefV3.pdf
Useful References (Cont.)

Sample Programs:

![Import Projects screenshot](image)