Run the demo project

Configure debug and run operation

Before you could run the "demo.elf" file on MicroBlaze you should configure the "stdio output".

You shoud click "Run">"Run Configurations...".



A pop-up "Run Configutations" will appear. Click "demo.elf" (if it is not already selected) and then click "SDIO Connection" tab.



Filter matched 6 of 6 items	Apply Reyert
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"Run Configurations" opened

Check () the box "Connect STDIO to Console" and select as port "JTAG UART". Then click "Apply" button.

😡 Run Configurations	×
Create, manage, and run c	onfigurations
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Connect STDIO to Console

Then click "Close" button. The pop-up will close.

The Debug operation normaly share these settings, so you doesn't need to repeat this procedeure for debug operation but is better to check the settings (it is better to be on the safe side).

Change perspective from "C/C++" to "Debug"

To change perspective you should click "Window">"Open Perspective">"Debug".

😡 C/C++ - demo/src/main.c - Xilinx SDK			_	
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	IN THE SOFTWARE.			get_board_revision(vc
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	C-Build [demo]			
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Open Debug Perspective

 \odot

The new perspective is the following.

Debug - reference-TE0300_hw_platform/system.xml - Xilinx SDK							
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reference-TEU3UU_nw_platform Hardware Platform Specification							
Design Information							
Target FPGA Device: xc3s1600e							
Created With: EDK13.3							
Created On: Thu Nov 22 15:40:10 2012							
Address Map for processor microblaze_0					E		
dlmb_cntir 0x0000000 0x00007fff							
Imb_cntir 0x0000000 0x0000/fff							
SPLFLASH 0x83400000 0x8340ffff							
debug_module 0x84400000 0x8440ffff							
xps_intc_0 0x81800000 0x8180ffff							
RS232 0x84000000 0x8400ffff							
xps_i2c_slave_0 0xc6e00000 0xc6e0ffff							
xps_fx2_0 0xc7200000 0xc720ffff							
xps_npi_dma_0_UxclaUUUUUUxclaUffff							
IP blocks present in the design							
microblaze_0 microblaze 7.30.b							
mb_plb plb_v4b 1.05.a ilmb lmb_v10 1.00.a							
dimb100100.a					*		
Overview Source							
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C-Build [demo]							*
**** Build of configuration Debug for project demo ****							
make all							
make: Für das Ziel wall« ist nichts zu tun.							
00							

Debug perspective opened

Use the "demo" project with the XMD UART

Demo program (running on MicroBlaze) will work even in case the UART port is left unconnected: it is not necessary to use a USB/Uart converter or Uart port on a PC, if you are using XMD UART HDL block.

With this application, you can test the PC USB JTAG FPGA communication using a simulated UART (XMD_UART) on JTAG/USB connection.

GUI procedure

In this simple case you can simply click "Run" > "Run"

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In the console the menu of demo.elf should appear. If the menu doesn't appear you have probably set RS232 instead of debug (mdm) and/or set incorrectly "Stdio output".

If you write the character "a" the RAM test should start.

🚯 Debug - reference-TE0300_hw_platform/system.xml - Xilinx SDK		
File Edit Navigate Search Project Run Xilinx Tools Window Help		
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CAVIIInvBrojectUreFerence-TE0300(SDK/SDK/Workspace\demo\Debug\demo.eff [Console connected to JTAG UART] J	XDD Plyces mettion, .bms: 0x00003740-0x00003551 section, .tmap: 0x0000356-0x00003557 section, .stack: 0x0000356-0x00004057 Download Programs.10.2.0.3.0.4.0.50.60.70.80.90.Done Setting FC with Program Start Address 0x0000000 RINNING>	*
👔 system.xml 🛛 👔 system.mss 🖻 interrupts.c 🗟 func.c 🗟 datatype.h 🗟 control_fifo.h 🗟 func.h 🗟 interrupts.h	n 🗈 main.c 🙀 system.mss 📃 🗖 🗄 Outline 🛛	- 0
reference-TE0300_hw_platform Hardware Platform Specification	An outline is not availa	able.
Design Information Target FPGA Device: xx3:1600e Created With: EDK13.3 Overview [Source]		
Console X A Tasks P Terminal 1 P Problems O Executables Console		er 🗉 🕶 🖻 🖛 🗖 🗖
demo.elf [Xilinx C/C++ ELF] C:\XilinxProject\reference-TE0300\SDK\SDK_Workspace\demo\Debug\demo.elf [Console connected to JTAG UART]		
TE-USB DEMO ver 0x08030000 Setting up Interrupt Controller: Initialize exception handling Register external interrupt handler Enabling and initializing instruction cache Enabling and initializing data cache Type: 'a' RAM test 'f' RAM Frest 'c' toggles caching 't' starts RX thangmission 'r' starts RX thangmission 's' stops all thangmission 's' for the redraw menu a Ferforming RAM test: from addr 0x1C010000 to 0x1FC0FFFCwrittencountedFASSED		
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XMD procedure

🕪= Variables 💁 Breakpoints 🔣 XMD Console 🛛 💦 🐂 🖹	, 🛛
XMD Process	
Copyright (c) 1995-2012 Xilinx, Inc. All rights reserved.	
XMD\$	
XMD%	
Accepted a new TCLSock connection from 127.0.0.1 on port 49161	
Programming Bitstream C:/XilinxProject/reference-TE0300/SDK/SDK_Workspace/reference-TE0300_hw_platform/download	
Fpga Programming Progress102030405060708090Done	-
XMD% connect mb mdm -debugdevice cpunr 1	

In the XMD console you should write "connect mb mdm -debugdevice cpunr 1".

In the XMD console you shoud write "rst" and then click "return" on the keyboard.

🗵 Variables 💁 Breakpoints 😰 XMD Console 🖾 👘 🖡	
(MD Process	
Connected to "mb" target. id = 0	
Starting GDB server for "mb" target (id = 0) at TCP port no 1234	
XMD% rst	
System reset successfully	
XMD%	
٠ III	
<pre>KMD% dow C:/XilinxProject/reference-TE0300/SDK/SDK_Workspace/demo/Debug/demo.elf</pre>	

In the XMD console you should write "dow C:/XilinxProject/reference-TE0300/SDK/SDK_Workspace/demo/Debug/demo.elf" and then click "return" on the keyboard.

🕬= Variables 🤷 Breakpoints 🔯 XMD Console 🛛	
XMD Process	
section, .heap: 0x00003854-0x00003c57	*
section, .stack: 0x00003c58-0x00004057	
Download Progress10.20.30.40.50.60.70.80.90.Done	
Setting PC with Program Start Address 0x00000000	
System Reset DONE	
XMD%	•
	4
XMD% run	
In the XMD console you shoud write "run" and then click "return" on the keyboard.	
🕬= Variables 🧕 Breakpoints 🔀 XMD Console 🛛	🖡 🖹 🗸 🖓 🖻 E
XMD Process	
Setting PC with Program Start Address 0x00000000	
System Reset DONE	
XMD% run	
RUNNING> 0	
XMD%	-

In the XMD console you shoud write "terminal -jtag_uart_server 4321" and then click "return" on the keyboard.

After this you should open some terminal emulators (because you want to input/output some characters with the XMD UART), such as

ш

• Microsoft / Hilgraeve HyperTerminal (usually included in Windows before Vista START MENU > All programs > Acessories > Communications > Hyper Terminal).ClearTerminal (very easy)

ь

XMD% terminal -jtag_uart_server 4321

•



- parity: none
- stop bits: 1
- flow control: none (otherwise you will not be able to enter commands)

In the XMD console you shoud write "stop" and then click "return" on the keyboard.

In the XMD console you shoud write "run" and then click "return" on the keyboard.

After this two further step the menu of "demo.elf" should appear in the terminal emulator.





After this two further step the menu of "demo.elf" should appear in the terminal emulator.

In the console the menu of demo.elf should appear. If the menu doesn't appear you have probably set RS232 instead of debug (mdm) and/or set incorrectly "Stdio output".

If you write the character "a" the RAM test should start.



Type:
'a' RAM test
'f' RAM Ftest
'c' toggles caching
't' starts TX transmission
'r' starts RX transmission
's' stops all transmissions
'v' for internal test
'm' for the redraw menu
Performing RAM test: from addr 0x1C010000 to 0x1FC0FFFCwritte
ncountedPASSED
localhost: 4321 (connected)

If you write the character "a" the RAM test should start.

Use the demo project without the XMD UART

To use the *demo* project without the XMD UART, you need to use "RS232" instead of "debug_module" as standard in/out port. Otherwise the application running on the Microblaze processor freezes if you disconnect the XMD. To accomplish that you need to set up the Microblaze "Software Platform Settings".

- In the dialog window select "OS and libraries" in the left window and pick "RS232" as a stdout and stdin interface.
- Then rebuild the software and download again the project to the FPGA.

The UART is then redirected to external pins, which are defined in the data/system.ucf file.



- bits per seconds: 115,200
- data bits: 8
- · parity: none
- stop bits: 1
- flow control: none (otherwise you will not be able to enter commands)

The following snippet shows the case of the TE0300 series modules:

Module RS232 constraints* Net fpga_0_RS232_RX_pin LOC=B13; Net fpga_0_RS232_TX_pin LOC=B14; Please refer to the table below for other module series relevant to this application note.

TE series	RS232_RX FPGA ball	RS232_RX module pin	RS232_TX FPGA ball	RS232_TX module pin
TE0300	R6	J5-29	P6	J5-31
TE0320	V17	J5-IO18	W17	J5-IO19
TE0630	Y7	J5-29	AB7	J5-31

TE0303	It doesn't apply	J1-33	It doesn't apply	J1-34
TE0304	It doesn't apply	J1-3	It doesn't apply	J1-2
TE0323	It doesn't apply	J4-35	It doesn't apply	J4-37
host (PC)	тх	ТХ	RX	RX

Location of UART pins examples.



Sample UART to USB virtual COM port converter.



Sample UART to USB virtual COM port converter: signal detail for TE0320 and TE0323.