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Name of the exercise

Use of bus analyzers

Responsible for the exercise

Markus Joos

Description of the exercise

Using the program developed in Exercise 1 and analyzers for VMEbus and PCI the students will discover how PCI / VMEbus cycles look like at the signal level. They will understand the timing elements of the VMEbus handshake and the H/W and S/W overheads involved in the data transfers as well as the differences of the PCI and VMEbus protocol. They will also learn how to use a bus analyzer to look for special events such as bus errors and how to relate them to the code of the application that triggered them.

What will the students learn

- Using a bus analyser
- VMEbus protocol (as an example for an asynchronous parallel bus)
- PCI protocol (as an example for a synchronous parallel bus)

Duration

2 hours.

List of material

H/W:

- 1 VMEbus crate
- 1 CCT SBC
- 1 VMEbus D32/MBLT memory module
- 1 VMEbus display module
- 1 VMEtro VBT325
- 1 VMEtro PBTM 515 PMC analyzer
- 1 Falco Terminal or a PC with a terminal emulator (e.g. minicom)

S/W:

- Linux file system and gcc compiler / linker
- vme_rcc, cmem_rcc and io_rcc driver
- TDAQ RCD S/W (vme_rcc and related libraries)
- The code developed in exercise 1

Relevant Information

- The students have heard the lecture on modular electronics

Installation guide.

See exercise 1

Instruction sheet.

Will be handed out to the students

Solution

A complete C-program is available in `/home/daqSchool/exercise11/solution`

Preparation of the exercise in Ankara

1. Unpack the VMEbus crate and check if the modules are all looking OK
2. Connect the upper RJ45 network port of the VP110 to the network. Make sure the server is switched on
3. Connect the console RJ45 connector with the RJ45-DB9 adapter to the COM0 port of pcdaschool1. "cd" to /kermit and run "rkermit .kermrc_vp110". Then type "connect". Switch on the VMEbus crate and check if you can see the messages from the BIOS of the VP110.
4. Check if the VP110 boots OK
5. unconnect the RS232 cable and set up a PC. This PC is required to "ssh" to the VMEbus SBC. It has to be connected to the DAQ school network. Linux is preferred. There has to be a program (xterm, etc.) that allows to "ssh" to the SBC. When the students execute this exercise they need this PC as well.
6. Log on to the SBC via ssh and "cd" to "/home/daqSchool/exercise11/"
7. Check if you can see the the files in this directory

Remarks

The use of the bus analyzer and the possibilities it offers may be difficult to describe in the instruction sheet. Therefore the tutor of this exercise should be familiar with the VBT325 / PBTM 515 and the VMEbus / PCI protocol as (s)he will have to guide the students.

-- MarkusJoos - 2009-08-21

This topic: Sandbox > DaqSchoolExercise2

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