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Embedded electronics course (EMB1) - Fall 2018

Lecture 5

Topics

The topics for the first lecture with programmable electronics are:

- Getting familiar with the Zynq IC and the propeller board.
- Combinational logic.
- Getting familiar with Vivado.
- Workflow from hardware descriptive language to generating bit file.

Hardware

You can borrow the required hardware from us, one set pr. group.

- Zynq platform: DIPFORTy1 "Soft Propeller" TE0722[1] from Trenz electronics.
- Programmer: XMOD FTDI JTAG Adapter[2] from Trenz electronics.

Preparation

Make sure you all have installed Vivado, cable drivers and board files before the lecture.

Hardware platform

- From UG585 briefly read Cp. 21 to Cp. 21.3.1

VHDL

- Read the first 48 pages in “Free Range VHDL” (Blackboard)
  You should have seen most of this from earlier courses so briefly read it and make sure you have an overview of where to find the things you need when we start writing code. If VHDL is new to you then it is suggested to read the book and make some implementations during the next three weeks.
- Combinational logic: https://en.wikipedia.org/wiki/Combinational_logic

Vivado design flow

Getting started with Vivado IDE.
These are the suggested videos but you are more than welcome do use the documents from the “Documentation Navigator” if reading is more your style.

- Vivado intro:
  https://www.xilinx.com/video/hardware/getting-started-with-the-vivado-ide.html
- Synticized design:
  https://www.xilinx.com/video/hardware/synthesizing-the-design.html
- Implementating design:
  https://www.xilinx.com/video/hardware/implementing-the-design.html

Assignment (Will be uploaded to Blackboard before the lecture)

[1] https://shop.trenz-electronic.de/en/TE0722-02-DIPFORTy1-Soft-Propeller-with-Xilinx-Zynq-7010-and-16-MByte-Flash?c=348
[2] https://shop.trenz-electronic.de/en/TE0790-02-XMOD-FTDI-JTAG-Adapter-Xilinx-compatible?c=318