182.701 – LU Hardware Software Codesign

Course Introduction

Robert Najvirt, Thomas Polzer, Andreas Steininger
Florian Huemer, Markus Schütz

WS 2015, Oct. 5th, 2015

People

- Staff
  - Robert Najvirt
  - Thomas Polzer
  - Andreas Steininger
- Tutors
  - Florian Huemer
  - Markus Schütz

Teaching Goal

You should learn how to:

- Partition a complex system design to software and hardware components
- Reuse and customize existing hardware and software components
- Optimize both hardware and software to meet a performance goal and then to reach the same performance with less resources
- Efficiently work in a group

Organization

- First individually solve a get-to-know task to get comfortable with the platform and tools
- It is a simple application everybody must be able to solve individually
- After solving the task:
  - Make an appointment to show us the solution
  - Upload your solution to MyTI earlier than 24 hours before the appointment
  - Upload deadline: **26. 10. 2015, 23:59**
  - Appointment deadline: **30. 10. 2015**
- Only who successfully completes this first task may proceed to the group phase

Organization

The main task

- You will work on the main task in groups of three
- You may enter suggestions for groups in MyTI – mix with people from other studies
- A few weeks before the end of the term, you will upload and present (both in the lab and in a presentation) a working solution
- The same appointment/24 hours rule
- After that, work on optimizing it for less resources

Grading

- 10 pts. first task (solution + lab presentation)
- 40 pts. working solution (solution + lab presentation + oral presentation)
- 50 pts. final solution (solution + lab presentation)

- Group members can be assessed differently

Prerequisites

- Mandatory
  - Master
- Recommended
  - LU Digital Design and Computer Architecture
  - VO Rechnerstrukturen
  - VO Digital Design
  - VO Hardware Modeling
  - VU Signale und Systeme 2

The Lab

- TILAB: Room no. 1
  - Treitlstraße 1-3, Hochparterre
- Accounts and access cards
  - Account info will be available online (`http://password.tilab.tuwien.ac.at`)
  - Upload a photo to myTI (Until Oct. 8th, 23:59)
  - Must be claimed before Oct. 26rd, otherwise you will be unregistered from the course!
- Working in the lab only allowed after you have claimed your account!
- Please keep special events in mind
  - Lab closed on such occasions (see TiLab Homepage)

The Lab

- Self-organized working time
- Supervised slots by tutors
  - Tutors will be available in the lab (see course homepage)
  - Otherwise contact them by e-mail:
    `hwswtut@ecs.tuwien.ac.at`
- Equipment similar to DDCA:
  - PC
  - DE2-115 FPGA-Board
  - Logic Analyzer (shared)

Registration

- Register in TISS
- Registration ends Oct. 8^{th}, 23:59!
- Earlier registration = Earlier lab access

This year's main task

Software Defined Radio (SDR) – Receive RDS data from FM broadcast

- You will receive an RF signal between 99.25 MHz and 101.75 MHz as I/Q samples with 2.5 MSps
- Tune to and demodulate the signal at 99.9 MHz (OE3)
- Tune to and demodulate the RDS subcarrier (57 kHz)
- Show received data (station name etc.) on the display

More details soon!

More information

- Current information will always be uploaded to the course's homepage `http://ti.tuwien.ac.at/ecs/teaching/courses/hwsw_lu_WS2015` and/or to your e-mail address in MyTI.
- You can always consult the tutors in the lab as well me directly `rnajvirt@ecs.tuwien.ac.at`

GOOD LUCK!

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