

# Developing Software for the NIOS II Processor



## Course Description

This course is targeted at Software Engineers or Developers. You will learn to develop and run embedded software for the Nios® II processor in the Nios II Software Build Tools for Eclipse and with the Nios II Command Tools. You will also be exposed to a few hardware concepts including how a Nios II 32-bit microprocessor is configured and integrated into an Altera® FPGA using the Quartus® II software and the SOPC Builder design tools. This course utilizes one of the Nios II Development Kits so that you can download, run, and debug your code in an Altera FPGA. You will participate in discussions about the features and capabilities of the Nios II Embedded Design Suite, and after taking this course you should feel confident tackling your next embedded programming project.

## Skills Developed

- Create software project from hardware deliverables
- Manage software projects using the Nios II Software Build Tools for Eclipse & the Nios II Command tools
- Download, run, & debug software on a board
- Access Nios II peripherals from C
- Create interrupt-driven C code
- Reduce code size
- Build new device drivers for custom peripherals
- Incorporate & program software for RTOSes
- Use the Interniche Nichestack for TCP/IP applications
- Access custom instruction hardware from C

## Skills Required

- Some knowledge of programming in C, especially for embedded systems
- Basic understanding of hardware design in FPGAs
- Completion of the "Designing with the Nios II Processor & SOPC Builder" course is optional but strongly recommended

Course Length	2 days
Language	Presentation in German or English Slides and documentation in English
Platform	PC Windows XP / Windows 7
Pricing	On request
Dates	On request

## Exercises

- Familiarization with the BSP Flow / Debugging Using the Nios II IDE
- Accessing Peripherals and Timers
- Build Options, Interrupts and Code Size
- Advanced Debugging
- Hardware Acceleration Features
- Creating a Character Mode Device Driver for the Seven Segment Display
- Programming with an RTOS
- Programming with the NicheStack Internet Protocol Stack by Interniche

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