Real Time College

Course: Embedded Systems Complete Path
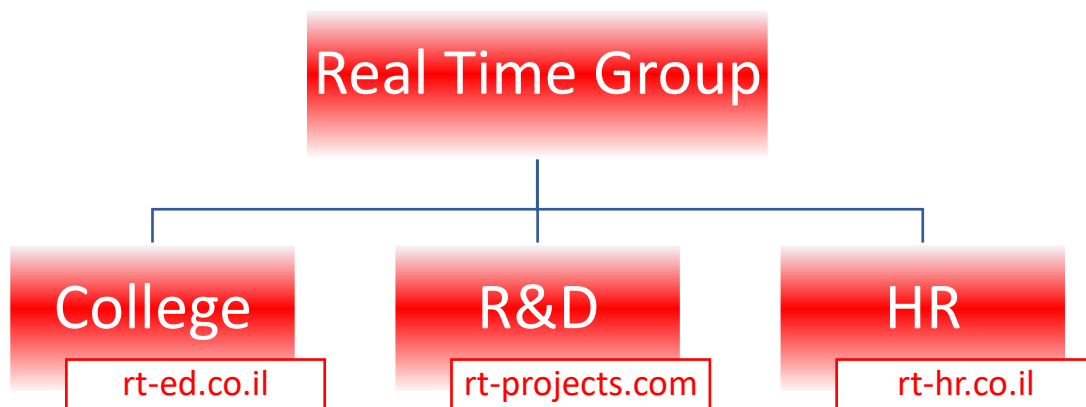
Duration: 360 Hours
Hands-On-Training: 90

Real Time Group is a multi-disciplinary dynamic and innovative Real-Time O.S. and Embedded Software Solutions Center, established in 2007.

Providing Bare-Metal and Embedded Linux solutions, professional services and consulting, end-to-end flexible system infrastructure, outsourcing, integration and training services for Hardware, Software and RT-OS \ Embedded Systems.

 The company is divided into the following three Divisions:

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                        Real Time Group
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     College                  R&D                     HR
   rt-ed.co.il           rt-projects.com          rt-hr.co.il
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<u>Training Division:</u>

Professional Training Services for Hardware, Software, RT-OS and Embedded systems industries.

We provide the knowledge and experience needed to enable professional engineers to Develop, Integrate and QA Hardware, Software and Networking Projects.

In order to ensure experience, all courses are practical – hands-on-training.
The latest Development, QA and Automation equipment which are adopted by the industry are used.

All students are supplied with Development-Boards for home-work and course projects.
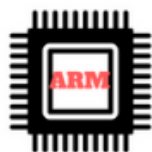
Course Overview:

Being a leading provider of RT-Embedded Linux Solutions for the last decade,
We have gained experience solving hundreds of complex projects.
That's why we know exactly what it takes to make you an Embedded Systems
Developer.

This RT-Group's flag-ship course, provides a complete and comprehensive hand-on-
training for Embedded Systems Engineering.

It's designed to provide the knowledge, development tools, the experience needed to
place you as an Embedded Systems Developer, Hundreds of students have participated
in this Track since 2007 and successfully integrated in our Company's Development
Division and the Israeli \ word-wide Hi-Tech industry.

The Complete track is composed out of 6 courses and includes all the development
stages starting from the moment the Embedded Board is turned on, through system boot-
loading and up to Loading the O.S. and running user Applications.

Throughout the course we'll go through the Fundamentals of Linux, BASH Scripting,
Programming Basic & Advanced Python Application, Designing and Implementing
Linux System\User-Space programming, Multi-Threading and Synchronization, usage of
Linux system resources, Inter-Process Communication (IPC), Linux Kernel Modules
(LKM's), Board Support Package (BSP), Embedded Linux Programming,
 Linux Kernel Device Drivers (implementing Drivers for Peripherals such as GPIO \
I2C \ SPI \ UART \ Timers \ PWM…) Using Debug Tools and much more.

It focuses on giving you real world coding experience by using ARM Cotex-A8
Development Boards.

Who should attend:

- Anyone who wants a career in Embedded Linux Engineering.
- Hardware, Practical and software engineers who need to speed up with Embedded Linux as a development platform.
- Linux System\ User-Space developers.
- Linux Kernel Developers \ Linux Device Driver Developers.
- FAE's & Support engineers who will be integrating code and managing applications hosted on Embedded & Linux systems.

Prerequisite:

- High level understating of the English Language.
- Knowledge \ Experience in C Programming.
- A Basic level of Embedded Systems literacy is expected.
- No previous experience of Linux\UNIX is necessary.

The following table concludes the list of courses in the Track, with a short description and course length.

Embedded Systems \ Bare Metal Courses:

Course Name	Course Description	Length [AH]
C for Embedded (Basics)	The Basics of C programming, for those without any C programming background.	45
C for Embedded (Advanced)	Advanced C Topics, for those with Basic C programming experience	45
Embedded Systems Programming	A complete guide to Hand-on software development for Embedded Systems, focuses on giving you real world coding experience Bare Metal Development, discuss the techniques, development tools, working environment and debugging tools. Implement Peripherals using Embedded C, Drivers for GPIO, I2C, SPI, UART, Timers, handling Interrupt and much more.	90
C++ & OOD	Covering Object Oriented Programming through the C++ language, highlighting Polymorphism, Multiple Inheritance, Exceptions, RTTI, Templates, Abstract Data Types, Basic Design Patterns and Embedded \ Real Time Considerations.	90
Practical Networking Engineering	Starting with Fundamentals of Networking, going through the bits and bytes of the TCP\IP Protocol, Vlan and MPLS. Using Networking tools such as Sniffers, Traffic generators for performance and diagnostics. Networking Equipment (Repeaters \ Switches \ Routers \ Gateways). use C\C++ to implement Layers 2,3 4.	90
Final Project		
	Sum	360

The following Block Diagram concludes the order of the courses in the Track.
Feel free to click on the required course name for a detailed description.

Embedded Systems \ Bare Metal Courses:

C for Embedded
Basics

⬇

C for Embedded
Advanced

⬇

Embedded
Systems
[ARM]

⬇

Practical
Networking

⬇

C++ & OOD

⬇

**RT Final
Project**

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