# Introduction to Real-time Programming

BlackBerry QNX Professional Services



Since 1980, thousands of companies have deployed the QNX® real-time operating system to ensure the best combination of performance, safety, security and reliability. At the core of this offering is QNX Neutrino® Real-time Operating System (RTOS), a full-featured and robust RTOS with a microkernel design and modular architecture.

This introductory training course provides an overview of the features of the QNX Neutrino RTOS and real-time programming basics so you can begin to design your safe, secure and reliable QNX-based system. A more in-depth QNX Neutrino RTOS training course is also available as the ideal complement to this introductory course.

# Introduction to Real-time Programming

This course is designed for anyone who develops QNX Neutrino RTOS real-time applications. By the end of the course, you will understand the QNX Neutrino architecture and programming API and learn to apply QNX Neutrino RTOS concepts to real-world applications.

The course will cover:

- **QNX Neutrino RTOS Architecture**

  Overview of the QNX Neutrino RTOS, highlighting key features, services, and architecture.

- **Compiling and debugging using QNX® Momentics IDE®**

  A quick introduction to editing, compiling, running, and debugging your application in the QNX Momentics Integrated Development Environment.

- **Processes, Threads and Synchronization**

  Unlike many OS, the QNX RTOS executes programs in separate, memory protected processes. This course will cover how a system design problem can be broken down into separate processes, and how processes are started and terminated. We'll also discuss what a thread is, how to start and stop a thread, and how to synchronize resource access via QNX Neutrino RTOS and POSIX function calls.

- **Interprocess communication**

  Learn how to allow two or more processes to exchange information and control. We look at QNX message passing, pulses and shared memory.

- **Timers, clocks, and timeouts**

  In a real-time system, you need to keep track of real time and schedule periodic events. This section will cover functions that deal with real time and timers.

- **Building a QNX Neutrino Boot/OS Image**

  How to bind together core OS components, such as the QNX microkernel, network components, file system components, drivers, etc, to produce a bootable OS image.

- **Introduction to resource managers**

  Any process can be a resource manager, and drivers almost always are. This section looks at the capabilities of resource managers, including pathname-space resolution, and general structure.

## Package Details

Led by a BlackBerry QNX senior technical trainer and delivered in live virtual sessions, this course includes:

- Six 90-minute sessions, 2 sessions per day, held over 3 consecutive days
- We recommend a maximum of 20 people to enable effective sessions

## About BlackBerry® QNX®

BlackBerry QNX is a leading supplier of safe, secure, and trusted operating systems, middleware, development tools, and engineering services for mission-critical embedded systems. BlackBerry QNX helps customers develop and deliver complex and connected next generation systems on time. Their technology is trusted in over 150 million vehicles and more than 300 million embedded systems in medical, industrial automation, energy, and defense and aerospace markets. Founded in 1980, BlackBerry QNX is headquartered in Ottawa, Canada and was acquired by BlackBerry in 2010

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