
Embedded
Expert IO
EmbeddedExpertIO™
CERTIFICATE OF GRADUATION
Awarded To
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GRADUATING FROM
FreeRTOS From Ground Up™ on ARM Processors
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Curriculum - FreeRTOS From Ground Up on ARM Processors

• RTOS fundamentals and real-time applications	• Event Groups for synchronization
• ARM development environment setup	• Task Notifications (lightweight IPC)
• FreeRTOS architecture overview	• Scheduler operation and behavior
• Task management (creation, priorities, states)	• CMSIS-RTOS API layer
• Queues for inter-task communication	• Resource management (mutex, protection)
• Queue Sets	• System tick and time management
• Semaphores for synchronization	• CPU usage monitoring and statistics
• Driver development and hardware integration	• ARM architecture support for RTOS
• Gatekeeper design pattern	• Scheduling algorithms (Round-robin, RM, etc.)
• Software timers and callbacks	• Board Support Package (BSP) development
• Interrupt handling (ISR + RTOS)	• FreeRTOS kernel internals