

apriorit: How to Develop Embedded Software Using the C

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A comprehensive guide on creating and using QEMU virtual devices to accelerate your driver and embedded software development.

Prepared by practitioners from Apriorit!





Introduction Why do we use QEMU? Pros and cons of using a QEMU virtual device Driver implementation stages Communication between a device and its driver I/O address space Interrupts Line-based interrupts Message-signaled interrupts

Bus mastering Test device specifications

Structure of the device I/O memory

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Interrupts

Device description in QEMU Initializing the device in QEMU

Working with the I/O memory space

Working with interrupts

Working with DMA memory

Processing requests

QEMU device

Implementing a WDF driver for the test device

The minimum driver

Initializing device resources

Working with I/O memory

Interrupt handling

Working with DMA

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Testing and debugging

Quality control of driver code

Driver installation

Driver communication

Implementing driver unit tests

Implementing driver autotest

Driver verification with Driver Verifier and WDF Verifier

References

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