Inter-Task Communication and Synchronization in the Hard Real-Time Compact Kernel HARETICK

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Abstract: HARETICK is a hard real-time compact operating kernel designed specifically to support critical applications on DSP and embedded platforms including intelligent sensor networks and robotic environments. It provides operating support for both hard real-time and soft/non real-time tasks. The hard real-time task execution context is based on non-preemptive mechanisms. This paper focuses on the inter-task communication and synchronization techniques involving the two types of tasks previously mentioned. As a case study, a highly predictable synchronous serial communication (i.e., SPI) interface implemented on an ARM7-based HARETICK platform, is presented and discussed, along with some of the most interesting experimental results.

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