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Titolo	Embedded Systems Design using the MSP430FR2355 LaunchPad™ [[electronic resource] /] / by Brock J. LaMeres
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ISBN	3-030-40574-5
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (xiv, 480 pages) : illustrations
Disciplina	004.16
Soggetti	Electronic circuits Computer engineering Internet of things Embedded computer systems Microprocessors Circuits and Systems Cyber-physical systems, IoT Processor Architectures
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Digital Logic Basics -- Computer Systems -- The MSP430 -- Programming the MSP430 in Assembly -- Data Movement -- ALU Instructions -- Program Control Instructions -- Digital Input/Output -- The Stack and Subroutines -- Introduction to Interrupts -- Introduction to Timers -- Switching to the C Language -- Digital I/O in C -- Interrupts in C -- Timers in C -- Serial Communication Interfaces in C -- Analog to Digital Converters in C -- Other Cool Stuff to do with the MSP430.
Sommario/riassunto	This textbook for courses in Embedded Systems introduces students to necessary concepts, through a hands-on approach. LEARN BY EXAMPLE – This book is designed to teach the material the way it is learned, through example. Every concept is supported by numerous programming examples that provide the reader with a step-by-step explanation for how and why the computer is doing what it is doing. LEARN BY DOING – This book targets the Texas Instruments MSP430

microcontroller. This platform is a widely popular, low-cost embedded system that is used to illustrate each concept in the book. The book is designed for a reader that is at their computer with an MSP430FR2355 LaunchPad™ Development Kit plugged in so that each example can be coded and run as they learn. **LEARN BOTH ASSEMBLY AND C** – The book teaches the basic operation of an embedded computer using assembly language so that the computer operation can be explored at a low-level. Once more complicated systems are introduced (i.e., timers, analog-to-digital converters, and serial interfaces), the book moves into the C programming language. Moving to C allows the learner to abstract the operation of the lower-level hardware and focus on understanding how to “make things work”. **BASED ON SOUND PEDAGOGY** - This book is designed with learning outcomes and assessment at its core. Each section addresses a specific learning outcome that the student should be able to “do” after its completion. The concept checks and exercise problems provide a rich set of assessment tools to measure student performance on each outcome. Written the way the material is taught, enabling a bottoms-up approach to learning which culminates with a high-level of learning, with a solid foundation; Emphasizes examples from which students can learn: contains a program examples that can be run for nearly every section in the book; Targets a widely popular embedded computer, the Texas Instruments MSP430FR2355; Covers both assembly language and C language programming of the MSP430, with examples that are meant to be coded and run on an MSP430FR2355 LaunchPad™ Development Kit directly; Describes specific learning outcomes for each activity, so that the reader knows why they are doing what they are doing, along with abundant assessment tools, including concept checks and exercises.
