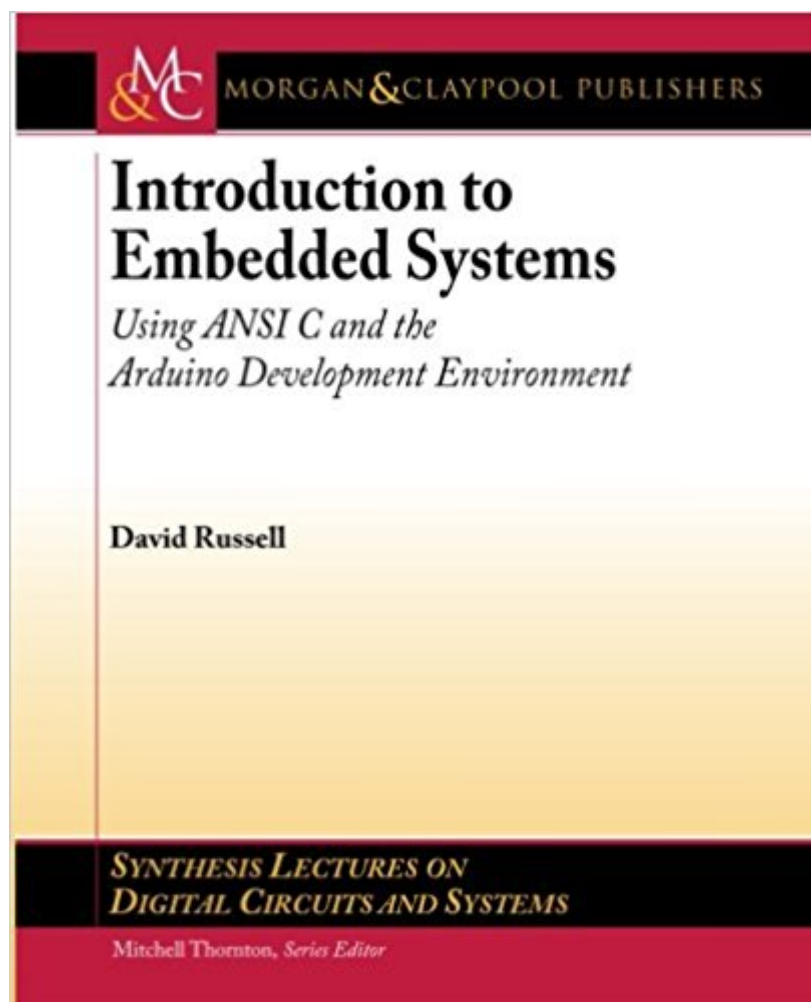


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# Introduction To Embedded Systems: Using ANSI C And The Arduino Development Environment (Synthesis Lectures On Digital Circuits And Systems)





## Synopsis

Many electrical and computer engineering projects involve some kind of embedded system in which a microcontroller sits at the center as the primary source of control. The recently-developed Arduino development platform includes an inexpensive hardware development board hosting an eight-bit ATMEGA ATmega-family processor and a Java-based software-development environment. These features allow an embedded systems beginner the ability to focus their attention on learning how to write embedded software instead of wasting time overcoming the engineering CAD tools learning curve. The goal of this text is to introduce fundamental methods for creating embedded software in general, with a focus on ANSI C. The Arduino development platform provides a great means for accomplishing this task. As such, this work presents embedded software development using 100% ANSI C for the Arduino's ATmega328P processor. We deviate from using the Arduino-specific Wiring libraries in an attempt to provide the most general embedded methods. In this way, the reader will acquire essential knowledge necessary for work on future projects involving other processors. Particular attention is paid to the notorious issue of using C pointers in order to gain direct access to microprocessor registers, which ultimately allow control over all peripheral interfacing.

Table of Contents: Introduction / ANSI C / Introduction to Arduino / Embedded Debugging / ATmega328P Architecture / General-Purpose Input/Output / Timer Ports / Analog Input Ports / Interrupt Processing / Serial Communications / Assembly Language / Non-volatile Memory

## Book Information

Series: Synthesis Lectures on Digital Circuits and Systems

Paperback: 276 pages

Publisher: Morgan and Claypool Publishers; 1 edition (July 12, 2010)

Language: English

ISBN-10: 1608454983

ISBN-13: 978-1608454983

Product Dimensions: 7.5 x 0.6 x 9.2 inches

Shipping Weight: 1.3 pounds (View shipping rates and policies)

Average Customer Review: 3.7 out of 5 stars 16 customer reviews

Best Sellers Rank: #99,845 in Books (See Top 100 in Books) #11 in Books > Computers & Technology > Hardware & DIY > Microprocessors & System Design > Embedded Systems #42 in Books > Computers & Technology > Hardware & DIY > Single Board Computers #66 in Books > Computers & Technology > Hardware & DIY > Personal Computers

## Customer Reviews

This textbook is no "introduction" at all. I had to use this textbook for my Junior level Computer Engineering course if that was any indication. Stray away if you're new to computer engineering, or want to learn but don't have much drive to get deep into it. There's too much technical jargon, and the book constantly references itself in roundabout ways which cause you to go from chapter 1 then to the index, then back to chapter 2 to learn about something in chapter 1. This combined with its incessant need to complicate things by using TEXT to describe the pins on a board or the functions of an Arduino is just ridiculous. Nowhere in the book does it actually seem to USE an Arduino.

This text book introduction to embedded systems using Ansi C along with the Arduino Micro computer is excellent. The text is well written and thought out. I highly recommend this no nonsense book. The order of topic discussion is easier to read than most text books and computer language texts. It explains data architecture and the micro computer architecture very efficiently and clearly. The order of topic discussion is logical and easy to follow.

This book along with the You Tube by PAZ is one way to get a top level electronics education at a minimal cost. I am getting old and have worked with electrical controls all my life but still like to learn what is new. This book and video cover a lot of ground that is difficult to get one book and video at a time. Great Job PAZ!!!!

Excellent ref. book for an intro. to embedded systems. Book is well organized and has plenty of pictures and diagrams and explains the C programming language as it applies to Arduino micro controllers.

DR. Robert Paz from EE 260 Klipsch School of Electrical and Computer Engineering New Mexico State University. He has 17 Arduino lessons free on YouTube. Pulse Free lectures on PDF. DR. Paz Recommend this book for his this class. I am on chapter 2, it look like a good read. I can tell you more when I am done with the lessons. O did i tell you the class are free on YouTube

This book is exactly what I've been looking for, if you have a decent understanding of electronics and programming and want to put the two together, this book is for you. Its straight to the point and read much like a lecture, which for me was great. The only issue I have with this book is that at the end of each chapter there are questions like a text book, unfortunately there is no answer key in the

book, kind of leaves you wondering if you were right or not. Still minus that one part, it's a great book.

Wonderful introduction to embedded systems.

This book is a competent treatment of the subject. Without frills, it pragmatically takes you through a hobbyist understanding of Arduino and programming to the fundamentals that would be useful towards learning embedded systems.

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