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Farzin Asadi

Digital Circuits Laboratory Manual

Springer

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Digital Circuits Laboratory Manual

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In loving memory of my father Moloud Asadi and my mother Khorshid Tahmasebi, always on my mind, forever in my heart.

Preface

Digital technology pervades almost everything in our daily lives. For example, cell phones and other types of wireless communications, laptops, television, radio, process controls, automotive electronics, consumer electronics, and aircraft navigation, to name only a few applications that depend heavily on digital electronics.

A strong grounding in the fundamentals of digital technology will prepare you for the highly skilled jobs of the future. Understanding the core fundamentals is very important since it enables you to go anywhere.

This book can be used as a laboratory manual for any standard textbook on digital electronics. You can make the circuits on breadboard or you can use a simulation software like Proteus® to simulate the circuits.

This book is composed of 11 chapters. Here is a brief summary of each chapter:

Chapter 1 is an Introduction to Digital Systems.

Chapter 2 contains experiments related to Logic Gates and Combinational Logic Circuits.

Chapter 3 contains experiments related to Digital Arithmetic.

Chapter 4 contains experiments related to Multiplexers and De-multiplexers.

Chapter 5 contains experiments related to Encoders and Decoders.

Chapter 6 contains experiments related to Display Information on Seven Segments.

Chapter 7 contains experiments related to Latches, Flip Flops and Shift Registers.

Chapter 8 contains experiments related to Frequency Division with Flip Flops.

Chapter 9 contains experiments related to Counter Circuits.

Chapter 10 contains experiments related to Oscillator Circuits.

Chapter 11 contains experiments related to Analog-to-Digital and Digital-to-Analog Conversion.

I hope that this book will be useful to the readers, and I welcome comments on the book.

Istanbul, Türkiye — Farzin Asadi

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