Programming the BeagleBone

Yogesh Chavan

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Master BeagleBone programming by doing simple electronics and Internet of Things projects

About This Book

- Quickly develop electronics projects that interact with Internet applications using JavaScript and Python
- Learn about electronics components such as sensors and motors, and how to communicate with them by writing programs
- A step-by-step guide to explore the exciting world of BeagleBone—from connecting BeagleBone to doing electronics projects and creating IoT applications

Who This Book Is For

This book is for anyone who wants to learn programming on embedded systems and understand key concepts such as GPIO, PWM, and Bus. It is intended for programming beginner who is willing to work on electronics projects and basic IoT applications. This book will be helpful to BeagleBone owner who wants to quickly implement small-scale home automation solutions. Some hands on is expected on C or Python. Some familiarity with electronics is helpful. However, it is not essential.

What You Will Learn

- Connect your BeagleBone to a computer in different ways and get Cloud9 IDE running to quickly start programming on the BeagleBone
- Get to know BeagleBone extension pins, such as GPIO, and how to connect various electronic components to the BeagleBone
- Read and write to various electronic components, such as LEDs, push buttons, sensors, and motors
- Grasp in-depth theory on Analog, PWM, and BUS programming and the electronic components used in programs
- Handle data to and from various BUS-supporting modules, such as UART, I2C, and SPI, using the Adafruit BBIO Python library
- Write real-life IoT applications in JavaScript and Python, such as sending an e-mail on overheat and controlling a servo motor remotely
- Make use of free online cloud services to store and analyze sensor data collected on the BeagleBone

In Detail

The BeagleBone is an ultra-small, cost-effective computer that comes with powerful hardware. It runs a fully-fledged Debian Linux OS and provides numerous electronics solutions. It gives you all the benefits of a Linux kernel, such as multitasking, multi-users, and extensive device driver support. It allows you to program in many languages, including high-level languages such as JavaScript and Python.

This book aims to exploit the hardware and software capabilities of the BeagleBone to create real-life electronics and Internet of Things (IoT) applications quickly. It is divided into two parts. The first part covers

JavaScript programs. The second part provides electronics projects and IoT applications in Python. Starting with the basics needed to set up the BeagleBone and Cloud9 IDE, this book covers interfacing with various electronics components via simple programs. Finally, the book helps you create some real-life IoT applications.

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