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Java Programming for IoT

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Product Description

JAVA PROGRAMMING FOR IOT is a comprehensive guide designed to bridge the gap between fundamental Object-Oriented Programming (OOP) concepts in Java and their practical application within the rapidly evolving landscape of the Internet of Things (IoT). The book's core purpose is to empower readers to develop complete, robust, and distributed application programs that can run across various connected systems. It meticulously covers the essentials of Java—from basic syntax, data types, and looping constructs to advanced OOP principles like Inheritance, Polymorphism, and Encapsulation.

The curriculum seamlessly transitions into specialized, high-value IoT topics. Readers will master critical methodologies such as Exceptions Handling and Multi-threading, as well as essential socket programming techniques required for effective communication with connected devices. A key focus is the Java Development Environment for IoT, offering hands-on expertise with Java ME 8 and its deployment on Raspberry Pi using the NetBeans IDE. The practical learning culminates in detailed coverage of Application Management Systems (AMS), which includes managing the application lifecycle, configuring remote devices, and implementing strategies for securing IoT applications and ensuring data integrity in real-world scenarios. This text is an essential resource for a broad audience, including students, novice programmers eager to start their IoT journey, and experienced developers seeking to master innovative, secure, and distributed IoT solutions with the robust Java platform.

Salient Features:

• Foundational OOP Skills: Comprehensive coverage of core Object-Oriented Programming (OOP) concepts in Java, including Inheritance, Polymorphism, Abstraction, and Encapsulation, essential for building robust software.

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• IoT Thread Management: Detailed units on multi-threading, thread synchronization, and managing the thread lifecycle (suspending/resuming) for building efficient and concurrent IoT Applications.

• Embedded Development Kit: Practical focus on setting up the Java development environment for IoT, utilizing Java ME 8, CLDC, and the NetBeans IDE for creating and deploying embedded applications.

• Raspberry Pi Integration: Step-by-step guidance on running the Java Runtime on a Raspberry Pi board, including using the Command Line Interface (CLI) for deployment and application testing.

• Secure IoT Deployment: Dedicated strategies for securing IoT applications and ensuring data integrity, covering topics like device authentication and the built-in security features of Java ME 8.

• Application Lifecycle: In-depth analysis of the Application Management System (AMS) for monitoring, remotely configuring, updating, and managing the entire lifecycle of deployed IoT solutions.

• Device Communication: Instruction on various socket programming methods to establish and manage communication channels, enabling Java programs to effectively interact with network-connected devices.

• Notification & Alarms: Practical modules on creating real-time event-driven notifications using PushRegistry and configuring Alarm Registration for comprehensive system monitoring in the AMS.

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