IoT Device Configuration and Communication: C Edition

Modality: On Demand

Duration: 12 Hours

About this course:

The IoT Device Configuration and Communication: C Edition is an integral part of the Certificate in IoT by the Microsoft Professional program.

If you think you have the skills to develop IoT device applications, then fortunately for you, you have found the right course. This module-based course teaches with the help of a series of labs, which focuses on “how to program IoT devices?” and its secure communication with the cloud. Here, you will get to learn the configuration and creation of cloud gateway (IoT Hub) and its basic functions such as registration, provision, and management of IoT devices in real-time applications. The applications are all programmed in a real-world scenario.

The course starts with an introduction to the cloud gateway and how it integrates with Azure and the Azure IoT Hub. Then, you will learn how to formulate your IoT Hub and experience the key features of its service. This course would then lead on to the configuration of the development of the MXChip device and how to register IoT with your own devices. A demonstration of communication between the device and the cloud is also a part of this course.

The course will then focus on the Azure IoT SDKs and ways in which it could be used for the security of a 2-way communication for the device and cloud. You will experience the world of Raspberry Pi and with our step by step guide, you can create a solution that will be integrated into the code to secure communication with the IoT Hub. You will also get an experience of using client tools such as Azure CLI and its provision with IoT simulated devices.

Moving on, you will learn in-depth about Device Provisioning Services and its provision with devices at scale. The curse then moves on to device twin and direct methods to examine device management tasks, and you will learn the benefits and applications of both. Then the focus will shift towards IoT hub operations and IoT Hub endpoints and routing.

In the end, you will be given a real-life scenario to implement all your knowledge and gain some hands-on experience. For this examination, you need to determine, document, develop, and configure your IoT system. And implement hardware and software understanding along with client-side and server-side solutions.

Course Objective:

At the end of this course, students will be able to:

- Build and manage a cloud gateway
- Provisioning a device
- Configure a normal device according to cloud communication

- Inspect an IoT device with Service SDKs
- Program an app that will allow a device to transmit telemetry messages
- Improve the security of an IoT Device
- Explain device management, twin device, and device properties
- Provision IoT devices with Device Provisioning Services
- Configuration and management of automated devices
- Management of IoT Hub operations
- Evaluate better design solution goals
- Implement telemetry data aggregation and communication where applicable
- Documentation of data with cold path analytics
- Configure a simple IoT edge device

Audience:

The target audience for this course is:

- IoT Engineers
- C/C++ Developers
- IoT developers

Prerequisite:

Before starting the course, students should have:

- Basic concepts of IoT terms and business goals
- Understanding of embedded device programming
- Programming skills with C
- Hands-on experience with updated software development tools

Course Outline:

Configure a Cloud Gateway and Devices

- Creating Your Cloud Gateway
- Getting Started with Your MXChip AZ3166 Device
- Implementing Simple Device--Cloud Communication

Implement Device Communications

- Exploring the IoT SDKs and Communication Support
- Developing a Raspberry Pi Device Application
- Configuring and Securing IoT Hub Devices

Manage Your Devices

- Provisioning Devices
- Aumating Device Configuration and Management
- Managing IoT Hub Operations

Develop Real-World Device Applications

- Evaluating Solution Design Goals
- Implementing Device Hardware and Software
- Archive Data for Cold Path Analytics
- Getting Started with IoT Edge

Final Evaluation

- Final Assessments