Certnexus - Certified Internet of Things Practitioner

Kód kurzu: CIoTP

IT professionals often have little or no experience working with embedded systems, sensor networks, actuators, realtime systems, and other components that are common to IoT, so this course provides a foundation for understanding how these components work with other systems that IT professionals typically have more experience working with—such as networks, cloud computing, and applications running on servers, desktop computers, and mobile devices.

In this course, students will learn general strategies for planning, designing, developing, implementing, and maintaining an IoT system through various case studies and by assembling and configuring an IoT device to work in a sensor network. Students will create an IoT device based on an ESP8266 microcontroller, implementing various common IoT features, such as analog and digital sensors, a web-based interface, MQTT messaging, and data encryption.

The Internet of Things (IoT) promises a wide range of benefits for industry, energy and utility companies, municipalities, healthcare, and consumers. Data can be collected in extraordinary volume and detail regarding almost anything worth measuring, such as public health and safety, the environment, industrial and agricultural production, energy and utilities. New data analysis tools have been optimized for the massive amounts of data that IoT produces, enabling well-informed decisions to be made quickly.

But putting IoT systems into place can be a complicated proposition, and fraught with hazards. Solutions may involve devices and technologies from many different vendors, requiring a good understanding of software and hardware and strategies to integrate them, as well as the risks associated with security, privacy, and the safety of those whose working and living environments are managed by these systems.

Pro koho je kurz určen

This course is designed for IT professionals with baseline skills in computer hardware, software support, and development who want to learn how to design, develop, implement, operate, and manage Internet of Things devices and related systems. The student is interested in learning more about embedded systems, microcontroller programming, IoT security, and the development life cycle for IoT projects.

Co Vás naučíme

In this course, you will learn how to apply Internet of Things technologies to solve real-world problems. You will:

- Construct and program an IoT device
- Communicate with an IoT device using wired and wireless connections
- Process sensor input and control an actuator on an IoT device
- Manage security, privacy, and safety risks on IoT projects
- Plan an IoT prototyping and development project

Požadované vstupní znalosti

While students will gain hands-on experience assembling a prototype IoT device and using software development tools, these activities are closely guided, so previous experience in electronics assembly and programming are not required.

This course prepares students for taking the CertNexus Certified Internet of Things (IoT) Practitioner (Exam ITP-110).

To ensure your success in this course you should be an experienced computer user who is comfortable setting up and configuring computers and electronic devices.

Studijní materiály

Official guide book for this course

Osnova kurzu

GOPAS Praha
Na Strži 2097/63
140 00 Praha 4 - Krč
Tel.: +420 226 201 390
info@gopas.cz

GOPAS Brno
Nové sady 996/25
602 00 Brno
Tel.: +420 530 513 590
info@gopas.cz

GOPAS Bratislava
Dr. Vladimíra Clementisa 10
Bratislava, 821 02
Tel.: +421 902 903 132
info@gopas.sk

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Lesson 1: Planning an IoT Implementation
- Select a General Architecture for an IoT Project Topic
- Identify Benefits and Challenges of IoT

Lesson 2: Constructing and Programming an IoT Device
- Select and Configure a Processing Unit
- Select a Microcontroller Power Source
- Use a Software Development Kit to Program an IoT Device

Lesson 3: Communicating with an IoT Device
- Communicate Using Wired Connections
- Communicate Using Wireless Connections
- Communicate Using Internet Protocols

Lesson 4: Processing IoT Data
- Process IoT Device Input and Output
- Process Data in the Cloud
- Provide Machine to Machine Communication

Lesson 5: Managing Risks on IoT Projects
- Identify IoT Security and Privacy Risks
- Manage IoT Security and Privacy Risks
- Manage IoT Safety Risks

Lesson 6: Undertaking an IoT Project
- Identify Real World Applications for IoT
- Follow the IoT Development Lifecycle

Appendix A: Mapping Course Content to Certified Internet of Things Practitioner (CIoTP) (Exam ITP-110)

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