training code: AZ-220 / ENG DL 4d / EN

Microsoft Azure IoT Developer

Authorized Microsoft Azure IoT Developer **AZ-220** Distance Learning training.

Purpose of the training

The training is intended for people responsible for developing and maintaining part of the cloud and the margin of Azure IoT solution. Especially the course is aimed at Azure IoT developers, who are responsible for implementing, and then maintaining the cloud and the boundary parts of Azure IoT solution, including the people responsible for configuring and tool maintenance using Azure IoT services and other Microsoft tools, as well as configuring physical devices and tool maintenace throughout the whole life-cycle. IoT Developer implements IoT solution projects, including the topology of devices, connectivity, debugging and securities. In case of Edge device scenarios, IoT developer also implements cloud computing machines/containers and configures device networks, which might include different boundary gateway implementations. IoT developer implements solution projects to manage data streams, including monitoring and data transformation in relation to IoT. IoT Developer cooperates with data engineers and other stakeholders to provide a successful business integration. The course included such topics as:

- Basic Azure IoT services
- IoT Hub
- Device sharing services
- Azure Stream Analytics
- Analyzing time strings and other
- Azure PaaS services
- IoT Edge
- Device management
- Monitoring and problem solving
- Security related problems
- Azure IoT Central.

Benefits of completing the training

Gaining knowledge and practical skills in Azure platform management. Including an acquaintance with:

- Creating, configuring and Azure IoT Center management,
- Device provisioning using IoT Hub and DPS, including provisoning on a large scale,
- Determining a safe two-directional communication between IoT Hub devices,
- Implementing message processing with the use of IoT Hub routing and Azure Stream Analytics services,
- Configuring a connection with Time Series Insights and supporting requirements related to business integration,
- Implementing IoT Edge scenarios using marketplace modules and different Edge gateway patterns,
- Implementing IoT Edge scenarios which require developing and implementing non-standard modules and containers,
- Implementing device management using twin devices and direct methods,
- Implementing solution monitoring, registering and diagnostic testing.
- Identifying and solving problems related to security and implementing Azure Security Center for Internet of Things.
- Architecting IoT solutions using Azure IoT Central and reusing SaaS opportunities for IoT.

Examination method

The exam is on-line. You can enroll at: https://home.pearsonvue.com/Clients/Microsoft.aspx

Exam description

After the AZ-220 course, you can take Microsoft certification exams:an Authorized Test Center,online being monitored by an offsite proctor. Details on the website: https://learn.microsoft.com/en-us/certifications/exams/AZ-220

Expected Listener Preparation

Experience in developing software is a preliminary condition of the course, however, no specific programming language is required, and experience does not have to be at professional level. The experience in data processing – general understanding of storing and data processing is recommended, but not obligatory. A knowledge of cloud solutions – participants should have basic knowledge of PaaS, SaaS and IaaS implementation. It is recommended to know the basics of Microsoft Azure (AZ-900) or equivalent skills, including options of data storage, data processing and PaaS Azure IoT compared to SaaS options. It is advised to have a programming skill in at least one programming language operated

by Azure platform, including C #, Node.js, C, Python or Java.
An ability to use English materials.
To make work more convenient and training more effective we suggest using additional screen. Lack of extra screen does not make it impossible to participate in the training, but significantly influences the convenience of work during classes
Information and requirements conerning participation in distance learning trainings is available at: https://www.altkomakademia.pl/distance-learning/#FAQ

Training Language

- **Training**: English
- **Materials**: English

Training Includes

* electronic handbook available at:
https://learn.microsoft.com/pl-pl/training/
* access to Altkom Akademia student portal

Duration

4 days / 28 hours

Training agenda

1. Introduction to IoT services and Azure IoT Services:
   - Business opportunities for IoT
   - Introduction to do IoT architecture solutions
   - IoT hardware and cloud services
   - Lab: Lab scenarios for the course
   - Lab: First steps with Azure platform
   - Lab: Start settings with Azure IoT services.

2. Device settings and communication:
   - IoT center and settings
   - IoT software tools
   - Device configuration and communication
   - Lab: Software environment configuration
   - Lab: Connecting IoT device with Azure platform.
3. Device scale provisioning:
   - Requirements of services related to sharing devices
   - Configuring device management service and managing it
   - Device operating tasks
   - Lab: Individual device registration in DPS
   - Lab: Automatic device regsitration in DPS.
4. Message processing and analytics:
   - Messages and message processing
   - Data storage options
   - Azure Stream Analytics
   - Lab: Device message routing
   - Lab: Message data filtering and aggregation.
5. Information and business integration
   - IoT solution business integration
   - Data visualization with time string analyses
   - Data visualization using Power BI
   - Lab: IoT Center integration with Event Grid
   - Lab: Exploring and analyzing data with time indicators with the use of time string analyses
6. Azure IoT boundary implementation process
   - Introduction to Azure IoT Edge
   - Edge implementation process
   - Edge Gateway devices
   - Lab: Introduction to IoT Edge
   - Lab: IoT Edge gateway configuration
7. IoT Azure edge modules and containers
   - Creating non-standard edge modules
   - Offline and local storage
   - Lab: Creating, implementing and debugging a non-standard module on Azure IoT Edge
   - Lab: Launching Edge IoT device in Internet with limitations and offline
8. Device management
   - Introduction to IoT device management
   - Manage IoT and IoT Edge devices
   - Device management on a scale
   - Lab: Remote monitoring and control of devices using Azure IoT Hub service

- Lab: Automatic device management

9. Testing solutions, diagnostics and registering
   - Monitoring and registering
   - Problem solving
   - Lab: Configuring metrics and diaries in IoT Azure Center
   - Lab: Monitoring and debugging connection errors
10. Azure Security Center and the issues related to IoT security
    - Basics of security for IoT solutions
    - Introduction to Azure Security Center for IoT
    - Increasing a protection thanks to Azure Security Center for IoT agents
    - Lab: implementing Azure Security Center for the Internet of Things