



TRAINING

POWER PLATFORM
AZURE
.NET 8
SYNAPSE ANALYTICS
DYNAMICS 365
POWER BI
MICROSOFT
365
ANGULAR
LAR



COURSE AGENDA
OCTOBER 2023 - APRIL 2024

u2u DEVELOPER AND IT TRAINING

U2U has more than 20 years of experience in delivering top quality courses by trainers who are experts in their respective fields. U2U courses provide developers, IT professionals, data specialists and business users with the skills to get the most out of web, mobile, cloud, infrastructure and data technologies.



HIGH-QUALITY COURSES

We develop our own courses, keep them up to date with the latest features, and provide you with a printed copy. Enjoy a mix of theory, live demonstrations and exercises.



IN-CLASS TRAINING

Instructor-led courses organized in our spacious training center in Brussels. Learn in small groups with a highly qualified and experienced trainer.



OUR TRAINERS

All trainers are experienced fulltime presenters who will make the most challenging topics easy to understand!



TUNE IN REMOTELY

Participate remotely in our classroom-based courses. Follow the presentation and trainers' activity in the classroom through our video conferencing system and Microsoft Teams.



LEARNING PORTAL

Benefit from our lab and learning environment during and after your training.

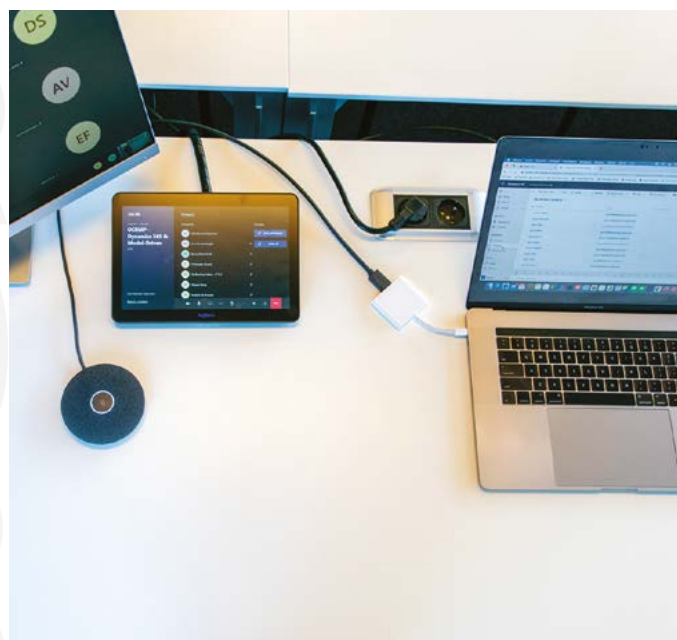


TABLE OF CONTENTS

ON-SCHEDULE COURSES	4
IN-COMPANY COURSES	5
KMO-PORTEFEUILLE	5
SCHEDULE OCTOBER - APRIL	6
AZURE DEVELOPMENT	8
AZURE INFRASTRUCTURE	10
AZURE DEVOPS	12
AZURE DATA PLATFORM	13
.NET	16
JAVASCRIPT	23
MICROSOFT 365	26
POWERSHELL	30
POWER BI	31
WINDOWS SERVER	34
POWER PLATFORM	35
SQL SERVER	38

CONTACT



Ms. Hannah Schyvens
Office & Sales
hannah@u2u.be



Ms. Agnès Duhain
Office & Finance
agnes@u2u.be



Mr. Lieven Iliano
Sales & Technologies
lieven@u2u.be

ON-SCHEDULE COURSES

Our open enrolment courses are organized regularly **in our training center in Brussels**. These courses are conducted in **English** by our highly skilled and experienced instructors.

To facilitate online training, all our classrooms are properly equipped with hardware for remote learning to accommodate both in-person and online participants. This setup supports regular and substantive interaction between the trainer and the participants as if they were physically in the classroom.

DELIVERY FORMATS



Classroom

- Classroom-based instructor-led courses
- Organized in our spacious training center in Brussels
- Face-to-face interaction with highly qualified and experienced instructors
- Course manual, preconfigured laptop, lunch, coffee and beverages are included



Remote Classroom

- Participate remotely in our classroom-based courses
- Follow the presentation and trainer's activities through the camera system from anywhere in the world
- Interact with our trainer, similar to a physical classroom
- Participate in exercises with a ready-to-use lab and learning environment

AVAILABLE DISCOUNTS

- **10% discount** if you bring your own laptop to the classroom-based course.
- **15% discount** for 14-Day Advance Payment. Your registration will be final and cannot be refunded or cancelled.
- **15% discount** for the second participant. **25% discount** from the third participant onwards of the same company attending the same course session.

50% DISCOUNT?

Book multiple participants for the same course session and select the available discount. The first participant can receive up to 25% discount, the second up to 40% and from the third participant on up to 50%. Your group's price for a 5-day classroom-based course will be:

First participant: 2100€ - 25% = 1575€

Second participant: 2100€ - 40% = 1260€

Third participant: 2100€ - **50%** = 1050€

Total for 3 participants: 3885€ (instead of 6300€)



IN-COMPANY COURSES

Private company courses can provide a more economic and convenient solution for companies that want to train a group **of people**. Our private formula offers exclusive courses in **Dutch, English or French customized to meet the needs of your company**.

WHAT YOU WANT

The content of the courses can be **fully tailored to meet your needs**. To optimize your time and to make the most of the course, you can choose the duration and which topics, based on our current catalog, you want to integrate in the course.

WHERE YOU WANT

The courses can be organized **in our training center, online or at a location of your choice** throughout Europe and the Middle East. We will bring the course material and the ready-to-use lab environment.

PRICES

Our group price starts at 4600€ for 3-day in-company training up to 10 participants.

What is included in our price?

- The price includes the organization of the training online or on-site in your classrooms
- The course content can be adapted to your needs without extra cost
- All courseware up to 10 participants is included
- Above 10 participants, additional fee per extra participant

Please contact us for an exact price calculation and for more information about our terms and conditions.

KMO-PORTEFEUILLE



Dankzij de subsidiemaatregel van de Vlaamse overheid, de kmo-portefeuille, kan u voor uw opleiding tot 30% subsidies ontvangen. Het registratienummer van U2U voor de pijler opleiding binnen het thema Digitalisering is DV.O213569.



SCHEDULE OCTOBER 2023 - APRIL 2024

MICROSOFT AZURE

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
AZURE DEVELOPMENT										
UAWEB	Developing & Deploying Web Apps on Microsoft Azure	2100€	5	2		4		19		8
UAMIC	Developing Microservices with Containers, Kubernetes and Microsoft Azure	1400€	3	16		18		19		15
UACA	Microsoft Azure Architecture Master Class - Development	1750€	4		6	18		5		2
UADAI	Developing Intelligent Solutions with the Microsoft AI Platform	1400€	3		13			19	25	
AZURE DEVOPS										
UTFS	Team Development with Azure DevOps	1400€	3	9		6		19		8
AZ-400	Microsoft Azure DevOps Solutions	1750€	4	2			15			
UGIT	Version Control and Team Collaboration with Git NEW	450€	1	9		6		19		8
UAIC	GitOps: Infrastructure as Code with Microsoft Azure	1400€	3			4		12		15
AZURE INFRASTRUCTURE										
UAZUREA	Microsoft Azure Infrastructure Services	2100€	5	16		11		12	25	
AZ-700	Designing and Implementing Microsoft Azure Networking Solutions	1400€	3	17		12		13	26	
UAIA	Microsoft Azure Architecture Master Class - Infrastructure NEW	1750€	4		13		22		18	
UAAD	Microsoft Entra Identity Management	1400€	3	9		18			11	22
UACON	Managing Containers with Kubernetes and Microsoft Azure	1400€	3	2		4		26		
UASEC	Securing and Monitoring Microsoft Azure	950€	2		23			1		11
UCSEC	Mastering Microsoft Cloud Cybersecurity	2100€	5		20		29			8
AZURE DATA PLATFORM										
UASQL	Administering Azure SQL Databases	1750€	4	16			22			2
UASQLD	Developing Azure SQL Databases	2100€	5		20			12	25	
UADE	Data Engineering on Microsoft Azure	2100€	5		13		22		18	
UASA	Data Engineering with Azure Synapse Analytics	2100€	5		13		22		18	
UPDE	Python for Data Engineers: From Syntax to Solutions NEW	1400€	3	11		11		19		8
UADS	Data Science with Python on Azure AI NEW	1400€	3	16		18		26		15
UPUR	Data Governance with Microsoft Purview	950€	2		2		7	22		

.NET

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
.NET PROGRAMMING										
UCSPR	Object-Oriented Programming in C#	2100€	5	9	27		22		11	22
UNOOP	Advanced Object-Oriented Programming Techniques in .NET	2100€	5		13			5	25	
WEB DEVELOPMENT										
UNASP	Building Web Applications with ASP.NET	2100€	5	23		4		19		8
UWAPI	Building ASP.NET Web APIs	2100€	5	2		11		12	18	
UWEBA	Advanced .NET Web Development	2100€	5	23			15		11	
UWSEC	Web Security Development Techniques	1400€	3	9	22		22	5	18	
UBLZ	Building Single Page Applications with Blazor and C#	1400€	3			6		26		15
ENTERPRISE & ARCHITECTURE										
UARCH	.NET Best Practices: Architecture & Design Patterns	2100€	5		20		29		25	
UDEF	Domain-Driven Design with Entity Framework Core	1400€	3	16			15		4	22
UTEST	Effective Unit Testing	950€	2	12		4		15		29
WINDOWS & MOBILE DEVELOPMENT										
UWPF	Building Windows Applications with WPF	2100€	5					15		
UMAUI	Building Mobile Apps with .NET MAUI	2100€	5		13		29			15
TECHNOLOGY OVERVIEW										
UMST	Microsoft Windows & Web Development - Technology Overview	950€	2	30			15		29	

JAVASCRIPT

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
WEB FUNDAMENTALS										
UJSDEV	JavaScript Fundamentals	1400€	3	23	22			14		17
UJSWEB	Programming with JavaScript, HTML and CSS	2100€	5		20			12		15
JAVASCRIPT LIBRARIES										
UANG	Building web apps with Angular and TypeScript	1400€	3			11		12		2
UANGA	Mastering Angular	1400€	3		6			5		8
UREACT	Developing Web Apps with React	1400€	3			11		26		22
UVUE	Building Web Apps with Vue.js	950€	2					22		
MOBILE DEVELOPMENT										
UREACTN	Mobile Development with React Native	950€	2			14		29		25

All courses scheduled at U2U Brussels are taught in English. Course hours are from 9:30 to 16:45 on the first day and from 9:15 to 16:45 on subsequent days.

All prices listed are in euros and exclude 21% VAT. These prices apply to all courses scheduled and organized at the U2U training center in Brussels and are valid for bookings made after October 1, 2023, and before February 1, 2024.

The price includes high-quality lectures, a preconfigured laptop for hands-on exercises, a U2U course book, lunch, snacks, coffee, and drinks during the course.

MICROSOFT 365

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
MICROSOFT 365 ESSENTIALS										
USPOP	SharePoint Online for Power Users	2100€	5		6		15	26		8
U0365P	Office 365 Essentials	1400€	3				29			
UPOWER	Microsoft Power Apps and Power Automate	1750€	4	23		4	22		4	22
UM365AI	Building Smart Solutions with AI Builder and Microsoft Syntex NEW	950€	2	19			18			11
MS-900	Microsoft 365 Fundamentals	450€	1		3	15			14	29
MICROSOFT 365 DEVELOPMENT										
USPOAP	Modern Development with Office 365 and SharePoint Online	2100€	5		6		29			15
USPFX	Developing with the SharePoint Framework	2100€	5		20				25	
MICROSOFT 365 ADMINISTRATION										
U0365A	Configuring & Administering Microsoft 365	1750€	4	23		18		19		15
MS-700	Managing Microsoft Teams	1400€	3	16					11	
UINT	Microsoft Endpoint Manager: Configuring Devices with Microsoft Intune	1400€	3	16		11		12		2
UMSEC	Microsoft 365 Cloud Security	1400€	3		20		29			8
UCSEC	Mastering Microsoft Cloud Cybersecurity	2100€	5		20		29			8

POWERSHELL

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
POWERSHELL										
UPSHELL	Scripting with PowerShell	1400€	3		13		15		4	22
UPSHELLA	Mastering PowerShell	2100€	5		13		15		4	22

POWER BI

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
POWER BI ESSENTIALS										
UBIPBE	Analyzing your data with Power BI for Business Users	1400€	3	9	6	18		12		8
UBIPB	Analyzing your data with Power BI for BI Professionals	2100€	5		13		15			15
POWER BI ADVANCED										
UDAX	Mastering DAX	1400€	3			11		5	18	
UPBIM	Managing a Power BI Environment	1400€	3	23		18			11	
UPBIDM	Designing Data Models for Power BI NEW	950€	2		30			22		11
POWER BI DEVELOPMENT										
UBIPBD	Developing for the Power BI Platform	1400€	3						4	

WINDOWS SERVER

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
WINDOWS SERVER 2022										
AZ-800	Administering Windows Server Hybrid Core Infrastructure	2100€	5		6			5		
UPKI	Public Key Infrastructure	950€	2	30						

POWER PLATFORM

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
POWER APPS & POWER AUTOMATE										
UPOWER	Microsoft Power Apps and Power Automate	1750€	4	23		4	22		4	22
UPPA	Power Apps and Power Automate: Advanced Patterns NEW	1400€	3		20		29			2
MICROSOFT DATAVERSE										
UCDS	Model-Driven Apps with Microsoft Dataverse in Power Apps	2100€	5	2		4		5	25	
UPAP	Create Low-code Business Websites with Microsoft Power Pages NEW	1400€	3				15			2
MICROSOFT DATAVERSE DEVELOPMENT										
UCDSD	Developing for the Power Platform with Microsoft Dataverse	2100€	5				29			15
AI BUILDER										
UM365AI	Building Smart Solutions with AI Builder and Microsoft Syntex NEW	950€	2	19			18			11

SQL SERVER

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
MICROSOFT SQL SERVER										
UTSQL	Querying SQL Server with Transact-SQL	1400€	3		13	18		5	18	
USQLD	Developing and Optimizing SQL Server Databases	2100€	5		20				12	25
USQLA	Administering Microsoft SQL Server Databases	2100€	5		6				5	8
USQLOP	SQL Server Performance Tuning and Optimization	2100€	5			11		26		22
AZURE SQL										
UTSQL	Querying SQL Server with Transact-SQL	1400€	3		13	18		5	18	
UASQLD	Developing Azure SQL Databases	2100€	5		20			12	25	
UASQL	Administering Azure SQL Databases	1750€	4	16			22			2
USQLOP	SQL Server Performance Tuning and Optimization	2100€	5			11		26		22
SQL SERVER BUSINESS INTELLIGENCE										
USQLIS	Implementing Data Warehouses with Integration Services	2100€	5	9			29			22
USQLAT	Microsoft SQL Server Analysis Services Tabular	950€	2						28	
USQLRS	Microsoft SQL Server Reporting Services	1400€	3		20					

05
DAYS

UAWEB

02 - 06 OCTOBER 2023

04 - 08 DECEMBER 2023

19 - 23 FEBRUARY 2024

08 - 12 APRIL 2024

27 - 31 MAY 2024

LEARNING GOALS

This training is designed to get developers up to speed with designing, developing, hosting and managing web applications using Microsoft Azure. Azure Web Apps and Azure Functions will contain your code; Azure SQL, Cosmos DB and Blob Storage will hold your data; and Message Brokers and Logic Apps will wire it all together. You will also learn about security, monitoring and automated deployment.

TARGET AUDIENCE

This course is intended for web developers who would like to get familiar with the web development services and tools of Microsoft Azure. A basic understanding of ASP.NET is expected.

03
DAYS

UAMIC

16 - 18 OCTOBER 2023

18 - 20 DECEMBER 2023

19 - 21 FEBRUARY 2024

15 - 17 APRIL 2024

LEARNING GOALS

The training will make you familiar with the different container services offered by Azure like Azure Kubernetes Service and Azure Container Apps. You will learn about the Microservice architecture and how to implement them using a variety of technologies including Azure Service Bus and Dapr.

TARGET AUDIENCE

This course is intended for experienced .NET developers who would like to get acquainted with Docker containers and Microservices on Azure.

DEVELOPING & DEPLOYING WEB APPS ON MICROSOFT AZURE

MICROSOFT AZURE OVERVIEW FOR DEVELOPERS

Overview of Microsoft Azure. Usage Scenarios. Software as a Service (SaaS). Platform as a Service (PaaS). Infrastructure as a Service (IaaS). Pricing. The Azure Management Portals. The Azure Management Portals. Azure Components.

APP SERVICE PLANS

What is an App Service. Purpose of Service Plans. Creating a Service Plan. Scaling a Service Plan. Moving and Cloning Apps to other Service Plans.

DEPLOYING RESOURCES WITH ARM AND BICEP

The Azure Resource Manager. Declarative Syntax for ARM Templates. Getting ARM-templates for your Deployed Resources. Bicep. Deploying with Templates.

APP SERVICES: WEB APPS

Deploying from Visual Studio. Configuring App Settings, TLS, Domain Names and Backup Scheduling. Monitoring your Web App. Running and Testing Locally. Spinning up Multiple Website Instances. Working with Deployment Slots. API Metadata and CORS. API Management.

STORING YOUR DATA IN THE CLOUD

Advantages of Storing Data in the Cloud. Microsoft Azure Storage Concepts. Storage APIs: Blob, File, Table and Queue. Securing your Storage with Shared Access Signatures. Using the Azure CDN in your Websites to Serve your Assets.

BROKERED MESSAGING IN THE CLOUD

Using Service Bus Queues for Decoupling Applications. Dispatching Messages with Topics and Subscriptions. Adding Filters to Subscriptions.

SERVERLESS COMPUTING WITH AZURE FUNCTIONS

Serverless Azure Functions. Development Environments. Triggers and Bindings. Hosting and Scaling Creating Workflows with Durable Functions.

SERVERLESS COMPUTING WITH LOGIC APPS

Workflow-like logic. Triggering a Logic App. Connectors and Actions. Controlling the flow: Conditions, Variables and Iterations.

AZURE SQL DATABASE

Features and Service Tiers. Azure SQL Server and Azure SQL Database. Comparison with on-prem SQL. Backups and Replication. Authentication and Firewall.

SECURING YOUR APPLICATIONS AND APIS WITH MICROSOFT IDENTITY PLATFORM

Azure Active Directory. Basic Principles: Users, Groups, App Registrations, Roles and Scopes. Tokens and Claims. Authentication Scenarios. Microsoft Authentication Library.

ELIMINATE CREDENTIALS USING MANAGED IDENTITY

System-Assigned and User-Assigned Managed Identities. Storing secrets using Azure Key Vault. Accessing Blob Storage, Azure SQL and Service Bus.

LOGGING AND MONITORING YOUR APPLICATIONS

Enabling Application Insights. Diagnosing Failures. Diagnosing Dependencies. Custom events and using Metrics Explorer. Availability and Performance. Using Alerts to Detect Live Problems Early. Snapshot Debugging. Power BI Dashboards.

REDIS CACHE

What is Redis Cache. Data Types you can use in your Cache. Accessing the Cache. Redis Messaging. Implementing Redis Cache into your Website.

STORING YOUR DATA IN COSMOSDB

What is Cosmos DB. Scaling and Partitioning. Using Document Databases using the SQL API. Using Document Databases using the MongoDB API. Using Graph Databases using the Gremlin API. Using Key-Value Databases using the Table API.

CI/CD WITH AZURE DEVOPS

DevOps Lifecycle. Planning. Build. Release Management. Autosetup.

AZURE STATIC WEB APPS

Static Web Apps. API support with Azure Functions. Integrate with a GitHub Repository. Automated and Distributed Deployment.

DEVELOPING MICROSERVICES WITH CONTAINERS, KUBERNETES AND MICROSOFT AZURE

CONTAINERS

Why Containers? Containers vs Virtual Machines. Linux and Windows Containers. Container Orchestration.

DOCKER

Running Docker. Containers, Images and Registries. Building an Image. Port Mapping and Volumes. Container Orchestration.

ADD ASP.NET APPLICATIONS TO CONTAINERS

ASP.NET or ASP.NET Core? Official .NET Docker Images. Containerizing Dependencies. Tools.

AZURE FOR CONTAINER OVERVIEW

Azure Container Registry. Hosting Containers: Container Instances, AKS, Service Fabric and ACA. Deploy with Containers: Web Apps and Functions.

MICROSERVICE ARCHITECTURE

Dealing with Evolution in an Application. Benefits and Drawbacks. Scaling. Communication: Client-Service, Service-Service, Event-Based.

KUBERNETES

Kubernetes Cluster. Kubectl and YAML. Workloads: Pods and Deployments. Communication: Services and Ingresses. Scaling and Updates. Health Monitoring.

AZURE CONTAINER SERVICE (AKS)

Putting a Kubernetes Cluster in Azure. AKS Features. Using Helm Charts.

AZURE CONTAINER APPS

Container Apps and Environments. Event-based Scaling with KEDA. Working with Revisions. Integrating with Dapr Components. Network and Ingress. Authentication and Service Connection.

API GATEWAYS

Benefits/Drawbacks. Implementation Options. Azure API Management.

ASYNCHRONOUS COMMUNICATION

Communication Patterns. Event-Based Communication. Event Bus. Integration Events. Eventual Consistency. Azure Service Bus.

SYNCHRONOUS COMMUNICATION

Problems with Direct Communication. Retry. Circuit Breaker. Sidecar Pattern. Service Mesh. Secrets Management.



MICROSOFT AZURE ARCHITECTURE MASTER CLASS - DEVELOPMENT

AZURE ARCHITECTURE INTRODUCTION

Azure Global Infrastructure. Architectural Building Blocks: Applications, Data, Communication and Others. Considerations: Availability, Resiliency, Performance, Cost...

MICROSERVICES

Dealing with Evolution in an Application. Benefits and Drawbacks. Communication: client-service, service-service. Data Isolation.

SCALING AN APPLICATION IN AZURE

Using an App Service Plan. Using an Orchestrator. Serverless. Multi-Region. Load Balancing. Azure Resources: Traffic Manager, Front Door, Load Balancer, Application Gateway.

SQL VERSUS NOSQL

Schemas and Relations. Data Consistency. Read and Write Performance. Partitioning and Scaling. Azure Resources: Azure SQL, Cosmos DB.

SCALING A DATABASE IN AZURE

Vertical versus Horizontal Scaling. Partitioning and Sharding. MultiRegion. Azure Resources: Azure SQL, Cosmos DB.

CACHING STRATEGIES

Azure Redis Cache. Cache-Aside Pattern. Read-Through and WriteThrough. Materialized View Pattern. Valet Key Pattern. Azure CDN.

SYNCHRONOUS COMMUNICATION

Retry and Circuit Breaker Throttling. Bulkhead Pattern. Ambassador Pattern.

ASYNCHRONOUS COMMUNICATION

Messages, Events and Commands. Queue-Based Load Leveling. Event-Based Communication. Asynchronous Request-Reply.

DESIGNING A MESSAGE BROKER IN AZURE

Partitioning. Push vs Pull. Pub-Sub. Mechanisms: Claim-Check Pattern. Azure Resources: Service Bus Event Grid, Storage Queues.

DATA CONSISTENCY

Strong Consistency. CAP Theorem. Eventual Consistency. Outbox Pattern. Compensating Transaction Pattern.

CQRS AND EVENT SOURCING

The Problem with CRUD. Read and Write Models. Commands. Event Store.

EXTERNAL COMMUNICATION

API Gateway. Backend for Frontends. Asynchronous Request-Reply. Webhooks. Azure Resources: API Management, Front Door, Logic Apps.

SECURITY CONCERNS

Options for Storing Sensitive Data. Azure Key Vault and Managed Identity. Service Authentication. Security on Infrastructural Level: Virtual Networks, Firewalls,... Gatekeeper Pattern.

04
DAYS

UACA

06 - 09 NOVEMBER 2023

18 - 21 DECEMBER 2023

05 - 08 FEBRUARY 2024

02 - 05 APRIL 2024

27 - 30 MAY 2024

LEARNING GOALS

In this training we start from potential problems a cloud developer/architect may face. Then, we figure out what to do by using proven patterns. And finally, we look at various technologies available in Azure to implement these patterns. The focus is on the concepts and patterns, not on the technical details.

TARGET AUDIENCE

People who want to become cloud architects in Microsoft Azure. Participants of this course need to have a solid developer background and must know the basics of Azure.

DEVELOPING INTELLIGENT SOLUTIONS WITH THE MICROSOFT AI PLATFORM

WHAT IS ARTIFICIAL INTELLIGENCE?

Definitions of Artificial Intelligence. Domains of Artificial Intelligence. History, Current State and Future.

BOTS

The Microsoft Bot Framework. Debugging your Bot with the Bot Emulator. Turns, Messages and Activities. Conversations and Channels. Designing a Dialog Flow. Prompts, Waterfalls and Components.

AZURE COGNITIVE SERVICES

What is Cognitive Services? Image Classification, Recognition and Moderation. Person Identification. Speech-to-text, text-to-speech. Speaker Recognition and Real-Time Translation. Visual Search. Question Answering.

AZURE COGNITIVE SERVICE FOR LANGUAGE

Conversational Language Understanding. Intents, Entities and Utterances. Key Phrase Extraction. Named Entity Recognition. Language Detection. Text Summarization. Question Answering.

EXPOSING CONTENT TO AI WITH AZURE COGNITIVE SEARCH

Setting up Search Indexing. Filtering, Sorting, Facets, ... Query Syntax. Cognitive Search and Content Enrichment. Consuming your Search Service.

AZURE OPENAI AND CHATGPT BASICS

Introducing Azure OpenAI and ChatGPT. ChatGPT, GPT Models and Large Language Models. Understanding Tokens. Writing and Editing Prompts. Beware of Hallucinations. Zero, One- and Few-Shot Prompting. Introducing ChatML

BUILDING APPS WITH CHATGPT

An introduction to the Completions API. An introduction to the Chat Completions API. Using the Completions and Chat Completions API in your code. Combining ChatGPT and Azure Cognitive Search.

03
DAYS

UADA1

13 - 15 NOVEMBER 2023

19 - 21 FEBRUARY 2024

25 - 27 MARCH 2024

20 - 22 MAY 2024

LEARNING GOALS

The Azure AI Services bring AI at the fingertips of any software developer without having to be a data scientist. Add the 'wow'-factor to your application and gain insights into the workings of AI.

In this course you are taken through all relevant topics to integrate the Azure AI services in your software development projects. The focus of this course is on the pre-built AI services in Microsoft Azure.

TARGET AUDIENCE

This course targets professional developers that want to get started with the Microsoft AI platform. Participants of this course need to have a decent understanding of .NET and preferably some experience with Microsoft Azure. This is not a course for data scientists who want to build their own AI models or understand how existing AI models work.



05
DAYS

UAZUREA

16 - 20 OCTOBER 2023

11 - 15 DECEMBER 2023

12 - 16 FEBRUARY 2024

25 - 29 MARCH 2024

27 - 31 MAY 2024

LEARNING GOALS

The Microsoft Azure Cloud platform offers a wide variety of services to host your infrastructure components: Virtual machines, virtual networks, SQL Azure databases, web apps, ... This course will provide you with the knowledge and skills to setup your cloud infrastructure in Azure.

TARGET AUDIENCE

This course is intended for IT professionals responsible for implementing and maintaining the IT environment.

04
DAYS

UAIA

13 - 15 NOVEMBER 2023

22 - 25 JANUARY 2024

18 - 21 MARCH 2024

21 - 24 MAY 2024

LEARNING GOALS

Making design and architectural decisions is not always an easy task. So the key is to find the best option for the job in terms of cost, manageability, high availability, security, ... In this course we will investigate various Azure services, compare them and debate about the best service for a given project. This course focuses on architecture and design, not on the technical implementation of Azure resources.

TARGET AUDIENCE

Participants should have experience in Azure and understand the services and solutions offered by the platform.

MICROSOFT AZURE INFRASTRUCTURE SERVICES

AZURE OVERVIEW

Cloud Computing. Azure Benefits. Software as a Service (SaaS). Platform as a Service (PaaS). Infrastructure as a Service (IaaS). Global Azure Infrastructure. Azure Products Overview. SLA and Pricing. Azure Resource Manager.

AZURE MANAGEMENT TOOLS

Azure Portal. Managing Azure with PowerShell. Managing Azure with the CLI. Azure Cloud Shell. Azure Resource Manager Templates. Bicep.

AZURE AUTHORIZING SOLUTIONS

Azure Resource Manager (ARM) Templates. Terraform. Bicep.

MANAGING SUBSCRIPTIONS

Management Groups. Naming and Tagging. Resource Locks. Role Based Access Control (RBAC).

AZURE STORAGE

Azure Storage Types: Blob, Tables, Queues, Files and Disks. Storage Accounts. Secure Access to Storage. Working with Storage. Azure File Sync.

AZURE NETWORKING

Virtual Network. Virtual Network Design. VNet Peering. Site-to-Site Connection. Point-to-Site Connection. ExpressRoute.

AZURE VIRTUAL MACHINES

Virtual Machines Overview, Pricing and Storage. VM Networking. Network Security Groups. Creating VMs. Connect to a VM: RDP, SSH, Bastion.

AZURE ADVANCED NETWORKING

Azure DNS. User Defined Networking. Service Endpoints. Private Endpoints. Azure Firewall.

AZURE HYBRID NETWORKING

Virtual Network Gateway. Site-to-Site Connections. Point-to-Site Connections. ExpressRoute. Azure Virtual WAN. Azure Virtual Network Hub.

AZURE LOAD BALANCING

Azure Load Balancer. Application Gateway. Web Application Firewall. Traffic Manager. Azure Front Door. Comparing Load Balancing Solutions.

MANAGE AZURE VMS

Disk Management. VM Extensions. VM Backup. Recovery Services. Update Management.

SIZING AND TROUBLESHOOTING AZURE VMS

Boot Diagnostics. Serial Console. RDP Connection Issues. Run Command. Azure Mobile App. VM Scale Sets.

AZURE WEB APPS

App Services and App Service Plans. Web Apps. Deployment. Deployment Slots. Web App Scaling. Backup and Restore. Adding a Custom Domain to your Web App. Enabling HTTPS.

AZURE SQL DATABASE

Azure SQL Database Service. Managed Instances. Pricing Models. Creating and Managing Databases. Connecting to SQL Azure Database. Business Continuity. Security.

AZURE GOVERNANCE

Management Groups. Azure Policy. BluePrints. Cost Management. Resource Graph.

MICROSOFT AZURE ARCHITECTURE MASTER CLASS - INFRASTRUCTURE

AZURE INFRASTRUCTURE ARCHITECTURE INTRODUCTION

Global Azure Infrastructure. Architectural Building Blocks: Storage, Networking, Compute. Design Influencers: Security, Cost, Performance, High Availability, ...

DESIGNING SUBSCRIPTIONS

Tenants. Management Groups. Subscriptions. Resource Groups. Azure Regions. Naming and Tagging.

RESOURCE DEPLOYMENT

Scripting versus Declarative Approach. Declarative Languages: ARM Templates, Terraform, Bicep. Azure BluePrints. Azure DevOps versus GitHub. Automation Design Considerations.

NETWORK DESIGN

IP Address Ranges. Hub and Spoke Topology. Azure Virtual WAN. Network Routing: UDR versus BGP. Hybrid Networking: VPN Gateways versus ExpressRoute. Network Topology Design Options.

NAME RESOLUTION

Azure-Provided Name Resolution. Azure Private DNS Zone. Hybrid Name Resolution: Azure DNS Private Resolver. Name Resolution with Azure Virtual WAN.

VNET INTEGRATION OPTIONS FOR PAAS SOLUTIONS

Service Endpoints. Private Endpoints. VNet Integration. App Service Environment.

CHOOSING A COMPUTE SOLUTION

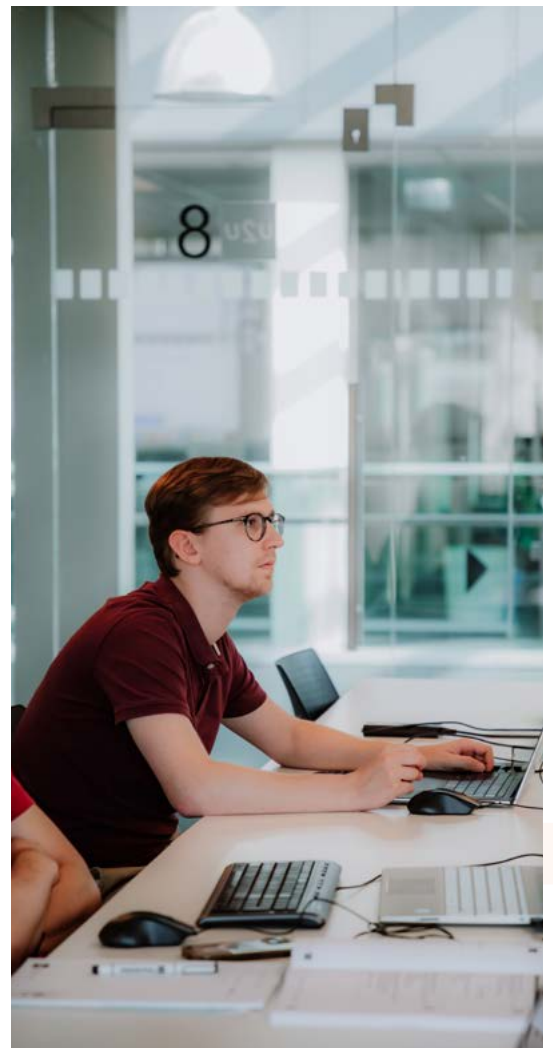
Virtual Machines. Containers: Container Instances, Container Apps, AKS. App Services: Web Apps, Azure Functions. Compare Solutions: Cost, Security, Availability, Scalability.

SECURITY ARCHITECTURE

Role Based Access Control (RBAC). Options for Storing Sensitive Data. Key Vault. Managed Identities. Inbound/Outbound Internet Connectivity. Security Best Practices.

DESIGN FOR IDENTITIES

Microsoft Entra ID. Hybrid Options: Azure AD Connect versus Azure AD Cloud Sync. Sign In Options: MFA, Password-less Authentication. Azure AD as Central Identity Service for all Applications. Protection Features: Design Conditional Access Policies. External Identities: Lifecycle Management. Centralized versus Decentralized Identities: Verified IDs.



SECURING AND MONITORING MICROSOFT AZURE

AZURE MONITOR

Azure Monitoring Overview. Azure Monitor. Azure Advisor. Activity Log. Alerts and Metrics. Workbooks.

AZURE LOG ANALYTICS

Azure Monitor Logs. Log Analytics Workspace Data Collection. Log Data Structure. Workspace Design.

KUSTO QUERY LANGUAGE

Kusto Query Language. Writing Basic Log Queries. Filter Data. Aggregate Data. Using Variables. Joining Multiple Tables in a Single Query. Functions and Computer Groups.

MICROSOFT DEFENDER FOR CLOUD

Microsoft Defender for Cloud. Defender for Cloud Tiers and Pricing. Security Policies. Security Recommendations and Secure Score. Just in Time VM Access. Adaptive Application Controls. File Integrity Monitor. Adaptive Network Hardening. Security Alerts and Incidents.

MICROSOFT SENTINEL

Microsoft Sentinel Overview and Pricing. Activate Microsoft Sentinel. Onboard Security Sources: Data Connectors and Content Hub. Threat Intelligence. Watchlists. User and Entity Behavior Analytics (UEBA).

MICROSOFT SENTINEL INCIDENT INVESTIGATION AND THREAT HUNTING

Sentinel Analytics and Investigation. Security Orchestration Automation: Automation Rules and Playbooks. Threat Hunting. Workbooks and Notebooks.

MICROSOFT ENTRA IDENTITY MANAGEMENT

MICROSOFT ENTRA OVERVIEW

Microsoft Entra Overview. Microsoft Entra ID Overview. Microsoft Entra ID Editions. Directories and Domains. Add a custom domain to Microsoft Entra ID.

ENTRA ID USERS, GROUPS AND DEVICES

User Management. Group Management. Dynamic Groups. Role Assignable Groups. Group-based Licensing. Group Settings. Device Management.

ENTRA ID FEATURES

Multi-Factor Authentication. Authentication Methods. Password Management. Company Branding. Custom Security Attributes.

ENTRA ID ROLES

Entra ID Roles. Administrative Units. Privileged Identity Management.

MICROSOFT ENTRA EXTERNAL ID

External Identities Overview. Identity Providers. Microsoft Entra External ID for Partners (B2B). Guest Access. Cross-Tenant Sync. B2B Direct Connect. Microsoft Entra External ID for Customers (B2C).

ENTRA ID IDENTITY GOVERNANCE

Entra ID Identity Governance Overview. Entra ID Entitlement Management. Access Packages. Connected Organizations. Access Reviews.

ENTRA ID PROTECTION

Single Sign On. Identity Protection. Conditional Access.

AZURE AD CONNECT

Directory Synchronization. Azure AD Connect. Azure AD Sync Options. Azure AD Connect Health.

ENTRA ID AUTHENTICATION OPTIONS

Password Hash Sync. Pass-Through Authentication. Seamless Single Sign On. Federation. Compare Authentication Solutions.

ENTRA ID APPLICATION MANAGEMENT

Application Management Overview. Gallery Applications. Entra ID Application Proxy. Custom Developed Applications. Managed Identities.

MANAGING CONTAINERS WITH KUBERNETES AND MICROSOFT AZURE

CONTAINERS

Containers Overview. Containers versus Virtual Machines. Container Fundamentals. Docker Editions.

WINDOWS AND LINUX CONTAINERS

Windows Containers. Linux Containers. Linux Containers on Windows.

DOCKER

Docker Overview. Docker Commands. Container Networking. Dockerfile. Docker Hub. Docker Compose. Docker Swarm.

APPLICATIONS IN CONTAINERS

Software Architecture Evolution. Microservices. .NET Core versus .NET Framework. Migrate Existing Applications. Databases and Containers.

KUBERNETES

Kubernetes Overview. Kubernetes Cluster. Cluster Hosting Options. Azure Kubernetes Service. Kubernetes Building Blocks: Pods, Volumes.

CONTAINER DEPLOYMENT WITH KUBERNETES

Deployments. Update a Deployment. Scaling. Networking in Kubernetes. AKS Networking Options. Services.

CONTAINER MANAGEMENT WITH KUBERNETES

Ingress. Secrets and ConfigMaps. Namespaces. Network Policies. Health Monitoring. Monitor the Kubernetes Cluster and Containers

CONTAINER TECHNOLOGY IN AZURE

Azure Container Registry. Azure Container Instances. Web App for Containers. Azure Container Apps.

02
DAYS

UASEC

23 - 24 NOVEMBER 2023

01 - 02 FEBRUARY 2024

11 - 12 APRIL 2024

LEARNING GOALS

In this course you will learn the ins and outs of the monitoring and security features that are available in the Azure Cloud platform.

TARGET AUDIENCE

This course is intended for IT professional specialists responsible for analyzing and securing the cloud IT environment.

03
DAYS

UAAD

09 - 11 OCTOBER 2023

18 - 20 DECEMBER 2023

11 - 13 MARCH 2024

22 - 24 APRIL 2024

LEARNING GOALS

One of the most important tasks of any administrator is to provide a secure, easy-to-manage identity system. For any Microsoft cloud service that system is Microsoft Entra ID, previously known as Azure AD.

TARGET AUDIENCE

IT Administrators responsible for user management in cloud services like Microsoft 365, Azure, Intune and Dynamics 365.

03
DAYS

UACON

02 - 04 OCTOBER 2023

04 - 06 DECEMBER 2023

26 - 28 FEBRUARY 2024

LEARNING GOALS

In this course you will learn how to use Docker and Kubernetes to manage containers, both on-premises and in the Azure Cloud platform.

TARGET AUDIENCE

This course is intended for experienced IT professionals. The technologies learned in the course can be useful for both on-prem and Azure deployments.

03
DAYS

UTFS

09 - 11 OCTOBER 2023

06 - 08 DECEMBER 2023

19 - 21 FEBRUARY 2024

08 - 10 APRIL 2024

LEARNING GOALS

In this course you will learn about using Azure DevOps to manage the application development lifecycle, showing how DevOps can improve the efficiency and code quality of your team. You will perform project management, source control, build, release automation and infrastructure as code with Azure DevOps. Finally we will look at Azure Artifacts and how to integrate with DevOps.

TARGET AUDIENCE

Anyone who is involved in application development. Exercises don't require real coding skills.

TEAM DEVELOPMENT WITH AZURE DEVOPS

AZURE DEVOPS SERVICES

Azure DevOps: The big picture. Features. The Extensions Marketplace.

AZURE DEVOPS TEAM PROJECTS

Development Processes. Team Projects and Process Templates.

USING GIT

Version Control concepts. Distributed Source Control with Git. Git Clients: Command Line, Visual Studio or Visual Studio Code. Creating a local repository. Configuring your git repository. Checking the status of your repo. Staging files. Committing files, and then amending it. Comparing changes in files. Reverting commits. Finding the bad change using git bisect.

TEAM COLLABORATION WITH REMOTE REPOSITORIES

Remote repositories. Cloning a remote repository. Synchronizing with a remote repository. Resolving conflicts. Using Git Hooks.

WORKING IN ISOLATION WITH BRANCHES

Adding branches to your workflow. Branching Strategies - Using GitFlow. Merge vs. Rebase - keeping a linear history. Different Merge Strategies, i.e. Squash Merge. Managing your branches.

TEAM COLLABORATION WITH PULL REQUESTS

Protecting your branches with pull requests. Ensuring high quality code with Pull Requests. Versioning with Git Tags. Using Forks.

PROJECT MANAGEMENT WITH AZURE BOARDS

Iterative Development. Creating the project backlog. Work Items and Queries. Velocity and Forecasting.

PLANNING A SPRINT

Sprint Planning. Identifying user stories for the next sprint. Capacity planning. Defining tasks to complete a user story. Adjust work to fit team capacity. Sharing a sprint with stakeholders.

RUNNING THE SPRINT

Running a sprint. The daily standup meeting. Burndown chart. Team dashboard.

CONTINUOUS INTEGRATION WITH AZURE PIPELINES

What is Team Build? Doing Continuous integration. Authoring build using the designer and yaml. What are stages, jobs, tasks? Integrating with other systems (such as Azure and GitHub) using Service Connections. What are Build Agents? Setting up a build agent in your enterprise network.

CONTINUOUS DEPLOYMENT WITH AZURE PIPELINES

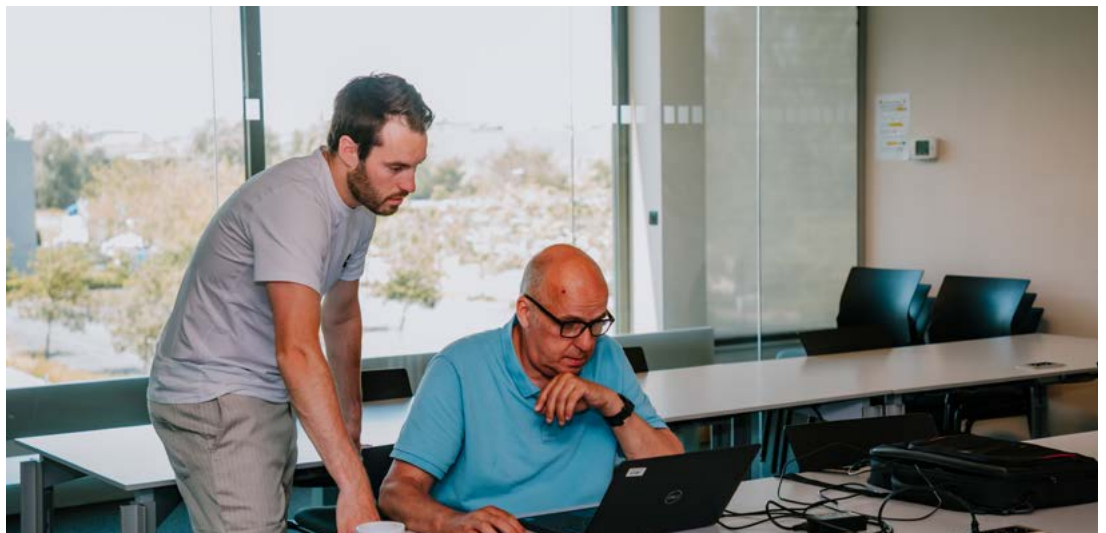
Release management and continuous deployment. Release definitions. Approving releases with release gates. Choosing between deployment patterns. Notifications with Service Hooks.

INFRASTRUCTURE AS CODE

What is Infrastructure as Code? Authoring Bicep Templates. Deploying Bicep using Azure CLI. Using Continuous Deployment to create your infrastructure.

AZURE ARTIFACTS

Understanding Azure Artifacts. Creating a Package Feed. Pushing a Package. Understanding Upstream Sources. Versioning Packages. Using Artifacts in Azure Pipelines.

03
DAYS

UAIC

04 - 06 DECEMBER 2023

12 - 14 FEBRUARY 2024

15 - 17 APRIL 2024

LEARNING GOALS

The idea of GitOps is having a Git repository that contains declarative descriptions of the infrastructure and an automated process to make the production environment match the described state. In this course, you will learn how to setup this kind of deployment.

TARGET AUDIENCE

IT Pros who are interested in learning how to deploy their cloud infrastructure in an easy, fully automated way.

GITOPS: INFRASTRUCTURE AS CODE WITH MICROSOFT AZURE

INTRODUCTION TO GITOPS

What is GitOps? Why should you use GitOps? How does GitOps work? GitOps Services and Tooling: Git(Hub), Azure DevOps, Kubernetes, Terraform, Flux,...

AZURE RESOURCE MANAGER TEMPLATES

Infrastructure as Code. Authoring ARM Templates. Parameters, Variables, Resources, Output. Nested Templates. Validating ARM Templates: Test Toolkit, Pester.

TERRAFORM

Terraform Features. Configuration and Providers. Variables, Resources, Secrets. Terraform State.

DESIRED STATE CONFIGURATION (DSC)

Benefits of Desired State Configuration. DSC Components: Configuration, Resources, Compilation. Enact Your Configuration: Push or Pull mode. Using Azure Automation for DSC.

THE BICEP LANGUAGE

Benefits of Bicep Versus Other Tools. Install Bicep Tools. Author Resources. Parameters, Variables, Outputs. Validate Files with Bicep Linter. Migrate from ARM Templates to Bicep.

USING GIT WITH GITHUB

Version Control concepts. Distributed Source Control with Git and GitHub. Creating a local repository. Cloning a remote repository. Staging files. Committing files. Adding branches to your workflow. Branching Strategies. Using Forks. Merge vs. Rebase. Synchronizing with a remote repository. Pull Requests.

CONTINUOUS INTEGRATION WITH GITHUB ACTIONS

What is GitHub Actions? Doing Continuous integration. What are jobs and steps? Using variables. Defining and using secrets. Integrating with Azure using Publish Profiles or Service Principals.

GITHUB WORKFLOW RUNNERS

Understanding Runners. Using GitHub hosted runners Setting up a Windows hosted runner Setting up a Linux hosted runner.

CONTINUOUS DEPLOYMENT WITH GITHUB ACTIONS

Release management and continuous deployment Deploying Artifacts. Caching Dependencies. Using environments during deployment. Triggering workflows.

DEVELOPING AZURE SQL DATABASES

INTRODUCTION TO DATABASE DEVELOPMENT

Introduction to the SQL Server Platform. Azure SQL Database Development Tasks.

DESIGNING AND IMPLEMENTING TABLES

Designing Tables. Data Types. Working with Schemas. Creating and Altering Tables.

ADVANCED TABLE DESIGNS

Partitioning Data. Compressing Data. Temporal Tables. Ensuring Data Integrity through Constraints. Enforcing Data Integrity. Implementing Data Domain Integrity. Implementing Entity and Referential Integrity.

INTRODUCTION TO INDEXES

Core Indexing Concepts. Data Types and Indexes. Heaps, Clustered, and Nonclustered Indexes. Single Column and Composite Indexes.

DESIGNING OPTIMIZED INDEX STRATEGIES

Index Strategies. Managing Indexes. Execution Plans. The Database Engine Tuning Advisor. Query Store.

COLUMNSTORE INDEXES

Introduction to Columnstore Indexes. Creating Columnstore Indexes.

DESIGNING AND IMPLEMENTING VIEWS

Introduction to Views. Creating and Managing Views. Performance Considerations for Views.

DESIGNING AND IMPLEMENTING STORED PROCEDURES

Introduction to Stored Procedures. Working with Stored Procedures. Implementing Parameterized Stored Procedures. Controlling Execution Context.

DESIGNING AND IMPLEMENTING USER-DEFINED FUNCTIONS

Overview of Functions. Designing and Implementing Scalar Functions. Designing and Implementing Table-Valued Functions. Considerations for Implementing Functions. Alternatives to Functions.

RESPONDING TO DATA MANIPULATION VIA TRIGGERS

Designing DML Triggers. Implementing DML Triggers. Advanced Trigger Concepts.

USING IN-MEMORY TABLES

Memory-Optimized Tables. Natively Compiled Stored Procedures.

SQL SERVER CONCURRENCY

Concurrency and Transactions. Locking Internals.

PERFORMANCE AND MONITORING

Extended Events. Working with extended Events. Live Query Statistics. Optimize Database File Configuration. Metrics.

05
DAYS

UASQLD

20 - 24 NOVEMBER 2023

12 - 16 FEBRUARY 2024

25 - 29 MARCH 2024

13 - 17 MAY 2024

LEARNING GOALS

This course provides students with the knowledge and skills to develop a Microsoft Azure SQL database, or databases on Azure SQL Managed Instances. The course focuses on teaching individuals how to use Azure SQL product features and tools related to developing a database: logical table design, indexing and query plans. It also focusses on the creation of database objects including views, stored procedures, along with parameters, and functions.

TARGET AUDIENCE

IT Professionals who want to become skilled on Azure SQL databases.

ADMINISTERING AZURE SQL DATABASES

INTRODUCTION TO AZURE SQL

What is Azure SQL? Azure SQL Architecture. Azure SQL Pricing. Azure SQL Service Tiers and DTUs. Limitations of Azure SQL. Differences between Azure SQL Databases and Azure SQL Managed Instances.

PROVISIONING AZURE SQL DATABASES

Creating and configuring a Server in Azure SQL. Creating and configuring an Azure SQL Database. Implementing Firewall Rules. Azure SQL networking overview. Overview of the Azure SQL Management Tools.

PROVISIONING AZURE SQL MANAGED INSTANCES

Azure SQL Managed Instance overview. Differences between an On-Premises SQL Server and an Azure SQL Managed Instance. Virtual Networks and Azure SQL Managed Instances. Provisioning and configuring an Azure SQL Managed Instance. Accessing Azure SQL Managed Instances.



CREATING AND MIGRATING AZURE SQL DATABASES

Creating tables, views, stored procedures, ... Migrate an existing SQL Server database to Azure SQL. The Data Migration Assistant. Exporting and Importing BACPAC files of a SQL Database. The Azure Database Migration Service. Copy an Azure SQL Database.

AZURE SQL DATABASE CLIENT CONNECTIVITY

Connectivity Overview. Available Connectivity Libraries. Azure SQL Database Connection Strings.

ELASTIC DATABASES AND POOLS

Introducing Elastic Database Pools. Implementing Elastic Database Pools and working with eDTUs. Creating Elastic Database Pools. Configuring Elastic Databases. Monitoring Elastic Database Pools. Creating Elastic Jobs. Introducing instance pools in SQL Managed Instance.

SECURING USER ACCESS TO AZURE SQL

Authentication overview. Configuring Authentication. Configuring Authorization. Creating Logins and Users. Working with contained databases.

SECURING AZURE SQL

Network security. Auditing in Azure SQL. Azure Defender for SQL. Advanced Threat Protection. Always Encrypted. Data Discovery and Classification. Dynamic Data Masking.

MONITORING AND TUNING IN AZURE SQL

Working with Extended Events. The SQL Server Query Store. Query Performance Insight in Azure SQL Databases. Azure SQL Analytics. Automatic tuning in Azure SQL. Monitoring using DMVs.

BACKUP AND RESTORE IN AZURE SQL

Automatic backups in Azure SQL. Backup retention and storage. Configure Long-term backup retention. Perform manual backups with Azure SQL Managed Instances. Perform a Point-in-time restore. Long-term database restore. Geo-restoring databases.

HIGH AVAILABILITY AND DISASTER RECOVERY

Business Continuity overview. High Availability in the Basic, Standard and General-Purpose service tiers. High Availability in the Premium and Business Critical service tiers. Active geo-replication. Auto-failover groups.

04
DAYS

UASQL

16 - 19 OCTOBER 2023

22 - 25 JANUARY 2024

02 - 05 APRIL 2024

27 - 30 MAY 2024

LEARNING GOALS

Participants of this course will learn from both a DBA and database developer's perspective how to setup and implement Azure SQL databases. The complete database lifecycle from creating and configuring your servers and databases, developing new database objects or migrating existing databases and client applications will be covered.

TARGET AUDIENCE

This 4-day course is intended for DBAs and database developers who want to move their databases to Azure SQL. Participants of this course need to have a basic understanding of the Microsoft SQL Server platform.

05
DAYS

UASA

13 - 17 NOVEMBER 2023

22 - 26 JANUARY 2024

18 - 22 MARCH 2024

13 - 17 MAY 2024

LEARNING GOALS

In the Microsoft Azure stack, Synapse Analytics is the cornerstone service for the data engineer. It encompasses pipelines to copy data, Spark and SQL to transform and query data, Data Explorer for near realtime analysis and data exploration, and Power BI for reporting.

TARGET AUDIENCE

This course focusses on developers and administrators who are considering migrating existing data solutions to the Microsoft Azure cloud, or start designing new data oriented solutions in the Azure cloud.

03
DAYS

UPDE

11 - 13 OCTOBER 2023

11 - 13 DECEMBER 2023

19 - 21 FEBRUARY 2024

08 - 10 APRIL 2024

LEARNING GOALS

Python plays a crucial role in data engineering due to its versatility, extensive libraries such as Pandas and PySpark, and its ability to handle large-scale data processing, making it an indispensable tool for extracting insights and building data pipelines. In this course, participants will gain a solid understanding of Python.

They will acquire the necessary skills and knowledge to utilize Python effectively for data engineering tasks, from basic syntax to implementing real-world solutions. During the course participants will get hands-on experience with Pandas, PySpark, Delta Lake...

TARGET AUDIENCE

This course is targeted at data engineers with no or little experience with Python.

DATA ENGINEERING WITH AZURE SYNAPSE ANALYTICS

THE MODERN DATA WAREHOUSE

From traditional to modern data warehouse. Comparing data warehouse with data lake. Lambda architecture. Overview of Big Data related Azure services. Getting started with the Azure Portal.

STORING DATA IN AZURE

Introduction Azure Blob Storage. Compare Azure Data Lake Storage Gen 2 with traditional blob storage. Tools for uploading data. Storage Explorer, AZCopy, PolyBase.

OVERVIEW OF AZURE SYNAPSE ANALYTICS (ASA)

The different components of Synapse Analytics. Provisioning a Synapse Analytics workspace. Github setup. Navigating Synapse Analytics Studio.

INTRODUCTION TO AZURE SYNAPSE ANALYTICS PIPELINES

Introducing Azure Synapse Analytics Pipelines. Pipeline terminology. Creating Pipelines, Linked Services and Datasets. Copying data with the Copy Data wizard.

AUTHORING PIPELINES IN AZURE SYNAPSE ANALYTICS

Adding activities to the pipeline. Working with Expressions. Variables and Parameters. Debugging a pipeline.

AUTHORING DATA FLOWS IN AZURE SYNAPSE ANALYTICS

From ELT to ETL. Creating Data flows. Sizing the Spark cluster. Running and Profiling Data flows.

MANAGING SYNAPSE PIPELINES

Integration Runtime Overview. The Azure Integration Runtime. The Self-Hosted Integration Runtime. Scheduling Pipelines using Triggers. Monitoring pipeline executions.

AZURE SQL DATABASE

Provisioning an Azure SQL Database. Migrating an on-premises Data Warehouse to Azure SQL Database. Ingesting Azure Blob Storage data. Working with Columnstore Indexes.

SERVERLESS SQL POOL IN AZURE SYNAPSE ANALYTICS

When Azure SQL Databases reach their limits. Provisioned versus Serverless Synapse Analytics databases. Creating and accessing Serverless databases. Using OPENROWSET for data access. Creating external tables.

AZURE SYNAPSE ANALYTICS PROVISIONED SQL POOLS

Architecture of Provisioned SQL Pools. Loading data via PolyBase. CTAS and CETAS. Setting up table distributions. Indexing.

GETTING STARTED WITH APACHE SPARK OR DATABRICKS

Introduction Spark framework. Spark Cluster setup. Getting started with Notebooks. Introduction to Apache Spark on Databricks.

ACCESSING DATA IN SYNAPSE ANALYTICS SPARK

The Spark Session and Context objects. Connecting to Azure Blob Storage and Azure Data Lake Storage Gen2. Connecting to relation databases through JDBC or ODBC. Loading and saving data in Spark using DataFrames. An introduction to transforming data using PySpark. Using Spark SQL to query and transform data.

INTRODUCING DELTA LAKE

Introducing Delta Lake. Creating Delta Tables. Modifying data in a Delta Table. Time Travel with Delta Tables. Creating a Lake Database/Lakehouse in Azure Synapse Analytics. Querying a Lake Database/Lakehouse using the Serverless SQL Pool.

THE ROLE OF THE POWER BI SERVICE

Overview of Power BI Service. Analysis Services/Power BI in the modern data warehouse architecture. Link Synapse Analytics with Power BI.

AZURE DATA EXPLORER

Data Explorer architecture. Ingesting data in Data Explorer. Querying and visualizing data with Kusto. Accessing Data Explorer from Data Factory and Power BI.

PYTHON FOR DATA ENGINEERS: FROM SYNTAX TO SOLUTIONS

GETTING STARTED WITH PYTHON

Introducing to Python. Installing Python. Executing Python Code from the Command Shell. Python and Visual Studio Code. Working with packages in Python. Working with Virtual Environments in Python. Interactive development in Jupyter notebooks.

BASIC LANGUAGE CONSTRUCTS IN PYTHON

Introduction to writing Python code. Declaring and Using Variables. Data Types in Python. Working with Lists, Tuples, Sequences and Dictionaries. Basic Programming Constructs in Python. Declaring and executing Functions.

WORKING WITH CLASSES AND OBJECTS

Introduction to Object-Oriented Programming. Defining and instantiating Classes in Python. Working with Constructors. Instance and Class Variables. Inheritance in Python. Working with Access Modifiers.

USING AND CREATING MODULES

Introduction to Modules. Importing Modules. Creating Modules.

DATA PROCESSING AND CLEANSING USING PANDAS

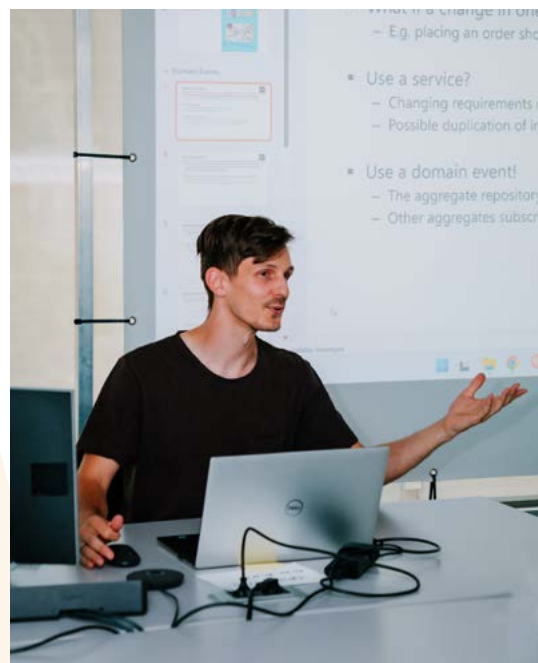
What is Pandas. Introducing Pandas Data Structures. Reading data with Pandas. Indexing in a DataFrame. Creating and deleting columns. Filtering and Replacing data. Sorting and Ranking data. Grouping and aggregating data.

FROM PYTHON AND PANDAS TO APACHE SPARK

Introducing Apache Spark. The SparkSession, SparkContext and SQLContext objects. An introduction to Resilient Distributed Datasets (RDD). Convert a Pandas DataFrame to/from a PySpark DataFrame. Reading and writing data using DataFrames. Working with DataFrames in PySpark. Data Cleansing using PySpark. Grouping and aggregating data in PySpark. Joining DataFrames. Using SQL to select and manipulate data.

BUILDING A LAKEHOUSE USING DELTA LAKE

What Is a Lakehouse? Introduction to Delta Lake. Creating tables. Partitioning data in tables. Reading table data. Query older snapshots of a table (Time Travel). Insert, Update, Delete and Merge table data. Retrieving table metadata. Altering table metadata. Configuring Change Data Feed.



DATA SCIENCE WITH PYTHON ON AZURE AI

MACHINE LEARNING INTRODUCTION

Why using machine learning. Supervised versus unsupervised learning. Machine learning methodology CRISP-DM. Data preparation. Train, validation and test sets. Classification, regression and clustering.



AI SERVICES

AI Services. Azure OpenAI. Speech service. Language service. Computer vision. Customizing AI services.

AZURE OPENAI

Introducing OpenAI. Azure OpenAI Studio. Tokenizer. Choosing the right Deployment. Completion versus Chat. Deploying models as a web app. Creating, storing and using Embeddings.

USING AZURE AI SERVICES IN PYTHON

Azure AI services API. Using Azure AI Services CLI. Calling Azure AI Services from Python.

MACHINE LEARNING WITH SCIKIT-LEARN

Machine learning specific data preprocessing: normalization, standardization, one-hot encoding. Classification using decision trees, logistic regression and support vector machines. Model tuning: working with hyper-parameters. Building regression models with linear regression, SVM and Neural networks. Unsupervised learning: Clustering.

AZURE MACHINE LEARNING SERVICES

Azure ML service overview. Create a ML service workspace. Setting up computes and datastores. Creating and querying experiments. Deploying and using models. Creating and registering images. Deploy images as web services.

AUTOMATED MACHINE LEARNING

Building and deploying Automated ML models via the portal. Calling Automated ML from Python.

AZURE MACHINE LEARNING PIPELINES

Azure ML pipelines. Using the Azure ML Designer. Creating pipelines in Python. Executing Azure ML pipelines.

GETTING STARTED WITH DEEP LEARNING

From Neural networks to Deep learning. Overview of deep learning frameworks. Getting started with the Keras framework.

03
DAYS

UADS

16 - 18 OCTOBER 2023

18 - 20 DECEMBER 2023

26 - 28 FEBRUARY 2024

15 - 17 APRIL 2024

LEARNING GOALS

Machine learning looks for patterns in data, to help understand the past or to predict future outcomes. This can be done by using machine learning models that have been trained by others (such as ChatGPT) or by building your own models. In this class both options are explored.

TARGET AUDIENCE

This course focusses on developers and data scientists who are starting to use machine learning on their own infrastructure or who are considering the Azure stack for applying machine learning on their data.

DATA GOVERNANCE WITH MICROSOFT PURVIEW

WHAT IS MICROSOFT PURVIEW?

The need for a metadata catalog. Purview features. Quick comparison with Azure Data Catalog.

SETTING UP A PURVIEW ACCOUNT

Creating an account via the portal. Inspecting the Purview account in the portal. Purview cost.

MICROSOFT PURVIEW GOVERNANCE PORTAL AND COLLECTIONS

Exploring the Microsoft Purview Governance Portal. Creating Collection hierarchies. Collection permissions.

REGISTERING SOURCES

Supported sources. Registering sources.

SCANNING DATA

Setting up a scan. Defining scan sets. Scheduling a scan. Using Azure Key Vault.



SCANNING ON-PREMISES DATA

Integration runtimes. Setup a self-hosted integration runtime. Configure scans with a self-hosted integration runtime.

QUERY THE PURVIEW CATALOG

Query from the portal. Inspecting lineage information. Integrating with Azure Data Factory. Integrating with Azure Purview.

GLOSSARY AND OTHER RELEVANT GOVERNANCE DATA

Building glossaries. Creating Term Templates. Editing the catalog items. Working with custom attributes.

DATA SHARES

The need for Data Share. Setup Data Share using Purview.

CONTROLLING DATA ACCESS

3 types of granting data access. Setup data access policies. Configuring Self-service access policies. Setup approval workflows.

PURVIEW REST SERVICE

Purview and Apache Atlas API. Calling the API from PowerShell.

02
DAYS

UPUR

02 - 03 NOVEMBER 2023

22 - 23 FEBRUARY 2024

29 - 30 APRIL 2024

LEARNING GOALS

Microsoft Purview provides a unified data governance service that helps you manage your on-premises, multicloud, and software-as-a-service (SaaS) data. Microsoft Purview creates a map of your data landscape with automated data discovery, sensitive data classification, and end-to-end data lineage. This enables security administrators to manage and keep your data estate secure while empowering data consumers to find valuable, trustworthy data.

TARGET AUDIENCE

The training aims at people responsible for (mainly) cloud data governance using the Azure platform.

05
DAYS

UCSPR

09 - 13 OCTOBER 2023
27 NOVEMBER - 01 DECEMBER 2023
22 - 26 JANUARY 2024
11 - 15 MARCH 2024
22 - 26 APRIL 2024

LEARNING GOALS

This course teaches you how to start programming with Visual Studio, C# and .NET. You will get familiar with the C# language syntax and the .NET Object-Oriented concepts, such as classes, objects, inheritance, polymorphism...

TARGET AUDIENCE

This training targets developers with no or limited C# experience. A basic understanding of programming in whatever language is advised. Once you've finished this training, you can start your journey to learn building things like web applications, desktop or mobile apps, backends, games, IoT, bots, etc. All with C#.

05
DAYS

UNOOP

13 - 17 NOVEMBER 2023
05 - 09 FEBRUARY 2024
25 - 29 MARCH 2024

LEARNING GOALS

Today's applications have to be more responsive, scalable and high performing. Therefore, modern .NET developers have to be familiar with the more advanced features of .NET and know how things work under the hood. This course examines advanced concepts of the framework like async programming, parallel computing and Reactive Extensions. You'll explore the latest C# language features like Nullable Reference Types and Asynchronous Streams.

TARGET AUDIENCE

Experienced developers who have an understanding of the .NET platform and have built .NET applications using C#.

OBJECT-ORIENTED PROGRAMMING IN C#

OVERVIEW OF .NET 8

What is a .NET Application? .NET Framework versus .NET. .NET Applications: ASP.NET Core, Web API, WPF, Blazor, MAUI,...

THE .NET APPLICATION

The Visual Studio Solution and Project. What are Namespaces and Assemblies?

CLASSES AND OBJECTS

What is a class? Fields, Methods and Properties. Introduction to Debugging. Namespaces.

INSTANCE CONSTRUCTORS

Instance Constructors. Constructor Initializers. Overloading Constructors.

TYPES IN .NET

Type categories in .NET. Value types, Reference types and Immutable Reference types. Custom Value types: Structure and Enumeration. Boxing and Unboxing. Arguments of Functions. Pass by Value, by Reference. Passing Output.

STATIC MEMBERS AND STATIC CLASSES

Static Members. Static Constructors. Static Classes.

INHERITANCE

General Principle of Inheritance. Access Modifiers: Public, Private, Protected, File and Internal.

POLYMORPHISM

Inheritance & polymorphism. Overriding methods & properties. Using the base class. Sealed classes, methods and properties. The Object class. Overriding the ToString, Equals and GetHashCode method.

ABSTRACT CLASSES AND INTERFACES

Abstract classes. Defining interfaces. Implementing interfaces. Interface examples in .NET.

COLLECTIONS

Arrays in .NET, Multidimensional Arrays. Indexer properties. The for, foreach and while loops.

GENERICS

How to use Generics. Creating your own Generics. Generic constraints.

EXCEPTION HANDLING

The exception-mechanism in .NET. The try-catch-finally Keywords. Creating custom Exceptions.

USING DELEGATES AND EVENTS

Setting up a Timer using a delegate. Combining Delegates as a Multicast Delegate. Building a Programmable Robot using Delegates. Anonymous Methods and Lambda Expressions

EVENTS IN .NET

Creating Events. Using Events in a UI.

THE ASYNC AND AWAIT SYNTAX EXPLAINED

What is Asynchronous Programming? Comparing async/await to other Asynchronous Constructs. Diving into the Keywords. Async Guidelines.

LINQ QUERY SYNTAX

Anonymous Types. Using LINQ with IEnumerable. Func Delegates. Query Operations from, where, order, group and select. Using LINQ with IQueryable. Accessing a Database using Entity Framework Core.

ADVANCED OBJECT-ORIENTED PROGRAMMING TECHNIQUES IN .NET

GENERICS

Generic Class Declarations and Generic Struct Declarations. Generic interface declarations. Understanding Covariance and Contravariance.

DELEGATES AND EVENTS

Creating Delegates. Using Delegates. Multicast Delegates. Creating Events. Using Events in a UI. Understanding Closures and static lambda functions.

LINQ FUNDAMENTALS

What is LINQ? LINQ to Objects, SQL, Entity Framework and XML. LINQ's Enumerable Class. Query Syntax vs. Method Syntax. Deferred Query Evaluation with Yield Return. LINQ Operators. LINQ Internals. Extending LINQ with your own Operators.

MODERN C# LANGUAGE FEATURES

Nullable Reference Types. Value Tuples. Pattern Matching. Global and Implicit Usings. Required and Init-Only Properties. Records. File-Scoped Types and Namespaces. Using Raw String Literals. Required Members. Generic Attributes. Specifying the Return Type for Lambda Functions.

GARBAGE COLLECTION

The Lifecycle of a Class Instance. GC Class and Members. Forcing a Garbage Collection. Garbage Collection for Unmanaged Resources. The Dispose Pattern. Resurrection. Weak References.

REFERENCE SEMANTICS WITH VALUE TYPES

Understanding Reference Semantics. How Value Types allow you to write faster code. Passing value types by reference with new access modifiers. Understanding Span<T> and related classes. Measuring using BenchmarkDotNet.

CONCURRENCY

Understanding processes and threads. Different kinds of Concurrency. Scheduling Threads.

MULTITHREADING IN .NET

The Thread. Exceptions and threads. Understanding thread pooling. Debugging Multi-Threaded Code.

THREAD SYNCHRONIZATION

Race conditions and dead locks. Avoiding race conditions. Synchronizing threads: locks, monitors, signals... Thread safety in .NET.

TASKS

What are Task? Waiting asynchronously. Dealing with Exceptions. Task cancellation.

THE ASYNC AND AWAIT SYNTAX EXPLAINED

What is asynchronous programming? Comparing async/await to other Asynchronous Constructs. Diving into the Keywords. Async Guidelines.

ASYNCHRONOUS PROGRAMMING IN .NET

A History of Asynchronous Programming in .NET. Understanding SynchronizationContext. Cancellation, Progress and Exception Handling. ConfigureAwait. IAsyncEnumerable. Async Guidelines.

PARALLEL COMPUTING

What is parallel programming? Writing Parallel Loops. Concurrent collections. Parallel LINQ.

REACTIVE EXTENSIONS

Push vs. Pull. Understanding IObservable<T> and IObservable<T>. Hot and Cold Observables. IAsyncEnumerable versus Rx. What are Subjects? Using LINQ with Rx. Combining Observables. What about timing?

ATTRIBUTES AND REFLECTION

What are Attributes? Applying Attributes. Common Predefined Attributes. Building Custom Attributes. What is Reflection? Retrieving Attribute Values.

EXPRESSIONS AND STATIC REFLECTION

What are Expressions? How does LINQ to Database work? Using Static Reflection. Dynamically Generating Code with Expressions.

AUTOMATING YOUR CODE WITH SOURCE GENERATORS

What are Source Generators? .NET 7 and 8 Source Generators. Implementing a Source Generator. Source Generator Best Practices.

BUILDING WEB APPLICATIONS WITH ASP.NET

THE HTTP PROTOCOL

Http Methods. Headers. Status Codes. Redirection. Caching.

ASP.NET MVC: INTRODUCTION

The Model-View-Controller (MVC) pattern. MVC in ASP.NET Core. Client-centric versus Server-centric applications.

THE 3 MAIN ASP.NET MVC COMPONENTS

Handling the user interaction with Controller. Rendering the response with MVC views. Creating a MVC Model and ViewModel. Understanding Routing.

INTRODUCTION TO ENTITY FRAMEWORK CORE

What is Entity Framework Core? The need for Object Relational Mapping. Decoupling conceptual data structure from logical data structure. Querying data: APIs and LINQ.

MODELING YOUR DATABASE WITH EF CORE

Methods of configuration. Creating and applying migrations. Table and column mapping. Modeling properties. Mapping Value generated properties. Handling Concurrent updates. Modeling relationships. Mapping inheritance.

VIEWMODELS

Passing Data to a View. ViewModels. Mapping between Model and ViewModel.

ASP.NET CORE PIPELINE

The principle of the ASP.NET Core Pipeline. Building the Pipeline using Middleware. Overview of the built-in Middleware.

END-POINT ROUTING

Getting Started with Routing Concepts. Defining Routing Templates. Route Parameter Constraints. Route Parameter Transformers. Understanding Route Matching. Using Conventional vs. Attribute Routing. Routing Attributes. Request Short Circuiting. Handling Routing Errors.

ASP.NET CORE MVC CONTROLLERS

Model Binding. Different Action Results. Model Binding. Action Filters. Redirections.

BUILDING ASP.NET WEB APIS

INTRODUCING REST AND WEB API

Introducing REST. Building a simple Web API. Consuming a Web API. Documenting your API with Open API. Internal vs. Public APIs.

ASP.NET WEB API BUILDING BLOCKS

Getting Up and Running with Minimal APIs. Adding Structure to your Web API with Controllers. Web API Routing. Inspecting the Request Processing Pipeline.

ENDPOINT ROUTING

Getting Started with Routing Concepts. Defining Routing Templates. Route Parameter Constraints. Route Parameter Transformers. Understanding Route Matching. Using Attribute Routing. Routing Attributes. Understanding Routing Errors.

API CONTROLLERS

The Controller and ControllerBase Classes. The ApiController attribute. Action Methods and Action Results. Hooking into the Request Processing Pipeline with Filters.

DEPENDENCY INJECTION & TESTING

Methods of Dependency Injection. Dependency Inversion, Explicit Dependencies and Inversion of Control. Unit Testing your Components. Stubbing, Mocking & Faking.

MODELING THE DATA IN YOUR WEB API

Internal and External Models - How to organise resources. Mapping to Your Data Store with Entity Framework Core. Using Data Transfer Objects. Error Handling. HATEOAS.

CRUD

Model Binding. Binding Source Attributes. DTO Validation. Idempotency and Safeness. Potential Errors and How to Handle Them.

BEST PRACTICES WHEN DESIGNING A WEB API

Content Negotiation. Dealing with Batches. Cross Origin Resource Sharing (CORS). Limiting Data. Service Oriented Architecture.

RESPONSIVE WEB DESIGN WITH BOOTSTRAP

Normalizing and Resetting. The Grid System. Utility classes. Bootstrap Components. Customizing Bootstrap.

JAVASCRIPT FOR THE ASP.NET DEVELOPER

Introduction to JavaScript. Understanding the DOM. DOM Selection and Manipulation. Event Handling

RAZOR VIEWS

Building and Scaffolding Views. Introduction to Bootstrap. Layout and Sections. HTML and Tag Helpers. Partial Views.

DATA VALIDATION

Explicit versus Implicit Validation. Validating data using Data Annotations. Self-Validating Models. Validating using the Model Binder. Client-side validation with Unobtrusive JavaScript.

ASP.NET CORE MVC DEPENDENCY INJECTION

What is dependency injection. Methods of Dependency Injection. Dependency Inversion, Explicit Dependencies, and Inversion of Control. Clean Architecture. Using Services and Repository.

BUILDING RESTFUL SERVICES WITH WEB API

What is REST? Building a REST service with ASP.NET Core Web API. Supporting multiple representations: XML and JSON.

CONSUMING WEB APIS

Consuming a Web API from .NET. Best Practices for the .NET HttpClient using HttpClientFactory. Using the Swagger CodeGen Client. Consuming a Web API from JavaScript with Fetch. Web APIs and JavaScript Frameworks.

AUTHENTICATION

Knock Knock... Who's There? Windows Integrated Authentication. Username and Password Authentication. Extending Authentication with your own Data. Using the Microsoft Identity Platform. Authorization with Policies.

API PERFORMANCE

Making your Backend Asynchronous. Dealing with Cancellation. Throttling requests. Taking Advantage of Server-side and Client-side caching. Dealing with Large Resources.

MANAGING YOUR WEB API

Versioning: How to Add New Features to your API Without Breaking Existing Clients. Limiting Access to your API with API Keys. Leveraging Azure API Management as a Platform to Oversee All of Your APIs.

DOCUMENTING YOUR REST SERVICE WITH THE OPENAPI SPECIFICATION

Swagger and Swashbuckle. Enriching your Metadata with Attributes. Enriching your Metadata with Comments. Adding XML-Comments. Generating Client-side Code with Visual Studio and Swagger Codegen.

SECURING YOUR WEB API

Authentication & Authorization in Web API. Authorization Attributes and Policies. Authentication with OAuth and OpenID Connect. Working with Roles and Scopes.

ACTIONS AND REMOTE PROCEDURE CALLS

Actions VS Resources: A Practical Comparison. Exposing Actions in Web API. Introducing gRPC. Creating and Consuming gRPC Services.

ASYNCH PATTERNS IN WEB API

Async Request-Reply Pattern: decoupling Request and Response. Webhooks: Events for the Web.

CONSUMING WEB APIS

Consuming a Web API from .NET. Best Practices for the .NET HttpClient. Using the Swagger CodeGen Client. Consuming a Web API from JavaScript with Fetch. Web APIs and JavaScript Frameworks.

05
DAYS

UNASP

23 - 27 OCTOBER 2023

04 - 08 DECEMBER 2023

19 - 23 FEBRUARY 2024

08 - 12 APRIL 2024

LEARNING GOALS

This course will teach you how to build Web applications using the ASP.NET Core MVC (model-view-controller) framework and patterns in .NET 6, 7 or 8. This includes interacting with a database using Entity Framework Core; and creating and consuming RESTful services with ASP.NET Core Web API and JavaScript.

TARGET AUDIENCE

Students should have a good knowledge of C#. Furthermore, a basic knowledge of HTML is advised.

05
DAYS

UWAPI

02 - 06 OCTOBER 2024

11 - 15 DECEMBER 2023

12 - 16 FEBRUARY 2024

18 - 22 MARCH 2024

13 - 17 MAY 2024

LEARNING GOALS

ASP.NET Web API makes it easy to build REST APIs that reach a broad range of clients, including web and mobile applications. Along with best practices and modern design techniques, this extended 5-day training will guide you towards understanding API architecture, security considerations, and how to build a REST API with ASP.NET that is both extensible and flexible.

TARGET AUDIENCE

Participants of this course need to have a solid understanding of the .NET platform and building .NET applications using C#.

05
DAYS

UWEBA

23 - 27 OCTOBER 2023

15 - 19 JANUARY 2024

11 - 15 MARCH 2024

13 - 17 MAY 2024

LEARNING GOALS

So you've been using ASP.NET Core MVC for a while, and you want to learn more? Join us in this training to upgrade your skills to master .NET 6, 7 or 8 and ASP.NET Core. In this advanced ASP.NET development course you will build up the necessary knowledge and tools for dealing with the complexity of modern web applications using .NET, Entity Framework Core, apply Clean Architecture, and get more insights into SignalR, gRPC, Blazor, Azure, OpenID Connect and Internationalization.

TARGET AUDIENCE

This course is meant for developers who have experience with ASP.NET Core MVC and/or Web API and want to become a master in ASP.NET Core.

ADVANCED .NET WEB DEVELOPMENT**.NET 8 INTRODUCTION**

Understanding .NET 8. Supporting multiple runtimes. What is .NET Standard?

VISUAL STUDIO FOR ASP.NET CORE

Visual Studio 2022. Developing with the new Hot Reload. NuGet. Creating your own NuGet packages. Dotnet CLI. Global.json.

ASP.NET CORE PIPELINE

Understanding the principle of the ASP.NET Core Pipeline. Configuring the pipeline in the Program class. Understanding Dependency Injection. Diagnostic Middleware. Using HTTPS and the HSTS header. Serving Static Files. Configuring Routing. Understanding Sessions and Caching. Exploring other built-in middleware.

BUILDING CUSTOM MIDDLEWARE FOR ASP.NET CORE

Building your own custom middleware. Testing your middleware.

ASP.NET CORE CONFIGURATION

Different ways of getting configuration to your code. Storing sensitive configuration in Secrets. Using Azure App Configuration. Adding your own configuration provider.

LOGGING

Why do we need another logging framework? Choosing from different logging providers. Understanding logging scopes. Using the HTTP Logging Middleware. An example: Using NLog with .NET Core.

FILTERS

How Filters Work. Authorization Filters. Action Filters. Result Filters. Exception Filters. Service and Type Filters. Filters versus Middleware

ADVANCED RAZOR TECHNIQUES

Using CSS Isolation for Razor Views. Cleaner Razor with TagHelpers. Building Custom TagHelpers. Understanding and Creating View Components. Display and Editor Templates. Service Injection.

HOSTED SERVICES

What is a Hosted Service. Timed background tasks. Queued background tasks. Asynchronous timed background task.

MINIMAL APIS

Benefits of Minimal APIs. Routes and Handlers. Model Binding and Return Types. Code Organization. Endpoint Filters. Route Groups.

INTEGRATION WITH A JAVASCRIPT FRONTEND

Setting up a JavaScript Frontend with a .NET Backend. Visual Studio Templates. Using a Proxy and CORS. VS Templates for Angular and React.

SIGNALR

Server Concepts. Building SignalR Clients with C# and JavaScript.

BUILDING SPA WITH C# AND BLAZOR

Introducing Blazor and Web Assembly. Client-Side vs. Server-Side Blazor. Creating a simple Blazor Component. Hosting Blazor.

EFFICIENT COMMUNICATION WITH GRPC

What is gRPC? Defining your contracts. Implementing your contracts on the server. Generating a Proxy and using it on the client.

INTERNATIONALIZATION

Display Content in Different Cultures. Using resource files. Autodetect Cultures.

UNDERSTANDING CLAIMS-BASED SECURITY

Representing the user. Introducing claims based security. Understanding tokens and their representation on the net. Using Claims in .NET.

MODERN WEB AUTHENTICATION AND AUTHORIZATION

The Internet and a way of sharing. Introducing OAuth and OpenID Connect. OAuth fundamentals: Authorization Code Grant, Implicit Grant and Client Credential Grant. Implementing OpenID Connect web signin with AzureAD and Identity Server.

PROTECTING A WEB-API WITH OPENID CONNECT

Protecting a Web API's resources. Adding permissions to the server side. Requesting permissions at the client side. Using the Microsoft Authentication Library (MSAL). User consent.

PUBLISHING YOUR APPLICATION

Deployment Options. Cross-platform Deployment. Self-Contained Deployment. Optimize your deployment with Assembly Trimming. Ahead of Time (AOT) compilation. Deploying to Containers.

AZURE APP SERVICES: WEB APPS

Understanding Azure Web Apps. Deploying from Visual Studio. Configuring app settings, TLS, domain names and backup scheduling. Monitoring your Web API.



DOMAIN DRIVEN DESIGN WITH ENTITY FRAMEWORK CORE

INTRODUCTION TO DOMAIN DRIVEN DESIGN

What is DDD? Advantages of using DDD. When is DDD a bad option?

ARCHITECTING MODERN WEB APPLICATIONS

'Clean' Architecture: put the business and application model at the center. Understanding the Core, Infrastructure and Presentation layer. Testing everything with Clean Architecture.

UNIT TESTING IN .NET AND .NET 6/7

What every developer wants: Quality code that works; and keeps on working. Finding bugs: not just in code. Or how NASA lost a 125,000,000\$ Mars orbiter. What is unit testing? And what is a good unit test? Understanding the difference between a unit test and an integration test. Test Driven Development Should you be doing it? Roleplaying: Marge, Homer and Bart. The Triple-A of unit testing and what has cooking to do with this?

UNIT TESTING WITH VISUAL STUDIO WITH XUNIT

Unit Testing best practices with XUnit. Facts and Theories. Using the Test Explorer Window. Live unit testing with Visual Studio Running tests in parallel, or not. Measuring and improving Code Coverage. Replacing dependencies using Fakes, Stubs and Mocks. Building Stubs and Mocks using NSubstitute.

TACTICAL DESIGN

What is tactical design? Entities, Services, Aggregates, etc... Applying Tactical Design to a real world business case.

TACTICAL DESIGN - ENTITIES AND VALUE OBJECTS

Differentiating between Entities and Value Objects. Designing Entities their Identity. Designing immutable Value Objects. Implementing Value Objects Equality efficiently. C# 9 records.

TACTICAL DESIGN - DOMAIN SERVICES AND MODULES

Providing domain specific operations with Domain Services. Domain, Infrastructure and Application Services. Segregating concepts using Modules.

STRATEGIC DESIGN

Anti-Pattern: Big Ball of Mud. The linguistic delimitation that are Bounded Contexts. Identifying the terms and concepts with the Ubiquitous Language. Relating Bounded Contexts with Context Maps.

TACTICAL DESIGN - LIFE CYCLE, AGGREGATES, FACTORIES AND REPOSITORIES

Clustering Entities and Value Objects with Aggregates. Anti-Pattern: Death by a Thousand Dots. Abstracting the creation of business objects with Factories. Data storage by using Repositories. Abstracting queries using Specifications.

MODELING YOUR DATABASE WITH EF CORE

Methods of configuration. Creating and applying migrations. Table and column mapping. Modeling properties. Mapping Value generated properties. Handling Concurrent updates. Modeling relationships. Mapping inheritance.

ADVANCED EF: MAPPING DDD TO EF CORE

DDD and Persistence Ignorance. Implementing Value Objects with Owned Properties. Using Shadow Properties to Avoid 'Leaky Abstractions'. Building Repository and Specification classes. Testing your Specifications. Entity Validation.

TACTICAL DESIGN - DOMAIN EVENTS

What are Domain Events? Publishing significant domain changes with Domain Events. Using MediatR with Domain Events.

UNIT TESTING ASP.NET CORE WEB APPLICATIONS

Challenges when unit testing MVC applications. Writing unit tests for your MVC controllers. Unit testing ApiControllers. Testing data access, such as Repositories and Specifications. Using the ASP.NET Core testing framework. End-to-end testing.

03
DAYS

UDEF

16 - 18 OCTOBER 2023

15 - 17 JANUARY 2024

04 - 06 MARCH 2024

22 - 24 APRIL 2024

LEARNING GOALS

This course will discuss the concepts of domain-driven design and how EF Core can help you at implementing these concepts. Participants learn about modern architecture and will get a hands-on approach to building a web site using DDD and EF Core.

TARGET AUDIENCE

Attendees are required to have prior knowledge of C# and .NET.

WEB SECURITY DEVELOPMENT TECHNIQUES

SECURITY: A MANY PRONGED WORD

Non-disclosure. Authentication. Authorization. Data-tampering. Security testing. Applying STRIDE. The Ten Immutable Laws of Security.

PRIVACY

Encryption. Understanding Symmetric Keys. Asymmetric Keys. Hybrid Encryption. Hashing. Properly store passwords with Hashing and Salt. What are Digital Signatures? Certificates, SSL, TLS and HTTPS.

OWASP WEB SECURITY HEADERS

Understanding HTTP headers. Setting headers in IIS and ASP.NET Core. HTTP Strict Transport Security header. HSTS options.

UNDERSTANDING CLAIMS-BASED SECURITY

Representing the User. Introducing Claims Based Security. Understanding Tokens. Using Claims in .NET

MODERN WEB AUTHENTICATION AND AUTHORIZATION

The Internet and a Way of Sharing. Introducing OAuth and OpenID Connect. OAuth Fundamentals: Authorization Code Grant, PKCE and Client Credential Grant. Implementing OpenID Connect Web Sign-in with AzureAD.

PROTECTING A WEB-API WITH OPENID CONNECT & AZUREAD

Protecting a Web API's resources. Adding permissions to the server side. Requesting permissions at the client side. Using the Microsoft Authentication Library (MSAL). User consent.

WEB SITE SECURITY THREATS AND DEFENCES

OWASP - Top 10 security issues. Broken Access Control. Cryptographic Failures. Injection. Insecure Design. Security Misconfiguration. Vulnerable and Outdated Components. Identification and Authentication Failures. Software and Data Integrity Failures. Security Logging and Monitoring Failures. Server-Side Request Forgery. Extra: Denial of Service.

FINDING VULNERABILITIES

Introducing the OWASP Juice Shop. Finding vulnerabilities in a webshop.

03
DAYS

UWSEC

09 - 11 OCTOBER 2023

22 - 24 NOVEMBER 2023

22 - 24 JANUARY 2024

05 - 07 FEBRUARY 2024

18 - 20 MARCH 2024

20 - 22 MAY 2024

LEARNING GOALS

This course takes you through the different security threats and defenses and teaches you hands-on how to apply them to ASP.NET Core. This course provides in-depth, hands-on experience securing your web-based applications.

TARGET AUDIENCE

This course is meant for developers who have experience with ASP.NET MVC or ASP.NET Core and want to make the world a safer place through applied security best practices.

05
DAYS

MARCH

20 - 24 NOVEMBER 2023

29 JANUARY - 02 FEBRUARY 2024

25 - 29 MARCH 2024

13 - 17 MAY 2024

LEARNING GOALS

In this training we identify software design problems and see how to address these using the best suited Design Pattern. We will also look at modern C# language features, S.O.L.I.D. principles, and apply what we've learned. Modern day developers should also know about Reactive Programming. Finally we finish building a reusable library always keeping things like backward compatibility and developer ease-of-use in mind!

TARGET AUDIENCE

This course is intended for experienced programmers who are very familiar with C# and have a working experience with .NET.

.NET BEST PRACTICES: ARCHITECTURE & DESIGN PATTERNS

SOLID PRINCIPLES

Single Responsibility. Open/Closed. Liskov Substitution. Interface Segregation. Dependency Inversion.

INTRODUCTION TO PATTERNS

What is a Pattern? The Gang of Four: Erich Gamma, Ralph Johnson, Richard Helm and John Vlissides. Different kinds of design patterns: creational, structural and behavioral patterns. The difference between implementation, design and architecture patterns... Some anti-patterns such as Loopy-Goopy.

CREATIONAL PATTERNS

Singleton - a.k.a. The Pluto Pattern. Factory Method. Abstract Factory.

BEHAVIORAL PATTERNS

Template Method. Strategy. Chain of Responsibility. State. Iterator. Observer. Mediator.

BUILDING YOUR OWN LITTLE PROGRAMMING LANGUAGE WITH SOME PATTERNS - FUN!

Interpreter: Build your own expressive language-grammar and execute it. How LINQ uses Interpreter - and how you can take advantage of it yourself. Builder: Hide how complex hierarchies of objects get built - and allow variations. XAML as the ultimate builder. Reflection: the ideal .NET way for implementing your own builder. Visitor: When you need a lot of different operations on the same object structure.

STRUCTURAL PATTERNS

Adapter. Decorator. Composite. Facade. Flyweight. Proxy.

MODEL-VIEW-WHATEVER

Model-View-Controller: An ancient pattern back in fashion. ASP.NET MVC - an introduction. MVVM in WPF - MVC taking advantage of powerful databinding capabilities. Command: Encapsulate behavior in objects. Implementing commands using closures.

REACTIVE PROGRAMMING

What are Observables? Using Reactive Extensions. Applying the Redux pattern so simplify complex applications.

DESIGN PATTERNS APPLIED: DEVELOPING YOUR OWN REUSABLE LIBRARY

Adding the GoF Command pattern to MVVM. Using interfaces for flexibility. Building Command Objects - extending WPF's ICommand interface. Adding Undo and Redo functionality to the command pattern. Using a CommandManager class. Challenge: retro-fitting our commands into MVVM without lots of changes. Implementing Undo-Redo using the Memento pattern. Choosing whether or not to add the Prototype pattern. Ideas on how to proceed with the command pattern.



EFFECTIVE UNIT TESTING

UNIT TESTING IN .NET

What every developer wants: Quality code that works; and keeps on working. Finding bugs: not just in code. - Or how NASA lost a 125.000.000\$ Mars orbiter. What is unit testing? And what is a good unit test? Understanding the difference between a unit test and an integration test. Test Driven Development - Should you be doing it? Role-playing: Marge, Homer and Bart. The Triple-A of unit testing - and what has cooking to do with this? Given-When-Then.

UNIT TESTING WITH VISUAL STUDIO WITH MSTEST AND XUNIT

MSUnit - Built-in into Visual Studio. Building and running Unit Tests with MSUnit. Using the Test Explorer Window. Using Test Settings. Live unit testing with Visual Studio. Unit Testing best practices with Xunit. Facts and Theories. Unit testing parallelism. Fluent Assertions. Measuring and improving Code Coverage.

MORE LOOSE COUPLING USING DEPENDENCY INJECTION

What is tight coupling and how to prevent it? Using Inversion of Control (IoC) containers. Constructor and Property injection. Microsoft.Extensions.DependencyInjection as an example.

WRITING TESTABLE CODE

Testing dependencies - and the art of writing testable code. The difference between a Fake, a Stub and a Mock. How to replace dependencies with stub and mock objects. The Extract and Override pattern. How the MVVM pattern facilitates UI testing. Replacing configuration in tests.

ISOLATION FRAMEWORKS: NSUBSTITUTE AND MICROSOFT FAKES.

Understanding Isolation Frameworks. Building Stubs and Mocks with NSubstitute. Checking arguments and return values. Using Linq to Mocks. What makes Microsoft Fakes so special. Testing legacy/ untestable code. Building Stubs and Mocks with Fakes.

UNIT TESTING ASP.NET CORE WEB APPLICATIONS

Challenges when unit testing MVC applications. Writing unit test for your MVC controllers. Unit testing your views. Unit testing ApiControllers. Faking Data Access. Using the ASP.NET Core testing framework. End-to-end testing.

AUTOMATIC REGRESSION TESTING

What is a regression? Using an automated build system. Continuous integration. Running integration tests. Automatic regression tests. Automatically running your regression tests using GitHub Actions.



VERSION CONTROL AND TEAM COLLABORATION WITH GIT

AZURE DEVOPS VS GITHUB

Development Processes. Team Projects and Process Templates.

USING GIT

Version Control concepts. Distributed Source Control with Git. Git Clients: Command Line, Visual Studio or Visual Studio Code. Creating a local repository. Configuring your git repository. Checking the status of your repo. Staging files. Committing files, and then amending it. Comparing changes in files. Reverting commits. Finding the bad change using git bisect.

TEAM COLLABORATION WITH REMOTE REPOSITORIES

Team collaboration with remote repositories. Cloning a remote repository. Synchronizing with a remote repository. Resolving conflicts. Using Git Hooks.

WORKING IN ISOLATION WITH BRANCHES

Adding branches to your workflow. Branching Strategies - Using GitFlow. Merge vs. Rebase - keeping a linear history. Different Merge Strategies, i.e. Squash Merge. Managing your branches.

TEAM COLLABORATION WITH PULL REQUESTS

Protecting your branches with pull requests. Ensuring high quality code with Pull Requests. Versioning with Git Tags. Using Forks.

02
DAYS

UTEST

12 - 13 OCTOBER 2023

04 - 05 DECEMBER 2023

15 - 16 FEBRUARY 2024

29 - 30 APRIL 2024

LEARNING GOALS

This course guides you into the art of unit testing, where you learn to build testable code and various techniques to give your code a good spin. With unit testing, comes unit testing frameworks, we'll discuss how unit testing frameworks work and how they help you.

TARGET AUDIENCE

This course is intended for experienced programmers who are very familiar with C#.

01
DAY

UGIT

09 OCTOBER 2023

06 DECEMBER 2023

19 FEBRUARY 2024

08 APRIL 2024

LEARNING GOALS

This training will teach you about source control with Git and GitFlow.

TARGET AUDIENCE

Developers who need to use Git for Source Control.

03
DAYS

UBLZ

06 - 08 DECEMBER 2023

26 - 28 FEBRUARY 2024

15 - 17 APRIL 2024

LEARNING GOALS

Blazor is a new Microsoft Framework for building Single Page Applications. Unlike frameworks such as Angular, VueJS, and React, Blazor allows you to do this using C# and use all the skills and tools you have been using with .NET! Attend this training if you want to get a headstart with Blazor!

TARGET AUDIENCE

This training requires basic knowledge about building websites with HTML and CSS, and also some knowledge about C# and ASP.NET.

05
DAYS

UMAUI

13 - 17 NOVEMBER 2023

29 JANUARY - 02 FEBRUARY 2024

15 - 19 APRIL 2024

LEARNING GOALS

Creating a mobile app is seldom creating one app. It's creating one app per platform. Learning different platforms is time consuming. MAUI allows us to do this in a much more efficient way. One language to rule them all: C#. MAUI, which evolved from Xamarin Forms, is based upon .NET. By combining reusable C# code and MAUI UI, MAUI is able to create cross-platform native apps with all the features and power of the native platforms.

TARGET AUDIENCE

Participants of this course need to have a good understanding of C# and a notion of mobile app development.

BUILDING SINGLE PAGE APPLICATIONS WITH C# AND BLAZOR

INTRODUCTION TO WEBASSEMBLY AND BLAZOR

Building Rich Web Experiences, Past, Present and Future. Introducing Web Assembly. Web Assembly and .NET. Getting Started with Blazor - Easy! Understanding the difference between Blazor WASM and Blazor Server. Blazor Features Overview. Generating your project with Visual Studio, dotnet CLI or Visual Studio Code. Examining the generated solution and its projects.

BLAZOR DATA BINDING

A Quick Look at Razor. One Way Data Binding. Event Handling and Data Binding. Two Way Data Binding. Reporting Changes with StateHasChanged.

BLAZOR FORMS AND VALIDATION

Working with Forms in Blazor. Adding validation to your forms. Disabling the 'Submit' button when validation detects errors. Implementing custom validation in Blazor. Fluent Validation.

BLAZOR COMPONENTS

What is a Blazor Component? Building a Simple Blazor Component. Component Parameters. Conditional Rendering and ChildContent. Separating the View and View-Model. Component Data Binding. Attribute Splatting. Understanding EventCallback. Referring to Components. Styling Components.

UNDERSTANDING BLAZOR COMPONENT LIFECYCLE HOOKS

Understanding Lifecycle Hooks. Limiting unnecessary Rerendering of components with ShouldRender. Using Virtualization to limit rendering. Help Blazor with change detection using @key.

REUSING COMPONENTS WITH COMPONENT LIBRARIES

Building a Component Library. Consuming a Component Library. Using the QuickGrid Component.

SERVICES AND DEPENDENCY INJECTION

Understanding Dependency Inversion & Injection. Some Inversion of Control Containers. Blazor and Dependency Injection. Building Blazor Services.

DATA STORAGE AND MICROSERVICES

What is REST? Invoking Server Functionality with REST. Building a Simple Microservice with ASP.NET Core. What is Entity Framework Core? Generating the Database with Code First. Testing your Microservice using Postman.

COMMUNICATION WITH MICROSERVICES

Sending and receiving data. Using the HttpClient Class. IHttpClientFactory Interface. The HttpClient.JsonExtensions Methods. Taking full control with HttpRequestMessage. Retrieving Data From the Server. Storing Changes.

SINGLE PAGE APPLICATIONS AND ROUTING

What is a Single Page Application? Using Layout Components. Understanding Routing. Setting the Route Template. Redirecting to Other Pages. Sharing State between Components. Lazy Loading parts of your Blazor web site. Handling location changing events.

JAVASCRIPT INTEROPERABILITY

Why do we still need JavaScript in Blazor? Calling JavaScript from C#. Calling .NET Methods from JavaScript. Displaying a map with a JavaScript library.

SECURITY

Adding authentication to a Blazor Server application. Adding authentication to a Blazor WASM application.

BUILDING MOBILE APPS WITH .NET MAUI

INTRODUCTION TO MAUI

Mobile Development Options and Problems. A Uniform Way for Creating UIs. Creating a .NET MAUI Project.

BUILDING THE UI WITH XAML

What is XAML? XAML versus Code. Looking at XAML Basic Syntax. Understanding XAML Attached Properties. Nesting Controls. Extending XAML through Markup Extensions. Understanding Namespace Mapping. Naming Elements.

.NET MAUI CONTROLS OVERVIEW

Examining the Class Hierarchy. The Power of Composability. Presentation Controls, Command Controls, Editing Controls. Collection Controls. the Trouble with Images. Understanding Bindable Properties.

CONTROLLING THE LAYOUT

Absolute positioning using AbsoluteLayout. Flexible positioning using FlexLayout. Tabular positioning with Grid. Stacking controls with StackLayouts. Frames, ScrollView and Contentviews.

REUSABILITY WITH RESOURCES

Reusing Objects through Resources. Resource Inheritance. Resource Dictionaries. Theming your Application. Multilingual Applications.

STYLES AND TEMPLATES

Why we need Styles. Default, Implicit and Explicit Styles. Dynamic and Device styles. Styling using CSS. Theming an application. Introduction to Control Templates. Control Handlers. Effects.

DATA BINDING

The Need for Data Binding. Binding to Properties. Converting Data for Data Binding. Binding to Collections. Understanding Source and BindingContext. Cell Templates. Data Templates. Filtering, Sorting and Grouping. Compiled Bindings. Using BindableLayout.

BUILDING ADAPTIVE AND SCALABLE LAYOUTS

Fixed Versus Adaptive Layout. Working with the ViewStateManager and Adaptive Triggers.

NAVIGATION

Navigation in .NET MAUI. NavigationPage, TabbedPage, FlyoutPage and Modal Pages. Shell Applications. Route-based Navigation in Shell.

DEALING WITH DIFFERENT PLATFORMS

Shared Projects. Dependency Injection. Multi-Targetting Code. Using Platform Specific Controls. The MessagingCenter.

.NET MAUI ESSENTIALS

Clipboard, Compass, Contacts, Device Info, Email. File Picker, Geolocation. Phone Dialer, Preferences, Secure Storage, Web Authenticator.

PROCESS LIFECYCLE MANAGEMENT

When Apps Run. Handling Resume, Suspend and Termination. Supporting Different App Activation Scenarios. Splash Screens.

RUNNING IN THE BACKGROUND

Application Lifecycle. Platform-specific Considerations. Android's Activity Life Cycle and Services. iOS Backgrounding Techniques. Backgrounding in Windows.

STORING DATA

Local Storage. Working with SQLite. Using Entity Framework Core.

CONSUMING WEB SERVICES

HttpClient and WebHttpRequest Class. Serialization and Deserialization.

DATA VALIDATION

INotifyDataErrorInfo. Data Annotations. Validation through Events. Validation Templates.

MVVM

What is the MVVM Pattern? Using Commands instead of Event Handling. Defining the Model. Adding the ViewModel. Binding the View to the ViewModel. Using Behaviors.

NOTIFICATIONS

Platform-specific Notification Mechanisms. Local Notifications. Push Notifications.

JAVASCRIPT FUNDAMENTALS

JAVASCRIPT INTRODUCTION

Why is JavaScript important? What is ECMAScript? Performance. Picking the right Libraries. Developer Tools.

JAVASCRIPT LANGUAGE FUNDAMENTALS

Using Variables. Primitives and Objects. Functions: more powerful than you'd expect. Understanding Scope. Strict Mode. Error Handling. Best Practices.

JAVASCRIPT COLLECTIONS

Storing multiple values in Arrays. Useful Functions and Operators. Using Objects as Dictionaries. Sets, Maps and Others.

JAVASCRIPT CONSTRUCTORS AND CLASSES

Creating your own Objects using Constructors. Prototypes. Class syntax. Using Properties to encapsulate your fields. The 'this' keyword explained.

DEALING WITH ASYNC CODE IN JAVASCRIPT

Threading in JavaScript. Using Callbacks. Event Handling. Working with Promises. Async and Await.

STRUCTURING JAVASCRIPT APPLICATIONS AND TOOLING

Using Libraries. Content Delivery Networks. Getting Libraries with npm. Modules versus the Global Object. Using Task Runners like Gulp. Bundling and Minification Tools like WebPack. PolyFills and Transpilers like Babel and TypeScript. Tools for Code Quality.

REST SERVICES

REST. Verbs and URLs. XML and JSON format. Example with node.js and Express.

CLIENT-SIDE SERVICE CONSUMPTION

Getting data using AJAX. Fetch API. External Libraries. Vue.js Essentials. Loading Data in a Vue Application.



PROGRAMMING WITH HTML, CSS AND JAVASCRIPT

THE HTTP PROTOCOL

Http Verbs. Headers. Status Codes. Cookies. Redirection. Caching.

HTML FUNDAMENTALS

Anatomy of a page. How a page is parsed. Some important HTML elements. Styling and Behavior.

FORMS

Form Elements. How Forms Work. Useful Attributes and Functions. Validation.

HTML FUNDAMENTALS

The need for meaningful elements. Headers, content and footers. Articles and sections. Navigation elements. Meaningful figures. Dates and time.

CSS FUNDAMENTALS

Styling websites using CSS. CSS Selectors. Understanding Inheritance & Cascading behavior. Choosing the right unit.

PRINCIPLES OF WEB DESIGN

Layout and Composition. Color. Graphics. Typography. User Experience.

CSS POSITIONING

Understanding the Box Model. Flow. Display. Position.

CSS POSITIONING ADVANCED

Float. Flex Box. Grid. Page layout strategies.

RESPONSIVE WEB DESIGN WITH BOOTSTRAP

Normalizing and Resetting. The Grid System. Utility classes. Customizing look & feel. Components: navigation, popovers ...

JAVASCRIPT INTRODUCTION

Why is JavaScript important? What is ECMAScript? Performance. Picking the right Libraries. Developer Tools.

JAVASCRIPT LANGUAGE FUNDAMENTALS

Using Variables. Primitives and Objects. Functions: more powerful than you'd expect. Understanding Scope. Strict Mode. Error Handling. Best Practices.

JAVASCRIPT COLLECTIONS

Storing multiple values in Arrays. Useful Functions and Operators. Using Objects as Dictionaries. Sets, Maps and Others.

JAVASCRIPT CONSTRUCTORS AND CLASSES

Creating your own Objects using Constructors. Prototypes. Class syntax. Using Properties to encapsulate your fields. The 'this' keyword explained.

DEALING WITH ASYNC CODE IN JAVASCRIPT

Threading in JavaScript. Using Callbacks. Event Handling. Working with Promises. Async and Await.

STRUCTURING JAVASCRIPT APPLICATIONS AND TOOLING

Using Libraries. Content Delivery Networks. Getting Libraries with npm. Modules versus the Global Object. Using Task Runners like Gulp. Bundling and Minification Tools like WebPack. PolyFills and Transpilers like Babel and TypeScript. Tools for Code Quality.

REST SERVICES

REST. Verbs and URLs. XML and JSON format. Example with node.js and Express.

CLIENT-SIDE SERVICE CONSUMPTION

Getting data using AJAX. Fetch API. External Libraries. Vue.js Essentials. Loading Data in a Vue Application.

03
DAYS

UJSDEV

22 - 24 NOVEMBER 2023

14 - 16 FEBRUARY 2024

17 - 19 APRIL 2024

LEARNING GOALS

This course is the primer you need for any of your JavaScript endeavours, whether you want to build web sites, web servers with node, mobile apps, office extensions, tools, machine learning,... The list goes on.

TARGET AUDIENCE

This course is independent of the server-side technology you are using, so feel free to attend whether you use PHP, ASP.NET, Python, Ruby on Rails... A basic understanding of programming - in whatever language - is advised.

05
DAYS

UJSWEB

20 - 24 NOVEMBER 2023

12 - 16 FEBRUARY 2024

15 - 19 APRIL 2024

LEARNING GOALS

This course is about front-end (client-side) web development. It's what the user sees, touches and experiences in the browser. You'll learn how to build modern, interactive websites by learning the fundamentals of HTML, CSS, and JavaScript. This course is about the browser not the server.

TARGET AUDIENCE

This course is independent of the server-side technology you are using, so feel free to attend whether you use PHP, ASP.NET, Python, Ruby on Rails... A basic understanding of programming - in whatever language - is advised.

03
DAYS

UANG

23 - 25 OCTOBER 2023

11 - 13 DECEMBER 2023

12 - 14 FEBRUARY 2024

02 - 04 APRIL 2024

21 - 23 MAY 2024

LEARNING GOALS

By using a componentized approach, Angular is better equipped than ever to build performant data-driven web-apps. While Angular takes care of data binding, navigation and server communication; TypeScript allows you to use the most advanced features JavaScript has to offer on any browser.

TARGET AUDIENCE

Good understanding of JavaScript, HTML and CSS and a notion of node.js and npm.

BUILDING WEB APPS WITH ANGULAR AND TYPESCRIPT**INTRODUCTION TO ANGULAR**

Evolution in Web App Development. Basic Node.js and Angular project structure. Angular Core and Modules. TypeScript, Dart, Plain Old JavaScript.

STRONGLY TYPED JAVASCRIPT WITH TYPESCRIPT

Writing Application-Scale JavaScript. Type-Safe JavaScript Development with TypeScript. Typescript configuration. Implementing Types, Classes and Inheritance. Namespaces and Modules.

CORE CONCEPTS

Components. Standalone Components. Modules. Services. Angular CLI and other tools.

DATA BINDING

The Importance of Binding. Component to View. Structural Directives. Local Template Variables. Value Conversion. View to Component.

COMPONENTS

Using Multiple Components. Input and Output. ViewChild and ContentChild. EventEmitter. Directive Life Cycle.

ATTRIBUTE AND STRUCTURAL DIRECTIVES

Attribute Directives. Directive Composition. Structural Directives. Built-in Directives. Custom.

DEPENDENCY INJECTION AND PROVIDERS

Terminology. Dependency Injection Basics. Services. Providers. Factories. Injection Tokens.

PIPES

Using a Pipe. Built-in Pipes. Custom Pipes. Pure versus Impure.

WORKING WITH FORMS

What's in a Form. Responding to Changes. FormBuilder. Data Validation.

TALKING TO THE SERVER

Sending and Receiving Data. HTTPClient Module. HTTP Interceptors. Observables versus Promises.

BUILDING A SINGLE PAGE APPLICATION

What is a SPA. Router Module. Route Configuration. Parent-Child Navigation. Route Guards.

03
DAYS

UANGA

06 - 08 NOVEMBER 2023

05 - 07 FEBRUARY 2024

08 - 10 APRIL 2024

27 - 29 MAY 2024

LEARNING GOALS

This training will take you from being an average Angular developer to a great one. You'll gain more insight in the workings of Angular and you'll explore more advanced programming techniques like RxJS, Redux and Advanced Forms. This course is constantly being updated to the latest version of Angular, currently Angular 13.

TARGET AUDIENCE

This course targets professional web developers who really want to master Angular. Participants of this course need to have a decent understanding of Angular and TypeScript.

MASTERING ANGULAR**REACTIVE EXTENSIONS FOR JAVASCRIPT**

What are Reactive Extensions. Observable and Observer. Subjects. Cold versus Hot Observables. Making Async Calls. Combining Observables. Error Handling. Dealing with Back Pressure.

CHANGE DETECTION

Zones. How Change Detection Works. Immutables and Observables. Signals.

STATE MANAGEMENT WITH NGRX

The Redux Pattern. Major Principles. The Store, Actions and Reducers. Using RxJS within Redux. Efficient Slicing. Using Async Pipes. Tools.

BRINGING REDUX TO ANGULAR WITH NGRX

Using RxJS within Redux. Efficient Slicing. Using Async Pipes.

THE NGRX STORE

Responsibilities. Normalizing Data. Initializing the Store.

NGRX REDUCERS

Useful Operators. Splitting Up Reducers. NgRx Effects.

SMART AND DUMB COMPONENTS

Characteristics of Dumb Components. Characteristics of Smart Components. Performance Impact.

STRUCTURING AN APPLICATION

Domain, Routing, Core and Shared Modules. Exporting and Providing. Clean Imports. Creating Libraries.

FORMS ADVANCED

Dynamically Adding Elements. FormArray. Nested Forms.

ANGULAR UNIVERSAL

AOT versus JIT compilation. Server-side rendering with Angular Universal. Hot-Loading with pre-boot.

TESTING

Challenges. Unit Testing. Jasmine Features. Karma. Writing Testable Code. Getting Started. Isolated Tests. Angular Testing Utility APIs.

CUSTOM COMPONENTS WITH SVG AND CANVAS

SVG Graphics. Canvas Graphics. Animating Graphics.

ANGULAR ELEMENTS

Custom Elements. Transforming Angular Components to Custom Elements. Packaging and Using your Custom Element.

DEVELOPING WEB APPS WITH REACT

INTRODUCING REACT

The Evolution of Web Development. Components Everywhere. Combining React with other Libraries. React Tooling.

REACT FUNDAMENTALS

React App Structure. What is JSX. JavaScript Expressions. JSX Tips and Tricks.

STATE AND PROPS

State in React Components. Props and Data Flow. Stateful and Stateless Components. Transferring Props.

HOOKS

Functional Components. State Hook. Effect Hook. Things to Know when Using Hooks. Building your own Custom Hooks.

WORKING WITH FORMS

What is in a Form? Value Binding to State. Controlled vs Uncontrolled Components. Sanitizing and Validating Input. Using Libraries to Manage your Forms.

TALKING TO THE SERVER

Fetch API. When and Where to Fetch Data? Using the Effect Hook.

COMPONENT COMPOSITION

props.children. Working with Context and the useContext Hook. Rendering Dynamic Content with Render Props. Higher Order Components.

ROUTING

Introducing React Router. Paths and Parameters. Nesting Routes. Data APIs in React Router. Lazy Loading. Component Lifecycle.

PERFORMANCE

Virtual DOM. Using Memoization and the Callback Hook. Avoiding Computational Work. Avoiding Re-rendering. Pitfalls.

STATE MANAGEMENT

Externalizing State from Components. Redux: the State Management Pattern of Champions. Mobx: a Simpler, more Lightweight Alternative to Redux.

REDUX

What is Redux? Actors: Store, Actions, Reducers. View and Hooks. Asynchronous Actions. Tools.

JEST AND REACT

What is Jest? Creating Tests with Jest. Asynchronous Methods. Mocking. Testing React components using Snapshots.

MOBILE DEVELOPMENT WITH REACT NATIVE

INTRODUCTION TO REACT NATIVE

The World of Mobile Development. What is React Native? Why Choose React Native? Setting up a Development Environment.

GETTING STARTED WITH REACT NATIVE

Project Structure. Debugging an Application. Components. JSX. Building our first page. Adding application state. Reacting to user input.

LAYOUT AND STYLING

Styling and Layout in Mobile Applications. Layout with Flexbox. The React Native Styling system. Adding Animations to enhance User Experience.

MANAGING DATA AND RESOURCES

Data in Mobile Apps. Loading resources from an API. Working with ListViews. storing offline data with AsyncStorage. Working with Assets.

ROUTING AND NAVIGATION

Introducing React Navigation. Basic routing with Stack Navigation. Bringing navigation to the foreground with Tab Navigation. Drawer Navigation: Save screen space while retaining easy navigation. Combining Navigators for a better flow in your app.



BUILDING WEB APPS WITH VUE.JS

INTRODUCTION TO VUE

The Evolution of Web Development. Components Everywhere. Vue Tools and Ecosystem.

VUE FUNDAMENTALS

Vue App Structure. The Vue Instance. Component Basics. Lifecycle Hooks.

DATA BINDING

The Importance of Binding. Directives. Event Handling. Conditionals and Loops. Computed Properties and Watchers. Filters. Class and Style Bindings.

VIEWMODEL IN VUE

Adding Interactivity. Methods. Computed Properties. Watchers.

COMPONENTS

Using Multiple Components. Passing Data with Props. Emitting Events. Content Slots.

WRITING SERVICES

What are Services? Provide / Inject.

TALKING TO THE SERVER

Fetch API. Where and When to Fetch Data? Loading and Error Indicators.

ROUTING

Vue Router Library. Routing Directives. Routing Configuration. Nested Routes. Navigation Guards.

COMPOSITION AND REUSABILITY

Mixins. Composition API.

03
DAYS

UREACT

11 - 13 DECEMBER 2023

26 - 28 FEBRUARY 2024

22 - 24 APRIL 2024

LEARNING GOALS

In this training developers will learn how to use React and its component based development to create rich and dynamic websites.

TARGET AUDIENCE

This course targets professional web developers who are familiar with JavaScript.

02
DAYS

UREACTN

14 - 15 DECEMBER 2023

29 FEBRUARY - 01 MARCH 2024

25 - 26 APRIL 2024

LEARNING GOALS

React Native aims to reduce the complexity of cross-platform development by letting React developers reuse a lot of the skills they already possess.

TARGET AUDIENCE

This course targets professional web developers who are familiar with JavaScript.

02
DAYS

UVUE

22 - 23 FEBRUARY 2024

30 - 31 MAY 2024

LEARNING GOALS

Vue aims to be an approachable and progressive framework for building user interfaces. In this 2-day training developers will learn how to use Vue and its component-based development.

TARGET AUDIENCE

Professional web developers who are familiar with JavaScript and HTML.

05
DAYS

USPOP

06 - 10 NOVEMBER 2023

15 - 19 JANUARY 2024

26 FEBRUARY - 01 MARCH 2024

08 - 12 APRIL 2024

27 - 31 MAY 2024

LEARNING GOALS

You will leave the training with the skills to build powerful collaboration and intranet environments in SharePoint Online while integrating many Microsoft 365 products like Microsoft Teams, Power Apps and Power Automate.

TARGET AUDIENCE

This course targets both IT professionals and business users interested in learning the ins and outs of the SharePoint Online functionalities. No prior SharePoint Online knowledge is required.

SHAREPOINT ONLINE FOR POWER USERS

POSITIONING SHAREPOINT ONLINE AND MICROSOFT 365

Understanding Microsoft 365 & Office 365. Overview of Microsoft 365 Services. Microsoft 365 & Office 365 Licensing.

MODERN SHAREPOINT SITES

What is a SharePoint Site? Creating and configuring. SharePoint Sites. Microsoft 365 Groups. Team Sites vs. Communication Sites. Classic vs Modern Sites. Configuring Sites. Site Templates. Changing the look and feel. Site Usage.

BUILDING MODERN COLLABORATION & INTRANET ENVIRONMENTS

Structuring SharePoint Sites. What are Site Collections? What are Hub Sites? Hub Site Navigation. Shared Look and Feel. Hub Permissions. Hub Site Content Aggregation. Configuring the Home Site. Planning Global Navigation.

CONTENT MANAGEMENT IN SHAREPOINT ONLINE AND MICROSOFT LISTS

Fundamentals of Lists and Libraries. Comparing Lists in SharePoint Online, Microsoft Teams and Microsoft Lists. Working with metadata and different column types. Terms and Term Sets. Working with the Details Pane. Filtering data in a List or Library. Managing what you see with views. Formatting views in a rich and customized way. Exporting and Importing Data.

DOCUMENT MANAGEMENT

Working with Views in Modern Document Libraries. Keep track of different versions. Configure check-out and Approval. Receive email Alerts. Co-Authoring on Office documents. Recycle Bin.

MANAGING CONTENT TYPES

Providing reusable metadata with Site Columns. Terms and TermSets Content Type guidelines. Working with Document Templates. Publishing of Enterprise Content Types with the Content Type Gallery. Grouping documents in Document Sets.

WORKING WITH MODERN PAGES

Working with Modern Site Pages. Enriching your pages with web parts. Authoring and publishing a Modern Page. Scheduling. Publishing News. Page approval. Multilingual Pages.

ONEDRIVE FOR BUSINESS

Store Work Files in OneDrive. OneDrive Mobile Apps. Synchronize your documents with different devices. Files On-Demand.

MICROSOFT TEAMS

Microsoft Teams Feature Overview: Chat, Teams, Meetings, Phone System. Connecting a Team to an Microsoft 365 Groups. Desktop, Mobile and Web Teams Client. Teams, Channels, Tabs, Apps and Connectors. Microsoft Teams configuration options. Integrate SharePoint Online in Microsoft Teams with Tabs. Using the Lists app in Microsoft Teams. Microsoft Teams Governance and Lifecycle Management.

VIVA CONNECTIONS

Introducing Microsoft Viva Connections. Configuring SharePoint Online Prerequisites. Setup Viva Connections. The Viva Connections Feed. Authoring a Microsoft Viva Connections Dashboard in SharePoint. Branding and Deploying the Viva Connections app in Microsoft Teams.

USER MANAGEMENT & PERMISSIONS

Authentication and Authorization. SharePoint Security Architecture. Managing Membership with Microsoft 365 Groups. Sharing Content in SharePoint. Configure and Manage Sharing Settings. External Sharing. Guest and Anonymous Access.

MICROSOFT SEARCH

What is Microsoft Search? Search Query Syntax. Managing the Search Schema. Manage Bookmarks, Acronyms, Floor Plans, Locations and Q&A. Index third-party data with Microsoft Graph Connectors. Customize the end-user UX: Verticals, Result types and Search Result Layouts.

COMPLIANCE FEATURES

Compliance Overview. Keeping necessary data with Data Retention. Protecting important information with Sensitivity Labels. Prevent Data Disclosure with Data Loss Prevention.

MICROSOFT POWER APPS

What is Microsoft Power Apps?. Power Apps Flavours. Power Apps pricing. Creating a Power App from a template, from a data source or from blank. Adding Screens and controls to your app. Building custom SharePoint list forms with Power Apps. Adding a Power App as a webpart to a SharePoint page.

MICROSOFT POWER AUTOMATE

What is Microsoft Power Automate? Power Automate pricing. Using out-of-the-box flows in SharePoint Online. Building flows from a template. Working with modern approvals. Building flows from scratch: Adding triggers and actions. Running and managing flows.

02
DAYS

UM365AI

19 - 20 OCTOBER 2023

18 - 19 JANUARY 2024

11 - 12 APRIL 2024

LEARNING GOALS

AI Builder is a user-friendly tool that allows you to easily create custom Artificial Intelligence (AI) models. It is designed to be accessible to users without extensive technical expertise.

Microsoft Syntex allows you to extract information and insights from unstructured data and documents.

TARGET AUDIENCE

This course is targeted at IT Professionals and Business users who want to learn how to extend the functionalities in the Power Platform & SharePoint with the help of Artificial Intelligence.

BUILDING SMART SOLUTIONS WITH MICROSOFT 365 AI BUILDER AND MICROSOFT SYNTAX

WHAT IS ARTIFICIAL INTELLIGENCE

What is AI? How to use AI Efficiently.

INTRODUCING AI BUILDER IN POWER PLATFORM

What is AI Builder. Introducing the Power Platform. Licensing Requirements for AI Builder. AI Builder Custom and Prebuilt Models. AI Model Deployment Pipeline.

TRAIN YOUR MODEL WITH MICROSOFT DATAVERSE

Discovering Text-based AI Models: Sentiment, Text Translation, Language Detection, Entity Extraction... What is Microsoft Dataverse? Loading data in Microsoft Dataverse Tables. Train your Model.

USING AI MODELS IN POWER PLATFORM

Import Data to a Power Automate Flow. Apply AI Model and Process Results. Using Power Apps Prebuilt AI Controls. Extracting Model Results in Canvas Apps.

AI BUILDER PREDICTION MODELS

Import Structured Data in a Table. Predict Future Outcomes using a Custom Model. Use Model Results Throughout Microsoft 365.

DOCUMENT-BASED MODELS

Compare Document Processing Models. Collect Data and Train Model. Use any Model in Apps or Flows.

SHAREPOINT DOCUMENT PROCESSING IN MICROSOFT SYNTAX

Microsoft Syntex Introduction. Setup SharePoint for Syntex. Microsoft Syntex Model Types. Structured Document Processing. Classify and Detect Unstructured Data. Model Metadata Enhancement with Taxonomy. Implement and use Models in SharePoint.

IMAGE DETECTION AND CLASSIFICATION

Classifying vs Detecting Models. Prepare Images with the Lobe App. Train model by Classifying and Detecting Images.

MANAGING AI BUILDER MODELS

Manage, Retrain and Publish Different Model Versions. Share and Distribute your Model. Continuously Improve your Model. Secure your AI Models with Role Based Security.

DEVELOPING WITH THE SHAREPOINT FRAMEWORK

WHAT IS SHAREPOINT FRAMEWORK

SharePoint Framework overview. SharePoint Framework tools. Key SPFx features. Road map.

PREPARING YOUR MACHINE FOR THE SHAREPOINT FRAMEWORK

Visual Studio Code. Introducing Node.js, Yeoman, Gulp and Webpack.

BUILDING CLIENT-SIDE WEB PARTS

Client-side Web Parts Fundamentals. Web Part Project Structure. Full Page Apps. Creating Teams Tabs with SPFx.

STRONGLY TYPED JAVASCRIPT WITH TYPESCRIPT

What is Typescript? Typescript Transpilation and Configuration. Language Features. Namespaces and Modules.

WEB PART PROPERTIES

The Property Pane. Custom Property Controls. Validation. Property Pane Life Cycle.

LOADING SHAREPOINT DATA IN SPFX

The REST Endpoints. Using the SPClient to Get Data. PnPjs. SharePoint List Subscriptions (webhooks).

LOADING OTHER FRAMEWORKS

npm Modules. Loading JavaScript libraries. CDN. Bundling and Externals.

DEPLOYMENT OVERVIEW

The App Catalog. Versioning. Deploying SharePoint Assets & Extensions. Tenant-wide, Site Collection or Site specific deployments. Deploying to Microsoft Teams.

USING AND BUILDING REACT COMPONENTS FOR THE SHAREPOINT FRAMEWORK

React App Structure. What is JSX? JavaScript Expressions. JSX Tips and Tricks. React Component.

REACT COMPONENTS DEEP-DIVE

Multiple Components. Transferring Props. Component State & Lifecycle. Form Components. React Virtual DOM.

BRAND YOUR CLIENT WEB PARTS WITH SASS AND FLUENT UI

Introducing SASS. SASS Variables, Mixins, Nesting, functions, ... SASS Preprocessing. Fluent UI styles. Fluent UI Fabric components.

CONNECTING TO MICROSOFT GRAPH AND ENTRA ID SECURED API'S

Register Custom Application on Entra ID. The Microsoft Graph API. Consuming Microsoft Graph. API Permissions in SharePoint. Using Other Protected API's. Domain Isolated Web Parts.

SHAREPOINT FRAMEWORK EXTENSIONS

Creating an Application Customizer. Creating a Field Customizer. Creating a Command Set. Executing Scripts. Build your own Form. Build Adaptive Card Extensions.

USING THE GRAPH TOOLKIT WITH SPFX

Graph Toolkit. React Components. Building Teams Tab. Customizing Graph Toolkit Components. Authentication Providers.

DYNAMIC DATA

Writing a Data Provider and Data Consumer. Data Serialization. Handling Data Updates.

UNIT TESTING

Unit testing with Enzyme, Sinon and Chai. Running tests using Karma & Jest.

TIPS AND TRICKS

Debugging. Application Insights. Custom Gulp Tasks. Bundles in WebPack.

05
DAYS

USPFX

20 - 24 NOVEMBER 2023

25 - 29 MARCH 2024

LEARNING GOALS

In this deep-dive development course we will learn the way to efficiently work with Node.js, React and Typescript. Using this tool set we can build modern SharePoint web parts, Teams tabs, Viva Connections Cards and other extensions to Office 365. We will see how to connect to various data sources like Microsoft Graph, Microsoft Identity Platform, Azure Functions, etc.

TARGET AUDIENCE

Participants ideally have some development experience. No TypeScript or JavaScript experience is required, but recommended. Knowing how to use SharePoint is advised.

MODERN DEVELOPMENT WITH SHAREPOINT ONLINE AND MICROSOFT 365

INTRODUCTION TO SHAREPOINT AND O365 DEVELOPMENT

Microsoft 365 Overview. SharePoint Development Options. Overview of Microsoft 365 APIs.

MICROSOFT IDENTITY PLATFORM

Microsoft Identity Platform Overview. Registering your Apps. OAuth Authentication Flows. User & Application Authentication. Microsoft Authentication Libraries (MSAL).

MICROSOFT GRAPH

The Microsoft Graph API: Mail, Contacts, Calendar, People, Teams... The Microsoft Graph SDK. Graph Extensions. Graph Webhooks.

CUSTOMIZING MICROSOFT SEARCH WITH MICROSOFT GRAPH

Verticals, Result Types, Search Result Layouts, Filters and Microsoft Graph Connectors. Querying Data with the Search API. Indexing External Data with the Search API.

CLIENT SIDE DEVELOPMENT USING CSOM

Authentication with CSOM. Consuming SharePoint Data. CSOM for JavaScript.

REST AND ODATA

The SharePoint REST APIs. Authentication. OData Querying Syntax. Batch Processing. Digest Tokens.

INTRODUCTION TO SHAREPOINT FRAMEWORK

SPFx Overview. The SharePoint Framework Toolset: Yeoman, npm, gulp, TypeScript and React. SPFx Roadmap.

BUILDING CLIENT-SIDE WEB PARTS WITH SHAREPOINT FRAMEWORK

Client-side Web Part Fundamentals. SPFx Project Structure. Adding multiple Web Parts to a Project. Creating Full Page Apps.

SPFX DEPLOYMENT OVERVIEW

What is an App Catalog? Deploying your Bundle and Package. Tenant-wide, Site Collection or Site Specific Deployments.

THE FLUENT UI FRAMEWORK

Branding your Applications with Fluent UI Framework. Fluent UI Styles. Fluent UI components.

USING THE MICROSOFT GRAPH TOOLKIT

Graph Toolkit. React Components. Building Teams Tab. Customizing Graph Toolkit Components. Authentication Providers.

STYLING YOUR SHAREPOINT SITES

Creating Site Templates. Extracting Site Templates with PowerShell. Formatting Columns & Views.

RESPONDING TO LIST EVENTS WITH SHAREPOINT WEBHOOKS

Webhook Subscriptions and Event Notifications. Getting Change Details. Debugging Webhooks.

MICROSOFT 365 PATTERNS AND PRACTICES - PNP

The PnP Initiative. Using PnP Core in your Applications. Simplifying Authentication using the PnP IdentityModel. Using the PnP PowerShell CmdLets.

REMOTE PROVISIONING AND REMOTE TIMERJOBS WITH PNP

Why do we need (Remote) Provisioning? The PnP Provisioning Engine. Building Remote Timerjobs.

AZURE UTILITIES

Asynchronous Processing with Azure Queues. Delegate Functionalities to Azure Functions. Application Insights.

MICROSOFT TEAMS DEVELOPMENT OVERVIEW

Options for creating Microsoft Teams Apps. The Teams SDK. Adaptive Cards. Microsoft Teams Toolkit. App elements: Tabs, Bots, Connectors, Message Extensions.

LOW-CODE APP DEVELOPMENT WITH POWER APPS

Auto-generating Apps from your Data. Using Power Apps Studio. Working with Data Connections. Adding screens and Controls. Introduction to Edit- and Detail-forms. Using Power Apps in SharePoint & Teams.

AUTOMATING BUSINESS PROCESSES WITH POWER AUTOMATE

Start a Flow for a SharePoint List. Start a Flow on a Schedule. Adding Conditions. Monitoring Flows.

CREATING OFFICE ADD-INS AND OFFICE SCRIPTS

Introduction to Office Add-ins. Supported Applications. User Experience with Task Panes, Content, Mail Add-ins and Custom Ribbon Buttons. The Office API. Automate Excel Tasks with Office Scripts.

05
DAYS

USPOAP

06 - 10 NOVEMBER 2023

29 JANUARY - 02 FEBRUARY 2024

15 - 19 APRIL 2024

LEARNING GOALS

Microsoft 365 offers new and modern ways to develop for SharePoint, Microsoft Teams and other parts of Microsoft 365, following the general industry tendency towards more client-side development. This course sets you up with the knowledge and best practices on the tools and techniques needed to add your creations to the Microsoft 365 ecosystem: going from the client-side object model, to remote scripting and PnP, to SharePoint Framework and Microsoft Teams.

TARGET AUDIENCE

Developers who want to automate or extend Microsoft 365 or who want to integrate their applications with Microsoft 365. Being familiar with .NET and JavaScript is required.

04
DAYS

U0365A

23 - 26 OCTOBER 2023

18 - 21 DECEMBER 2023

19 - 22 FEBRUARY 2024

15 - 18 APRIL 2024

LEARNING GOALS

Microsoft 365 and Office 365 deliver the power of cloud productivity to businesses of all sizes, helping save time and money. In this course, you will learn about the main Office 365 services: Exchange Online, SharePoint Online, Teams and Microsoft Entra ID.

TARGET AUDIENCE

This course is designed for experienced IT Professionals, IT Decision Makers, Administrators, ... who will be responsible for configuring and managing an Office 365 environment.

03
DAYS

U0365B

16 - 18 OCTOBER 2023

11 - 13 DECEMBER 2023

12 - 14 FEBRUARY 2024

02 - 04 APRIL 2024

13 - 15 MAY 2024

LEARNING GOALS

With Microsoft Intune you can manage all devices in your organization: mobile devices (Android, iOS), Windows, Linux and Mac devices. Intune helps you to configure and control machines, deploy apps and keep your data secure. In this course you will learn about all the aspects of the Intune service.

TARGET AUDIENCE

This course is intended for IT professionals responsible for managing devices in the cloud.

CONFIGURING AND ADMINISTERING MICROSOFT 365

UNDERSTANDING OFFICE 365

Introduction to Microsoft 365. Key Office 365 Features. Office 365 Security & Privacy.

MICROSOFT CLOUD OFFERINGS

Microsoft Entra ID. Office 365. Intune. Security. Enterprise Mobility and Security. Microsoft 365.

MANAGING OFFICE 365

Managing Clients. Deploying Microsoft 365 Apps. Microsoft 365 Admin Center. Connecting to Office 365 with PowerShell and/or Office365 CLI.

MICROSOFT ENTRA ID

Microsoft Entra ID Overview. Microsoft Entra ID Editions. Add your domain to Entra ID. User and Group Management. Managing Entra ID with PowerShell. Entra ID Security Roles. Microsoft Entra External ID.

MICROSOFT ENTRA ID SIGN-IN OPTIONS

Azure AD Connect. Directory Synchronization. Password Synchronization. Pass-Through Authentication. Federation.

EXCHANGE ONLINE

Exchange Online Feature Overview. Management Tools. Role-based Access Control. Creating and Managing Recipients. Exchange Online Archiving. Exchange Online Transport Rules.

MICROSOFT 365 GROUPS

Microsoft 365 Groups Overview. Creating Microsoft 365 Groups. Microsoft 365 Group Connectors. Microsoft 365 Groups Administration.

MICROSOFT TEAMS

Microsoft Teams Feature Overview. Teams Clients. Teams Admin Tools. Teams Policies. Communication Services: Presence, Chat, Audio/Video. Meetings, Webinars and Live Events. Cloud Voice: Phone System, Call Queues, Dial Plans. Collaboration Services: Teams, Channels, Tabs, Apps and Connectors. External Access and Guest Users.

SHAREPOINT ONLINE ARCHITECTURE

Modern SharePoint Team Sites and Communication Sites. Connecting Environments with Hub Sites. Self Service Site Creation Governance. Building Modern Collaboration & Intranet Environments. SharePoint Lists and Libraries.

SHAREPOINT ONLINE ADMINISTRATION

External Access. SharePoint Migration Tool. Content Services: Term Store, Content Type Gallery. SharePoint Modern Search.

MICROSOFT 365 SECURITY

Microsoft Defender for Office 365. Anti-malware Protection. Anti-spam Protection. Anti-phishing and Anti-spoofing. Email Authentication: SPF, DKIM and DMARC. Attack Simulator. Safe Attachments and Safe Links. Threat Protection for Collaboration. Threat Protection Reports and Secure Score.

MICROSOFT 365 COMPLIANCE

Microsoft Purview Compliance Portal Overview. Information Protection: Sensitivity Labels and Data Loss Prevention. Data Lifecycle Management: Retention Labels and Policies eDiscovery. Auditing and Alert Policies. Compliance Score.

MICROSOFT ENDPOINT MANAGER: CONFIGURING DEVICES WITH MICROSOFT INTUNE

INTUNE OVERVIEW

Intune Subscriptions. Intune Management. Mobile Device Management (MDM). Mobile App Management (MAM). Microsoft Entra ID. Role-Based Access Control (RBAC).

DEVICE ENROLLMENT

Device Enrollment. Device Management Capabilities. Enrollment Options. Windows Enrollment. Android Enrollment. iOS Enrollment.

DEVICE CONFIGURATION

Configure Device Profiles. Configure Device Features. Configure Device Restrictions. Configure Settings: Email, VPN, Wi-Fi. Administrative Templates. Upgrade Editions. Kiosk Devices.

APP MANAGEMENT

App Lifecycle. Add apps to Intune: Store Apps - Office 365 - Web Apps - LOB Apps - Win32 Apps - PowerShell Scripts. Monitor Apps. App Configuration Policies.

DEVICE AND APP PROTECTION

Device Compliance Policies. App Protection Policies. Windows Information Protection. Conditional Access.

ENDPOINT PROTECTION

Endpoint Protection. Microsoft Defender for Endpoint. Integration between Intune and Defender for Endpoint. Enforce Compliance with Conditional Access. Remediate Vulnerabilities.

DEVICE MANAGEMENT

Lock, Restart or Remove Device. Locate Lost Device. Logout or Remove User. Bypass Activation Lock. Reset Passcode. Remote Control Mobile Devices. Synchronize Device.

KIOSK DEVICES

Windows Kiosk Devices. Android Kiosk Devices. iOS Kiosk Devices.

WINDOWS AUTOPILOT

Windows Autopilot Overview. Windows Autopilot Requirements. Deployment Scenarios. Administering Windows Autopilot.



MASTERING MICROSOFT CLOUD CYBERSECURITY

CLOUD SECURITY OVERVIEW

Threat Landscape. Common Threats and Attack Types. The Defender's Dilemma. Identity and Access Management. Threat Protection. Security Management. Information Protection.

SECURING YOUR CLOUD IDENTITIES

Multi-Factor Authentication. Privileged Identity Management. Identity Protection. Conditional Access.

MICROSOFT DEFENDER FOR IDENTITY

Microsoft Defender for Identity Features. Configuring Defender for Identity. Protecting Your Accounts. Identify Threats: Reconnaissance and Lateral Movement. Detect Pass-the-Hash and Pass-the-Ticket Attacks.

MICROSOFT DEFENDER FOR OFFICE 365

Protect Against Malware, Spam, Phishing, Spoofing. Email Authentication: SPF, DKIM and DMARC. Attack Simulator. Safe Attachments and Safe Links. Threat Protection for Collaboration: SharePoint, OneDrive and Teams. Secure Score.

MICROSOFT DEFENDER FOR ENDPOINT

Protect Your Devices. Onboarding Devices. Endpoint Detection and Response. Threat and Vulnerability Management. Secure Score for Devices.

MICROSOFT DEFENDER FOR CLOUD APPS

Cloud Discovery. App Connectors. Control Access to Apps with Policies. Conditional Access App Control. Protect Sensitive Information. Detect and Stop attacks with Microsoft 365 Defender Protect Your Environment. Onboard Security Services. Attack Investigation. Threat Hunting.

INFORMATION GOVERNANCE AND PROTECTION

Microsoft Purview Compliance Portal Overview. Sensitive Information Types. Trainable Classifiers. Sensitivity Labels. Data Loss Prevention. Retention Labels and Policies. Communication Compliance.

INFORMATION INSIGHTS AND DISCOVERY

eDiscovery. Auditing and Alert Policies. Compliance Manager. Data Classification. Insider Risk Management. Privacy Management.

AZURE MONITOR

Azure Monitoring Overview. Azure Monitor. Azure Advisor. Activity Log. Alerts and Metrics. Workbooks.

AZURE LOG ANALYTICS

Azure Monitor Logs. Log Analytics Workspace. Data Collection. Log Data Structure. Workspace Design.

KUSTO QUERY LANGUAGE

Kusto Query Language. Writing Basic Log Queries. Filter Data. Aggregate Data. Using Variables. Joining Multiple Tables in a Single Query. Functions and Computer Groups.

MICROSOFT DEFENDER FOR CLOUD

Microsoft Defender for Cloud. Defender for Cloud Tiers and Pricing. Security Policies. Security Recommendations and Secure Score. Just in Time VM Access. Adaptive Application Controls. File Integrity Monitor. Adaptive Network Hardening. Security Alerts and Incidents.

MICROSOFT SENTINEL

Microsoft Sentinel Overview and Pricing. Activate Microsoft Sentinel. Onboard Security Sources: Data Connectors and Content Hub. Sentinel Analytics and Investigation. Security Orchestration Automation. Threat Hunting. Workbooks and Notebooks.

05
DAYS

UCSEC

20 - 24 NOVEMBER 2023

29 JANUARY - 02 FEBRUARY 2024

08 - 12 APRIL 2024

LEARNING GOALS

Securing your cloud infrastructure can be complex and challenging in today's world where users are working from any location on any type of device. To support organizations in protecting themselves from several kinds of attacks, Microsoft offers a broad range of cloud security services targeted at both Microsoft Azure and Microsoft 365. In this training you will learn how to investigate, respond to, and hunt for cyberthreats. You will leave the training with the skills to reduce your organizational risk, respond rapidly to active attacks and advise on improvements to threat protection practices.

TARGET AUDIENCE

This course is intended for system administrators and security specialists responsible for securing and analyzing the cloud IT environment.

MANAGING MICROSOFT TEAMS

EXPLORE MICROSOFT TEAMS

Explore capabilities in Microsoft Teams. Microsoft Teams architecture. Integration with Microsoft 365 Groups, Power Platform, SharePoint, OneDrive and Exchange. Understand Microsoft Teams certified solutions.

PLAN AND DEPLOY MICROSOFT TEAMS

Understand Teams management tools. Plan for Teams rollout. Plan for Teams licensing.

IMPLEMENT LIFECYCLE MANAGEMENT AND GOVERNANCE FOR MICROSOFT TEAMS

Plan for lifecycle management: Groups Creation, Expiration and Naming Policies. Plan policy assignment for users and groups. Create and manage teams templates.

MONITOR YOUR MICROSOFT TEAMS ENVIRONMENT

Monitor Microsoft Teams usage reports. Microsoft Adoption Score. AAD Access Reviews.

MANAGE ACCESS FOR EXTERNAL USERS

Work with external users in Microsoft Teams. Manage guest access in Microsoft Teams.

IMPLEMENT SECURITY FOR MICROSOFT TEAMS

Configure conditional access. Multifactor authentication. Safe Attachments and Safe Links.

IMPLEMENT COMPLIANCE FOR MICROSOFT TEAMS

Sensitivity labels. Retention policies. Data Loss Prevention policies. Deploy communication compliance. Create and manage compliance recording policies.

PLAN AND CONFIGURE NETWORK SETTINGS FOR MICROSOFT TEAMS

Examine network requirements for Microsoft Teams. Configure tenant data for Call Quality Dashboard reports. Assess network readiness.

CREATE AND MANAGE TEAMS

Create and manage teams. Configure dynamic membership. Archive restore and delete a team.

MANAGE COLLABORATION EXPERIENCES FOR CHAT AND CHANNELS

Create and manage channels. Create and manage Teams policies for channels. Create and manage messaging policies.

MANAGE APPS FOR MICROSOFT TEAMS

Explore apps in Microsoft Teams. App Policies. Publish custom apps to Microsoft Teams.

MANAGE MEETINGS AND EVENTS EXPERIENCES

Explore meetings and events. Configure meeting settings and policies. Configure and manage Microsoft Teams Room and Teams devices Plan for Teams Rooms deployment. Manage devices in Microsoft Teams.

MANAGE PHONE NUMBERS AND SETTINGS

Evaluate Microsoft Teams calling solutions. Get phone numbers with Calling Plans. Manage phone numbers and voice settings.

MANAGE TEAMS PHONE SETTINGS AND POLICIES

Explore Teams Phone. Call queues and auto attendants. Calling policies.

TROUBLESHOOT AUDIO, VIDEO, AND CLIENT ISSUES

Troubleshoot Teams. Use Power BI to analyze Call Quality Dashboard data.

03
DAYS

MS-700

16 - 18 OCTOBER 2023

11 - 13 MARCH 2024

LEARNING GOALS

In this course, you will learn about various Teams management tools, security and compliance feature for Teams, network requirement for Teams deployment as well as different Teams settings and policies for managing collaboration and communication experience in Teams.

TARGET AUDIENCE

A Microsoft Teams administrator plans, deploys, configures, and manages Microsoft Teams to focus on efficient and effective collaboration.

03
DAYS

UPSHELL

13 - 15 NOVEMBER 2023

15 - 17 JANUARY 2024

04 - 06 MARCH 2024

22 - 24 APRIL 2024

LEARNING GOALS

PowerShell is a powerful tool for automating tasks and managing systems across different platforms. In this course you will learn to work with objects, connect to remote systems and write basic scripts. PowerShell can be used to manage your on-prem Windows and Linux systems as well as many cloud services like Exchange Online, SharePoint Online and Teams.

TARGET AUDIENCE

System Engineers who are responsible for the management and configuration of multiple Servers, Microsoft applications or a Microsoft Cloud Infrastructure. Developers interested in automation of test environments, interfacing with C#, embedding PowerShell in their application.

05
DAYS

UPSHELLA

13 - 17 NOVEMBER 2023

15 - 19 JANUARY 2024

04 - 08 MARCH 2024

22 - 26 APRIL 2024

LEARNING GOALS

This course will get you acquainted with all the different features of PowerShell. You will learn how to automate and script administration, configuration and deployment of on-prem servers and cloud environments with out-of-the-box cmdlets and custom scripts.

TARGET AUDIENCE

System Administrators or System Engineers who are responsible for the management and configuration of Microsoft Servers, Microsoft Cloud Infrastructure or Microsoft applications.

SCRIPTING WITH POWERSHELL

POWERSHELL OVERVIEW

PowerShell Overview. Brushing up on objects. PowerShell Versions. Windows PowerShell versus PowerShell Core. Concepts and Terminology. Getting Commands. Getting Help. Providers and Drives.

POWERSHELL SHELLS

PowerShell Console. Integrated Scripting Environment (ISE). Visual Studio Code.

CORE CONCEPTS

Viewing Object Structure. Object Pipeline. Using Format Cmdlets to Change Output. Export Data with Out Cmdlets. Using Variables to Store Objects.

OBJECT PIPELINE PROCESSING

Where-Object. Foreach-Object. Select-Object. Sort-Object. Measure-Object. Compare-Object. Group-Object. Tee-Object.

WORKING WITH OBJECTS

Files and Folders. Registry Keys and Values. COM Objects. WMI Objects. .NET Objects. Static Classes.

EXTENDING POWERSHELL FUNCTIONALITY

Modules. Package Manager. PowerShell Gallery. PowerShell Profiles. Operators and Expressions.

POWERSHELL REMOTING

PowerShell Remoting Overview. WS-Management (WSMAN). Remote CIM Sessions. Import/Export Remote Sessions. WinRM Security. WinRM Double Hop Problem. Using Variables in Remoting Sessions. Remoting with PowerShell Core.

POWERSHELL SECURITY

PowerShell Execution Policy. Script Signing. Security Sensitive Information in Scripts.

POWERSHELL SCRIPTING

Foreach. For. While - do while - do until. If - Switch. Break - Continue.

MANAGING YOUR ENVIRONMENT

Networking. File Shares. Data Import Security. Server Management. Active Directory. Certificates.



MASTERING POWERSHELL

POWERSHELL OVERVIEW

PowerShell Overview. Brushing up on objects. PowerShell Versions. Windows PowerShell versus PowerShell Core. Concepts and Terminology. Getting Commands. Getting Help. Providers and Drives.

POWERSHELL SHELLS

PowerShell Console. Integrated Scripting Environment (ISE). Visual Studio Code.

CORE CONCEPTS

Viewing Object Structure. Object Pipeline. Using Format Cmdlets to Change Output. Export Data with Out Cmdlets. Using Variables to Store Objects.

OBJECT PIPELINE PROCESSING

Where-Object. Foreach-Object. Select-Object. Sort-Object. Measure-Object. Compare-Object. Group-Object. Tee-Object.

WORKING WITH OBJECTS

Files and Folders. Registry Keys and Values. COM Objects. WMI Objects. .NET Objects. Static Classes.

EXTENDING POWERSHELL FUNCTIONALITY

Modules. Package Manager. PowerShell Gallery. PowerShell Profiles. Operators and Expressions.

POWERSHELL REMOTING

PowerShell Remoting Overview. WS-Management (WSMAN). Remote CIM Sessions. Import/Export Remote Sessions. WinRM Security. WinRM Double Hop Problem. Using Variables in Remoting Sessions. Remoting with PowerShell Core.

POWERSHELL SECURITY

PowerShell Execution Policy. Script Signing. Security Sensitive Information in Scripts.

POWERSHELL SCRIPTING

Foreach. For. While - do while - do until. If - Switch. Break - Continue.

MANAGING YOUR ENVIRONMENT

Networking. File Shares. Data Import Security. Server Management. Active Directory. Certificates.

POWERSHELL JOBS

Background Jobs. Remoting Jobs. Scheduled Jobs.

ERROR HANDLING

Debugging options. Error Handling. Trap Statement. Try - Catch Statement.

DEVOPS: DESIRED STATE CONFIGURATION

Desired State Configuration Overview. DSC Components: Configuration - Node - Resource. Apply DSC Configurations. Push versus Pull Mode. Azure Automation DSC.

ADVANCED SCRIPTING

Functions. Script Basics. Advanced Functions. Advanced Parameter Configuration. Command Documentation. Creating a PowerShell Module. Creating your own Cmdlets.

JEA: JUST ENOUGH ADMINISTRATION

JEA Overview. Role Capabilities. Session Configurations. Register JEA Endpoint. Auditing and Reporting.

POWERSHELL ON LINUX

Install PowerShell Core on Linux. Manage Linux Systems. Manage Windows Systems from Linux. Remoting over SSH.

ANALYZING YOUR DATA WITH POWER BI FOR BUSINESS USERS

INTRODUCTION TO POWER BI

The need for Business Intelligence. Self-Service BI versus Enterprise BI. Core concepts of Power BI. Introducing Power BI Desktop. Introducing the Power BI Service.

LOADING DATA WITH POWER BI DESKTOP

Core Concepts of Power Query. Creating Queries to load data. Applying Basic Transformations. Working with Direct Query.

ENHANCING A DATA MODEL IN POWER BI DESKTOP

Renaming & Hiding Columns and Tables. Column Data Types and Formatting. Working with Numerical Columns. Sorting Columns. Data Categorization. Creating Hierarchies inside Tables. Defining Calculated Columns and Measures using DAX. Working with Quick Measures. Defining Relationships between Tables.

DESIGNING REPORTS IN POWER BI DESKTOP

Overview of the Report Canvas. Adding Text Boxes, Shapes and Images. Using Built-in Visualizations. Custom Theming. Printing a Power BI Report. Power BI Templates.

ENHANCING REPORTS IN POWER BI DESKTOP

Slicers and Filters. Drillthrough Report Pages. Custom Tooltips. Bookmarks. Visual Hierarchies and Drill-down Behavior. Grouping and Binning. Dynamic Behavior with Parameters. Custom Visuals. Report Mobile Design.

INTRODUCTION TO POWER BI SERVICE

Power BI Service Overview. Power BI Service Tiers and Features. Working with Datasets and Reports. Creating and using Workspaces.

CREATING DATASETS AND REPORTS IN POWER BI SERVICE

Creating Datasets in the Power BI Service. Connecting to Datasets in Power BI Desktop. Dataset Configuration and Permissions. Creating Reports in the Power BI Service. Configuring and Exporting Reports.

CREATING DASHBOARDS AND ANALYZING DATA WITH POWER BI SERVICE

Creating and Configuring Dashboards. Working with Power BI Q&A. Analyze Datasets in Excel. Metrics and Scorecards for KPI tracking.

SHARING CONTENT IN THE POWER BI SERVICE

Sharing Reports and Dashboards with internal and external users. Sharing content inside a Workspace. Creating & Consuming Power BI Apps. Publishing Reports to the web. Subscribing to Report updates. Embedding a report in SharePoint Online or Microsoft Teams. Report Usage Metrics.

USING POWER BI WITH MOBILE DEVICES

Supported Platforms. Accessing Reports, Dashboards and Datasets from Mobile Devices.

03
DAYS

UBIPBE

06 - 08 NOVEMBER 2023

18 - 20 DECEMBER 2023

12 - 14 FEBRUARY 2024

08 - 10 APRIL 2024

21 - 23 MAY 2024

LEARNING GOALS

This course covers the whole idea of Power BI. You learn how to connect to any data source using Power Query. The next step is enhancing the Data Model by using relationships, hierarchies, calculated columns, and measures. When the model is finished, you will build an interactive report and maintain & share it in the Power BI Cloud Service.

TARGET AUDIENCE

This course is intended for business users with no or little knowledge of Power BI. No technical or IT background is required.

ANALYZING YOUR DATA WITH POWER BI FOR BI PROFESSIONALS

INTRODUCTION TO POWER BI

The need for Business Intelligence. Self-Service BI versus Enterprise BI. Power BI Core Concepts. Introducing Power BI Desktop. Introducing the Power BI Service. Power BI Service Tiers and Features.

CREATING QUERIES USING POWER BI DESKTOP

Creating Power Queries and working with Query steps. Loading Data from CSV and Excel Files. Loading Data from Relational Databases. Loading Data from Web, Folders, SharePoint, ... Applying Basic Transformations. Query Folding. Importing Data, using Direct Query or using Live Connections.

WRITING ADVANCED QUERIES IN POWER BI DESKTOP

Advanced Transformations in Power Query. Appending and Merging Queries. Working with Query Parameters. Defining and using Query Functions. Managing Data Source Security.

BUILDING A DATA MODEL

Why do we need a Data Model? Authoring Data Models in Power BI Desktop. Column Data Types and Formatting. Sorting Columns. Data Categorization. Creating Hierarchies inside tables. Data model storage in import mode. Analyzing storage costs using DAX Studio.

RELATIONSHIPS

Cardinality of Relationships. Relationship Limitations. Role-playing Dimensions. The Cross-Filter direction of Relationships.

DATA MODEL STORAGE MODES

Import Mode. DirectQuery Mode. Dual Mode. Live Connection. Aggregation Tables.

DATA ANALYSIS EXPRESSIONS (DAX)

DAX introduction. Creating Calculated Columns. Creating Tables. Creating Measures. CALCULATE-Function. Time-Intelligence Functions.

DESIGNING REPORTS IN POWER BI DESKTOP

Overview of the Report Canvas. Adding Text Boxes, Shapes and Images. Using built-in Visualizations. Custom Theming. Printing a Power BI Report. Power BI Templates.

ENHANCING REPORTS IN POWER BI DESKTOP

Slicers and Filters. Drill through Pages. Custom Tooltips. Bookmarks. Visual Hierarchies and Drill-down Behaviour. Grouping and Binning. Dynamic Behaviour with Parameters. Custom Visuals. Report Mobile Design.

INTRODUCTION TO POWER BI SERVICE

Power BI Service Overview. Power BI Service Tiers and Features. Working with Datasets and Reports. Creating and using Workspaces.

CREATING DATASETS AND REPORTS IN POWER BI SERVICE

Creating Datasets in the Power BI Service. Connecting to Datasets in Power BI Desktop. Dataset Configuration and Permissions. Creating Reports in the Power BI Service. Configuring and Exporting Reports.

CREATING DASHBOARDS AND ANALYZING DATA WITH POWER BI SERVICE

Creating & Configuring Dashboards. Working with Power BI Q&A. Analyze Datasets in Excel. Metrics and Scorecards for KPI tracking.

SHARING CONTENT IN THE POWER BI SERVICE

Sharing Reports and Dashboards with internal and external users. Sharing content inside a Workspace. Creating & Consuming Power BI Apps. Publishing Reports to the web. Subscribing to Report updates. Embedding a report in SharePoint Online or Microsoft Teams. Report Usage Metrics.

MANAGING DATA REFRESH IN POWER BI

Scheduling Dataset Refreshes. Online vs. on-prem Data Sources. The need for a Data Gateway. Configuring a Data Gateway. Incremental Refresh.

SECURING A DATA MODEL

Enhancing a Data Model with Row Level Security. Configuring Row Level Security. Implementing Dynamic Security. Security and Relationships.

05
DAYS

UBIPB

13 - 17 NOVEMBER 2023

15 - 19 JANUARY 2024

15 - 19 APRIL 2024

27 - 31 MAY 2024

LEARNING GOALS

This course will teach you all aspects of connecting to data sources and transforming them using Power Query, creating Power BI data models and reports, and publishing and maintaining them on the Power BI cloud service. The course covers more technical topics on DAX and Power Query. It also explains how to configure a Data Gateway so that you can connect the Power BI service to your on-premises data sources, and how row-level security can be used to secure data models.

TARGET AUDIENCE

This course is intended for technical people who have a background in Business Intelligence.

03
DAYS

UDAX

11 - 13 DECEMBER 2023

05 - 07 FEBRUARY 2024

18 - 20 MARCH 2024

21 - 23 MAY 2024

LEARNING GOALS

DAX or Data Analysis Expressions is a language used in Power BI and SQL Server Analysis Services Tabular Models to define expressions and formulas. In this course you will learn how to use DAX to create calculated columns and measures and how you can use DAX as a query language.

TARGET AUDIENCE

This course is intended for people who have a background in Business Intelligence and have already built data models in Power BI or Analysis Services.

03
DAYS

UPBIM

23 - 25 OCTOBER 2023

18 - 20 DECEMBER 2023

11 - 13 MARCH 2024

21 - 23 MAY 2024

LEARNING GOALS

Power BI is a suite of business analytics tools to analyze data and share insights. This training shows you how to setup and manage Power BI in an enterprise business environment. It focusses on the challenges that might appear when a large group of people need to develop and access the Power BI infrastructure: How to do versioning? How to check data lineage? How to deploy large dataset? How to setup security?

TARGET AUDIENCE

BI and IT professionals responsible for an enterprise deployment and management of Power BI solutions in the cloud. Participants are expected to have some experience with Power BI Desktop.

MASTERING DAX

AN INTRODUCTION TO DAX

DAX use cases. Understanding calculated columns and measures. Building tables with DAX. DAX as a query language. DAX for row level security. DAX patterns.

DAX STUDIO

Introducing DAX Studio. Installing DAX Studio. Writing DAX queries: EVALUATE, ORDER BY and START AT. Constructing tables with FILTER, DISTINCT, ROW, SELECTCOLUMNS and SUMMARIZECOLUMNS. Who's eating up the resources: Querying meta-data. Performance tuning. Profiling DAX queries.

DAX EXPRESSIONS

DAX data types. Getting started with constants. Mathematical, boolean and string operators. The most important scalar functions in DAX.

CREATING DAX MEASURES

Introduction to evaluation context. The CALCULATE function and the row and filter context. Aggregation functions. Defining table scopes. Using ALL and VALUES.

USING CALCULATE FOR TIME INTELLIGENCE

Creating calendar tables using CALENDAR and CALENDARAUTO. Working with multiple data tables. Mark as Data Table. Computing YTD/OTD and MTD totals. Comparing data over time using DAX. Calculating Rolling Totals. Calculating Moving Averages.

WORKING WITH CALCULATION GROUPS

The need for calculation groups. Creating calculation groups. Format strings in calculation groups. Excluding measures from calculation items.

MORE ON MEASURES: ITERATORS

SUMX aggregation function. Linking to different tables with RELATED. More iterators: RANKX, CONCATENATEX, ... Using variables in DAX. Context transition.

INSPECTING AND CONTROLLING THE EXECUTION CONTEXT

Why do we need the context? HASONEVALUE. ISFILTERED. ISCROSSFILTERED. ISINScope. SELECTEDVALUE. ALLSELECTED. Handling hierarchies in DAX. Calculate ratio's to a parent subtotals. Raising errors in DAX.

ADVANCED DAX CONSTRUCTS

CALCULATE modifiers USERELATIONSHIP, CROSSFILTER, ... Expanded tables. TREATAS, CALCULATETABLE. Windowing functions: OFFSET, INDEX and WINDOW.

MANAGING A POWER BI ENVIRONMENT

CONFIGURING WORKSPACES

Creating workspaces. Set a Workspace OneDrive. Shared versus dedicated capacity. Workspace connectivity with the XMLA endpoint. Configuring Azure Data Lake Gen 2 integration. Automating Workspace creation using PowerShell. Creating and working with Service principals. Governance.

MANAGING DATASETS

Working with datasets in the Power BI Service. Versioning using the open-source ALM Toolkit. Versioning and ALM using Visual Studio with Analysis Services projects. Working with shared datasets. Dataset Lineage. Certifying and promoting datasets. Automating Dataset deployment using PowerShell.

DEPLOYING CONTENT USING DEPLOYMENT PIPELINES

The need for different workspaces. Using Deployment Pipelines.

CONFIGURING WORKSPACE SECURITY

Configuring Workspace security. Security when sharing Dashboards and Reports. Securing data at rest. Securing data in transit.

REFRESHING DATASETS

Data Gateways. Standard versus Personal mode. Import versus DirectQuery versus live connections. Configuring Data Refresh Credentials. Monitoring Gateways and data refresh. Configuring incremental refresh. Incremental refreshes and partitioning. Dataset refresh using the XMLA endpoint.

WORKING WITH DATAFLOWS

What are Dataflows? Dataflows, Entities and the Common Data Model (CDM). Dataflows and Azure Data Lake Gen 2 storage. Creating Dataflows. Working with linked and computed Entities. Scheduling refreshes for Dataflows. Using Dataflows in Power BI Desktop. Dataflow licensing.

ADMINISTERING A POWER BI TENANT

Configuring tenant settings. Sharing settings. Custom visuals settings. Managing custom data sources.

MONITORING POWER BI

Monitor Power BI via reports. Monitoring workspace usage. Customizing workspace usage reporting. Power BI Premium Capacity Metrics and Alerts. Integrated Unified Office 365 Audit Logging.



DESIGNING DATA MODELS FOR POWER BI

THE NEED FOR DATA MODELING

Data model definitions and terminology. Advantages and disadvantages of normalizing data. Issues when reporting on operational databases. Differences between data warehouse, data flow, and data set. Data model advantages. Conducting user interviews. Prioritizing the requirements. Documenting the requirements.

MODELING DIMENSIONAL TABLES

Introducing dimensional modeling. The need for dimension tables. Properties of dimension tables. Surrogate keys. Star versus snowflake dimensions.

MODELING FACTUAL TABLES

Properties of Fact tables. Additive, Semi-additive and none-additive measures. Transactional Fact Table. Snapshot Fact Table. Accumulating Snapshot Fact Table. Inspecting the size of the fact tables in Power BI.

DESIGNING THE DATE DIMENSION

Why do we need a date dimension. The danger of the auto-generated date tables in Power BI. Designing the date dimension. Working with Time. Multiple time zones. Useful tools and scripts.

WORKING WITH SLOWLY CHANGING DIMENSIONS (SCD)

Why do we need Slowly Changing Dimensions. Type I, II and III slowly changing dimensions. Designing for SCD. Advanced SCD types.

ADVANCED DIMENSIONAL MODELING

Early arriving facts. Late arriving facts. Dealing with currency conversion. Dealing with hierarchies. Role playing dimensions. Modeling many to many relations.

PHYSICAL DATA MODEL DESIGN

Staging tables In Power Query. Impact of modeling on model size. Data Flows. Aggregation tables.



DEVELOPING FOR THE POWER BI PLATFORM

INTRODUCTION TO POWER BI DEVELOPMENT

Overview of Power BI Desktop and Power BI Service. How can developers extend Power BI? Introducing Power BI REST API. Overview of Power BI Embedded. Overview of developing custom Visuals.

THE POWER BI REST API

Overview of Power BI REST API. Registering applications with Azure Active Directory. Authenticate with the Power BI REST API using OAuth 2.0 and ADAL. Working with App Workspaces. Working with Datasets. Pushing rows into dataset tables. Publishing Power BI Desktop PBIX files. Configuring data sources and dataset refresh settings.

WORKING WITH STREAMING DATASETS

Introduction to streaming datasets. Different types of streaming datasets. Creating and using streaming datasets in the Power BI Service UI. Creating and using streaming datasets using the Power BI REST API. Creating streaming datasets using the Azure Stream Analytics. Building real-time dashboards.

POWER BI EMBEDDED

Overview of Power BI Embedded. Power BI Embedded licensing models. Authentication scenarios for Power BI Embedded. The Power BI Embedded JavaScript API. Embedding dashboards. Embedding reports. Embedding Tiles. Event handling on embedded reports and dashboards.

GETTING STARTED WITH DEVELOPING CUSTOM VISUALS

Installing Node.js. Working with the Node Package Manager. Installing developer certificates. Installing and using the Power BI Visual Tools (pbiviz). Creating your first Power BI custom Visual. Overview of the Power BI Visual project structure. Testing and debugging a custom Visual. Working with external JavaScript libraries and Type Definition Files.

DEVELOPING CUSTOM POWER BI VISUALS

Overview of the Power BI custom Visual object model. Define capabilities and data view mappings. Define custom properties. How to format numbers, dates, ... in a custom Visual. Package and deploy a custom Visual.

02
DAYS

UPBIDM

30 NOVEMBER - 01 DECEMBER 2023

22 - 23 FEBRUARY 2024

11 - 12 APRIL 2024

LEARNING GOALS

Data modeling is an essential step in business intelligence, when data is stored centrally to be used by multiple reports and analytical tools. This could be the case when building a Power BI data flow, Power BI data sets or even other analytical data storage solutions on top of a data warehouse. In this training you will learn how to design such models according to the popular dimensional modeling techniques using Star and Snowflake schemas.

TARGET AUDIENCE

This course is intended for Business Intelligence developers responsible for designing Power BI data models. The course assumes participants are already familiar with Power BI Desktop.

03
DAYS

UBIPBD

04 - 06 MARCH 2024

LEARNING GOALS

Developing for the Power BI platform is an intensive 3-day training targeted at developers. In this course, participants will learn how to develop custom applications on top of Power BI.

TARGET AUDIENCE

This course is intended for developers who would like to develop custom applications for the Power BI platform. Participants should have a basic understanding of Power BI Desktop and the Power BI Service. Students should also have previous programming experience with .NET and/or JavaScript in Visual Studio.

05
DAYS

AZ-800

06 - 10 NOVEMBER 2023

05 - 09 FEBRUARY 2024

13 - 17 MAY 2024

LEARNING GOALS

In this course, students will learn to manage Windows Servers, both on-premises and in Azure. They will also learn how to integrate Windows Server environments with Azure services in a hybrid deployment.

TARGET AUDIENCE

This course is intended for IT Professionals responsible for the management of Windows Servers hosted on-premises and in Microsoft Azure.

ADMINISTERING WINDOWS SERVER HYBRID CORE INFRASTRUCTURE**IDENTITY SERVICES IN WINDOWS SERVER**

Introduction to AD DS. Manage AD DS Domain Controllers and FSMO Roles. Implement Group Policy Objects. Manage Trust Relationships. Monitor and Troubleshoot AD DS.

IMPLEMENTING IDENTITY IN HYBRID SCENARIOS

Install and Configure Directory Synchronization with Azure Active Directory Connect. Implement Seamless Single Sign-On. Azure Active Directory Domain Services. Deploy VMs as Active Directory Domain Controllers in Azure.

WINDOWS SERVER ADMINISTRATION

Perform Windows Server Secure Administration. Windows Server Administration Tools: Windows Admin Center, Server Manager and PowerShell. Configure Windows Server Core Installations. Just Enough Administration in Windows Server (JEA).

FACILITATING HYBRID MANAGEMENT

Administer and Manage Azure VMs remotely. Manage VMs with Azure Bastion. Configure Just-in-Time Administration. Manage Hybrid Workloads with Azure Arc.

HYPER-V VIRTUALIZATION IN WINDOWS SERVER

Deploy and Configure a Hyper-V Server. Create and Manage Hyper-V Virtual Machines. Secure Hyper-V Workloads with Shielded VMs. Run Docker Containers on Windows Server. Orchestrate Containers on Windows Server using Kubernetes. Deploy and Configure Azure VMs.

DEPLOY AND CONFIGURE AZURE VMS

Deploy Azure Virtual Machines. Customize Azure VM Images. Automate the Configuration of Azure VMs. Implement Azure Automation with DSC.

NETWORK INFRASTRUCTURE SERVICES IN WINDOWS SERVER

Deploy and Manage DHCP. Implement Windows Server DNS. Implement IP Address Management. Implement Remote Access.

IMPLEMENT HYBRID NETWORK INFRASTRUCTURE

Azure Network Topologies. Connect Azure and On-Prem Networks: VPN Gateway and ExpressRoute. Name Resolution in Azure. Implement Azure VM IP Addressing and Routing.

FILE SERVERS AND STORAGE MANAGEMENT IN WINDOWS SERVER

Manage Windows Server File Servers. Implement Storage Spaces and Storage Spaces Direct. Implement Data Deduplication. Implement iSCSI Storage. Implement Storage Replica.

IMPLEMENT A HYBRID FILE SERVER INFRASTRUCTURE

Azure File Services. Configure Connectivity to Azure Files. Implement Azure File Sync. Migrate from DFSR to Azure File Sync.



MICROSOFT POWER APPS AND POWER AUTOMATE

INTRODUCTION TO THE POWER PLATFORM

Overview of the Microsoft Power Platform. Power Apps, Power Automate, Power BI, Power Virtual Agents & Power Pages. Microsoft Dataverse. Real world use case of the Power Platform

POWER PLATFORM LICENSING GUIDE

Licensing Overview. Included Features by License Type. Connectors and Connections Overview. Standard vs Premium connectors. Extra Add-ons.

INTRODUCTION TO POWER APPS

What is Power Apps? What are environments? Canvas Apps vs. Model-Driven Apps vs. Power Apps Portals. Getting started with Canvas Apps using templates. Power Apps on mobile.

BUILDING CANVAS APPS

Power Apps Studio. Data and API Connections. Creating Canvas Apps from Data Connection vs. from Scratch. Screens & Controls. Galleries. Forms. Power FX.

WORKING WITH FORMS IN CANVAS APPS

Customizing Edit and Detail Forms. Saving Form Data to a Data Source. Data Cards. Data Card Customizations. Input validation. Hidden Data Cards.

DATA SOURCES AND LOCAL DATA IN CANVAS APPS

Variables and Collections. Data Source Configuration. Operations & Manipulations. Handling and Preventing Errors. Data Source Search, Sort & Refresh. Data Source Delegation.

CONFIGURING AND PUBLISHING CANVAS APPS

Canvas Apps Configuration. Canvas App Responsiveness. Saving, Sharing and Publishing Apps. Sharing and Permissions. Embed a Canvas App in a SharePoint Page & Microsoft Teams. Canvas App Analytics & Monitoring.

INTRODUCTION TO POWER AUTOMATE

Power Automate Overview. Power Automate Building Blocks. Using Connections in Flows. The Power Automate Mobile App.

BUILDING BASIC FLOWS

Building Flows from Scratch. Automated, Instant & Scheduled Flows. Flow Actions & Connections. Flow Conditions and Dynamic Content. Monitoring Flows. Microsoft 365 Integration.

POPULAR CONNECTIONS AND ACTIONS

List Data and Document Management in SharePoint. File management in OneDrive. File manipulation in Word and Excel. User and Group Manipulation in Office 365 and Azure AD. Data Management in Relational Databases.

MODERN APPROVALS WITH POWER AUTOMATE

Configuring Approvals with Power Automate. Approval Settings. Approving and Rejecting Approvals. Processing the Approval Outcome.

POWER AUTOMATE PATTERNS

Advanced Trigger and Action Configurations. HTTP Actions to call APIs or other Flows. Variables, Collections and Data operations. Conditions, Parallelism and Loops. Flow Error Handling. Flow and Connector Limitations.

WORKFLOW DEFINITION LANGUAGE

Introduction to Workflow Definition Language. Expressions, Operators and Functions. Using Expressions in Flows.

FLOW PERMISSIONS & SHARING

Sharing a Flow. Co-Ownership. Flow Permissions. Shared Flow Connections & Credentials. Run only users and Connections.

SHAREPOINT FORM CUSTOMIZATION

Customizing a SharePoint form. SharePoint Integration Control. Differentiate your form based on the mode: view, edit, new. Adding Behaviour with Controls. Wide screen SharePoint forms.

POWER PLATFORM INTEGRATIONS

Bundling Apps and Flows in Solutions. Trigger a Flow from a Canvas App. Open a Canvas App from a Flow Notification. Power BI & Power Virtual Agent Integrations.

04
DAYS

UPOWER

23 - 26 OCTOBER 2023

04 - 07 DECEMBER 2023

22 - 25 JANUARY 2024

04 - 07 MARCH 2024

22 - 25 APRIL 2024

LEARNING GOALS

Microsoft Power Apps and Microsoft Power Automate are integral components of Microsoft's Power Platform, enabling citizen developers to create robust applications and automations using a low-code approach. Power Apps empowers us to construct interactive mobile applications, while Power Automate facilitates the automation of business processes including approvals, synchronization, and more. Throughout this course, you will acquire the skills to construct Power Apps Canvas Apps and implement Power Automate processes that integrate seamlessly with your data.

TARGET AUDIENCE

This course targets power users, content managers, business analysts and many more. No prior knowledge to Power Apps or Power Automate is required.

POWER APPS AND POWER AUTOMATE: ADVANCED PATTERNS

WORKING WITH ENVIRONMENTS IN THE POWER PLATFORM

Overview of the Power Platform. The role of Environments in the Power Platform. Creating and managing Environments. Environments and security. The Default Environment.

WORKING WITH SOLUTIONS IN THE POWER PLATFORM

Working with solutions in Environments. Default Solutions in an Environment. Creating Solutions and Solution Publishers. Creating Canvas apps and Power Automate Flows inside a Solution. Importing and Exporting Solutions. Managed versus Unmanaged Solutions. Importing and Exporting Solutions. Solutions and Managed Properties.

WORKING WITH CONNECTION REFERENCES AND ENVIRONMENT VARIABLES

Introducing Connection References. Connection References In Power Automate Cloud Flows. Connection References In Canvas Apps. Manually creating Connection References in Solutions. Importing Solutions with Connection References. Connection References Gotchas.

APPLICATION LIFECYCLE MANAGEMENT (ALM) WITH THE MICROSOFT POWER PLATFORM

The Microsoft Power Platform CLI. Application Lifecycle Management with the Power Platform CLI. Application Lifecycle Management with Azure DevOps. Using GitHub with a Canvas app. Editing a Canvas app using Power Fx and Visual Studio Code.

WORKING WITH PIPELINES IN THE POWER PLATFORM

What are Pipelines. Setup Pipelines. Run Pipelines Extend Pipelines.

USING MICROSOFT DATVERSE IN CANVAS APPS AND POWER AUTOMATE FLOW

Using Microsoft Dataverse as a data source. Creating Tables in Microsoft Dataverse. Creating Columns, Relationships Forms and Views in a Table. Combining Microsoft Dataverse, Canvas apps and Power Automate.

03
DAYS

UPPA

20 - 22 NOVEMBER 2023

29 - 31 JANUARY 2024

02 - 04 APRIL 2024

21 - 23 MAY 2024

LEARNING GOALS

This training mainly covers more complex deployment concepts like Environments, Solutions, ALM with the Power Platform CLI ... You will also get acquainted with more advanced topics like Environment Variables, Connection References and using Microsoft Dataverse as a data source.

TARGET AUDIENCE

This course is targeted at Power Platform makers who have already a solid understanding of creating Canvas apps and Power Automate Flows.

05
DAYS

UCDS

02 - 06 OCTOBER 2023

04 - 08 DECEMBER 2023

05 - 09 FEBRUARY 2024

25 - 29 MARCH 2024

13 - 17 MAY 2024

LEARNING GOALS

Built on the fundamentals of Dynamics 365, Model-Driven Apps allow you to build complex and sophisticated business apps without writing code. Model-driven apps follow a data-first approach. You first design the data model of your model-driven app using Microsoft Dataverse and then you compose the UI of the model-driven app. Unlike canvas app development where the designer has complete control over app layout, with model-driven apps much of the layout is determined for you and largely designated by the components you add to the app.

TARGET AUDIENCE

Power users, consultants and key business users.

03
DAYS

UPAP

15 - 17 JANUARY 2024

02 - 04 APRIL 2024

LEARNING GOALS

This training will teach low-code makers and developers how to create external-facing business websites using Power Pages. With Power Pages, you can quickly build web sites by using the same shared business data stored in Microsoft Dataverse that you use for building apps and workflows.

TARGET AUDIENCE

Students will need to have a basic understanding of HTML, the Power Platform and Microsoft Dataverse.

MODEL-DRIVEN APPS WITH MICROSOFT DATAVERSE IN POWER APPS

INTRODUCTION TO THE MICROSOFT POWER PLATFORM

The past. From Dynamics CRM to Dynamics 365 for Customer Engagement, The Common Data Model and Model-Driven Apps. Overview of the Microsoft Power Platform. Introduction to Microsoft Dataverse. The Common Data Model. Dynamics 365 Sales, Customer Services, ... as model-driven apps on Microsoft Dataverse.

OVERVIEW OF MODEL-DRIVEN APPS/DYNAMICS 365

Creating and working with environments. The relationship between environments and Microsoft Dataverse. Navigating and using a model-driven app.

WORKING WITH SOLUTIONS

Introduction to customizing Model-Driven Apps. Working with Publishers and Solutions. Difference between Managed and Unmanaged Solutions. Adding components to your solutions. Working with managed properties. Importing and Exporting Solutions. Versioning solutions.

CREATING MODEL-DRIVEN APPS

Concepts of a model-driven app. The structure of a Site Map. Creating a Site Map for an app. Creating apps with the App Designer. Navigating between apps. Managing apps in Solutions. Preview: the modern app designer. Introducing XrmToolBox.

CREATING AND CUSTOMIZING TABLES

Creating and configuring tables in Microsoft Dataverse. The default table columns. Creating custom Activity Tables.

MANAGING RELATIONSHIPS

Plan, create, and configure Table Relationships. Creating and using relationships - 1:N, N:N. Connections and Connection Roles. Defining self-referential relationships. Defining hierarchy visualizations. Creating polymorphic or multi-table relationships.

CREATING AND CUSTOMIZING COLUMNS

Adding custom Columns to Tables. Supported column data types. Working with File and Image data types. Working with Lookup. Preview: creating multi-table or polymorphic Lookups. The Choice and Choices data types. Using the Status and Status Reason columns. Defining Alternate Keys for a Table. Importing rows in tables using Dataflows. Aggregating data with Rollup Columns. Calculate data based on other column with Calculated Columns. Creating Formula columns using PowerFX.

CUSTOMIZING FORMS

Define the structure. How to add, remove or modify the components using the Form Designer. Placing image column. Configure and use Quick Create, Quick View and Card Forms. Working with custom components. Embedding Canvas apps in a Form.

BUSINESS RULES

Create and apply Business Rules. Defining the scope of Business Rules. Business Rules limitations.

CREATING AND USING VIEWS

Different types of system, public and personal Views. Create and modify Views. Configure quick find, advanced find and associated Views. Configure views with custom controls like the Editable grid, calendar Control...

CREATING CUSTOM PAGES

Add a custom page to a model-driven app. Design considerations for custom pages. Use PowerFx in a custom page. Add connectors to a custom page.

REPORTING IN MODEL-DRIVEN APPS

Build Interactive Charts to show in Views or on Dashboards. Classic Dashboards showing Charts, Data or web pages. Interactive Dashboards with dynamic sorting and filtering. Working with the Tabular Data Stream (TDS) endpoint. Using Power BI Desktop with data stored in Microsoft Dataverse. Creating embedded Power BI Dashboards. Embedding a Power BI report in a Table Form.

SECURING MODEL-DRIVEN APPS

Building a Security Model. Business Units and their role in security modeling. Define Privileges and access levels in Security Roles. Creating and maintaining users. Team management.

POWER PLATFORM AUTOMATION

Overview. Trigger a Flow based on a create, update or delete of an table row. Consuming Microsoft Dataverse data inside Power Automate. Schedule a Flow. Modern Approval with Power Automate.

CREATE LOW-CODE BUSINESS WEBSITES WITH MICROSOFT POWER PAGES

INTRODUCTION TO POWER PAGES

Overview of the Power Platform. Introducing Microsoft Dataverse. Using the Power Platform Admin Center. Using the Power Apps Maker Portal. Creating a site from blank. Creating a site from a template. Power Pages licensing. Power Pages and Dynamics 365. Introducing the Power Platform CLI.

GETTING STARTED WITH POWER PAGES

Overview of a Power Pages site. Lifecycle of a Power Pages site. Understanding Power Pages design studio. Authoring basic content in Power Pages design studio. Overview of the Portal Management app. Managing a Power Pages site in the Portal Management app. Configuring Power Pages settings. Browsing and editing a Power Pages site. Deleting a Power Pages site. XrmToolBox and Power Pages. The Enhanced vs Standard Data Model.

CREATE AND DESIGN A POWER PAGES SITE

Creating Web Pages. Adding Sections. Adding text, images, breadcrumbs, custom menus, Working with Templates. working with Themes and CSS. Using the code editor. Configuring the site Navigation.

DEEP DIVE INTO WEB PAGES

Root and Content Pages. Introduction to Liquid. Working with Liquid objects, tags and filters. Creating custom Page Layouts. Working with Page and Web Templates. Using JavaScript inside Web Pages. Authoring Power Pages content in XrmToolBox.

AUTHORING ADVANCED POWER PAGES CONTENT

Creating Web Files. Working with Web Links and Web Link Sets. Configuring Content Snippets. Using Site Markers. Working with Redirects and Shortcuts. Authoring content in Visual Studio Code using the Power Platform CLI.

POWER PAGES AND MICROSOFT DATAVERSE

Working with Lists. Configuring advanced List properties. Working with basic and advanced Forms. Retrieving and displaying Dataverse data with Liquid and FetchXML. Configuring advanced Form properties.

CONFIGURING AUTHENTICATION IN A POWER PAGES SITE

Power Pages authentication overview. Configure Power Pages authentication with Azure AD, Azure B2C, ... Configure contacts. Invite contacts.

CONFIGURING AUTHORIZATION IN A POWER PAGES SITE

Creating and using Web Roles. Configure Table permissions. Manage Web Page Access Control Rules.. Create website access permissions.

POWER PAGES SITES AND ALM

Overview of ALM with Power Pages sites. Exporting site content from a development environment. Importing site content in a acceptance/production environment.

DEVELOPING FOR THE POWER PLATFORM WITH MICROSOFT DATAVERSE

EXTENSIBILITY OVERVIEW

Introduction to Dataverse. Overview of the Dataverse extensibility model. overview of the Power Platform SDKs that are available from Microsoft via NuGet. Introducing XrmToolBox. Introducing the Power Platform CLI.

WORKING WITH THE DATAVERSE WEB API

Introduction to the Dataverse Web API. Registering client applications with Azure Active Directory. Authenticate with the Dataverse Web API using OAuth 2.0 and MSAL/ADAL. Performing a simple Create operation using the Dataverse Web API. Composing HTTP requests and error handling. Dataverse Web API URL and versions. The different HTTP methods and headers. Executing your first HTTP requests.

USING THE DATAVERSE WEB API

Query Data using the Dataverse Web API. Creating, Updating and Deleting rows in tables. Executing Actions and Functions. Impersonate another user using the Dataverse Web API. Detect duplicate data using the Dataverse Web API. Batch processing with the Dataverse Web API.

WORKING WITH THE DATAVERSE SERVICE CLIENT SDK

What is the Dataverse Service Client SDK. The IOrganizationService interface. Using the ServiceClient class to connect to Microsoft Dataverse. Use connection strings to connect to Microsoft Dataverse. Early versus late binding when accessing table rows. Generating entity classes using the Power Platform CLI. Create, update, delete and retrieve table rows using the ServiceClient. Querying Microsoft Dataverse using the QueryExpression and QueryByAttribute classes. Executing batches using ServiceClient.

QUERYING MICROSOFT DATAVERSE WITH FETCHXML

Introduction to FetchXML. Writing FetchXML queries. Using XrmToolBox FetchXML Builder to create FetchXML queries. Executing FetchXML queries using the Dataverse Web API and the Dataverse Service Client SDK.

PLUG-INS

Plug-in overview. Writing custom plug-ins. Register and deploy plug-ins using the Plug-In Registration Tool. Debugging plug-ins in the Dataverse. Deploying Plug-Ins with Solutions. Automate Plug-in deployment using Spkl. Using Plugin Trace Viewer in XrmToolBox.

AZURE INTEGRATIONS

Overview of the Azure integration with the Dataverse. Integration with Azure Service Bus. Configuring the Azure-aware OOB plug-in. Write a custom Azure-aware plug-in. Integration between the Dataverse and Web Hooks.

CREATING AND USING CUSTOM APIS AND ACTIONS

Introduction to the Microsoft Dataverse Event Framework. Executing messages via the Web API. Executing Functions and Actions using the Web API. Creating Custom Actions. Creating Custom APIs. Registering and testing Custom APIs using XrmToolBox. Using Custom APIs and Actions with the Web API. Using Custom APIs and Actions in Power Automate. Working with Business Events.

CLIENT SCRIPTING IN MODEL-DRIVEN APPS USING JAVASCRIPT

Creating JavaScript Web Resources. Handling Form/View and Field events. Root objects in the Client API object model. Working with the Client API execution context object. The Client API Form context object. Interacting with forms and attributes using the Client API object model. The Client API grid context object. The Client API Xrm object. Best practices in writing client-side Code.

CUSTOMIZING THE COMMAND BAR IN A MODEL-DRIVEN APP

Overview of the Command Bar. Available Command Bars in model-driven apps. Classic versus Modern Commanding. Working with Display and Enable rules. Creating a custom Ribbon Action. Pass data or URL parameters to a Ribbon Action. Adding or removing Commands in the Command Bar. Using Ribbon Workbench to customize the command Bar. Modern Commanding using the Command Bar designer. Creating visibility rules using Power FX. Executing Power FX commands.

CREATING WEB RESOURCES

Web resources overview. Building custom HTML Web Resources. Using the Xrm.WebApi JavaScript object model to access, create and manage records.

AN INTRODUCTION TO POWER APPS COMPONENT FRAMEWORK

Using the Microsoft Power Apps CLI to create a new PCF code component. Defining the properties of a code component. Authoring the code component. Package a code component in a Solution.

05
DAYS

UCDSD

29 JANUARY - 02 FEBRUARY 2024
15 - 19 APRIL 2024

LEARNING GOALS

Although Microsoft Dataverse and Model-driven apps have quite some out of the box customization options, many companies have requirements which can only be met by extending the existing feature set of Microsoft Dataverse. This course is specifically designed to help .NET and JavaScript developers learn the various development features of Microsoft Dataverse and Model-driven apps.

TARGET AUDIENCE

Basic understanding of C# and JavaScript is required. Working knowledge of Model-driven apps and the Power Platform is advised.



03
DAYS

UTSQL

13 - 15 NOVEMBER 2023

18 - 20 DECEMBER 2023

05 - 07 FEBRUARY 2024

18 - 20 MARCH 2024

21 - 23 MAY 2024

LEARNING GOALS

The goal of this course is to provide students with the technical skills required to write basic Transact-SQL queries for Microsoft SQL Server. The course covers querying SQL Server 2022 or previous versions as well as Azure SQL Databases.

TARGET AUDIENCE

This course is intended for SQL Server database administrators, implementers, system engineers, and developers who are responsible for writing queries but have no or very limited experience in writing T-SQL SELECT statements.

QUERYING SQL SERVER WITH TRANSACT-SQL

INTRODUCTION TO TRANSACT-SQL AND THE QUERYING TOOLS

Object Hierarchy. SQL Server Management Studio. Azure Data Studio. Using the graphical query builder in Management Studio. Connecting to SQL Server from Excel or Power BI. Brief history of SQL Server.

SELECT FUNDAMENTALS

Basic SELECT Statement. T-SQL Expressions. Formatting Result Sets. The CASE Statement. Fetching Data from Tables. Filtering Data. Sorting Data. Combining Multiple Result Sets: UNION, EXCEPT and INTERSECT.

AGGREGATING DATA

Using Aggregation Functions. GROUP BY Fundamentals. Filtering on Groups Using the HAVING Clause. Computing Subtotals Using the ROLLUP and CUBE Clauses.

JOINING MULTIPLE TABLES

Database Normalization. Using Aliases for Table Names. Inner, outer, cross and self joins. Creating Nested Queries.

ADVANCED SELECT

Using Functions. Data Types. Conversion Between Data Types. The CROSS APPLY Statement.

MODIFYING DATA

Understanding Transactions. Inserting Data. Updating Data. Deleting Data. Truncating a Table. Intro into Constraints.

ADVANCED QUERYING TECHNIQUES

T-SQL Scripts. Common table expressions. Writing recursive CTEs. Using the OVER-clause. Windowing functions. Ranking functions. Analytic functions. PIVOT and UNPIVOT statement.

VIEWS, STORED PROCEDURES AND FUNCTIONS

Introduction to Views. Introduction to Stored Procedures. Introduction to User-defined Functions. Functions and procedures.

05
DAYS

USQLD

20 - 24 NOVEMBER 2023

12 - 16 FEBRUARY 2024

25 - 29 MARCH 2024

13 - 17 MAY 2024

LEARNING GOALS

This five-day instructor-led course provides students with the knowledge and skills to develop a Microsoft SQL Server 2022 (or earlier) database, or databases on Azure SQL or Azure Managed Instances. The course focuses on teaching individuals how to use SQL Server product features and tools related to developing a database; logical table design, indexing and query plans.

TARGET AUDIENCE

The primary audience for this course is IT Professionals who want to become skilled on Azure SQL Databases, Azure Managed Instances or SQL Server 2022 (or earlier) product features and technologies for implementing a database.

DEVELOPING AND OPTIMIZING SQL SERVER DATABASES

INTRODUCTION TO DATABASE DEVELOPMENT

Introduction to the SQL Server Platform. SQL Server Database Development Tasks.

DESIGNING AND IMPLEMENTING TABLES

Designing Tables. Data Types. Working with Schemas. Creating and Altering Tables.

ADVANCED TABLE DESIGNS

Partitioning Data. Compressing Data. Temporal Tables.

ENSURING DATA INTEGRITY THROUGH CONSTRAINTS

Enforcing Data Integrity. Implementing Data Domain Integrity. Implementing Entity and Referential Integrity.

INTRODUCTION TO INDEXES

Core Indexing Concepts. Data Types and Indexes. Heaps, Clustered, and Nonclustered Indexes. Single Column and Composite Indexes.

DESIGNING OPTIMIZED INDEX STRATEGIES

Index Strategies. Managing Indexes. Execution Plans. The Database Engine Tuning Advisor. Query Store.

COLUMNSTORE INDEXES

Introduction to Columnstore Indexes. Creating Columnstore Indexes.

DESIGNING AND IMPLEMENTING VIEWS

Introduction to Views. Creating and Managing Views. Performance Considerations for Views.

DESIGNING AND IMPLEMENTING STORED PROCEDURES

Introduction to Stored Procedures. Working with Stored Procedures. Implementing Parameterized Stored Procedures. Controlling Execution Context.

DESIGNING AND IMPLEMENTING USER-DEFINED FUNCTIONS

Overview of Functions. Designing and Implementing Scalar Functions. Designing and Implementing Table-Valued Functions. Considerations for Implementing Functions. Alternatives to Functions.

RESPONDING TO DATA MANIPULATION VIA TRIGGERS

Designing DML Triggers. Implementing DML Triggers. Advanced Trigger Concepts.

USING IN-MEMORY TABLES

Memory-Optimized Tables. Natively Compiled Stored Procedures.

SQL SERVER CONCURRENCY

Concurrency and Transactions. Locking Internals.

PERFORMANCE AND MONITORING

Extended Events. Working with extended Events. Live Query Statistics. Optimize Database File Configuration. Metrics.

ADMINISTERING MICROSOFT SQL SERVER DATABASES

INTRODUCTION TO SQL SERVER DATABASE ADMINISTRATION

Database Administration Overview. Introduction to the SQL Server Platform. Database Management Tools and Techniques.

INSTALLING AND CONFIGURING SQL SERVER

Planning SQL Server Installation. Installing SQL Server. Post-Installation Configuration.

WORKING WITH DATABASES AND STORAGE

Introduction to Data Storage with SQL Server. Managing Storage for System Databases. Managing Storage for User Databases. Moving Database Files. Configuring the Buffer Pool Extension.

PLANNING AND IMPLEMENTING A BACKUP STRATEGY

Understanding SQL Server Recovery Models. Planning a Backup Strategy. Backing up Databases and Transaction Logs. Using Backup Options. Ensuring Backup Reliability.

RESTORING SQL SERVER DATABASES

Understanding the Restore Process. Restoring Databases. Advanced Restore Scenarios. Working with Point-in-Time Recovery.

IMPORTING AND EXPORTING DATA

Introduction to Transferring Data. Importing and Exporting Table Data. Copying or Moving a Database.

MONITORING SQL SERVER

Introduction to Monitoring SQL Server. Dynamic Management Views and Functions. Performance Monitor.

TRACING SQL SERVER ACTIVITY

Tracing SQL Server Workload Activity. Using Traces.

MANAGING SQL SERVER SECURITY

Introduction to SQL Server Security. Managing Server-Level Security. Managing Database-Level Principals. Managing Database Permissions.

AUDITING DATA ACCESS AND ENCRYPTING DATA

Auditing Data Access in SQL Server. Implementing SQL Server Audit. Encrypting Databases.

PERFORMING ONGOING DATABASE MAINTENANCE

Ensuring Database Integrity. Maintaining Indexes. Automating Routine Database Maintenance.

AUTOMATING SQL SERVER MANAGEMENT

Automating SQL Server Management. Implementing SQL Server Agent Jobs. Managing SQL Server Agent Jobs. Managing Job Step Security Contexts. Managing Jobs on Multiple Servers.

MONITORING SQL SERVER BY USING ALERTS AND NOTIFICATIONS

Monitoring SQL Server Errors. Configuring Database Mail. Configuring Operators, Alerts, and Notifications.

05
DAYS

USQLA

06 - 10 NOVEMBER 2023

05 - 09 FEBRUARY 2024

08 - 12 APRIL 2024

LEARNING GOALS

This course provides students with the knowledge and skills to maintain a Microsoft SQL Server 2022 or previous version.

The course focuses on teaching individuals how to use SQL Server product features and tools related to maintaining a database.

TARGET AUDIENCE

The primary audience for this course is individuals who administer and maintain SQL Server databases.

SQL SERVER PERFORMANCE TUNING AND OPTIMIZATION

CPU AND PROCESS SCHEDULING

Threads and workers. Worker thread binding. Wait statistics analysis.

IO AND DATABASE STRUCTURE

Databases in SQL Server. Working with Data files. Using and configuring Filegroups. Log files.

MEMORY USE

Dynamic memory allocation. Memory consumers. Monitoring memory consumption.

DATA TYPES AND TABLES

Importance of data type selection. Storage cost. Variable versus fixed length. Implicit and explicit data type conversions.

INDEXES AND STATISTICS

Heaps. Clustered and non-clustered indexes. Monitoring allocation units. Creating filtered indexes. Indexes and statistics. Reading statistics. How the Query Optimizer uses statistics. Using filtered statistics. Working with indexed views. Configuring delayed durability.

QUERY EXECUTION AND QUERY PLANS

Execution context. Execution plans. Plan cache and plan reuse. Plan recompilation. Parameterization. Query store. Adaptive Query Processing. Automatic regressed plan detection.

INDEX AND QUERY TUNING

Understanding the query plan operators. How to measure query cost. Common query tuning techniques.

IMPROVED CARDINALITY ESTIMATOR

Cardinality estimates. Improvements in the new cardinality estimator. Which estimator is used? Discovering slower queries with the Query Store.

CONCURRENCY AND TRANSACTIONS

Transactions. Optimistic versus pessimistic concurrency control. Locking and lock types. Isolation levels. Monitoring locks. Deadlocks.

MONITORING SQL SERVER

Performance monitor. Profiler. Configuring Extended Event sessions.

WORKING WITH COLUMNSTORE INDEXES

Introduction to columnar data storage. Introduction to Rowgroups and segments. Creating Clustered ColumnStore Indexes. Creating NonClustered ColumnStore Indexes. Fragmentation in ColumnStore indexes. Real-time Operational Analytics.

WORKING WITH IN-MEMORY OLTP

Planning for In-Memory tables. Creating In-Memory tables. In-Memory tables and indexes. Working with Native Compiled Stored procedures.

05
DAYS

USQLOP

11 - 15 DECEMBER 2023

26 FEBRUARY - 01 MARCH 2024

22 - 26 APRIL 2024

LEARNING GOALS

This course is designed to give the right amount of Internals knowledge and wealth of practical tuning & optimization techniques that you can put into production. This 5-day class offers a comprehensive coverage of SQL Server architecture, indexing and statistics strategies, optimize transaction log operations, tempdb and data file configuration, transactions and isolation levels, and locking and blocking.

TARGET AUDIENCE

The primary audience for this course is individuals who develop, administer and maintain on-premises SQL Server or cloud-based Azure SQL databases and are responsible for optimal performance of SQL Server instances that they develop or manage.

U2U TRAINING CENTER



OUR LOCATION

U2U NV/SA

Z1 Researchpark 110
1731 Zellik (Brussels) Belgium

+ 32 2 466 00 16

info@u2u.be

www.u2u.be

VAT BE 0541 885 352

HOW TO GET THERE?



BY CAR

U2U is located next to the Brussels ring-road (R0) at exit 10. Our training center provides ample parking space.



BY BUS

From bus stop "Ganshoren Sport" (bus 84 or 87) it takes 5 minutes walking to get to our training center.



BY TRAIN

The walking path takes you in 15 minutes from the city railway station Sint-Agatha-Berchem to the U2U training center.



BY PLANE

From Brussels International Airport, it takes 15 minutes by taxi or 35 minutes by train to arrive at U2U. From the airport Brussels South (Charleroi), it takes less than 1 hour by shuttle bus, train or taxi.

