



u2u

TRAINING

POWER PLATFORM

**AZURE
NET 7**

SYNAPSE ANALYTICS

DYNAMICS 365

POWER BI

MICROSOFT

365

ANGULAR

COURSE AGENDA
JANUARY - JULY 2023

ON-SCHEDULE IN BRUSSELS
ON-SITE IN EUROPE & MIDDLE EAST
ONLINE EVERYWHERE

u2u DEVELOPER AND IT TRAINING



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!



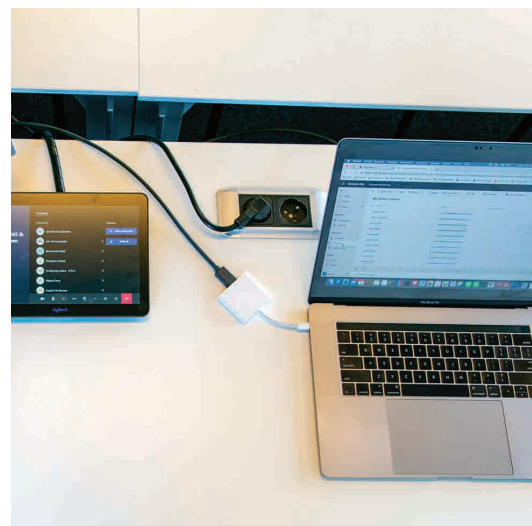
TUNE IN REMOTELY

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.



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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.

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CONTACT

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.

HOW TO OBTAIN A 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 number of participants is not limited
- All courseware up to 10 participants is included
- The course content can be adapted to your needs without extra cost
- Above 10 participants, additional fee per extra participant

Please contact us for an exact price calculation and 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 is **DV.0213569**.

KMO-PORTEFEUILLE
ERKENDE DIENSTVERLENER



SCHEDULE JANUARY 2023 - JULY 2023

VISUAL STUDIO

		Price	Days	Jan	Feb	Mar	Apr	May	Jun	Jul
.NET PROGRAMMING										
UCSPR	Object-Oriented Programming in C#	2100€	5			13		8	26	
UNOOP	Advanced Object-Oriented Programming Techniques in .NET	2100€	5			13		22		10
WEB DEVELOPMENT										
UNASP	Building Web Applications with ASP.NET	2100€	5	30		27		22		10
UWEBA	Advanced .NET Web Development	2100€	5		27			8		3
UWAPI	Building ASP.NET Web APIs	2100€	5	30		20		8		3
UWSEC	Web Security Development Techniques	1400€	3		13		11	30		
UBLZ	Building Single Page Applications with Blazor and C#	1400€	3	23		20				10
WINDOWS & MOBILE DEVELOPMENT										
UWPF	Building Windows Applications with WPF	2100€	5		27				19	
UWMAUI	Building Mobile Apps with .NET MAUI NEW	2100€	5		20		17		19	
ENTERPRISE & ARCHITECTURE										
UARCH	.NET Best Practices: Architecture & Design Patterns	2100€	5		20		24			3
UDEF	Domain-Driven Design with Entity Framework Core	1400€	3		27		11		12	
UTEST	Effective Unit Testing	950€	2	26		23			1	
BIZTALK DEVELOPMENT										
UBTSD	Developing Solutions Using Microsoft BizTalk Server 2020	2200€	5			27				

MICROSOFT AZURE

		Price	Days	Jan	Feb	Mar	Apr	May	Jun	Jul
MICROSOFT AZURE FOR DEVELOPERS										
UAWEB	Developing & Deploying Web Apps on Microsoft Azure	2100€	5		27		3		5	
UAMIC	Developing Microservices with Containers, Kubernetes and Microsoft Azure	1400€	3		20		24		26	
UACA	Microsoft Azure Architecture Master Class - Development NEW	1750€	4		13		11		19	
UADAI	Developing Intelligent Solutions with the Microsoft AI Platform	1400€	3			6		30		
MICROSOFT AZURE DEVOPS										
UTFS	Team Development with Azure DevOps	1400€	3			20	17		5	
AZ-400	Microsoft Azure DevOps Solutions	1750€	4			13			26	
UGIT	Version Control and Team Collaboration with Git	450€	1			20	17		5	
MICROSOFT AZURE FOR ADMINISTRATORS										
UAZUREA	Microsoft Azure Infrastructure Services	2100€	5		6		17			3
UAIA	Microsoft Azure Architecture Master Class - Infrastructure NEW	1400€	3					8		10
AZ-700	Designing and Implementing Microsoft Azure Networking Solutions	1400€	3		7		18			4
UAAD	Azure Active Directory Identity Management	1400€	3	23		27		30		
UAON	Managing Containers with Kubernetes and Microsoft Azure	1400€	3			20			12	
UAIC	GitOps: Infrastructure as Code with Microsoft Azure	1400€	3		13		11		12	
UASEC	Securing and Monitoring Microsoft Azure	950€	2		16		27		22	
UCSEC	Mastering Microsoft Cloud Cybersecurity NEW	2100€	5		13		24		19	
MICROSOFT AZURE DATA PLATFORM										
UASQL	Administering Azure SQL Databases	1750€	4		27		11		12	
UASQLD	Developing Azure SQL Databases	2100€	5		20		24		26	
UASA	Data Engineering with Azure Synapse Analytics NEW	2100€	5		6	20		8		3
UPUR	Data Governance with Microsoft Purview NEW	950€	2		17			4	22	
UACIT	Machine Learning for the Citizen Data Scientist	950€	2				17			
UADS	Data Science with Python on the Microsoft Azure Platform	1400€	3	26			19			

JAVASCRIPT

		Price	Days	Jan	Feb	Mar	Apr	May	Jun	Jul
WEB FUNDAMENTALS										
UJSDEV	JavaScript Fundamentals	1400€	3	18			26		28	
UJSWEB	Programming with JavaScript, HTML and CSS	2100€	5	16			24		26	
JAVASCRIPT LIBRARIES										
UANG	Building web apps with Angular and TypeScript	1400€	3	16		6		2		3
UANGA	Mastering Angular	1400€	3		6		11		5	
UREACT	Developing Web Apps with React	1400€	3		20		17		12	
UVUE	Building Web Apps with Vue.js	950€	2		9		11			6
MOBILE DEVELOPMENT										
UREACTN	Mobile Development with React Native	950€	2		23		20		15	

All courses scheduled at U2U Brussels are taught in English. Course hours: First day of course 9:30-17:00, next days: 9:15-17:00.

All prices listed are in Euro and are 21% VAT exclusive. The prices listed on our calendar are for courses scheduled and organized at the U2U training center in Brussels. The course price includes the high-quality lecture, hands-on exercises on an individual PC, a U2U course book or Microsoft Official Courseware, coffee, soft drinks and lunch. The prices are valid for all bookings registered at U2U after 1st January 2023 and before 31st May 2023. Cancellations up to 8 days before the course are at no charge. Cancellations after this date, as well as no-shows, will be liable for the full registration fee. Substitutions may be made at any time by providing U2U with written notice of the names of both the original and substitute registrant. Please send cancellation or substitution information by email to info@u2u.be.

POWER BI

POWER BI FUNDAMENTALS

		Price	Days	Jan	Feb	Mar	Apr	May	Jun	Jul
UBIPBE	Analyzing your data with Power BI for Business Users	1400€	3	30		13	24		19	
UBIPB	Analyzing your data with Power BI for BI Professionals	2100€	5		13		3	22		10
ADVANCED POWER BI										
UDAX	Mastering DAX	1400€	3	23			11	30		
UPBIM	Managing a Power BI Environment	1400€	3	30		27		30		
UPBIDM	Designing Data Models for Power BI NEW	950€	2		2		27		29	
POWER BI FOR DEVELOPERS										
UBIPBD	Developing for the Power BI Platform	1400€	3				24			3

MICROSOFT POWER PLATFORM & DYNAMICS 365

MICROSOFT POWER APPS & POWER AUTOMATE

		Price	Days	Jan	Feb	Mar	Apr	May	Jun	Jul
UPOWER	Microsoft Power Apps and Power Automate	1750€	4		6	20			2	12
UPPA	Power Apps and Power Automate: Advanced Patterns NEW	1400€	3		20		3	30		
MICROSOFT DATAVERSE										
UCDS	Model-Driven Apps with Microsoft Dataverse in Power Apps	2100€	5		13		3		5	
UPAP	Create low-code business websites with Microsoft Power Pages NEW	1400€	3	16			24		26	
UCDSD	Developing for the Power Platform with Microsoft Dataverse	2100€	5			20		22		31

MICROSOFT 365 & SHAREPOINT

MICROSOFT 365 FOR POWER USERS

		Price	Days	Jan	Feb	Mar	Apr	May	Jun	Jul
USPOP	Microsoft SharePoint Online for Power Users	2100€	5	30		6	24	12	31	
U0365P	Office 365 Essentials	1400€	3			13			5	
UVIVA	Microsoft 365 Employee Experience with Microsoft Viva NEW	1400€	3				11			3
UM365AI	Building Smart Solutions with Microsoft 365 AI Builder and Microsoft Syntex NEW	950€	2			16		25		

MICROSOFT 365 FOR DEVELOPERS

		Price	Days	Jan	Feb	Mar	Apr	May	Jun	Jul
USPOAP	Modern Development with Office 365 and SharePoint Online	2100€	5		6		24		26	
USPFX	Developing with the SharePoint Framework	2100€	5	23		27			5	
UTEAMSD	Developing for Microsoft Teams	1400€	3		20			2		10

MICROSOFT 365 FOR IT PROFESSIONALS

		Price	Days	Jan	Feb	Mar	Apr	May	Jun	Jul
U0365A	Configuring & Administering Microsoft 365	1750€	4			13		2	26	
MS-700	Managing Microsoft Teams	1400€	3	25		20		30		
UINT	Microsoft Endpoint Manager: Configuring Devices with Microsoft Intune	1400€	3		27		24		19	
UMSEC	Microsoft 365 Cloud Security	1400€	3		13		24		19	
UCSEC	Mastering Microsoft Cloud Cybersecurity NEW	2100€	5		13		24		19	

MICROSOFT SQL SERVER

MICROSOFT SQL SERVER

		Price	Days	Jan	Feb	Mar	Apr	May	Jun	Jul
UTSQL	Querying SQL Server with Transact-SQL	1400€	3		13		17	30		
USQLD	Developing and Optimizing SQL Server Databases	2100€	5		20		24		26	
USQLA	Administering Microsoft SQL Server Databases	2100€	5		13		3		12	
USQLOP	SQL Server Performance Tuning and Optimization	2100€	5		20		17		19	

AZURE SQL

		Price	Days	Jan	Feb	Mar	Apr	May	Jun	Jul
UTSQL	Querying SQL Server with Transact-SQL	1400€	3		13		17	30		
UASQLD	Developing Azure SQL Databases	2100€	5		20		24		26	
UASQL	Administering Azure SQL Databases NEW	1750€	4		27		11		12	
USQLOP	SQL Server Performance Tuning and Optimization	2100€	5		20		17		19	

POWERSHELL & WINDOWS SERVER

WINDOWS SERVER 2022

		Price	Days	Jan	Feb	Mar	Apr	May	Jun	Jul
AZ-800	Administering Windows Server Hybrid Core Infrastructure	2100€	5		27			5		
WS-011	Windows Server 2022 Administration	2100€	5		27				5	
UPKI	Public Key Infrastructure	950€	2						15	

POWERSHELL

		Price	Days	Jan	Feb	Mar	Apr	May	Jun	Jul
UPSHELL	Scripting with PowerShell	1400€	3	30		13		22		10
UPSHELLA	Mastering PowerShell	2100€	5	30		13		22		10

UCSPR

05
DAYS

13 - 17 March 2023
08 - 12 May 2023
26 - 30 June 2023
21 - 25 August 2023

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... In this course, you'll get a taste of the different types of applications and .NET libraries through examples in WPF, Entity Framework Core and ASP.NET Core.

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#.

UNOOP

05
DAYS

13 - 17 March 2023
22 - 26 May 2023
10 - 14 July 2023
11 - 15 September 2023

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 6/7**

What is a .NET Application? .NET Framework versus .NET 6/7. .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. 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.

GENERIC

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.

DELEGATES AND EVENTS

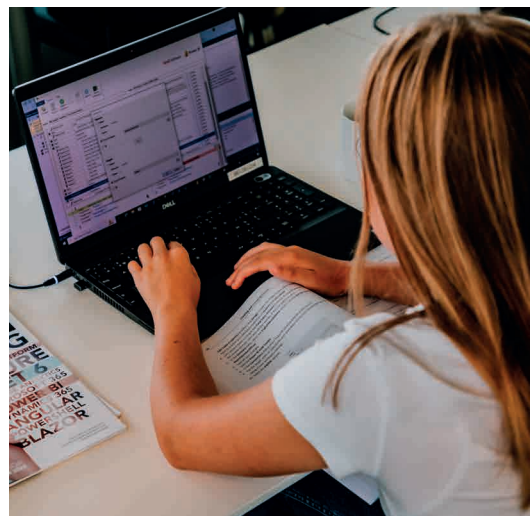
Creating Delegates. Using Delegates. Multicast Delegates. Creating Events. Using Events in a UI. Anonymous Methods and Lambda Expressions.

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****GENERIC**

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. Closures.

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.

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. Async Guidelines.

PARALLEL COMPUTING

What is parallel programming? Concurrent collections. Parallel LINQ.

REACTIVE EXTENSIONS

Push vs. Pull. Understanding IObservable<T> and IObservable<T>. Hot and Cold Observables. Using LINQ with Rx. Building your own Rx Extensions.

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 Static Reflection.

USING THE DYNAMIC LANGUAGE RUNTIME

Understanding the Dynamic Keyword. Talking to JavaScript Objects using the Dynamic Keyword. Building your own Dynamic Types.

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. Understanding Dependency Injection.

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. Handling Routing Errors.

ASP.NET CORE MVC CONTROLLERS

Model Binding. Different Action Results. Working with GET and POST. Action Filters. Redirections.

RESPONSIVE WEB DESIGN WITH BOOTSTRAP

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

JAVASCRIPT LANGUAGE FUNDAMENTALS

Variables. Primitives and Objects. Functions and Scope. Error Handling.

RAZOR VIEWS

Views and View Engines. 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 & TESTING

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

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 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. Username and Password. Extending Authentication with your own Data. Using the Microsoft Identity Platform. Authorization with Policies.

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.

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.

ASYNC 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

30 January - 03 February 2023

27 - 31 March 2023

22 - 26 May 2023

10 - 14 July 2023

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. 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. This course is intended for .NET 6/7 with C#.

05
DAYS

UWAPI

30 January - 01 February 2023

20 - 24 March 2023

08 - 12 May 2023

03 - 07 July 2023

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#.

UDEF

03
DAYS

27 February - 01 March 2023

11 - 13 April 2023

12 - 14 June 2023

16 - 18 August 2023

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#/VB.NET and ASP.NET.

UWSEC

03
DAYS

13 - 15 February 2023

11 - 13 April 2023

30 May - 01 June 2023

17 - 19 August 2023

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 that have experience with ASP.NET MVC or ASP.NET Core and want to make the world a safer place through applied security best practices.

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? Anti-Pattern: Big Ball of Mud. Anti-Pattern: Death by a Thousand Dots.

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 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. Measuring and improving Code Coverage.

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 identity. Designing immutable value objects. Implementing Value Objects Equality efficiently. C# 9 records.

TACTICAL DESIGN - DOMAIN SERVICES AND MODULES

Providing domain specific operations with Services. Segregating concepts using Modules.

STRATEGIC DESIGN

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. Abstracting the creation of Entities, Value Objects and Aggregates 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 test for your MVC controllers. Unit testing your views. Unit testing ApiControllers. Using the ASP.NET Core testing framework. End-to-end testing.

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.



ADVANCED .NET WEB DEVELOPMENT

NET 6/7 INTRODUCTION

Understanding .NET 6/7: .NET Framework versus .NET 6/7. 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.

MODERN C# LANGUAGE FEATURES YOU NEED TO KNOW

Enabling the latest C# features. Nullable Reference Types. Implicit Usings and File Scoped Namespaces. Value Tuples. C# Pattern Matching. Init-only Properties and Records. Target Typed Expressions. Top-level Programs. Generic Attributes. Raw String Literals. Required Members.

ASP.NET CORE PIPELINE

Understanding the principle of Pipelines. Selecting your middleware in the Startup class. Review of 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 6/7.

FILTERS

How Filters Work. Authorization Filters. Action Filters. Result Filters Exception 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.

MINIMAL APIS

Benefits of Minimal APIs. Routes and Handlers. Model Binding and Return Types. Code Organization. .NET 7 Endpoint Filters. .NET 7 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 OAUTH

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. Deploying to Containers.

AZURE APP SERVICES: WEB APPS

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

05
DAYS

UWEBA

27 february - 03 March 2023

08 - 12 May 2023

03 - 07 July 2023

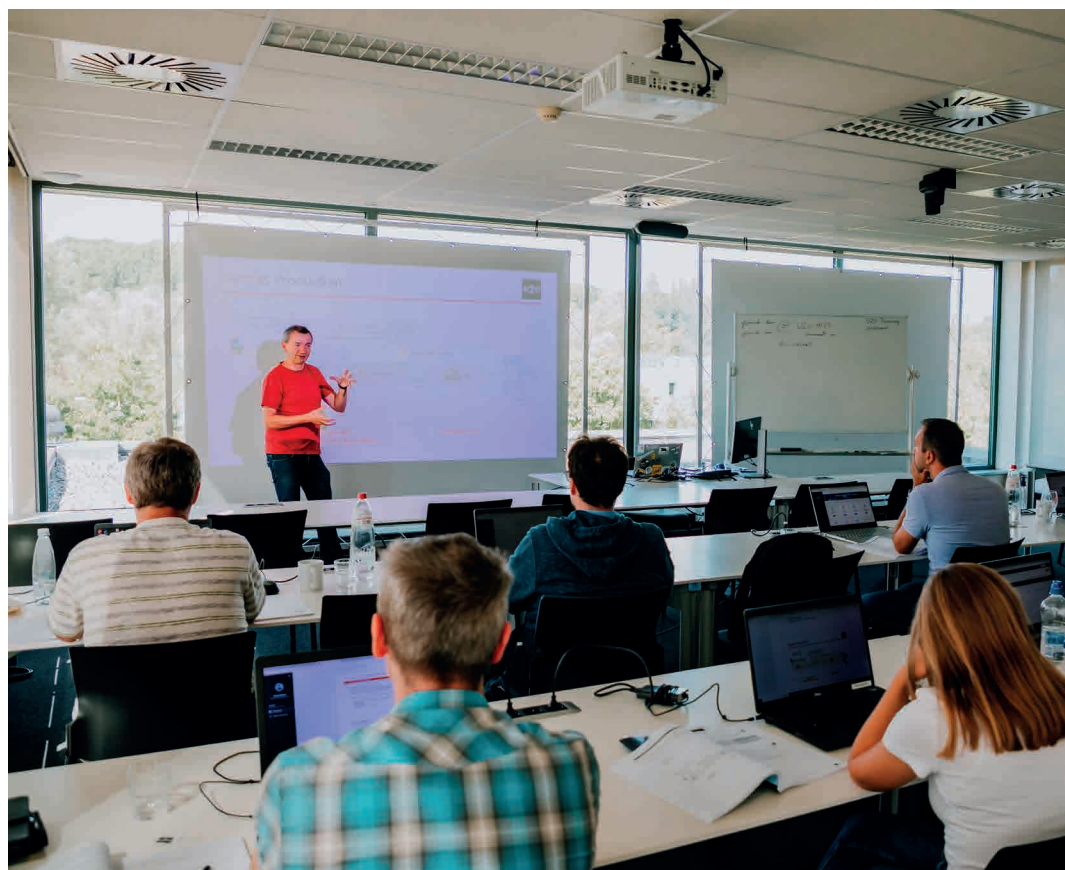
04 - 08 September 2023

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 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 6/7, 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 that have experience with ASP.NET Core MVC and/or Web API and want to become a master in ASP.NET Core.



UARCH

05
DAYS

20 - 24 February 2023
24 - 28 April 2023
03 - 07 July 2023
04 - 08 September 2023

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 Loosy-Goosy.

CREATIONAL PATTERNS

Singleton - a.k.a. The Pluto Pattern. Builders - separating the construction from the representation. 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: MOQ AND MICROSOFT FAKES.

Understanding Isolation Frameworks. Building Stubs and Mocks with MOQ. 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. 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.

UTEST

02
DAYS

26 - 27 January 2023
23 - 24 March 2023
01 - 02 June 2023
10 - 11 august 2023

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#.

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 HttpClientJsonExtensions 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.

BLAZOR AND GLOBALIZATION

What is internationalization, localization and globalization? Detecting the user's language. Internationalizing your Blazor application. Localizing your application.

SECURITY

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

03
DAYS

UBLZ

23 - 25 January 2023

20 - 22 March 2023

10 - 12 July 2023

11 - 13 September 2023

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.

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

Re-using 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

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

05
DAYS

UMAUI

20 - 24 February 2023

17 - 21 April 2023

19 - 23 June 2023

28 August - 01 September 2023

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 6/7. 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.

UAWEB

05
DAYS

27 February - 03 March 2023

03 - 07 April 2023

05 - 09 June 2023

07 - 11 August 2023

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.

UAMIC

03
DAYS

20 - 22 February 2023

24 - 26 April 2023

26 - 28 June 2023

21 - 23 August 2023

LEARNING GOALS

This course starts with covering Docker technology and how to deploy your .NET applications in Docker containers. 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.

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.

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. Function Triggering Options. Integrating with other Azure Services. Sending Triggers from your Website via Azure Storage Queues.

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.

ARM TEMPLATES

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

CI/CD WITH AZURE DEVOPS

DevOps Lifecycle. Planning. Build. Release Management. Autotest.

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.

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.

SERVICE MESH

Problems with Synchronous Communication. Sidecar Pattern. What is a Service Mesh? Example: Open Service Mesh.

BUILDING MICROSERVICES WITH DAPR

Dapr Overview. Installation. State Management. Service Invocation. Publish and Subscribe. Bindings. Observability. Secrets Management.

AZURE CONTAINER APPS

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

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. MultiRegion. 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

13 - 17 February 2023

11 - 14 April 2023

18 - 21 June 2023

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.

MACHINE LEARNING

Supervised vs Unsupervised. Machine Learning Process. Deep Learning. Data Preparation. Tools.

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.

AZURE MACHINE LEARNING DESIGNER

Working with Datasets. Data Preparation. Exploring Modelling Techniques. Training and Evaluating Models. Automated ML. Deployment as Web Service.

ML.NET

Loading and Transforming Data. Prediction and Evaluation. Importing and Exporting Models. Experiments. Automated Machine Learning.

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.

03
DAYS

UADAI

06 - 08 March 2023

30 May - 01 June 2023

28 - 30 August 2023

LEARNING GOALS

AI is not just for the greats, it's at the fingertips of any developer without having to be a data scientist. In this course you are taken through all relevant topics to build intelligent applications.

TARGET AUDIENCE

Participants of this course need to have a decent understanding of .NET and preferably some experience with Microsoft Azure



UAAZUREA

05
DAYS

06 - 10 February 2023
17 - 21 April 2023
03 - 07 July 2023
04 - 08 September 2023

LEARNING GOALS

Microsoft Azure helps IT Professionals to build a scalable infrastructure to their needs. It reduces costs for the overall IT platform and allows you to extend your environment very quickly whenever necessary. The cost of the IT infrastructure is reduced because you only pay for what you really use.

TARGET AUDIENCE

This course is intended for IT professional technical specialists responsible for implementing and maintaining the IT environment.

UAIA

03
DAYS

08 - 10 May 2023
10 - 12 July 2023
25 - 27 September 2023

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.

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 Overview. 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.

MANAGE AZURE VMs

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

SIZING AND TROUBLESHOOTING AZURE VMs

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

AZURE LOAD BALANCING

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

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. Deployment Solutions: SaaS, PaaS, IaaS. Hybrid Cloud Solutions: Azure Stack, Stack Hub. Architectural Building Blocks: Storage, Networking, Compute. Design Influencers: Security, Cost, Performance, High Availability, ...

DESIGNING SUBSCRIPTIONS

Tenants. Management Groups. Subscriptions. Resource Groups. Azure Lighthouse.

RESOURCE DEPLOYMENT

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

CHOOSING A COMPUTE SOLUTION

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

NETWORK DESIGN

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

NAME RESOLUTION

Azure DNS Service. Public DNS Zone. Private DNS Zone. Hybrid Name Resolution: Azure DNS Private Resolver.

DESIGN AN APPLICATION PROTECTION STRATEGY

Disaster Recovery, Business Continuity and High Availability Solutions. Azure Backup Services. Azure Recovery Services. Choosing a Load Balancing Solution: Azure Load Balancer, Application Gateway, Traffic Manager, Front Door.

VNET INTEGRATION OPTIONS FOR PAAS SOLUTIONS

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

SECURITY ARCHITECTURE

Role Based Access Control (RBAC). Options for Storing Sensitive Data. Key Vault. Managed Identities.

DESIGN FOR IDENTITIES

Azure AD. 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.



AZURE ACTIVE DIRECTORY IDENTITY MANAGEMENT

AZURE ACTIVE DIRECTORY OVERVIEW

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

AZURE AD USERS, GROUPS AND DEVICES

User Management. Group Management. Dynamic Groups. Role Assignable Groups. Group Settings. Device Management.

AZURE AD FEATURES

Multi-Factor Authentication. Password Management. Company Branding.

AZURE AD ROLES

Azure AD Roles. Administrative Units. Privileged Identity Management.

AZURE AD EXTERNAL IDENTITIES

External Identities Overview. Identity Providers. B2B Collaboration. Manage B2B Access. B2B Direct Connect. Azure AD B2C.

AZURE AD SECURING IDENTITIES

Single Sign On. Identity Protection. Conditional Access.

AZURE AD CONNECT

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

AZURE AD AUTHENTICATION OPTIONS

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

AZURE AD APPLICATION MANAGEMENT

Application Management Overview. Gallery Applications. Azure AD Application Proxy. Custom Developed Applications. Managed Identities.

AZURE AD IDENTITY GOVERNANCE

Azure AD Identity Governance Overview. Azure AD Entitlement Management. Access Packages. Connected Organizations. Access Reviews.

02
DAYS

UASEC

16 - 17 February 2023

27 - 28 April 2023

22 - 23 June 2023

21 - 22 September 2023

LEARNING GOALS

IT departments have to manage lots of different services and applications, hosted on-premises or in a cloud infrastructure. Azure provides various tools that can help you to accomplish this task. Collecting and analyzing security data is another important aspect of the IT professional's job. Services like Microsoft Defender for Cloud and Microsoft Sentinel can be a huge help in keeping the overview on what is going on in the organization.

TARGET AUDIENCE

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

03
DAYS

UAAD

23 - 25 January 2023

27 - 29 March 2023

30 May - 01 June 2023

16 - 18 August 2023

LEARNING GOALS

Azure Active Directory is a cloud identity solution that provides a set of capabilities to manage users and groups. Azure AD can be integrated with your on-prem Active Directory to simplify user management and provide a Single Sign-On experience.

TARGET AUDIENCE

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

AZ-800

05
DAYS

27 February - 03 March 2023

05 - 09 June 2023

06 - 10 November 2023

LEARNING GOALS

This course teaches IT Professionals how to manage core Windows Server workloads and services using on-premises, hybrid, and cloud technologies. The course teaches IT Professionals how to implement and manage on-premises and hybrid solutions such as identity, management, compute, networking, and storage in a Windows Server hybrid environment.

TARGET AUDIENCE

This course is intended for Windows Server Hybrid Administrators who have experience working with Windows Server and want to extend the capabilities of their on-premises environments by combining on-premises and hybrid technologies.

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 advanced features of AD DS.

IMPLEMENTING IDENTITY IN HYBRID SCENARIOS

Implement hybrid identity with Windows Server. Deploy and manage Azure IaaS Active Directory domain controllers in Azure.

WINDOWS SERVER ADMINISTRATION

Perform Windows Server secure administration. Describe Windows Server administration tools. Perform post-installation configuration of Windows Server. Just Enough Administration in Windows Server.

FACILITATING HYBRID MANAGEMENT

Administer and manage Windows Server IaaS virtual machines remotely. Manage hybrid workloads with Azure Arc.

HYPER-V VIRTUALIZATION IN WINDOWS SERVER

Configure and manage Hyper-V. Configure and manage Hyper-V virtual machines. Secure Hyper-V workloads. Run containers on Windows Server. Orchestrate containers on Windows Server using Kubernetes.

DEPLOYING AND CONFIGURING AZURE VMS

Plan and deploy Windows Server IaaS virtual machines. Customize Windows Server IaaS virtual machine images. Automate the configuration of Windows Server IaaS virtual machines.

NETWORK INFRASTRUCTURE SERVICES IN WINDOWS SERVER

Deploy and manage DHCP. Implement Windows Server DNS. Implement IP address management. Implement remote access.

IMPLEMENTING HYBRID NETWORKING INFRASTRUCTURE

Implement hybrid network infrastructure. Implement DNS for Windows Server IaaS VMs. Implement Windows Server IaaS 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 Windows Server Data Deduplication. Implement Windows Server iSCSI. Implement Windows Server Storage Replica.

IMPLEMENTING A HYBRID FILE SERVER INFRASTRUCTURE

Overview of Azure file services. Implementing Azure File Sync.



MANAGING CONTAINERS WITH KUBERNETES AND MICROSOFT AZURE

CONTAINERS

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

WINDOWS AND LINUX CONTAINERS

Windows Containers. Deploy a Windows Container Host. Linux Containers on Windows. Linux Containers. Deploy a Linux Container Host.

DOCKER

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

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.



UACON

03
DAYS

20 - 22 March 2023

12 - 14 June 2023

02 - 04 October 2023

LEARNING GOALS

In this course students will learn to build Docker containers on both Windows and Linux. When working in a containerized environment, you will need an orchestration tool to simplify the deployment and configuration of your containers. That is where Kubernetes and Azure Kubernetes Cluster (AKS) come into play.

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.

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.



ADMINISTERING AZURE SQL DATABASES

INTRODUCTION TO AZURE SQL

What is Azure SQL? Azure SQL Architecture. Azure SQL Pricing. Azure SQL Service Tiers and DTU's. 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 eDTU's. 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.

05
DAYS

UASQLD

20 - 24 February 2023

24 - 28 April 2023

26 - 30 June 2023

25 - 29 September 2023

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.

04
DAYS

UASQL

27 February - 02 March 2023

11 - 14 April 2023

12 - 15 June 2023

07 - 10 August 2023

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 DBA's 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.

UASA

05
DAYS

06 - 10 February 2023
20 - 24 March 2023
08 - 12 May 2023
03 - 07 July 2023

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. This training teaches how to use Synapse Analytics to design, build and maintain a modern data lake architecture. The training also includes a few other Azure services which come in handy when working with Synapse Analytics.

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.

UPUR

02
DAYS

17 February 2023
04 - 05 May 2023
22 - 23 June 2023
07 - 08 September 2023

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.

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.

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 ADVANCED PIPELINES

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

CREATING DATA FLOWS IN SYNAPSE ANALYTICS PIPELINES

From ELT to ETL. Creating Data flows. Sizing the Spark cluster. Running and Profiling Data flows. Exploring the Power Query activity.

CONFIGURING INTEGRATION RUNTIMES

Integration runtime overview. Controlling the Azure Integration Runtime. Setup self-hosted Integration Runtimes. Lift and shift SSIS packages in Data Factory.

DEPLOYING AND MONITORING PIPELINES

Adding triggers to pipelines. Deploying pipelines. Monitoring pipeline executions. Restart failed pipelines.

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.

AZURE SYNAPSE ANALYTICS SERVERLESS SQL

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. Partitioning. Performance monitoring and tuning.

GETTING STARTED WITH SPARK

Introduction Spark framework. Spark Cluster setup. Getting started with Notebooks.

ACCESSING DATA IN SYNAPSE ANALYTICS SPARK

Uploading data. Connecting to Azure Storage and Data Lake Gen 2. Dealing with malformed data. Processing Spark Dataframes in Python. Using Spark SQL. Working with Delta Lake.

WORKING WITH AZURE DATABRICKS

Provision a Databricks cluster. Uploading data. Connecting to Azure Storage and Data Warehouse. Mounting Azure Blob storage. Accessing data in an Azure Data Lake Gen 2.

DEPLOYING AN AZURE DATABRICKS OR SPARK SOLUTION

Azure Databricks jobs. Working with Databricks Widgets. Calling Databricks Notebooks from within Azure Data Factory pipelines.

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.

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

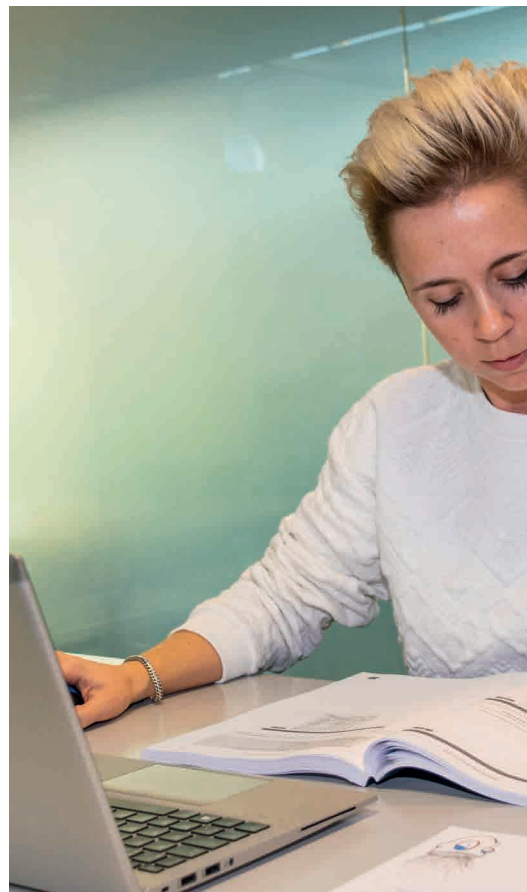
The need for Data Share. Setup Data Share using Purview.

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.



MACHINE LEARNING FOR THE CITIZEN DATA SCIENTIST

INTRODUCTION TO MACHINE LEARNING

What is machine learning? Why would we use Machine Learning? Machine Learning methodology. Data preprocessing. Modeling. Model evaluation: measuring quality.

TOOLS FOR CITIZEN DATA SCIENTISTS IN AZURE

Overview Machine Learning in Azure. Pretrained models. Transfer learning. Graphical approaches. Coding approaches.

COGNITIVE SERVICES

Overview of cognitive services. Pretrained services. Customizable services. Conversational Language Understanding (CLU).

AZURE MACHINE LEARNING SERVICE: AUTOMATED ML

Introduction to Azure Machine Learning Service. Important concepts Azure ML. Building Automated ML Models. Deploying and consuming an Automated ML model.

AZURE MACHINE LEARNING SERVICE: DESIGNER

What is the Designer? Loading data. Preprocessing data. Creating Machine Learning Models. Deploying models.

AI FEATURES IN POWER BI

Introduction to Power BI. Using ML models in Power BI Data Flows. More machine learning options in Power BI.



DATA SCIENCE WITH PYTHON ON THE MICROSOFT AZURE PLATFORM

MACHINE LEARNING INTRODUCTION

Supervised versus unsupervised learning. Machine learning methodology. Data preparation. Classification, regression and clustering. Model evaluation. Cognitive services. Automated ML in Azure ML Services. Working with the Azure ML Designer.

GETTING STARTED WITH PYTHON

Introducing the Python programming language. Python environments. Interactive development in Jupyter notebooks. Variables and objects. Looping and iteration. Common data structures: Lists, tuples, sets and dictionaries.

DEVELOPING MODULAR PYTHON CODE

Functions. Creating classes. Using classes. Inheritance.

DATA PROCESSING WITH SCIPY

Numerical Python: Numpy. Numpy data structures. Pandas DataFrames. Loading data with pandas. Data manipulations with Pandas.

DATA INSPECTION

Plotting with pandas. Introducing the matplotlib package. Using the seaborn package. Creating interactive plots with Plotly.

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's 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.

GETTING STARTED WITH DEEP LEARNING

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



02
DAYS

UACIT

17 - 18 April 2023

07 - 08 August 2023

30 - 31 October 2023

LEARNING GOALS

In this course the concepts of ML for citizen data science are covered. You will learn how to create and deploy ML models without a lot of ML or coding knowledge in Azure.

TARGET AUDIENCE

This course is intended for people who plan on using ML without writing code.

03
DAYS

UADS

26 - 27 January 2023

19 - 21 April 2023

09 - 11 August 2023

25 - 27 October 2023

LEARNING GOALS

A first goal is to learn the fundamentals of machine learning: Terminology and methodology. A second goal is to learn the Python language as a tool to load and cleanse data, and apply machine learning on this data. The final goal is to learn how Azure Machine Learning can be used to manage and scale up the machine learning process.

TARGET AUDIENCE

Developers and data scientists who are starting to use machine learning and who are considering the Azure stack for applying machine learning.

UTFS

03
DAYS

20 - 22 March 2023
17 - 19 April 2023
05 - 07 June 2023
16 - 18 August 2023

LEARNING GOALS

In this course you will learn about application development lifecycle, showing how DevOps can improve the efficiency and code quality of your team. You will perform project management, source control, build automation and infrastructure as code.

TARGET AUDIENCE

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

UAIC

03
DAYS

13 - 15 February 2023
11 - 13 April 2023
12 - 14 June 2023
07 - 09 August 2023

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.

UGIT

01
DAY

20 March 2023
17 April 2023
05 June 2023

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.

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 IN AZURE REPOS

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. Creating Build processes with the new componentized build. What are jobs, tasks? Integrating with other systems (such as GitHub) using Service Connections. Integrating with other systems (such as GitHub) using Service Connections.

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. What are Agents? Setting up a build agent in your enterprise network. Understanding ChatOps.

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.

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.

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.

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. Error Handling. Best practice.

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

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

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

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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

18 - 20 January 2023

26 - 28 April 2023

28 - 30 June 2023

20 - 22 September 2023

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

16 - 20 January 2023

24 - 28 April 2023

26 - 30 June 2023

18 - 22 September 2023

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.

UANG

03
DAYS

16 - 18 January 2023

06 - 08 March 2023

02 - 04 May 2023

03 - 05 July 2023

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.

UANGA

03
DAYS

06 - 08 February 2023

11 - 13 April 2023

05 - 07 June 2023

02 - 04 August 2023

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 that really want to master Angular. Participants of this course need to have a decent understanding of Angular and TypeScript.

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. 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.

**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.

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.

03
DAYS

UREACT

20 - 22 February 2023

17 - 19 April 2023

12 - 14 June 2023

21 - 23 August 2023

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.

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 ListView. 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.

02
DAYS

UREACTN

23 - 24 February 2023

20 - 21 April 2023

15 - 16 June 2023

24 - 25 August 2023

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.

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.

02
DAYS

UVUE

09 - 10 February 2023

11 - 12 April 2023

06 - 07 July 2023

29 - 30 September 2023

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 componentbased development.

TARGET AUDIENCE

Professional web developers who are familiar with JavaScript and HTML.

03
DAYS

UPSHELL

30 January - 01 February 2023
13 - 15 March 2023
22 - 24 May 2023
10 - 12 July 2023

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 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

30 January - 03 February 2023
13 - 17 March 2023
22 - 26 May 2023
10 - 14 July 2023

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

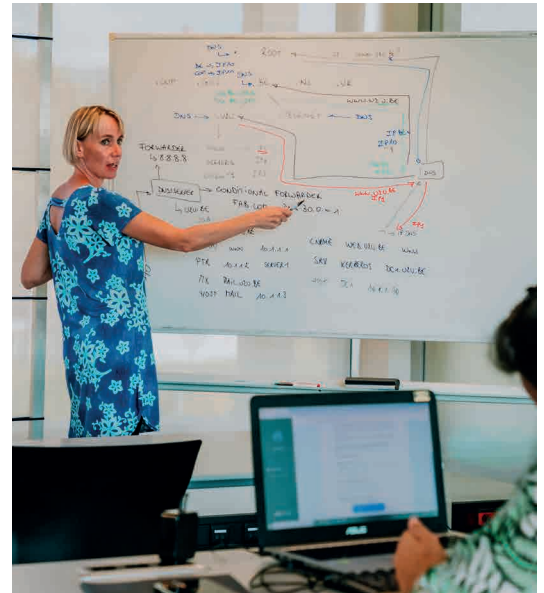
PowerShell Execution Policy. Script Signing. Security Sensitive Information in Scripts.

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 Aliases. PowerShell Aliases.

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. Working with the Object cmdlets: Where-Object, Foreach-Object, ...

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.

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

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PowerShell Remoting Overview. WS-Management (WSMAN). Remote CIM Sessions. Import/Export Remoting 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 and 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

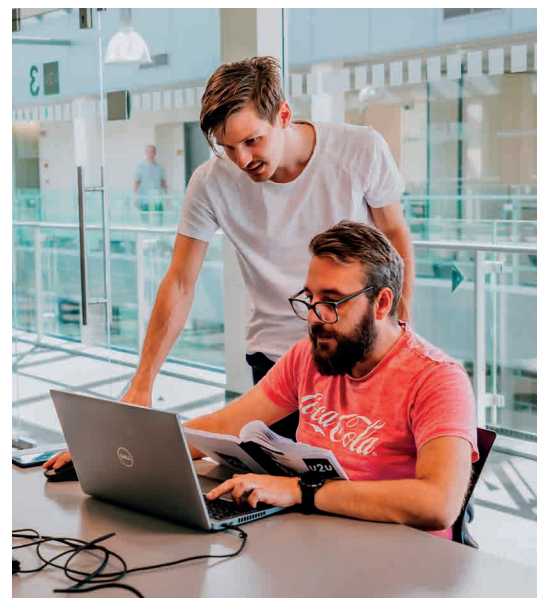
Functions. Script Basics. Advanced Functions. Advanced Parameter Configuration. Command Documentation. Creating a PowerShell Module. Creating your own Cmdlets.

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 columns and tables. Hiding columns and tables from the Data Model. Column data type and formatting. Working with numerical fields. Sorting data in columns. Data categorization. Creating Hierarchies in 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. Add style and branding through themes. Printing a Power BI Report. Creating Power BI Templates.

ENHANCING REPORTS IN POWER BI DESKTOP

Working with Slicers and Filters. Working with Drillthrough report pages. Working with Bookmarks. Visual hierarchies and drill-down behavior. Grouping and Binning. Using Custom Visuals. Create reports that are optimized for phones.

INTRODUCTION TO POWER BI SERVICE

What is the Power BI Service?. Power BI Service pricing 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 a dataset from the service in Power BI Desktop. DirectQuery for Power BI datasets and Azure Analysis Services. Using Quick Insights. Creating Reports in the Power BI Service. Printing Reports. Export to PowerPoint.

CREATING DASHBOARDS AND ANALYZING DATA WITH POWER BI SERVICE

Creating Dashboards. Printing Dashboards. Configuring Dashboards for Mobile Devices. Working with Power BI Q&A. Analyze in Excel. Working with goals.

SHARING CONTENT IN THE POWER BI SERVICE

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

USING POWER BI WITH MOBILE DEVICES

Supported Platforms. Accessing Reports and Dashboards from mobile devices.

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. 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. Controlling field formatting. Creating hierarchies inside tables. Data model storage in import mode. Analyzing storage costs using the Vertipaq Analyzer or DAX Studio.

CREATING RELATIONSHIPS

Cardinality of relationships. Handling role-playing dimensions. The Cross-Filter direction of relationships.

WORKING WITH STORAGE MODES

Importing data. Using DirectQuery. Using a Live connection. Creating aggregation tables.

DATA ANALYSIS EXPRESSIONS (DAX)

DAX introduction. Creating Calculated Columns. Creating Tables. Creating Measures. Working with CALCULATE. Time Intelligence Functions.

DESIGNING REPORTS IN POWER BI DESKTOP

Overview of the Report Canvas. Adding textboxes, shapes and images. Using built-in visualizations. Add style and branding through themes. Creating Power BI Templates.

ENHANCING REPORTS IN POWER BI DESKTOP

Working with Slicers and Filters. Working with Drill through report pages. Creating custom Tooltips. Working with Bookmarks. Visual hierarchies and drill-down behavior. Grouping and Binning data. What If Parameters. Using Custom Visuals. Create reports that are optimized for phones.

INTRODUCTION TO POWER BI SERVICE

What is the Power BI Service? Power BI Service pricing and features. Creating and using Workspaces. Working with Datasets and Reports.

CREATING DATASETS AND REPORTS IN POWER BI SERVICE

Creating Datasets in the Power BI Service. Connecting to a dataset from the service in Power BI Desktop. DirectQuery for Power BI datasets and Azure Analysis Services. Using Quick Insights. Creating Reports in the Power BI Service. Printing Reports. Export to PowerPoint.

CREATING DASHBOARDS AND ANALYZING DATA WITH POWER BI SERVICE

Creating Dashboards. Printing Dashboards. Configuring Dashboards for Mobile Devices. Working with Power BI Q&A. Analyze a dataset from the service in Excel. Working with goals.

SHARING CONTENT IN THE POWER BI SERVICE

Sharing Reports and Dashboards with internal and external users. Sharing content inside a Workspace. Creating and consuming Power BI Apps. Publishing Reports to the web. Working with Report Subscriptions. Embedding a report in SharePoint online or Microsoft Teams. Report usage metrics.

WORKING WITH DATA GATEWAYS

Scheduling Dataset refreshes. The need for a Data Gateway. Installing and configuring a Data Gateway. Creating Data Sources on a Data Gateway. Configuring incremental data refreshes.

WORKING WITH DATAFLOWS

What are Dataflows? Dataflows, Entities and the Common Data Model. Creating Dataflows. Scheduling refreshes for Data Flows. Using Dataflows in Power BI Desktop. Dataflow licensing.

SECURING A DATA MODEL

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

03
DAYS

UBIPBE

30 January - 01 February 2023

13 - 15 March 2023

24 - 26 April 2023

19 - 21 June 2023

LEARNING GOALS

In this training you learn how to write queries with Power BI Desktop to collect data from databases, cubes, online Excel files... You will learn how to enrich the data model with relationships, hierarchies, DAX calculated columns and measures... And finally you will see how to create interactive reports using the large set of visualization available in Power BI Desktop and share them using the Power BI service.

TARGET AUDIENCE

This course is intended for people who have no prior knowledge of Power BI.

05
DAYS

UBIPB

13 - 17 February 2023

03 - 07 April 2023

22 - 26 May 2023

10 - 14 July 2023

LEARNING GOALS

This course will teach you all aspects of creating Power BI Data Models and Reports and publishing and maintaining them on the Power BI online service. The course will cover technical topics on DAX and Power Query. It also explains how to configure the Data Gateway so that you can connect the Power BI online service to your on-premises data sources and how Row Level Security can be used.

TARGET AUDIENCE

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

23 - 25 January 2023
11 - 13 April 2023
30 May - 01 June 2023
16 - 18 August 2023

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 you can 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 BI people who wish to enhance their tabular models in Power BI or SQL Server Analysis Services Tabular with the DAX language.

30 January - 01 February 2023
27 - 29 March 2023
30 May - 01 June 2023
16 - 18 August 2023

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 control the tenant settings? 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/QTD 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. Gateway clusters. 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. Consuming and creating dataflows using Azure Synapse, Azure Databricks and Azure ML. 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

UPBDM

02 - 03 February 2023

27 - 28 April 2023

29 - 30 June 2023

21 - 23 September 2023

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

24 - 26 April 2023

03 - 05 July 2023

18 - 20 September 2023

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.

04
DAYS

UPOWER

06 - 09 February 2023
20 - 23 March 2023
02 - 05 May 2023
12 - 15 June 2023
01-04 August 2023

LEARNING GOALS

In this course, participants will get familiar with the concepts of Microsoft Power Apps and Microsoft Power Automate. They will learn how to use these services to create Canvas Apps and Flows without needing any development skills.

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.

03
DAYS

UPPA

20 - 22 February 2023
03 - 05 April 2023
30 May - 01 June 2023
07 - 09 August 2023

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.

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. What is included with existing licensing models? 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 WITH POWER APPS

Creating Canvas Apps with Power Apps Studio. Working with connections. Generating Canvas Apps from your data . Adding Screens and Screen Controls. Working with Galleries. Introduction to Forms. Working with PowerFX.

WORKING WITH FORMS IN CANVAS APPS

Customizing Edit and Detail Forms. How do data cards work? Data card templates and customization. Input validation. Dynamic controls. Use formulas to make fields required, hidden, etc.

DATA SOURCES AND LOCAL DATA IN CANVAS APPS

Configuring data sources. Using variables and collections. Data source manipulations. Manually patching data sources. Handling and preventing errors. Refreshing data and searching. Data source delegation.

CONFIGURING AND PUBLISHING CANVAS APPS

Configuring Canvas Apps. Saving, sharing and publishing Apps. Sharing and permissions. Use your Power App from SharePoint pages. Embed your Power App as a Teams app. App analytics.

INTRODUCTION TO POWER AUTOMATE

What is Power Automate? Flow types. Flow building blocks. Using Connections in Flows. Trigger types. Basic Actions. The Power Automate Mobile App.

BUILDING BASIC FLOWS

Building flows from Templates or from Blank. Start a flow when something happens with Automatic triggers. Start a flow with the push of a button or for a selected item with Manual triggers. Run a flow on a schedule with a Scheduled trigger. Flow action connection basics. Adding a simple condition. Monitoring

Flows and fixing errors.

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. Connecting to relational databases.

MODERN APPROVALS WITH POWER AUTOMATE

Approval with Power Automate. Approval types. Approving and Rejecting. Processing the approval outcome.

POWER AUTOMATE PATTERNS

Advanced trigger and action configurations. Using HTTP connectors to call APIs or trigger other flows. Variables and Data operations. Actions, Conditions, Parallelism and Loops. Flow error handling. Limits of flows and connections.

WORKFLOW DEFINITION LANGUAGE

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

SHARING FLOWS AND FLOW PERMISSIONS

Sharing a Flow. Co-Ownership and Team Flows. Flow permissions. Connections and 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 dynamic behavior. Wide screen SharePoint forms.

POWER PLATFORM INTEGRATIONS

Start a Flow from Power Apps. Open a Power App with a push notification from Power Automate. Trigger Flows from Power BI. Embed a Power BI report into your Power App. Embed a Power App in Power BI and integrate with your data. Bundling Apps and Flows in Solutions.

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

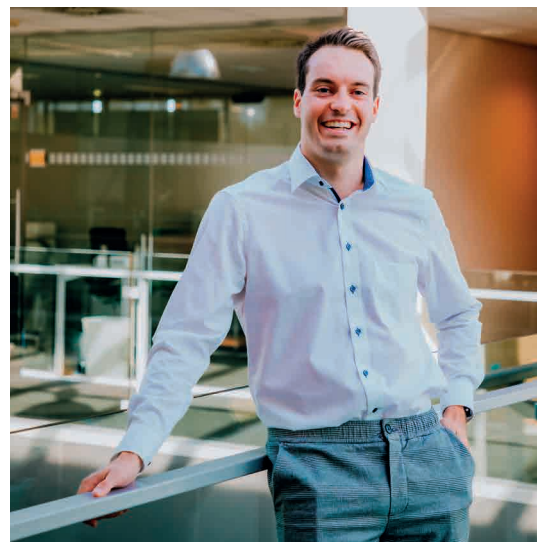
Introducing Connection References. Connection References In Power Automate Cloud Flows. Connection References In Canvas Apps. Manually creating Connection References in Solutions. Importing Solutions with Connection References. Connection References Gotchas.

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.

USING MICROSOFT DATAVERSE 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.



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.

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.

05
DAYS

UCDS

13 - 17 February 2023

03 - 07 April 2023

05 - 09 June 2023

07 - 11 August 2023

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

16 - 18 January 2023

24 - 26 April 2023

26 - 28 June 2023

11 - 13 September 2023

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.

20 - 24 March 2023
22 - 26 May 2023
31 July - 04 August 2023
25 - 29 September 2023

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.

DEVELOPING FOR THE POWER PLATFORM WITH MICROSOFT DATVERSE

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 DATVERSE 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 DATVERSE 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 DATVERSE 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 DATVERSE WITH FETCHXML

Introduction to FetchXML. Writing FetchXML queries. Using Xrm-ToolBox 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.



MICROSOFT 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.

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. A general introduction into the Power Platform. What is AI Builder and what does it consist of? 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 Syntax Introduction. Setup SharePoint for Syntax. Microsoft Syntax 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.

05
DAYS

USPOP

30 January - 03 February 2023

06 - 10 March 2023

24 - 28 April 2023

12 - 16 June 2023

31 July - 04 August 2023

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.

02
DAYS

UM365AI

16 - 17 March 2023

25 - 26 May 2023

10 - 11 August 2023

LEARNING GOALS

AI Builder is a new tool to implement Artificial Intelligence and automation to these existing tools. Microsoft Syntax integrates AI in SharePoint. You will learn how to use AI to extract data out of documents and store the information in SharePoint document libraries.

TARGET AUDIENCE

This course is targeted for 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.

U0365A

04
DAYS

13 - 16 March 2023
02 - 05 May 2023
26 - 29 June 2023
11 - 14 September 2023

LEARNING GOALS

Office 365 contains a broad range of services that work well together. This training targets all the key components of Microsoft Office 365, with a focus on the technical services Azure Active Directory, Exchange Online, SharePoint Online and Microsoft Teams. In this training you will become familiar with the different subscription models for Office 365. You will learn how to configure and manage the services both with the different Admin Portals and with PowerShell.

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.

UINT

03
DAYS

27 February - 01 March 2023
24 - 26 April 2023
19 - 21 June 2023
16 - 18 October 2023

LEARNING GOALS

Microsoft Endpoint Manager is a single, integrated endpoint management platform for all your endpoints. It integrates Configuration Manager and Microsoft Intune. This course focuses on Intune: a cloudbased service in the enterprise mobility management (EMM) space that helps enable your workforce to be productive while keeping your corporate data protected.

TARGET AUDIENCE

This course is intended for IT professional technical specialists 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

Azure Active Directory. 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.

AZURE ACTIVE DIRECTORY

Azure AD Overview. Azure AD Editions. Add your domain to Azure AD. User and Group Management. Managing Azure AD objects with PowerShell. Azure AD Security Roles. Azure AD Business to Business.

AZURE ACTIVE DIRECTORY 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**INTUNE OVERVIEW**

Intune Subscriptions. Intune Management. Mobile Device Management (MDM). Mobile App Management (MAM). Azure Active Directory. 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.

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.

05
DAYS

UCSEC

13 - 17 February 2023

24 - 28 April 2023

19 - 23 June 2023

18 - 22 September 2023

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.

03
DAYS

MS-700

25 - 27 January 2023

20 - 22 March 2023

30 May - 01 June 2023

16 - 18 August 2023

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 and communication in a Microsoft 365 environment.

05
DAYS

USPOAP

06 - 10 February 2023

24 - 28 April 2023

26 - 30 June 2023

04 - 08 September 2023

LEARNING GOALS

Microsoft 365 offers new and modern ways to develop for Office 365, 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 needed knowledge and best practices guidance 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

This training is targeted at developers who want to develop applications that integrate with Office 365 or extend development techniques in their customizations for Office 365, SharePoint and Microsoft Teams. Being familiar with .NET and JavaScript is strongly advised.

MODERN DEVELOPMENT WITH SHAREPOINT ONLINE AND MICROSOFT 365

INTRODUCTION TO SHAREPOINT AND O365 DEVELOPMENT

Office 365 Overview. SharePoint On-Premise vs SharePoint Online development options. The modern development environment.

MICROSOFT IDENTITY PLATFORM

Microsoft Identity Platform overview. Registering your apps. OAuth authentication flows. User authentication with Microsoft Identity Platform. Application authentication with Microsoft Identity Platform. Microsoft Authentication Libraries (MSAL).

MICROSOFT GRAPH

The Microsoft Graph API. Discovering the different APIs: Mail, Contacts, Calendar, People, Mail, Teams,... The Microsoft Graph SDK. Graph webhooks. Extending the Graph with extensions.

CUSTOMIZING MICROSOFT SEARCH WITH MICROSOFT GRAPH

Microsoft Search - the basics: Verticals, Result Types, Search Result Layouts, Filters and Microsoft Graph Connectors. Querying data with the Search API. Index external data with the Search API.

CLIENT SIDE DEVELOPMENT USING CSOM

Getting started with CSOM. Authentication with CSOM. Consuming SharePoint data. Code efficiency with CSOM. Additional libraries. Administering your tenant with CSOM.

REST AND ODATA

Authentication with SharePoint REST APIs. OData querying syntax. Batch processing. The need for digest tokens when updating data.

INTRODUCTION TO SHAREPOINT FRAMEWORK

SharePoint Framework overview. SPFx toolset: Yeoman, npm, gulp, Typescript and React. On-Prem vs Online. SPFx Roadmap.

BUILDING CLIENT-SIDE WEB PARTS

Client-side web part fundamentals. SPFx Project Structure. Adding multiple web parts to a project. 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. Using the Fluent UI styles. Integrating Fluent UI components.

USING THE MICROSOFT GRAPH TOOLKIT

Graph Toolkit. Graph Toolkit for SPFX. Preparing your tenant for the Graph Toolkit. Building Teams Tabs with the Graph Toolkit. Customizing Graph Toolkit Components. Authentication Providers.

STYLING YOUR SHAREPOINT SITES

Creating Site Templates. Extracting Site Templates with PowerShell. Formatting List and Library Columns. Formatting List and Library Views.

RESPONDING TO LIST EVENTS WITH SHAREPOINT WEBHOOKS

How to handle webhook subscriptions and event notifications. Using SharePoint Webhooks. 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

Why do we need (remote) provisioning? The PnP provisioning engine. Building remote timerjobs.

AZURE UTILITIES

Relaying messages with Azure Queue-storage. Delegate functionalities to Azure Functions. Application Insights.

MICROSOFT TEAMS DEVELOPMENT OVERVIEW

Teams Development introduction. Creating Microsoft Teams Apps with Node and .NET. Using existing App Templates. Yeoman Generator for Microsoft Teams. Microsoft Teams Toolkit for Visual Studio Code. 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. Using Power Apps in Teams.

AUTOMATING BUSINESS PROCESSES WITH POWER AUTOMATE

Start a flow with automatic triggers. Start a flow for a selected list or library item. Start a flow on a schedule. Flow action connection basics. 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.

DEVELOPING FOR MICROSOFT TEAMS

This course shows students the options for extending and customizing the Microsoft Teams experience. Learn how Apps built on the Microsoft Teams platform can bridge the Teams client with your services and workflows. See how to create rich content pages to show in Tabs, enrich messages with Extensions, provide interaction with Bots and connect with Microsoft Teams to publish or read Card content from chats and channels.

Details see: www.u2u.be/training/microsoft-teams-development

03
DAYS

UTEAMSD



DEVELOPING WITH THE SHAREPOINT FRAMEWORK

PART 1 - BUILDING SHAREPOINT FRAMEWORK COMPONENTS

WHAT IS SHAREPOINT FRAMEWORK

SharePoint Framework overview. SharePoint Framework tools. Key SPFX features. On-Prem vs Online. Road map.

PREPARING YOUR MACHINE FOR THE SHAREPOINT FRAMEWORK

Visual Studio Code. Node.js/NPM - local hosting and module management. Yeoman - project scaffolding. Gulp - task runner. Webpack - bundling tool.

BUILDING CLIENT-SIDE WEB PARTS

Client-side web parts fundamentals. Web Part Project Structure. Adding multiple web parts to a project. Full Page Apps. Creating Teams Tabs with SPFX.

STRONGLY TYPED JAVASCRIPT WITH TYPESCRIPT

Overview of the TypeScript language. The ECMAScript standard

Why use TypeScript as a SharePoint developer? Typescript transpilation and configuration. Variables, Objects, Interfaces, Classes and more. Base classes and inheritance features. Namespaces and Modules.

WEB PART PROPERTIES

Extending the web part property pane with property controls. Validating web part properties. Using custom controls in the property pane. Property pane life cycle. Storing web part data.

LOADING SHAREPOINT DATA IN SPFX

Working with OData REST Services. Discovering the SharePoint REST endpoints. Using the built-in SharePoint client to get data

Adding or updating data from client-side code. Using PNP/JS to fetch data. Using list subscriptions to receive updates from a list/library (webhooks).

LOADING OTHER FRAMEWORKS

Npm modules. Versioning. Dependencies and types. Typescript intellisense with declaration files. Loading JavaScript libraries and plugins. Using Angular and Angular Elements. Loading packages from a CDN. Bundling and Externals.

CREATING APPS FOR TEAMS

Exposing Web Parts as Tabs. Exposing Web Parts as Messaging Extensions. Configuring Web Parts used in Teams.

DEPLOYMENT OVERVIEW

What is an app catalog and how do we create it? Deploying your bundle and package. Versioning in SPFX. Deploying SharePoint Assets like Lists, Content Types and more. Deploying Extensions. Tenant-wide, Site Collection or Site specific deployments. Deploying to Microsoft Teams as shared or personal apps. Deploying to Outlook.

PART 2 - WORKING WITH REACT AND OTHER LIBRARIES

USING AND BUILDING REACT COMPONENTS FOR THE SHAREPOINT FRAMEWORK

React App Structure. What is JSX. JavaScript Expressions. JSX Tips and Tricks. Building your first component.

REACT COMPONENTS DEEP-DIVE

Working with multiple components. Transferring Props. Dynamic data with component state. Form Components. Component Lifecycle. Loading Data into a component. React Virtual DOM.

BRAND YOUR CLIENT WEB PARTS WITH SASS AND FLUENT UI

SASS, the dynamic stylesheet language. SASS Variables, Mixins, Nesting, functions, ...SASS Preprocessing. Fluent UI styles. Fluent UI Fabric components.

CONNECTING TO MICROSOFT GRAPH

Microsoft Graph API. The Graph API Client. Consuming Microsoft Graph. Registering and approving permissions to access Microsoft Graph. Domain Isolated Web Parts.

CONSUMING AZUREAD PROTECTED APIS

Using the AadHttpClient. Azure AD applications. Setting permissions. Calling Azure AD protected resources.

CALL SHAREPOINT THROUGH YOUR OWN API

Make secure calls into SharePoint using your own API. Elevated privileges with App Only calls. Pick a technology: .NET/JAVA/Azure Functions...

PART 3 - SHAREPOINT FRAMEWORK COMPONENT

APPLICATION CUSTOMIZER

Creating an application customizer. Using dialogs and alerts. Injecting controls into modern page placeholders.

FIELD CUSTOMIZER

Creating a Field Customizer. Using field data. Injecting React controls into your field customizer.

COMMAND SET

Creating a Command Set. Executing scripts when a button is clicked. Show your button conditionally based on item selection, location, etc.

SEARCH EXTENSION

Creating a Search Extension. Manipulating the search results.

VIVA CONNECTIONS EXTENSIBILITY

Build Adaptive Card Extensions. Advanced Card Configuration Quick Views. Viva and Teams.

OFFICE ADD-INS

Building an Outlook plugin. Interacting with e-mail content.

FORM CUSTOMIZER EXTENSION

Build your own form. Add logic and validation. Deploy and activate the custom form.

PART 4 - ADVANCED DEVELOPMENT

USING THE GRAPH TOOLKIT WITH SPFX

Graph Toolkit for SPFX. Graph Toolkit React Components. Preparing your tenant for the Graph Toolkit. Building Teams Tabs with the Graph Toolkit. Customizing Graph Toolkit Components. Authentication Providers.

DYNAMIC DATA

Writing a data provider. Writing a data consumer. Data serialization. Handling data updates.

UNIT TESTING

Creating unit tests for your typescript code using Enzyme, Sinon, Chai, ... Running tests using Karma. Running tests with Jest.

TIPS AND TRICKS

Debugging with Visual Studio Code. Logging with Azure Application Insights. Extending the build process with your own Gulp tasks. Taking control over your bundles with WebPack configuration.



05
DAYS

USPFX

23 - 27 January 2023

27 - 31 March 2023

05 - 09 June 2023

07 - 11 August 2023

LEARNING GOALS

SharePoint Framework / SPFX offers us the tools to build custom solutions for the modern Office 365 experience, targeting SharePoint, Viva and Teams. 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 a few years of development experience. No TypeScript or JavaScript experience is required, but recommended. Knowing how to use SharePoint is advised.

UTSQL

03
DAYS

13 - 15 February 2023
17 - 19 April 2023
30 May - 01 June 2023
07 - 09 August 2023

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.

USQLD

05
DAYS

20 - 24 February 2023
24 - 28 April 2023
26 - 30 June 2023
25 - 29 September 2023

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.

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.



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

13 - 17 February 2023

03 - 07 April 2023

12 - 16 June 2023

21 - 25 August 2023

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

20 - 24 February 2023

17 - 21 April 2023

19 - 23 June 2023

28 August - 01 September 2023

LEARNING GOALS

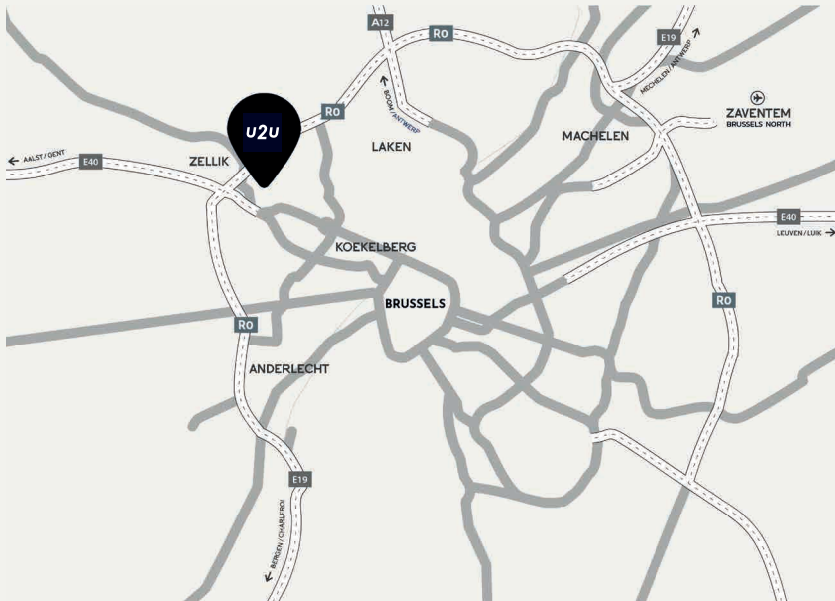
This course is designed to give the right amount of Internals knowledge and wealth of practical tuning & optimization techniques that you can put into production. This 5-day class offers a comprehensive coverage of SQL Server architecture, indexing and statistics strategies, optimize transaction log 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-premise and Azure SQL Server 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 Brussels (Zellik) Belgium

+ 32 2 466 00 16

info@u2u.be

www.u2u.be

VAT BE 0541 885 352

HOW TO GET HERE?



BY CAR

U2U is located next to the Brussels ring-road (RO) 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.

