

MB-500T00: Microsoft Dynamics 365: Finance and Operations Apps Developer

Course Code: MB-500T00

Duration: 5 days

Instructor-led Training (ILT) | Virtual Instructor-led Training (VILT)

OVERVIEW

Developer training. Microsoft Dynamics 365 Finance and Operations Apps Developers implement and extend applications to meet the requirements of the business. Candidates provide fully realized solutions by using standardized application coding patterns, extensible features, and external integrations

SKILLS COVERED

- Describe finance and operations apps, and extend apps by using Microsoft Power Platform technologies
- Configure administrative features and workflows
- Manage finance and operations data
- Validate and support solutions
- Plan architecture and solution design
- Apply developer tools
- Design and develop AOT elements
- Develop and test code
- Implement reporting
- Integrate and manage data solutions
- Implement security and optimize performance

WHO SHOULD ATTEND?

Microsoft Dynamics 365 Finance and Operations Apps Developers

PREREQUISITES

- None

MODULES

Module 1: Get introduced to the finance and operations apps

This module discusses the general capabilities of the Microsoft Dynamics 365 suite of finance and operations apps, including built-in reporting and integration with other Microsoft products such as Microsoft Excel, Microsoft Word, Power BI, and Microsoft Teams.

Learning objectives

After completing this module, you will be able to:

- Discover the suite of finance and operation apps that you can use for enterprise resource planning.
- Review use cases for finance and operations apps.

Module 2: Explore the ecosystem and main components of finance and operations apps

Dynamics 365 offers a large range of cloud-driven applications that help organizations optimize their business so they can reach their full potential. This module explores the Dynamics 365 ecosystem and how the apps work together to help your organization reach its fullest potential. Additionally, this module describes the major components of finance and operations apps that are important for you to know before you begin developing.

Learning objectives

In this module, you will:

- Explore the Dynamics 365 ecosystem.
- Learn about the main components of finance and operations apps.
- Learn about on-premises and cloud deployment options.

- Explore the development and deployment process for finance and operations apps.

Module 3: Key differences between Dynamics AX 2012 and finance and operations apps

This module introduces learners to the Microsoft Dynamics 365 cloud and reviews the architectural and component changes between Dynamics AX 2012 and the finance and operations apps. By understanding these changes, you can make better decisions for upgrading your Dynamics AX 2012 solution to Dynamics 365.

Learning objectives

In this module, you will learn about:

- How Microsoft helps customers upgrade.
- The Microsoft Cloud.
- Architectural and operational differences between AX 2012 and finance and operations apps.

Prerequisites

- Knowledge of Dynamics AX 2012
- Understanding of development techniques

Module 4: Explore the technical architecture of finance and operations apps

To begin developing for finance and operations, you must understand the core concepts of development, including packages, models, and elements. Additionally, as a developer, you will need to understand metadata management and source control tools and processes by using Azure DevOps. Last, this module will also discuss the purpose of Lifecycle Services, deployable packages and their importance throughout development, and implementation of finance and operations apps.

Learning objectives

In this module, you will:

- Differentiate between on-premises and cloud architecture of finance and operations.
- Learn about the purposes and relationships between packages, models, and elements.
- Learn about the application components and architecture.
- Detail metadata management and source control processes.
- Use and understand the purpose of Lifecycle Services.

Prerequisites

- Basic understanding of enterprise resource planning systems

Module 5: Implement application lifecycle management in finance and operations apps

Application Lifecycle Management (ALM) is the management of computer programs, which includes managing requirements, software architecture, software development, software maintenance, change management, continuous integration, project management, and released management. Learn about ALM to plan, create, test, and implement code for finance and operations apps.

Learning objectives

In this module, you will:

- Define ALM.
- Learn about the different ALM methodologies.
- Build models.
- Create a project plan for building and testing solutions.

- Create processes for release management, change management, and risk management.

Prerequisites

- Basic understanding of enterprise resource planning systems

Module 6: Manage finance and operations apps implementations by using Lifecycle Services

Lifecycle Services helps you host finance and operations apps environments. It provides repeatable processes to support consistent success with each delivery. Lifecycle Services is available to customers and partners as part of their support plans.

Learning objectives

In this module, you will learn about:

- Performing support tasks.
- Provisioning and managing environments.
- Managing asset libraries.
- Managing the code upgrade process between versions of finance and operations apps.

Prerequisites

- Basic knowledge of finance and operations apps infrastructure
- Ability to navigate Lifecycle Services

Module 7: Start developing for finance and operations apps by using Visual Studio

Visual Studio is the integrated development environment (IDE) for finance and operations apps. Developers can create deployable packages that contain projects and elements that are stored as metadata. Developing in

Visual Studio allows users to customize the finance and operations apps experience.

Learning objectives

In this module, you will:

- Create and build projects and deployable packages in Visual Studio.
- Use the Application Explorer to manage elements.
- Synchronize data dictionary changes with the application database.
- Work in the Element Designer to create elements.

Prerequisites

- Basic understanding of enterprise resource planning systems
- Basic understanding of out-of-the-box features of Visual Studio

Module 8: Manage source code by using version control in finance and operations apps

When you're collaborating with other developers, it's important to manage your source code by using version control. For finance and operations apps, source code is managed by using Azure DevOps within Visual Studio.

Learning objectives

In this module, you will:

- Connect your developer environment to an Azure DevOps project.
- Use best practices for version control.
- Manage and perform code reviews.

Prerequisites

- Basic understanding of enterprise resource planning systems

- Basic understanding of coding concepts
- Knowledge and ability to develop for finance and operations apps
- Basic understanding of Visual Studio

Module 9: Build extended data types and enumerations for finance and operations apps

Extended data types (EDTs) and base enumerations (enums) are data types that are created and managed in the development environment. Base enums represent a list of literals, while EDTs are reusable data types that have a specific definition. The Application Object Tree (AOT) in finance and operations apps contains many existing EDTs and base enums that can be extended for use in your project, or you can create new data types. This module will focus on creating new data types.

Learning objectives

In this module, you will:

- Identify the different types of EDTs.
- Learn about the use of base enumerations (base enums).
- Identify how EDTs and base enums are viewed in the finance and operations apps user interface.
- Create a base enumeration.

Prerequisites

- Basic understanding of enterprise resource planning systems
- Basic knowledge of development terms and verbiage

Module 10: Build tables in finance and operations apps

While tables aren't always viewable to a user in finance and operations apps, they are important in development. All data in finance and operations apps is stored and managed in a

table in Visual Studio. Tables store data such as company transactions, inventory, and journals.

Learning objectives

In this module, you will:

- Define the use of tables in finance and operations apps.
- Create a new table in Visual Studio.
- Manage table properties.
- Add fields and field groups to a table.
- Create an index and a table relation.
- Learn about table methods.

Prerequisites

- Basic understanding of enterprise resource planning systems
- Basic knowledge of development terms and verbiage

Module 11: Extend elements in finance and operations apps

Elements in finance and operations apps are customized through extensions to help you modify properties, add components, or remove controls.

Learning objectives

In this module, you will:

- Create extensions to customize finance and operations apps.
- Extend a table.
- Create a form extension.

Prerequisites

- Familiarity with finance and operations apps
- Moderate experience with coding in X++, including creating class extensions

- Knowledge of the extension framework in finance and operations apps
- An understanding of how to create a new class extension and add new methods
- Knowledge of how to add event handler methods to a class

Module 12: Build forms and optimize form performance in finance and operations apps

Forms are created and managed in Visual Studio and will display to the user as web pages. This module explains how forms are created and managed in the finance and operations apps developer environment, along with how to optimize the performance of forms.

Learning objectives

In this module, you will:

- Create a new form.
- Apply a form pattern.
- Add a data source to a form.
- Add grids, fields, and groups to a form.
- Understand form methods.
- Discover the types of menu items.
- Create a menu item and add it to a form.
- Run a form and test its functionality.
- Learn about browser-based and Performance Timer tools that are used to optimize form performance.

Prerequisites

- Basic understanding of enterprise resource planning systems
- Basic understanding of object-oriented programming
- Basic knowledge of finance and operations apps

Module 13: Create classes in finance and operations apps

Classes are blocks of code that contain data and methods. When developing for finance and operations apps, you will use the X++ language to create new classes.

Learning objectives

In this module, you will:

- Learn about the use of classes in developing for finance and operations apps.
- Create a new class that is added to a project.
- Add methods to a class.
- Review the types of methods that can be used in a class.

Prerequisites

- Basic knowledge of enterprise resource planning systems
- Basic knowledge of object-oriented programming

Module 14: Explore extensions and the extension framework in finance and operations apps

Finance and operations apps are customized by using extensions, which let you add functionality to model elements and source code in the Application Object Tree (AOT) by using Visual Studio.

Learning objectives

In this module, you will:

- Learn about the reasons for creating extensions.
- Determine when to use the extensibility request form.

- Learn about the risk of intrusive customizations.
- Develop code that will extend the functionality of finance and operations apps.
- Implement the SysOperationSandbox framework.

Prerequisites

- Basic knowledge of finance and operations apps
- Experience with coding in X++

Module 15: Configure your user interface in Finance and Operations apps

In this module, learners were introduced to the idea of personalizing the Dynamics 365 Finance and Operations user interface to fit their business needs. They learned how to change menus, forms, and reports.

Learning objectives

At the end of this module, learners will be able to:

- Add a menu item to favorites
- Explain how different roles see different dashboards
- Add a KPI to a dashboard workspace
- Modify the fields in a form
- Modify the fields in a report

Prerequisites

- MB-901: Microsoft Dynamics 365 Fundamentals is recommended
- Learning Path Configure apps in Finance and Operations – Module 01 – Get started with configuration and personalization in Finance and Operations apps

Module 16: Build workspaces in finance and operations apps

Workspaces are personalized work centers with data, reports, and transactions and are designed to increase efficiency of daily tasks. Workspaces can be created and modified by developers. There are many reasons to design and create a workspace in the developer environment rather than the user interface. For instance, your business might want key performance indicator (KPI) tiles, analytical components, drillthrough components, or other advanced features that cannot be created or modified in the user interface.

Learning objectives

In this module, you will:

- Design and build key performance indicators (KPIs).
- Create workspace elements.
- Use Report Definition Language (RDL) to create custom reports.
- Implement reporting components into workspaces.

Prerequisites

- Basic knowledge of finance and operations apps.
- Access to an environment that has a standard sample of data in finance and operations apps, and is connected to Microsoft Power BI.

Module 17: Get started with development using X++ in finance and operations apps

X++ is an object-oriented language. This module introduces X++ development for finance and operations apps, which is performed in Visual Studio.

Learning objectives

In this module, you will:

- Identify components of classes.
- Create an instance of a class.
- Create objects in a constructor.
- Manipulate data by using X++.
- Identify the different types of conditional statements.
- Write conditional statements.
- Write loop statements.
- Use iterative statements.
- Identify exception handling statements.
- Write exception handling statements.
- Learn about the use and function of const values.

Prerequisites

- Basic understanding of development techniques

Module 18: Develop object-oriented code in finance and operations apps

Object-oriented programming (OOP) is a programming paradigm that is modeled around objects and how you manipulate them. This module discusses concepts for object-oriented programming so you can develop customizations in finance and operations apps.

Learning objectives

In this module, you will:

- Discover the importance of object-oriented programming for finance and operations apps.
- Learn the importance of abstract classes and inheritance in object-oriented programming.
- Learn about interfaces.
- Use the Chain of Command (CoC).
- Learn how scoping is implemented in X++ code.

- Determine when to use references and values.

Prerequisites

- Basic understanding of Visual Studio
- Basic understanding of X++

Module 19: Build reports for finance and operations apps

Organizations have a lot of data. When an organization grows, its ability to provide context for all that data becomes increasingly crucial. Reports can organize data in a meaningful way. Finance and operations apps include reporting tools to help you create reports for your organizations, SQL Server Reporting Services (SSRS), Microsoft Power BI, and Microsoft Excel reports. You can use these reporting tools to visualize a data set in many ways, including as a tabular layout with collapsible tables and by using dashboards. Throughout this module, you will build a foundation to design, create, and modify reports.

Learning objectives

In this module, you will:

- Enable Business document management.
- Design, create, and modify SSRS reports.
- Create and modify a Power BI report by using finance and operations apps data.
- Create and modify an Excel report by using finance and operations apps data.
- Learn how to build SQL statement by using query objects.

Prerequisites

- Basic understanding of enterprise resource planning systems

- Basic understanding of object-oriented programming

Module 20: Implement the Data management package API for finance and operations apps

The Data management framework's package representational state transfer (REST) application programming interface (API) lets you integrate with finance and operations apps by using data packages.

Learning objectives

In this module, you will:

- Import and export APIs between finance and operations apps cloud deployments and on-premises deployments.
- Import and export APIs between on-premises deployments.
- Use GetExecutionSummaryStatus to get the status and availability of APIs.
- Create wrapper classes with C# and X++

Prerequisites

- Basic knowledge of the finance and operations apps
- Basic knowledge of object-oriented programming
- Experience developing with X++ programming language
- Basic understanding of recurring integrations and data integration concepts

Module 21: Explore the test framework and tools in finance and operations apps

In finance and operations apps, the test framework helps to alleviate risks and provides a system to manage a clean record of testing.

Learning objectives

In this module, you will learn about:

- Capabilities and benefits of the unit test framework.
- Capabilities and benefits of Task Recorder.
- Benefits of the Best Practices tool.

Prerequisites

- Basic understanding of Visual Studio
- Understanding of object-oriented development terms and verbiage
- Understanding of X++ development language
- General knowledge of finance and operations apps
- Understanding of elements, models, and packages

Module 22: Perform user acceptance testing in finance and operations apps

After all customer requirements have been handled by either configuration, customization, and integration, you need to know how to perform user acceptance testing (UAT) in finance and operations apps to validate the solution. User acceptance testing is an important step in the go-live preparation. You can perform automated tests by using the Regression suite automation tool (RSAT).

Learning objectives

In this module, you will learn about:

- Test cases and business requirements
- Best practices for recording test cases
- Task recorder
- How to create a BPM library
- How to synchronize and configure your test plan in Azure DevOps
- How to run test cases manually and automatically

- The Regression suite automation tool (RSAT)

Prerequisites

- Ability to use finance and operations apps for basic processing
- Ability to use Microsoft Dynamics Lifecycle Services
- General understanding of testing processes

Module 23: Explore reporting tools in finance and operations apps

A report is a structured presentation of data. Reporting presents data in a way that lets you make informed decisions by using data visualizations, dashboards, financial reporting, and structured documents. finance and operations apps provide several reporting tools that you can use to meet different reporting needs. This module will help you become familiar with the various reporting options that are available with finance and operations apps.

Learning objectives

In this module, you will:

- Learn about the capabilities of various reporting tools in finance and operations apps.
- Determine which types of reports should be used.
- Create and modify a report data source.
- Learn about reporting and security requirements.
- Deploy reports with PowerShell.
- Deploy reports with Visual Studio.

Prerequisites

- Basic understanding of enterprise resource planning systems

- Basic understanding of object-oriented programming
- Experience using Visual Studio

Module 24: Compare reporting and analytics in finance and operations apps with Dynamics AX 2012

An important step in your upgrade journey is to determine how you will provide your users with the reporting and analytics that they need to make decisions. finance and operations apps provides out-of-the-box tools that allow you to use your data to create modern reporting and analytics.

Learning objectives

In this module, you will learn about:

- Reporting and Power BI analysis used with AX 2012.
- The reporting options available in finance and operations apps.
- Data export services in finance and operations apps.
- How to modernize your data warehouse.
- How to modernize your analytics and reporting.

Prerequisites

- Knowledge of Dynamics AX 2012
- Understanding of reporting capabilities

Module 25: Identify data integration patterns and scenarios in finance and operations apps

As a developer, you are generally part of the data integration scenarios during and after a finance and operations apps implementation. This module explores web application programming interfaces (APIs) that are available for finance and operations apps and will help you understand the key differences between

synchronous and asynchronous integrations for the application.

Learning objectives

In this module, you will:

- Identify integration web application programming interfaces.
- Explore available data integration scenarios.
- Identify the key differences between synchronous and asynchronous integrations.

Prerequisites

- Basic understanding of the finance and operations apps

Module 26: Implement data integration concepts and solutions for finance and operations apps

Connect to your finance and operations apps data by using data entities, where data is accessed outside of the application and with different endpoint and external applications.

Learning objectives

In this module, you will:

- Create a data entity.
- Enable data management capabilities.
- Expose Open Data Protocol (OData) endpoints with data entities.
- Identify custom service endpoints.
- Discover external web services that are available for use.
- Consume external web services.
- Connect to your data with the Microsoft Excel add-in.
- Connect to your data with Microsoft Power Apps

Prerequisites

- Moderate knowledge of finance and operations apps
- Moderate knowledge of object-oriented programming
- Experience using Visual Studio

Module 27: Data integrations with finance and operations apps

Integrations are an important component of implementing finance and operations apps. By implementing recurring integrations, you can enable the exchange of documents or files between finance and operations apps and third-party applications or services.

Learning objectives

In this module, you will:

- Set up a data project.
- Set up a recurring data job.
- Define authorization for integrations by using OAuth.
- Monitor the status and availability of entities.
- Develop data transformations.
- Use Microsoft Dataverse to synchronize entities between Dynamics 365 applications.
- Use composite data entities.
- Integrate composite data entities.
- Export composite data entities.
- Learn about Azure Data Lake and Entity Store, and how to change data in Azure Data Lake
- Learn about Microsoft Power Platform convergence.

Prerequisites

- Basic understanding of enterprise resource planning systems

- Basic understanding of object-oriented programming

Module 28: Connect to Microsoft Power Platform services with finance and operations apps

Microsoft Power Platform services like Power Apps and Power Automate, and the Common Data Model are tools that you can use to create efficient ways to get more work done with finance and operations apps.

Learning objectives

In this module, you will:

- Connect your finance and operations apps data with Power Automate.
- Connect to your finance and operations apps data with Power Apps.
- Learn about the Common Data Model to bring data from multiple systems and applications together.

Prerequisites

- Basic understanding of enterprise resource planning systems
- Familiarity with finance and operations apps

Module 29: Dual-write implementation for Dynamics 365 solutions

Dual-write offers an out-of-the-box infrastructure that can provide customers near real-time interaction between Customer engagement apps and finance and operations apps. The Dual-write implementation workshop guides you through key points to help identify and resolve potential blockers to a successful dual-write implementation.

Learning objectives

In this module, you will:

- Learn about the Dual-write implementation workshop
- Prepare for the Dual-write implementation workshop
- Learn how to conduct the Dual-write implementation workshop
- Follow up after the Dual-write implementation workshop

Prerequisites

- Knowledge of Dynamics 365 apps
- Knowledge of Success by Design concepts
- Extensive functional consultant knowledge
- Previous experience as a solution architect on a project is helpful
- Completion of a solution blueprint
- Download an example of the template for this workshop from [GitHub location](#)

Module 30: Work with data management in finance and operations apps

You can export or import data in finance and operations apps by using the Data management workspace. Validate the data by staging the source data, and then move it to the target tables in the finance and operations apps database.

Learning objectives

In this module, you will learn how to:

- Identify the correct pattern for a given scenario to use the Data management platform for integration by using data entities.
- Work with the Data management workspace.
- Export data from a legal entity.
- Import data into a legal entity.
- Work with data import and export jobs.
- Clean up the staging tables.

- Work with database movement operations.
- Work with the data sharing framework.

Prerequisites

- General knowledge of Microsoft Windows
- Basic understanding of finance and operations apps, including core concepts and basic application navigation skills
- Basic understanding of adding entities, fields, and relationships to finance and operations apps

Module 31: Work with performance and monitoring tools in finance and operations apps

Learn how to use performance tools and Lifecycle Services environment monitoring tools to enhance your validation and testing experience in finance and operations apps.

Learning objectives

In this module, you will:

- Diagnose performance issues by using Trace parser.
- Explore load testing by using the Performance SDK.
- Monitor performance by using the SQL Insights dashboard.
- Monitor server Health metrics in Microsoft Dynamics Lifecycle Services.

Prerequisites

- Advanced understanding of Visual Studio
- Basic understanding of functional data and business processes
- Basic understanding and navigation of Lifecycle Services

Module 32: Implement role-based security in finance and operations apps

Finance and operations apps use role-based security to assign access to components in the system. A user who is assigned to a security role has access to the set of privileges that is associated with that role.

Learning objectives

In this module, you will learn how to:

- Create and modify roles, duties, privileges, and permissions.
- Review the role-based security hierarchy.
- Use and enforce permissions policies.
- Define the extensible data security framework (XDS).
- Apply security permissions.
- Stay compliant with user licensing requirements

Prerequisites

- Basic understanding of enterprise resource planning systems
- Familiarity with finance and operations apps

Module 33: Plan and implement security in finance and operations apps

If you understand the security architecture of finance and operations apps, you can customize it to fit the requirements of your business. finance and operations apps, helps keep your sensitive data safe, and users focused on their roles.

Learning objectives

In this module, you will:

- Understand security architecture of finance and operations apps

- Learn about encryption in finance and operations apps
 - Manage users
 - Manage security
 - Apply segregation of duties
 - Run security reports
 - Stay compliant with user licensing requirements
- Experience using Visual Studio

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Prerequisites

General knowledge of Windows and the ability to use finance and operations apps for basic processing.

Module 34: Apply basic performance optimization in finance and operations apps

By optimizing your development for performance, you can ensure that your work is useful and appreciated by users. As a finance and operations apps developer, you should understand how your designs can be properly optimized for performance.

Learning objectives

In this module, you will:

- Discover what temporary tables are and when to use them.
- Learn about what set-based statements and row-based operations are, and when to use each.
- Understand and demonstrate different methods for optimizing custom queries.
- Learn about the different caching methods that are possible and when each should be used.

Prerequisites

- Basic knowledge of the finance and operations apps
- Basic experience developing for finance and operations apps