

# Study guide for Exam MB-500: Microsoft Dynamics 365: Finance and Operations Apps Developer

## Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

Useful links	Description
<a href="#">Review the skills measured as of December 27, 2022</a>	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
<a href="#">Review the skills measured prior to December 27, 2022</a>	Study this list of skills if you take your exam PRIOR to the date provided.
<a href="#">Change log</a>	You can go directly to the change log if you want to see the changes that will be made on the date provided.
<a href="#">How to earn the certification</a>	Some certifications only require passing one exam, while others require passing multiple exams.
<a href="#">Certification renewal</a>	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a <b>free</b> online assessment on Microsoft Learn.
<a href="#">Your Microsoft Learn profile</a>	Connecting your certification profile to Learn allows you to schedule and renew exams and share and print certificates.
<a href="#">Passing score</a>	A score of 700 or greater is required to pass.
<a href="#">Exam sandbox</a>	You can explore the exam environment by visiting our exam sandbox.

Useful links	Description
<a href="#">Request accommodations</a>	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
<a href="#">Take a practice test</a>	Are you ready to take the exam or do you need to study a bit more?

## Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

### Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

### Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

## Skills measured as of December 27, 2022

### Audience profile

Candidates for this exam are developers who work with finance and operations apps in Microsoft Dynamics 365 to implement and extend applications that meet the requirements of a business. Candidates provide fully realized solutions by using standardized application coding patterns, extensible features, and external integrations.

Candidates develop business logic by using X++, create and modify finance and operations app reports and workspaces, customize user interfaces, provide endpoints and APIs to support Microsoft Power Platform apps and external systems, perform testing, monitor performance, analyze and manipulate data, create technical designs and implementation details, and implement permission policies and security requirements.

Candidates should have a deep knowledge and experience using the underlying framework, data structures, and objects associated with finance and operations solutions.

Candidates should have experience with products that include Visual Studio, Azure DevOps Lifecycle Services (LCS) tools, Postman, GitHub, Microsoft 365, and SQL Server Management Studio.

- Plan architecture and solution design (5–10%)
- Apply developer tools (10–15%)
- Design and develop AOT elements (20–25%)
- Develop and test code (10–15%)
- Implement reporting (10–15%)
- Integrate and manage data solutions (10–15%)
- Implement security and optimize performance (10–15%)

## **Plan the architecture and solution design (5–10%)**

### **Identify the major components of Dynamics 365 finance and operations apps**

- Identify finance and operations app modules required for a solution based on business requirements
- Identify architectural differences between the cloud and on-premises versions of finance and operations apps
- Identify components of the application stack
- Differentiate the purposes and interrelationships between packages, projects, models, and elements

### **Design and implement a user interface**

- Describe the finance and operations user interface layouts and components
- Design workspaces
- Design and personalize user interface elements including grids, forms, and pages
- Define navigation elements including menus and menu items
- Configure filtering options and saved views

### **Implement Application Lifecycle Management (ALM) and Lifecycle Services (LCS)**

- Describe the capabilities of the Environment Monitoring Tool within Lifecycle Services (LCS)
- Select the purpose and appropriate uses of LCS tools and components
- Research and resolve issues by using Issue Search
- Identify activities that require asset libraries
- Prepare deployment packages and deploy packages

## **Apply developer tools (10–15%)**

### **Customize finance and operations apps by using Visual Studio**

- Create extension models
- Design and build projects

- Manage metadata using Application Explorer
- Synchronize data dictionary changes with the application database
- Create elements by using element designers

## **Manage source code and artifacts by using version control**

- Create, check out, and check in code and artifacts
- Branch and merge code
- Compare code and resolve version conflicts

## **Implement finance and operations app framework functionality**

- Implement the SysOperation framework
- Implement the SysExtension framework
- Implement the asynchronous framework
- Implement the workflow framework
- Implement the SysTest framework

## **Design and develop AOT elements (20–25%)**

### **Create forms**

- Add a new form to a project and apply a pattern (template)
- Configure a data source for the form
- Add a grid and grid fields, groups, and other controls to a form
- Create and populate menu items
- Test form functionality and data connections
- Add a form extension to a project for selected standard forms

### **Create and extend tables**

- Add tables to a project
- Add table fields and field properties to a table
- Add field groups, relations, delete actions, methods, and indices
- Add a table extension to a project for a table

### **Create Extended Data Types (EDT) and enumerations**

- Add an EDT to a project and populate EDT properties
- Add an enumeration to a project
- Add or update enumeration elements and enumeration element properties
- Add an extension of EDT and enumerations

### **Create classes and extend AOT elements**

- Add a new class to a project
- Create a new class extension and add new methods
- Add event handler methods to a class

- Add attributes to a class

## **Develop and test code (10–15%)**

### **Develop X++ code**

- Identify and implement base types and operators
- Implement common structured programming constructs of X++
- Create, read, update, and delete (CRUD) data
- Identify and implement global functions in X++
- Implement table and form methods

### **Develop object-oriented code**

- Implement X++ variable scoping
- Implement inheritance and abstraction concept
- Implement query objects and the QueryBuilder class
- Implement attribute classes
- Implement chain of command and wrapper classes

## **Implement reporting (10–15%)**

### **Describe the capabilities and limitations of reporting tools in finance and operations apps**

- Create and modify report data sources and supporting classes
- Implement reporting security requirements
- Describe the report publishing process
- Describe the differences between using Entity store and Bring your own database (BYOD) or Azure Data Lake as reporting data stores

### **Design, create, and revise Dynamics reports**

- Create and modify reports in finance and operations apps that use SQL Server Reporting Services (SSRS)
- Create and modify finance and operations apps reports by using Power BI
- Create and modify finance and operations apps reports by using Microsoft Excel
- Implement Business document management

### **Design, create, and revise Dynamics workspaces**

- Design and implement KPIs
- Identify data integration patterns
- Create drill-through workspace elements
- Implement built-in charts, Power BI embedded visualizations, aggregate measurements, aggregate dimensions, and other reporting components

## **Integrate and manage data solutions (10–15%)**

### **Identify data integration patterns and scenarios**

- Identify data integration patterns
- Select an appropriate data integration API
- Identify differences between synchronous vs. asynchronous patterns

### **Implement data integration concepts and solutions**

- Develop a data entity by using Visual Studio
- Develop, import, and export composite data entities
- Identify and manage unmapped fields in data entities
- Consume external web services by using RESTful APIs and SOAP
- Integrate finance and operations apps with Microsoft Excel by using OData
- Integrate Power Automate, Power BI, and Power Apps with finance and operations apps
- Implement electronic reporting
- Implement custom services, Batch OData API, business events, and Azure Logic Apps
- Integrate Microsoft Dataverse with finance and operations apps by using dual-write or virtual entities

### **Implement data management**

- Import and export data using entities between finance and operations apps and other systems
- Monitor the status and availability of entities
- Enable change tracking for entities
- Set up a data project and recurring data jobs
- Design entity sequencing
- Generate field mapping between source and target data structures
- Develop data transformations

## **Implement security and optimize performance (10–15%)**

### **Implement role-based security policies and requirements**

- Create or modify duties, privileges, permissions, and roles
- Implement segregation of duties
- Enforce permissions policies
- Implement Extensible Data Security (XDS) policies

### **Apply fundamental performance optimization techniques**

- Identify and apply caching mechanisms for forms and tables
- Implement the global cache
- Create or modify temporary tables for optimization purposes
- Determine when to use set-based queries and row-based queries

- Modify queries to optimize performance
- Modify variable scope to optimize performance
- Analyze and optimize concurrency

## Optimize user interface performance

- Capture traces by using TraceParser and analyze traces
- Diagnose and optimize client performance by using Microsoft Edge F12 Developer tools, Fiddler, and other common tools
- Diagnose and optimize client performance by using Performance Timer
- Optimize performance for data entities, data source queries, batch processes, and reports

## Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

Study resources	Links to learning and documentation
<b>Get trained</b>	<a href="#">Choose from self-paced learning paths and modules or take an instructor led course</a>
<b>Find documentation</b>	<a href="#">Dynamics 365 documentation and learning modules</a> <a href="#">Finance home page</a>
<b>Ask a question</b>	<a href="#">Microsoft Q&amp;A   Microsoft Docs</a>
<b>Get community support</b>	<a href="#">Microsoft Dynamics Community</a>
<b>Follow Microsoft Learn</b>	<a href="#">Microsoft Learn - Microsoft Tech Community</a>
<b>Find a video</b>	<a href="#">Exam Readiness Zone</a>

## Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

Skill area prior to December 27, 2022	Skill area as of December 27, 2022	Change
<b>Plan the architecture and solution design</b>	<b>Plan the architecture and solution design</b>	No change

Skill area prior to December 27, 2022	Skill area as of December 27, 2022	Change
Identify the major components of Dynamics 365 finance and operations apps	Identify the major components of Dynamics 365 finance and operations apps	No change
Design and implement a user interface	Design and implement a user interface	No change
Implement Application Lifecycle Management (ALM) and Lifecycle Services (LCS)	Implement Application Lifecycle Management (ALM) and Lifecycle Services (LCS)	No change
<b>Apply developer tools</b>	<b>Apply developer tools</b>	No change
Customize finance and operations apps by using Visual Studio	Customize finance and operations apps by using Visual Studio	Minor
Manage source code and artifacts by using version control	Manage source code and artifacts by using version control	No change
Implement finance and operations app framework functionality	Implement finance and operations app framework functionality	Minor
<b>Design and develop AOT elements</b>	<b>Design and develop AOT elements</b>	No change
Create forms	Create forms	No change
Create and extend tables	Create and extend tables	No change
Create Extended Data Types (EDT) and enumerations	Create Extended Data Types (EDT) and enumerations	No change
Create classes and extend AOT elements	Create classes and extend AOT elements	No change
<b>Develop and test code</b>	<b>Develop and test code</b>	No change
Develop X++ code	Develop X++ code	No change
Develop object-oriented code	Develop object-oriented code	No change
<b>Implement reporting</b>	<b>Implement reporting</b>	No change
Describe the capabilities and limitations of reporting tools in finance and operations apps	Describe the capabilities and limitations of reporting tools in finance and operations apps	No change



Skill area prior to December 27, 2022	Skill area as of December 27, 2022	Change
Design, create, and revise Dynamics reports	Design, create, and revise Dynamics reports	Minor
Design, create, and revise Dynamics workspaces	Design, create, and revise Dynamics workspaces	No change
<b>Integrate and manage data solutions</b>	<b>Integrate and manage data solutions</b>	No change
Identify data integration patterns and scenarios	Identify data integration patterns and scenarios	No change
Implement data integration concepts and solutions	Implement data integration concepts and solutions	Minor
Implement data management	Implement data management	Minor
<b>Implement security and optimize performance</b>	<b>Implement security and optimize performance</b>	No change
Implement role-based security policies and requirements	Implement role-based security policies and requirements	Minor
Apply fundamental performance optimization techniques	Apply fundamental performance optimization techniques	No change
Optimize user interface performance	Optimize user interface performance	No change

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## **Implement security and optimize performance (10–15%)**

### **Implement role-based security policies and requirements**

- Create or modify duties, privileges, permissions, and roles
- Implement segregation of duties
- Enforce permissions policies
- Implement record-level security by using Extensible Data Security (XDS)

### **Apply fundamental performance optimization techniques**

- Identify and apply caching mechanisms for forms and tables
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