MuleSoft Certified Developer – Level 1 (Mule 4) Certification Exam

Summary

A *MuleSoft Certified Developer – Level 1* should be able to successfully work on basic Mule 4 projects with guidance and supervision. The *MCD – Level 1 (Mule 4)* exam validates that a developer has the required knowledge and skills to design, build, test and debug, deploy, and manage basic APIs and integrations: moving from Anypoint Platform to Anypoint Studio and back. Certified candidates should be able to:

- Use MuleSoft-hosted Anypoint Platform to take a basic API through all the steps of its lifecycle: design, build, deploy, manage, and govern.
- Use Anypoint Studio to build, test, and debug basic integrations and API implementations.
- Connect to a range of resources including databases, files, web services, SaaS applications, and JMS queues.
- Perform basic data transformations using DataWeave 2.
- Control event flow and handle errors.
- Process batch records.

Format

- Format: Multiple-choice, closed book, proctored
- Length: 60 questions
- Duration: 120 minutes (2 hours)
- Pass score: 70%
- Language: English

You can take the exam a maximum of 5 times, with a 24-hour wait between each attempt.

Cost

You can purchase the exam with one of the following. Each includes one free retake.

- $250
- 1 Flexible Training Credit (FTC)

Additional retakes (i.e. attempts 3 to 5) are 50% off and do not come with a free retake.

You can also get two exam attempts with the successful completion of the *Anypoint Platform Development: Fundamentals (Mule 4)* course or the *Anypoint Platform Development: Mule 4 for Mule 3 Users* course.

Validity

The certification expires two years from the date you pass the exam. To extend the certification validity after this date, you can take the *MuleSoft Certified Developer – Level 1 (Mule 4) MAINTENANCE* exam.

Preparation

You can best prepare for the exam by taking the instructor-led *Anypoint Platform Development: Fundamentals (Mule 4)* course and completing the accompanying Do-It-Yourself (DIY) exercises. **Candidates should be familiar with all of the content in the course and be able to apply the concepts in actual projects.**

The following resources are available to help you prepare:

- **Instructor-led training: *Anypoint Platform Development: Fundamentals (Mule 4)***
  - Recommended as the most effective and efficient method of preparation
  - 5-day class
  - Private, public, onsite, and online classes available
  - Includes two attempts for this exam
- **Self-study training: *Anypoint Platform Development: Fundamentals (Mule 4)***
  - 60+ step-by-step exercises to teach you the basics
  - All content available instantly for you to complete at your own pace
  - Supported by the peer-to-peer MuleSoft training forum
  - Successful completion of the course includes two MuleSoft-sponsored attempts for this exam
- **Self-assessment quiz**
  - 5+ multiple-choice questions for each course module
  - Identifies strengths and weaknesses
- **Do-it-yourself exercises**
  - 10+ DIY exercises to get experience with and apply the knowledge gained in class
  - Starting code and solutions provided
  - Can be completed in any order

Topics

The exam validates that you can perform the following tasks.

Note: DEV: FUN4 is the acronym for the Anypoint Platform Development: Fundamentals (Mule 4) course. DEV: DIY4 is the acronym for the MCD - Level 1 / Development Fundamentals (Mule 4) Self-Assessment Quiz & DIY Exercises materials.

Explaining application network basics	Resources
• Explain MuleSoft's proposal for closing the IT delivery gap. • Describe the role and characteristics of the "modern API." • Describe the purpose and roles of a Center for Enablement (C4E). • Define and describe the benefits of API-led connectivity and application networks. • Define and correctly use the terms API, API implementation, API interface, API consumer, and API invocation. • Describe the basics of the HTTP protocol and the characteristics of requests and responses. • Describe the capabilities and high-level components of Anypoint Platform for the API lifecycle.	• DEV: FUN4 Module 1 • DEV: FUN4 Module 2
Designing and consuming APIs	
• Describe the lifecycle of the "modern API." • Use RAML to define API resources, nested resources, and methods. • Identify when and how to define query parameters vs URI parameters. • Use RAML to define API parameters, requests, and responses. • Use RAML to define reusable data types and format-independent examples. • Read a RAML spec and formulate RESTful requests with query parameters and/or headers as appropriate.	• DEV: FUN4 Module 3 • DEV: DIY4 Exercise 3-1 and 4-1
Accessing and modifying Mule events	
• Describe the Mule event data structure. • Use transformers to set event payloads, attributes, and variables. • Write DataWeave expressions to access and modify event payloads, attributes, and variables. • Enrich Mule events using target parameters.	• DEV: FUN4 Module 6 • DEV: DIY4 Exercise 6-1, 7-1, and 7-2 • Enriching Data with Target Parameters

Structuring Mule applications	
• Parameterize an application using property placeholders. • Define and reuse global configurations in an application. • Break an application into multiple flows using private flows, subflows, and the Flow Reference component. • Specify what data (payload, attributes, variables) is persisted between flows when a Flow Reference is used. • Specify what data (payload, attributes, variables) is persisted between flows when a Mule event crosses a connection boundary. • Specify what data (payload, attributes, variables) exists in a flow before and after a call in the middle of a flow to an external resource.	• DEV: FUN4 Module 7 • DEV: DIY4 Exercise 7-1 and 7-2
Building API implementation interfaces	
• Manually create a RESTful interface for a Mule application. • Generate a REST Connector from a RAML specification. • Describe the features and benefits of APIkit . • Use APIkit to create implementation flows from a RAML file. • Describe how requests are routed through flows generated by APIkit.	• DEV: FUN4 Module 4 • DEV: FUN4 Module 8 • DEV: DIY4 Exercise 4-1
Routing events	
• Use the Choice router to route events based on conditional logic. • Use the Scatter-Gather router to multicast events. • Validate data using the Validation module.	• DEV: FUN4 Module 9 • DEV: DIY4 Exercise 9-1
Handling errors	
• Describe the default error handling in a Mule application. • Define a custom global default error handler for an application and identify in what situations it will be used. • Compare and contrast how the On Error Continue and On Error Propagate scopes work. • Create one or more error handlers for a flow. • Use the Try scope to specify error handlers for one or more event processors. • Describe the data structure of the Mule Error object. • Map errors to custom application errors.	• DEV: FUN4 Module 10 • DEV: DIY4 Exercise 10-1

Transforming data with DataWeave	
• Write DataWeave scripts to convert JSON, XML, and Java data structures to different data structures and data types. • Use DataWeave functions. • Define and use DataWeave variables, functions, and modules. • Define and use custom data types. • Apply correct DataWeave syntax to coerce data types. • Apply correct DataWeave syntax to format strings, numbers, and dates. • Call Mule flows from a DataWeave script.	• DEV: FUN4 Module 11 • DEV: DIY4 Exercise 11-1
Using Connectors	
• Retrieve data from a Database using the Database connector. • Create parameterized SQL queries for the Database connector. • Retrieve data from a REST service using the HTTP Request operation or a REST Connector. • Use a Web Service Consumer connector to consume a SOAP web service. • Use the Transform Message component to pass arguments to a SOAP web service. • List, read, and write local files using the File connector. • List, read, and write remote files using the FTP connector. • Use the JMS connector to publish and listen for JMS messages.	• DEV: FUN4 Module 4 • DEV: FUN4 Module 8 • DEV: FUN4 Module 12 • DEV: DIY4 Exercise 4-1, 8-1, 12-1, and 12-2
Processing records	
• List and compare and contrast the methods for processing individual records in a collection. • Explain how Mule events are processed by the For Each scope. • Use the For Each scope to process records. • Explain how Mule events are processed by the Batch Job scope. • Use a Batch Job with Batch Steps and a Batch Aggregator to process records. • Use the Scheduler component to trigger a flow. • Use connector listeners to trigger flows. • Describe the features, benefits, and process to use automatic watermarking vs. manual watermarking. • Use connectors with automatic watermarking capabilities. • Persist data between flow executions using the Object Store.	• DEV: FUN4 Module 12 • DEV: FUN4 Module 13 • DEV: DIY4 Exercise 13-1

Debugging and troubleshooting Mule applications	
• Use breakpoints to inspect a Mule event during runtime. • Install missing Maven dependencies. • Read and decipher Mule log error messages.	• DEV: FUN4 Module 6 • DEV: FUN4 all WTs • DEV: DIY4 Exercise 6-1 and Walkthrough • DEV: DIY4 all exercises
Deploying and managing APIs and integrations	
• Package Mule applications for deployment. • Deploy applications to CloudHub. • Use CloudHub properties to ensure deployment success. • Create and deploy API proxies. • Connect an API implementation to API Manager using autodiscovery. • Use policies, including client ID enforcement, to secure an API. • Create SLA tiers and apply SLA based policies.	• DEV: FUN4 Module 5 • DEV: DIY4 Exercise 5-1 and 5-2 • Configuring API Autodiscovery in a Mule 4 Application

More information

For more information, visit http://help.learn.mulesoft.com.