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Question 1

Question Type: MultipleChoice

Choose the correct answer:

What is true about a MOF 2.x Model?

Options:

- A- It is always a valid UML 2 x Model
- B- It can be a valid UML 2.x Model, when certain limitations are observed.
- C- The visual representation resembles a UML 2.x Model, but the underlying Model is a MOF-Model.
- D- There is a subtle difference between it and a UML 2.x Model, but only theoretical computer scientists care.

Answer:

B

Explanation:

A MOF (Meta Object Facility) 2.x Model is not always a valid UML (Unified Modeling Language) 2.x Model. The MOF 2.x and UML 2.x serve different purposes and have different scopes of application. While UML is a general-purpose modeling language used to define software systems, MOF is a language for defining metamodels, which can include UML itself¹.

The MOF 2.x specification provides the basis for metamodel definition in OMG's (Object Management Group's) family of modeling languages, which includes UML. However, it is based on a simplification of UML 2's class modeling capabilities¹. MOF is designed to be simpler, directly implementable, and provides a set of CORBA interfaces for manipulating meta objects². In contrast, UML is used as a general-purpose modeling language with potentially many implementation targets².

Therefore, a MOF 2.x Model can be a valid UML 2.x Model when certain limitations are observed, such as adhering to the simplified class modeling capabilities that MOF is based on. This means that while a MOF model can resemble a UML model in terms of visual representation, it is fundamentally a MOF model, and its validity as a UML model depends on the extent to which it conforms to the UML specifications

Question 2

Question Type: MultipleChoice

Choose the correct answer:

What is the main purpose of the concept of Extent in MOF?

Options:

- A- To allow an Element to access its meta class in order to obtain a reflective description of that Element.
- B- To define a set of Tags that represent information to be associated by any number of model Elements.
- C- To provide a context in which an Element can be identified independently from any value in the Element.
- D- To provide an extension mechanism to dynamically annotate model Elements with additional information.

Answer:

B

Explanation:

The concept of Extent in MOF serves the purpose of defining a set of Tag that can be associated with any number of model elements. These tags provide additional information or metadata about the elements. Extent allows you to annotate model elements with relevant information beyond their intrinsic properties. It provides a context for identifying and managing these annotations independently from the element's actual values.

[Meta-Modeling and the OMG Meta Object Facility \(MOF\)](#)

[About the Meta Object Facility Specification Version 2.5.1](#)

[Semantics, Metamodels, and Ontologies | SpringerLink](#)

Question 3

Question Type: MultipleChoice

Choose the correct answer:

Which capability enables the discovery and manipulation of metaobjects and metadata"

Options:

- A- Life Cycle
- B- Extension
- C- Reflection
- D- Federation

Answer:

C

Explanation:

The capability that enables the discovery and manipulation of metaobjects and metadata is Reflection. In the context of the Meta-Object Facility (MOF), reflection allows you to examine and interact with the structure and semantics of metamodels, models, and their elements. It provides a way to introspect and dynamically access information about the modeling constructs, such as classes, attributes, relationships, and constraints.

[Meta-Object Facility - Wikipedia](#)

Question 4

Question Type: MultipleChoice

Choose the correct answer: What is the value of EMOF?

Options:

- A- It provides the ability to define instance models without defining Slots.
- B- It is the metamodel used to specify other metamodels including UML 2.
- C- It allows implementations, but these are not considered MOF-compliant.
- D- It enables mapping of MOF models to implementations such as XMI for simple metamodels.

Answer:

D

Explanation:

The value of Essential MOF (EMOF) lies in its ability to provide a straightforward framework for mapping MOF models to implementations such as XML Metadata Interchange (XMI) for simple metamodels². This allows for easier integration and manipulation of MOF models in various platforms and tools.

Question 5

Question Type: MultipleChoice

Choose the correct answer:

Which MOF capability supports the correlation of model elements across model transformations where both the source and target models may be subject to change?

Options:

- A- Identifiers
- B- Extension
- C- Reflection
- D- Federation

Answer:

D

Explanation:

The MOF capability that supports the correlation of model elements across model transformations, where both the source and target models may be subject to change, is known as Federation¹. Federation allows for the integration of different models, ensuring that changes in one model can be reflected in another, thus maintaining consistency across transformations.

Question 6

Question Type: MultipleChoice

Choose the correct answer: What is a minimal reflexive metamodel?

Options:

- A- a metamodel whose interpretation maps completely onto itself
- B- a metamodel that can define class and activity model elements
- C- a metamodel that can define a modeling language of conformance level 1
- D- a metamodel that can define a modeling language of conformance level 2

Answer:

A

Explanation:

A minimal reflexive metamodel is a metamodel that is expressed using itself, meaning it can be used to describe its own structure and semantics. This concept is akin to a self-describing system. In the domain of metamodeling, this allows for a consistent and coherent definition of the metamodel that is both the subject and the tool of its own description². This reflexivity is a key property that enables the metamodel to be used in a variety of contexts, ensuring that it remains consistent with its own definitions.

Question 7

Question Type: MultipleChoice

Choose the correct answer:

What is a metamodel in the context of MOF?

Options:

- A- a collection of Stereotypes
- B- a model of a modeling language
- C- a model based on an executable semantic
- D- a model library of model elements to be reused by many models

Answer:

B

Explanation:

In the context of the Meta-Object Facility (MOF), a metamodel is essentially a model that defines the structure and semantics of a modeling language. It is a set of constructs and rules that describe how models can be constructed for a particular domain or purpose. The MOF itself is an example of a metamodel because it provides the language for defining other metamodels, such as the UML metamodel.

Question 8

Question Type: MultipleChoice

Choose the correct answer:

Which class sits at the top of the MOF class hierarchy?

Options:

- A- Root
- B- Element
- C- Classifier
- D- Metaclass

Answer:

B

Explanation:

In the MOF class hierarchy, the class 'Element' sits at the top. It is the superclass of all classes defined in MOF and is an implicit superclass of all metaclasses defined using MOF1. This superclass relationship to 'Element' does not need to be explicitly declared in the metamodels.

Question 9

Question Type: MultipleChoice

Choose the correct answer:

How is the semantics (or the MOF elements) represented?

Options:

- A- as graphic presentations
- B- as natural language descriptions
- C- using Metamodels
- D- using an Abstract Syntax section

Answer:

B

Explanation:

The semantics of MOF elements are typically provided in the specification as natural language descriptions¹. This approach allows for a clear and understandable explanation of the elements and their intended use within the framework.

Question 10

Question Type: MultipleChoice

Choose the correct answer:

What does the MDA approach support?

Options:

A- The MDA approach presents Meta Data Aspects of modeling.

- B-** The MDA approach focuses on Design and Architectural Models as its name suggests
- C-** The MDA approach covers everything from requirements to technology implementations.
- D-** The MDA approach Is primarily about Deriving Models from Artificial Intelligence Systems.

Answer:

C

Explanation:

The Model-Driven Architecture (MDA) approach is a design methodology that covers the entire software development lifecycle, from requirements to technology implementation. It emphasizes the use of models as the primary artifacts in the development process, allowing for a more abstract and high-level approach to software design. MDA supports the transformation of models from platform-independent models (PIMs) to platform-specific models (PSMs) and ultimately to code, ensuring that the initial requirements are accurately reflected in the final technology implementation.

MDA is not limited to Meta Data Aspects (A) or Design and Architectural Models (B) alone, nor is it primarily about deriving models from Artificial Intelligence Systems (D). Instead, it provides a comprehensive framework that facilitates the creation of software systems by bridging the gap between business requirements and technology solutions.

[An MDA Approach Based on UML and ODM Standards to Support Big Data Analytics1](#)

[Improving Automatic UML2 Profile Generation for MDA Industrial Development2](#)

[Applying 4+1 View Architecture with UML 2](#)

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