OMG-OCUP2-ADV300 Practice Questions

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Question 1

Question Type: MultipleChoice

Choose the correct answer:

Can State Machine Events have Features?

Options:

A- Yes. they can
B- Yes. they can. but only when the modeled Events also extend Classifier.
C- No. they can not. because State Machine Events are not Classifiers.
D- No. they can not. because UML State Machines do not have an Event concept.

Answer:

C

Explanation:

State Machine Events in UML are triggers for transitions and do not classify as objects or classifiers; thus they do not inherently have features:

A . Incorrect, because State Machine Events are not treated as classifiers with features.

B . Incorrect, though it hints at an extended use case, State Machine Events do not extend classifiers in standard UML usage.

C . Correct, State Machine Events are not Classifiers and therefore cannot have features such as properties or operations.

D . Incorrect, because UML State Machines certainly have an Event concept, but these Events are not classified as having features.

UML Specification: State Machine chapter, specifically sections discussing the nature of events and triggers.

Further insights can be found in the event and trigger management sections of the UML 2.5 Documentation.

Question 2

Question Type: MultipleChoice

Choose the correct answer:

What is correct about the modeling of individual things with UML?

Options:

A- A UML Model can contain individual things (e.g. Instances) UML does not prescribe the level of detail to be used in the description.
B- A UML Model can contain statements about individual things If a thing is an instance of a Classifier, these statements must be consistent (all mandatory Properties must be defined, all Constraints must be satisfied).
C- A UML Model can contain statements about individual things These statements can be incomplete, imprecise, and abstract, but not wrong.
D- A UML Model can contain statements about individual things. These statements can be incomplete, imprecise, abstract, may turn out to be wrong, or even be asserted as counterfactual
E- A UML Model can only contain statements about sets of individual things (e.g. Classifiers).

Answer:

D

Explanation:

In UML, modeling individual things (such as instances) involves making statements about them. Here are the details for each option:

A . A UML Model can contain individual things (e.g. Instances) UML does not prescribe the level of detail to be used in the description.

This statement is partially correct. UML models can indeed contain individual things (instances), but the level of detail is not explicitly prescribed by UML. However, the statement does not cover the possibility of incomplete or imprecise information.

B . A UML Model can contain statements about individual things If a thing is an instance of a Classifier, these statements must be consistent (all mandatory Properties must be defined, all Constraints must be satisfied).

While it is true that a UML model can contain statements about individual things (instances), the requirement for consistency (mandatory properties and constraints) is not explicitly mentioned in UML. Therefore, this option is not entirely accurate.

C . A UML Model can contain statements about individual things These statements can be

incomplete, imprecise, and abstract, but not wrong.

This statement is also partially correct. UML allows for incomplete, imprecise, and abstract statements about individual things. However, it does not guarantee that these statements cannot be wrong.

D . A UML Model can contain statements about individual things. These statements can be incomplete, imprecise, abstract, may turn out to be wrong, or even be asserted as counterfactual.

This option provides a more accurate representation. UML allows for statements about individual things that can be incomplete, imprecise, abstract, and even potentially incorrect. It acknowledges the uncertainty and variability in modeling individual things.

E . A UML Model can only contain statements about sets of individual things (e.g. Classifiers).

This statement is incorrect. UML models can contain statements about both individual things (instances) and sets of things (classifiers).

UML 2.5.1 Specification

While the UML specification does not explicitly state the options, it provides the foundation for UML modeling principles and allows for flexibility in expressing statements about individual things.

Remember that UML is a modeling language, and its primary purpose is to capture and communicate information about systems and their components. The level of detail, precision, and correctness can vary based on the modeling context and the specific use case. Therefore, option D best reflects the UML approach to modeling individual things.

Please note that the information provided here is based on UML 2.5.1, and it's essential to consult the official UML specification for the most accurate and up-to-date details.

Question 3

Question Type: MultipleChoice

Choose the correct answer:

An organization has determined that they want to add the capability to create and add requirement elements to their UML models. They also want to create a unique relationship for tracing requirements to other model elements.

What is the appropriate approach to do this?

Options:

A- Use the requirement element and relationship defined in the UML specification.
B- Create a profile that stereotypes Class as requirement and Dependency as the relationship.
C- Create a new MOF metamodel that includes UML and adds the desired requirement element and relationship.
D- Assign tag values that ascribe the desired requirement type to a UML Requirement and Dependency relationship.

Answer:

B

Explanation:

UML allows the introduction of new concepts that are not part of the standard UML metamodel by creating a profile. To add capabilities for modeling requirements and tracing relationships in UML, a profile can be created where a Class is stereotyped to represent a requirement, and a Dependency is stereotyped to represent the trace relationship. This approach is both practical and conforms to the UML standard's mechanisms for extending the language. It is a common practice to create such profiles for requirements engineering within the UML framework. This conforms to the UML 2 Superstructure Specification, which provides guidelines on creating and applying profiles and stereotypes.

Question 4

Question Type: MultipleChoice

Choose the correct answer:

What must a modeler do to use an Action that coordinates other Actions?

Options:

A- extend Behavior and add the desired Actions
B- use one of the StructuredActivityNodes in UML
C- use the standard Action and add desired tag values
D- extend Action and specify the constraints to be relaxed or removed

Answer:

B

Explanation:

To orchestrate multiple actions within UML, a modeler should use StructuredActivityNodes:

A . Extending Behavior and adding desired Actions is not specifically about coordinating multiple actions; it's about defining new behaviors.

B . Correct. StructuredActivityNodes are a part of UML that provides a mechanism to group a set of actions together and manage the data flows between them, thus coordinating the actions.

C . Using the standard Action and adding desired tag values does not inherently coordinate actions.

D . Extending Action and specifying constraints to be relaxed or removed does not directly relate to coordinating other actions.

UML Specification: Activities section, which describes the use of StructuredActivityNodes.

The use of StructuredActivityNodes for coordinating actions is elaborated in the UML 2.5 Documentation under Activity Diagrams.

Question 5

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.

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An MDA Approach Based on UML and ODM Standards to Support Big Data Analytics1

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Question 6

Question Type: MultipleChoice

Choose the correct answer:

Which concept is used in AN to represent a model element such as a class or an activity?

Options:

A- Unit
B- Package
C- Classifier
D- Namespace

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Answer:

C

Explanation:

In UML, the concept used to represent a model element such as a class or an activity is known as a Classifier.A Classifier in UML is a term that categorizes a group of model elements that have similar structural features, which include attributes and associations, and similar

behavioral features, which include operations and methods1.The term applies not only to specific UML model elements but to all classifiers, encompassing a variety of elements such as classes, components, interfaces, and even activities1.

For instance, a class is a classifier because it describes a set of objects with similar properties (attributes), common behavior (operations), common relationships to other objects, and common semantics.An activity, which is a behavior, can also be considered a classifier because it describes a sequence of actions or flow of control and data1. Therefore, the correct answer is C. Classifier, as it is the overarching concept that includes both structural and behavioral elements within UML.

Question 7

Question Type: MultipleChoice

Choose the correct answer:

Which statement is correct about redefinition of simple States?

Options:

A- A simple State cannot be redefined
B- A simple State can be redefined by excluding it in a redefined StateMachine.
C- A simple State can be redefined as a composite State with one or more Regions.
D- State Redefinition is not a UML capability.

Answer:

B

Explanation:

In UML, a simple State can indeed be redefined, but the specifics of how it is redefined matter:

A is incorrect as redefinition of States, including simple States, is permitted.

B is correct. A simple State can be effectively removed or altered through redefinition in a derived StateMachine, which could include changing its type or characteristics.

C suggests that a simple State can be turned into a composite State. While theoretically possible in the context of redefinition, this option might be considered a significant alteration that could be misleading without additional context.

D is incorrect; UML does support State Redefinition.

UML Specification, particularly the sections on Redefinition and StateMachines.

Detailed rules on state redefinition are outlined in the UML 2.5 Documentation, specifically under StateMachine specializations.

Question 8

Question Type: MultipleChoice

Choose the correct answer:

In addition to stereotypes, which UML elements can a profile define?

Options:

A- all of the UML elements
B- all of the UML Structured Classifiers
C- Class. DataType. Enumeration
D- Class. DataType. Enumeration. Object. Component

Answer:

C

Explanation:

A UML profile can define several different elements to extend the UML for a specific domain, platform, or purpose. Besides stereotypes, a profile can define DataTypes and Enumerations, which can be used within Stereotypes to type the tagged values. A profile can also define Classes, which can be used as base classes for stereotypes. However, a profile does not typically define instances of elements, such as Objects, nor does it define composite structures, such as Components. The intent of a profile is to adapt existing metamodel elements through the use of stereotypes, tag definitions, and constraints rather than to create instances or define system architectures. This definition and use of a profile are aligned with the guidelines in the UML 2.x Superstructure Specification, which outlines what elements a profile can define within the UML framework.

Question 9

Question Type: MultipleChoice

Choose the correct answer:

How are the execution semantics of Alf defined?

Options:

A- by a specification defined with the Meta Object Facility
B- by a specification defined with the Object Constraint Language
C- by a specification defined with the programming language Java
D- by mapping the concrete syntax of Alf to the abstract syntax of fUML

Answer:

D

Explanation:

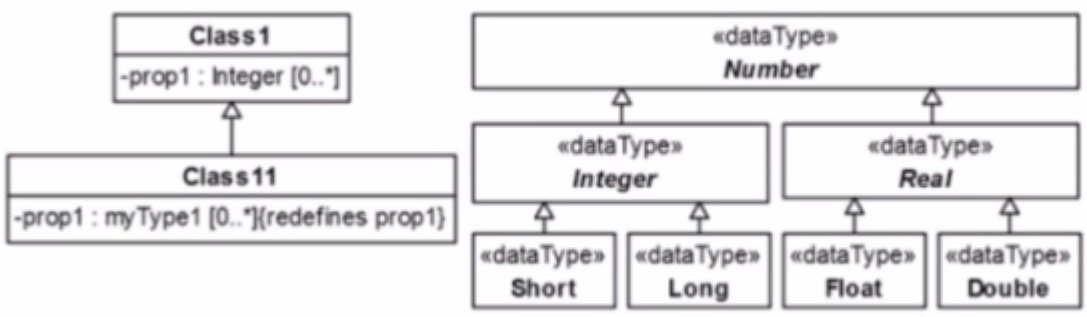
The execution semantics of Alf (Action Language for Foundational UML) are defined by mapping the concrete syntax of Alf to the abstract syntax of fUML3.Alf provides a textual surface representation for a subset of UML model elements, and its main benefit is an execution semantics that allows for the generation of executable code out of Alf specifications4. This mapping ensures that Alf can be used to specify behavior in a way that is directly executable in the context of an fUML model.

Question 10

Question Type: MultipleChoice

Choose the correct answer:

Consider the following diagram:



What could be substituted for myTypel?

Options:

A- Number
B- Short or Long
C- any subtype of Number
D- any Type, there is no restriction

Answer:

C

Explanation:

In the given diagram, myType1 is shown redefining prop1, which was originally of type Integer. Given that Integer is a subtype of Number, and myType1 is used in a redefinition context, it implies that myType1 must also be a subtype of Number. In UML, when a property is redefined, the redefining property must be type compatible with the property it redefines. Therefore, myType1 could be substituted by any subtype of Number, which includes Integer, Real, and all their subtypes (Short, Long, Float, Double, etc.). This is based on the UML principle of type conformance in property redefinition, as specified in the UML 2.x Superstructure Specification.

Question 11

Question Type: MultipleChoice

Choose the correct answer:

A modeler has been asked to provide an alternate graphical and textual concrete syntax for a set of Actions.

Which statement is true regarding this task?

Options:

A- The modeler should develop a tool-specific set of representations and map them to the standard concrete syntax.
B- The modeler should develop a tool-specific set of representations and map them to the standard abstract syntax.
C- Alternate graphical concrete syntax for Action elements is not allowed

D- Alternate textual concrete syntax for Action elements is not allowed

Answer:

B

Explanation:

Regarding the development of alternate syntax for Actions in UML:

A . Incorrect, as it does not address the need to align with the standard abstract syntax of UML.

B . Correct. When developing alternate syntax (graphical or textual), it should still map back to the standard abstract syntax of UML, ensuring that the semantic meaning is preserved across different representations.

C . Incorrect, as UML does not explicitly forbid alternate graphical concrete syntax if it adheres to the abstract syntax rules.

D . Also incorrect, as alternate textual syntax is allowed provided it conforms to the abstract syntax.

UML Specification: Notation section, which discusses the requirements and flexibility regarding syntax representation.

More on the abstraction and syntax can be found in the introductory and foundational chapters of the UML 2.5 Documentation.

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