



Free Questions for OMG-OCUP2- FOUND100

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Question 1

Question Type: MultipleChoice

Select the correct answer: OpaqueExpression can use which languages?

Options:

- A- onlyOCL
- B- only programming languages
- C- only Mathematical Expressions
- D- any language

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Answer:

D

Explanation:

An OpaqueExpression in UML 2 is used to specify behavior in a textual form when it is not necessary to specify which language is used, or when it is not possible to use graphical notation. According to the UML 2 specification, an OpaqueExpression is not limited to any particular language; it can represent expressions written in any language.

The key characteristics of an OpaqueExpression are as follows:

The 'body' of an OpaqueExpression is a sequence of strings, where each string could be written in a different language. This means it has the capacity to include multiple languages simultaneously.

The 'language' attribute is optional and is used to indicate the languages of the respective 'body' parts.

The allowance for any language is clearly stated in the UML 2 Infrastructure Specification. OpaqueExpression is designed to be a flexible way to capture expressions that are not readily expressible in UML or when using a language outside the scope of UML (e.g., mathematical expressions, programming languages, or other domain-specific languages).

Question 2

Question Type: MultipleChoice

Choose the correct answer:

Which statement characterizes a valuable model?

Options:

- A- A simple model that is useful has value.
- B- The value of a model is directly related to its complexity.
- C- A model must be 'right' in an engineering sense to have value.
- D- The value of a model is always based on its ability to predict system behavior.

Answer:

A

Explanation:

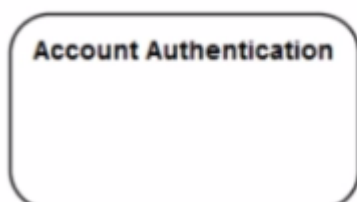
A valuable model in UML and systems design is characterized by its usefulness rather than its complexity or how 'correct' it is in an engineering sense. A model's primary objective is to effectively communicate the key aspects of a system or process, and simplicity often enhances this communication by making the model easier to understand and use. The value of a model thus comes from its ability to facilitate decision-making, problem-solving, and understanding among stakeholders. This perspective aligns with the principle of Occam's Razor in modeling, which suggests that simpler solutions are preferable when all other factors are equal. In UML, a model that provides clear insights with minimal complexity is considered more valuable because it is accessible to a wider audience and can be more readily applied to solve real-world problems.

Question 3

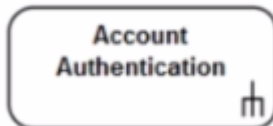
Question Type: MultipleChoice

Choose the correct answer:

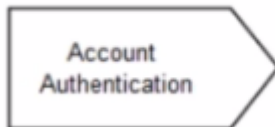
Consider the following Activity:



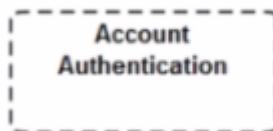
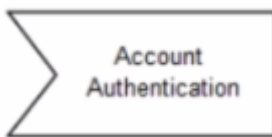
A)



B)



C)



Options:

- A- Option A
- B- Option B
- C- Option C
- D- Option D

Answer:

B

Explanation:

The diagram displays an activity labeled 'Account Authentication'.

There are two main paths branching from the start of the activity:

One path leads to an activity named 'Validate Password'.

The other path leads to an activity named 'Send OTP'.

Both paths converge into a decision diamond labeled 'Authentication Successful?'.

Depending on the outcome of the decision (Yes/No), the flow continues to either a 'Grant Access' or 'Deny Access' activity.

Explanation of why Option B is Correct:

This diagram accurately represents the scenario of account authentication where there are two alternative paths for validation: using a password or an OTP (One-Time Password). The decision point after these paths merges the flow for a final decision on granting or denying access based on successful authentication.

Comparison with Other Options:

Option A, C, and D show different activity sequences that don't align with the two initial validation paths (password vs. OTP) and the subsequent decision point based on authentication success.

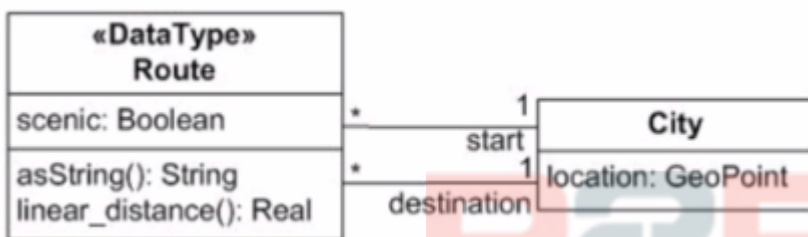
Reference

UML 2.5.1 Specification (Superstructure): Sections on Activity Diagrams
<https://www.omg.org/spec/UML/2.4/Superstructure/PDF>

Question 4

Question Type: MultipleChoice

Choose the correct answer: Consider the following diagram:



Is this diagram valid?

Options:

- A- No, because a DataType cannot have Associations to a Class.
- B- No, because a DataType cannot have Operations.
- C- No, because a DataType cannot have Attributes.
- D- Yes, it is formally correct.

Answer:

A

Explanation:

The provided diagram depicts a DataType named Route with operations, attributes, and associations to a Class named City. In UML, a DataType is a type of classifier that specifies the values that do not have identity (i.e., are not distinguishable from other objects). DataTypes may contain Attributes and Operations, so options B and C are incorrect.

However, DataTypes should not have associations to Classes because DataTypes are meant to be value types without identity, and associations typically imply a relationship between instances (which have identity). Thus, the presence of associations from Route to City is not consistent with the definition of a DataType.

UML 2.x Superstructure Specification: Sections on Classifiers and DataTypes provide definitions of what constitutes a DataType and what features they can have. They specifically mention that DataTypes are kinds of classifiers that do not have identity and are often used to type attributes.

UML 2.x Infrastructure Specification: This foundational document gives additional context on the semantics of different types of classifiers, including DataTypes, and how they relate to other elements in a UML model.

Question 5

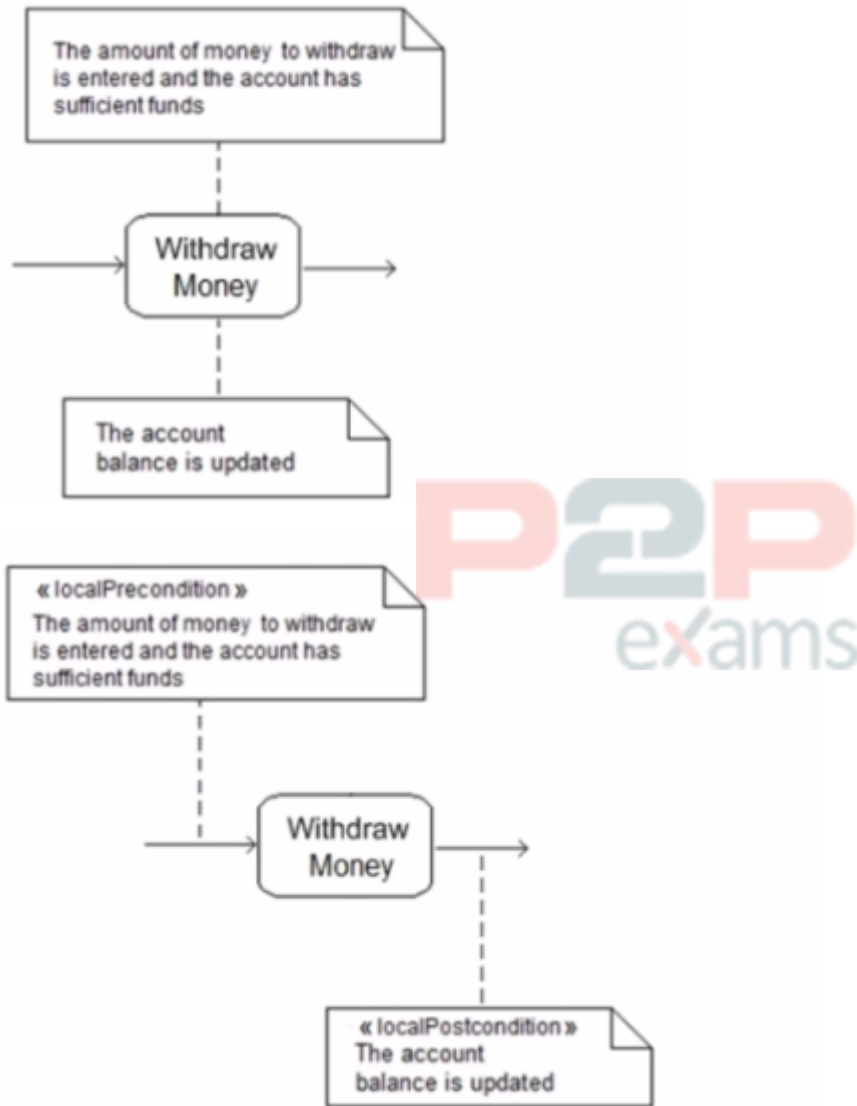
Question Type: MultipleChoice

Choose the correct answer: Consider the following scenario:

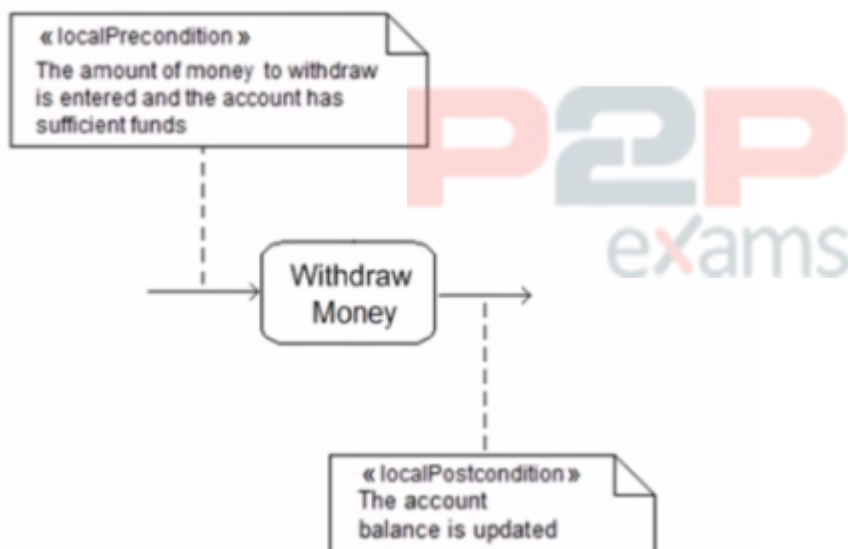
The "Withdraw Money" action can only be executed after the amount to withdraw is entered and the account contains sufficient funds. After the action is executed, the account balance is updated.

Which diagram models this scenario

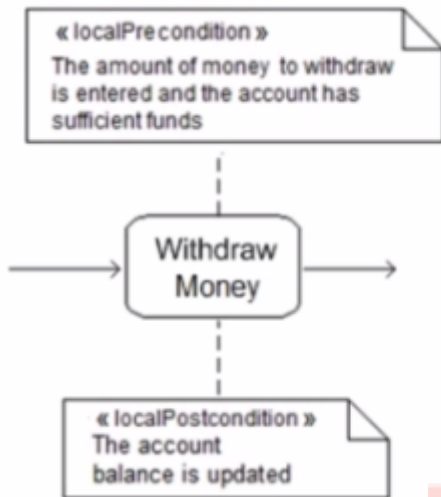
A)



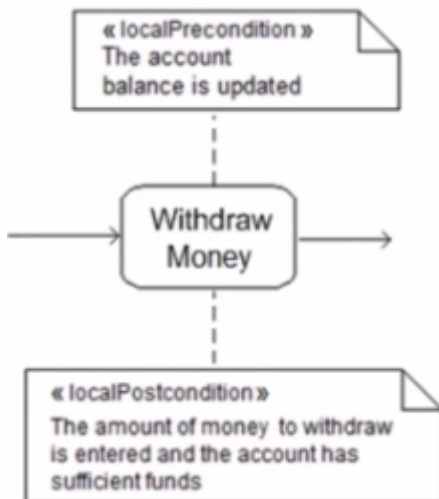
B)



C)



D)



Options:

- A- Option A
- B- Option B
- C- Option C
- D- Option D

Answer:

C

Explanation:

The correct answer is Option C based on the UML 2 Foundation concepts for activities and pre/postconditions.

Analysis of the Diagram in Option C:

The diagram depicts an activity named 'Withdraw Money'.

There are two diamonds preceding the activity, representing preconditions. Preconditions are conditions that must be true before the activity can be executed.

The text within the first diamond indicates that 'the amount of money to withdraw is entered'.

The text within the second diamond indicates that 'the account has sufficient funds'.

This aligns with the scenario where the user must enter a withdrawal amount and the account must have enough money to cover the withdrawal before the 'Withdraw Money' activity can proceed.

Following the activity, there's a diamond labeled 'postcondition,' indicating a condition that becomes true after the activity is completed.

The text within the postcondition diamond states that 'the account balance is updated.' This reflects the scenario where the account balance is updated after a successful withdrawal.

Comparison with Other Options:

Option A, B, and D do not explicitly show preconditions and postconditions using the diamond notation, making them less suited to represent the scenario where certain conditions need to be met before and after the action.

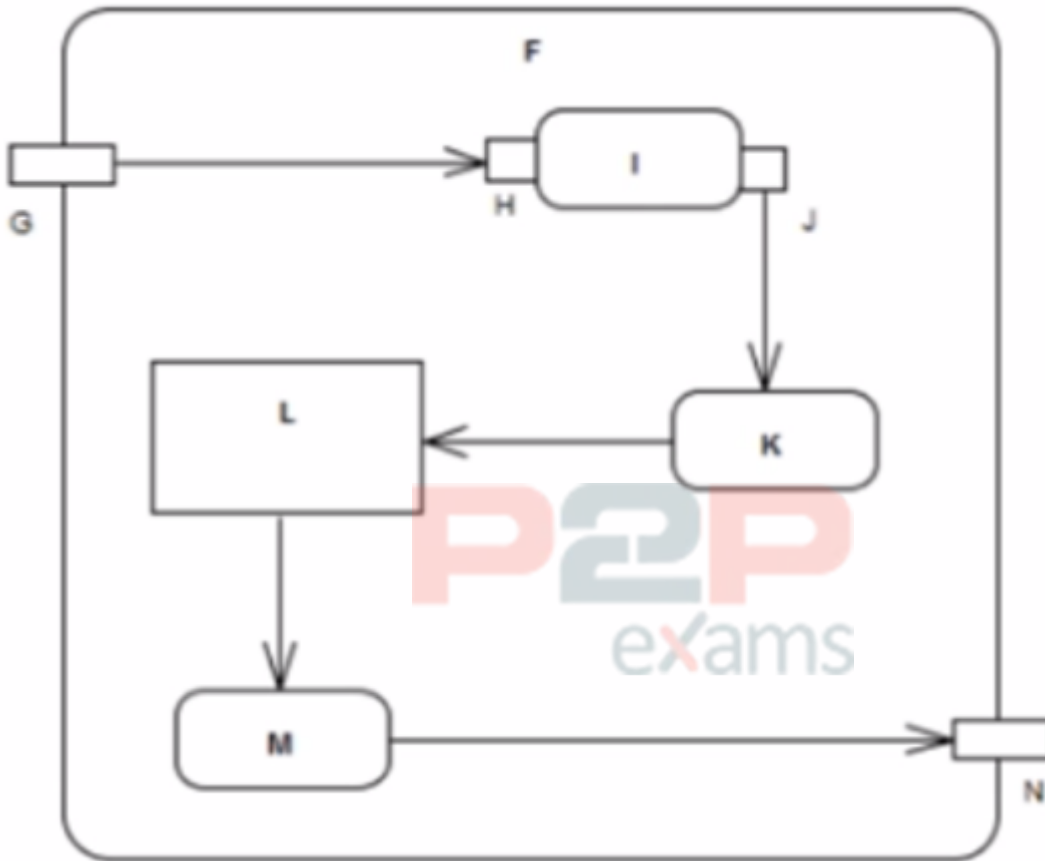
Reference

UML 2.5.1 Specification (Superstructure): Sections on Activity Diagrams and Pre/Postconditions <https://www.omg.org/spec/UML/2.4/Superstructure/PDF>

Question 6

Question Type: MultipleChoice

Choose the correct answer: Consider the following diagram:



How many object nodes in total are shown?

Options:

- A- 1
- B- 2
- C- 3
- D- 4
- E- 5
- F- 6
- G- 8

Answer:

G

Explanation:

ML 2 Foundation concepts for activity diagrams, there are eight object nodes in total. Here's a breakdown of the elements:

Object Nodes:

Order: This rectangle near the start of the diagram represents an object node.

Cust Name: This rectangle following the 'Get Customer Details' action is another object node.

Order Details: This rectangle after the 'Get Order Details' action is an object node as well.

New Order: The rectangle positioned after the decision diamond (approved) is an object node.

Repeat(text near the decision diamond): This is not an object node. It likely indicates a loopback or repetition, but it doesn't represent an object itself.

Cust Order: The rectangle after the 'Place Order' action is an object node.

Invoice: The rectangle following the 'Create Invoice' action is an object node.

OrderAck: The rectangle at the end signifies another object node.

Counting the Nodes:

There are eight rectangles that represent object nodes in the diagram (Order, Cust Name, Order Details, New Order, Cust Order, Invoice, OrderAck).

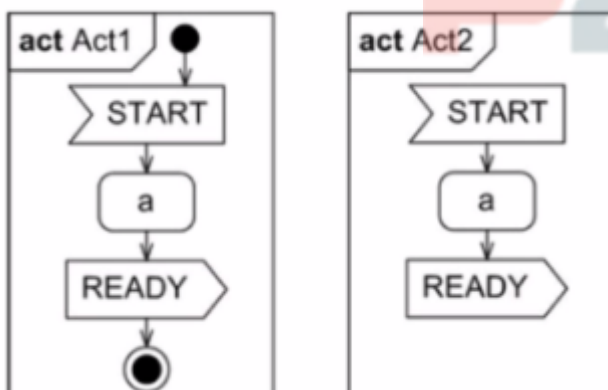
Reference

[UML 2.5.1 Specification \(Superstructure\): Sections on Activity Diagrams and Object Nodes](https://www.omg.org/spec/UML/2.5.1/)
<https://www.omg.org/spec/UML/2.5.1/>

Question 7

Question Type: MultipleChoice

Choose the correct answer:



Consider the following two diagrams:

Which description of these diagrams is true?

Options:

- A-** In both diagrams, the activity will end after action READY and no further signals will be accepted.
- B-** Initial and final nodes are optional. Therefore the execution semantics of both diagrams are equivalent.
- C-** In diagram Act1. action a can get executed once. In diagram Act2. action a can get executed many times.
- D-** Diagram Act2 is incomplete: It should get completed with exactly one start and at minimum one final node. If this would be done, both diagrams become equivalent.

Answer:

A

Explanation:

Start Node: Represented by a black circle, indicating the starting point of the activity.

Action a: Represented by a rounded rectangle, signifying an action or step within the activity.

Action READY: Another rounded rectangle representing an action.

End Node: A circle with a black dot inside, marking the end point of the activity.

Based on the common elements in both Act1 and Act2:

The activity starts at the designated start node.

It proceeds to action 'a'.

Then it moves to action 'READY'.

Finally, it reaches the end node, signifying completion.

There are no additional branches or loops that would allow for re-starting the activity or re-executing action 'a' multiple times.

Analysis of Other Options:

B . Initial and final nodes are optional...While it's true that initial and final nodes can be implicit in some cases, well-formed activity diagrams typically include them for clarity. Here, both diagrams have them explicitly.

C . In diagram Act1. action a can get executed once...There's no basis to claim a difference in the number of executions of action 'a' between the two diagrams.

D . Diagram Act2 is incomplete...Both diagrams seem complete as they have proper start and end nodes, and the flow goes from start to finish without any ambiguity.

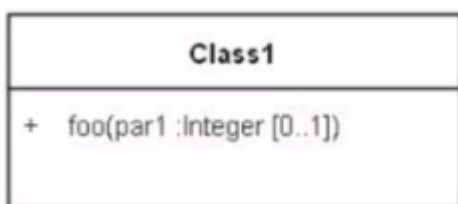
Therefore, considering the structure and execution flow, both Act1 and Act2 will end after the 'READY' action, and no further signals will be accepted, making answer A the most accurate description.

Question 8

Question Type: MultipleChoice

Choose the correct answer:

Consider the following diagram fragment:



Which statement is correct about the parameter part?

Options:

- A- It is optional.
- B- It accepts a collection of items.
- C- It accepts only values either 0 or 1.
- D- It accepts only values between 0 and 1.

Answer:

A

Explanation:

In UML, when a class diagram shows an operation with a parameter that has a multiplicity of [0..1], it indicates that the parameter is optional. The range [0..1] means that the parameter can have 0 or 1 occurrence. This does not mean it accepts a collection, nor does it specify the values it accepts (it specifies how many times the parameter can occur).

The correct interpretation of the parameter `par1 : Integer [0..1]` is:

A . It is optional.

B is incorrect because the multiplicity [0..1] does not mean a collection of items; rather, it signifies that the parameter can be omitted or present, but not multiple times. C is incorrect because the multiplicity [0..1] does not constrain the values to 0 or 1; it refers to the number of instances of the parameter. D is incorrect because [0..1] is not a range of values but a range of occurrences or instances of the parameter.

Therefore, the correct answer is:

A . It is optional.



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