Self-test OOAD/UML

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INTRODUCTION TO THE SELF-TEST OOAD/UML

With this test you can see for yourself if you attained the objectives of the OOAD/UML course (or if you will profit from following it).

This test consists of 20 questions. For each question you should mark only one choice, unless indicated otherwise. A question is answered correctly, if only all correct choices are marked.

The test will take about 25 minutes.

You can find the right answers and guidelines for the evaluation at the end of this document.

QUESTIONS SELF-TEST OOAD/UML

1. If you want to plan project activities such as developing new functionalities or test cases, which of the following OOAD artifacts is the most useful?

   O (a) Sequence diagrams

   O (b) Use cases

   O (c) Domain model

   O (d) Package diagrams

2. Which of the following is iterative, incremental, use case driven and architecture centric?

   O (a) V-method

   O (b) UML

   O (c) Component Based Development

   O (d) RUP

3. What is true about UML stereotypes?

   O (a) A stereotype is used for extending the UML language.

   O (b) A stereotyped class must be abstract.

   O (c) The stereotype {frozen} indicates that the UML element cannot be changed.

   O (d) UML Profiles can be stereotyped for backward compatibility.

4. Consider a beverage machine. If the actor is ‘customer’, and the scope is ‘machine’, what is most likely to be found in the main scenario of the use case ‘get drink’?

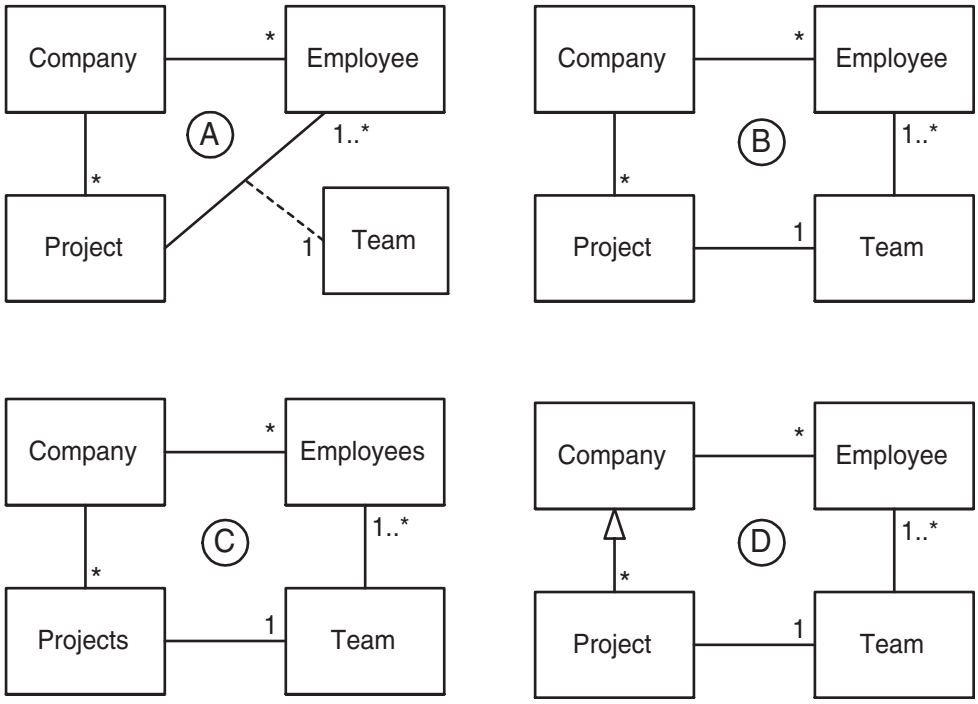
   O (a)
   - enter choice
   - if drink available then show price
   - put in coins
   - if paid enough then deliver drink

   O (b)
   - customer enters choice
   - machine shows price
   - customer puts in coins
   - machine delivers drink

   O (c)
   - enter choice
   - show price
   - put in coins
   - deliver drink

   O (d)
   - ...
   - machine sends price to LCD display
   - customer put coins in slot
   - coin mechanism verifies amount and tells machine controller
   - machine controller activates boiler
   - ...

5. Consider the following situation:
a company realizes projects; each project is executed by a team of employees.
Which would be a suitable conceptual UML diagram?



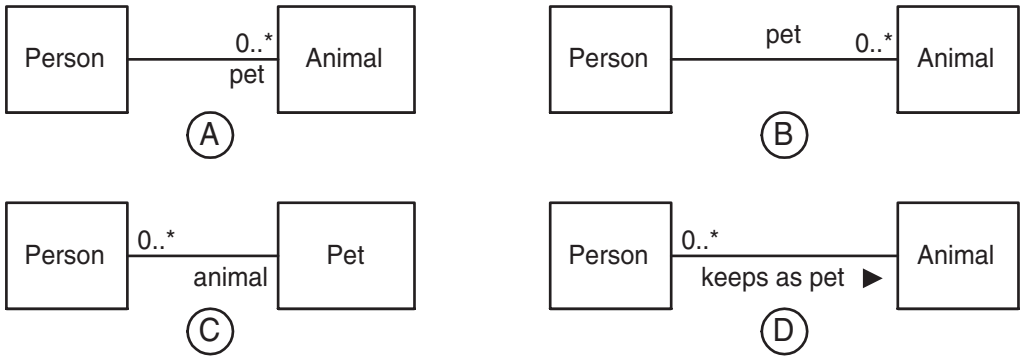
O (a) diagram A

O (b) diagram B

O (c) diagram C

O (d) diagram D

6. How do you express that some persons keep animals as pets?



O (a) diagram A

O (b) diagram B

O (c) diagram C

O (d) diagram D

7. What can UML interfaces be used for?

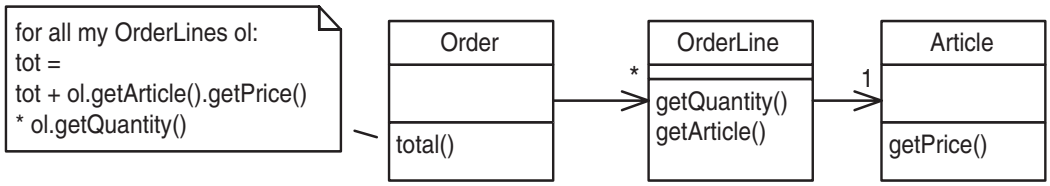
O (a) to provide concrete classes with the stereotype <<interface>>

O (b) to program in Java and C++, but not in C#

O (c) to define executable logic that can be reused in several classes

O (d) to specify required services for types of objects

8. Consider the following design.



How would the introduction of a subtotal() method in OrderLine improve the design?

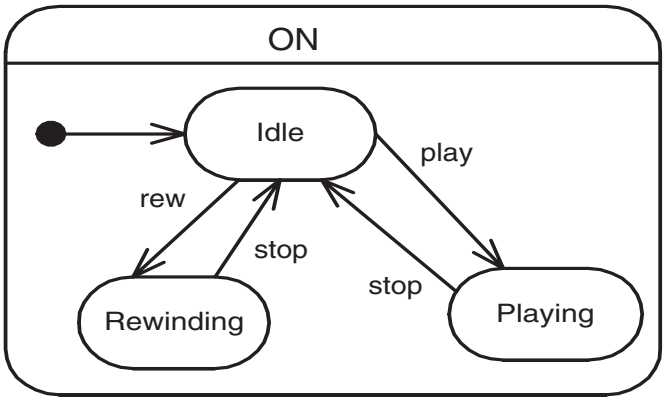
O (a) It increases the cohesion of Article.

O (b) It reduces the coupling of Order.

O (c) It reduces the cohesion of Order.

O (d) It increases the coupling of Article.

9. What is correct about the following State Diagram?



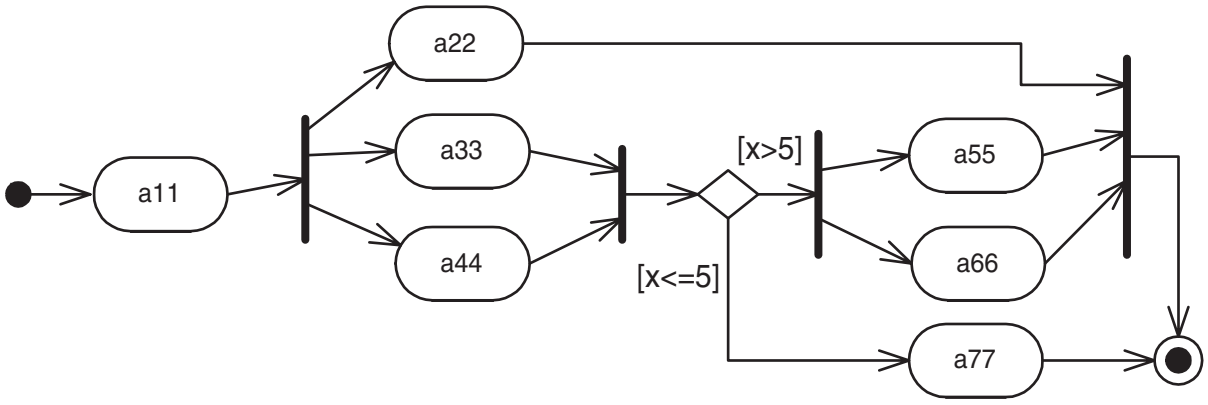
O (a) 'ON' is a concurrent state.

O (b) This State Diagram is invalid because it contains no final state.

O (c) 'play', 'stop' and 'rew' are actions.

O (d) 'ON' is a superstate.

10. Which of these activities COULD occur simultaneously? *[2 answers]*



[_] [a] a44 and a66

[_] [b] a44, a33 and a22

[_] [c] a22 and a77

[_] [d] a77 and a66

11. Which are valid events in a State diagram? *[2 answers]*

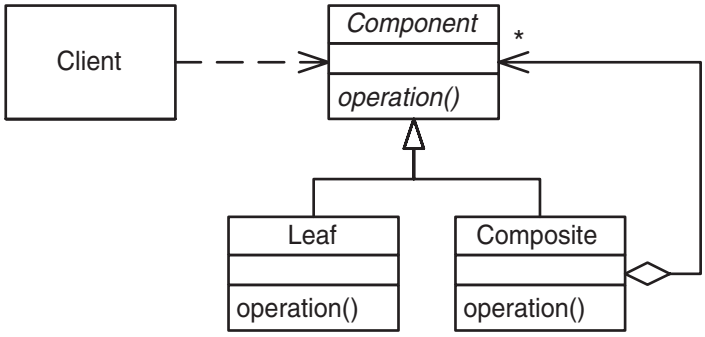
[_] [a] if()

[_] [b] when()

[_] [c] close()

[_] [d] after()

12. This is the structure of a well-known GoF pattern; which one?



O (a) Component

O (b) Delegation

O (c) Polymorphism

O (d) Composite

13. Which of the following are known refactorings (according to Fowler)?*[2 answers]*

[_] [a] Protect Variations

[_] [b] Replace Inheritance with Delegation

[_] [c] Replace Delegation with Inheritance

[_] [d] Introduce Association Class

14. If you need to show the physical relationship between software components and the hardware in the delivered system, which UML diagram can you use?

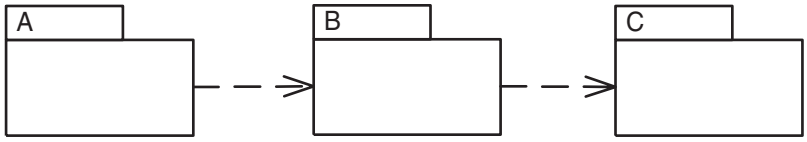
O (a) component diagram

O (b) deployment diagram

O (c) class diagram

O (d) network diagram

15. What is a true statement about the following packages?



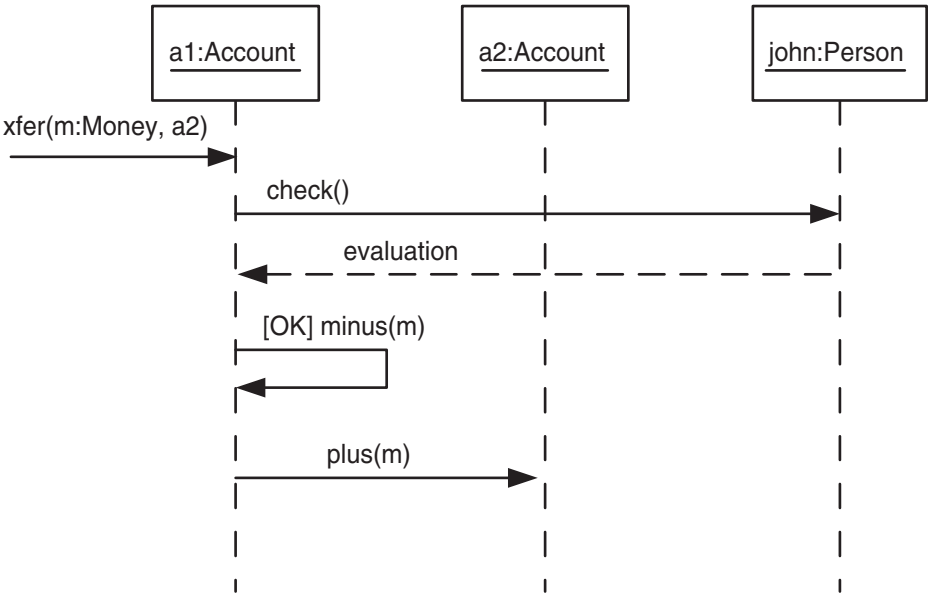
O (a) If package C changes, package B must be inspected for necessary changes, and if there are any, package A may have to be adapted as well.

O (b) If package B changes, package A and package C must be inspected for necessary changes.

O (c) Packages should be designed so that a change in one package does not have an effect to other packages.

O (d) If package C changes, package A has to be examined (as well as B), because dependencies are transitive.

16. Given the following diagram, which method(s) should be implemented for the Account class?



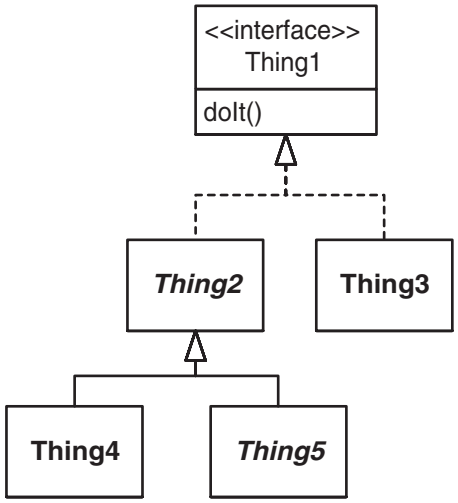
O (a) xfer()

O (b) xfer(), plus(), minus()

O (c) check(), plus(), minus()

O (d) xfer(), evaluation(), plus(), minus()

17. Which is true about the method doIt()?



O (a) The method doIt() must be implemented by Thing3 and possibly also by Thing4.

O (b) The method doIt() must be implemented only by Thing5.

O (c) The method doIt() must be implemented by Thing2, Thing3, Thing4 and Thing5.

O (d) There is no need for any class to implement doIt(), because it is already implemented by Thing1.

18. What is true about a Sequence Diagram? *[2 answers]*

[_] [a] It describes the behaviour in many Use Cases.

[_] [b] It describes the behaviour in a single Use Case.

[_] [c] It describes the behaviour of a single object.

[_] [d] It describes the behaviour of several objects.

19. Which GRASP pattern do you use to decide who is going to handle the incoming system events?

O (a) Controller

O (b) Low coupling

O (c) Adapter

O (d) Information Expert

20. Which UML diagram is NOT commonly used for illustrating use cases?

O (a) system sequence diagram

O (b) activity diagram

O (c) use case diagram

O (d) collaboration diagram

EVALUATION.

Here are the correct answers to all questions:

1. b
2. d
3. a
4. b
5. b
6. a
7. d
8. b
9. d
10. b c
11. b d
12. d
13. b c
14. b
15. a
16. b
17. a
18. b d
19. a
20. d

Give yourself 1 point for each correctly answered question (for multiple answer questions, this means that **all** correct answers must be marked and no other choices).

If you answered less than 50% of the questions correctly, you will definitely profit from following the OO analysis and design with UML course.

If you answered between 50% and 75% of the questions correctly, you know already some concepts, but you will still learn a lot in the OO analysis and design with UML course.

If you answered more than 75% correctly, then the OO analysis and design with UML course is probably not useful for you any more: maybe you should consider the Patterns in practice course.