

Génie Logiciel Avancé

Exercices: Diagramme UC

Bui Thi Mai Anh¹

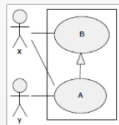
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Ha Noi University of Science and Technology

23 mars 2020

Question 1

Question 1: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case A?

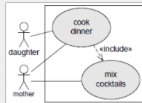
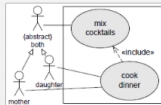
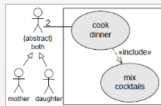
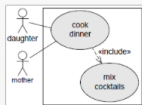


- | | | |
|-------------------------------------|--------------------------|-----------------------|
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| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $X \wedge Y$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $X \wedge Y \wedge Y$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Y |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $X \wedge X \wedge Y$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | X |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $X \wedge X \wedge X$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $X \wedge X$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $Y \wedge Y \wedge Y$ |

Question 2

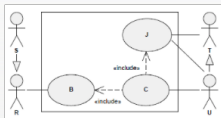
Question 2: How do you model the following situation with a UML2 use case diagram?

A mother cooks dinner together with her daughter. In the course of that, the mother also always has to mix the cocktails.



Question 3

Question 3: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case B?

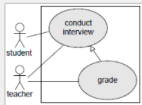
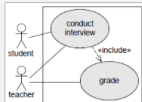
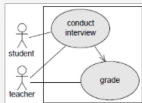
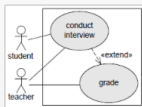


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| <input checked="" type="checkbox"/> | <input type="checkbox"/> | R |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $U \wedge R$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $S \wedge S \wedge S$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $S \wedge U$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $U \wedge R \wedge S$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $R \wedge S$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | S |

Question 4

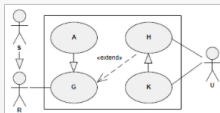
Question 4: How do you model the following situation with a UML2 use case diagram?

A teacher is conducting an interview with a student. In the course of that, the teacher always has to grade the student.



Question 5

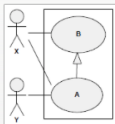
Question 5: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case Π ?



- | | | |
|-------------------------------------|--------------------------|-----------------------|
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| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $R \wedge U \wedge U$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $S \wedge U \wedge U$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $U \wedge U$ |
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| <input checked="" type="checkbox"/> | <input type="checkbox"/> | U |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | R |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $U \wedge S$ |

Question 6

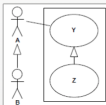
Question 1: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case A?



- | | | |
|-------------------------------------|--------------------------|-----------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $Y \wedge Y$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $X \wedge Y$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $X \wedge Y \wedge Y$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Y |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $X \wedge X \wedge Y$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | X |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $X \wedge X \wedge X$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $X \wedge X$ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | $Y \wedge Y \wedge Y$ |

Question 7

Question 7: Which of the following statements about the given diagram clipping are true?



- ☒ ☐ A and B execute Y together.
- ☒ ☐ A and B can execute Z separately.
- ☒ ☐ A and B execute Z together.
- ☒ ☐ A and B can execute Y separately.

Question 8

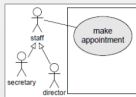
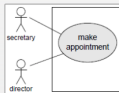
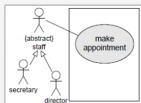
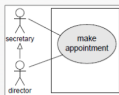
Question 8: Actors in a use case diagram ...

- ☒ ☐ ... might use the described system.
- ☒ ☐ ... interact with the described system.
- ☒ ☐ ... represent roles of the users of the described system.
- ☒ ☐ ... can be linked to abstract and non-abstract use cases via associations.
- ☒ ☐ ... interact with the system in the form of <<include>>-relationships.
- ☒ ☐ ... might be used by the described system.
- ☒ ☐ ... are always located within the described system.
- ☒ ☐ ... can be linked to each other by inheritance.
- ☒ ☐ ... communicate with use cases and other actors.

Question 9

Question 9: How do you model the following situation with a UML2 use case diagram:

The directors or his secretary are allowed to make an appointment, but nobody else.



Question 10

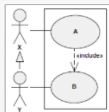
Question 6: How do you model the following situation with a UML2 use case diagram:

A person goes for lunch. In the course of that it might be necessary that the person withdraws cash from an ATM.



Question 11

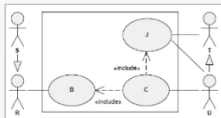
Question 11: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case B?



- ☒ ☐ $X \wedge X \wedge Y$
- ☒ ☐ $Y \wedge Y$
- ☒ ☐ $X \wedge X \wedge X$
- ☒ ☐ X
- ☒ ☐ $X \wedge Y$
- ☒ ☐ Y
- ☒ ☐ $X \wedge Y \wedge Y$
- ☒ ☐ $X \wedge X$
- ☒ ☐ $Y \wedge Y \wedge Y$

Question 12

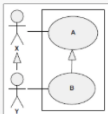
Question 12: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case c?



- ☒ ☐ R
- ☒ ☐ S
- ☒ ☐ U
- ☒ ☐ S \wedge U
- ☒ ☐ U \wedge T
- ☒ ☐ U \wedge R \wedge S
- ☒ ☐ T
- ☒ ☐ U \wedge R
- ☒ ☐ T \wedge T

Question 13

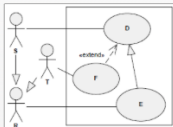
Question 13: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case B?



- ☒ ☐ X
- ☒ ☐ $Y \wedge Y \wedge Y$
- ☒ ☐ $X \wedge X \wedge X$
- ☒ ☐ $X \wedge Y$
- ☒ ☐ $Y \wedge Y$
- ☒ ☐ $X \vee (Y \wedge Y)$
- ☒ ☐ $(X \vee Y) \wedge Y$
- ☒ ☐ $X \wedge X$
- ☒ ☐ $X \wedge (X \vee Y)$
- ☒ ☐ Y

Question 14

Question 14: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case E?



☒ ☐ $T \wedge T$

☒ ☐ S

☒ ☐ $T \wedge S$

☒ ☐ $S \wedge S$

☒ ☐ $R \wedge T$

☒ ☐ R

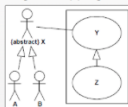
☒ ☐ $R \wedge R$

☒ ☐ $R \wedge S$

☒ ☐ T

Question 15

Question 15: Which of the following statements about the given diagram clipping are true?



A and B execute Y together.



A or B can execute Z.



A and B can execute Y separately.



Z inherits from Y, it is a specialised Y and can be executed by sub actors (descendants) of X. A and B inherit the behavior of X, they are specialised X and can execute Y.

Question 16

Question 16: The following <<include>>-relationship means, that ...



- ☒ ☐ ... B cannot be executed without A.
- ☒ ☐ ... the behavior of A might or might not be inserted into the behavior of B.
- ☒ ☐ ... the behavior of B always has to be inserted into the behavior of A.
- ☒ ☐ ... the behavior of A always has to be inserted into the behavior of B.
- ☒ ☐ ... A cannot be executed without B.
- ☒ ☐ ... A might or might not invoke use case B.
- ☒ ☐ ... B can be executed instead of A.
- ☒ ☐ ... the behavior of B might or might not be inserted into the behavior of A.

Question 17

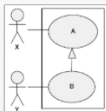
Question 17: How do you model the following situation with a UML2 use case diagram:

A travel booking is cancelled by a staff member or by the department head (who also is a staff member).



Question 18

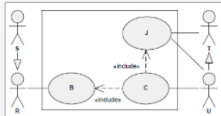
Question 18: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case B?



- ☒ ☐ $Y \wedge Y \wedge Y$
- ☒ ☐ $X \wedge X \wedge Y$
- ☒ ☐ $X \wedge Y$
- ☒ ☐ X
- ☒ ☐ $X \wedge X \wedge X$
- ☒ ☐ $Y \wedge Y$
- ☒ ☐ $X \wedge X$
- ☒ ☐ $X \wedge Y \wedge Y$
- ☒ ☐ Y

Question 19

Question 19: With which use cases does actor T communicate - no matter if other actors are also involved?



- ☒ ☐ J
- ☒ ☐ C
- ☒ ☐ B

Question 20

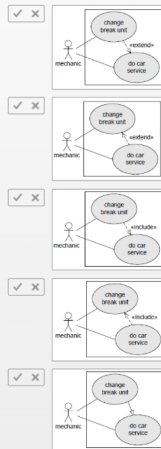
Question 20: Which of the following statements about the given diagram clipping are true?



- ☒ ☐ B inherits the behavior of A and can override and expand it.
- ☒ ☐ B should not be abstract.
- ☒ ☐ B is called "sub use case".
- ☒ ☐ A inherits all relationships from B.
- ☒ ☐ B is called "base use case".
- ☒ ☐ A must not be abstract.
- ☒ ☐ B inherits all relationships from A.

Question 21

Question 21: How do you model the following situation with a UML2 use case diagram:
A mechanic does a car service. During that service, it might be necessary to change the break unit.



Question 22

Question 22: The following <<extend>>-relationship means, that ...



- ☒ ☐ ... B can extend A.
- ☒ ☐ ... A might or might not invoke B.
- ☒ ☐ ... B might or might not invoke A.
- ☒ ☐ ... A can extend B.
- ☒ ☐ ... A cannot be executed without B.
- ☒ ☐ ... B always has to invoke A.
- ☒ ☐ ... B can be executed instead of A.

Question 23

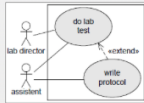
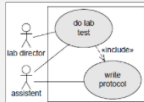
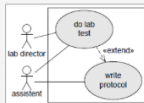
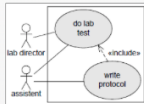
Question 23: Which of the following use cases are correct use cases when you want to design a use case diagram for an online book shop?

- ☒ ☐ Enter credit card details
- ☒ ☐ Do not order a book
- ☒ ☐ Enter book title
- ☒ ☐ Cancel order
- ☒ ☐ Look for a book
- ☒ ☐ Order a book
- ☒ ☐ Login

Question 24

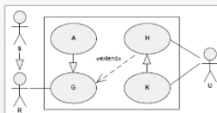
Question 24: How do you model the following situation with a UML2 use case diagram?

The lab director does a lab test together with his assistant. The assistant always has to write a protocol during the lab test.



Question 25

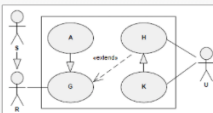
Question 25: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case κ ?



- ☒ ☐ $U \wedge U \wedge U$
- ☒ ☐ $S \wedge R \wedge U$
- ☒ ☐ U
- ☒ ☐ $R \wedge U \wedge U$
- ☒ ☐ $U \wedge U$
- ☒ ☐ $U \wedge R$
- ☒ ☐ R

Question 26

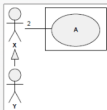
Question 26: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case A?



- ☒ ☐ $R \wedge S$
- ☒ ☐ $R \wedge U$
- ☒ ☐ $S \wedge S$
- ☒ ☐ $R \wedge R$
- ☒ ☐ R
- ☒ ☐ U
- ☒ ☐ S

Question 27

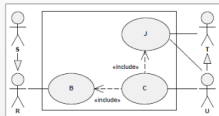
Question 27: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case A?



- ☒ ☐ $X \wedge X$
- ☒ ☐ X
- ☒ ☐ $Y \wedge Y \wedge Y$
- ☒ ☐ Y
- ☒ ☐ $X \wedge X \wedge Y$
- ☒ ☐ $X \wedge X \wedge X$
- ☒ ☐ $X \wedge Y \wedge Y$
- ☒ ☐ $Y \wedge Y$
- ☒ ☐ $X \wedge Y$

Question 28

Question 28: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case J?



- ☒ ☐ $T \wedge U \wedge U$
- ☒ ☐ $T \wedge T$
- ☒ ☐ $U \wedge T$
- ☒ ☐ T
- ☒ ☐ $(T \vee U) \wedge U$
- ☒ ☐ $T \wedge T \wedge U$
- ☒ ☐ U
- ☒ ☐ $U \wedge U$

Question 29

Question 29: The association between an actor and a use case...



...is modeled with a directed edge with the arrowhead pointing to the use case.



...is modeled with a dashed line.



...might have multiplicities.



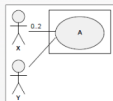
...is binary.



...might be ternary.

Question 30

Question 30: The following Use Case Diagram was modeled according to UML2 standard. Which combinations of actors communicate with Use Case A?



- ☒ ☐ $Y \wedge Y$
- ☒ ☐ $X \wedge Y$
- ☒ ☐ $Y \wedge Y \wedge Y$
- ☒ ☐ $X \wedge Y \wedge Y$
- ☒ ☐ $X \wedge X \wedge Y$
- ☒ ☐ $X \wedge X$
- ☒ ☐ $X \wedge X \wedge X$
- ☒ ☐ Y
- ☒ ☐ X