Software Development Methods
Lab 4: Advanced Use Case Modelling with UML

The Software Development Methods Team

October, 2018

In this lab, please use the following template in the resolution of the exercises, when describing scenarios.

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Name: use case name
Id: a unique serial number to identify the use case.
Description: executive summary
Actors: communicating with the use case
    Main
    Secondary
Pre-conditions: prerequisites for a successful execution
Main flow: atomic steps of the use case.
Alternative flows: detours from the main scenario
Post-conditions: system state, after a successful execution
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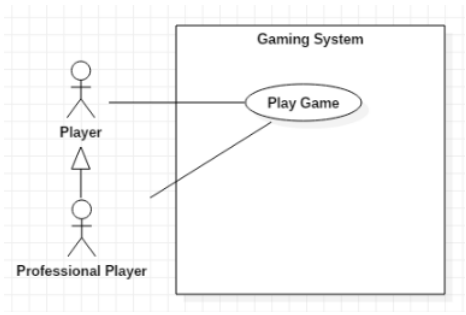
1 The nuts and bolts of use case modelling

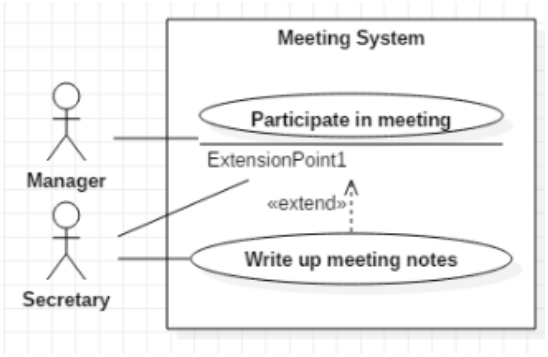
Let us see if you really understand the implications of using the different use case modelling mechanisms. In the multiple choice questions, there may be more than one correct option. Please discuss each option and discuss why it is a correct alternative, or not.

1.1 Which of these combinations of actors communicate with the Play Game use case? Choose all that apply, if any.

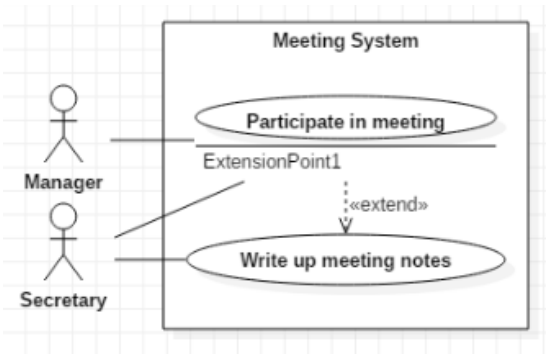


1. A Player
2. A Professional Player
3. A Player and a Professional Player
4. Two Players
5. Two Professional Players

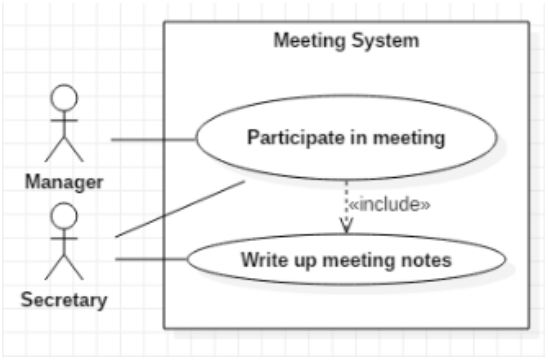
1.2 A manager and a secretary participate in a meeting. During the course of the meeting, the secretary has to write up the meeting notes. Which of the following are correct? Why are the others incorrect?



(a)



(b)



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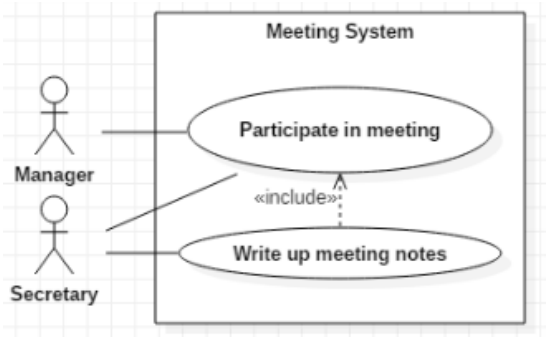
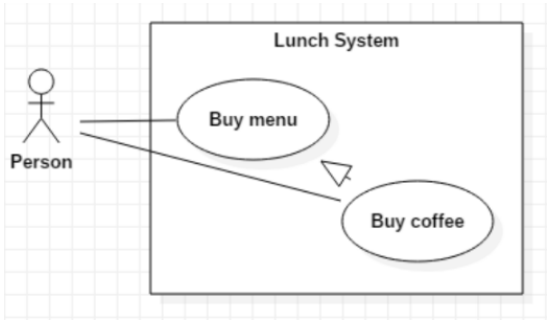
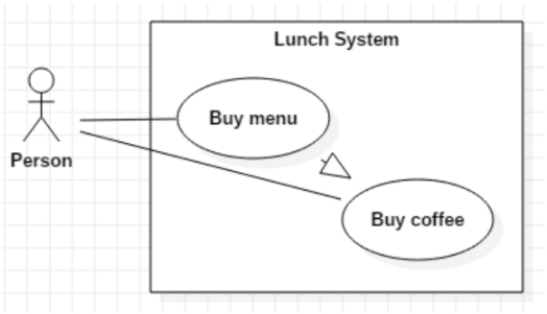


(d)

1.3 A person goes for lunch. At the restaurant, there is a touchscreen where the person can buy a menu. In the course of that, the person may want to buy a coffee, as well. Which of the following models correctly capture these requirements? Why are the others incorrect?



(a)



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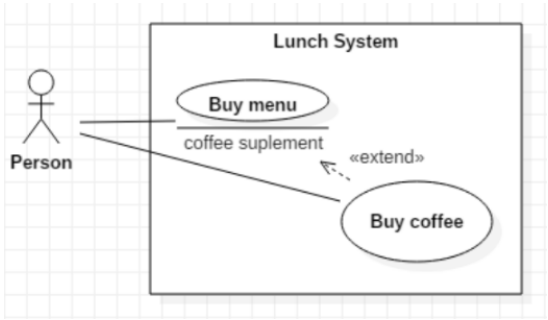

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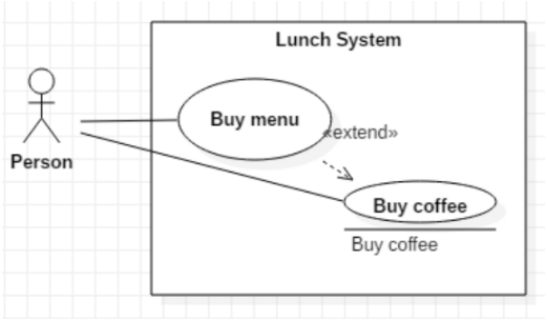
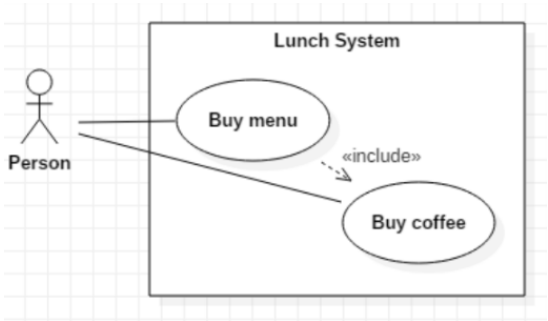


(d)



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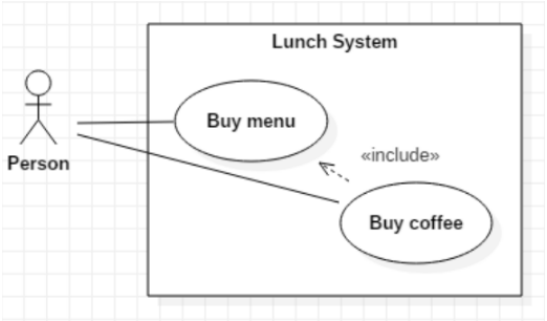

(f)

2 The University System

At FCT, we have three kinds of students: undergraduate (BSc) students, MSc students and PhD students. All of them can enrol in classes, and take exams. Both the MSc students and the PhD students may also submit their dissertations and apply to tutoring positions (to support lab classes). PhD students can also submit their thesis plan. Whenever graduate students submit their dissertation, their supervisor receives a notification from the system. Supervisors also receive notifications when their PhD students submit their thesis plan.

Exams can be written, or oral, but not both. There are no other kinds of exams the student can take. The process of taking these kinds of exams shares commonalities, but also a few specifics (*e.g.* in terms of scheduling the exam, all students take it at the same time, while this is not so for oral exams). The details are beyond the scope of this exercise.

When students participate in an oral exam, a professor always has to grade them in the course of that exam (*i.e.*, the exam is not complete without the grading by the professor). That said, professors grade students in several other occasions, as well.

Although this is not mandatory, graduate students may ask a recommendation letter from a professor in the department. The request itself is not done via the system, but graduate students may submit a recommendation letter along with their application.

1. Build a Use Case diagram for the University System.

2. When submitting a dissertation, what a graduate student (MSc or PhD) really does is the following: they have to submit a document where they request their dissertation to be examined. Then, they submit the dissertation itself. Their supervisor gets notified of the dissertation submission and fills in a form with the suggested external examiners (these are experts from other academic institutions). In doing so, the supervisor "accepts" the graduate student's submission for evaluation. Sometimes, graduate students and their supervisors disagree with respect to the status of the dissertation. In such cases, supervisors may choose not to submit the form with external examiners and the system marks the thesis as being a subject of conflict. In any case, the thesis is submitted and the graduate student receives a notification that this process is complete. It is beyond the scope of this use case to model what happens next. Please specify the "Submit dissertation" use case.