Métodos de Desenvolvimento de Software / Software Development Methods

2014/2015

Exercises

Lab 4 – Use cases

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

Name: use case name
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

1. Subway tickets system

To use the subway, a client must have an electronic ticket that was previously loaded with a certain amount of money (for simplicity, assume that the payment is only performed with coins and bills, and that the vending machine can return change, if necessary). An electronic ticket can be purchased and credited in special vending machines located in subway stations. The ticket owner uses the ticket in a ticket validation machine, to gain access to the embarking/disembarking terminal of the subway, and this action results in debiting the value of a journey (for simplicity, assume that all journeys cost the same), so that the ticket owner can make his trip. If the ticket has not enough credit, the doors to the the terminal will not open. When the client reaches his destination, he uses the ticket on an exit validation machine, so that he can finish his trip. A client can ask for a reimbursement of the remaining value within the ticket, by returning the ticket to a vending machine. A subway employee collects the money from vending machines, from time to time, but without a predefined periodicity, or schedule. Every day, the system generates a report with all the sales in the vending machines, and sends that report to an administrator, who has the ability to update the ticket prices.

1. Identify and define the actors and use cases.
2. Build the top level use cases diagram.
3. Specify, textually, using the available template, each of the use cases you identified. This specification should focus on the main scenario for each of the use cases identified.

2. Meonos cable tv system

A new cable tv operator, Meonos, is developing a system to support the use of its tv service. The system is based on a fiber optical network connecting the decoding boxes installed at the clients' houses to the Meonos servers.

A) The service made available by Meonos allows the following typical functionalities: a client has access to a set of channels, determined by the service package acquired by the client. Different packages correspond to different channels sets. Moreover, a client may also to premium channels to his package, such as sports channels (e.g. SportTv), or movies channels (e.g. Telecine), paying an extra fee for those so called premium channels. Channels may be of TV, or Radio. Among tv channels, we should also consider that we have normal, HD, and 3D channels. A user can also connect and disconnect the decoding box, check the tv guide, select the channel to watch/listen to, and adjust the volume.

B) The system also allows to access to the advanced services provided by Meonos, namely the possibility to restart watching a show from its beginning, to pause and resume later a show, possibly going back in the same show so that the viewer can regain the context. Furthermore, it is also possible to watch a selection of programs which were broadcasted in the last 30 days and make available a video on demand service, with no added cost for the customer. The customer may record up to two shows (which may not coincide with whatever the customer is watching, while the recordings are being done), setup future recordings, in such a way that the system is smart enough to use alternative recording schedules, if more than two recordings are requested simultaneously, and record tv series. At any moment in time, the client may also erase previously recorded shows, or entire series, in order to free some space from memory (note that the available space for recordings is, of course, limited). The shows and series which are recorded can be visualized by the customer.

C) The service also includes a video-club service, where the customer may rent movies, in such a way that the costs are added to those in next month's payment invoice. Once rented, the movie is available for 48 hours in the decoding box.

D) The service allows a connection to social networks, so that customers can associate their clients' accounts to Facebook and vote on the shows they enjoy. These votes are used by the system to create personalized recommendations for each client, and to provide an indication of the popularity of each show available. As such, each client may access, through his tv, to a list of recommendations tailored for him, from which the client may setup additional recordings, and so on. These recommendations are also visible in the queries to the tv guide, which should allow visualizing the the schedules for the next 7 days, in each of the channels, and setup recordings for individual shows and series seasons.

E) Every month, Meonos generates a new invoice with the bill to be paid by the client. As you can imagine, Meonos has a much wider service than the one described here, which includes phone and internet access, but those two systems are completely beyond the scope of the task at hand, and can safely be ignored, at this point.

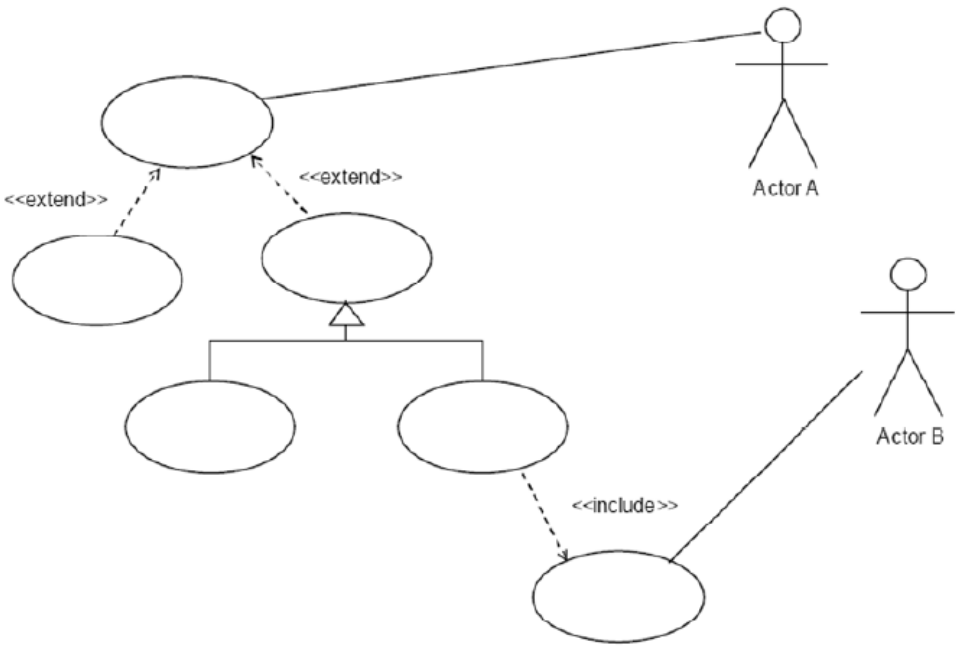
F) In order for all these functionalities to be avaialbe to customers, the system needs to have access, at any moment, to a database server including information on programming schedules, clients' data, etc, are available.

1. Please identify and define the actors and use cases presented here.
2. Build the top level use cases diagram here.

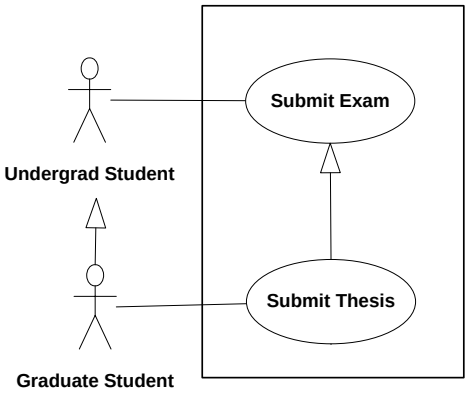
3. Specify, in textual format, using the template available in this document, each of the use cases you identified. This specification should only focus on the main scenario, for each use case.

3. Complete

Which relationship is missing in the model below, so that both actors have access to the same set of functionalities?



4. Please identify the correct comments on the following figure:



a) The actor "Undergrad Student" can only submit exams

b) The actor "Undergrad Student" may submit exams and thesis.

c) The actor "Graduate Student" can only submit thesis

d) The actor "Graduate Student" may submit exams and thesis.

5. There was something wrong with the previous use case diagram. Please correct it.

6. Which of the following sentences are true about use cases? (select all the valid ones)

a) Use cases offer the basis for communicating between clients and engineers, in the planning phase.

b) Use cases are a good source for requirements identification of domain concepts

c) Use case diagrams are the tool that documents requirements

d) A complete use case makes explicit not only the "what", the "how", making us ready for implementing it

e) Use cases do not have flow.

f) A use case is the interaction between user and system.

7. The key elements in a use case diagram are:

a) actors and use cases

b) People, classes and objects

c) People and computers

d) Use cases.

8. Please identify all the reasons why the following diagram is wrong.