Assignment 5

(may be done by a team of at most two students)
Assigned: November 19
Due: Weds, December 4 (11:59 pm), for Parts 1 and 2

Part 1: Use-Case Driven Design (Part 2 will be assigned later)

You are to develop **Star UML Use-Case and Activity Diagrams** for a high-level view of an *Online Forum* described briefly below.

The online forum caters to three main categories of users – students, TAs, and Professor[1]*– each with different privileges. TAs and the Professor are collectively referred to as Staff. The forum supports three types of 'posts': a Q&A post, a Poll post, and a Resource post. Staff may make all three types of posts, but students may only make a Q&A post and a Poll post. The internal details of these posts are not required to be modeled in this assignment.*

All users must login initially to use the online forum; they may logout at any time but must login again to take any actions. The professor creates the class by first logging in and then enrolling the TAs followed by enrolling the students. Students and TAs must login first and then activate their accounts before being allowed to take any further actions.

During the course of a semester, students, TAs, and the professor operate concurrently in taking their actions on the online forum. These users may make any number of posts (of the permitted types) and in any order. As noted above, a user may logout at any time, but must login again before any further other action can be taken.

Finally, the Online Forum maintains statistics on the usage of the online forum, such as average response time for queries, numbers of posts made by users, etc. All activity in the online forum ends at the end of the semester.

(a) What to Represent in the Use-Case Diagram.

(i) The 'Users' to be represented are: *Student, TA, Professor, Staff, User,* and *OnlineForum*.

(ii) The 'Actions' to be represented are: *Login, Logout, Activate, Post, Q&A Post, Poll Post, Resource Post, Create Class, Enroll Students, Enroll Staff,* and *Generate Statistics*.

(iii) 'Generalization' arrows are to be used in relating Users as well as Actions. Draw these arrows pointing upwards (or slanted upwards).

(iv) 'Directed Association' arrows are to be used in relating Users with their Actions. Draw these arrows pointing sideways or upwards (or slanted upwards).

(v) '*«includes»*' arrows are to be used in relating 'Actions' where appropriate.

[1] You may assume that there is only one Professor for the course, although Piazza allows more than one Professor.

(b) What to Represent in the Star UML Activity Diagram.

(i) Introduce three 'swim lanes', for *Student*, *TA*, and *Professor* respectively. Within each swim lane, give the control flow for the permitted actions for these three categories of users.

Note: Although students, TAs and the professor operate concurrently *with one another* (see iv below), each user acts in a sequential manner and hence the control flow within each swim lane is sequential.

(ii) The 'Actions' to be represented are: *Login, Logout, Activate, Q&A Post, Poll Post, Resource Post, Create Class*.

(iii) Introduce one initial node and one final node for the entire diagram.

(iv) Use a Fork node (or nodes) to initiate concurrent operation of *Student*, *TA*, and *Professor*, and use a Join node (or nodes) to depict the termination of concurrent operation – which may be assumed to take place at the end of the semester.

(v) Use decision and merge nodes to construct an iterative flow of control within the *Student*, *TA*, and *Professor* swim lanes. To the extent possible, use vertical and horizontal arrows in depicting flow of control. Slanted arrows are permissible – Star UML also allows an arrow to have several slanted segments (bends).

(vi) Show 'end of semester' as a constraint on the outgoing edge of appropriate decision nodes.

Finally:

Save your model as a file `OnlineForum.mdj`. The suffix `mdj` is automatically added by Star UML.

Important Note:

Sloppily drawn use-case and activity diagrams will not receive any credit. Hence pay attention to drawing and aethestics, as noted in the instructions above.

***What to Submit*:**

Prepare a top-level directory named *A5_Part1_UBITId1_UBITId2* if the assignment is done by a team of two students; otherwise, name it as *A5_Part1_UBITId* if the assignment is done solo. (Order the *UBITId*s in alphabetic order, in the former case.) In this directory, place `OnlineForum.mdj`. Compress the directory and submit the compressed file using the `submit_cse522` command. Only one submission per team is required.

End of Assignment 5 Part 1

Download information for Star UML 3.1 is given in Lecture 22 Slide 31. There are several YouTube videos explaining how to use Star UML 3.