Assignment 5

(may be done by a team of at most two students)

Assigned: November 24

Due: Fri, December 11 (11:59 pm), for Parts 1 and 2

Part 1: Use-Case and Activity Diagrams using StarUML ***(Part 2 will be assigned later)***

You are to develop an 'external view' of an *Online Forum* application 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 Online 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. As the focus of this assignment is on the external view of the application, the internal details of these posts are not relevant in this assignment.*

All Users must login to use the Online Forum; they may logout at any time but must login back again in order to take any actions. Initially, the Professor logs in and creates the class which includes enrolling the TAs and Students. Only after the class is created may Students and TAs login and activate their accounts – activation to be done only once, at the start of the semester.

During the course of the semester, Students, TAs, and the Professor all operate concurrently relative to one another in taking their actions on the Online Forum. However, each User operates sequentially in taking their individual actions. Each User 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 back 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 *Maintain Statistics*.

(iii) 'Generalization' arrows are to be used to depict relevant relations between different types of *Users*. Similarly for *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 slanted upwards/downwards

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

[1] Assume there is only one Professor for the course, although online forums such as Piazza allow more than one Professor.

(b) What to Represent in the Activity Diagram.

(i) Introduce three swim lanes, for *Student*, *TA*, and *Professor* respectively. Within each swim lane, define the control flow for the permitted actions for that type of user.

(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 Fork/Join nodes (in *Professor*) to initiate/terminate concurrent operation of all users. Termination takes place at the end of the semester. Note that each user takes their individual actions in a sequential manner.

(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 – StarUML also allows an arrow to have more than one segment (bend).

(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 StarUML.

Important Note:

Points will be deducted for sloppily drawn use-case and activity diagrams. Hence pay attention to drawing and aesthestics, as noted in the instructions above. Strive for symmetric diagrams with minimal line crossings to the extent possible – some asymmetry and line crossings are acceptable.

***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 `submit_cse410` (undergrads) or `submit_cse522` (grads). Only one submission per team is required.

End of Assignment 5 Part 1