**CS3354 – Fall 2020 – Assignment 4**

**Due date: Mon, Dec 7 at 11:55 p.m.**

**Project Title:**  Online Discussion Forum - UML Design

**Goal:** In this assignment, students will analyze the requirements of an Online Discussion Forum software, and come up with an appropriate UML design, which can be later translated into code. The design should support some simple functionality common to most Forum applications, as described below.

**Software Requirements:**

* The system is expected to support three types of users, simple members, moderators, and administrators.
* All users can create an account, log in and out of the system and manage their profile information.
* Members can create new threads, read posts, and manage (post/edit/delete) their own posts.
* Moderators can do all the above, plus manage (move/close/delete) threads, manage (delete) posts posted by others, and ban members.
* Administrators can do all the above, plus manage (change role/delete) users and can manage (create/edit/delete) forums.
* We can assume that each post is written in plain text and that posts are organized in threads. A post can be posted as a top-level comment in a thread, or as a reply to an existing post. If a post has a reply, the post cannot be modified by simple members, but it can be modified (e.g. deleted) by moderators and administrators, in which case all replies to the post are also deleted.
* The system utilizes an Artificial Intelligence (AI) engine which can do the following: detect offensive posts, classify each post based on sentiment (positive, neutral, or negative) and detect toxic threads. A thread is considered as toxic if more than half of its posts are classified as negative. Assume a minimum of three posts. The detection of offensive posts or toxic threads is initiated by moderators or administrators, who decide what action to take in each case.

**Tasks:**

Assume that the above are the requirements of the system, as described by the owner of the Forum. You are asked to do the following:

1. [15 points] Come up with a set of Use Cases that best capture the requirements as described above. Use free text (bullet points) to describe flows of events for each individual use case.

2. [20 points] Create a Use Case Diagram that shows the interaction between actors and use cases, as well as the relationships among use cases (communication, inclusion, extension, inheritance).

3. [15 points] Derive and show a set of Class-Responsibility-Collaboration (CRC) cards that show the classes that you have identified, as well as their responsibilities and collaborators.

4. [20 points] Based on your CRC cards, create a Class Diagram that shows the relationships between classes (dependences, inheritance, aggregations, compositions, multiplicities, etc.). In each class of the class diagram, you may show the most important fields and methods.

5. [20 points] Draw a Sequence Diagram for the sequence of operations taking place when a member wants to reply to an existing post (including the log in step).

6. [10 points] Use the StarUML (or similar software) Java code generator to generate the Java code that corresponds the Class Diagram created in task 4.

**Logistics:**

This assignment must be done either **individually**.

No late submission is allowed for this assignment.

Submit your assignment solution as a single compressed assign4\_xxxxx\_yyyyy.zip file that contains

1. UML solutions as a single MS Word, PDF document, or any image files for big diagrams

2. generated Java code (You don’t need to implement it)

To create your diagrams, you can use any UML editor of your preference, which is compatible with the notation used in class (StarUML is recommended). You may export the diagrams as images and add them to your document, or simply take screenshots of your UML editor and crop them appropriately.

There is no single correct solution. All solutions that are reasonable, well documented and follow the standards that we saw in class, will be accepted. If you are unsure about certain decisions and need to make assumptions, please state your assumptions clearly in your solution document.

**Submit an electronic copy only, using the Assignments tool on the TRACS website for this class.**