North South University
Department of Electrical and Computer Engineering
CSE327 - Software Engineering
Assessment, Spring 2021
Total Marks - 20, Due - 11:59pm, 25th Of April, 2021 (Google Classroom)

There are three tasks in this assessment. All three questions are based on the following Case study.

Case Study

A university is moving to an online-first submission system that the students will use to submit their assignments and homework. The system is administered by the admin user, who can create accounts - either individually or in bulk via a spreadsheet, delete accounts - also individually and in bulk via a spreadsheet, block accounts, and check the account activity of individual users.

Teachers create assessment items. Each assessment item has a title, an optional short description, a due date, and is associated with one or more classes.

Whenever a student logs into the system, she/he can see a list of assessments that are still due and another list of assessments that she/he has missed. Each student can submit content against each assessment task. Content can really be of any type, however, there are a few for which the system should take special actions:

- Zip files and binary files should be scanned for viruses.
- Images should be limited to a maximum resolution of 1024 x 800. If necessary, the system should be resized on the fly.
- URLs should be stored as it is, but when displaying the URL, the title of the target HTML content should be rendered as well.
- Video files should be displayed in two parts:
    - a download link.
    - a video player embedded in the view so that the teacher can play the video in the system itself.
- GIT URLs should be linked to the GIT repository as well as a small floating text showing how the repository can be cloned.
- When viewing PDF files should have a download link and an icon. Clicking on the icon should render the file on the system itself instead of downloading.

When making a submission, the student has to submit the content, as well as accept a declaration statement stating that the work is her/his and it is not copied from someone/somewhere without proper attribution. Once a submission is made, the student cannot re-submit but can send a re-submit request to the teacher. The teacher will receive a notification of such requests and if so wishes can log in to the system, view any pending requests, and approve the ones she/he wishes. Approved re-submission requests

Approach

will generate notifications for the appropriate students, who can follow a link (sent in the notification) to submit new contents. The system has to keep track of the old content as well as the new ones.

Some assessment tasks are multi-part. That is, students have to submit content at different times. The number of submissions and the times of each submission are set by the teacher when he/she decides to create a multi-part assessment task. All the other information is the same, except this time, the system should first ask how many submissions are required and accept the required number of dates and times.

End of Case Study

Task 1 (10 marks):

Assuming an MVC architecture, draw a high-level UML class diagram depicting the design of the model classes of the system.

Task 2 (5 marks):

Draw a sequence diagram for "Submitting content for an assessment task". You should assume that assessment is not a multi-part assessment. You must ensure that your sequence diagram is consistent with the class diagram you drew for Task 1.

Task 3 (5 marks):

Draw a sequence diagram for "Creating a multi-part assessment item". You must ensure that your sequence diagram is consistent with the class diagram you drew for Task 1.