Distributed Systems Programming

A.Y. 2021/22

Exam Assignment for Exam Call on 25/02/2022

Deadline for submission: 22/02/2022 EOD

Extend the REST APIs of Laboratory 3, by introducing the possibility to have tasks that need to be completed by a certain number of users, rather than by a single user (e.g., one of these tasks could be the review of a document, which has to be done by 3 different users). The extension must adhere to the following specifications:

1. Each task is characterized by an additional property, named "completers", which is the number of different users who must cooperate to complete the task (default value is 1, which corresponds to the case of the old tasks).
2. When a new user completes a task, the task status changes, taking into account that this new user has completed the task, but the completed flag of the task is set only if the number of users who have completed the task is equal to the "completers" property of the task.
3. A user who has already completed a task cannot complete it again (an error must be returned by the API if this operation is attempted).
4. The REST APIs must provide the possibility, only for the owner of a task, to get the completion status of the task, i.e., to know who are the users the task has been assigned to, who are those who have selected the task, and who are those who have already completed the task.
5. The extended REST APIs must be documented, by providing the information that is necessary to develop clients.
6. All the other specifications from Laboratory 3 remain unaltered. In particular, remind that, according to the specifications of Laboratories 1 and 3, only the assignee of a task can select or complete it. The extension developed for this exam assignment must still adhere to that constraint.

Extend the implementation of the service so that it implements the extended REST APIs. Of course, the database must also be extended accordingly. Note that it is not required to extend the REACT client. Test the extended REST API by using a client like Postman.

Submit the updated solution, including all the following items:

- All the json schemas
- The full Open API documentation of the REST APIs, including examples of JSON documents to be used when invoking the operations

- The REST APIs implementation code
- The database file, including some sample data
- README.md files that specify the contents of folders and instructions on how to run the code from scratch

Important:

- Organize the project files as in the solution provided for Laboratory 3.
- The solution must work within the Labinf VMs, with the software already installed in those machines.
- The solution will be tested with Postman and Swagger.
- The solution must be uploaded to a git repository for which you will get the credentials in the next days.