Faculty of Computer Science

Dalhousie University

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CSCI 5409 – PROJECT

You need to develop a scenario for a web application that satisfies a number of constraints that are listed and discussed below. However, functional specifications on what the application will be doing is up to you. The web application, when developed, must satisfy the following requirements:

- It will be a web application in that it will include front, middle, and backend
- Your scenario will include at least three independent companies – they are independent in that their software collaborate only through invocation of each other's webservices and their DBs are independent.
- Web service are supported through nodejs and related frameworks
- You may choose frameworks you for the front-end UI development or you can use an MVC framework(s) (such as Sailsjs) as long as the other constraints are satisfied
- Information will be stored on at least three different DBs
- ORM is used to access information in at least one DB
- Containers will be used for deployment
- You will use at least two different clouds (e.g., AWS and Heroku, or Azure and AWS) for deployment
- There will be serverless computing
- You need to have functional requirements that include a transaction that spans all companies, i.e., a transaction that requires updates at all companies (or at least three companies) and will require the use of the distributed (two-phase) commit protocol. Since you are using Nodejs, I recommend that you investigate the use of XA transactions.

As for your previous team assignment, you need to use software development based on sprint and scrums and you need to use the same collaborative tools and keep minutes of your team's meetings. You will need to have at least two sprints and need a sprint master (you will have to perform without a product owner rep or simulate one). Of course, different members will contribute to perform different tasks that may not be codding related (e.g., keeping minutes, organization, or writing report). However, each team member/leader must contribute to the code-base.

Trello board should record all tasks, not just for coding tasks. For instance, if you need to do some research (e.g., if you know you will have some technical how-to issue, such as distributed transaction), you should include in your plan a task for its research and resolution. If someone is looking after minutes of meetings or organizational tasks, they should also be included as should initial tasks to team members should be included. Although a formal project plan is not required for this simple application, your document should include sufficient information for a reader (your evaluator) to understand your tasks and their inter-dependencies.

Format for Submitted Documents

Your documents should conform to the following specifications.
- Standard page size (US 11x81/2) with 2-inch margins on sides and top and bottom
- Font: Times New Roman - 10pt; Spacing 1.5 lines spacing

Submission Requirements

Title Page and Table of Contents

Obvious …

Scenario for Business Context and High-level Project Plan

You need to include the following information:

High-level scenario for business context of your web application and outline interaction of the companies in terms of the purpose of UI and webservices.

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Functional requirements: For each company, functional requirements for UI and webservices for each company. Here you will also describe your transaction that performs updates at the different companies.

Non-functional requirements: Here you will need to specify the atomicity requirement for your transaction that performs updates at different companies.   In addition, you also need to list other non-functional requirements that you may wish to enforce, such as communication over secure channels, or using two-factor authentication (instead of using only a simple username/password).

Deficiencies

Description of any deficiencies related to the assignment's functional requirements.

Meritable Features/Properties

Optionally, in a separate section, brief description of what you did in excess of the basic requirements or which features you deemed to be deserving merits. Use this to highlight what you did particularly well or in excess of the requirements. In particular, if you are proud of your work and feel it deserves more than satisfying requirements (B+), highlight here why.

Software Overview

High-level overview of your software. Overall description highlighting your system architecture/organization while describing your major software components. For example:
- Overview of your front-end (e.g., webpages used and how hosted)
- Web-services, their end-points, and how hosted
- Workflow coordination description

Collaboration Summary

Your group/team will collaborate to make informed decisions, plans, and activities in completing your assignment while using the collaboration tools, namely, your code repository, MS Teams, Trelllo, and minutes of meetings (to be stored on MS Teams) - collectively, these repositories and the minutes of the meetings will be referred to as the **Collaboration Information (CI)**. The intention/objectives of this summary is to provide guidance/narrative to your evaluator/marker in reviewing your activities and contributions as they appear in your CI in order to form a view of how well your team functioned in tackling various issues that arose and making necessary adjustments. Without such a summary/narrative, it may be difficult for the evaluator to form an overall view as the related information is stored in separate repositories. Your summary should be at a sufficient level of abstraction to highlight the major decisions and the reasons why they were taken and which option were considered – so that your evaluator will not get "bogged down" in details in forming the overall picture of your team's functioning.

In addition, in separate subsections, you should also summarize you minutes of meetings, and trello board as described below. You will also have to list the tasks and who performed them – this information is reported separately using the form *Proj-Task-Form-CSCI-4145-5409Sum2020.docx.*

Summary of Minutes of Meetings … Present the summary of your minutes in a table format, in which each row represents one meeting and columns include Date, Topics considered, List of absentees (identified by initials … of course, you need to list the members or and their initials somewhere in the table's annotation).

Trello Board Examples … Include a screenshot (or maybe two)aof your Trello board at a particular point in time (e.g., end of sprint) and describe briefly its cards/tasks appearing on it.
Trello board should record all tasks, not just for coding tasks. For instance, if you need to do some research (e.g., if you know you will have some technical how-to issue), you should include in your plan a task for its research and resolution. If someone is looking after minutes of meetings or organizational tasks, they should also be included.

Resources-Related Information

- Cloud resources related … description of cloud resources used

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- Software related … high-level software units and frameworks used for their development (e.g., UI for company X management of parts developed using Angular framework)
- Identification of any code from other sources that you used (e.g., code snippets from tutorials): Identify source and also where in your code you used the adopted "foreign" code.
- Description of your existing or planned security mechanisms for communication and storage.

Optional Items

Video …   Reference to a video that can be viewed by your evaluator to be introduced to your software when it executes – the intention is to provide your evaluator with an introduction to the software UI for each of the three companies. The video is not intended to be used as a proof that your software works, i.e., it is not intended to show the results of all possible cases that can be reached through UI.

   …

DEMO / Live-testing

Your demo will be scheduled in the weeks of Aug 4 and Aug 10 – instructions for setting date/time will be posted. Each demo is scheduled for 45 minutes and will occur on MS Teams. Your whole team should be present – if anyone is unable to attend, I'll need an advanced written notice (email) with an explanation. Note that the majority of the team members must be present for the demo to proceed.

This is important – you also need to schedule a demo with your TA (scheduling information will be announced). Following your demos, the TA and I shall each evaluate your submission independently while proposing a grade for your submission and a grade for individual members (if any different from your team's as determined by the review of the task and peer-to-peer forms). Reviewing the TA's and mine evaluations, I shall determine the grade for your submission and use it in determining your final course grade.

You need to be on-time and well prepared for the demo of your software (you should have your software running so the demo is not delayed by initial setup/startup or similar). The format of testing will be the same as used for assignments.

As I shall be asking questions related to your software organization and your CI, you should be prepared to quickly lookup something on MS Teams, Trello, repo, or your submission. For instance, if I ask a question related to a specific part of your software, there should be a team member who is familiar with it, can answer questions about it, and can find the related software code (e.g., a specific software module in a repo) quickly.

I am looking forward to your live demos.