

# Assignment 3

CSCI 5410 (Serverless Data Processing)

Date Given: Oct 25, 2022

Due Date: Nov 07, 2022 at 11:59 pm

**Late Submissions are not accepted. A deduction of 10% per day will be applied for late submission.**

**To avoid any additional charges for resource consumption - Delete any AWS service, database after fulfilling the assignment submission requirements**

## Objective:

This assignment will help you learn a key concept related to Cloud computing through a literature study. In addition, by implementing a simple Serverless application, you will get practical experience of function-as-a-service application building.

## Plagiarism Policy:

- This assignment is an individual task. Collaboration of any type amounts to a violation of the academic integrity policy and will be reported to the AIO.
- Content cannot be copied verbatim from any source(s). Please understand the concept and write in your own words. In addition, cite the actual source. Failing to do so will be considered as plagiarism and/or cheating.
- The Dalhousie Academic Integrity policy applies to all material submitted as part of this course. Please understand the policy, which is available at: [https://www.dal.ca/dept/university\\_secretariat/academic-integrity.html](https://www.dal.ca/dept/university_secretariat/academic-integrity.html)

## Assignment Rubric - based on the discussion board rubric (McKinney, 2018)

	Excellent (25%)	Proficient (15%)	Marginal (5%)	Unacceptable (0%)	Problem # where applied
Completeness including Citation	All required tasks are completed	Submission highlights tasks completion. However, missed some tasks in between, which created a disconnection	Some tasks are completed, which are disjoint in nature.	Incorrect and irrelevant	Part A Part B
Correctness	All parts of the given tasks are correct	Most of the given tasks are correct. However, some portions need minor modifications.	Most of the given tasks are incorrect. The submission requires major modifications.	Incorrect and unacceptable	Part A Part B
Novelty	The submission contains novel contribution in key segments, which is a clear indication of application knowledge.	The submission lacks novel contributions. There are some evidence of novelty, however, it is not significant	The submission does not contain novel contributions. However, there is an evidence of some effort.	There is no novelty	Part A Part B

Clarity	The written or graphical materials, and developed applications provide a clear picture of the concept and highlights the clarity.	The written or graphical materials, and developed applications do not show clear picture of the concept. There is room for improvement	The written or graphical materials, and developed applications fail to prove the clarity. Background knowledge is needed.	Failed to prove the clarity. Need proper background knowledge to perform the tasks.	<b>Part A</b> <b>Part B</b>
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**Citation:**

McKinney, B. (2018). The impact of program-wide discussion board grading rubrics on students' and faculty satisfaction. Online Learning, 22(2), 289-299.

**Tasks:**

This assignment has 2 parts. Part A is application development. Part B is related to background literature study.

**Part A.** Build an event-driven serverless application using AWS Lambda.

In this assignment, you need to use AWS Lex, DynamoDb, and Lambda Functions.

**take screenshots at every step and submit as part of the PDF:**

- a. This task can be developed and tested from AWS console and/or command line. If you have time and the required skills then you can also create web application, but this is not a requirement for the assignment.
- b. Create a custom chatbot [**BotProfAppointment**] using AWS Lex, which can be used to book office hours (E.g., booking office hours to meet a professor)
- c. Create another custom chatbot [**BotStdLookup**] using AWS Lex, which can be used to verify student's identity (E.g., if a valid student is trying to access the system)
- d. **BotStdLookup:**
  - 1) The bot has one intent to perform student verification
  - 2) Valid student information is present in DynamoDb [ID, Name, Email]
  - 3) If the user submits utterances in Lex, the BotStdLookup bot should ask the user to enter name and email as prompts
  - 4) Then a Lambda function is invoked, which communicates with DynamoDb to retrieve records to perform the user's name and Email verification
  - 5) Then bot concludes the communication
- e. **BotProfAppointment:**
  - 1) This is the second bot, which has intent to book professor's appointment
  - 2) Based on prompts provided by the bot, the user provides date and time
  - 3) Once the entry matches the slots the bot fulfills the intent.
- f. **Test your two bot applications, database, and lambda function with test cases and provide screenshots.**

### Part A - Submission requirement:

Submit screenshots of every steps. Please do not exclude any steps. Include all screenshots as part of a PDF file. In addition, provide the program/scripts as part of the PDF file. Include citation, such as documentation you followed, materials you read etc. Furthermore, upload the code on gitlab.

### Part B.

W. Eiers, G. Sankaran, A. Li, E. O'Mahony, B. Prince and T. Bultan, "Quantifying Permissiveness of Access Control Policies," 2022 IEEE/ACM 44th International Conference on Software Engineering (ICSE), 2022, pp. 1805-1817, doi: 10.1145/3510003.3510233.

URL: <https://ieeexplore-ieee-org.ezproxy.library.dal.ca/document/9794078>

As a part of this assignment, your job is to read the paper, and write one-page summary on the key points that are discussed in this paper. In addition, you need to write your views on this topic.

**Hint:** To write the views, you can use concepts that are discussed in the paper, in the 5410 class lectures, and the limitations of the published material that you discovered while reading the paper.

### Part B - Submission requirement:

A PDF file with the summary of the paper, and your views. You need to cite all the materials that you have referred including the given paper in your PDF file. Do not forget to add in-line citation