Assignment 1

CSCI 5410 (Serverless Data Processing)
Date Given: May 15, 2021
Due Date: May 25, 2021 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 the AWS S3 storage, and AWS MySQL after fulfilling the assignment submission requirements.

Objective:
This assignment covers some basic concepts of cloud computing and services. The primary objective of this assignment is to introduce you to the cloud computing platform and perform a cloud computing literature review.

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

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**
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 B**
Novelty	The submission contains novel contribution in key segments, which is a clear indication	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	There is no novelty	**Part C**

	of application knowledge.		an evidence of some effort.		
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.	**Part A**

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 three parts. Part A has a small reading task, and part B, part C have small programming tasks:

Part A. Read the attached paper "A1(5410)_Reading.pdf", and write the central idea discussed in the paper.

- It can be approximately 1 page summary and must be written in your own words. The summary should include - (a) what the authors have presented in the paper, (b) if any specific issue is addressed, (c) if any experiments or studies performed, (d) analysis or findings made by the authors.

Part A - Submission requirement: A pdf file with the summary

Part B. AWS S3 Storage experiment:

Using AWS Educate account, perform the following:

take screenshots at every step:

a. Create a S3 bucket from AWS management console. Once it is done, create a text file (empty file) in your computer and rename it with your "First Name". e.g. "Alice.txt".
b. Explore AWS SDK for Java - and using Java program written based on the SDK specification, upload the file on the S3 bucket you created.
c. Create a second bucket in AWS S3 using Java, and programmatically change the access permission, "disable public access". In addition, programmatically change the ACL write option to "full-control" for bucket owner.
d. Try to move (using your program) the file from 1st bucket to 2nd bucket.
e. Create a flowchart using draw.io/ word or any similar tool to show the steps that you have performed in this experiment.

Part B - Submission requirement: A pdf file with the (i) flowchart, (ii) a paragraph on your overall observation, (iii) screenshots of the S3 buckets and operations (capture all steps) (iv) copy-paste the program script in the pdf. (In addition, submit the source in gitlab)

Part C. AWS RDS database service experiment:

Using AWS Educate account, perform the following:
take screenshots at every step.

a. Using AWS RDS - Create MySQL DB instance
b. Create a single table database with two fields (userID, and Password)
c. Write a Java program to insert an ID and Password into the database.
d. In the same program, you need to write another block/function/method to retrieve password based on the given ID.
e. You need to use JDBC driver to connect to the database.
f. The password must be encrypted before inserting to the database. To encrypt password, use the lookup table provided, however, first store the table in S3 bucket, and access from there.

   [Hint: Consider each password contains only lower-case English alphabet ('a' to 'z'). In the given lookup table, 1st column represents the original alphabet, and the 2nd column represents its "replacement". E.g. if password contains "a", you need to replace it with "xt".]

Part C - Submission requirement: A pdf file with the (i) screenshots of the S3 bucket with Lookup table, (ii) screenshots of the RDBMS, (iii) also copy-paste program code in the pdf. (**In addition, submit the source in gitlab**), (iv) output – displays password before encryption, after encryption, and after decryption.