

Assignment 1 (10%)
Date Given: Jan 26, 2020
Submission Due: Feb 5, 2019 at 11:59 pm (midnight)
**** Late submissions are not accepted and will result in a 0 on the assignment**

Objective:

This assignment covers basic concepts of cloud computing and working principle of specific cloud architecture(s).

Grading Scheme (Total 45 Points):

- Q1: 10 points
- Q2: 5 points
- Q3: 5 points (2.5 X 2)
- Q4: 20 (5 points for design/manual/guide/readme, 10 points for program, 5 points for correct output)
- Adding citation in IEEE/ACM Format only. Use reliable information source: 5 points

Academic Integrity:

- This assignment does not require group work. Therefore, each student is expected to complete their work by themselves. Collaboration of any type amounts to a violation of the academic integrity policy and will be reported to the AIO.
- Do not copy texts verbatim from online or printed materials
- Do not copy texts from other's work
- Do not submit other's work
- If you obtain help from Tutor(s), please acknowledge
- Provide citation for texts, images, tables, data etc.
- 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

Questions:

- Q1.** Read the following paper, and write a summary of your findings. Your summary should include key points that are discussed in the paper. (Do not copy any text verbatim). At most 1 page (Font: size=11 point, type=Times). In addition, please include one or two insightful comments based on your understanding.

W. Hassan, T. Chou, L. Pagliari, J. Pickard and O. Tamer, "Is Public Cloud Computing Adoption Strategically the Way to Go for All the Enterprises?," *2019 IEEE 5th Intl Conference on Big Data Security on Cloud (BigDataSecurity), IEEE Intl Conference on High Performance and Smart Computing, (HPSC) and IEEE Intl Conference on Intelligent Data and Security (IDS)*, Washington, DC, USA, 2019, pp. 310-320.

Note: To obtain the paper, visit Online Dal Library and navigate to IEEE database. If you cannot locate the paper, please ask me

Q2. To understand the functionality of Type 2 Hypervisor, download and install Oracle VirtualBox. Before downloading read the documentation and write a ½ page summary on the product. You can run a lightweight OS, such as Ubuntu in the VirtualBox or you can choose a different OS. In addition, to your report, you need to provide a screenshot of the guest OS terminal (with your name as the user) running on virtualized platform, and your system's host OS.

Q3. “ABC” company has launched a virtualized service (S) running on Virtual Server (V). For each of the following scenarios, provide an appropriate solution with proper justification and pictorial representation (if applicable).

- a) “ABC” has 1000 users, and each user accesses the service approximately 1000 times in an hour. Is “ABC’s” system sufficient to handle the requests? If not, then what are the available options?
- b) “ABC” has option to rent private cloud, which is little expensive. However, all the customers use free tier of the service (S). Is it logical to rent private cloud? Provide justification. Do you have any suggestion for “ABC”?

Q4. This question simulates a cloud computing architecture. You need to design a program using a standard high level programming/scripting language, such as Java/Python etc.

“Cloud5409” is a reputed hypothetical cloud provider company, which has 100,000 customers. 50,000 customers use paid-private cloud accounts, 20,000 customers use partially paid account with hybrid cloud model, and 30,000 customers use free-public cloud accounts. Each paid user can send unlimited requests, and SLA states “Auto Scaling” is available. Partially paid users’ SLA states “Auto Scaling” is possible only after 60% of the tasks are performed. Resource pools can be created and used if applicable. This model does not use any cloud bursting architecture.

- a) Before designing the program, build the scenario. Write each step, and provide graphical representation of the scenario
- b) Write a program to simulate the scenario, and test it with different input/output. Your program should simulate every step – e.g. placing input or requests, processing requests, allocation/deallocation of resources, AutoScaling check, and executing any intelligent script (if required).
- c) Take screenshot of your outputs.
- d) Your program does not have to produce graphical output.
- e) Finally generate a graph of cloud resource usage for 1000 requests.

Submission Instruction:

- Create a Folder with your name and B00 number, and store all your files –
 - Program Source code with readme and/or libraries
 - PDF file containing all answers
 - Screenshots and image files (if any)
- Compress the folder and create a .ZIP file (do not use other compression formats)
- Upload the .ZIP file on Brightspace.
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