**Northeastern University – Silicon Valley**

CS 6620 Cloud Computing

**Homework Set #7** [100 points]

***INSTRUCTIONS: Please provide clear explanations in your own sentences, directly answering the question, demonstrating your understanding of the question and its solution, in depth, with sufficient detail. Submit your solutions [PDF preferred]. Include your full name. Do not email the solutions.***

**PART I: Concepts and Theory, Algorithms [70 points]**

Please provide accurate, concise (maximum 10 sentence) answers.

1. Consider design for your eCommerce SaaS on AWS Cloud. In this context:
   1. Explain the key functionalities of Apache Kafka. What is it and why would you need it for your eCom SaaS platform?
   2. Please show your design using an architectural diagram.
   3. What is Amazon Kinesis? How is it similar to and different from Kafka? How would you need it for your eCom SaaS platform?
   4. What are message queues (MQ) and why do we need them for SaaS? Compare and contrast any 3 MQ solutions you learned about.
2. The eCommerce web store you built is for Food and Wine only. Its is acquired by a store like Aamazon.com. In this context, please explain:
   1. What is SSO? Why do you need it and how would you use it with the 2 platforms’ merger?
   2. Explain what these are and why you need them for your eCommerce SaaS platform:

SAML, Kerberos, Oauth

* 1. How is Amazon IAM different from the above?
  2. Which one would you use for your eCom store and why? Please justify your answer.

**PART II: LAB [30 points]**

1. Following the examples in Chapter 13, section on AWS IAM from your textbook, create a basic IAM user, Group and Roles and show screenshots and explain your results – why you need these for your eCommerce SaaS workloads.
2. Try the Encryption code (a) AES and (b) asymmetric (Box 13.3 and 13.4) on any example data and show/explain results.