| Full Name: |
| Andrew ID: |

CS 15-440: Distributed Systems
Mock Quiz 1
September 27, 2015
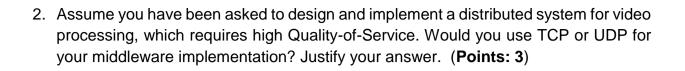
Total Time: 30 minutes

Instructions:

- Write your answers in the spaces provided below each problem. If you make a mess, clearly indicate your final answer.
- The quiz has a maximum score of 20 points.
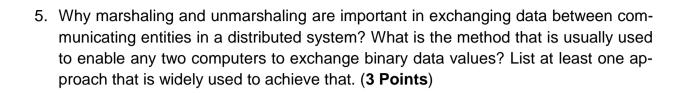- Keep up with time. We recommend you to approximately spend 1 minute per point.

Good Luck!

Question No	Max. Points	Earned Points
1	4	
2	3	
3	4	
4	3	
5	3	
6	3	
Total	**20**	

1. What is the difference between *layered* and *tiered* architectures in distributed systems? Give an example of when you would you use a layered architecture, but not a tiered one? **(Points: 4)**

2. Assume you have been asked to design and implement a distributed system for video processing, which requires high Quality-of-Service. Would you use TCP or UDP for your middleware implementation? Justify your answer. (**Points: 3**)

3. Socket Programming and Message-Queuing (MQ) systems provide mechanisms to communicate with remote entities. Describe any two advantages of MQ systems when compared to Socket Programming. Explain one disadvantage of MQ systems with respect to Socket Programming? **(Points: 4)**

4. Can persistent asynchronous communication be implemented using RPC or RMI? Explain. (**Points: 3**)

5. Why marshaling and unmarshaling are important in exchanging data between communicating entities in a distributed system? What is the method that is usually used to enable any two computers to exchange binary data values? List at least one approach that is widely used to achieve that. (**3 Points**)

6. If a mobile computer is to remain accessible to clients when it moves between local networks and wireless networks, it must retain a single IP number. However, IP routing is subnet-based. Subnets are at fixed locations, and the correct routing of packets to them depends upon their positions on the network. Discuss a way of how location transparency can be achieved in such an environment (i.e., IP communication continues normally when a mobile computer moves between subnets at different locations). (**Points: 3**)