

CMCS 828 Final- Fall 2006

Posted on 12/13/2006 5 pm

Due by e-mail 48 hours later 12/15/2006 5 pm

You need to sign and return the attached sheet verifying that the test was taken individually and that you did not collaborate, discuss, communicate via social networks or any kind a computer or human proxy.

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Be brief. I would like to see your understanding on the concepts and your creativity with lean and to the point answers- not a cut a paste job.

1. Distributed Computing and Mobility:
 - a. Describe three similarities and three differences between and distributed computing and location/context aware computing.
 - b. Although Google uses very large clusters of processors and disks, it is still remains centralized. Discuss why in your opinion the reason we do have a distributed Google engine even though a large portion of Google's business comes from "local search" and the ads it generates.
2. Mules & Ferries
 - a. Describe three similarities and three differences between the Ferries and the Mule protocols.
 - b. If were to extend the two protocols so that there is message exchange amongst Ferries or Mules would it be advantageous? If so, in what terms and why?
3. Grid computing, sensors and web services:
 - a. What is the connection between grid computing and web services?
 - b. What are the challenges when integrating sensor networks with a grid computing architecture? .
 - c. Can web services be provided on sensor networks? If so, explain how.
 - d. Contrast continuous queries and web services on the sensors. (specify similarities and/or differences).
 - e. What would be the role of a proxy or an API to the sensors?
4. Compare MobiShare and CAMA. What common features/concepts do you find in them and what differences.
5. Design a hybrid vehicular mobility protocol
 - a. Vehicles and Access Points nodes serve as servers and clients
 - b. messages are routed using geocasting to the nearest AP and then broadcast to the location of the vehicles
 - c. protocol permits exchange of messages amongst vehicles

Provide your answers bullet form (to the point- no long essay answers)

Evaluate your protocol with respect to

 - a. Ease of deployment
 - b. Success of message delivery
 - c. Speed or latency of delivery
6. Assume that in 10 years from now there will be one (or multiple seamless) communication substrate(s) on which any device that can process (i.e. collect, manipulate, store) data is connected and that the communication is free, and has with 10ms average access time and 100MB/sec transfer rate. In other words, all data and processors are at the same distance as a local hard drive (and all today's networking researchers at the Unemployment Office).
 - a. How would the fundamentals of (distributed) computing be different in such a world? What would matter in such a computing environment? How would the rendezvous of data and processing occur?
 - b. Would context-aware and location-aware computing be still useful? Why?
 - c. Would Distributed Hash Tables (DHTs) be relevant in such an environment? Would there be an improvement on their performance? Explain why.
 - d. Would the Peer-to-Peer premises of sharing data, CPU, and bandwidth still be relevant? Explain why.

I _____YOUR NAME_____ certify the submitted answers to the final examination of CMSC 828s were produced by me and that I neither collaborated nor exchanged materials with other classmates or other individuals on matters related to this examination.