Asian Institute of Technology
Final Examination
August 2019

Course: AT71.9003 Selected Topic: Data Management & Modeling	Total score: 100 (25%)
Date: Wednesday 20 November 2019	Time: 13:00-16:00 (3 hours)

Instructions

- This examination is Open-Book. Number of pages: 2, Number of Questions: 3.
- Mobile phones, PDAs, tablets and other communication devices **are prohibited**.
- **Be concise!**

Case Study:

LinkedExpertNetwork is a research social network platform that globally connects researcher and experts to research and innovate together. It maintains an expert profile of each expert including name, contact, education background, work and research experience, list of projects working on or already completed, publications, patents, etc.

Through LinkedExpertNetwork, expert groups can be created for collaboration and communication. Therefore, the platform can perform expert network analysis, expert/expert group search as well as project/publication/patent search.

For instance, it can support a search for an expert or an expert group of a particular domain or topic area (such as e-government, databases, machine learning, robotics) within a specific region/country. In addition, searching for an expert who used to work together in the same project is possible.

-- End of Case Study --

Refer to the given Case Study to answer Questions 1 to 3. For any missing details, explicitly state necessary assumptions or conditions you make. Make your assumptions rational and practical.

1. (20 points) Identify **TEN** most important CRUD operations to manage data of LinkedNetworkExpert.

2. (60 points) Select a NoSQL data model that can properly model LinkedExpertNetwork data and can operate the CRUD operations identified in Question 1.
    a. Describe your design using proper diagrams/illustrations. Show how to use the proposed data models to represent some sample data.
    b. Demonstrate with proper queries / code snippets or explanations, how to implement the identified CRUD operations. Choose any one C, one R, one U and one D operations.

3. (20 points) Propose a proper consistency model and data distribution model for LinkedExpertNetwork. Explain and justify.

-- End of Exam Paper --