



جامعة الإمارات العربية المتحدة
United Arab Emirates University

UAEU

**The College of Graduate Studies and the College of Information Technology
Cordially Invite You to a**

Master Thesis Defense

Entitled

MIGRATING FROM SQL TO NOSQL DATABASE: PRACTICES AND ANALYSIS

by

Fatima Jamal Al Shekh Yassin

Faculty Advisor

Dr. Mamoun Awad, Department of Computer Science and Software Engineering
College of Information Technology

Date & Venue

12:30 PM

Thursday, 16 November 2017

Room 1036, E1 Building

Abstract

Most of the enterprises that are dealing with big data are moving towards using NoSQL data structures to represent data. Converting existing SQL structures to NoSQL structure is a very important task where we should guarantee both better performance and accurate data. The main objective of this thesis is to highlight the most suitable MongoDB structure in terms of design and high performance. Different combinations of MongoDB structures have been tested and compared with MySQL data to be able to conclude the best design to use. We used the MySQL data that is stored in five tables with different types of relations between them and implemented it in three different MongoDB structures. We considered combinations of different levels of embedding documents and reference relations between documents. The implementation of this experiment obviously proved that using a mix of one level embedded document with a reference relation with another document is the best solution to choose. We have used a large database that contains five tables with a variety of relations one-to-one, many-to-one, and many-to-many. Also the huge amount of data stored in all the structures about 2 millions record/document. The research compares between the performance of different MongoDB representation of data and the result shows that in some cases using more than one collection to represent huge data with complex relations is better than keeping all the data in one document.

Keywords: Big data, SQL, NoSQL, MySQL, MongoDB, Embedding document, Reference relation, one-to-one, many-to-one, many-to-many.