CSE530S

Studio: Mangoes?!?!

Introduction

In this studio you will:

Install and set up MongoDB

Design a MongoDB database

Practice inserting data into a MongoDB database

Practice retrieving information from a MongoDB database

You are encouraged to work in groups of up to 4 people. Please do not just let one person do all of the work while everyone else watches. It is important for everyone to follow these steps and participate in the studio.

Setting up Mongo

Before you can use MongoDB, you must install it. Go to the MongoDB website, download the appropriate version of the MongoDB Community Server software, and follow the installation instructions.

Once Mongo is installed, you must start the server. Open a terminal, navigate to the directory where Mongo was installed, and run the **mongod** program. It will display a bunch of diagnostic information in the terminal, which we don't really care about. Leave this terminal window open, and open a second terminal window.

Next we need to start the client. In the second terminal window, navigate to the directory where Mongo was installed and run the **mongo** program. It should find the running server and connect to it. You know it is working if you see a MongoDB prompt appear. You can try running some simple commands (such as "show dbs" or "show collections") to make sure it works, though you will not see much, as we have not created any databases yet.

Designing a MongoDB Database

We again wish to design a database for tracking students and courses. This database will function much like the OLTP version you designed in studio 2 (not the datawarehouse version from studio 5).

You are encouraged to sketch out your design on a sheet of paper. As you go, use the answers to the following questions to

help you craft your design:

* What collections should exist?

* What does a document in a collection represent?

* What keys do we expect to find in a document?

* Will these documents contain lists or embedded documents?

You will likely need a few collections in your design.

Implementation

Creating a MongoDB database is as simple as inserting data into a collection. Come up with some example data for each of the collections in your design, then insert that data into your database.

You may wish to refer to the lecture notes and/or the Mongo DB Documentation.

Querying

For this part, you should pull up the MongoDB documentation, and use it to help you answer the following questions:

* Write a query that well retrieve a list of all students currently enrolled in the school. This list should only contain their first and last names.

* Write a query that will show which courses are offered by which departments. If you do not have a Department table, you should incorporate it into your design and add it to your database. The result of this query should have one document for each course that contains the name of the department and the name of the course offered by the department.

* Select one course that exists in your database, and write a query that will show all of the students who have taken or are currently taking that course.

* Select one student that exists in your database, and write a query that will show what courses they have taken.

For each query, consider how your design affects how easy/difficult the query is to write. Can you concieve of a different design that will lead to more efficient queries?