



CB105: Introduction to Data Modeling in JSON

Couchbase 4.x+

Lab Workbook

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Lab 1 – Review *Couchgadget* conceptual model and analyze entities in sample physical models

Objectives

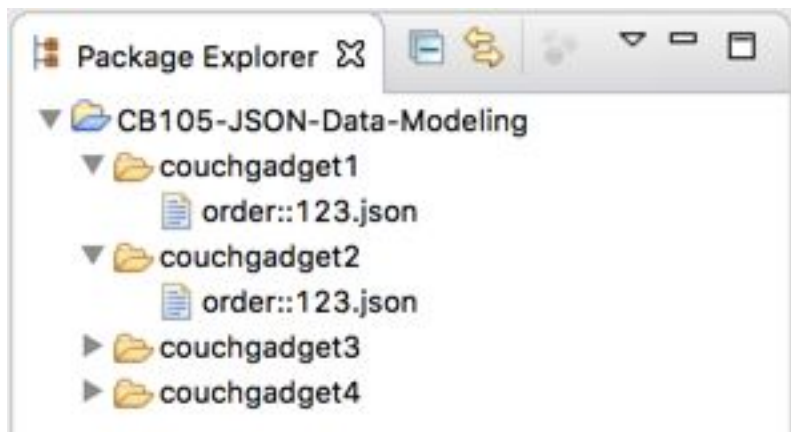
A	Deploy sample artifacts for conceptual and physical data models
B	Review physical implementations in relation to conceptual model
C	List personal entity design choices from conceptual model
D	Analyze sample physical implementations

A. Deploy sample artifacts for conceptual and physical data models

1. From the Couchbase Learning Management System, download this file:

CB105-JSON-Data-Modeling.zip

2. Unzip this file, and review the top-level contents:



Note: these files use double-colons (::) in their file names. On Mac, these values are automatically escaped to double-slashes (//), and they should open in any text editor. On Windows, you may need to modify the file names before they will open in a text editor.

B. Review physical implementations in relation to conceptual model

3. Open and review the illustration of the *Couchgadget* conceptual data model:

couchgadget-dm-color.pdf

4. Open and briefly examine sample files for each of the four alternative physical implementations of the *Couchgadget* data model.

C. List personal entity design choices from conceptual model

5. List the entities you believe are relevant in the *Couchgadget* conceptual data model. Your choices may or may not correspond with the colors in the conceptual data model, or any of the sample physical implementations.

B. Analyze sample physical implementations

6. Consider each of these questions, in relation to each of the four physical models.

Note, some of these questions are subjective, and may not have “correct” answers.

- a. Which data model would be best for a mobile environment? What factors lead you to your conclusion, and why?
- b. Is there a risk that documents shaped like any of these samples might exceed 20mb in actual use?
- c. If orders needed to update atomically as to item quantity, which of these physical models – if any – would support this atomic updating?
- d. Under what circumstances, if any, might the data duplication in the 4th data model be helpful?
- e. Does the 4th physical model contain all information needed for duplicated data to be accurately updated for whichever document is most current?
- f. In the 4th data model, compare how addresses are encoded in each of the Order documents. What benefits might there be to each approach?
- g. If you have coding experience, which physical model do you think would map most easily to your preferred language and framework?

End of Lab

Lab 2 – Implement physical models from *Couchchat* conceptual model

Objectives

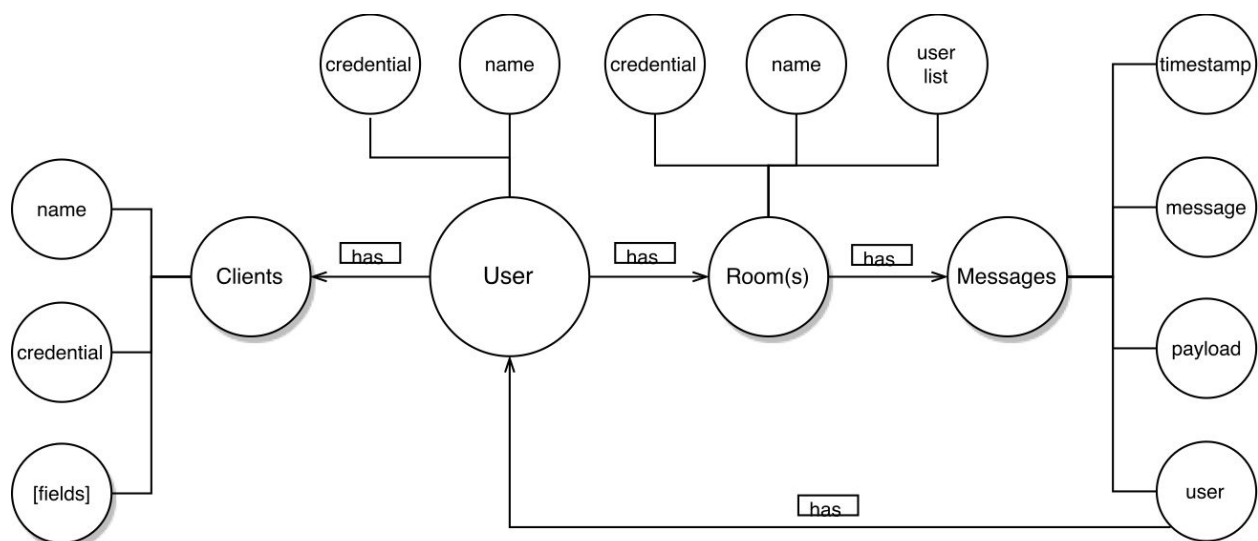
A	Review conceptual model
B	Implement physical model for mobile environment
C	Implement physical model with atomic update requirement

A. Review conceptual model

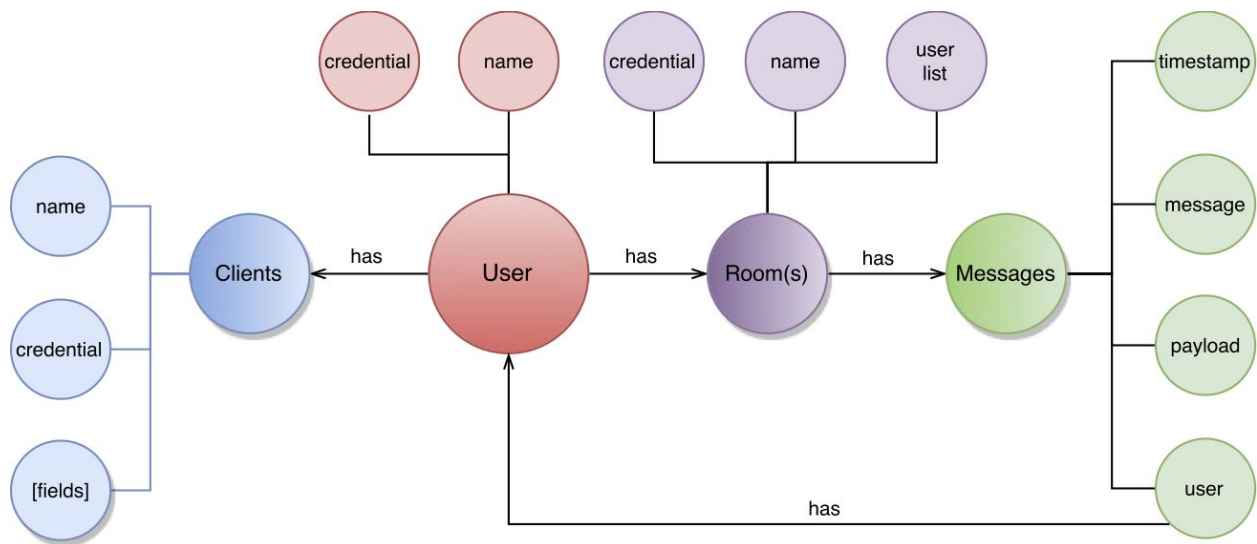
1. Review the following conceptual data model diagram, and identify likely entities.

Note: If simulating the Conceptual phase, do not consider target technology (e.g., JSON) in determining entities. If simulating the Logical phase, assume you are modeling for a JSON document database, and will be implementing the model in JSON files.

Note: [fields] indicates attribute(s) which may vary by client type.



2. Review the following conceptual data model diagram, and determine whether you agreed with the proposed entities, indicated by color.



B. Implement physical model for mobile environment

3. Using your preferred text editor, draft sample JSON file(s) which support each entity you have identified in the proposed conceptual data model. Adopt the following assumptions:
- You are designing a mobile application to be used in an environment where devices must support 6+ hours of use prior to recharge
 - Each room may have an indefinite number of messages, which will only be purged if the user chooses to do so

C. Implement physical model with atomic update requirement

4. Using your preferred text editor, draft sample JSON file(s) which support each entity you have identified in the proposed conceptual data model. Adopt the following assumptions:
- You are designing a server based application which will use N1QL to join documents by their Document ID
 - User data must update atomically along with related Client data

End of Lab