MongoDB

01

Presented by
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mongoDB

{ name: mongo, type: DB }

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Installing MongoDB

- MongoDB website supplies binaries to install on Linux, Mac OS X, and Windows.
- If you use Windows or Linux
  - download either the 32-bit or 64-bit version
- Mac users are safe to download the 64-bit version.

Installation …

- After downloading and extracting the archive file,
- locate the mongod binary,
- usually located in the bin folder.
- The mongod process runs the main MongoDB server process
  - as a standalone server or
  - a single node of a MongoDB replica set

Installation …

- In our case, we will use MongoDB as a standalone server.
- The mongod process requires
  - a folder to store the database files in (the default folder is /data/db) and
  - a port to listen to (the default port is 27017).

MongoDB on Windows

- Once downloaded,
  - unpack the archive file,
  - and move the folder to C:\mongodb.

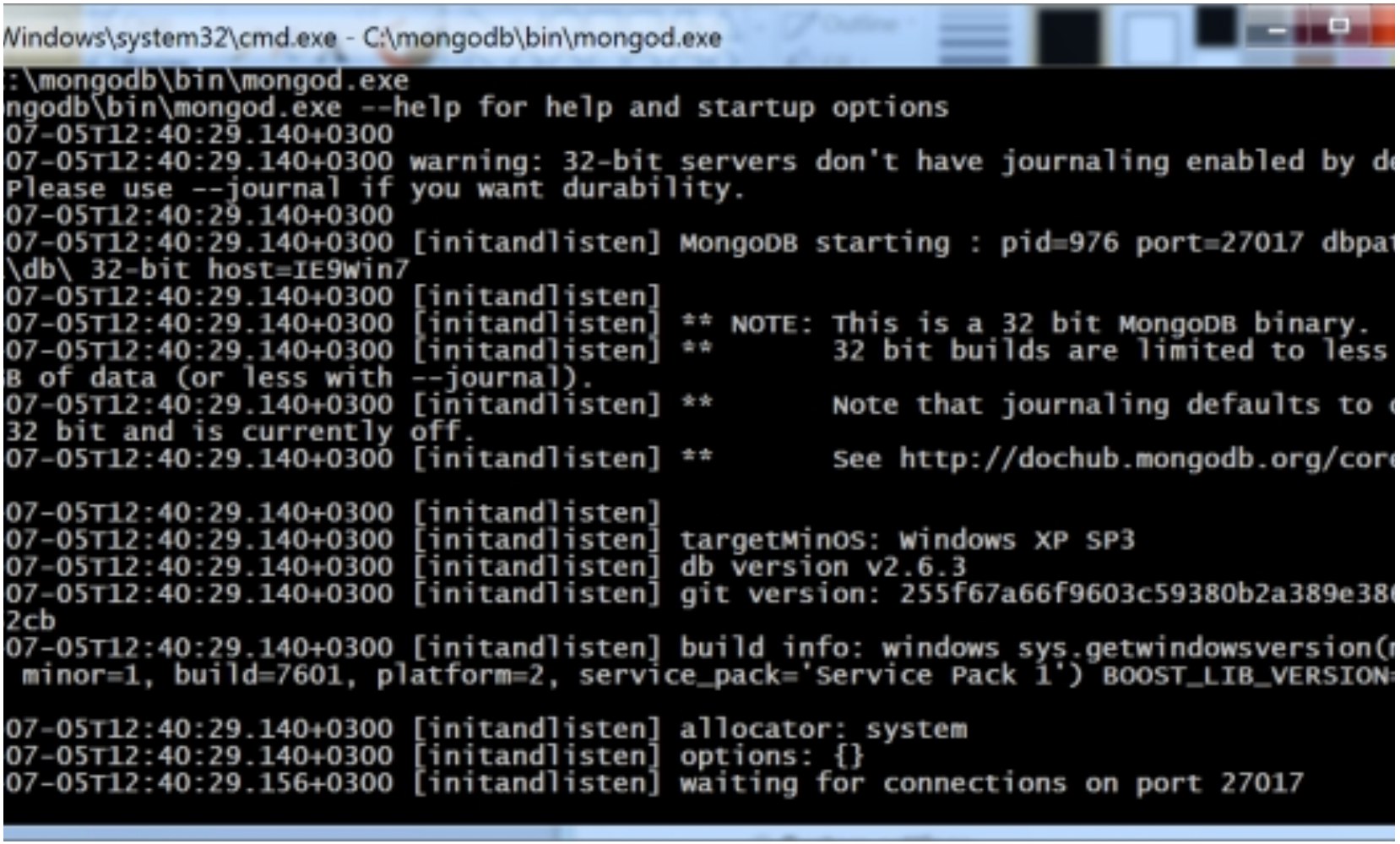
MongoDB on Windows

- MongoDB default folder n Windows,
  - C:\data\db
- Start Command Window and
  - C:\md data\db
- You can tell the mongod service to use an alternative path for the data files using the
  - --dbpath command-line flag

Running MongoDB manually

- To run MongoDB manually,
- open the command prompt:
  - C:\> C:\mongodb\bin\mongod.exe
- will run the main MongoDB service
  - listening to the default 27017 port

Running MongoDB server on Windows



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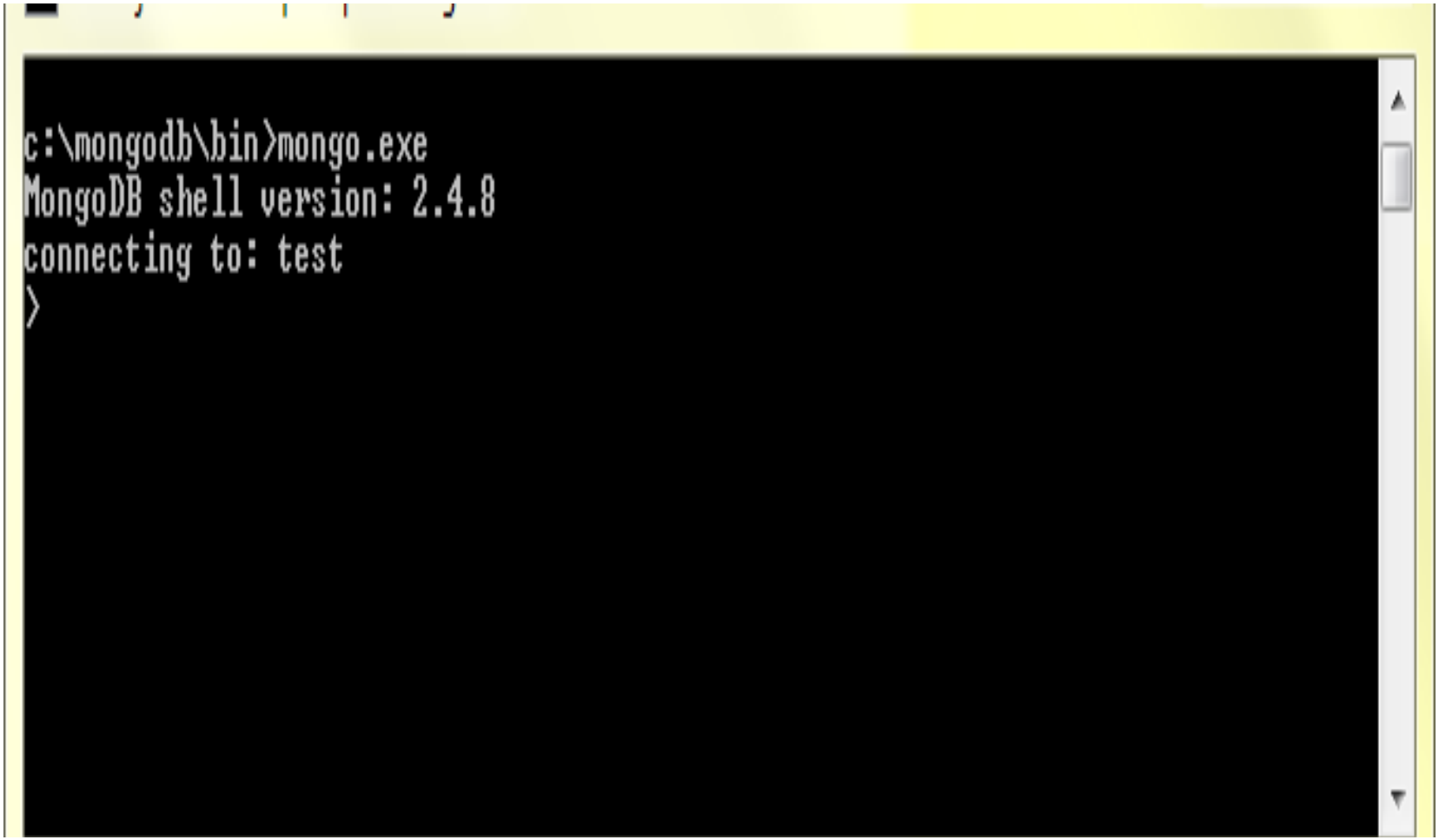
Connect to MongoDB.

- To connect to MongoDB through the mongo.exe shell,
  - open another Command Prompt.
- C:\mongodb\bin\mongo.exe

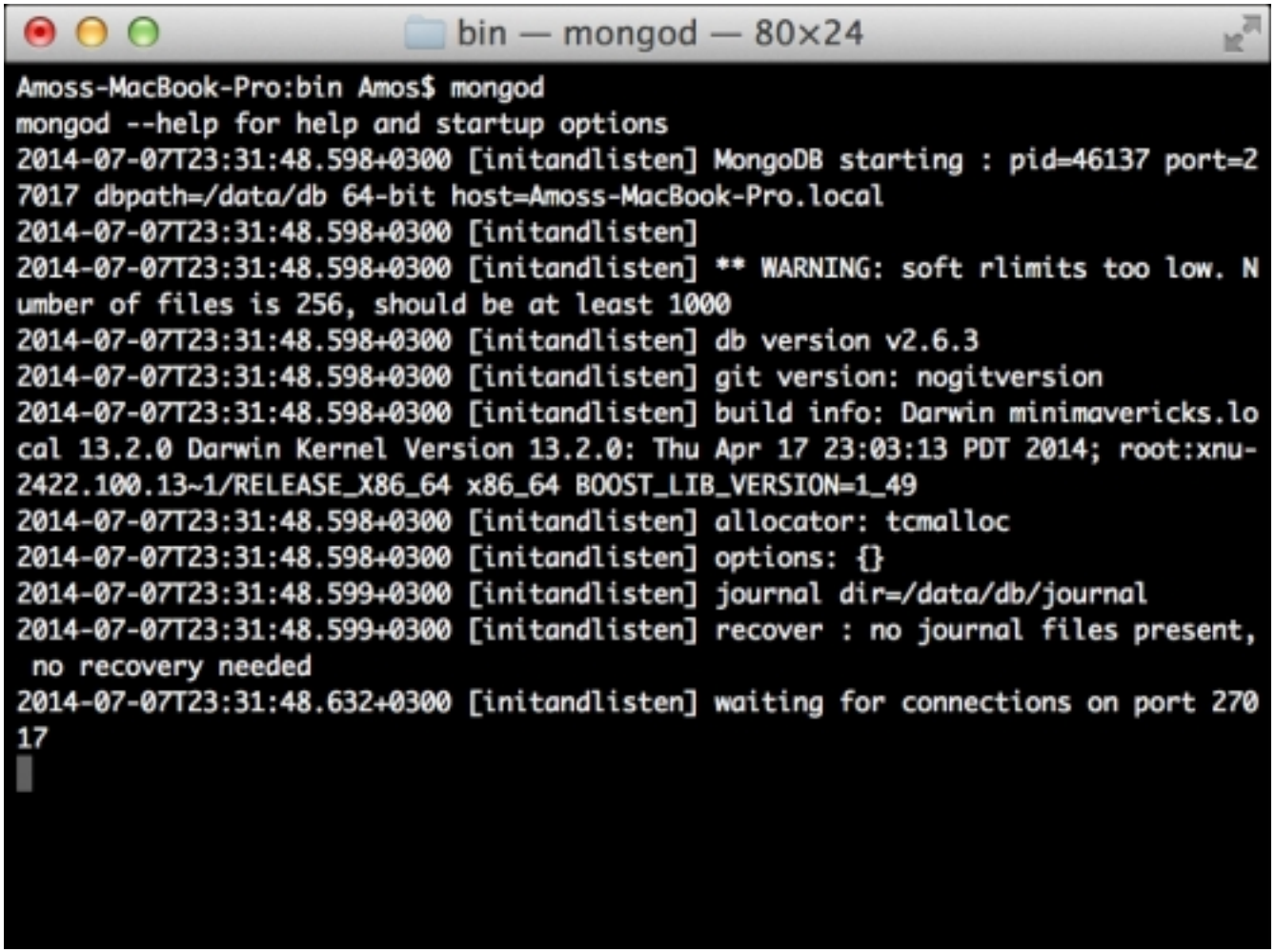
MongoDB shell Mongo running



Installing MongoDB on Mac OS X and Linux

- curl -O http://downloads.mongodb.org/...
- tar -zxvf mongodb-.....tgz
- mv mongodb-..... mongodb
- sudo mkdir -p /data/db
- sudo chown -R $USER /data/db
- cd mongodb/bin
- mongod

Running MongoDB on Mac



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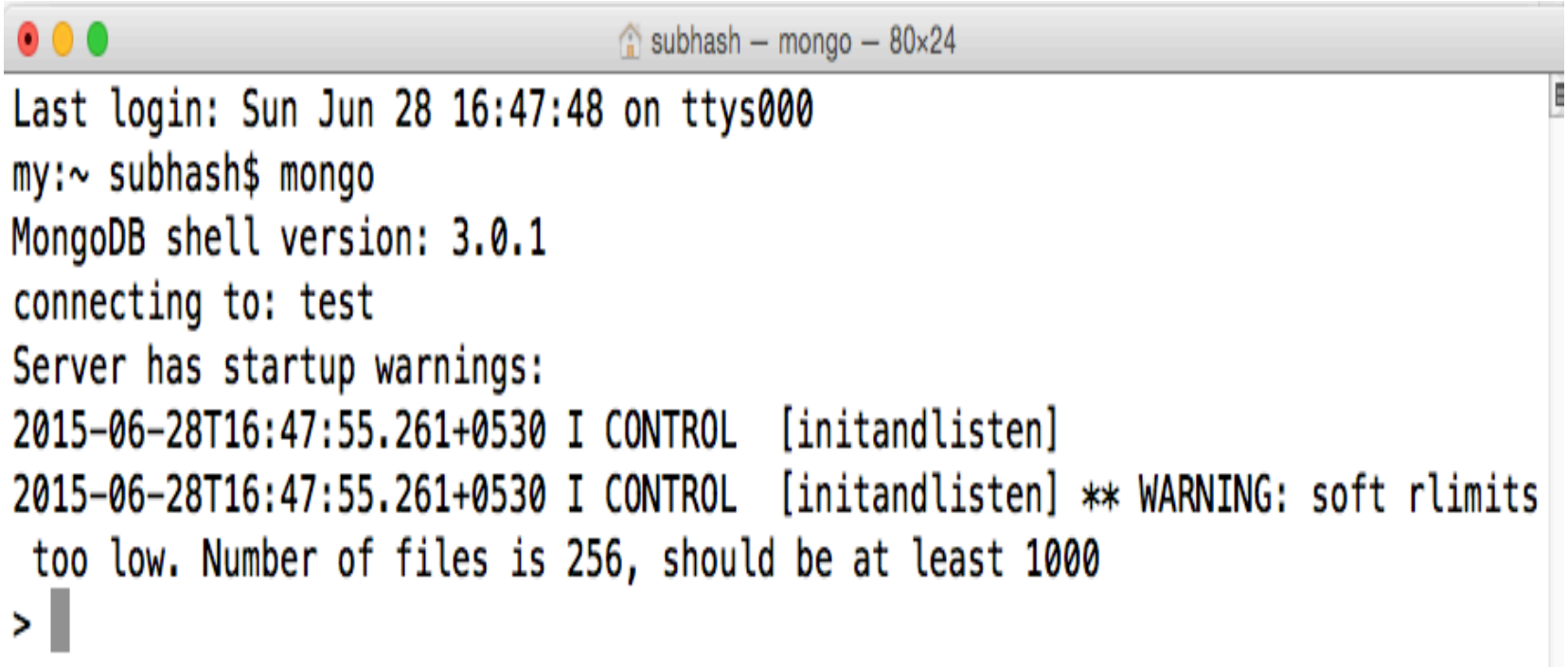
MongoDB shell Mongo running



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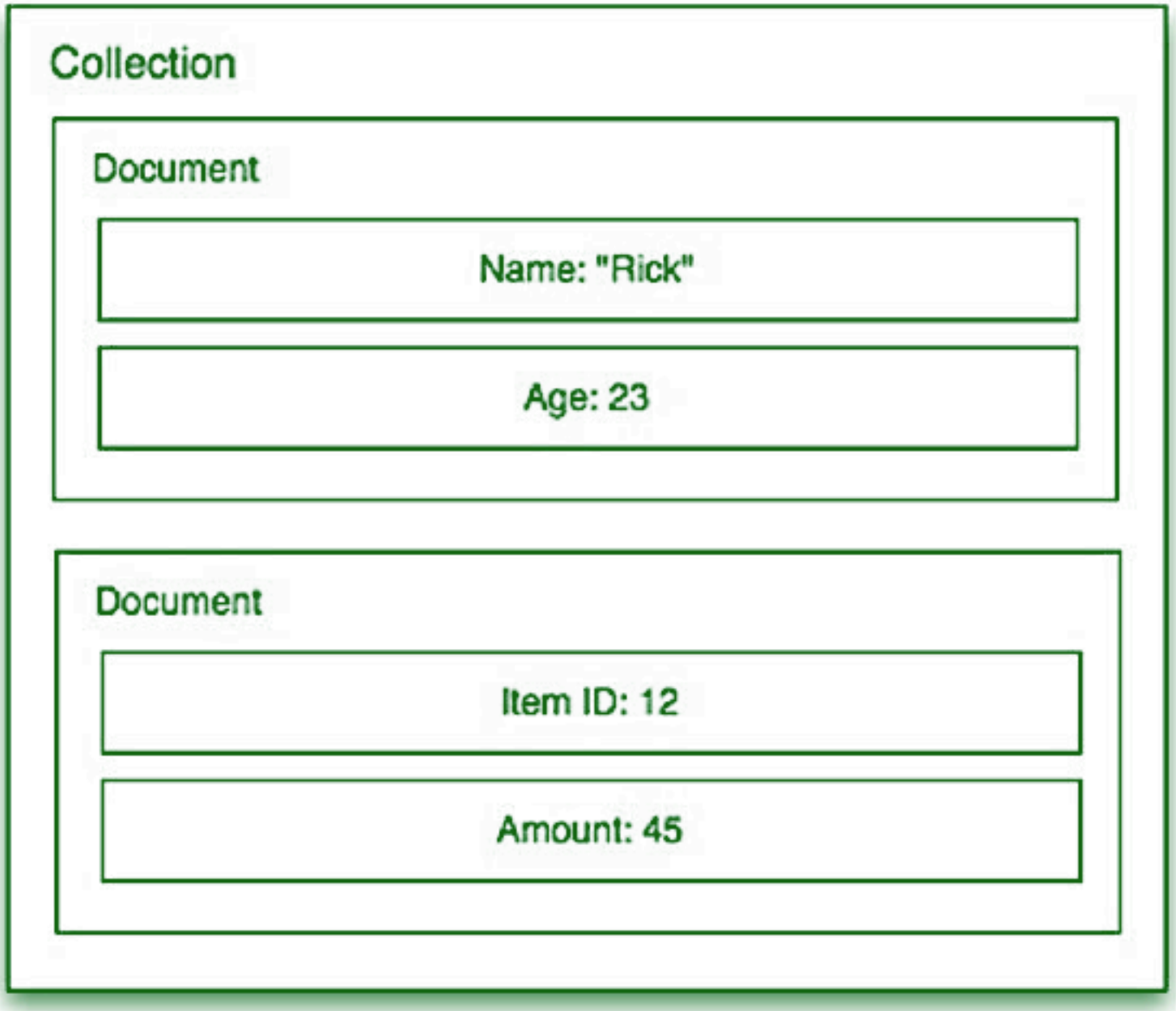
Test your database

- run the following command in shell:
  - > db.articles.insert({title: "Hello World"})
- This will create a new article collection and insert a JSON object
- To retrieve the article object:
  - > db.articles.find()

Getting Started

- A document is the basic unit of data for MongoDB and is roughly equivalent to a row in a relational database management system
- Similarly, a collection can be thought of as a table with a dynamic schema


Collection
Document
Name: "Rick"
Age: 23
Document
Item ID: 12
Amount: 45

Getting Started

- A single instance of MongoDB can host multiple independent databases, each of which can have its own collections.
- Every document has a special key, "_id", that is unique within a collection.

Getting Started

- MongoDB comes with a simple but powerful JavaScript shell, which is useful for the administration of MongoDB instances and data manipulation.

Documents

- At the heart of MongoDB
- an ordered set of keys with associated values.
- The representation of a document varies by programming language,
  - but most languages have a data structure that is a natural fit,
  - such as a map, hash, or dictionary

Documents

- In JavaScript, for example, documents are represented as objects:
  - {"greeting" : "Hello, world!", "foo" : 3}

MongoDB type-sensitive & case-sensitive

- type-sensitive
  - {"foo" : 3}
  - {"foo" : "3"}
- case-sensitive
  - {"foo" : 3}
  - {"Foo" : 3}

Step # 1 – define document

```
var new_entry = {
  firstname: "Subhash",
  lastname: "Edakkuda",
  age: 25,
  address: {
    street: "OMR, Perungudi",
    city: "Chennai",
    state: "TN",
    postalcode: 600096
  }
}
```

Step # 2 – Save

```
db.addressBook.save(new_entry)
```

Step # 3 – Read

db.addressBook.find()

~~{"greeting" : "Hello, world!", "greeting" : "Hello, MongoDB!"}~~

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Collections

- A collection is a group of documents.
  - document is the MongoDB analog of a row in a relational database,
  - then a collection can be thought of as the analog to a table.

Dynamic Schemas

- Collections have dynamic schemas.
- can have any number of different “shapes.”
- For example, both documents stored in a single collection:
  - {"greeting" : "Hello, world!"}
  - {"foo" : 5}

Dynamic Documents

- The documents can not only have
  - different types for their values (string versus integer)
  - but also have entirely different keys.

Dynamic Collections?

- Because any document can be put into any collection,
  - "Why do we need separate collections at all?"

Many Collections

- Keeping different kinds of documents in the same collection can be a nightmare for developers and admins.
- Developers need to make sure that each query is only returning documents of a certain type or that the application code performing a query can handle documents of different shapes.
- If we're querying for blog posts, it's a hassle to weed out documents containing author data.

Many Collections

- It is much faster to get a list of collections than to extract a list of the types in a collection.
- For example, if we had a "type" field in each document that specified whether the document was a “skim,” “whole,” or “chunky monkey,” it would be much slower to find those three values in a single collection than to have three separate collections and query the correct collection.

Many Collections

- Grouping documents of the same kind together in the same collection allows for data locality.
- Getting several blog posts from a collection containing only posts will likely require fewer disk seeks than getting the same posts from a collection containing posts and author data.

Many Collections

- We begin to impose some structure on our documents when we create indexes. (This is especially true in the case of unique indexes.)
- These indexes are defined per collection. By putting only documents of a single type into the same collection, we can index our collections more efficiently.

That's all

End of Session

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