embarcadero

CodeRage® X

Develop Anything, Anytime, Anywhere

Advanced MongoDB & FireDAC

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Agenda – *The Fun Stuff*

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Code Samples are all Object Pascal

Slides & More
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Q&A at 39:03

Indexing

- _id is indexed by default as _id_
- Other indexes can be added to improve query performance
- MongoDB uses a B-Tree internally for indexing
- Use the Query Option to get an *Explain* Plan
- Docs
  - http://docs.mongodb.org/manual/administration/indexes-creation/
  - http://docs.mongodb.org/manual/tutorial/create-an-index/
  - http://docs.mongodb.org/manual/tutorial/create-a-compound-index/
  - http://docs.mongodb.org/manual/tutorial/list-indexes/
  - http://docs.mongodb.org/manual/tutorial/remove-indexes/
  - http://docs.mongodb.org/manual/reference/method/cursor.explain/

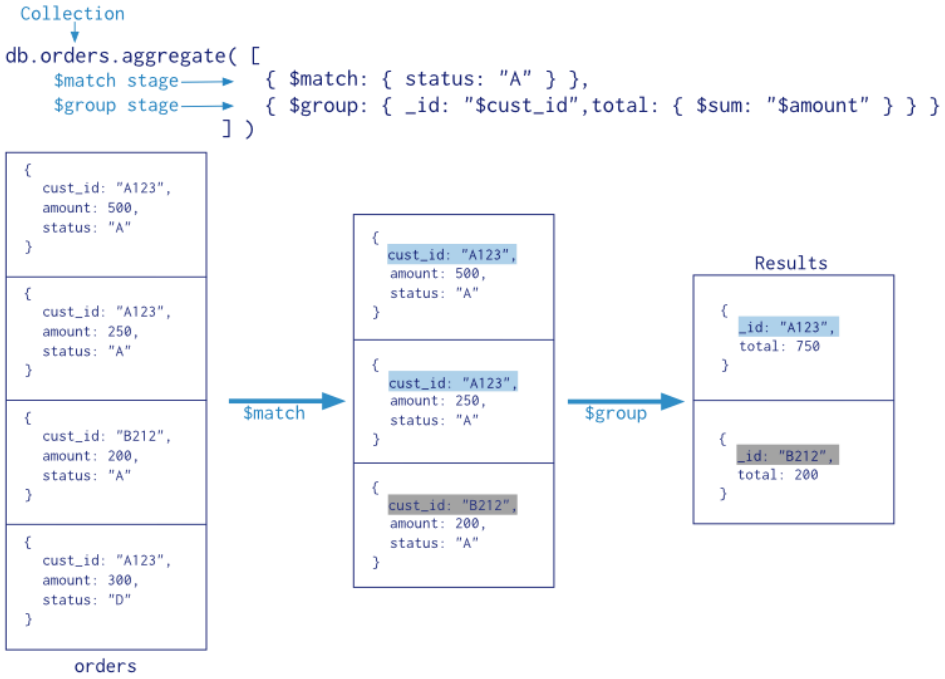
Geospatial Indexes and Queries

- Supports both spherical and planar geometries
  - 2d: geometries on a plane
  - 2dsphere: geometries of an earth-like sphere
- Query operations
  - Within a bounding geometry
  - Intersecting geometry
  - Near a point
- More information
  - http://docs.mongodb.org/manual/applications/geospatial-indexes/
  - http://docs.mongodb.org/manual/reference/operator/query-geospatial/

Aggregation Pipeline

- Operations that process data along a series of steps
- Change the format of or further process documents resulting from a query
- Documents enter the pipeline and are transformed into an aggregated result
- A less complex alternative to map-reduce (also supported)
- FireDAC supports through the TFDMongoPipeline and Aggregate methods
- References
  - http://docs.mongodb.org/manual/aggregation/
  - http://docs.mongodb.org/manual/reference/operator/aggregation/

Aggregation Example



- Runs through stages
- Typically starts with a match
- Example shows grouping
- Resulting collection contains modified documents
- Makes documents easier to work with in program logic
- Underlying collection is unmodified

Update Operations

- Modifies an existing document or documents in a collection.
- Can modify specific fields of an existing document or documents or replace an existing document entirely.
- Can replace with static or dynamic operator generated values.
- Updates are atomic within a single document.
- More information
  - http://docs.mongodb.org/manual/tutorial/modify-documents/
  - http://docs.mongodb.org/manual/reference/method/db.collection.update/
  - http://docs.mongodb.org/manual/reference/operator/update/inc/
  - http://docs.mongodb.org/manual/reference/operator/update/push/

Learning Resources

Slides & More
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- MongoDB Documentation
  - docs.mongodb.org/manual/
- MongoDB Skill Sprint
  - embt.co/sprint-nosql-mongodb
- Part 1 from CodeRage X
- DocWiki
  - docwiki.embarcadero.com/RADStudio/en/What%27s_New#Support_for_the_NoSQL_MongoDB_Database
  - docwiki.embarcadero.com/RADStudio/en/Connect_to_MongoDB_Database_(FireDAC)
  - docwiki.embarcadero.com/CodeExamples/en/FireDAC.MongoDB_Explore_Sample
  - docwiki.embarcadero.com/Libraries/en/FireDAC.Phys.MongoDBWrapper
- Samples
  - \Samples\Object Pascal\Database\FireDAC\Samples\DBMS Specific\MongoDB