MongoDB aggregation

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Aggregation operations process data records and return computed results. Aggregation operations group values from multiple documents together and can perform a variety of operations on the grouped data to return a single result. MongoDB provides three ways to perform aggregation:

> aggregation pipeline

> map-reduce function

> single purpose aggregation methods

Aggregation Pipeline

MongoDB’s aggregation framework is modeled on the concept of data processing pipelines. Documents enter a multi-stage pipeline that transforms the documents into an aggregated result. The most basic pipeline stages provide filters that operate like queries and document transformations that modify the form of the output document. Other pipeline operations provide tools for grouping and sorting documents by specific field or fields as well as tools for aggregating the contents of arrays, including arrays of documents. In addition, pipeline stages can use operators for tasks such as calculating the average or concatenating a string.

1. $group
   * \_id can be field reference, constant, object
   * other output fields are
     + $sum , $max, $min, $avg, $push, $addToSet, $first, $last
   * Processes all data in memory by default
2. $unwind
   * Flatten the array
   * Create documents from array elements
     1. Array replaced by element value
     2. Missing/empty elements – no output
     3. Non-array fields – Error
   * Pipe to group to aggregate

