Structured and Non-Structured data

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>STRUCTURED:

- in structured data the inputs or the data is arranged systematically…specifically in the form of tables
- in structured data the data type of the data in the table is fixed
- it is like data in an excel sheet in the form of rows and columns in fixed places
- The examples :
  1.bank records
  2.hospital records
  3.SQL databases
- Databases used: MySQL , PostgreSQL

>NON-STRUCTURED:

- the non-structured data is the one which cannot be put into a table due to its varied schema , i.e. , the data type of this data varies…..
- hence cannot be put in specific columns and rows , the unstructured data has no fixed format or flow
- And since it is a bit messy …..it is hard to find and sort the non-structured data.
- example: text files
- Databases used: MongoDB, Cassandra , Redis , etc.

- MongoDB :
  - MongoDB document stores data in the form of key-value pairs
  - It is a NoSQL database , popularly used
  - It makes it easy to handle large unstructured data
  - It consists of three parts:
    Databases------->Collections-------->Documents

CRUD in MongoDB

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1. Create : to create a field in MongoDB we use
   >insert One() command
   >insert Many() command

2. Read : to read the inserted fields we use the find() command

3. Update : to update an already existing field we use
   > update One()
   >update Many()

4. delete : to delete a field we use
   >delete One()
   >delete Many()

Aggregate

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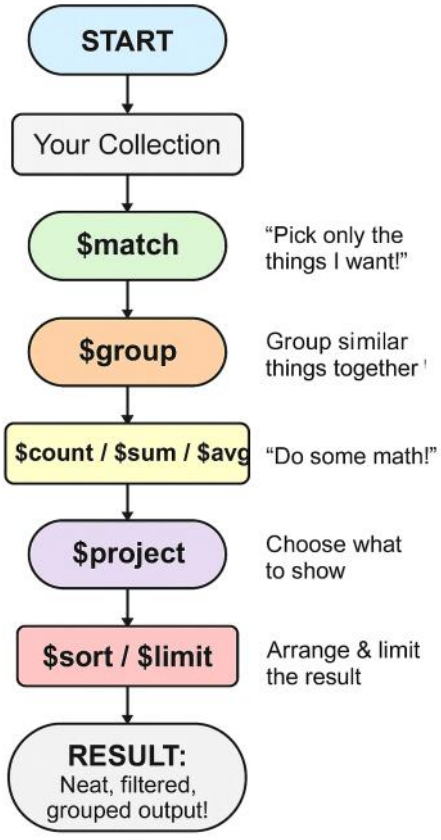
Aggregate is to sort or group a certain collection of data…in your desired categories.
We can think of it as the root of a plant which passes the data through different stages to reach the top , i.e., to get the result.

Example:

Assuming our data is just a list of fruits….and that we want to pick a certain fruit



----->the match command picks our desired fruit from the list using aggregate

------>if we want to make a juice of three fruits…we will use the $match command to pick out those…and $group command to make a group of them

------->the mathematical functions help us in various calculations

------>the $project command will help us choose what to show…if we make two diff groups using the $group command for 2 diff juices…then this will help om what to show

-------> *sort: this may help us sort the fruit price wise…in ascending or descending order…so that we can estimate the price of our juices.
*limit: this will help us decide the definite amount of fruits to be used at a time.

The dollar sign($) in MongoDB is used to represent the operators or the field references…so that we make out the difference .

Operator	**Purpose**
$match	Filters documents
$group	Groups documents by a certain field
$sum	Adds values together
$ avg	Averages values
$ gt	Greater than
$ lte	Less than or equal

NOTE: $match operator is used for filtering or comparing data….when to calculate the sum or average we use the $group operator.

operators	purpose
$set	To add or update a field
$project	To choose what fields to show
$lookup	To look into other collections or to use the fields from there
$unwind	It takes a field and separates it into separate documents

Indexing

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Indexing:

- Indexing in mongoDB is just like the index of a book…..it is used to find the data faster
- It sorts data by the fields we have chosen for indexing ……
- Ex: if we are handling student data then we can do indexing by roll nos. …so each time I want a particular data…. i will just search by roll nos.
- this saves our time of going through each student's records just to find the one I need.
- So , since mongoDB uses unstructured data ……
- indexing makes it easier to keep a large pile of data sorted and easy to find.

JSON

- Javascript Object Notations
- Easy to read and write
- Works for javascript , python , java , etc.
- Unsrtuctred data can be easily stored