



Firestore

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What is Firestore?

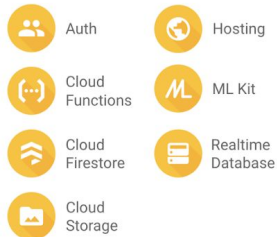
It's a part of Firebase, which is a suite of Google Cloud services

Other important Firebase services include:

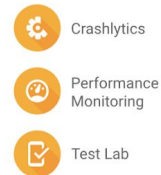
- Auth
- Storage
- Functions
- Analytics
- Messaging



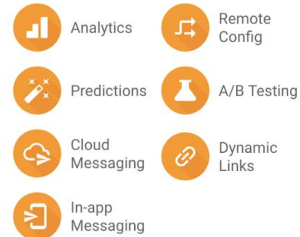
Build better apps



Improve app quality



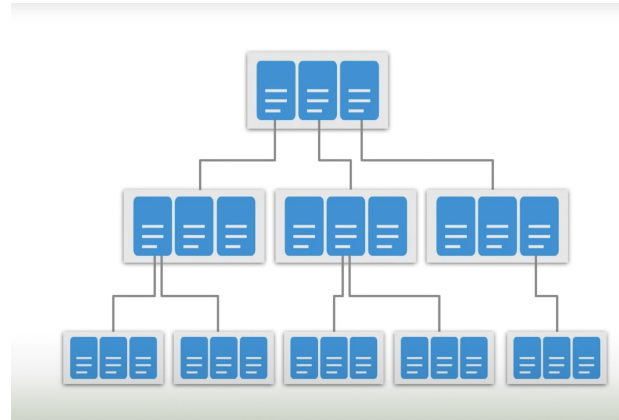
Grow your app



NoSQL vs Relational databases

Firestore is a NoSQL database:

- Data stored as documents rather than table entries
- The database is constructed of one or more collections
- Each collection can contain one or more documents
- Documents can contain sub-collections





Document

A Firestore document:

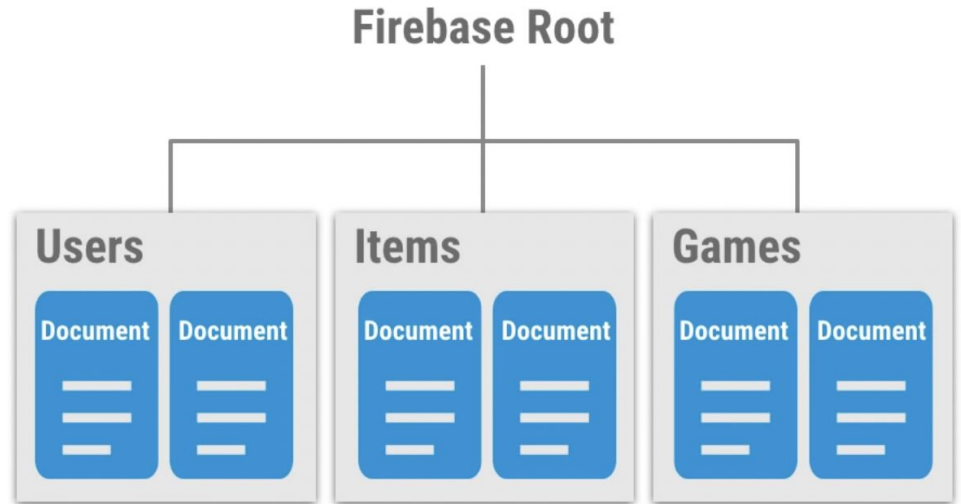
- Is basically a set of **fields** and **values**
- Each field is accessed using a string **key**
- The values can be from a range of common data types (strings, booleans, integers, floats, lists, maps, etc.)
- There is a limit to the max size for a document (**1 MiB**)

Document

```
bird_type: "swallow"  
airspeed: 42.733  
coconut_capacity: 0.62  
isNative: false  
icon: <binary data>  
vector:  
  {x: 36.4255,  
   y: 25.1442,  
   z: 18.8816}  
distances_traveled:  
  [42, 39, 12, 42]
```

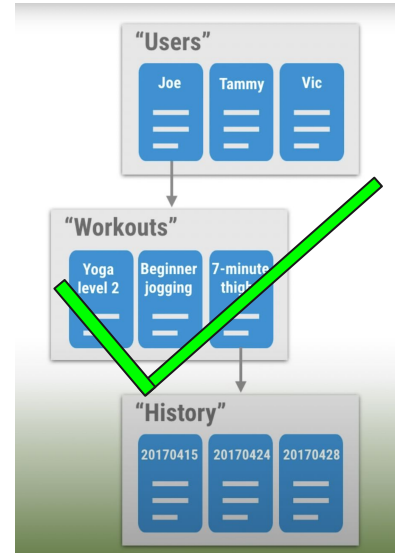
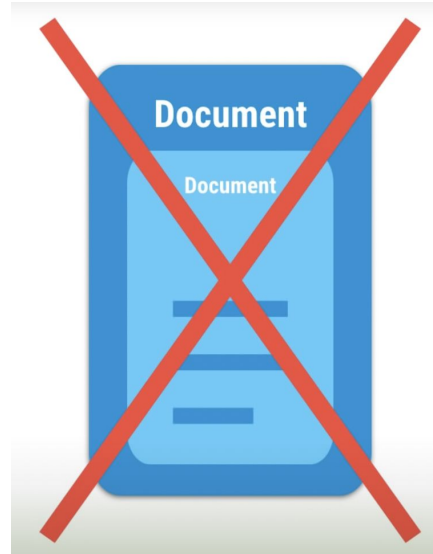
Collections

- Collections contain a number of documents
- The documents under a collection do not need to follow the same structure (i.e. have the same fields)



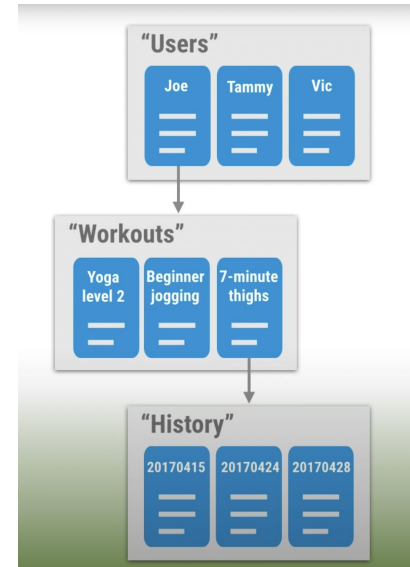
Nesting documents

- Documents cannot contain other documents within themselves (but they can contain the id of the other document in one of their fields)
- Documents can though have sub-collections within them that contain other child documents



Accessing documents

- Each document has a specific unique ID (at least unique within the enclosing collection)
- We access documents by specifying the path from the database root
- For example, to access the first document in “History” we use:
`“Users/Joe/7-minute thighs/History/20170415”`





Other Firestore features

- **Offline persistence**
Data is cached in the device and can be accessed while offline
- **Realtime updates**
reflected while the app is open
- **Paginated queries**
Get a range of documents from a large collection



Let's implement it!

Open up the Lab 5 instructions file:

https://eclass.srv.ualberta.ca/pluginfile.php/8545278/mod_resource/content/0/Lab%205%20Firestore%20Integration%20Instructions.pdf