CouchDB

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CouchDB – Relax

- CouchDB is an open-source document store DB that uses JSON for document storage.
- Queries are done through JavaScript, API is MapReduce + HTTP

CouchDB

- Designed to handle changes from multiple sources.
  - Revision control exists for this purpose; each document has a revision number which can be used to compare to another document's revision number.

Introduction to JSON

- All JSON documents start with { and end with }
- Strings are always enclosed with double-quotes
- Items inside JSON objects are separated by commas
- Example:

  -
    ```
    {
      "userName":"Mark",
      "age":33,
      "gender":"M"
    }
    ```

JSON Constructs

More Examples:

```
{
    "fruitName": "apple",           String data
    "color": "green",               String data
    "numberOfSeeds": 5,             Integer data
    "parentTypes": [                Array
        "Granny Smith",
        "Ambrosia"
    ]
}
```

GET

- Retrieve database information or documents.

```
curl –X GET host:port/db_name
```

Gets the database information

```
curl –X GET host:port/db_name/doc_id
```

Gets the documents in the database

```
curl –X GET host:port/_all_dbs
```

Get all the databases

```
curl –X GET host:port/db_name/_all_docs
```

Get all the documents in certain database

HEAD

- Head returns the basic information of the document.

```
curl –X HEAD host:port/db_name/doc_id
```

PUT and POST

- PUT and POST adds databases or documents.

```
curl –X PUT host:port/db_name
```

This creates a database

```
curl –X PUT host:port/db_name/doc_id –d “{\ “key\”:
\“value\”, “key\”: \“value\”…….}”
```

To store number: \“key\”: 1

To store array: \“key\”:[\“value1\”, \“value2\”….]

DELETE and UPDATE

- When you want to delete or update a document in couchDB you have to provide _rev at the end of the query.

```
curl –X DELETE host:port/db_name/doc_id?rev=…………
```

It will only delete the document if you provided with the correct rev

```
curl –X PUT host:port/db_name/doc_id?rev=………/ -d
“{……}”
```

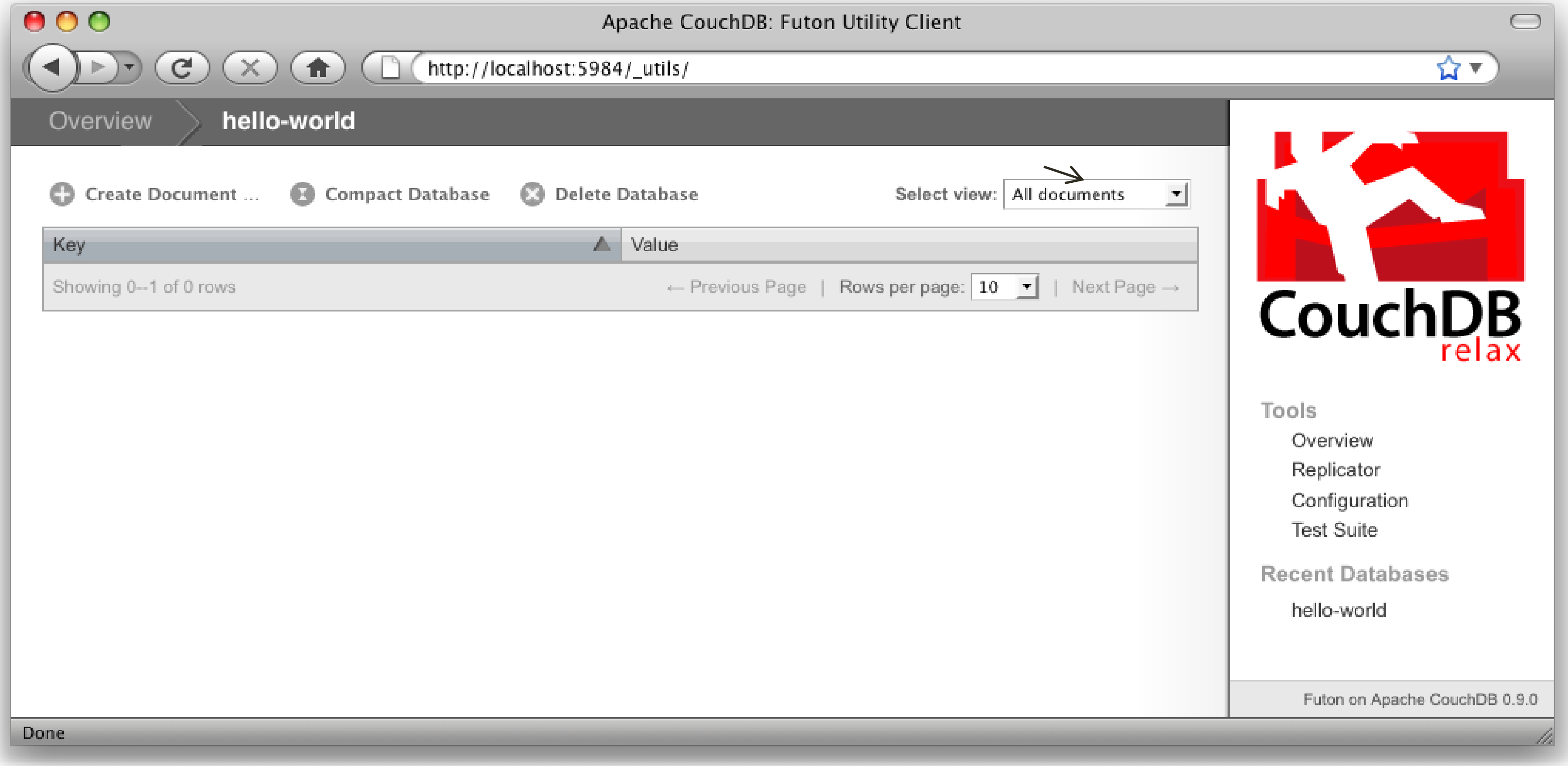
This will overwrite the original document with the same id.

http://wiki.apache.org/couchdb/HTTP_Document_API

VIEW

- After you created the database and the documents you can then create views (used like queries).
- We can do views in cURL, but it is difficult to PUT, UPDATE, DELETE views through cURL. It is easier to do it through Futon.
- Two main types: *permanent* (via GET) and *temporary* (via POST)
- *Temporary* views are computationally expensive, so should not be used in deployed systems.
- CouchDB was designed with frequent 'inserts' in mind, along with infrequent changes to 'selects' (views)
  - You can make *Temporary Views* through Futon, then save them to make them *Permanent VIews*

- Under database you can create view



Apache CouchDB: Futon Utility Client

http://localhost:5984/_utils/

Select view: All documents

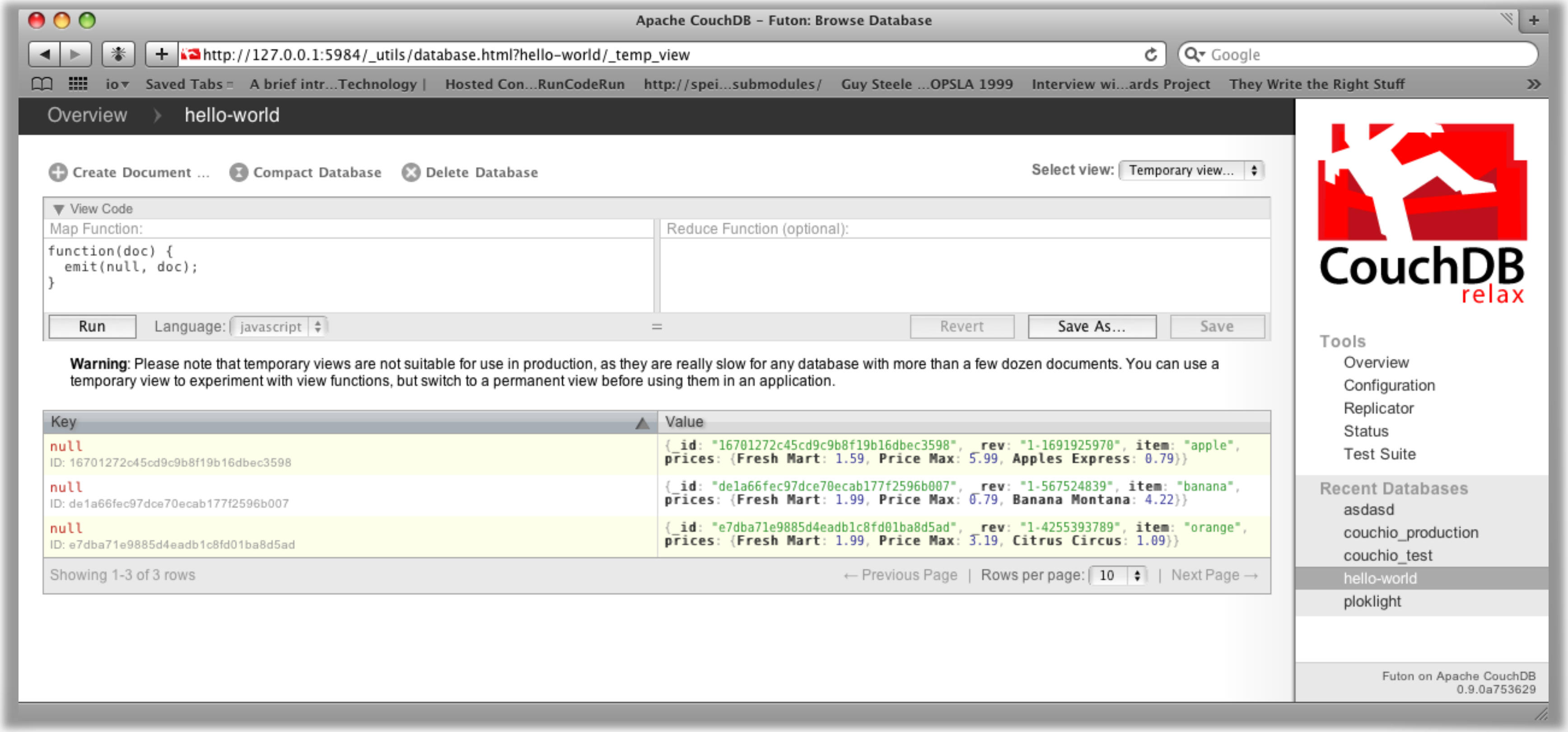
Key	Value

Showing 0--1 of 0 rows

Rows per page: 10

Done

Futon on Apache CouchDB 0.9.0



Apache CouchDB – Futon: Browse Database

http://127.0.0.1:5984/_utils/database.html?hello-world/_temp_view

Overview › hello-world

Select view: Temporary view...

Map Function:

```
function(doc) {
  emit(null, doc);
}
```

Reduce Function (optional):

Language: javascript

Warning: Please note that temporary views are not suitable for use in production, as they are really slow for any database with more than a few dozen documents. You can use a temporary view to experiment with view functions, but switch to a permanent view before using them in an application.

Key	Value
null ID: 16701272c45cd9c9b8f19b16dbec3598	{_id: "16701272c45cd9c9b8f19b16dbec3598", _rev: "1-1691925970", item: "apple", prices: {Fresh Mart: 1.59, Price Max: 5.99, Apples Express: 0.79}}
null ID: de1a66fec97dce70ecab177f2596b007	{_id: "de1a66fec97dce70ecab177f2596b007", _rev: "1-567524839", item: "banana", prices: {Fresh Mart: 1.99, Price Max: 0.79, Banana Montana: 4.22}}
null ID: e7dba71e9885d4eadb1c8fd01ba8d5ad	{_id: "e7dba71e9885d4eadb1c8fd01ba8d5ad", _rev: "1-4255393789", item: "orange", prices: {Fresh Mart: 1.99, Price Max: 3.19, Citrus Circus: 1.09}}

Showing 1-3 of 3 rows

Rows per page: 10

Futon on Apache CouchDB 0.9.0a753629

Views

- *Views* are essentially the *map* component of MapReduce in CouchDB.
  - Because of this, views are written in JavaScript as functions
- A few necessary components:
  - `function (doc) {…}`
  - *doc* is the current document being processed; each document goes though the map one by one
- Examples:

```
function(doc){
       emit(doc.name,doc.age);
}

function(doc){
if(doc.scores.name){
       for(var i in soc.scores)
              emit(doc.scores[i].name,doc.scores[i].score)
       }
}
```

You can do sum or count by using the reduce function

MAP:

```
Function(doc){
If(doc.scores.name){
        For(var i in soc.scores)
                emit(doc.scores[i].name,doc.scores[i].score)
}
}
```

REDUCE:

_sum or _count or _stats