MONGODB - ANALYZING QUERIES

Analyzing queries is a very important aspect of measuring how effective the database and indexing design is. We will learn about the frequently used **$explain** and **$hint** queries.

Using $explain

The **$explain** operator provides information on the query, indexes used in a query and other statistics. It is very useful when analyzing how well your indexes are optimized.

In the last chapter we had already created an index for **users** collection on fields **gender** and **user_name** using following query:

```
>db.users.ensureIndex({gender:1,user_name:1})
```

We will now use **$explain** on the following query:

```
>db.users.find({gender:"M"},{user_name:1,_id:0}).explain()
```

The above explain query returns the following analyzed result:

```
{
   "cursor" : "BtreeCursor gender_1_user_name_1",
   "isMultiKey" : false,
   "n" : 1,
   "nscannedObjects" : 0,
   "nscanned" : 1,
   "nscannedObjectsAllPlans" : 0,
   "nscannedAllPlans" : 1,
   "scanAndOrder" : false,
   "indexOnly" : true,
   "nYields" : 0,
   "nChunkSkips" : 0,
   "millis" : 0,
   "indexBounds" : {
      "gender" : [
         [
            "M",
            "M"
         ]
      ],
      "user_name" : [
         [
            {
               "$minElement" : 1
            },
            {
               "$maxElement" : 1
            }
         ]
      ]
   }
}
```

We will now look at the fields in this result set:

- The true value of **indexOnly** indicates that this query has used indexing.
- The **cursor** field specifies the type of cursor used. BTreeCursor type indicates that an index was used and also gives the name of the index used. BasicCursor indicates that a full scan was made without using any indexes.
- **n** indicates the number of documents matching returned.

- **nscannedObjects** indicates the total number of documents scanned
- **nscanned** indicates the total number of documents or index entries scanned

Using $hint

The **$hint** operator forces the query optimizer to use the specified index to run a query. This is particularly useful when you want to test performance of a query with different indexes. For example, the following query specifies the index on fields gender and user_name to be used for this query :

```
>db.users.find({gender:"M"},{user_name:1,_id:0}).hint({gender:1,user_name:1})
```

To analyze the above query using $explain:

```
>db.users.find({gender:"M"},{user_name:1,_id:0}).hint({gender:1,user_name:1}).explain()
```