Roll No: 5117060

## Experiment 2

**Show Databases**

```
> show databases;

admin    0.000GB

config   0.000GB

local    0.000GB
```

**Use a particular Database**

```
> use config

switched to db config
```

**Create Collection**

```
> db.createCollection("Project");

{ "ok" : 1 }

> show collections

Project
```

**Insert into collections:**

```
> db.project.insert({id:1,prjctname:"DNSSEC",p_domain:"security"});

WriteResult({ "nInserted" : 1 })

> db.project.insert({_id:2,prjctname:"YLPS",p_domain:"WEB"});

WriteResult({ "nInserted" : 1 })
```

**Display all elements:**

```
> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "DNSSEC", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "YLPS", "p_domain" : "WEB" }
```

**Insert**

**a.Insert-having OD in Collection (Duplicate Key Error)**

```
> db.project.insert({_id:2,prjctname:"oYLPS",p_domain:"WEB"});

WriteResult({

        "nInserted" : 0,

        "writeError" : {

                "code" : 11000,

                "errmsg" : "E11000 duplicate key error collection:
shivam.project index: _id_ dup key: { _id: 2.0 }"

        }
```

```
})
```

**b. Insert- Not having ID in Collection (Auto ID is generated)**

```
> db.project.insert({prjctname:"oYLPS",p_domain:"Net"});

WriteResult({ "nInserted" : 1 })

> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "DNSSEC", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "YLPS", "p_domain" : "WEB" }

{ "_id" : ObjectId("5fb1368f0a90b0b3a1bb4ab2"), "prjctname" :
"oYLPS", "p_domain" : "Net" }
```

**c. Insert – ID doesn't exists in Collection( Insert):**

```
> db.project.insert({_id:2,prjctname:"YLPS",p_domain:"WEB"});

WriteResult({ "nInserted" : 1 })

> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "DNSSEC", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "YLPS", "p_domain" : "WEB" }
```

**Save**

   **a. Having ID in collection (Update)**

```
> db.project.save({_id:3,prjctname:"lmnop",p_domain:"ML"});

WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })

> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "DNSSEC", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "YLPS", "p_domain" : "WEB" }

{ "_id" : ObjectId("5fb1368f0a90b0b3a1bb4ab2"), "prjctname" :
"oYLPS", "p_domain" : "Net" }

{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "ML" }
```

   **b. Not having ID in Collection(Insert):**

```
> db.project.save({prjctname:"pqrs",p_domain:"ML"});

WriteResult({ "nInserted" : 1 })

> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "DNSSEC", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "YLPS", "p_domain" : "WEB" }

{ "_id" : ObjectId("5fb1368f0a90b0b3a1bb4ab2"), "prjctname" :
"oYLPS", "p_domain" : "Net" }
```

```
{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "ML" }

{ "_id" : ObjectId("5fb137990a90b0b3a1bb4ab3"), "prjctname" :
"pqrs", "p_domain" : "ML" }
```

**c. ID doesn't exists in Collection(Insert):**

```
> db.project.save({_id:3,prjctname:"lmnop",p_domain:"AI"});

WriteResult({ "nMatched" : 0, "nUpserted" : 1, "nModified" : 0,
"_id" : 3 })

> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "DNSSEC", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "YLPS", "p_domain" : "WEB" }

{ "_id" : ObjectId("5fb1368f0a90b0b3a1bb4ab2"), "prjctname" :
"oYLPS", "p_domain" : "Net" }

{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "AI" }
```

**UPDATE:**

**a. Upsert(True) and ID matches**

```
>
db.project.update({_id:2},{$set:{prjctname:"abc"}},{upsert:true})
;

WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })

> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "DNSSEC", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "abc", "p_domain" : "WEB" }

{ "_id" : ObjectId("5fb1368f0a90b0b3a1bb4ab2"), "prjctname" :
"oYLPS", "p_domain" : "Net" }

{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "ML" }

{ "_id" : ObjectId("5fb137990a90b0b3a1bb4ab3"), "prjctname" :
"pqrs", "p_domain" : "ML" }
```

**b. Upsert(true) and no id matches(Insert New Document)**

```
>
db.project.update({_id:6},{$set:{prjctname:"abc"}},{upsert:true})
;

WriteResult({ "nMatched" : 0, "nUpserted" : 1, "nModified" : 0,
"_id" : 6 })

> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "DNSSEC", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "abc", "p_domain" : "WEB" }
```

```
{ "_id" : ObjectId("5fb1368f0a90b0b3a1bb4ab2"), "prjctname" :
"oYLPS", "p_domain" : "Net" }

{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "ML" }

{ "_id" : ObjectId("5fb137990a90b0b3a1bb4ab3"), "prjctname" :
"pqrs", "p_domain" : "ML" }

{ "_id" : 4, "prjctname" : "abc" }

{ "_id" : 6, "prjctname" : "abc" }
```

**c. Upsert(false) and no id matches(No change):**

```
> db.project.update({_id:7},{$set:{prjctname:"xyz"}});

WriteResult({ "nMatched" : 0, "nUpserted" : 0, "nModified" : 0 })

> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "DNSSEC", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "abc", "p_domain" : "WEB" }

{ "_id" : ObjectId("5fb1368f0a90b0b3a1bb4ab2"), "prjctname" :
"oYLPS", "p_domain" : "Net" }

{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "ML" }

{ "_id" : ObjectId("5fb137990a90b0b3a1bb4ab3"), "prjctname" :
"pqrs", "p_domain" : "ML" }

{ "_id" : 4, "prjctname" : "abc" }

{ "_id" : 6, "prjctname" : "xyz" }
```

**d. Upsert(false) and ID Matches(update)**

```
> db.project.update({_id:6},{$set:{prjctname:"lms"}});

WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })

> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "DNSSEC", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "abc", "p_domain" : "WEB" }

{ "_id" : ObjectId("5fb1368f0a90b0b3a1bb4ab2"), "prjctname" :
"oYLPS", "p_domain" : "Net" }

{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "ML" }

{ "_id" : ObjectId("5fb137990a90b0b3a1bb4ab3"), "prjctname" :
"pqrs", "p_domain" : "ML" }

{ "_id" : 4, "prjctname" : "abc" }

{ "_id" : 6, "prjctname" : "lms" }
```

**e. Multi(true)**

```
>
db.project.update({id:1},{$set:{prjctname:"multi"}},{multi:true})
;

WriteResult({ "nMatched" : 2, "nUpserted" : 0, "nModified" : 2 })

> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "multi", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "abc", "p_domain" : "WEB" }

{ "_id" : ObjectId("5fb1368f0a90b0b3a1bb4ab2"), "prjctname" :
"oYLPS", "p_domain" : "Net" }

{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "ML" }

{ "_id" : ObjectId("5fb137990a90b0b3a1bb4ab3"), "prjctname" :
"pqrs", "p_domain" : "ML" }

{ "_id" : 4, "prjctname" : "abc" }

{ "_id" : 6, "prjctname" : "lms" }

{ "_id" : ObjectId("5fb13e480a90b0b3a1bb4ab4"), "id" : 1,
"prjctname" : "multi" }
```

**f. Multi(false):**

```
>
db.project.update({id:1},{$set:{prjctname:"multifalse"}},{multi:f
alse});

WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })

> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "multifalse", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "abc", "p_domain" : "WEB" }

{ "_id" : ObjectId("5fb1368f0a90b0b3a1bb4ab2"), "prjctname" :
"oYLPS", "p_domain" : "Net" }

{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "ML" }

{ "_id" : ObjectId("5fb137990a90b0b3a1bb4ab3"), "prjctname" :
"pqrs", "p_domain" : "ML" }

{ "_id" : 4, "prjctname" : "abc" }

{ "_id" : 6, "prjctname" : "lms" }

{ "_id" : ObjectId("5fb13e480a90b0b3a1bb4ab4"), "id" : 1,
"prjctname" : "multi" }
```

**Remove**

**a. With Condition**

```
db.project.remove({_id:6})

WriteResult({ "nRemoved" : 1 })
```

```
> db.project.find()

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "multifalse", "p_domain" : "security" }

{ "_id" : 2, "prjctname" : "abc", "p_domain" : "WEB" }

{ "_id" : ObjectId("5fb1368f0a90b0b3a1bb4ab2"), "prjctname" :
"oYLPS", "p_domain" : "Net" }

{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "ML" }

{ "_id" : ObjectId("5fb137990a90b0b3a1bb4ab3"), "prjctname" :
"pqrs", "p_domain" : "ML" }

{ "_id" : 4, "prjctname" : "abc" }

{ "_id" : ObjectId("5fb13e480a90b0b3a1bb4ab4"), "id" : 1,
"prjctname" : "multi" }
```

**b. Without Condition**

```
db.project.remove({});

WriteResult({ "nRemoved" : 1 })
```

**STRING MATCHING**

**a. Starts with a**

```
> db.project.find({prjctname:/^a/});

{ "_id" : 2, "prjctname" : "abc", "p_domain" : "WEB" }

{ "_id" : 4, "prjctname" : "abc" }
```

**b. Ends with p**

```
> db.project.find({prjctname:/p$/});

{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "ML" }
```

**c. Has n in between**

```
> db.project.find({prjctname:/n/});

{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "ML" }
```

**$eq**

```
> db.project.find({prjctname:{$eq:"abc"}});

{ "_id" : 2, "prjctname" : "abc", "p_domain" : "WEB" }

{ "_id" : 4, "prjctname" : "abc" }
```

**$ne**

```
> db.project.find({prjctname:{$ne:"abc"}});

{ "_id" : ObjectId("5fb135d90a90b0b3a1bb4ab1"), "id" : 1,
"prjctname" : "multifalse", "p_domain" : "security" }
```

```
{ "_id" : ObjectId("5fb1368f0a90b0b3a1bb4ab2"), "prjctname" :
"oYLPS", "p_domain" : "Net" }

{ "_id" : 3, "prjctname" : "lmnop", "p_domain" : "ML" }

{ "_id" : ObjectId("5fb137990a90b0b3a1bb4ab3"), "prjctname" :
"pqrs", "p_domain" : "ML" }

{ "_id" : ObjectId("5fb13e480a90b0b3a1bb4ab4"), "id" : 1,
"prjctname" : "multi" }
```

**$gt**

```
> db.collection.find({_id:{$gt:3}});

{ "_id" : 4, "name" : "Aziz", "sub1" : "ABC", "sub2" : "CSL" }

{ "_id" : 5, "name" : "Abuzar", "sub1" : "ABC", "sub2" : "CSL" }

{ "_id" : 6, "name" : "Needa", "sub1" : "ABC", "sub2" : "CSL" }

{ "_id" : 7, "name" : "Furqan", "sub1" : "ABC", "sub2" : "CSL" }
```

**$gte**

```
> db.collection.find({_id:{$gte:3}});

{ "_id" : 3, "name" : "Irfan", "sub1" : "ABC", "sub2" : "XYZ" }

{ "_id" : 4, "name" : "Aziz", "sub1" : "ABC", "sub2" : "CSL" }

{ "_id" : 5, "name" : "Abuzar", "sub1" : "ABC", "sub2" : "CSL" }

{ "_id" : 6, "name" : "Needa", "sub1" : "ABC", "sub2" : "CSL" }

{ "_id" : 7, "name" : "Furqan", "sub1" : "ABC", "sub2" : "CSL" }
```

**$lt**

```
> db.collection.find({_id:{$lt:3}});

{ "_id" : 1, "name" : "Shivam", "sub1" : "ABC", "sub2" : "XYZ" }

{ "_id" : 2, "name" : "Asma", "sub1" : "ABC", "sub2" : "XYZ" }
```

**$lte**

```
> db.collection.find({_id:{$lte:3}});

{ "_id" : 1, "name" : "Shivam", "sub1" : "ABC", "sub2" : "XYZ" }

{ "_id" : 2, "name" : "Asma", "sub1" : "ABC", "sub2" : "XYZ" }

{ "_id" : 3, "name" : "Irfan", "sub1" : "ABC", "sub2" : "XYZ" }
```

**$in**

```
> db.collection.find({sub2:{$in:['XYZ']}});

{ "_id" : 1, "name" : "Shivam", "sub1" : "ABC", "sub2" : "XYZ" }

{ "_id" : 2, "name" : "Asma", "sub1" : "ABC", "sub2" : "XYZ" }

{ "_id" : 3, "name" : "Irfan", "sub1" : "ABC", "sub2" : "XYZ" }
```

**$nin**

```
> db.collection.find({sub2:{$nin:['XYZ']}});
{ "_id" : 4, "name" : "Aziz", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 5, "name" : "Abuzar", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 6, "name" : "Needa", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 7, "name" : "Furqan", "sub1" : "ABC", "sub2" : "CSL" }
```

**AND**

```
> db.collection.find({$and:[{sub1:"ABC"},{sub2:"CSL"}]});
{ "_id" : 4, "name" : "Aziz", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 5, "name" : "Abuzar", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 6, "name" : "Needa", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 7, "name" : "Furqan", "sub1" : "ABC", "sub2" : "CSL" }
```

**OR**

```
> db.collection.find({$or:[{sub2:"ABC"},{sub2:"CSL"}]});
{ "_id" : 4, "name" : "Aziz", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 5, "name" : "Abuzar", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 6, "name" : "Needa", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 7, "name" : "Furqan", "sub1" : "ABC", "sub2" : "CSL" }
```

**NULL**

```
> db.collection.update({_id:1},{$set:{sub2:null}});
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.collection.find({sub2:{$eq:null}});
{ "_id" : 1, "name" : "Shivam", "sub1" : "ABC", "sub2" : null }
```

**COUNT**

```
> db.collection.count()
7
> db.collection.count({sub2:'XYZ'});
2
> db.collection.count({sub2:{$eq:null}});
1
```

**LIMIT**

```
> db.collection.find().limit(2)
{ "_id" : 1, "name" : "Shivam", "sub1" : "ABC", "sub2" : null }
{ "_id" : 2, "name" : "Asma", "sub1" : "ABC", "sub2" : "XYZ" }
```

**SKIP**

```
> db.collection.find().skip(2)
{ "_id" : 3, "name" : "Irfan", "sub1" : "ABC", "sub2" : "XYZ" }
{ "_id" : 4, "name" : "Aziz", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 5, "name" : "Abuzar", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 6, "name" : "Needa", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 7, "name" : "Furqan", "sub1" : "ABC", "sub2" : "CSL" }
```

**SORT**

```
> db.collection.find().sort({name:1})
{ "_id" : 5, "name" : "Abuzar", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 2, "name" : "Asma", "sub1" : "ABC", "sub2" : "XYZ" }
{ "_id" : 4, "name" : "Aziz", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 7, "name" : "Furqan", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 3, "name" : "Irfan", "sub1" : "ABC", "sub2" : "XYZ" }
{ "_id" : 6, "name" : "Needa", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 1, "name" : "Shivam", "sub1" : "ABC", "sub2" : null }
> db.collection.find().sort({name:-1})
{ "_id" : 1, "name" : "Shivam", "sub1" : "ABC", "sub2" : null }
{ "_id" : 6, "name" : "Needa", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 3, "name" : "Irfan", "sub1" : "ABC", "sub2" : "XYZ" }
{ "_id" : 7, "name" : "Furqan", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 4, "name" : "Aziz", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 2, "name" : "Asma", "sub1" : "ABC", "sub2" : "XYZ" }
{ "_id" : 5, "name" : "Abuzar", "sub1" : "ABC", "sub2" : "CSL" }
> db.collection.find().sort({name:-1}).limit(4)
{ "_id" : 1, "name" : "Shivam", "sub1" : "ABC", "sub2" : null }
{ "_id" : 6, "name" : "Needa", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 3, "name" : "Irfan", "sub1" : "ABC", "sub2" : "XYZ" }
{ "_id" : 7, "name" : "Furqan", "sub1" : "ABC", "sub2" : "CSL" }
> db.collection.find().sort({name:-1}).skip(4)
{ "_id" : 4, "name" : "Aziz", "sub1" : "ABC", "sub2" : "CSL" }
{ "_id" : 2, "name" : "Asma", "sub1" : "ABC", "sub2" : "XYZ" }
{ "_id" : 5, "name" : "Abuzar", "sub1" : "ABC", "sub2" : "CSL" }
```

**LAST 2 AND 3 RECORDS**

```
> db.collection.find().skip(db.collection.count()-2)

{ "_id" : 6, "name" : "Needa", "sub1" : "ABC", "sub2" : "CSL" }

{ "_id" : 7, "name" : "Furqan", "sub1" : "ABC", "sub2" : "CSL" }

> db.collection.find().skip(db.collection.count()-3)

{ "_id" : 5, "name" : "Abuzar", "sub1" : "ABC", "sub2" : "CSL" }

{ "_id" : 6, "name" : "Needa", "sub1" : "ABC", "sub2" : "CSL" }
```

**ARRAYS**

```
> db.food.insert({_id:1,fruits:['apple']});

WriteResult({ "nInserted" : 1 })

> db.food.insert({_id:2,fruits:['apple','banana']});

WriteResult({ "nInserted" : 1 })

> db.food.insert({_id:3,fruits:['apple','banana','pineApple']});

WriteResult({ "nInserted" : 1 })

>
db.food.insert({_id:4,fruits:['apple','banana','pineApple','Guava']}
);

WriteResult({ "nInserted" : 1 })

> db.food.find()

{ "_id" : 1, "fruits" : [ "apple" ] }

{ "_id" : 2, "fruits" : [ "apple", "banana" ] }

{ "_id" : 3, "fruits" : [ "apple", "banana", "pineApple" ] }

{ "_id" : 4, "fruits" : [ "apple", "banana", "pineApple", "Guava" ]
}

> db.food.find({fruits:"Guava"})

{ "_id" : 4, "fruits" : [ "apple", "banana", "pineApple", "Guava" ]
}

> db.food.find({'fruits.3':"Guava"})

{ "_id" : 4, "fruits" : [ "apple", "banana", "pineApple", "Guava" ]
}
```

**SIZE OF ARRAY**

```
> db.food.find({'fruits':{$size:1}})

{ "_id" : 1, "fruits" : [ "apple" ] }
```

**SLICE**

```
> db.food.find({_id:4},{'fruits':{$slice:2}})

{ "_id" : 4, "fruits" : [ "apple", "banana" ] }
```

**UPDATE INDEX VALUE IN ARRAY**

```
> db.food.update({_id:1},{$set:{'fruits.0':'peach'}});
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.food.find()
{ "_id" : 1, "fruits" : [ "peach" ] }
{ "_id" : 2, "fruits" : [ "apple", "banana" ] }
{ "_id" : 3, "fruits" : [ "apple", "banana", "pineApple" ] }
{ "_id" : 4, "fruits" : [ "apple", "banana", "pineApple", "Guava" ]
}
```