

ASSIGNMENT 3 – MongoDB (2)

TRAINEE NAME: Swathi Baskaran

Atomicity

```
tempDB> db.tempCollection.insertMany([{_id: 0, name: "Swathi"}, {_id: 1, name: "Ananya"},
{ _id: 2, name: "Charanya"}])
{ acknowledged: true, insertedIds: { '0': 0, '1': 1, '2': 2 } }
tempDB> db.tempCollection.find()
[
  { _id: 0, name: 'Swathi' },
  { _id: 1, name: 'Ananya' },
  { _id: 2, name: 'Charanya' }
]
tempDB> db.tempCollection.insertOne({_id: 0, name: "Preethi"})
MongoServerError: E11000 duplicate key error collection: tempDB.tempCollection index: _id_
dup key: { _id: 0 }
tempDB> db.tempCollection.insertOne({_id: 0, name: "Swathi"})
MongoServerError: E11000 duplicate key error collection: tempDB.tempCollection index: _id_
dup key: { _id: 0 }
```

Transaction

```
tempDB> db.tempCollection.insertMany([{name: "Swathi", age: 22}, {name: "Gayatri", age: 24},
{name: "Preethi", age: 22}])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('687f917a4e25b31ae4cb0cf7'),
    '1': ObjectId('687f917a4e25b31ae4cb0cf8'),
    '2': ObjectId('687f917a4e25b31ae4cb0cf9')
  }
}
tempDB> db.tempCollection.find()
[
  {
    _id: ObjectId('687f917a4e25b31ae4cb0cf7'),
    name: 'Swathi',
    age: 22
  },
  {
    _id: ObjectId('687f917a4e25b31ae4cb0cf8'),
    name: 'Gayatri',
    age: 24
  },
  {
    _id: ObjectId('687f917a4e25b31ae4cb0cf9'),
    name: 'Preethi',
    age: 22
  }
]
```

```
tempDB> db.tempCollection.updateOne({name: "Gayatri"}, {$inc: {age: 1}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
tempDB> db.tempCollection.updateOne({name: "Gayatri"}, {$inc: {age: 1}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
tempDB> db.tempCollection.find()
[
  {
    _id: ObjectId('687f917a4e25b31ae4cb0cf7'),
    name: 'Swathi',
    age: 22
  },
  {
    _id: ObjectId('687f917a4e25b31ae4cb0cf8'),
    name: 'Gayatri',
    age: 26
  },
  {
    _id: ObjectId('687f917a4e25b31ae4cb0cf9'),
    name: 'Preethi',
    age: 22
  }
]
```

Projection

```
tempDB> db.Sports.find({}, {name: 1})
[
  { _id: ObjectId('687f583d4e25b31ae4cb0ced'), name: 'Badminton' },
  { _id: ObjectId('687f583d4e25b31ae4cb0cee'), name: 'Cricket' },
  { _id: ObjectId('687f583d4e25b31ae4cb0cef'), name: 'Football' },
  { _id: ObjectId('687f583d4e25b31ae4cb0cf0'), name: 'Boxing' },
  { _id: ObjectId('687f583d4e25b31ae4cb0cf1'), name: 'Kabaddi' }
]
```

Inclusion of specific fields

```
tempDB> db.tempCollection.find({}, {name: 1, _id: 0})
[ { name: 'Swathi' }, { name: 'Gayatri' }, { name: 'Preethi' } ]
```

Inclusion of specific fields with a condition

```
tempDB> db.tempCollection.find({name: "Swathi"}, {name: 1, age: 1, _id: 0}).pretty()  
[ { name: 'Swathi', age: 22 } ]
```

Using Pretty Function

```
tempDB> db.Sports.find().pretty()  
[  
  {  
    _id: ObjectId('687f583d4e25b31ae4cb0ced'),  
    name: 'Badminton',  
    numberOfPlayers: 1  
  },  
  {  
    _id: ObjectId('687f583d4e25b31ae4cb0cef'),  
    name: 'Football',  
    numberOfPlayers: 11  
  },  
  {  
    _id: ObjectId('687f583d4e25b31ae4cb0cf0'),  
    name: 'Boxing',  
    numberOfPlayers: 1  
  },  
  {  
    _id: ObjectId('687f583d4e25b31ae4cb0cf1'),  
    name: 'Kabaddi',  
    numberOfPlayers: 7  
  },  
  {  
    _id: ObjectId('687f68924e25b31ae4cb0cf2'),  
    name: 'Cricket',  
    numberOfPlayers: 11,  
    teamSplitUp: { wicket_keeper: 1, batsmen: 6, bowlers: 4, all_rounders: 3 }  
  }  
]
```

Embedded Documents:

1. Insertion:

```
tempDB> db.Sports.insertOne({name: "Cricket", numberOfPlayers: 11, teamSplitUp: {wicket_keeper: 1, batsmen: 6, bowlers: 4, all_rounders: 3}})
{
  acknowledged: true,
  insertedId: ObjectId('687f68924e25b31ae4cb0cf2')
}
tempDB> db.Sports.find()
[
  {
    _id: ObjectId('687f583d4e25b31ae4cb0ced'),
    name: 'Badminton',
    numberOfPlayers: 1
  },
  {
    _id: ObjectId('687f583d4e25b31ae4cb0cef'),
    name: 'Football',
    numberOfPlayers: 11
  },
  {
    _id: ObjectId('687f583d4e25b31ae4cb0cf0'),
    name: 'Boxing',
    numberOfPlayers: 1
  },
  {
    _id: ObjectId('687f583d4e25b31ae4cb0cf1'),
    name: 'Kabaddi',
    numberOfPlayers: 7
  },
  {
    _id: ObjectId('687f68924e25b31ae4cb0cf2'),
    name: 'Cricket',
    numberOfPlayers: 11,
    teamSplitUp: { wicket_keeper: 1, batsmen: 6, bowlers: 4, all_rounders: 3 }
  }
]
```

2. Reading data

```
tempDB> db.Sports.find({"teamSplitUp.wicket_keeper": 1})
[
  {
    _id: ObjectId('687f68924e25b31ae4cb0cf2'),
    name: 'Cricket',
    numberOfPlayers: 11,
    teamSplitUp: { wicket_keeper: 1, batsmen: 6, bowlers: 4, all_rounders: 3 }
  }
]
```

3. Updation of Data

```
tempDB> db.Sports.updateOne({name: "Cricket"}, {$set: {"teamSplitUp.all_rounder": 2}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
tempDB> db.Sports.find()
[
  {
    _id: ObjectId('687f583d4e25b31ae4cb0ced'),
    name: 'Badminton',
    numberOfPlayers: 1
  },
  {
    _id: ObjectId('687f583d4e25b31ae4cb0cef'),
    name: 'Football',
    numberOfPlayers: 11
  },
  {
    _id: ObjectId('687f583d4e25b31ae4cb0cf0'),
    name: 'Boxing',
    numberOfPlayers: 1
  },
  {
    _id: ObjectId('687f583d4e25b31ae4cb0cf1'),
    name: 'Kabaddi',
    numberOfPlayers: 7
  },
  {
    _id: ObjectId('687f68924e25b31ae4cb0cf2'),
    name: 'Cricket',
    numberOfPlayers: 11,
    teamSplitUp: { wicket_keeper: 1, batsmen: 6, bowlers: 4, all_rounder: 2 }
  }
]
```

4. Deletion of Data

```
tempDB> db.Sports.updateOne({name: "Cricket"}, {$unset: {"teamSplitUp.all_rounder": ""}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
tempDB> db.Sports.find()
[
  {
    _id: ObjectId('687f583d4e25b31ae4cb0ced'),
    name: 'Badminton',
    numberOfPlayers: 1
  },
  {
    _id: ObjectId('687f583d4e25b31ae4cb0cef'),
    name: 'Football',
    numberOfPlayers: 11
  },
  {
    _id: ObjectId('687f583d4e25b31ae4cb0cf0'),
    name: 'Boxing',
    numberOfPlayers: 1
  },
  {
    _id: ObjectId('687f583d4e25b31ae4cb0cf1'),
    name: 'Kabaddi',
    numberOfPlayers: 7
  },
  {
    _id: ObjectId('687f68924e25b31ae4cb0cf2'),
    name: 'Cricket',
    numberOfPlayers: 11,
    teamSplitUp: { wicket_keeper: 1, batsmen: 6, bowlers: 4 }
  }
]
```

Arrays

1. Insertion of data

```
tempDB> db.createCollection("students")
{ ok: 1 }
tempDB> db.students.insertOne({name: "Swathi", subjects: ["Mathematics", "Science", "Social Science"]})
{
  acknowledged: true,
  insertedId: ObjectId('687f78254e25b31ae4cb0cf3')
}
```

2. Bulk Insertion of data

```
tempDB> db.students.insertMany([
  {name: "Subash", subjects: ["Mathematics", "Science", "Social Science", "English", "Tamil"], marks: [78, 45, 56, 34, 67]},
  {name: "Vinod", subjects: ["Mathematics", "Science", "Social Science", "English", "Tamil"], marks: [56, 75, 36, 88, 97]},
  {name: "Venkat", subjects: ["Mathematics", "Science", "Social Science", "English", "Tamil"], marks: [79, 58, 94, 84, 90]}
])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('687f89554e25b31ae4cb0cf4'),
    '1': ObjectId('687f89554e25b31ae4cb0cf5'),
    '2': ObjectId('687f89554e25b31ae4cb0cf6')
  }
}
```

3. Reading data with a condition specified

```
tempDB> db.students.find({subjects: "Mathematics"})
[
  {
    _id: ObjectId('687f78254e25b31ae4cb0cf3'),
    name: 'Swathi',
    subjects: [ 'Mathematics', 'Science', 'Social Science' ],
    marks: [ 98, 92, 96 ]
  }
]
```

4. Update Operation using Push (Single value)

```
tempDB> db.students.updateOne({subjects: "Mathematics"}, {$push: {subjects: "English"}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
tempDB> db.students.find()
[
  {
    _id: ObjectId('687f78254e25b31ae4cb0cf3'),
    name: 'Swathi',
    subjects: [ 'Mathematics', 'Science', 'Social Science', 'English' ],
    marks: [ 98, 92, 96 ]
  }
]
```

5. Update Operation using Push (Multiple values)

```
tempDB> db.students.updateOne({name: "Swathi"}, {$push: {subjects: {$each: ["English", "Tamil"]}}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
tempDB> db.students.updateOne({name: "Swathi"}, {$push: {marks: {$each: [89, 99]}}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
tempDB> db.students.find()
[
  {
    _id: ObjectId('687f78254e25b31ae4cb0cf3'),
    name: 'Swathi',
    subjects: [ 'Mathematics', 'Science', 'Social Science', 'English', 'Tamil' ],
    marks: [ 98, 92, 96, 89, 99 ]
  }
]
```

6. Update Operation

```
tempDB> db.students.updateOne({name: "Venkat", subjects: "Science"}, {$set: {"subjects.$": "Science"}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
```

7. Delete Operation using Pull (Single value)

```
tempDB> db.students.updateOne({name: "Swathi"}, {$pull: {subjects: "English"}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
tempDB> db.students.find()
[
  {
    _id: ObjectId('687f78254e25b31ae4cb0cf3'),
    name: 'Swathi',
    subjects: [ 'Mathematics', 'Science', 'Social Science' ],
    marks: [ 98, 92, 96 ]
  }
]
```

8. Delete Operation using Pull (Multiple values)

```
tempDB> db.students.updateOne({subjects: "Mathematis"}, {$pull: {subjects: {$in: ["English", "Tamil"]}}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 0,
  modifiedCount: 0,
  upsertedCount: 0
}
tempDB> db.students.find()
[
  {
    _id: ObjectId('687f78254e25b31ae4cb0cf3'),
    name: 'Swathi',
    subjects: [ 'Mathematics', 'Science', 'Social Science', 'English', 'Tamil' ],
    marks: [ 98, 92, 96, 89, 99 ]
  }
]
```

9. Slicing Operation without using aggregation

```
tempDB> db.students.updateMany({}, [{ $set: { subjects: { $slice: [ "$subjects", 0, 3 ] }, marks: { $slice: [ "$marks", 0, 3 ] } } }])
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 4,
  modifiedCount: 3,
  upsertedCount: 0
}
tempDB> db.students.find()
[
  {
    _id: ObjectId('687f78254e25b31ae4cb0cf3'),
    name: 'Swathi',
    subjects: [ 'Mathematics', 'Science', 'Social Science' ],
    marks: [ 98, 92, 96 ]
  },
  {
    _id: ObjectId('687f89554e25b31ae4cb0cf4'),
    name: 'Subash',
    subjects: [ 'Mathematics', 'Science', 'Social Science' ],
    marks: [ 78, 45, 56 ]
  },
  {
    _id: ObjectId('687f89554e25b31ae4cb0cf5'),
    name: 'Vinod',
    subjects: [ 'Mathematics', 'Science', 'Social Science' ],
    marks: [ 56, 75, 36 ]
  },
  {
    _id: ObjectId('687f89554e25b31ae4cb0cf6'),
    name: 'Venkat',
    subjects: [ 'Mathematics', 'Science', 'Social Science' ],
    marks: [ 79, 58, 94 ]
  }
]
```


10. Insertion of Embedded Documents in Arrays:

```
tempDB> db.Sports.updateOne({name: "Cricket"}, {$set: {players: [{name: "Shubman Gill", position: "all_rounder"}, {name: "Rishabh Pant", position: "wicket_keeper"}, {name: "Yashasvi Jaiswal", position: "Batsman"}, {name: "K L Rahul", position: "Batsman"}, {name: "Sai Sudharshan", position: "Batsman"}, {name: "Ravindra Jadeja", position: "all_rounder"}, {name: "Washington Sundar", position: "all_rounder"}, {name: "Kuldeep Yadav", position: "Bowler"}, {name: "Mohammed Siraj", position: "Bowler"}, {name: "Jasprit Bumrah", position: "Bowler"}, {name: "Anshul Kamboj", position: "Bowler"}]}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
```

```
tempDB> db.Sports.find()
[
  {
    _id: ObjectId('687f583d4e25b31ae4cb0ced'),
    name: 'Badminton',
    numberOfPlayers: 1
  },
  {
    _id: ObjectId('687f583d4e25b31ae4cb0cef'),
    name: 'Football',
    numberOfPlayers: 11
  },
  {
    _id: ObjectId('687f583d4e25b31ae4cb0cf0'),
    name: 'Boxing',
    numberOfPlayers: 1
  },
  {
    _id: ObjectId('687f583d4e25b31ae4cb0cf1'),
    name: 'Kabaddi',
    numberOfPlayers: 7
  },
  {
    _id: ObjectId('687f68924e25b31ae4cb0cf2'),
    name: 'Cricket',
    numberOfPlayers: 11,
    teamSplitUp: { wicket_keeper: 1, batsmen: 6, bowlers: 4, all_rounder: 2 },
    players: [
      { name: 'Shubman Gill', position: 'all_rounder' },
      { name: 'Rishabh Pant', position: 'wicket_keeper' },
      { name: 'Yashasvi Jaiswal', position: 'Batsman' },
      { name: 'K L Rahul', position: 'Batsman' },
      { name: 'Sai Sudharshan', position: 'Batsman' },
      { name: 'Ravindra Jadeja', position: 'all_rounder' },
      { name: 'Washington Sundar', position: 'all_rounder' },
      { name: 'Kuldeep Yadav', position: 'Bowler' },
      { name: 'Mohammed Siraj', position: 'Bowler' },
      { name: 'Jasprit Bumrah', position: 'Bowler' },
      { name: 'Anshul Kamboj', position: 'Bowler' }
    ]
  }
]
```

11. Updation of Embedded Array Elements

```
tempDB> db.Sports.updateOne({name: "Cricket", "players.name": "K L Rahul"}, {$set: {"players.$.position" : "all_rounder"}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
```