

Assignment No. 2(b)

Title: MongoDB – Aggregation and Indexing: Design and Develop MongoDB Queries using aggregation and indexing with suitable example using MongoDB

```
gescoe@gescoe-OptiPlex-3010:~$ mongo
MongoDB shell version: 3.0.15
connecting to: test
test> use EmpployeeDB
switched to db EmpployeeDB
EmpplyeeDB>
db.employee.insert({_id:1,name:"steve",age:23,role:"Manager",project:"Nirvana",salary:40000});
{ acknowledged: true, insertedIds: { '0': 1 } }
EmpplyeeDB>
db.employee.insert({_id:2,name:"Tony",age:28,role:"Developer",project:"Alexa",salary:35000},tech: [
'Java', 'Hibernate' ]);
{ acknowledged: true, insertedIds: { '0': 2 } }
EmpplyeeDB>
db.employee.insert({_id:3,name:"Natasha",age:30,role:"Designer",project:"Nirvana",salary:32000},tech:
[ 'React', 'Bootstrap' ]);
{ acknowledged: true, insertedIds: { '0': 3 } }
EmpplyeeDB> db.employee.insert({_id:4,name:"Groot",age:21,role:"Sales
Manager",project:"Cortana",salary:28000});
{ acknowledged: true, insertedIds: { '0': 4 } }
EmpplyeeDB> db.employee.insert({_id:5,name:"Bruce",age:32,role:"Marketing
Managar",project:"Amazon Echo",salary:38000});
{ acknowledged: true, insertedIds: { '0': 5 } }
EmpplyeeDB>
db.employee.insert({_id:6,name:"Peter",age:20,role:"Designer",project:"Alexa",salary:25000});
{ acknowledged: true, insertedIds: { '0': 6 } }
EmpplyeeDB>
db.employee.insert({_id:7,name:"MJ",age:20,role:"Developer",project:"Siri",salary:29000});
{ acknowledged: true, insertedIds: { '0': 7 } }

EmpplyeeDB> db.employee.find().pretty()
[
  {
    _id: 1,
    name: 'steve',
    age: 23,
    role: 'Manager',
    project: 'Nirvana',
    salary: 40000
  },
  {
    _id: 2,
    name: 'Tony',
```

```
    age: 28,
    role: 'Developer',
    project: 'Alexa',
    salary: 35000,
    tech: [ 'Java', 'Hibernate' ]
  },
  {
    _id: 3,
    name: 'Natasha',
    age: 30,
    role: 'Designer',
    project: 'Nirvana',
    salary: 32000,
    tech: [ 'React', 'Bootstrap' ]
  },
  {
    _id: 4,
    name: 'Groot',
    age: 21,
    role: 'Sales Manager',
    project: 'Cortana',
    salary: 28000
  },
  {
    _id: 5,
    name: 'Bruce',
    age: 32,
    role: 'Marketing Managar',
    project: 'Amazon Echo',
    salary: 38000
  },
  {
    _id: 6,
    name: 'Peter',
    age: 20,
    role: 'Designer',
    project: 'Alexa',
    salary: 25000
  },
  {
    _id: 7,
    name: 'MJ',
    age: 20,
    role: 'Developer',
    project: 'Siri',
    salary: 29000
  }
]
```

*****Aggregation*****

```
EmplyeeDB> db.employee.aggregate([{$match:{project:"Alexa"}},{$count:"People Working on Project:Alexa"}])
[ { 'People Working on Project:Alexa': 2 } ]
```

```
EmplyeeDB>
db.employee.aggregate([{$group:{_id:"$role",totalPayment:{$sum:1},min_age:{$min:"$age"}}}])
[
  { _id: 'Marketing Managar', totalPayment: 1, min_age: 32 },
  { _id: 'Sales Manager', totalPayment: 1, min_age: 21 },
  { _id: 'Developer', totalPayment: 2, min_age: 20 },
  { _id: 'Manager', totalPayment: 1, min_age: 23 },
  { _id: 'Designer', totalPayment: 2, min_age: 20 }
]
```

```
EmplyeeDB>
db.employee.aggregate([{$group:{_id:"$role",totalPayment:{$sum:1},max_age:{$max:"$age"}}}])
[
  { _id: 'Sales Manager', totalPayment: 1, max_age: 21 },
  { _id: 'Marketing Managar', totalPayment: 1, max_age: 32 },
  { _id: 'Manager', totalPayment: 1, max_age: 23 },
  { _id: 'Developer', totalPayment: 2, max_age: 28 },
  { _id: 'Designer', totalPayment: 2, max_age: 30 }
]
```

```
EmplyeeDB> db.employee.aggregate([{$group:{_id:"$role",avg_Salary:{$avg:"$salary"}}}])
[
  { _id: 'Sales Manager', avg_Salary: 28000 },
  { _id: 'Marketing Managar', avg_Salary: 38000 },
  { _id: 'Manager', avg_Salary: 40000 },
  { _id: 'Developer', avg_Salary: 32000 },
  { _id: 'Designer', avg_Salary: 28500 }
]
```

```
EmplyeeDB> db.employee.aggregate([{$match:{age:{$gt:30}}}])
[
  {
    _id: 5,
    name: 'Bruce',
    age: 32,
    role: 'Marketing Managar',
    project: 'Amazon Echo',
    salary: 38000
  }
]
```

```
EmplyeeDB> db.employee.aggregate([{$sort:{name:1}}])
[
```

```
{
  _id: 5,
  name: 'Bruce',
  age: 32,
  role: 'Marketing Managar',
  project: 'Amazon Echo',
  salary: 38000
},
{
  _id: 4,
  name: 'Groot',
  age: 21,
  role: 'Sales Manager',
  project: 'Cortana',
  salary: 28000
},
{
  _id: 7,
  name: 'MJ',
  age: 20,
  role: 'Developer',
  project: 'Siri',
  salary: 29000
},
{
  _id: 3,
  name: 'Natasha',
  age: 30,
  role: 'Designer',
  project: 'Nirvana',
  salary: 32000,
  tech: [ 'React', 'Bootstrap' ]
},
{
  _id: 6,
  name: 'Peter',
  age: 20,
  role: 'Designer',
  project: 'Alexa',
  salary: 25000
},
{
  _id: 2,
  name: 'Tony',
  age: 28,
  role: 'Developer',
  project: 'Alexa',
  salary: 35000,
```

```
    tech: [ 'Java', 'Hibernate' ]
  },
  {
    _id: 1,
    name: 'steve',
    age: 23,
    role: 'Manager',
    project: 'Nirvana',
    salary: 40000
  }
]
```

EmployeeDB> db.employee.aggregate([{\$unwind:"\$tech"}])

```
[
  {
    _id: 2,
    name: 'Tony',
    age: 28,
    role: 'Developer',
    project: 'Alexa',
    salary: 35000,
    tech: 'Java'
  },
  {
    _id: 2,
    name: 'Tony',
    age: 28,
    role: 'Developer',
    project: 'Alexa',
    salary: 35000,
    tech: 'Hibernate'
  },
  {
    _id: 3,
    name: 'Natasha',
    age: 30,
    role: 'Designer',
    project: 'Nirvana',
    salary: 32000,
    tech: 'React'
  },
  {
    _id: 3,
    name: 'Natasha',
    age: 30,
    role: 'Designer',
    project: 'Nirvana',
    salary: 32000,

```

```
    tech: 'Bootstrap'
  }
]
```

*****Indexing*****

```
EmplyeeDB> db.employee.createIndex({"age":1})
age_1
```

```
EmplyeeDB> db.employee.createIndex({"age":1,"salary":1})
age_1_salary_1
```

```
EmplyeeDB> db.employee.getIndexes()
[
  { v: 2, key: { _id: 1 }, name: '_id_' },
  { v: 2, key: { age: 1 }, name: 'age_1' },
  { v: 2, key: { age: 1, salary: 1 }, name: 'age_1_salary_1' }
]
```

```
EmplyeeDB> db.employee.dropIndex({"age":1})
{ nIndexesWas: 3, ok: 1 }
```

```
EmplyeeDB> db.employee.dropIndex({"age":1,"salary":1})
{ nIndexesWas: 2, ok: 1 }
```

```
EmplyeeDB> db.employee.getIndexes()
[ { v: 2, key: { _id: 1 }, name: '_id_' } ]
```

```
EmplyeeDB>
```
