

MONGODB_Assignment

Create database LMS_db and insert 1000 records in collection named student.

```
student> show dbs
admin  40.00 KiB
config 72.00 KiB
local  72.00 KiB
student> use LMS_db
switched to db LMS_db
LMS_db> db.createCollection("student")
{ ok: 1 }
LMS_db> db.student.insert([{"_id":1,"first_name":"Lief","last_name":"Roony","email":"lroony@paypal.com","gender":"Male","ip_address":"11.243.68.218"},
... [{"_id":2,"first_name":"Chancey","last_name":"Mechell","email":"cmecchell1@lmdo.com","gender":"Male","ip_address":"144.76.198.65"},
... [{"_id":3,"first_name":"Nils","last_name":"Petr","email":"npetr2@postorous.com","gender":"Male","ip_address":"167.176.72.13"},
... [{"_id":4,"first_name":"Carolyn","last_name":"Meecher","email":"cmeecher3@geocities.com","gender":"Female","ip_address":"120.157.42.111"},
... [{"_id":5,"first_name":"Ed","last_name":"MacDunleavy","email":"emacdunleavy@google.fr","gender":"Genderqueer","ip_address":"99.7.92.136"},
... [{"_id":6,"first_name":"Upton","last_name":"Richfield","email":"urichfield5@bandcamp.com","gender":"Male","ip_address":"36.205.68.239"},
... [{"_id":7,"first_name":"Dwight","last_name":"Snare","email":"dsnare@latimes.com","gender":"Male","ip_address":"211.23.187.157"},
... [{"_id":8,"first_name":"Cassandra","last_name":"Gaddie","email":"cgaddie7@freewebs.com","gender":"Female","ip_address":"196.141.58.109"},
... [{"_id":9,"first_name":"Gates","last_name":"Jaher","email":"rgjaher@webs.com","gender":"Female","ip_address":"43.196.217.187"},
... [{"_id":10,"first_name":"Alvinia","last_name":"Beinlnck","email":"abeinlnck@ebay.com","gender":"Polygender","ip_address":"201.247.124.210"},
... [{"_id":11,"first_name":"Haley","last_name":"Gavigan","email":"hgavigan@wikispaces.com","gender":"Male","ip_address":"114.84.124.47"},
... [{"_id":12,"first_name":"Nonte","last_name":"Gallehawk","email":"ngallehawk@cam.ac.uk","gender":"Female","ip_address":"149.83.224.148"},
... [{"_id":13,"first_name":"Ricky","last_name":"Redpath","email":"rredpath@grda.gov","gender":"Male","ip_address":"152.93.52.65"},
... [{"_id":14,"first_name":"Conchita","last_name":"Harce","email":"chardet@telegraph.co.uk","gender":"Female","ip_address":"76.66.19.65"},
... [{"_id":15,"first_name":"Esta","last_name":"Bellan","email":"ebellane@dailynews.com","gender":"Female","ip_address":"212.99.75.36"},
... [{"_id":16,"first_name":"Aerlela","last_name":"Mohring","email":"amohring@mapy.cz","gender":"Female","ip_address":"114.74.61.225"},
... [{"_id":17,"first_name":"Alexandra","last_name":"Tremble","email":"atremble@51.jp","gender":"Female","ip_address":"42.117.200.164"},
... [{"_id":18,"first_name":"Oliviero","last_name":"Mussett","email":"omussett@merriam-webster.com","gender":"Male","ip_address":"53.14.78.158"},
... [{"_id":19,"first_name":"Rockley","last_name":"Bedborough","email":"rbedborough@deviantart.com","gender":"Male","ip_address":"2.160.246.50"},
... [{"_id":20,"first_name":"Robinet","last_name":"Neward","email":"rneward@blogspot.com","gender":"Genderfluid","ip_address":"56.227.206.67"},
... [{"_id":21,"first_name":"Maxin","last_name":"Elphick","email":"melphick@ezinearticles.com","gender":"Male","ip_address":"32.88.148.77"},
... [{"_id":22,"first_name":"Pauletta","last_name":"Illidge","email":"pillidge@gartisteer.com","gender":"Female","ip_address":"9.66.197.229"},
... [{"_id":23,"first_name":"Ramonda","last_name":"Wille","email":"rwille@buzzfeed.com","gender":"Bigender","ip_address":"129.120.51.107"},
... [{"_id":24,"first_name":"Dimitry","last_name":"Sheridan","email":"dsheridan@people.com.cn","gender":"Male","ip_address":"18.284.159.15"},
... [{"_id":25,"first_name":"Zarlan","last_name":"Ezzell","email":"zezzell@alexa.com","gender":"Female","ip_address":"187.29.111.155"},
... [{"_id":26,"first_name":"Pearce","last_name":"Edginton","email":"pedginton@sohu.com","gender":"Male","ip_address":"119.232.206.64"},
... [{"_id":27,"first_name":"Alberto","last_name":"Di Bartolommeo","email":"adibartolommeo@1688.com","gender":"Male","ip_address":"101.24.149.100"},
... [{"_id":28,"first_name":"Valli","last_name":"Hanson","email":"vhanson@nytimes.com","gender":"Male","ip_address":"105.4.251.162"},
... [{"_id":29,"first_name":"Hephzibah","last_name":"Copello","email":"hcopello@1688.com","gender":"Female","ip_address":"79.78.46.167"},
... [{"_id":30,"first_name":"Winnt","last_name":"Bywater","email":"bbywater@ebay.com","gender":"Female","ip_address":"176.133.84.24"},
... [{"_id":31,"first_name":"Brenn","last_name":"Gasticker","email":"bgasticker@ucll.com","gender":"Agender","ip_address":"63.188.186.170"},
... [{"_id":32,"first_name":"Valli","last_name":"Cody","email":"jcodyv@privacy.gov.au","gender":"Female","ip_address":"51.210.202.240"},
... [{"_id":33,"first_name":"Zarla","last_name":"Garth","email":"sgarth@newsline.com","gender":"Genderfluid","ip_address":"233.77.125.24"},
... [{"_id":34,"first_name":"Courtney","last_name":"Bransgrove","email":"cbransgrove@behance.net","gender":"Female","ip_address":"73.241.43.30"},
... [{"_id":35,"first_name":"Ezechiel","last_name":"Cabell","email":"ecabell@independent.co.uk","gender":"Male","ip_address":"95.224.160.83"},
... [{"_id":36,"first_name":"Pamora","last_name":"Averall","email":"paverall@answers.com","gender":"Female","ip_address":"69.59.42.238"},
... [{"_id":37,"first_name":"Bernarr","last_name":"O'Crigan","email":"hocrigan@geocities.com","gender":"Male","ip_address":"207.48.178.86"},
... [{"_id":38,"first_name":"Lari","last_name":"Dack","email":"ldack1@google.lt","gender":"Female","ip_address":"172.161.250.104"},
... [{"_id":39,"first_name":"Doro","last_name":"Whyler","email":"dwhyler12@feng.com","gender":"Female","ip_address":"152.110.20.50"},
... [{"_id":40,"first_name":"Duckey","last_name":"Hufnagel","email":"dhufnagel@1688.com","gender":"Male","ip_address":"238.86.0.84"}]
```

```
Terminal
948: ObjectId("6421740ca8cb1159df087edc"),
949: ObjectId("6421740ca8cb1159df087edd"),
950: ObjectId("6421740ca8cb1159df087ede"),
951: ObjectId("6421740ca8cb1159df087edf"),
952: ObjectId("6421740ca8cb1159df087ee0"),
953: ObjectId("6421740ca8cb1159df087ee1"),
954: ObjectId("6421740ca8cb1159df087ee2"),
955: ObjectId("6421740ca8cb1159df087ee3"),
956: ObjectId("6421740ca8cb1159df087ee4"),
957: ObjectId("6421740ca8cb1159df087ee5"),
958: ObjectId("6421740ca8cb1159df087ee6"),
959: ObjectId("6421740ca8cb1159df087ee7"),
960: ObjectId("6421740ca8cb1159df087ee8"),
961: ObjectId("6421740ca8cb1159df087ee9"),
962: ObjectId("6421740ca8cb1159df087ef0"),
963: ObjectId("6421740ca8cb1159df087ef1"),
964: ObjectId("6421740ca8cb1159df087ef2"),
965: ObjectId("6421740ca8cb1159df087ef3"),
966: ObjectId("6421740ca8cb1159df087ef4"),
967: ObjectId("6421740ca8cb1159df087ef5"),
968: ObjectId("6421740ca8cb1159df087ef6"),
969: ObjectId("6421740ca8cb1159df087ef7"),
970: ObjectId("6421740ca8cb1159df087ef8"),
971: ObjectId("6421740ca8cb1159df087ef9"),
972: ObjectId("6421740ca8cb1159df087efa"),
973: ObjectId("6421740ca8cb1159df087efb"),
974: ObjectId("6421740ca8cb1159df087efc"),
975: ObjectId("6421740ca8cb1159df087efd"),
976: ObjectId("6421740ca8cb1159df087efe"),
977: ObjectId("6421740ca8cb1159df087eff"),
978: ObjectId("6421740ca8cb1159df087f00"),
979: ObjectId("6421740ca8cb1159df087f01"),
980: ObjectId("6421740ca8cb1159df087f02"),
981: ObjectId("6421740ca8cb1159df087f03"),
982: ObjectId("6421740ca8cb1159df087f04"),
983: ObjectId("6421740ca8cb1159df087f05"),
984: ObjectId("6421740ca8cb1159df087f06"),
985: ObjectId("6421740ca8cb1159df087f07"),
986: ObjectId("6421740ca8cb1159df087f08"),
987: ObjectId("6421740ca8cb1159df087f09"),
988: ObjectId("6421740ca8cb1159df087f0a"),
989: ObjectId("6421740ca8cb1159df087f0b"),
990: ObjectId("6421740ca8cb1159df087f0c"),
991: ObjectId("6421740ca8cb1159df087f0d"),
992: ObjectId("6421740ca8cb1159df087f0e"),
993: ObjectId("6421740ca8cb1159df087f0f"),
994: ObjectId("6421740ca8cb1159df087f10"),
995: ObjectId("6421740ca8cb1159df087f11"),
996: ObjectId("6421740ca8cb1159df087f12"),
997: ObjectId("6421740ca8cb1159df087f13"),
998: ObjectId("6421740ca8cb1159df087f14"),
999: ObjectId("6421740ca8cb1159df087f15"),
1000: ObjectId("6421740ca8cb1159df087f16")
LMS_db>
```

1) Batch Create with minimum 100 records in MongoDB (create batch).

```

s  Terminal
mongosh mo

    _id: ObjectId("6421740ca8cb1159df087b3b"),
    id: 20,
    first_name: 'Robinet',
    last_name: 'Neward',
    email: 'rnewardj@blogspot.com',
    gender: 'Genderfluid',
    ip_address: '56.227.206.67'
  }
]
Type "it" for more
LMS_db> db.student.find().pretty()
[
  {
    _id: ObjectId("6421740ca8cb1159df087b28"),
    id: 1,
    first_name: 'Lief',
    last_name: 'Roony',
    email: 'lroony@paypal.com',
    gender: 'Male',
    ip_address: '11.243.68.218'
  },
  {
    _id: ObjectId("6421740ca8cb1159df087b29"),
    id: 2,
    first_name: 'Chancey',
    last_name: 'Mechell',
    email: 'cmechell1@jmdo.com',
    gender: 'Male',
    ip_address: '144.70.198.65'
  },
  {
    _id: ObjectId("6421740ca8cb1159df087b2a"),
    id: 3,
    first_name: 'Nils',
    last_name: 'Petr',
    email: 'npetr2@posterous.com',
    gender: 'Male',
    ip_address: '167.176.72.13'
  },
  {
    _id: ObjectId("6421740ca8cb1159df087b2b"),
    id: 4,
    first_name: 'Carolyn',
    last_name: 'Meecher',
    email: 'cmeecher3@geocities.com',
    gender: 'Female',
    ip_address: '120.157.42.111'
  },
  {
    _id: ObjectId("6421740ca8cb1159df087b2c"),
    id: 5,
    first_name: 'Ed',
    last_name: 'MacDunleavy',
    email: 'emacdunleavy4@google.fr',
    gender: 'Genderqueer',
    ip_address: '172.16.17.230'
  }
]

```

```
Terminal
mongosh mongod

LMS_db> db.student.updateMany({gender: 'Male'},{$set:{gender: 'M'}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 430,
  modifiedCount: 430,
  upsertedCount: 0
}
LMS_db> db.student.find()
[
  {
    _id: ObjectId("6421740ca8cb1159df087b28"),
    id: 1,
    first_name: 'Lief',
    last_name: 'Roony',
    email: 'lroony0@paypal.com',
    gender: 'M',
    ip_address: '11.243.68.218'
  },
  {
    _id: ObjectId("6421740ca8cb1159df087b29"),
    id: 2,
    first_name: 'Chancey',
    last_name: 'Mechell',
    email: 'cmeechell1@jindo.com',
    gender: 'M',
    ip_address: '144.70.198.65'
  },
  {
    _id: ObjectId("6421740ca8cb1159df087b2a"),
    id: 3,
    first_name: 'Nils',
    last_name: 'Petr',
    email: 'npetr2@posterous.com',
    gender: 'M',
    ip_address: '167.176.72.13'
  },
  {
    _id: ObjectId("6421740ca8cb1159df087b2b"),
    id: 4,
    first_name: 'Carolyn',
    last_name: 'Meecher',
    email: 'cmeecher3@geocities.com',
    gender: 'Female',
    ip_address: '120.157.42.111'
  },
  {
    _id: ObjectId("6421740ca8cb1159df087b2c"),
    id: 5,
    first_name: 'Ed',
    last_name: 'MacDunleavy',
    email: 'emacdunleavy4@google.fr',
    gender: 'genderqueer',
    ip_address: '99.7.92.138'
  }
]
```

3) Perform indexing on particular 3 fields in MongoDB.

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

```
LMS_db> db.student.getIndexes()
[ { v: 2, key: { _id: 1 }, name: '_id_' } ]
LMS_db> db.student.createIndexes([{"gender":1}, {"id":1}, {"first_name":1}])
[ 'gender_1', 'id_1', 'first_name_1' ]
LMS_db> db.student.getIndexes()
[
  { v: 2, key: { _id: 1 }, name: '_id_' },
  { v: 2, key: { gender: 1 }, name: 'gender_1' },
  { v: 2, key: { id: 1 }, name: 'id_1' },
  { v: 2, key: { first_name: 1 }, name: 'first_name_1' }
]
LMS_db> 
```

```
Terminal
mongosh mongodb://127.0.0.1:27017/?directConnection=true
ok: 1
}
LMS_db> db.student.explain("executionStats").find({gender:"Female",id:"21"})
MongoServerError: Enumeration value 'executionStats' for field 'explain.verbosity' is not a valid value.
LMS_db> db.student.explain("executionStats").find({gender:"Female",id:"20"})
{
  explainVersion: '1',
  queryPlanner: {
    namespace: 'LMS_db.student',
    indexFilterSet: false,
    parsedQuery: {
      '$and': [ { gender: { '$eq': 'Female' } }, { id: { '$eq': '20' } } ]
    },
    queryHash: 'BE9C4978',
    planCacheKey: 'BE9C4978',
    maxIndexedOrSolutionsReached: false,
    maxIndexedAndSolutionsReached: false,
    maxScansToExplodeReached: false,
    winningPlan: {
      stage: 'COLLSCAN',
      filter: {
        '$and': [ { gender: { '$eq': 'Female' } }, { id: { '$eq': '20' } } ]
      },
      direction: 'forward'
    },
    rejectedPlans: []
  },
  executionStats: {
    executionSuccess: true,
    nReturned: 0,
    executionTimeMillis: 0,
    totalKeysExamined: 0,
    totalDocsExamined: 1000,
    executionStages: {
      stage: 'COLLSCAN',
      filter: {
        '$and': [ { gender: { '$eq': 'Female' } }, { id: { '$eq': '20' } } ]
      },
      nReturned: 0,
      executionTimeMillisEstimate: 0,
      works: 1000,
      advanced: 0,
      needTime: 1001,
      needYield: 0,
      saveState: 1,
      restoreState: 1,
      isEOF: 1,
      direction: 'forward',
      docsExamined: 1000
    }
  },
  command: {
    find: 'student',
    filter: { gender: 'Female', id: '20' },
    '$db': 'LMS_db'
  }
}
```

```
Terminal
mon
},
executionStats: {
  executionSuccess: true,
  nReturned: 0,
  executionTimeMillis: 1,
  totalKeysExamined: 0,
  totalDocsExamined: 0,
  executionStages: {
    stage: 'FETCH',
    filter: { gender: { '$eq': 'Female' } },
    nReturned: 0,
    executionTimeMillisEstimate: 0,
    works: 2,
    advanced: 0,
    needTime: 0,
    needYield: 0,
    saveState: 0,
    restoreState: 0,
    isEOF: 1,
    docsExamined: 0,
    alreadyHasObj: 0,
    inputStage: {
      stage: 'IXSCAN',
      nReturned: 0,
      executionTimeMillisEstimate: 0,
      works: 1,
      advanced: 0,
      needTime: 0,
      needYield: 0,
      saveState: 0,
      restoreState: 0,
      isEOF: 1,
      keyPattern: { id: 1 },
      indexName: 'id_1',
      isMultiKey: false,
      multiKeyPaths: { id: [] },
      isUnique: false,
      isSparse: false,
      isPartial: false,
      indexVersion: 2,
      direction: 'forward',
      indexBounds: { id: [ '['20"', '20"'] ] },
      keysExamined: 0,
      seeks: 1,
      dupsTested: 0,
      dupsDropped: 0
    }
  }
},
command: {
  find: 'student',
  filter: { gender: 'Female', id: '20' },
  '$db': 'LMS_db'
},
serverInfo: {
  host: '5f-cpu-754'
```

Here using index we can say that time needed is reduced.

4) Find duplicates using aggregation in MongoDB

```
lms_db> db.student.aggregate([{"$group":{"_id":"$first_name", count:{$sum:1}}},{ "$match":{"_id":{"$ne":null},"count":{"$gt":1}}},{ "$project":{"name":"$_id","_id":0}}])
[
  { name: 'Dwight' }, { name: 'Kristel' },
  { name: 'Netti' }, { name: 'Adam' },
  { name: 'Bethina' }, { name: 'Carolyn' },
  { name: 'Amelie' }, { name: 'Robbert' },
  { name: 'Candy' }, { name: 'Terrijo' },
  { name: 'Ramonda' }, { name: 'Rande' },
  { name: 'Flin' }, { name: 'Stanwood' },
  { name: 'Gustavus' }, { name: 'Falito' },
  { name: 'Harmonie' }, { name: 'Holt' },
  { name: 'Dukey' }, { name: 'Dagny' }
]
Type "it" for more
lms_db> 
```