

# Indexes in MongoDB

## Indexes

Indexes support the efficient execution of queries in MongoDB. Without indexes, MongoDB must perform a *collection scan*, i.e. scan every document in a collection, to select those documents that match the query statement. If an appropriate index exists for a query, MongoDB can use the index to limit the number of documents it must inspect.

```
school> db.students.find({name: "Name2"}).explain("executionStats")
```

```
{
  explainVersion: '1',
  queryPlanner: {
    namespace: 'school.students',
    parsedQuery: { name: { '$eq': 'Name2' } },
    indexFilterSet: false,
    queryHash: 'F4DDDCDC',
    planCacheShapeHash: 'F4DDDCDC',
    planCacheKey: 'E45FBFA1',
    optimizationTimeMillis: 0,
    maxIndexedOrSolutionsReached: false,
    maxIndexedAndSolutionsReached: false,
    maxScansToExplodeReached: false,
    prunedSimilarIndexes: false,
    winningPlan: {
      isCached: false,
      stage: 'COLLSCAN',
      filter: { name: { '$eq': 'Name2' } },
      direction: 'forward'
    },
    rejectedPlans: []
  },
  executionStats: {
    executionSuccess: true,
    nReturned: 1,
    executionTimeMillis: 0,
    totalKeysExamined: 0,
    totalDocsExamined: 9,
    executionStages: {
      isCached: false,
      stage: 'COLLSCAN',
      filter: { name: { '$eq': 'Name2' } },

```

```

    nReturned: 1,
    executionTimeMillisEstimate: 0,
    works: 10,
    advanced: 1,
    needTime: 8,
    needYield: 0,
    saveState: 0,
    restoreState: 0,
    isEOF: 1,
    direction: 'forward',
    docsExamined: 9
  }
},
queryShapeHash:
'61EF2197747739FAB45926D45CAE6F1E8A07DC4847027B8CF1E4AFDF426D2B56',
Comm...

```

**docsExamined: 9** <- Meaning it has examined 9 documents(like linear search), If the search exceeds many documents.

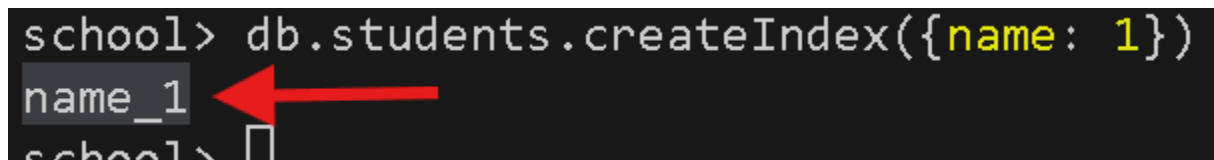
**We can speed up the lookup process by applying indexes.**

**To apply an index to the field:**

**Name: 1** <- for ascending order(a to z)

**Name: -1** <- for descending order(z to a)

**Name of the index:**



```

school> db.students.createIndex({name: 1})
name_1

```

```

school> db.students.find({name: "Name2"}).explain("executionStats")

```

```

{
  explainVersion: '1',
  queryPlanner: {
    namespace: 'school.students',
    parsedQuery: { name: { '$eq': 'Name2' } },
    indexFilterSet: false,
    queryHash: 'F4DDDCDC',
    planCacheShapeHash: 'F4DDDCDC',
    planCacheKey: '34C29116',
    optimizationTimeMillis: 0,
    maxIndexedOrSolutionsReached: false,
    maxIndexedAndSolutionsReached: false,
    maxScansToExplodeReached: false,

```

```

prunedSimilarIndexes: false,
winningPlan: {
  isCached: false,
  stage: 'FETCH',
  inputStage: {
    stage: 'IXSCAN',
    keyPattern: { name: 1 },
    indexName: 'name_1',
    isMultiKey: false,
    multiKeyPaths: { name: [] },
    isUnique: false,
    isSparse: false,
    isPartial: false,
    indexVersion: 2,
    direction: 'forward',
    indexBounds: { name: [ ["Name2", "Name2"] ] }
  }
},
rejectedPlans: []
},
executionStats: {
  executionSuccess: true,
  nReturned: 1,
  executionTimeMillis: 1,
  totalKeysExamined: 1,
  totalDocsExamined: 1,
  executionStages: {
    isCached: false,
    stage: 'FETCH',
    nReturned: 1,
    executionTimeMillisEstimate: 0,
    works: 2,
    advanced: 1,
    needTime: 0,
    needYield: 0,
    saveState: 0,
    restoreState: 0,
    isEOF: 1,
    docsExamined: 1,
    alreadyHasObj: 0,
    inputStage: {

```

**Now the document examined is one.(like docsExamined: 1).  
Which is lot less time consuming then examining 9 documents.**

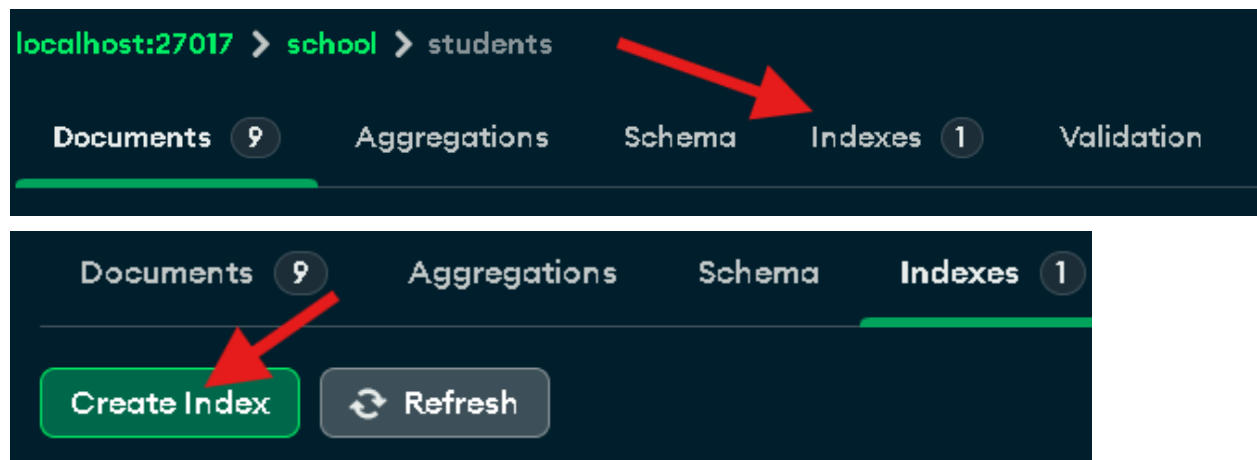
### To Get all the indexes:

```
school> db.students.getIndexes()
[
  { v: 2, key: { _id: 1 }, name: '_id_' },
  { v: 2, key: { name: 1 }, name: 'name_1' }
]
```

### To Drop an Index:

```
school> db.students.getIndexes()
[
  { v: 2, key: { _id: 1 }, name: '_id_' },
  { v: 2, key: { name: 1 }, name: 'name_1' }
]
school> db.students.dropIndex("name_1")
{ nIndexesWas: 2, ok: 1 }
school> db.students.getIndexes()
[ { v: 2, key: { _id: 1 }, name: '_id_' } ]
```

### *To create an Index in the Compass:*



# Create Index

school.students

Index fields

name 1 (asc) +


> Options

Cancel Create Index

***To drop the index: (click on trash icon)***

Documents 9 Aggregations Schema **Indexes 2** Validation

Create Index Refresh VIEWING INDEXES SEARCH INDEXES

Name & Definition	Type	Size	Usage	Properties	Status	
> _id_	REGULAR ⓘ	36.9 kB	3 (since Tue Feb 03 2026)	UNIQUE ⓘ	READY	
> name_1	REGULAR ⓘ	20.5 kB	0 (since Tue Feb 03 2026)		READY	

Drop Index name\_1

## Drop Index

Are you sure you want to drop index "name\_1"?

Type "name\_1" to confirm your action

name\_1

Cancel Drop

Use indexes wisely, recommended do it while searching instead of updating.