```
PE29 Vasu Kalariya
****************************************************************

Aggregation Operation

****************************************************************

Create database Company.
> use company
switched to db company
>
> show collections
employee
>
> db.employee.find().pretty().limit(1)
{
        "_id" : ObjectId("607bd69e051525164347d06d"),
        "firstName" : "James",
        "lastName" : "Smith",
        "age" : 20,
        "Address" : {
                "streetAddress" : "777 Brockton Avenue",
                "city" : "Abington",
                "state" : "MA",
                "postalCode" : 2351
        },
        "phoneNumber" : [
                {
                        "type" : "home",
                        "number" : 4661632082
                },
                {
                        "type" : "fax",
                        "number" : 2899829351
                }
        ],
        "emailAddress" : [
                "jamesS@gamil.com",
                "SJames@gmail.com"
        ]
}
>
>
> db.employee.count()
23
>

****************************************************************
-------Display state vise total employee-----------
```

```
> db.employee.aggregate([
... {$group:{_id:"$Address.state", Count:{$sum:1}}}
... ])
{ "_id" : "AL", "Count" : 1 }
{ "_id" : "MA", "Count" : 7 }
{ "_id" : "CT", "Count" : 3 }
{ "_id" : "NY", "Count" : 12 }
>


****************************************************************
-------Display  count of employees of 'NY' state-----------

> db.employee.aggregate([
... {$match:{"Address.state":"NY"}},
... {$group:{_id:"$Address.state", Count:{$sum:1}}}
... ])
{ "_id" : "NY", "Count" : 12 }



****************************************************************
-------Display all the states where more than 10 employees are working----------

> db.employee.aggregate([
... {$group:{_id:"$Address.state", Count:{$sum:{$gt:10}}}},
... ])
uncaught exception: Error: command failed: {
        "ok" : 0,
        "errmsg" : "Expression $gt takes exactly 2 arguments. 1 were passed in.",
        "code" : 16020,
        "codeName" : "Location16020"
} with original command request: {
        "aggregate" : "employee",
        "pipeline" : [
                {
                        "$group" : {
                                "_id" : "$Address.state",
                                "Count" : {
                                        "$sum" : {
                                                "$gt" : 10
                                        }
                                }
                        }
                }
        ],
        "cursor" : {

        },
        "lsid" : {
                "id" : UUID("6f1850ea-f8f0-4cc3-acf7-10a6e7fdf357")
        }
```

```
} on connection: connection to 127.0.0.1:27017 : aggregate failed :
_getErrorWithCode@src/mongo/shell/utils.js:25:13
doassert@src/mongo/shell/assert.js:18:14
_assertCommandWorked@src/mongo/shell/assert.js:719:17
assert.commandWorked@src/mongo/shell/assert.js:811:16
DB.prototype._runAggregate@src/mongo/shell/db.js:268:5
DBCollection.prototype.aggregate@src/mongo/shell/collection.js:1056:12
@(shell):1:1
>
> db.employee.aggregate([
... {$group:{_id:"$Address.state", Count:{$sum:1}}},
... {$match:{Count:{$gt:10}}}
... ])
{ "_id" : "NY", "Count" : 12 }
>


*****************************************************************
-------Display count of employees having age less than 30-----------

> db.employee.aggregate([
... {$match:{age:{$lt:30}}},
... {$group:{_id: null, Count:{$sum:1}}},
... ])
{ "_id" : null, "Count" : 13 }
>

*****************************************************************
-------Display name of employees having more than two phone nos.-----------

> db.employee.aggregate([
... {$group:{_id:"phoneNumber", Count:{$sum:1}}},
... {$match:{Count:{$gt:2}}},
... {$project:{_id:0, firstName:1, lastName:1}}
... ])
{   }
>
> db.employee.aggregate([
... {$project:{_id:0, firstName:1, lastName:1, Count:{"$size":"$phoneNumber"}}},
... {$match:{Count:{$gt:2}}}
... ])
{ "firstName" : "Alise", "lastName" : "Pickrell", "Count" : 3 }
{ "firstName" : "Leticia", "lastName" : "Wrobel", "Count" : 3 }
{ "firstName" : "Michele", "lastName" : "Gault", "Count" : 3 }
{ "firstName" : "Azalee", "lastName" : "Racey", "Count" : 3 }
{ "firstName" : "Will", "lastName" : "Strout", "Count" : 3 }
{ "firstName" : "Cesar", "lastName" : "Bannon", "Count" : 3 }
{ "firstName" : "Yuonne", "lastName" : "Gingerich", "Count" : 3 }
>
```

```
*********************************************************************
-------How many employees have provided home phone no-----------

> db.employee.aggregate([
... {$match:{"phoneNumber.type":"home"}},
... {$group:{_id:null,Count:{$sum:1}}}
... ])
{ "_id" : null, "Count" : 23 }
>



*********************************************************************
-------Display employee vise count of email addresses.-----------

> db.employee.aggregate([
... {$project:{_id:0, firstName:1, lastName:1, Count:{"$size":"$emailAddress"}}}
... ])
{ "firstName" : "James", "lastName" : "Smith", "Count" : 2 }
{ "firstName" : "Michael", "lastName" : "Smith", "Count" : 2 }
{ "firstName" : "Robert", "lastName" : "Smith", "Count" : 2 }
{ "firstName" : "Maria", "lastName" : "Garcia", "Count" : 2 }
{ "firstName" : "David", "lastName" : "Smith", "Count" : 2 }
{ "firstName" : "Maria", "lastName" : "Rodriguez", "Count" : 2 }
{ "firstName" : "Mary", "lastName" : "Smith", "Count" : 2 }
{ "firstName" : "Maria", "lastName" : "Hernandez", "Count" : 2 }
{ "firstName" : "Lilly", "lastName" : "Martinez", "Count" : 2 }
{ "firstName" : "James", "lastName" : "Johnson", "Count" : 2 }
{ "firstName" : "Kamilah", "lastName" : "Earhart", "Count" : 3 }
{ "firstName" : "Alise", "lastName" : "Pickrell", "Count" : 2 }
{ "firstName" : "Leticia", "lastName" : "Wrobel", "Count" : 3 }
{ "firstName" : "Caridad", "lastName" : "Kendall", "Count" : 2 }
{ "firstName" : "Michele", "lastName" : "Gault", "Count" : 3 }
{ "firstName" : "Azalee", "lastName" : "Racey", "Count" : 2 }
{ "firstName" : "Kathlyn", "lastName" : "Hackenberg", "Count" : 2 }
{ "firstName" : "Edie", "lastName" : "Burstein", "Count" : 3 }
{ "firstName" : "Will", "lastName" : "Strout", "Count" : 2 }
{ "firstName" : "Cesar", "lastName" : "Bannon", "Count" : 2 }
Type "it" for more
> it
{ "firstName" : "Hanna", "lastName" : "Voliva", "Count" : 3 }
{ "firstName" : "Yuonne", "lastName" : "Gingerich", "Count" : 2 }
{ "firstName" : "Jackie", "lastName" : "Wolfenbarger", "Count" : 2 }
>



*********************************************************************
> db.employee.find({"Address.postalCode":1524}).explain()
{
        "explainVersion" : "1",
        "queryPlanner" : {
```

```
                "namespace" : "company.employee",
                "indexFilterSet" : false,
                "parsedQuery" : {
                        "Address.postalCode" : {
                                "$eq" : 1524
                        }
                },
                "queryHash" : "E28F6A5F",
                "planCacheKey" : "E28F6A5F",
                "maxIndexedOrSolutionsReached" : false,
                "maxIndexedAndSolutionsReached" : false,
                "maxScansToExplodeReached" : false,
                "winningPlan" : {
                        "stage" : "COLLSCAN",
                        "filter" : {
                                "Address.postalCode" : {
                                        "$eq" : 1524
                                }
                        },
                        "direction" : "forward"
                },
                "rejectedPlans" : [ ]
        },
        "command" : {
                "find" : "employee",
                "filter" : {
                        "Address.postalCode" : 1524
                },
                "$db" : "company"
        },
        "serverInfo" : {
                "host" : "DESKTOP-43A64G1",
                "port" : 27017,
                "version" : "4.9.0-rc0",
                "gitVersion" : "64540ae7bb8b4298c780ecc154f866ddbc8d676c"
        },
        "serverParameters" : {
                "internalQueryFacetBufferSizeBytes" : 104857600,
                "internalQueryFacetMaxOutputDocSizeBytes" : 104857600,
                "internalLookupStageIntermediateDocumentMaxSizeBytes" : 104857600,
                "internalDocumentSourceGroupMaxMemoryBytes" : 104857600,
                "internalQueryMaxBlockingSortMemoryUsageBytes" : 104857600,
                "internalQueryProhibitBlockingMergeOnMongoS" : 0,
                "internalQueryMaxAddToSetBytes" : 104857600,
                "internalDocumentSourceSetWindowFieldsMaxMemoryBytes" : 104857600
        },
        "ok" : 1
}
>
```

```
> db.employee.find({"Address.postalCode":1524}).explain("executionStats")
{
        "explainVersion" : "1",
        "queryPlanner" : {
                "namespace" : "company.employee",
                "indexFilterSet" : false,
                "parsedQuery" : {
                        "Address.postalCode" : {
                                "$eq" : 1524
                        }
                },
                "maxIndexedOrSolutionsReached" : false,
                "maxIndexedAndSolutionsReached" : false,
                "maxScansToExplodeReached" : false,
                "winningPlan" : {
                        "stage" : "COLLSCAN",
                        "filter" : {
                                "Address.postalCode" : {
                                        "$eq" : 1524
                                }
                        },
                        "direction" : "forward"
                },
                "rejectedPlans" : [ ]
        },
        "executionStats" : {
                "executionSuccess" : true,
                "nReturned" : 1,
                "executionTimeMillis" : 0,
                "totalKeysExamined" : 0,
                "totalDocsExamined" : 23,
                "executionStages" : {
                        "stage" : "COLLSCAN",
                        "filter" : {
                                "Address.postalCode" : {
                                        "$eq" : 1524
                                }
                        },
                        "nReturned" : 1,
                        "executionTimeMillisEstimate" : 0,
                        "works" : 25,
                        "advanced" : 1,
                        "needTime" : 23,
                        "needYield" : 0,
                        "saveState" : 0,
                        "restoreState" : 0,
                        "isEOF" : 1,
                        "direction" : "forward",
                        "docsExamined" : 23
                }
```

```
        },
        "command" : {
                "find" : "employee",
                "filter" : {
                        "Address.postalCode" : 1524
                },
                "$db" : "company"
        },
        "serverInfo" : {
                "host" : "DESKTOP-43A64G1",
                "port" : 27017,
                "version" : "4.9.0-rc0",
                "gitVersion" : "64540ae7bb8b4298c780ecc154f866ddbc8d676c"
        },
        "serverParameters" : {
                "internalQueryFacetBufferSizeBytes" : 104857600,
                "internalQueryFacetMaxOutputDocSizeBytes" : 104857600,
                "internalLookupStageIntermediateDocumentMaxSizeBytes" : 104857600,
                "internalDocumentSourceGroupMaxMemoryBytes" : 104857600,
                "internalQueryMaxBlockingSortMemoryUsageBytes" : 104857600,
                "internalQueryProhibitBlockingMergeOnMongoS" : 0,
                "internalQueryMaxAddToSetBytes" : 104857600,
                "internalDocumentSourceSetWindowFieldsMaxMemoryBytes" : 104857600
        },
        "ok" : 1
}
>




****************************************************************

> db.employee.find({"firstName":"Kathlyn"}).explain("executionStats")
{
        "explainVersion" : "1",
        "queryPlanner" : {
                "namespace" : "company.employee",
                "indexFilterSet" : false,
                "parsedQuery" : {
                        "firstName" : {
                                "$eq" : "Kathlyn"
                        }
                },
                "maxIndexedOrSolutionsReached" : false,
                "maxIndexedAndSolutionsReached" : false,
                "maxScansToExplodeReached" : false,
                "winningPlan" : {
```

```
                        "stage" : "COLLSCAN",
                        "filter" : {
                                "firstName" : {
                                        "$eq" : "Kathlyn"
                                }
                        },
                        "direction" : "forward"
                },
                "rejectedPlans" : [ ]
        },
        "executionStats" : {
                "executionSuccess" : true,
                "nReturned" : 1,
                "executionTimeMillis" : 0,
                "totalKeysExamined" : 0,
                "totalDocsExamined" : 23,
                "executionStages" : {
                        "stage" : "COLLSCAN",
                        "filter" : {
                                "firstName" : {
                                        "$eq" : "Kathlyn"
                                }
                        },
                        "nReturned" : 1,
                        "executionTimeMillisEstimate" : 0,
                        "works" : 25,
                        "advanced" : 1,
                        "needTime" : 23,
                        "needYield" : 0,
                        "saveState" : 0,
                        "restoreState" : 0,
                        "isEOF" : 1,
                        "direction" : "forward",
                        "docsExamined" : 23
                }
        },
        "command" : {
                "find" : "employee",
                "filter" : {
                        "firstName" : "Kathlyn"
                },
                "$db" : "company"
        },
        "serverInfo" : {
                "host" : "DESKTOP-43A64G1",
                "port" : 27017,
                "version" : "4.9.0-rc0",
                "gitVersion" : "64540ae7bb8b4298c780ecc154f866ddbc8d676c"
        },
        "serverParameters" : {
```

```
                "internalQueryFacetBufferSizeBytes" : 104857600,
                "internalQueryFacetMaxOutputDocSizeBytes" : 104857600,
                "internalLookupStageIntermediateDocumentMaxSizeBytes" : 104857600,
                "internalDocumentSourceGroupMaxMemoryBytes" : 104857600,
                "internalQueryMaxBlockingSortMemoryUsageBytes" : 104857600,
                "internalQueryProhibitBlockingMergeOnMongoS" : 0,
                "internalQueryMaxAddToSetBytes" : 104857600,
                "internalDocumentSourceSetWindowFieldsMaxMemoryBytes" : 104857600
        },
        "ok" : 1
}
>




****************************************************************

> db.employee.find({"emailAddress":"WLeticia@gmail.com"}).explain("executionStats")
{
        "explainVersion" : "1",
        "queryPlanner" : {
                "namespace" : "company.employee",
                "indexFilterSet" : false,
                "parsedQuery" : {
                        "emailAddress" : {
                                "$eq" : "WLeticia@gmail.com"
                        }
                },
                "maxIndexedOrSolutionsReached" : false,
                "maxIndexedAndSolutionsReached" : false,
                "maxScansToExplodeReached" : false,
                "winningPlan" : {
                        "stage" : "COLLSCAN",
                        "filter" : {
                                "emailAddress" : {
                                        "$eq" : "WLeticia@gmail.com"
                                }
                        },
                        "direction" : "forward"
                },
                "rejectedPlans" : [ ]
        },
        "executionStats" : {
                "executionSuccess" : true,
                "nReturned" : 1,
                "executionTimeMillis" : 0,
                "totalKeysExamined" : 0,
                "totalDocsExamined" : 23,
                "executionStages" : {
```

```
                                "stage" : "COLLSCAN",
                                "filter" : {
                                        "emailAddress" : {
                                                "$eq" : "WLeticia@gmail.com"
                                        }
                                },
                                "nReturned" : 1,
                                "executionTimeMillisEstimate" : 0,
                                "works" : 25,
                                "advanced" : 1,
                                "needTime" : 23,
                                "needYield" : 0,
                                "saveState" : 0,
                                "restoreState" : 0,
                                "isEOF" : 1,
                                "direction" : "forward",
                                "docsExamined" : 23
                        }
                },
                "command" : {
                        "find" : "employee",
                        "filter" : {
                                "emailAddress" : "WLeticia@gmail.com"
                        },
                        "$db" : "company"
                },
                "serverInfo" : {
                        "host" : "DESKTOP-43A64G1",
                        "port" : 27017,
                        "version" : "4.9.0-rc0",
                        "gitVersion" : "64540ae7bb8b4298c780ecc154f866ddbc8d676c"
                },
                "serverParameters" : {
                        "internalQueryFacetBufferSizeBytes" : 104857600,
                        "internalQueryFacetMaxOutputDocSizeBytes" : 104857600,
                        "internalLookupStageIntermediateDocumentMaxSizeBytes" : 104857600,
                        "internalDocumentSourceGroupMaxMemoryBytes" : 104857600,
                        "internalQueryMaxBlockingSortMemoryUsageBytes" : 104857600,
                        "internalQueryProhibitBlockingMergeOnMongoS" : 0,
                        "internalQueryMaxAddToSetBytes" : 104857600,
                        "internalDocumentSourceSetWindowFieldsMaxMemoryBytes" : 104857600
                },
                "ok" : 1
}
>


*********************************************************************

> db.employee.createIndex({"Address.postalCode":1},{name:"postalCode_index"})
{
```

```
        "numIndexesBefore" : 1,
        "numIndexesAfter" : 2,
        "createdCollectionAutomatically" : false,
        "ok" : 1
}
>


> db.employee.createIndex({firstName:1, age:-1},{name:"firstname_index"})
{
        "numIndexesBefore" : 2,
        "numIndexesAfter" : 3,
        "createdCollectionAutomatically" : false,
        "ok" : 1
}
>

> db.employee.createIndex({emailAddress:1},{name:"email_index"})
{
        "numIndexesBefore" : 3,
        "numIndexesAfter" : 4,
        "createdCollectionAutomatically" : false,
        "ok" : 1
}
>

> db.employee.getIndexes()
[
        {
                "v" : 2,
                "key" : {
                        "_id" : 1
                },
                "name" : "_id_"
        },
        {
                "v" : 2,
                "key" : {
                        "Address.postalCode" : 1
                },
                "name" : "postalCode_index"
        },
        {
                "v" : 2,
                "key" : {
                        "firstName" : 1,
                        "age" : -1
                },
                "name" : "firstname_index"
        },
```

```
        {
                "v" : 2,
                "key" : {
                        "emailAddress" : 1
                },
                "name" : "email_index"
        }
]
>


*********************************************************************

>
db.employee.find({"Address.postalCode":1524}).hint("postalCode_index").explain("exec
utionStats")
{
        "explainVersion" : "1",
        "queryPlanner" : {
                "namespace" : "company.employee",
                "indexFilterSet" : false,
                "parsedQuery" : {
                        "Address.postalCode" : {
                                "$eq" : 1524
                        }
                },
                "maxIndexedOrSolutionsReached" : false,
                "maxIndexedAndSolutionsReached" : false,
                "maxScansToExplodeReached" : false,
                "winningPlan" : {
                        "stage" : "FETCH",
                        "inputStage" : {
                                "stage" : "IXSCAN",
                                "keyPattern" : {
                                        "Address.postalCode" : 1
                                },
                                "indexName" : "postalCode_index",
                                "isMultiKey" : false,
                                "multiKeyPaths" : {
                                        "Address.postalCode" : [ ]
                                },
                                "isUnique" : false,
                                "isSparse" : false,
                                "isPartial" : false,
                                "indexVersion" : 2,
                                "direction" : "forward",
                                "indexBounds" : {
                                        "Address.postalCode" : [
                                                "[1524.0, 1524.0]"
                                        ]
                                }
```

```
                    }
            },
            "rejectedPlans" : [ ]
    },
    "executionStats" : {
            "executionSuccess" : true,
            "nReturned" : 1,
            "executionTimeMillis" : 40,
            "totalKeysExamined" : 1,
            "totalDocsExamined" : 1,
            "executionStages" : {
                    "stage" : "FETCH",
                    "nReturned" : 1,
                    "executionTimeMillisEstimate" : 30,
                    "works" : 2,
                    "advanced" : 1,
                    "needTime" : 0,
                    "needYield" : 0,
                    "saveState" : 1,
                    "restoreState" : 1,
                    "isEOF" : 1,
                    "docsExamined" : 1,
                    "alreadyHasObj" : 0,
                    "inputStage" : {
                            "stage" : "IXSCAN",
                            "nReturned" : 1,
                            "executionTimeMillisEstimate" : 30,
                            "works" : 2,
                            "advanced" : 1,
                            "needTime" : 0,
                            "needYield" : 0,
                            "saveState" : 1,
                            "restoreState" : 1,
                            "isEOF" : 1,
                            "keyPattern" : {
                                    "Address.postalCode" : 1
                            },
                            "indexName" : "postalCode_index",
                            "isMultiKey" : false,
                            "multiKeyPaths" : {
                                    "Address.postalCode" : [ ]
                            },
                            "isUnique" : false,
                            "isSparse" : false,
                            "isPartial" : false,
                            "indexVersion" : 2,
                            "direction" : "forward",
                            "indexBounds" : {
                                    "Address.postalCode" : [
                                            "[1524.0, 1524.0]"
```

```
                                    ]
                            },
                            "keysExamined" : 1,
                            "seeks" : 1,
                            "dupsTested" : 0,
                            "dupsDropped" : 0
                    }
            }
    },
    "command" : {
            "find" : "employee",
            "filter" : {
                    "Address.postalCode" : 1524
            },
            "hint" : "postalCode_index",
            "$db" : "company"
    },
    "serverInfo" : {
            "host" : "DESKTOP-43A64G1",
            "port" : 27017,
            "version" : "4.9.0-rc0",
            "gitVersion" : "64540ae7bb8b4298c780ecc154f866ddbc8d676c"
    },
    "serverParameters" : {
            "internalQueryFacetBufferSizeBytes" : 104857600,
            "internalQueryFacetMaxOutputDocSizeBytes" : 104857600,
            "internalLookupStageIntermediateDocumentMaxSizeBytes" : 104857600,
            "internalDocumentSourceGroupMaxMemoryBytes" : 104857600,
            "internalQueryMaxBlockingSortMemoryUsageBytes" : 104857600,
            "internalQueryProhibitBlockingMergeOnMongoS" : 0,
            "internalQueryMaxAddToSetBytes" : 104857600,
            "internalDocumentSourceSetWindowFieldsMaxMemoryBytes" : 104857600
    },
    "ok" : 1
}
>

*******************************************************************

>
db.employee.find({"firstName":"Kathlyn"}).hint("firstname_index").explain("execution
Stats")
{
        "explainVersion" : "1",
        "queryPlanner" : {
                "namespace" : "company.employee",
                "indexFilterSet" : false,
                "parsedQuery" : {
                        "firstName" : {
                                "$eq" : "Kathlyn"
```

```
                    }
            },
            "maxIndexedOrSolutionsReached" : false,
            "maxIndexedAndSolutionsReached" : false,
            "maxScansToExplodeReached" : false,
            "winningPlan" : {
                    "stage" : "FETCH",
                    "inputStage" : {
                            "stage" : "IXSCAN",
                            "keyPattern" : {
                                    "firstName" : 1,
                                    "age" : -1
                            },
                            "indexName" : "firstname_index",
                            "isMultiKey" : false,
                            "multiKeyPaths" : {
                                    "firstName" : [ ],
                                    "age" : [ ]
                            },
                            "isUnique" : false,
                            "isSparse" : false,
                            "isPartial" : false,
                            "indexVersion" : 2,
                            "direction" : "forward",
                            "indexBounds" : {
                                    "firstName" : [
                                            "[\"Kathlyn\", \"Kathlyn\"]"
                                    ],
                                    "age" : [
                                            "[MaxKey, MinKey]"
                                    ]
                            }
                    }
            },
            "rejectedPlans" : [ ]
    },
    "executionStats" : {
            "executionSuccess" : true,
            "nReturned" : 1,
            "executionTimeMillis" : 31,
            "totalKeysExamined" : 1,
            "totalDocsExamined" : 1,
            "executionStages" : {
                    "stage" : "FETCH",
                    "nReturned" : 1,
                    "executionTimeMillisEstimate" : 32,
                    "works" : 2,
                    "advanced" : 1,
                    "needTime" : 0,
                    "needYield" : 0,
```

```
                    "saveState" : 1,
                    "restoreState" : 1,
                    "isEOF" : 1,
                    "docsExamined" : 1,
                    "alreadyHasObj" : 0,
                    "inputStage" : {
                            "stage" : "IXSCAN",
                            "nReturned" : 1,
                            "executionTimeMillisEstimate" : 32,
                            "works" : 2,
                            "advanced" : 1,
                            "needTime" : 0,
                            "needYield" : 0,
                            "saveState" : 1,
                            "restoreState" : 1,
                            "isEOF" : 1,
                            "keyPattern" : {
                                    "firstName" : 1,
                                    "age" : -1
                            },
                            "indexName" : "firstname_index",
                            "isMultiKey" : false,
                            "multiKeyPaths" : {
                                    "firstName" : [ ],
                                    "age" : [ ]
                            },
                            "isUnique" : false,
                            "isSparse" : false,
                            "isPartial" : false,
                            "indexVersion" : 2,
                            "direction" : "forward",
                            "indexBounds" : {
                                    "firstName" : [
                                            "[\"Kathlyn\", \"Kathlyn\"]"
                                    ],
                                    "age" : [
                                            "[MaxKey, MinKey]"
                                    ]
                            },
                            "keysExamined" : 1,
                            "seeks" : 1,
                            "dupsTested" : 0,
                            "dupsDropped" : 0
                    }
            }
    },
    "command" : {
            "find" : "employee",
            "filter" : {
                    "firstName" : "Kathlyn"
```

```
                },
                "hint" : "firstname_index",
                "$db" : "company"
        },
        "serverInfo" : {
                "host" : "DESKTOP-43A64G1",
                "port" : 27017,
                "version" : "4.9.0-rc0",
                "gitVersion" : "64540ae7bb8b4298c780ecc154f866ddbc8d676c"
        },
        "serverParameters" : {
                "internalQueryFacetBufferSizeBytes" : 104857600,
                "internalQueryFacetMaxOutputDocSizeBytes" : 104857600,
                "internalLookupStageIntermediateDocumentMaxSizeBytes" : 104857600,
                "internalDocumentSourceGroupMaxMemoryBytes" : 104857600,
                "internalQueryMaxBlockingSortMemoryUsageBytes" : 104857600,
                "internalQueryProhibitBlockingMergeOnMongoS" : 0,
                "internalQueryMaxAddToSetBytes" : 104857600,
                "internalDocumentSourceSetWindowFieldsMaxMemoryBytes" : 104857600
        },
        "ok" : 1
}
>


******************************************************************

>
db.employee.find({"emailAddress":"WLeticia@gmail.com"}).hint("email_index").explain(
"executionStats")
{
        "explainVersion" : "1",
        "queryPlanner" : {
                "namespace" : "company.employee",
                "indexFilterSet" : false,
                "parsedQuery" : {
                        "emailAddress" : {
                                "$eq" : "WLeticia@gmail.com"
                        }
                },
                "maxIndexedOrSolutionsReached" : false,
                "maxIndexedAndSolutionsReached" : false,
                "maxScansToExplodeReached" : false,
                "winningPlan" : {
                        "stage" : "FETCH",
                        "inputStage" : {
                                "stage" : "IXSCAN",
                                "keyPattern" : {
                                        "emailAddress" : 1
                                },
                                "indexName" : "email_index",
```

```
                        "isMultiKey" : true,
                        "multiKeyPaths" : {
                                "emailAddress" : [
                                        "emailAddress"
                                ]
                        },
                        "isUnique" : false,
                        "isSparse" : false,
                        "isPartial" : false,
                        "indexVersion" : 2,
                        "direction" : "forward",
                        "indexBounds" : {
                                "emailAddress" : [
                                        "[\"WLeticia@gmail.com\",
\"WLeticia@gmail.com\"]"
                                ]
                        }
                }
        }
    },
    "rejectedPlans" : [ ]
},
"executionStats" : {
        "executionSuccess" : true,
        "nReturned" : 1,
        "executionTimeMillis" : 16,
        "totalKeysExamined" : 1,
        "totalDocsExamined" : 1,
        "executionStages" : {
                "stage" : "FETCH",
                "nReturned" : 1,
                "executionTimeMillisEstimate" : 11,
                "works" : 2,
                "advanced" : 1,
                "needTime" : 0,
                "needYield" : 0,
                "saveState" : 1,
                "restoreState" : 1,
                "isEOF" : 1,
                "docsExamined" : 1,
                "alreadyHasObj" : 0,
                "inputStage" : {
                        "stage" : "IXSCAN",
                        "nReturned" : 1,
                        "executionTimeMillisEstimate" : 11,
                        "works" : 2,
                        "advanced" : 1,
                        "needTime" : 0,
                        "needYield" : 0,
                        "saveState" : 1,
                        "restoreState" : 1,
```

```
                                "isEOF" : 1,
                                "keyPattern" : {
                                        "emailAddress" : 1
                                },
                                "indexName" : "email_index",
                                "isMultiKey" : true,
                                "multiKeyPaths" : {
                                        "emailAddress" : [
                                                "emailAddress"
                                        ]
                                },
                                "isUnique" : false,
                                "isSparse" : false,
                                "isPartial" : false,
                                "indexVersion" : 2,
                                "direction" : "forward",
                                "indexBounds" : {
                                        "emailAddress" : [
                                                "[\"WLeticia@gmail.com\",
\"WLeticia@gmail.com\"]"
                                        ]
                                },
                                "keysExamined" : 1,
                                "seeks" : 1,
                                "dupsTested" : 1,
                                "dupsDropped" : 0
                        }
                }
        },
        "command" : {
                "find" : "employee",
                "filter" : {
                        "emailAddress" : "WLeticia@gmail.com"
                },
                "hint" : "email_index",
                "$db" : "company"
        },
        "serverInfo" : {
                "host" : "DESKTOP-43A64G1",
                "port" : 27017,
                "version" : "4.9.0-rc0",
                "gitVersion" : "64540ae7bb8b4298c780ecc154f866ddbc8d676c"
        },
        "serverParameters" : {
                "internalQueryFacetBufferSizeBytes" : 104857600,
                "internalQueryFacetMaxOutputDocSizeBytes" : 104857600,
                "internalLookupStageIntermediateDocumentMaxSizeBytes" : 104857600,
                "internalDocumentSourceGroupMaxMemoryBytes" : 104857600,
                "internalQueryMaxBlockingSortMemoryUsageBytes" : 104857600,
                "internalQueryProhibitBlockingMergeOnMongoS" : 0,
```

```
                    "internalQueryMaxAddToSetBytes" : 104857600,
                    "internalDocumentSourceSetWindowFieldsMaxMemoryBytes" : 104857600
            },
            "ok" : 1
}
>
```