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TE IT
Assignment No:-2 (Aggregation & Indexes)

problem statement:Implement the aggregation and indexing with suitable example in MongoDB. Demonstrate the following:

1. Aggregation framework
2. Create and drop different types of indexes and

PART-A

a) Find the total amount of each customer

```
db.customer.aggregate({$group:{_id:"$custID",totalAmount:
{$sum:"$Amount"}}})
```

```
{ "_id" : "B212", "totalAmount" : 200 }
{ "_id" : "A123", "totalAmount" : 1050 }
```

b) Find the total amount of each customer whose status is A

```
db.customer.aggregate({$match:{status:'A'}},
{$group:{_id:"$custID",totalAmount: {$sum:"$Amount"}}})
```

```
{ "_id" : "B212", "totalAmount" : 200 }
{ "_id" : "A123", "totalAmount" : 750 }
```

c) Find the minimum total amount of each customer whose Status is A

```
db.customer.aggregate({$match:{status:'A'}},
{$group:{_id:"$custID",min_totalAmount: {$min:"$Amount"}}})
```

```
{ "_id" : "B212", "min_totalAmount" : 200 }
{ "_id" : "A123", "min_totalAmount" : 250 }
```

d) Find the maximum total amount of each customer whose Status is A

```
db.customer.aggregate({$match:{status:'A'}},
{$group:{_id:"$custID",max_totalAmount: {$max:"$Amount"}}})
```

```
{ "_id" : "B212", "max_totalAmount" : 200 }
{ "_id" : "A123", "max_totalAmount" : 500 }
```

e) Find the average total amount of each customer whose Status is A.

```
db.customer.aggregate({$match:{status:'A'}},
{$group:{_id:"$custID",avg_totalAmount: {$avg:"$Amount"}}})
```

```
{ "_id" : "B212", "avg_totalAmount" : 200 }
{ "_id" : "A123", "avg_totalAmount" : 375 }
```

Part B (INDEX)

f) Create index on custID.

```
> db.customer.getIndexes()
[
  {
    "v" : 1,
    "key" : {
      "_id" : 1
    },
    "name" : "_id_",
    "ns" : "company.customer"
  }
]
> db.customer.createIndex({custID:1})
{
  "createdCollectionAutomatically" : false,
  "numIndexesBefore" : 1,
  "numIndexesAfter" : 2,
  "ok" : 1
}
```

g) Execute getIndexes

```
> db.customer.getIndexes()
[
  {
    "v" : 1,
    "key" : {
      "_id" : 1
    },
    "name" : "_id_",
    "ns" : "company.customer"
  },
  {
    "v" : 1,
    "key" : {
      "custID" : 1
    },
    "name" : "custID_1",
    "ns" : "company.customer"
  }
]
```

h) Drop the index created.

```
> db.customer.dropIndex({custID:1})
{ "nIndexesWas" : 2, "ok" : 1 }
> db.customer.getIndexes()
[
  {
    "v" : 1,
    "key" : {
      "_id" : 1
    },
    "name" : "_id_",
    "ns" : "company.customer"
  }
]
```

```

        "name" : "_id_",
        "ns" : "company.customer"
    }
]

```

-Compound Index

```

db.customer.createIndex({"custID":1,"Amount":1})
{
    "createdCollectionAutomatically" : false,
    "numIndexesBefore" : 1,
    "numIndexesAfter" : 2,
    "ok" : 1
}

```

> db.customer.getIndexes()

```

[
    {
        "v" : 1,
        "key" : {
            "_id" : 1
        },
        "name" : "_id_",
        "ns" : "company.customer"
    },
    {
        "v" : 1,
        "key" : {
            "custID" : 1,
            "Amount" : 1
        },
        "name" : "custID_1_Amount_1",
        "ns" : "company.customer"
    }
]

```

```

> db.customer.dropIndex({"custID":1,"Amount":1})
{ "nIndexesWas" : 2, "ok" : 1 }

```

-Partial Index

```

> db.customer.createIndex({"custID":1,"status":1},{ "Amount":{ $gte:250}})
{
    "createdCollectionAutomatically" : false,
    "numIndexesBefore" : 1,
    "numIndexesAfter" : 2,
    "ok" : 1
}

```

> db.customer.getIndexes()

```

[
    {
        "v" : 1,
        "key" : {
            "_id" : 1
        },
    },

```

```

        "name" : "_id_",
        "ns" : "company.customer"
    },
    {
        "v" : 1,
        "key" : {
            "custID" : 1,
            "status" : 1
        },
        "name" : "custID_1_status_1",
        "ns" : "company.customer",
        "Amount" : {
            "$gte" : 250
        }
    }
]

```

-Hashed index

```

> db.customer.createIndex({_id:"hashed"})
{
  "createdCollectionAutomatically" : false,
  "numIndexesBefore" : 2,
  "numIndexesAfter" : 3,
  "ok" : 1
}
> db.customer.getIndexes()
[
  {
    "v" : 1,
    "key" : {
      "_id" : 1
    },
    "name" : "_id_",
    "ns" : "company.customer"
  },
  {
    "v" : 1,
    "key" : {
      "custID" : 1,
      "status" : 1
    },
    "name" : "custID_1_status_1",
    "ns" : "company.customer",
    "Amount" : {
      "$gte" : 250
    }
  },
  {
    "v" : 1,
    "key" : {
      "_id" : "hashed"
    },
    "name" : "_id_hashed",
    "ns" : "company.customer"
  }
]

```

```
    }  
]  
> db.customer.dropIndex({_id:"hashed"})  
{ "nIndexesWas" : 3, "ok" : 1 }
```