

Name:Ruturaj Ghumkar

Rollno:TIT39

1)Data collection

```
> db.practical_2.find().pretty()
```

```
{
  "_id" : ObjectId("636557e114d1098f98d1c343"),
  "name" : "suresh",
  "roll_no" : 23,
  "age" : 20,
  "city" : "nagpur"
}
{
  "_id" : ObjectId("63655a54acc2564d9b0cc586"),
  "name" : "ramesh",
  "age" : 21,
  "city" : "kalyan"
}
{
  "_id" : ObjectId("63655a54acc2564d9b0cc587"),
  "name" : "suresh",
  "age" : 20,
  "city" : "thane"
}
{
  "_id" : ObjectId("63655a54acc2564d9b0cc588"),
```

```

    "name" : "hari",
    "age" : 19,
    "city" : "badlapur"
  }
  {
    "_id" : ObjectId("63655c13acc2564d9b0cc589"),
    "name" : "sahili",
    "age" : 18,
    "city" : "nagpur"
  }

```

2)Aggregate Function group and match

```

> db.practical_2.aggregate(
... [
...
{"$match":{"city":"nagpur"}},{ "$group":{_id:"$id",total_age:{"$sum":"age"}}
}])
{ "_id" : null, "total_age" : 0 }

```

3)Aggreagate function sort accordingly to age

```

> db.practical_2.aggregate([{'$sort': {'age': 1}}])
{ "_id" : ObjectId("63655c13acc2564d9b0cc589"), "name" : "sahili", "age" : 18,
"city" : "nagpur" }
{ "_id" : ObjectId("63655a54acc2564d9b0cc588"), "name" : "hari", "age" : 19,
"city" : "badlapur" }
{ "_id" : ObjectId("636557e114d1098f98d1c343"), "name" : "suresh", "roll_no"
: 23, "age" : 20, "city" : "nagpur" }
{ "_id" : ObjectId("63655a54acc2564d9b0cc587"), "name" : "suresh", "age" :
20, "city" : "thane" }
{ "_id" : ObjectId("63655a54acc2564d9b0cc586"), "name" : "ramesh", "age" :
21, "city" : "kalyan" }

```

4)Aggregate function sort unwind

```
> db.practical_2.aggregate([{$unwind: "$name"}])

{ "_id" : ObjectId("636557e114d1098f98d1c343"), "name" : "suresh", "roll_no" : 23, "age" : 20, "city" : "nagpur" }

{ "_id" : ObjectId("63655a54acc2564d9b0cc586"), "name" : "ramesh", "age" : 21, "city" : "kalyan" }

{ "_id" : ObjectId("63655a54acc2564d9b0cc587"), "name" : "suresh", "age" : 20, "city" : "thane" }

{ "_id" : ObjectId("63655a54acc2564d9b0cc588"), "name" : "hari", "age" : 19, "city" : "badlapur" }

{ "_id" : ObjectId("63655c13acc2564d9b0cc589"), "name" : "sahili", "age" : 18, "city" : "nagpur" }
```

5)Distinct Function applied on names

```
> db.practical_2.distinct("name")

[ "hari", "ramesh", "sahili", "suresh" ]
```

6)Count Function

```
> db.students.aggregate([{$match: {city:"nagpur"}},{ $count:"Total students from nagpur"}])

> db.students.aggregate([{$match: {city:"nagpur"}},{ $count:"Total students from nagpur"}])

> db.students.aggregate([{$match: {"city":"nagpur"}},{ $count:"Total students from nagpur"}])

> db.practical_2.aggregate([{$group: {_id:"$id", total_st: {$sum:1}, max_age:{$max:"$age"} } }])

{ "_id" : null, "total_st" : 5, "max_age" : 21 }
```

7)Create index

```
> db.practical_2.createIndex( { city: 1, name: 1 } )

{
  "numIndexesBefore" : 1,
  "numIndexesAfter" : 2,
  "createdCollectionAutomatically" : false,
```

```
    "ok" : 1
  }
```

8)Create sparse Index

```
> db.practical_2.createIndex({"name":1},{sparse:true})
{
  "numIndexesBefore" : 2,
  "numIndexesAfter" : 3,
  "createdCollectionAutomatically" : false,
  "ok" : 1
}
```

9)showing the index status

```
> db.orders.aggregate( [ { $indexStats: { } } ] )
> db.practical_2.aggregate([ { $indexStats: { } } ])
{ "name" : "_id_", "key" : { "_id" : 1 }, "host" : "LAPTOP-BFS3S3OO:27017",
  "accesses" : { "ops" : NumberLong(0), "since" : ISODate("2022-11-04T18:20:17.375Z") }, "spec" : { "v" : 2, "key" : { "_id" : 1 }, "name" : "_id_" }
}
{ "name" : "city_1_name_1", "key" : { "city" : 1, "name" : 1 }, "host" :
  "LAPTOP-BFS3S3OO:27017", "accesses" : { "ops" : NumberLong(0), "since" :
  ISODate("2022-11-05T06:02:45.592Z") }, "spec" : { "v" : 2, "key" : { "city" : 1,
  "name" : 1 }, "name" : "city_1_name_1" } }
```

10)Map Reduce Function

```
> var map=function(){emit(this.marks,this.id)};
> var reduce=function(sec,marks){return Array.sum(marks)};
> db.local.mapReduce(map,reduce,{out : "resultCollection1"});
```

```
{ "result" : "resultCollection1", "ok" : 1 }
> db.resultCollection1.find().pretty()
{ "_id" : 99, "value" : 1 }
{ "_id" : 95, "value" : 1 }
{ "_id" : 90, "value" : 3 }
{ "_id" : 80, "value" : 1 }
>
```

11) Manipulating index

```
> db.practical_2.find().count();
6
> db.practical_2.createIndex({y:1});
{
  "numIndexesBefore" : 4,
  "numIndexesAfter" : 5,
  "createdCollectionAutomatically" : false,
  "ok" : 1
}
> db.practical_2.find().hint({y:1}).count();
6
> db.practical_2.find({age: {$lt:20}})
{ "_id" : ObjectId("63655a54acc2564d9b0cc588"), "name" : "hari", "age" : 19,
  "city" : "badlapur" }
{ "_id" : ObjectId("63655c13acc2564d9b0cc589"), "name" : "sahili", "age" : 18,
  "city" : "nagpur" }
>
```

12)Aggregation merge operation

```
> db.practical_2.aggregate(
... [
... {
... $project:{_id:0}},
... {$merge:{into:"newcollection"}}])
> db.newcollection.find().pretty()
{
  "_id" : ObjectId("636bdb44e9aeccdcecd59065"),
  "age" : 20,
  "city" : "nagpur",
  "name" : "suresh",
  "roll_no" : 23
}
{
  "_id" : ObjectId("636bdb44e9aeccdcecd59066"),
  "age" : 21,
  "city" : "kalyan",
  "name" : "ramesh"
}
{
  "_id" : ObjectId("636bdb44e9aeccdcecd59067"),
  "age" : 20,
  "city" : "thane",
  "name" : "suresh"
}
```

```

{
  "_id" : ObjectId("636bdb44e9aeccdcecd59068"),
  "age" : 19,
  "city" : "badlapur",
  "name" : "hari"
}
{
  "_id" : ObjectId("636bdb44e9aeccdcecd59069"),
  "age" : 18,
  "city" : "nagpur",
  "name" : "sahili"
}
{ "_id" : ObjectId("636bdb44e9aeccdcecd5906a"), "y" : 1 }
>

```

13)runCommand and distinct operation

```

> db.practical_2.aggregate(
... [
... {
... $project:{_id:0}},
... {$merge:{into:"newcollection"}}])
> db.newcollection.find().pretty()
{
  "_id" : ObjectId("636bdb44e9aeccdcecd59065"),

```

```
"age" : 20,  
"city" : "nagpur",  
"name" : "suresh",  
"roll_no" : 23  
}  
  
{  
  "_id" : ObjectId("636bdb44e9aeccdcecd59066"),  
  "age" : 21,  
  "city" : "kalyan",  
  "name" : "ramesh"  
}  
  
{  
  "_id" : ObjectId("636bdb44e9aeccdcecd59067"),  
  "age" : 20,  
  "city" : "thane",  
  "name" : "suresh"  
}  
  
{  
  "_id" : ObjectId("636bdb44e9aeccdcecd59068"),  
  "age" : 19,  
  "city" : "badlapur",  
  "name" : "hari"  
}  
  
{  
  "_id" : ObjectId("636bdb44e9aeccdcecd59069"),  
  "age" : 18,  
  "city" : "nagpur",
```



```

    "name" : "sahili"
  }
  { "_id" : ObjectId("636bdb44e9aeccdcecd5906a"), "y" : 1 }
> db.runCommand({distinct:"practical_2",key:"age"});
{ "values" : [ 18, 19, 20, 21 ], "ok" : 1 }
> db.practical_2.distinct("age")
[ 18, 19, 20, 21 ]
> db.practical_2.distinct("name")
[ "hari", "ramesh", "sahili", "suresh" ]
>

```

14)Aggregate Addfield operation

```

> db.practical_2.aggregate(
... [
... {
... $addField:{
... "practical_2.phone_no":"+91"}}]);
{ "_id" : ObjectId("636557e114d1098f98d1c343"), "name" : "suresh", "roll_no" : 23, "age" : 20, "city" : "nagpur", "practical_2" : { "phone_no" : "+91" } }
{ "_id" : ObjectId("63655a54acc2564d9b0cc586"), "name" : "ramesh", "age" : 21, "city" : "kalyan", "practical_2" : { "phone_no" : "+91" } }
{ "_id" : ObjectId("63655a54acc2564d9b0cc587"), "name" : "suresh", "age" : 20, "city" : "thane", "practical_2" : { "phone_no" : "+91" } }
{ "_id" : ObjectId("63655a54acc2564d9b0cc588"), "name" : "hari", "age" : 19, "city" : "badlapur", "practical_2" : { "phone_no" : "+91" } }
{ "_id" : ObjectId("63655c13acc2564d9b0cc589"), "name" : "sahili", "age" : 18, "city" : "nagpur", "practical_2" : { "phone_no" : "+91" } }

```

```
{ "_id" : 1, "y" : 1, "practical_2" : { "phone_no" : "+91" } }
```

```
>
```

15)Aggregate collStats function

```
> db.practical_2.aggregate([ {$collStats:{count:{}}}] );
```

```
{ "ns" : "practical_2.practical_2", "host" : "LAPTOP-BFS3S3OO:27017",  
  "localTime" : ISODate("2022-11-09T17:10:38.588Z"), "count" : 6 }
```

```
> db.practical_2.aggregate([ {$collStats:{queryExecStats:{}}}] );
```

```
{ "ns" : "practical_2.practical_2", "host" : "LAPTOP-BFS3S3OO:27017",  
  "localTime" : ISODate("2022-11-09T17:11:33.924Z"), "queryExecStats" : {  
    "collectionScans" : { "total" : NumberLong(9), "nonTailable" : NumberLong(9)  
  } } }
```

```
>
```