

Group B - 3

1.Create database

```
> use stud;
switched to db stud

> show collections;
student
```

2.Displaying all records in database

```
> db.student.find();
{ "_id" : ObjectId("59c0e86bc97a65104ad168bf"), "eid" : "E002", "name" :
"Shweta",
"designation" : "Team Lead", "salary" : 25000, "projects" : [ "Linux Hotfix"
] }
{ "_id" : ObjectId("59c0e86bc97a65104ad168c0"), "eid" : "E003", "name" :
"Amit", "designation" :
"Sr. Engineer", "salary" : 20000, "projects" : [ "Linux Hotfix", "Windows
Hotfix" ] }
{ "_id" : ObjectId("59c0e86bc97a65104ad168c1"), "eid" : "E004", "name" :
"Hanish",
"designation" : "Sr. Engineer", "salary" : 22000, "projects" : [ "Linux
Change", "Windows Change" ] }
{ "_id" : ObjectId("59c0e86bc97a65104ad168c2"), "eid" : "E005", "name" :
"Danish",
"designation" : "Engineer", "salary" : 18000, "projects" : [ "Windows Change"
] }
{ "_id" : ObjectId("59c0e86bc97a65104ad168c3"), "eid" : "E006", "name" :
"Rohit",
"designation" : "Engineer", "salary" : 20000, "projects" : [ "Windows
Change", "Windows Hotfix" ] }
{ "_id" : ObjectId("59c0e86bc97a65104ad168c4"), "eid" : "E008", "name" :
"Salim",
"designation" : "Sr. Engineer", "salary" : 26000, "projects" : [ "Windows
Change", "Linux Hotfix" ] }
{ "_id" : ObjectId("59c0e86bc97a65104ad168c5"), "eid" : "E007", "name" :
"Manish",
"designation" : "Team Lead", "salary" : 24000, "projects" : [ "Windows
Change", "Linux Hotfix" ] }
{ "_id" : ObjectId("59c0e86bc97a65104ad168c6"), "eid" : "E001", "name" :
"Abhishek", "designation" : "Manager", "salary" : 30000, "projects" : [
"Windows Hotfix", "Windows Server updates" ] }
```

3.Displaying in Systematic way using pretty() command

```
> db.student.find().pretty();
{
  "_id" : ObjectId("59c0e86bc97a65104ad168bf"),
  "eid" : "E002",
  "name" : "Shweta",
  "designation" : "Team Lead",
  "salary" : 25000,
  "projects" : [
    "Linux Hotfix"
  ]
}
```

```

]
}
{
  "_id" : ObjectId("59c0e86bc97a65104ad168c0"), "eid" : "E003",
  "name" : "Amit",
  "designation" : "Sr. Engineer",
  "salary" : 20000,
  "projects" : [
    "Linux Hotfix",
    "Windows Hotfix"
  ] }
{
  "_id" : ObjectId("59c0e86bc97a65104ad168c1"),
  "eid" : "E004",
  "name" : "Hanish",
  "designation" : "Sr. Engineer",
  "salary" : 22000,
  "projects" : [
    "Linux Change",
    "Windows Change"
  ] }
{
  "_id" : ObjectId("59c0e86bc97a65104ad168c2"),
  "eid" : "E005",
  "name" : "Danish",
  "designation" : "Engineer",
  "salary" : 18000,
  "projects" : [
    "Windows Change"
  ] }
{
  "_id" : ObjectId("59c0e86bc97a65104ad168c3"),
  "eid" : "E006",
  "name" : "Rohit",
  "designation" : "Engineer",
  "salary" : 20000,
  "projects" : [
    "Windows Change",
    "Windows Hotfix"
  ] }
{
  "_id" : ObjectId("59c0e86bc97a65104ad168c4"),
  "eid" : "E008",
  "name" : "Salim",

```

```

"designation" : "Sr. Engineer",
"salary" : 26000,
"projects" : [
* "Windows Change",
"Linux Hotfix"
] }
{
  "_id" : ObjectId("59c0e86bc97a65104ad168c5"),
  "eid" : "E007",
  "name" : "Manish",
  "designation" : "Team Lead",
  "salary" : 24000,
  "projects" : [
    "Windows Change",
    "Linux Hotfix"
  ]
}
{
  "_id" : ObjectId("59c0e86bc97a65104ad168c6"),
  "eid" : "E001",
  "name" : "Abhishek",
  "designation" : "Manager",
  "salary" : 30000,
  "projects" : [
    "Windows Hotfix",
    "Windows Server updates"
  ]
}

```

4. Use Aggregation

```

> db.student.aggregate({$group:{_id:null,total:{$sum:"$salary"}}})
{ "_id" : null, "total" : 185000 }

> db.student.aggregate({$group:{_id:"$designation",total:{$sum:"$salary"}}})
{ "_id" : "Manager", "total" : 30000 }
{ "_id" : "Sr. Engineer", "total" : 68000 }
{ "_id" : "Engineer", "total" : 38000 }
{ "_id" : "Team Lead", "total" : 49000 }

> db.student.aggregate({$match:{projects:"Windows
Change"}},{ $group:{_id:"$projects",total:
{$sum:"$salary"}}})
{ "_id" : [ "Windows Change", "Linux Hotfix" ], "total" : 50000 }
{ "_id" : [ "Windows Change", "Windows Hotfix" ], "total" : 20000 }
{ "_id" : [ "Windows Change" ], "total" : 18000 }
{ "_id" : [ "Linux Change", "Windows Change" ], "total" : 22000 } > >

>db.student.aggregate({$match:{designation:"Sr. Engineer"}},{ $group:
{_id:"$designation",tot_emp:{$sum:1 }}})
{ "_id" : "Sr. Engineer", "tot_emp" : 3 }

> db.student.aggregate({$match:{$and:[{projects:"Windows
Change"},{projects:"Linux

```

```

Hotfix"]]]}, {$project: {_id:0,name:1,designation:1}})
{ "name" : "Salim", "designation" : "Sr. Engineer" }
{ "name" : "Manish", "designation" : "Team Lead" }

> db.student.aggregate({$sort:{salary:1}},{$project:{_id:0,name:1,salary:1}})
{ "name" : "Danish", "salary" : 18000 }
{ "name" : "Amit", "salary" : 20000 }
{ "name" : "Rohit", "salary" : 20000 }
{ "name" : "Hanish", "salary" : 22000 }
{ "name" : "Manish", "salary" : 24000 }
{ "name" : "Shweta", "salary" : 25000 }
{ "name" : "Salim", "salary" : 26000 }
{ "name" : "Abhishek", "salary" : 30000 }

> db.student.aggregate({$sort:{salary:-1}},{$project:{_id:0,name:1,salary:1}}) { "name" : "Abhishek", "salary" : 30000 }
{ "name" : "Salim", "salary" : 26000 }
{ "name" : "Shweta", "salary" : 25000 }
{ "name" : "Manish", "salary" : 24000 }
{ "name" : "Hanish", "salary" : 22000 }
{ "name" : "Amit", "salary" : 20000 }
{ "name" : "Rohit", "salary" : 20000 }
{ "name" : "Danish", "salary" : 18000 }

> db.student.aggregate({$sort:{name:-1}},{$project:{_id:0,name:1,salary:1}})
{ "name" : "Shweta", "salary" : 25000 }
{ "name" : "Salim", "salary" : 26000 }
{ "name" : "Rohit", "salary" : 20000 }
{ "name" : "Manish", "salary" : 24000 }
{ "name" : "Hanish", "salary" : 22000 }
{ "name" : "Danish", "salary" : 18000 }
{ "name" : "Amit", "salary" : 20000 }
{ "name" : "Abhishek", "salary" : 30000 }

```

5. Use Index

```

> db.employee.ensureIndex({designation:1})
{
  "createdCollectionAutomatically" : true,
  "numIndexesBefore" : 1,
  "numIndexesAfter" : 2,
  "ok" : 1
}

> db.student.ensureIndex({designation:1})
{
  "createdCollectionAutomatically" : false,
  "numIndexesBefore" : 1,
  "numIndexesAfter" : 2,
  "ok" : 1
}

```

```
> db.student.ensureIndex({eid:1,salary:-1})
{
  "createdCollectionAutomatically" : false,
  "numIndexesBefore" : 2,
  "numIndexesAfter" : 3,
  "ok" : 1
}

> db.student.ensureIndex({eid:1},{unique:true}) {
  "createdCollectionAutomatically" : false,
  "numIndexesBefore" : 3,
  "numIndexesAfter" : 4,
  "ok" : 1
}

> db.student.ensureIndex({eid:1},{unique:true}) {
  "createdCollectionAutomatically" : false,
  "numIndexesBefore" : 4,
  "numIndexesAfter" : 4,
  "note" : "all indexes already exist",
  "ok" : 1
}

> db.student.ensureIndex({projects:1},{sparse:true})
{
  "createdCollectionAutomatically" : false,
  "numIndexesBefore" : 4,
  "numIndexesAfter" : 5,
  "ok" : 1 }
```