ASSIGNMENT 9

```
test> use Assign9
switched to db Assign9
Assign9> db.zipcode.insertMany([
...   { "_id": "10001", "city": "PUNE", "state": "NY", "pop": 8008278 },
...   { "_id": "90001", "city": "BANGALORE", "state": "CA", "pop": 3980404 },
...   { "_id": "60601", "city": "CHENNAI", "state": "IL", "pop": 2716000 },
...   { "_id": "77001", "city": "DELHI", "state": "TX", "pop": 2320268 },
...   { "_id": "19101", "city": "PONDICHEERY", "state": "PA", "pop": 1584064 },
...   { "_id": "10280", "city": "NANITAL", "state": "NY", "pop": 5574 },
...   { "_id": "94101", "city": "MUMBAI", "state": "CA", "pop": 870887 },
...   { "_id": "10002", "city": "OOTY", "state": "NY", "pop": 5000000 }
... ])
...
{
  acknowledged: true,
  insertedIds: {
    '0': '10001',
    '1': '90001',
    '2': '60601',
    '3': '77001',
    '4': '19101',
    '5': '10280',
    '6': '94101',
    '7': '10002'
  }
}
```

//Return States with Populations above 10 Million

```
Assign9> db.zipcode.aggregate([
...   {
...     "$group": {
...       "_id": "$state",
...       "total_population": { "$sum": "$pop" }
...     }
...   },
...   {
...     "$match": {
...       "total_population": { "$gt": 10000000 }
...     }
...   },
...   {
...     "$project": {
...       "_id": 0,
```

```
...       "state": "$_id",
...       "total_population": 1
...     }
...   }
... ])
...
[ { total_population: 13013852, state: 'NY' } ]
```

//**Employees Collection**

```
Assign9>  db.employees.insertMany([
...     { "name": "Anica", "department": "IT", "salary": 70000, "roll_no": 1 },
...     { "name": "Bobby", "department": "HR", "salary": 45000, "roll_no": 2 },
...     { "name": "Chitra", "department": "Finance", "salary": 60000, "roll_no": 3 },
...     { "name": "Dev", "department": "IT", "salary": 65000, "roll_no": 4 },
...     { "name": "Eshaani", "department": "HR", "salary": 48000, "roll_no": 5 },
...     { "name": "Freddy", "department": "Finance", "salary": 75000, "roll_no": 6 },
...     { "name": "Gayatri", "department": "IT", "salary": 80000, "roll_no": 7 },
...     { "name": "Sneha", "department": "Finance", "salary": 50000, "roll_no": 8 },
...     { "name": "Aditya", "department": "HR", "salary": 55000, "roll_no": 9 },
...     { "name": "Jenny", "department": "IT", "salary": 90000, "roll_no": 10 }
...   ]);
...
...
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('67f2b586ec73fe1354b71236'),
    '1': ObjectId('67f2b586ec73fe1354b71237'),
    '2': ObjectId('67f2b586ec73fe1354b71238'),
    '3': ObjectId('67f2b586ec73fe1354b71239'),
    '4': ObjectId('67f2b586ec73fe1354b7123a'),
    '5': ObjectId('67f2b586ec73fe1354b7123b'),
    '6': ObjectId('67f2b586ec73fe1354b7123c'),
    '7': ObjectId('67f2b586ec73fe1354b7123d'),
    '8': ObjectId('67f2b586ec73fe1354b7123e'),
    '9': ObjectId('67f2b586ec73fe1354b7123f')
  }
}
```

Assign9> **//Displaying dept wise salary**

```
Assign9> db.employees.aggregate([
...   {
...     "$group": {
...       "_id": "$department",
...       "avg_salary": { "$avg": "$salary" }
...     }
...   }
```

```
... ]);
...
[
  { _id: 'HR', avg_salary: 49333.333333333336 },
  { _id: 'Finance', avg_salary: 61666.666666666664 },
  { _id: 'IT', avg_salary: 76250 }
]
Assign9> //Display the number of employees working in each department

Assign9> db.employees.aggregate([
...   {
...     "$group": {
...       "_id": "$department",
...       "total_employees": { "$sum": 1 }
...     }
...   }
... ]);
...
[
  { _id: 'IT', total_employees: 4 },
  { _id: 'HR', total_employees: 3 },
  { _id: 'Finance', total_employees: 3 }
]
Assign9> // Display the department wise total salary of departments having total salary
greater than or equals to 50000/-
Assign9> db.employees.aggregate([
...   {
...     "$group": {
...       "_id": "$department",
...       "total_salary": { "$sum": "$salary" }
...     }
...   },
...   {
...     "$match": {
...       "total_salary": { "$gte": 50000 }
...     }
...   }
... ]);
...
[
  { _id: 'HR', total_salary: 148000 },
  { _id: 'Finance', total_salary: 185000 },
  { _id: 'IT', total_salary: 305000 }
]
Assign9>Queries using different operators (max, min, etc.)
Assign9> db.employees.aggregate([
```

```
...   {
...     "$group": {
...       "_id": "$department",
...       "max_salary": { "$max": "$salary" }
...     }
...   }
... ]);
...
[
  { _id: 'HR', max_salary: 55000 },
  { _id: 'Finance', max_salary: 75000 },
  { _id: 'IT', max_salary: 90000 }
]
Assign9> db.employees.aggregate([
...   {
...     "$group": {
...       "_id": "$department",
...       "min_salary": { "$min": "$salary" }
...     }
...   }
... ]);
...
[
  { _id: 'Finance', min_salary: 50000 },
  { _id: 'IT', min_salary: 65000 },
  { _id: 'HR', min_salary: 45000 }
]
Assign9> //Create the simple index on roll_no field
Assign9> db.employees.createIndex({ "roll_no": 1 });
roll_no_1
Assign9> //Create unique index on any field for above given collections
Assign9> db.employees.createIndex({ "name": 1 }, { unique: true });
name_1
Assign9> // Create compound index on any fields for above given collections
Assign9> db.employees.createIndex({ "department": 1, "salary": -1 });
department_1_salary_-1
Assign9> // Show all indexes created in the database PCCOE
Assign9>  db.getCollectionNames().forEach(function(coll)  {
...   print("Indexes for " + coll + ":");
...   printjson(db[coll].getIndexes());
... });
Indexes for zipcode:
[
  {
    v: 2,
    key: {
```

```
    _id: 1
   },
   name: '_id_'
  }
]
Indexes for employees:
[
  {
   v: 2,
   key: {
    _id: 1
   },
   name: '_id_'
  },
  {
   v: 2,
   key: {
    roll_no: 1
   },
   name: 'roll_no_1'
  },
  {
   v: 2,
   key: {
    name: 1
   },
   name: 'name_1',
   unique: true
  },
  {
   v: 2,
   key: {
    department: 1,
    salary: -1
   },
   name:  'department_1_salary_-1'
  }
]

Assign9> //Show all indexes created in the above collection
Assign9> db.employees.getIndexes();
[
  { v: 2, key: { _id: 1 }, name: '_id_' },
  { v: 2, key: { roll_no: 1 }, name: 'roll_no_1' },
  { v: 2, key: { name: 1 }, name: 'name_1', unique: true },
  {
```

```
    v: 2,
    key: { department: 1, salary: -1 },
    name: 'department_1_salary_-1'
  }
]
```