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Class : TE A

Roll No : TECOA124

Batch : A2

Assignment No. 11

Title: Map-Reduce

Using Map-Reduce function comply the following requirements

1. Display the salary of employees department wise

```
db.teachers.find({})
{ "_id" : ObjectId("5d68a54e929b042788bd46c1"), "tname" : "rahul", "dno" : 101,
"dname" : "comp", "experience" : 5, "salary" : 50000, "doj" : ISODate("1998-12-
31T18:30:00Z") }
{ "_id" : ObjectId("5d68a62d929b042788bd46c2"), "dname" : "comp", "dno" : 101, "doj" :
ISODate("2005-05-31T18:30:00Z"), "experience" : 3, "salary" : 20000, "tname" :
"sonali" }
{ "_id" : ObjectId("5d68a696929b042788bd46c3"), "tname" : "sudeep", "dno" : 101,
"dname" : "comp", "experience" : 15, "salary" : 200000, "doj" : ISODate("1997-05-
31T18:30:00Z") }
{ "_id" : ObjectId("5d68a724929b042788bd46c4"), "tname" : "ashley", "dno" : 101,
"dname" : "comp", "experience" : 1, "salary" : 2000, "doj" : ISODate("2018-05-
31T18:30:00Z") }
{ "_id" : ObjectId("5d68a928929b042788bd46c5"), "tname" : "reema", "dno" : 103,
"dname" : "entc", "experience" : 4, "salary" : 30000, "doj" : ISODate("2012-12-
11T18:30:00Z") }
{ "_id" : ObjectId("5d68a994929b042788bd46c6"), "tname" : "sayali", "dno" : 103,
"dname" : "entc", "experience" : 2, "salary" : 10000, "doj" : ISODate("2017-08-
22T18:30:00Z") }
{ "_id" : ObjectId("5d68aac2929b042788bd46c7"), "tname" : "shaikh", "dno" : 104,
"dname" : "mech", "experience" : 7, "salary" : 100000, "doj" : ISODate("2000-07-
28T18:30:00Z") }
{ "_id" : ObjectId("5d68aaf8929b042788bd46c8"), "tname" : "jagtap", "dno" : 105,
"dname" : "ce", "experience" : 6, "salary" : 70000, "doj" : ISODate("2002-07-
19T18:30:00Z") }
{ "_id" : ObjectId("5d70ae9da11857cf2efb5c3e"), "dname" : "comp", "dno" : 101, "doj" :
ISODate("1998-12-22T18:30:00Z"), "experience" : 4, "salary" : 40000, "tname" :
"kulloli" }
{ "_id" : ObjectId("5d70aec5a11857cf2efb5c3f"), "dname" : "comp", "dno" : 101, "doj" :
ISODate("1999-03-18T18:30:00Z"), "experience" : 1, "salary" : 400, "tname" :
"gokhale" }
```

**db.teachers.mapReduce(function()
{emit(this.dname,this.salary);},function(keydname,valuesalary){return
Array.sum(valuesalary)},{out:'total',})**
```
{
        "result" : "total",
        "timeMillis" : 181,
```

```
        "counts" : {
                "input" : 10,
                "emit" : 10,
                "reduce" : 2,
                "output" : 4
        },
        "ok" : 1,
}
> db.total.find()
{ "_id" : "ce", "value" : 70000 }
{ "_id" : "comp", "value" : 312400 }
{ "_id" : "entc", "value" : 40000 }
{ "_id" : "mech", "value" : 100000 }
```

2. Display the count of employees departmentwise

```
db.teachers.find({})
{ "_id" : ObjectId("5d68a54e929b042788bd46c1"), "tname" : "rahul", "dno" : 101,
"dname" : "comp", "experience" : 5, "salary" : 50000, "doj" : ISODate("1998-12-
31T18:30:00Z") }
{ "_id" : ObjectId("5d68a62d929b042788bd46c2"), "dname" : "comp", "dno" : 101, "doj" :
ISODate("2005-05-31T18:30:00Z"), "experience" : 3, "salary" : 20000, "tname" :
"sonali" }
{ "_id" : ObjectId("5d68a696929b042788bd46c3"), "tname" : "sudeep", "dno" : 101,
"dname" : "comp", "experience" : 15, "salary" : 200000, "doj" : ISODate("1997-05-
31T18:30:00Z") }
{ "_id" : ObjectId("5d68a724929b042788bd46c4"), "tname" : "ashley", "dno" : 101,
"dname" : "comp", "experience" : 1, "salary" : 2000, "doj" : ISODate("2018-05-
31T18:30:00Z") }
{ "_id" : ObjectId("5d68a928929b042788bd46c5"), "tname" : "reema", "dno" : 103,
"dname" : "entc", "experience" : 4, "salary" : 30000, "doj" : ISODate("2012-12-
11T18:30:00Z") }
{ "_id" : ObjectId("5d68a994929b042788bd46c6"), "tname" : "sayali", "dno" : 103,
"dname" : "entc", "experience" : 2, "salary" : 10000, "doj" : ISODate("2017-08-
22T18:30:00Z") }
{ "_id" : ObjectId("5d68aac2929b042788bd46c7"), "tname" : "shaikh", "dno" : 104,
"dname" : "mech", "experience" : 7, "salary" : 100000, "doj" : ISODate("2000-07-
28T18:30:00Z") }
{ "_id" : ObjectId("5d68aaf8929b042788bd46c8"), "tname" : "jagtap", "dno" : 105,
"dname" : "ce", "experience" : 6, "salary" : 70000, "doj" : ISODate("2002-07-
19T18:30:00Z") }
{ "_id" : ObjectId("5d70ae9da11857cf2efb5c3e"), "dname" : "comp", "dno" : 101, "doj" :
ISODate("1998-12-22T18:30:00Z"), "experience" : 4, "salary" : 40000, "tname" :
"kulloli" }
{ "_id" : ObjectId("5d70aec5a11857cf2efb5c3f"), "dname" : "comp", "dno" : 101, "doj" :
ISODate("1999-03-18T18:30:00Z"), "experience" : 1, "salary" : 400, "tname" :
"gokhale" }
```

**db.teachers.mapReduce(function()
{emit(this.dname,1);},function(keydname,keid){return Array.sum(keid)},
{out:"total1"})**

```
{
        "result" : "total1",
        "timeMillis" : 47,
        "counts" : {
                "input" : 10,
                "emit" : 10,
                "reduce" : 2,
                "output" : 4
        },
        "ok" : 1,
```

```
}
> db.total1.find({})
{ "_id" : "ce", "value" : 1 }
{ "_id" : "comp", "value" : 6 }
{ "_id" : "entc", "value" : 2 }
{ "_id" : "mech", "value" : 1 }
```

3. Consider the collection "Orders " with the following types of doccuments
{
_id: ObjectId("50a8240b927d5d8b5891743c"),
cust_id: "abc123",
status: 'A',
price: 25,
}
Return the Total Price Per Customer

```
> db.orders.find({})
{ "_id" : ObjectId("5d96fe4d9c9b7c93e739c548"), "id" : 1, "status" : "A", "price" : 500 }
{ "_id" : ObjectId("5d96fe729c9b7c93e739c549"), "id" : 2, "status" : "D", "price" : 50 }
{ "_id" : ObjectId("5d96fe7e9c9b7c93e739c54a"), "id" : 3, "status" : "b", "price" : 250 }
{ "_id" : ObjectId("5d96fe8a9c9b7c93e739c54b"), "id" : 1, "status" : "A", "price" : 1500 }
{ "_id" : ObjectId("5d96fe949c9b7c93e739c54c"), "id" : 4, "status" : "c", "price" : 100 }
{ "_id" : ObjectId("5d96feaa9c9b7c93e739c54d"), "id" : 2, "status" : "C", "price" : 40 }
```

db.orders.mapReduce(function()
{emit(this.id,this.price);},function(keyid,valuesprice){return
Array.sum(valuesprice)},{out:'total3'})
```
{
        "result" : "total3",
        "timeMillis" : 34,
        "counts" : {
                "input" : 6,
                "emit" : 6,
                "reduce" : 2,
                "output" : 4
        },
        "ok" : 1,
}
> db.total3.find({})
{ "_id" : 1, "value" : 2000 }
{ "_id" : 2, "value" : 90 }
{ "_id" : 3, "value" : 250 }
{ "_id" : 4, "value" : 100 }
```

4. Display the total salatry of employees working in computer department.

```
db.teachers.find({})
{ "_id" : ObjectId("5d68a54e929b042788bd46c1"), "tname" : "rahul", "dno" : 101,
"dname" : "comp", "experience" : 5, "salary" : 50000, "doj" : ISODate("1998-12-
31T18:30:00Z") }
{ "_id" : ObjectId("5d68a62d929b042788bd46c2"), "dname" : "comp", "dno" : 101, "doj" :
ISODate("2005-05-31T18:30:00Z"), "experience" : 3, "salary" : 20000, "tname" :
"sonali" }
{ "_id" : ObjectId("5d68a696929b042788bd46c3"), "tname" : "sudeep", "dno" : 101,
"dname" : "comp", "experience" : 15, "salary" : 200000, "doj" : ISODate("1997-05-
31T18:30:00Z") }
{ "_id" : ObjectId("5d68a724929b042788bd46c4"), "tname" : "ashley", "dno" : 101,
"dname" : "comp", "experience" : 1, "salary" : 2000, "doj" : ISODate("2018-05-
31T18:30:00Z") }
```

{ "_id" : ObjectId("5d68a928929b042788bd46c5"), "tname" : "reema", "dno" : 103, "dname" : "entc", "experience" : 4, "salary" : 30000, "doj" : ISODate("2012-12-11T18:30:00Z") }
{ "_id" : ObjectId("5d68a994929b042788bd46c6"), "tname" : "sayali", "dno" : 103, "dname" : "entc", "experience" : 2, "salary" : 10000, "doj" : ISODate("2017-08-22T18:30:00Z") }
{ "_id" : ObjectId("5d68aac2929b042788bd46c7"), "tname" : "shaikh", "dno" : 104, "dname" : "mech", "experience" : 7, "salary" : 100000, "doj" : ISODate("2000-07-28T18:30:00Z") }
{ "_id" : ObjectId("5d68aaf8929b042788bd46c8"), "tname" : "jagtap", "dno" : 105, "dname" : "ce", "experience" : 6, "salary" : 70000, "doj" : ISODate("2002-07-19T18:30:00Z") }
{ "_id" : ObjectId("5d70ae9da11857cf2efb5c3e"), "dname" : "comp", "dno" : 101, "doj" : ISODate("1998-12-22T18:30:00Z"), "experience" : 4, "salary" : 40000, "tname" : "kulloli" }
{ "_id" : ObjectId("5d70aec5a11857cf2efb5c3f"), "dname" : "comp", "dno" : 101, "doj" : ISODate("1999-03-18T18:30:00Z"), "experience" : 1, "salary" : 400, "tname" : "gokhale" }

db.teachers.mapReduce(function() {emit(this.dname,this.salary);},function(keydname,valuesalary){return Array.sum(valuesalary)},{query:{dname:"comp"},out:"total4"})
```
{
        "result" : "total4",
        "timeMillis" : 5,
        "counts" : {
                "input" : 6,
                "emit" : 6,
                "reduce" : 1,
                "output" : 1
        },
        "ok" : 1,
}
> db.total4.find({})
{ "_id" : "comp", "value" : 312400 }
```

5. Consider each document in the zipcode collection has the following form:
```
{
"_id": "10280",
"city": "NEW YORK",
"state": "NY",
"pop": 5574,
}
```
Return the city wise population of the cities in the NY state.

```
> db.zipcode.find({})
{ "_id" : ObjectId("5d71e0700787a916d594dbd0"), "city" : "pune", "state" : "mah", "pop" : 50000 }
{ "_id" : ObjectId("5d71e0b90787a916d594dbd1"), "city" : "mumbai", "state" : "mah", "pop" : 100000 }
{ "_id" : ObjectId("5d71e14d0787a916d594dbd2"), "city" : "nashik", "state" : "mah", "pop" : 50000 }
{ "_id" : ObjectId("5d71e15f0787a916d594dbd3"), "city" : "aurangabad", "state" : "mah", "pop" : 20000 }
{ "_id" : ObjectId("5d71e18c0787a916d594dbd4"), "city" : "varanasi", "state" : "up", "pop" : 40000 }
{ "_id" : ObjectId("5d71e1d60787a916d594dbd5"), "city" : "lucknow", "state" : "up", "pop" : 70000 }
{ "_id" : ObjectId("5d71e38c0787a916d594dbd6"), "city" : "gorakhpur", "state" : "up", "pop" : 10000000 }
```

{ "_id" : ObjectId("5d71e74e0787a916d594dbd7"), "city" : "rampur", "state" : "up", "pop" : 20000000 }

db.zipcode.mapReduce(function()
{emit(this.city,this.pop);},function(keycity,valuespop){return
Array.sum(valuespop)},{query:{state:"mah"},out:"T"})
```
{
        "result" : "T",
        "timeMillis" : 27,
        "counts" : {
                "input" : 4,
                "emit" : 4,
                "reduce" : 0,
                "output" : 4
        },
        "ok" : 1,
}
> db.T.find({})
{ "_id" : "aurangabad", "value" : 20000 }
{ "_id" : "mumbai", "value" : 100000 }
{ "_id" : "nashik", "value" : 50000 }
{ "_id" : "pune", "value" : 50000 }
```