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PRACTICAL NO: 11

ROLL NO: TCOD01

**AIM:** MongoDB – Map-reduces operations: Implement Map reduces operation with suitable example using MongoDB.

Collection “city” which contains the documents given as below

```
{ city: "pune", type: "urban", state: "MH", population:"5600000" }  
-using map reduce, find state wise population  
-using map reduce, find city wise population  
-using map reduce, find type wise
```

```
test> use Department  
switched to db Department  
Department> db.city.insertMany([  
... {city:"pune",type:"urban",state:"MH",population:5600000},  
... {city:"nashik",type:"urban",state:"MH",population:240000},  
... {city:"mumbai",type:"urban",state:"MH",population:25000000},  
... {city:"solapur",type:"rural",state:"MH",population:150000},  
... {city:"rajkot",type:"rural",state:"GJ",population:145000},  
... {city:"bhopal",type:"rural",state:"MP",population:1478000},  
... {city:"jalandhar",type:"urban",state:"PB",population:1789451},  
... {city:"udampur",type:"rural",state:"JK",population:510000}])  
  
{  
  acknowledged: true,  
  insertedIds: {  
    '0': ObjectId('68ca54579be938e38ece5f4f'),  
    '1': ObjectId('68ca54579be938e38ece5f50'),  
    '2': ObjectId('68ca54579be938e38ece5f51'),  
    '3': ObjectId('68ca54579be938e38ece5f52'),  
    '4': ObjectId('68ca54579be938e38ece5f53'),  
    '5': ObjectId('68ca54579be938e38ece5f54'),  
    '6': ObjectId('68ca54579be938e38ece5f55'),  
    '7': ObjectId('68ca54579be938e38ece5f56')  
  }  
}
```

```
Departments> var mapState = function(){
... emit(this.state,this.population);
... };

Departments> var reduceState = function(key,values){
... return Array.sum(values);
... };

Departments> db.city.mapReduce(
... mapState,
... reduceState,
... {out:"statewise_population"})
DeprecationWarning: Collection.mapReduce() is deprecated. Use an aggregation instead.
See https://mongodb.com/docs/manual/core/map-reduce for details.
{ result: 'statewise_population', ok: 1 }
Departments> db.statewise_population.find()
[
  { _id: 'MP', value: 1478000 },
  { _id: 'GJ', value: 145000 },
  { _id: 'PB', value: 1789451 },
  { _id: 'JK', value: 510000 },
  { _id: 'MH', value: 30990000 }
]

Departments> var mapCity = function(){
... emit(this.city,this.population);
... };

Departments> var reduceCity = function(key,values){
... return Array.sum(values);
... };

Departments> db.city.mapReduce(
... mapCity,
... reduceCity,
... {out:"citywise_population"})
{ result: 'citywise_population', ok: 1 }
Departments> db.citywise_population.find()
[
  { _id: 'udampur', value: 510000 },
  { _id: 'jalandhar', value: 1789451 },
  { _id: 'pune', value: 5600000 },
  { _id: 'bhopal', value: 1478000 },
  { _id: 'mumbai', value: 25000000 },
  { _id: 'nashik', value: 240000 },
  { _id: 'solapur', value: 150000 },
  { _id: 'rajkot', value: 145000 }
]

Departments> var mapType = function(){
... emit(this.type,this.population);
... };

Departments> var reduceType = function(key,values){
... return Array.sum(values);
... };

Departments> db.city.mapReduce(
... mapType,
... reduceType,
... {out:"typewise_population"})
{ result: 'typewise_population', ok: 1 }
```