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SL1 ASSIGNMENT 15

Problem Statement : Implement Map reduces operation with suitable example on above MongoDB database

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Map Reduce

```
> var mapFun = function() {emit(this.order_id, this.price);};
> var redFun = function(key, values) {return Array.sum(values);};
> db.Orders.mapReduce(mapFun, redFun, {out : "result"});
{
      "result" : "result",
      "timeMillis" : 63,
      "counts" : {
            "input" : 2,
            "emit" : 2,
            "reduce" : 0,
            "output" : 2
      },
      "ok" : 1
}
> db.result.find().pretty();
{ "_id" : 10, "value" : 100 }
{ "_id" : 17, "value" : 7000 }
```

Map Reduce

```
> db.temp.find().pretty();
{
      "_id" : ObjectId("5fc1e93f7ba587b219205f10"),
      "cust_id" : "A123",
      "amount" : 500,
      "status" : "A"
```

```
}
{
      "_id" : ObjectId("5fc1e94d7ba587b219205f11"),
      "cust_id" : "A123",
      "amount" : 250,
      "status" : "A"
}
{
      "_id" : ObjectId("5fc1e95f7ba587b219205f12"),
      "cust_id" : "B212",
      "amount" : 200,
      "status" : "A"
}
{
      "_id" : ObjectId("5fc1e97b7ba587b219205f13"),
      "cust_id" : "A123",
      "amount" : 300,
      "status" : "D"
}

> db.temp.mapReduce(
... function() { emit( this.cust_id, this.amount ); },
... function(key, values) {return Array.sum(values) },
... {
... query : {status : "A"},
... out: "order_totals"
... }
... )
{
      "result" : "order_totals",
      "timeMillis" : 58,
      "counts" : {
            "input" : 3,
            "emit" : 3,
            "reduce" : 1,
```

```
            "output" : 2
      },
      "ok" : 1
}


> db.order_totals.find().pretty();
{ "_id" : "A123", "value" : 750 }
{ "_id" : "B212", "value" : 200 }
```

Map Reduce (Return Total price per customer)

```
> db.orders.insertMany([
...    { _id: 1, cust_id: "Ant O. Knee", ord_date: new Date("2020-03-01"),
price: 25, items: [ { sku: "oranges", qty: 5, price: 2.5 }, { sku: "apples",
qty: 5, price: 2.5 } ], status: "A" },
...    { _id: 2, cust_id: "Ant O. Knee", ord_date: new Date("2020-03-08"),
price: 70, items: [ { sku: "oranges", qty: 8, price: 2.5 }, { sku: "chocolates",
qty: 5, price: 10 } ], status: "A" },
...    { _id: 3, cust_id: "Busby Bee", ord_date: new Date("2020-03-08"), price:
50, items: [ { sku: "oranges", qty: 10, price: 2.5 }, { sku: "pears", qty: 10,
price: 2.5 } ], status: "A" },
...    { _id: 4, cust_id: "Busby Bee", ord_date: new Date("2020-03-18"), price:
25, items: [ { sku: "oranges", qty: 10, price: 2.5 } ], status: "A" },
...    { _id: 5, cust_id: "Busby Bee", ord_date: new Date("2020-03-19"), price:
50, items: [ { sku: "chocolates", qty: 5, price: 10 } ], status: "A"},
...    { _id: 6, cust_id: "Cam Elot", ord_date: new Date("2020-03-19"), price:
35, items: [ { sku: "carrots", qty: 10, price: 1.0 }, { sku: "apples", qty: 10,
price: 2.5 } ], status: "A" },
...    { _id: 7, cust_id: "Cam Elot", ord_date: new Date("2020-03-20"), price:
25, items: [ { sku: "oranges", qty: 10, price: 2.5 } ], status: "A" },
...    { _id: 8, cust_id: "Don Quis", ord_date: new Date("2020-03-20"), price:
75, items: [ { sku: "chocolates", qty: 5, price: 10 }, { sku: "apples", qty: 10,
price: 2.5 } ], status: "A" },
...    { _id: 9, cust_id: "Don Quis", ord_date: new Date("2020-03-20"), price:
55, items: [ { sku: "carrots", qty: 5, price: 1.0 }, { sku: "apples", qty: 10,
price: 2.5 }, { sku: "oranges", qty: 10, price: 2.5 } ], status: "A" },
...    { _id: 10, cust_id: "Don Quis", ord_date: new Date("2020-03-23"), price:
25, items: [ { sku: "oranges", qty: 10, price: 2.5 } ], status: "A" }
... ])
{
```

```
      "acknowledged" : true,
      "insertedIds" : [
            1,
            2,
            3,
            4,
            5,
            6,
            7,
            8,
            9,
            10
      ]
}
> var mapFunction1 = function() {
...    emit(this.cust_id, this.price);
... };
> var reduceFunction1 = function(keyCustId, valuesPrices) {
...    return Array.sum(valuesPrices);
... };
> db.orders.mapReduce(
...    mapFunction1,
...    reduceFunction1,
...    { out: "map_reduce_example" }
... )
{
      "result" : "map_reduce_example",
      "timeMillis" : 132,
      "counts" : {
            "input" : 10,
            "emit" : 10,
            "reduce" : 4,
            "output" : 4
      },
      "ok" : 1
```

```
}
> db.map_reduce_example.find().sort( { _id: 1 } )
{ "_id" : "Ant O. Knee", "value" : 95 }
{ "_id" : "Busby Bee", "value" : 125 }
{ "_id" : "Cam Elot", "value" : 60 }
{ "_id" : "Don Quis", "value" : 155 }
```

Calculate Order and Total Quantity with Average Quantity Per Item

```
> var mapFunction2 = function() {
...     for (var idx = 0; idx < this.items.length; idx++) {
...        var key = this.items[idx].sku;
...        var value = { count: 1, qty: this.items[idx].qty };
...
...        emit(key, value);
...     }
... };
> var reduceFunction2 = function(keySKU, countObjVals) {
...    reducedVal = { count: 0, qty: 0 };
...
...    for (var idx = 0; idx < countObjVals.length; idx++) {
...        reducedVal.count += countObjVals[idx].count;
...        reducedVal.qty += countObjVals[idx].qty;
...    }
...
...    return reducedVal;
... };
> var finalizeFunction2 = function (key, reducedVal) {
...   reducedVal.avg = reducedVal.qty/reducedVal.count;
...   return reducedVal;
... };
> db.orders.mapReduce(
...    mapFunction2,
...    reduceFunction2,
...    {
...      out: { merge: "map_reduce_example2" },
```

```
...      query: { ord_date: { $gte: new Date("2020-03-01") } },
...      finalize: finalizeFunction2
...    }
...  );
{
      "result" : "map_reduce_example2",
      "timeMillis" : 108,
      "counts" : {
            "input" : 10,
            "emit" : 17,
            "reduce" : 4,
            "output" : 5
      },
      "ok" : 1
}
> db.map_reduce_example2.find().sort( { _id: 1 } )
{ "_id" : "apples", "value" : { "count" : 4, "qty" : 35, "avg" : 8.75 } }
{ "_id" : "carrots", "value" : { "count" : 2, "qty" : 15, "avg" : 7.5 } }
{ "_id" : "chocolates", "value" : { "count" : 3, "qty" : 15, "avg" : 5 } }
{ "_id" : "oranges", "value" : { "count" : 7, "qty" : 63, "avg" : 9 } }
{ "_id" : "pears", "value" : { "count" : 1, "qty" : 10, "avg" : 10 } }
```