

# MONGODB ASSIGNMENT 3

## 1. Total sales per product.

```
db.sales.aggregate([{$project: {  
    product: 1,  
    total_sales: { $multiply: ["$price", "$quantity"] }},  
    {$group: { _id: "$product",  
    total_sales: { $sum: "$total_sales" } } } ])
```

```
Sales_Data> db.sales.aggregate([{$project: {  
...     product: 1,  
...     total_sales: { $multiply: ["$price", "$quantity"] }},  
...     {$group: { _id: "$product",  
...     total_sales: { $sum: "$total_sales" } } } ])  
[  
  { _id: 'TV', total_sales: 3600 },  
  { _id: 'Phone', total_sales: 6000 },  
  { _id: 'Shoes', total_sales: 1000 },  
  { _id: 'Watch', total_sales: 1050 },  
  { _id: 'Laptop', total_sales: 4000 }  
]  
Sales_Data>
```

## 2. Total revenue per product.

```
db.sales.aggregate([{$group: { _id: "$product",  
    total_revenue: { $sum: {  
    $multiply: ["$price", "$quantity"] } } } ])
```

```
Sales_Data> db.sales.aggregate([{$group: { _id: "$product",  
...     total_revenue: { $sum: {  
...     $multiply: ["$price", "$quantity"] } } } ])  
[  
  { _id: 'Laptop', total_revenue: 4000 },  
  { _id: 'Shoes', total_revenue: 1000 },  
  { _id: 'Phone', total_revenue: 6000 },  
  { _id: 'TV', total_revenue: 3600 },  
  { _id: 'Watch', total_revenue: 1050 }  
]
```

## 3. Total revenue per category.

```
db.sales.aggregate([{$group: { _id: "$category",  
    total_revenue: { $sum: {  
    $multiply: ["$price", "$quantity"] } } } ])
```

```
Sales_Data> db.sales.aggregate([{$group: {_id: "$category",
...                                     total_revenue: {$sum: {
...                                     $multiply: ["$price", "$quantity"]}}}}])
[
  { _id: 'Electronics', total_revenue: 13600 },
  { _id: 'Fashion', total_revenue: 2050 }
]
```

#### 4. Count of products per category.

```
db.sales.aggregate([{$group: {_id: "$category",
                               prod_category: {$sum: "$quantity"}}}])
```

```
Sales_Data> db.sales.aggregate([{$group: {_id: "$category",
...                                     prod_category: {$sum: "$quantity"}}}])
[
  { _id: 'Electronics', prod_category: 18 },
  { _id: 'Fashion', prod_category: 27 }
]
Sales_Data>
```

#### 5. Store-wise total sales.

```
db.sales.aggregate([{$group: {_id: "$store",
                               total_revenue: {$sum: {
                               $multiply: ["$price", "$quantity"]}}}}])
```

```
Sales_Data> db.sales.aggregate([{$group: {_id: "$store",
...                                     total_revenue: {$sum: {
...                                     $multiply: ["$price", "$quantity"]}}}}])
[
  { _id: 'C', total_revenue: 1000 },
  { _id: 'B', total_revenue: 7050 },
  { _id: 'A', total_revenue: 7600 }
]
```

#### 6. Average price of products per category.

```
db.sales.aggregate([{$group: {_id: "$category",
                               avg_price: {$avg: "$price"}}}])
```

```
Sales_Data> db.sales.aggregate([{$group: {_id: "$category",
...                                     avg_price: {$avg: "$price"}}}])
[
  { _id: 'Electronics', avg_price: 866.6666666666666 },
  { _id: 'Fashion', avg_price: 100 }
]
Sales_Data>
```

## 7. Top-selling product.

```
db.sales.aggregate([{$group: {_id: "$product",  
    top_product: {$sum: "$quantity"} }},  
    {$sort: {top_product: -1}}, {$limit: 1}])
```

```
Sales_Data> db.sales.aggregate([{$group: {_id: "$product",  
    ...    top_product: {$sum: "$quantity"} }},  
    ...    {$sort: {top_product: -1}}, {$limit: 1}])  
[ { _id: 'Shoes', top_product: 20 } ]  
Sales_Data>
```

## 8. Total sales for Electronics category.

```
db.sales.aggregate([{$match: {category: "Electronics"}},  
  
    {$group: {_id: null, revenue: {$sum: {$multiply: ["$price", "$quantity"]}}, sales: {$sum: "$quantity"} }])
```

```
Sales_Data> db.sales.aggregate([{$match: {category: "Electronics"}},  
    ...    {$group: {_id: null, revenue: {$sum: {$multiply: ["$price", "$quantity"]}},  
    ...    sales: {$sum: "$quantity"} }])  
[ { _id: null, revenue: 13600, sales: 18 } ]  
Sales_Data> _
```

## 9. Sales trend over time (day-wise total sales).

```
db.sales.aggregate([{$group: {_id: {$dateToString: {format: "%Y-%m-%d", date: "$date"}},  
  
    sales: {$sum: {$multiply: ["$price", "$quantity"]}} }},  
  
    {$sort: {_id: 1}}])
```

```
Sales_Data> db.sales.aggregate([{$group: {_id: {$dateToString: {format: "%Y-%m-%d", date: "$date"}},  
    ...    sales: {$sum: {$multiply: ["$price", "$quantity"]}} }},  
    ...    {$sort: {_id: 1}}])  
[  
  { _id: '2024-03-01', sales: 4000 },  
  { _id: '2024-03-02', sales: 6000 },  
  { _id: '2024-03-03', sales: 3600 },  
  { _id: '2024-03-04', sales: 1000 },  
  { _id: '2024-03-05', sales: 1050 }  
]  
Sales_Data> _
```

**10. Highest revenue-generating product.**

```
db.sales.aggregate([{$group:{_id:"$product",
                           sales:{$sum:{$multiply:["$price","$quantity"]}}}},
                   {$sort:{sales:-1}},{$limit:1}])
```

```
Sales_Data> db.sales.aggregate([{$group:{_id:"$product",
...                               sales:{$sum:{$multiply:["$price","$quantity"]}}}},
...                               {$sort:{sales:-1}},{$limit:1}])
[ { _id: 'Phone', sales: 6000 } ]
Sales_Data>
```

**11. Average revenue per sale.**

```
db.sales.aggregate([{$group:{_id:null,
                               avgrevenue:{$avg:{$multiply:["$price","$quantity"]}}}}])
```

```
Sales_Data> db.sales.aggregate([{$group:{_id:null,
...                               avgrevenue:{$avg:{$multiply:["$price","$quantity"]}}}}])
[ { _id: null, avgrevenue: 3130 } ]
Sales_Data> _
```

**12. Sales performance per store.**

```
db.sales.aggregate([{$group:{_id:"$store",
                               revenue:{$sum:{$multiply:["$price","$quantity"]}},
                               sales:{$sum:"$quantity"}}})
```

```
Sales_Data> db.sales.aggregate([{$group:{_id:"$store",
...                               revenue:{$sum:{$multiply:["$price","$quantity"]}},
...                               sales:{$sum:"$quantity"}}})
[
  { _id: 'C', revenue: 1000, sales: 20 },
  { _id: 'A', revenue: 7600, sales: 8 },
  { _id: 'B', revenue: 7050, sales: 17 }
]
```

**13. Products sold more than 5 times.**

```
db.sales.aggregate([{$group:{_id:"$product",qty_sold:{$sum:"$quantity"}},
                   {$match:{qty_sold:{$gt:5}}})]
```

```
Sales_Data> db.sales.aggregate([{$group: {_id: "$product", qty_sold: {$sum: "$quantity"}}},
...                               {$match: {qty_sold: {$gt: 5}}}]])
[
  { _id: 'Shoes', qty_sold: 20 },
  { _id: 'Watch', qty_sold: 7 },
  { _id: 'Phone', qty_sold: 10 }
]
```

#### 14. Least sold product.

```
db.sales.aggregate([{$group: {_id: "$product", qty_sold: {$sum: "$quantity"}}},
```

```
    {$sort: {qty_sold: 1}}, {$limit: 1}])
```

```
Sales_Data> db.sales.aggregate([{$group: {_id: "$product", qty_sold: {$sum: "$quantity"}},
...                               {$sort: {qty_sold: 1}}, {$limit: 1}])
[ { _id: 'TV', qty_sold: 3 } ]
```

#### 15. Monthly sales summary.

```
db.sales.aggregate([{$group: {_id: {$dateToString: {format: "%Y-%m", date: "$date"}},
```

```
    revenue: {$sum: {$multiply: ["$price", "$quantity"]}},
```

```
    sales: {$sum: "$quantity"}}])
```

```
Sales_Data> db.sales.aggregate([{$group: {_id: {$dateToString: {format: "%Y-%m", date: "$date"}},
...                               revenue: {$sum: {$multiply: ["$price", "$quantity"]}},
...                               sales: {$sum: "$quantity"}}])
[ { _id: '2024-03', revenue: 15650, sales: 45 } ]
Sales_Data>
```

#### 16. Number of unique products sold.

```
db.sales.distinct("product").length
```

```
Sales_Data> db.sales.distinct("product").length
5
Sales_Data>
```

#### 17. Maximum and minimum priced product.

```
db.sales.aggregate([{$sort: {"price": -1}},
```

```
    {$group: {_id: null,
```

```
max_price_prod:{$first:"$product"},max_price:{$first:"$price"}
,
min_price_prod:{$last:"$product"},min_price:{$last:"$price"}}}
])
```

```
Sales_Data> db.sales.aggregate([{$sort:{"price":-1}},
...                               {$group: {_id:null,
...                               max_price_prod:{$first:"$product"},max_price:{$first:"$price"},
...                               min_price_prod:{$last:"$product"},min_price:{$last:"$price"}}}],
[
  {
    _id: null,
    max_price_prod: 'TV',
    max_price: 1200,
    min_price_prod: 'Shoes',
    min_price: 50
  }
])
Sales_Data>
```

**18. Total revenue per product in descending order.**

```
db.sales.aggregate([{$group: {_id:"$product",
total_revenue:{$sum:{$multiply:["$price","$quantity"]}}}},
{$sort:{total_revenue:-1}}])
```

```
Sales_Data> db.sales.aggregate([{$group: {_id:"$product",
...                               total_revenue:{$sum:{$multiply:["$price","$quantity"]}}}},
...                               {$sort:{total_revenue:-1}}]),
[
  { _id: 'Phone', total_revenue: 6000 },
  { _id: 'Laptop', total_revenue: 4000 },
  { _id: 'TV', total_revenue: 3600 },
  { _id: 'Watch', total_revenue: 1050 },
  { _id: 'Shoes', total_revenue: 1000 }
])
Sales_Data>
```

**19. Revenue generated per store per category.**

```
db.sales.aggregate([{$group: {_id:{store:"$store",category:"$category"},
total_revenue:{$sum:{$multiply:["$price","$quantity"]}}}}])
```

```
Sales_Data> db.sales.aggregate([{$group:{_id:{store:"$store",category:"$category"},
...
total_revenue:{$sum:{$multiply:["$price","$quantity"]}}}}])
[
  { _id: { store: 'C', category: 'Fashion' }, total_revenue: 1000 },
  { _id: { store: 'B', category: 'Electronics' }, total_revenue: 6000 },
  { _id: { store: 'A', category: 'Electronics' }, total_revenue: 7600 },
  { _id: { store: 'B', category: 'Fashion' }, total_revenue: 1050 }
]
```

## 20. Products contributing more than 50% revenue.

```
db.sales.aggregate([{$group:{_id:null,
total_revenue:{$sum:{$multiply:["$price","$quantity"]}}},
{$group:{_id:"$product",
prod_revenue:{$sum:{$multiply:["$price","$quantity"]}}},
{$match:{$expr:{$gt:["$prod_revenue",{$multiply:["$total_revenue",0.5]}}}}])
```

```
Sales_Data> db.sales.aggregate([{$group:{_id:null,
...
total_revenue:{$sum:{$multiply:["$price","$quantity"]}}},
...
{$group:{_id:"$product",
...
prod_revenue:{$sum:{$multiply:["$price","$quantity"]}}},
...
{$match:{$expr:{$gt:["$prod_revenue",{$multiply:["$total_revenue",0.5]}}}}])
[ { _id: null, prod_revenue: 0 } ]
Sales_Data> _
```