Assignment 2

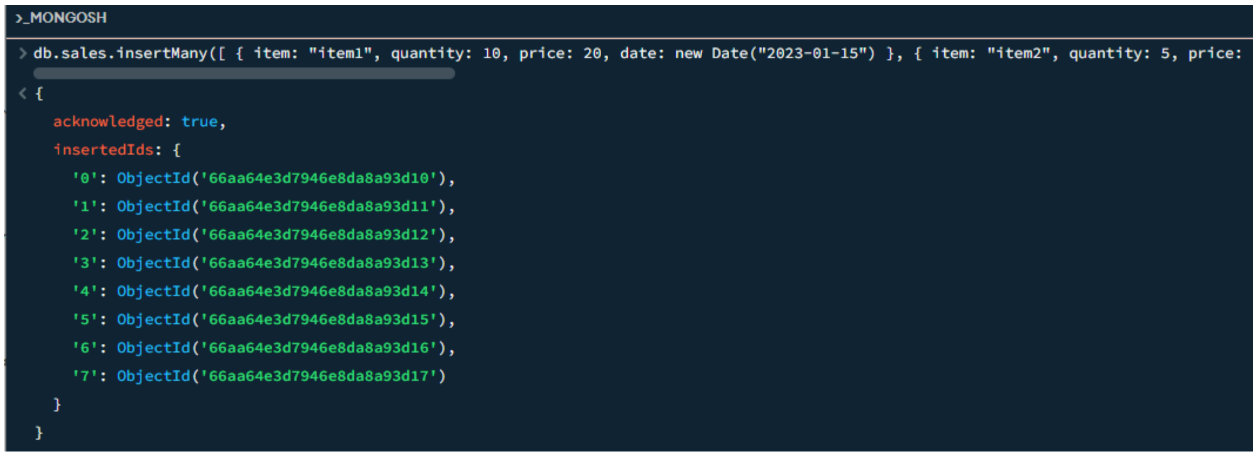
Aggregation Framework

1)Insert documents into a sales collection with fields such as item, quantity, price, and date?

Answer:-

Use sale
db.sales.insertMany([{ item: "item1", quantity: 10, price: 20, date: new Date("2023-01-15") }, { item: "item2", quantity: 5, price: 50, date: new Date("2023-02-10") }, { item: "item1", quantity: 7, price: 20, date: new Date("2023-03-12") }, { item: "item3", quantity: 2, price: 100, date: new Date("2023-01-30") }, { item: "item2", quantity: 1, price: 50, date: new Date("2023-04-01") }, { item: "item1", quantity: 20, price: 20, date: new Date("2023-02-20") }, { item: "item3", quantity: 4, price: 100, date: new Date("2023-03-05") }, { item: "item2", quantity: 3, price: 50, date: new Date("2023-05-10") }]);

Output:-



```
>_MONGOSH
> db.sales.insertMany([ { item: "item1", quantity: 10, price: 20, date: new Date("2023-01-15") }, { item: "item2", quantity: 5, price:
< {
    acknowledged: true,
    insertedIds: {
      '0': ObjectId('66aa64e3d7946e8da8a93d10'),
      '1': ObjectId('66aa64e3d7946e8da8a93d11'),
      '2': ObjectId('66aa64e3d7946e8da8a93d12'),
      '3': ObjectId('66aa64e3d7946e8da8a93d13'),
      '4': ObjectId('66aa64e3d7946e8da8a93d14'),
      '5': ObjectId('66aa64e3d7946e8da8a93d15'),
      '6': ObjectId('66aa64e3d7946e8da8a93d16'),
      '7': ObjectId('66aa64e3d7946e8da8a93d17')
    }
  }
```

Aggregation Pipelines

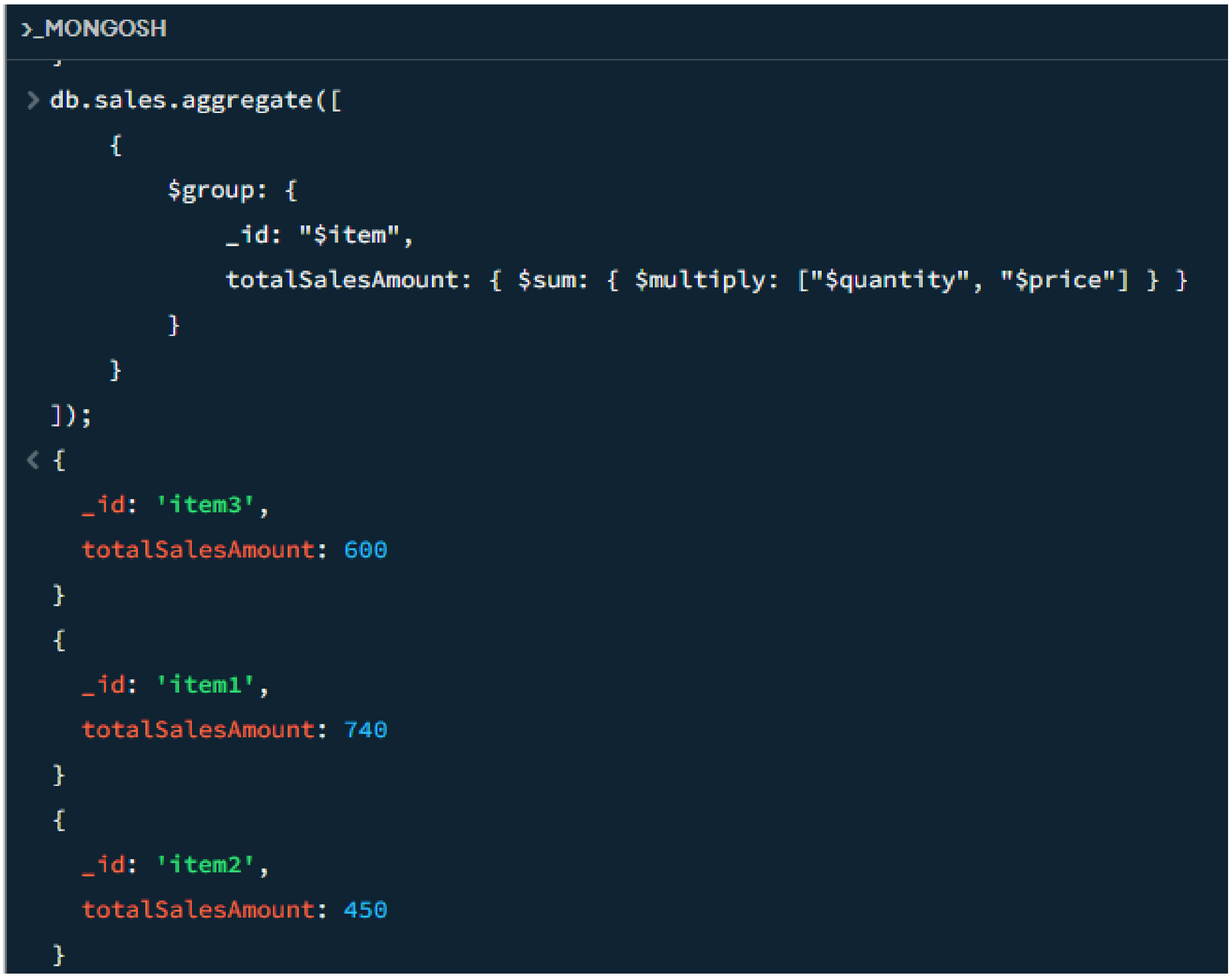
1. Calculate the Total Sales Amount for Each Item?

Answer:-

db.sales.aggregate([

```
    {
        $group: {
            _id: "$item",
            totalSalesAmount: { $sum: { $multiply: ["$quantity", "$price"] } }
        }
    }
]);
```

Output:-



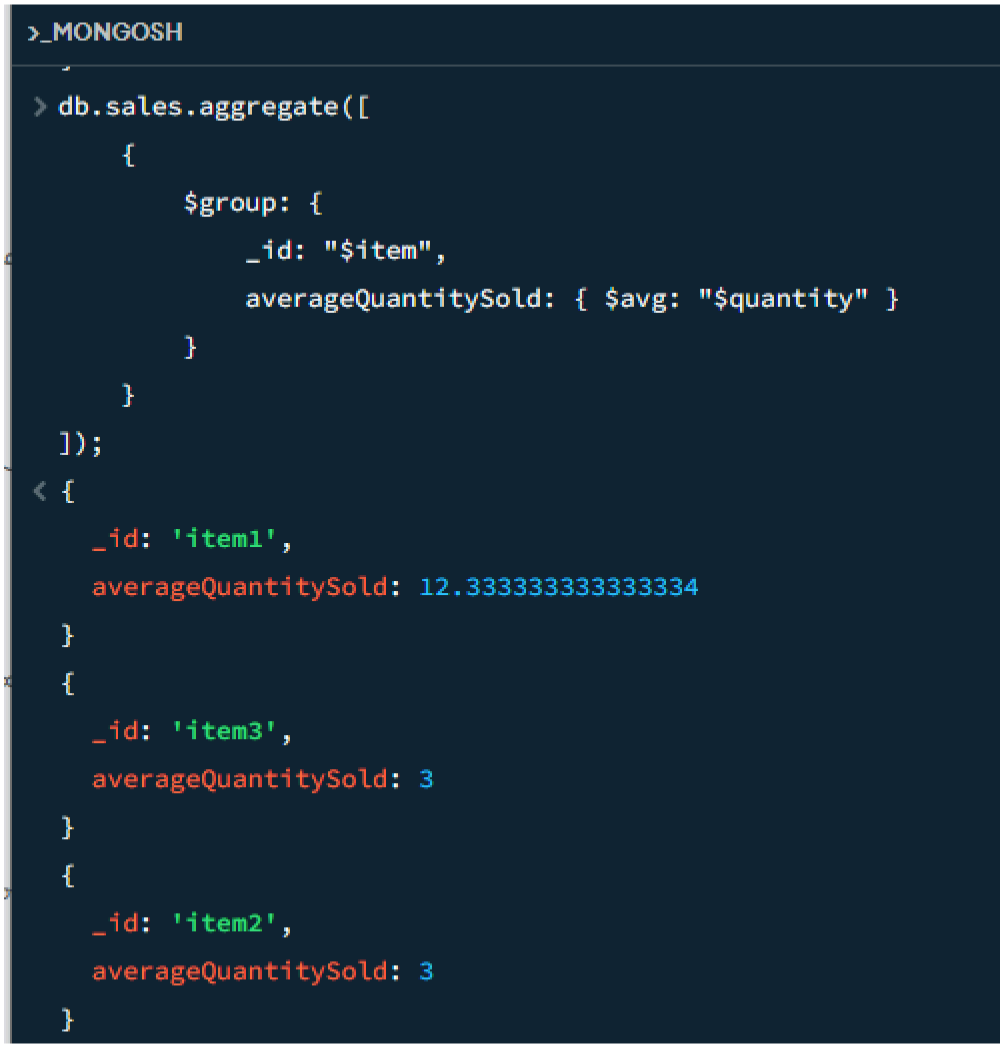
```
> db.sales.aggregate([
      {
          $group: {
              _id: "$item",
              totalSalesAmount: { $sum: { $multiply: ["$quantity", "$price"] } }
          }
      }
  ]);
< {
    _id: 'item3',
    totalSalesAmount: 600
  }
  {
    _id: 'item1',
    totalSalesAmount: 740
  }
  {
    _id: 'item2',
    totalSalesAmount: 450
  }
```

2. Find the Average Quantity Sold Per Item?

Answer

```
db.sales.aggregate([
    {
        $group: {
            _id: "$item",
            averageQuantitySold: { $avg: "$quantity" }
        }
    }
]);
```

Output:-

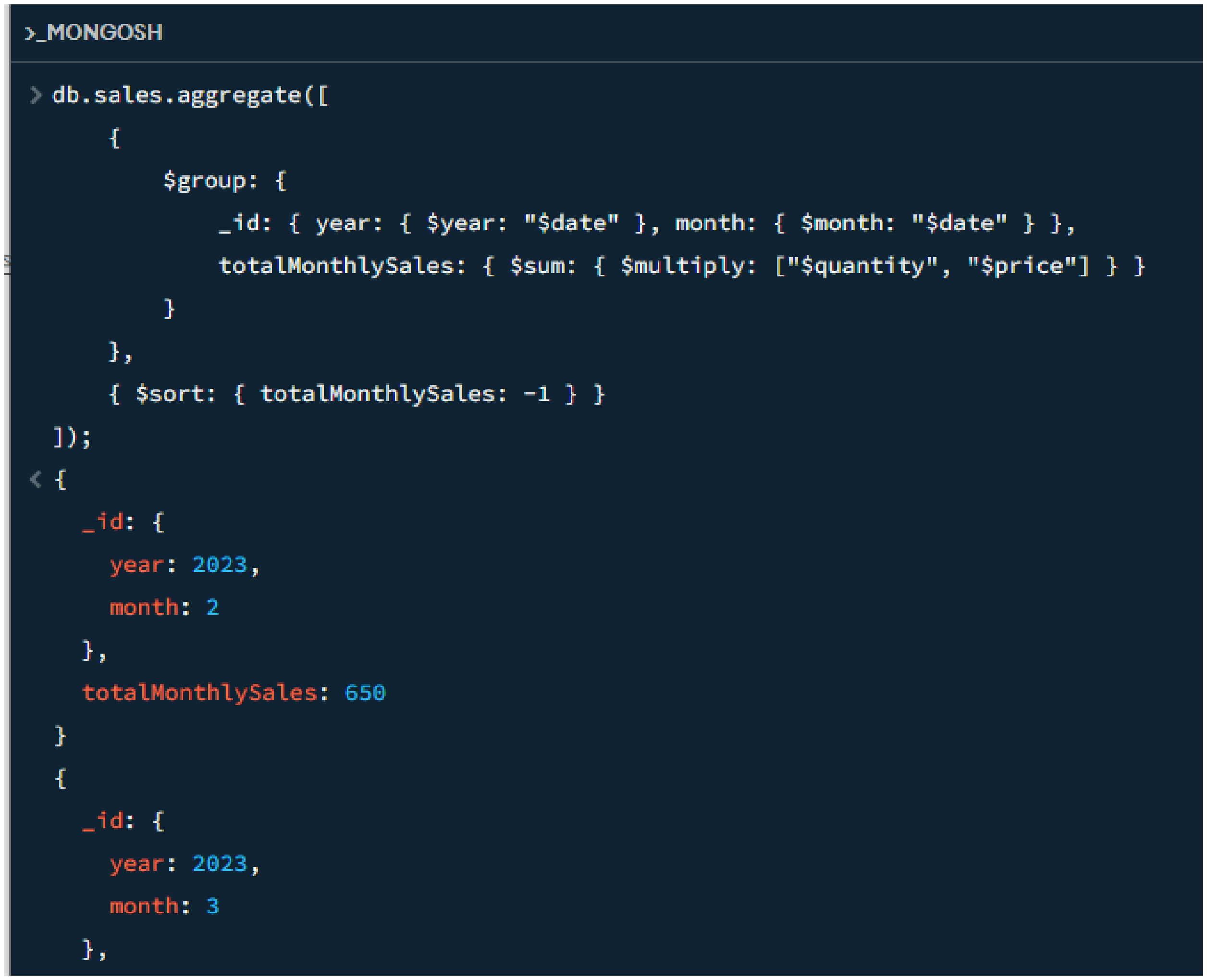


```
> db.sales.aggregate([
      {
          $group: {
              _id: "$item",
              averageQuantitySold: { $avg: "$quantity" }
          }
      }
  ]);
< {
    _id: 'item1',
    averageQuantitySold: 12.333333333333334
  }
  {
    _id: 'item3',
    averageQuantitySold: 3
  }
  {
    _id: 'item2',
    averageQuantitySold: 3
  }
```

3. Group Sales by Month and Calculate the Total Sales for Each Month, then Sort by the Largest Value

```
db.sales.aggregate([
  {
    $group: {
      _id: { year: { $year: "$date" }, month: { $month: "$date" } },
      totalMonthlySales: { $sum: { $multiply: ["$quantity", "$price"] } }
    }
  },
  { $sort: { totalMonthlySales: -1 } }
]);
```

Output:-



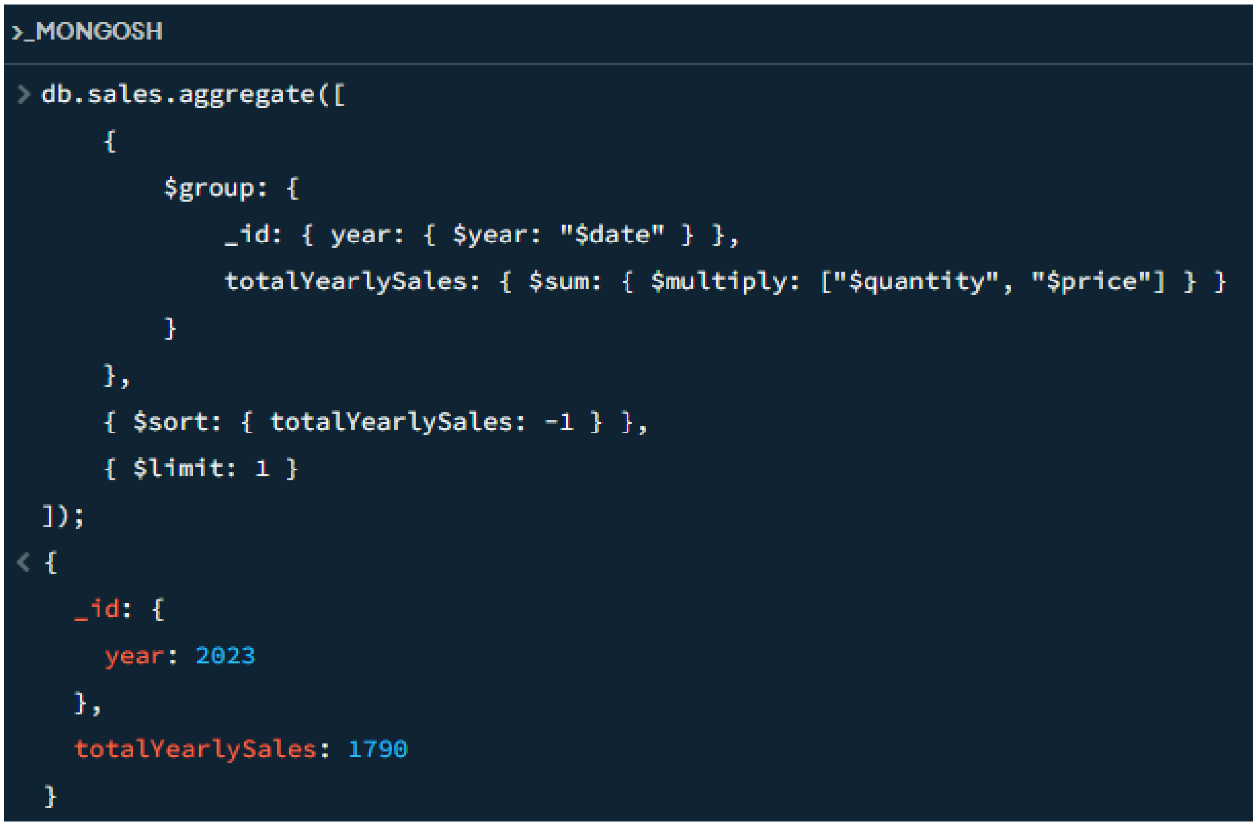
```
>_MONGOSH
> db.sales.aggregate([
      {
          $group: {
              _id: { year: { $year: "$date" }, month: { $month: "$date" } },
              totalMonthlySales: { $sum: { $multiply: ["$quantity", "$price"] } }
          }
      },
      { $sort: { totalMonthlySales: -1 } }
  ]);
< {
    _id: {
      year: 2023,
      month: 2
    },
    totalMonthlySales: 650
  }
  {
    _id: {
      year: 2023,
      month: 3
    },
```

4. Display Which Year Has the Maximum Sales?

Answer:

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

Output:-



```
>_MONGOSH
> db.sales.aggregate([
      {
          $group: {
              _id: { year: { $year: "$date" } },
              totalYearlySales: { $sum: { $multiply: ["$quantity", "$price"] } }
          }
      },
      { $sort: { totalYearlySales: -1 } },
      { $limit: 1 }
  ]);
< {
    _id: {
      year: 2023
    },
    totalYearlySales: 1790
  }
```