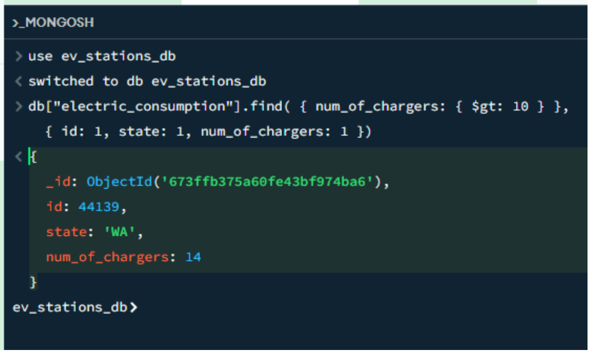
Implementation of Relation Model via NoSQL

Twelve collections from the **evstation schema** were migrated to MongoDB for efficient EV station data analysis.

- Q1 : db.electric_consumption.find(
  { num_of_chargers: { $gt: 10 } },
  { id: 1, state: 1, num_of_chargers: 1 });

  The query focuses on retrieving the charging stations that have more than 10 chargers, the query returns key information such as the station ID, state, and the number of chargers, helping to focus on stations with a significant capacity.

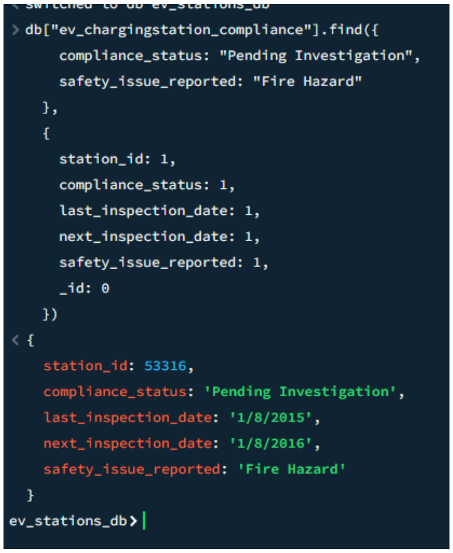


```
>_MONGOSH
> use ev_stations_db
< switched to db ev_stations_db
> db["electric_consumption"].find( { num_of_chargers: { $gt: 10 } },
    { id: 1, state: 1, num_of_chargers: 1 })
< {
    _id: ObjectId('673ffb375a60fe43bf974ba6'),
    id: 44139,
    state: 'WA',
    num_of_chargers: 14
  }
ev_stations_db>
```

- Q2 : db["ev_chargingstation_compliance"].find(
  { compliance_status: "Pending Investigation",
  safety_issue_reported: "Fire Hazard" },
  { station_id: 1, compliance_status: 1,
  last_inspection_date: 1, next_inspection_date: 1,
  safety_issue_reported: 1, _id: 0 })

  This query retrieves details of all electric charging stations that have the compliance status "Pending Investigation" and have reported the safety issue "Fire Hazard".

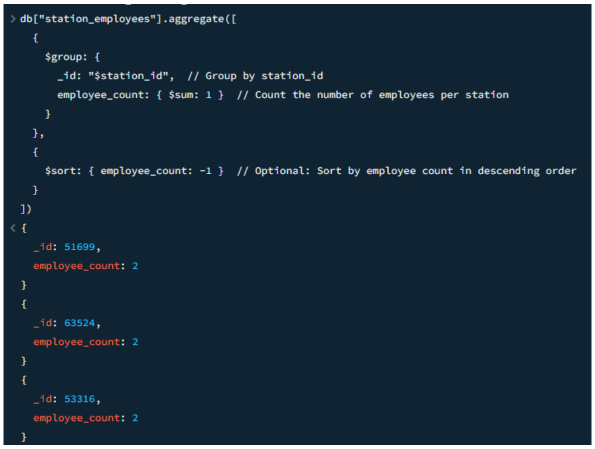
  This information is essential for identifying stations that require immediate attention due to fire hazards while ensuring regulatory compliance and safety standards are maintained.



```
< switched to db ev_stations_db
> db["ev_chargingstation_compliance"].find({
      compliance_status: "Pending Investigation",
      safety_issue_reported: "Fire Hazard"
    },
    {
      station_id: 1,
      compliance_status: 1,
      last_inspection_date: 1,
      next_inspection_date: 1,
      safety_issue_reported: 1,
      _id: 0
    })
< {
    station_id: 53316,
    compliance_status: 'Pending Investigation',
    last_inspection_date: '1/8/2015',
    next_inspection_date: '1/8/2016',
    safety_issue_reported: 'Fire Hazard'
  }
ev_stations_db>
```

- Q3 : db["station_employees"].aggregate([
  { $group: {_id: "$station_id", // Group by station_id
  employee_count: { $sum: 1 } // Count the number of employees per station} },{
  $sort: { employee_count: -1 } // Optional: Sort by employee count in descending order
  }])

  This query is to aggregate the data, to count the number of employees per station or group by the role of employees.



```
> db["station_employees"].aggregate([
    {
      $group: {
        _id: "$station_id",  // Group by station_id
        employee_count: { $sum: 1 }  // Count the number of employees per station
      }
    },
    {
      $sort: { employee_count: -1 }  // Optional: Sort by employee count in descending order
    }
  ])
< {
    _id: 51699,
    employee_count: 2
  }
  {
    _id: 63524,
    employee_count: 2
  }
  {
    _id: 53316,
    employee_count: 2
  }
```