**Sample Car Data**

**Single Document**

**{**

**"maker": "Tata",**

**"model": "Nexon",**

**"fuel\_type": "Petrol",**

**"transmission": "Automatic",**

**"engine": {**

**"type": "Turbocharged",**

**"cc": 1199,**

**"torque": "170 Nm"**

**},**

**"features": [**

**"Touchscreen",**

**"Reverse Camera",**

**"Bluetooth Connectivity"**

**],**

**"sunroof": false,**

**"airbags": 2**

**}**

**Many Document [ {}, {}, {}]**

**[**

**{**

**"maker": "Hyundai",**

**"model": "Creta",**

**"fuel\_type": "Diesel",**

**"transmission": "Manual",**

**"engine": {**

**"type": "Naturally Aspirated",**

**"cc": 1493,**

**"torque": "250 Nm"**

**},**

**"features": [**

**"Sunroof",**

**"Leather Seats",**

**"Wireless Charging",**

**"Ventilated Seats",**

**"Bluetooth"**

**],**

**"sunroof": true,**

**"airbags": 6**

**},**

**{**

**"maker": "Maruti Suzuki",**

**"model": "Baleno",**

**"fuel\_type": "Petrol",**

**"transmission": "Automatic",**

**"engine": {**

**"type": "Naturally Aspirated",**

**"cc": 1197,**

**"torque": "113 Nm"**

**},**

**"features": [**

**"Projector Headlamps",**

**"Apple CarPlay",**

**"ABS"**

**],**

**"sunroof": false,**

**"airbags": 2**

**},**

**{**

**"maker": "Mahindra",**

**"model": "XUV500",**

**"fuel\_type": "Diesel",**

**"transmission": "Manual",**

**"engine": {**

**"type": "Turbocharged",**

**"cc": 2179,**

**"torque": "360 Nm"**

**},**

**"features": [**

**"All-Wheel Drive",**

**"Navigation System",**

**"Cruise Control"**

**],**

**"sunroof": true,**

**"airbags": 6**

**},**

**{**

**"maker": "Honda",**

**"model": "City",**

**"fuel\_type": "Petrol",**

**"transmission": "Automatic",**

**"engine": {**

**"type": "Naturally Aspirated",**

**"cc": 1498,**

**"torque": "145 Nm"**

**},**

**"features": [**

**"Keyless Entry",**

**"Auto AC",**

**"Multi-angle Rearview Camera"**

**],**

**"sunroof": false,**

**"airbags": 4**

**}**

**]**

**Data for Relationship**

**users collection**

**[**

**{**

**"\_id": "user1",**

**"name": "Amit Sharma",**

**"email": "amit.sharma@example.com",**

**"phone": "+91-987654210",**

**"address": "MG Road, Mumbai, Maharashtra"**

**},**

**{**

**"\_id": "user2",**

**"name": "Priya Verma",**

**"email": "priya.verma@example.com",**

**"phone": "+91-987654211",**

**"address": "Nehru Place, New Delhi, Delhi"**

**},**

**{**

**"\_id": "user3",**

**"name": "Rahul Singh",**

**"email": "rahul.singh@example.com",**

**"phone": "+91-987654212",**

**"address": "Sector 18, Noida, Uttar Pradesh"**

**},**

**{**

**"\_id": "user4",**

**"name": "Anjali Nair",**

**"email": "anjali.nair@example.com",**

**"phone": "+91-987654213",**

**"address": "Marine Drive, Kochi, Kerala"**

**},**

**{**

**"\_id": "user5",**

**"name": "Vikram Desai",**

**"email": "vikram.desai@example.com",**

**"phone": "+91-987654214",**

**"address": "Park Street, Kolkata, West Bengal"**

**}**

**]**

**orders collection**

**[**

**{**

**"\_id": "order1",**

**"user\_id": "user1",**

**"product": "Laptop",**

**"amount": 50000,**

**"order\_date": "2024-08-01"**

**},**

**{**

**"\_id": "order2",**

**"user\_id": "user2",**

**"product": "Mobile Phone",**

**"amount": 15000,**

**"order\_date": "2024-08-05"**

**},**

**{**

**"\_id": "order3",**

**"user\_id": "user1",**

**"product": "Headphones",**

**"amount": 2000,**

**"order\_date": "2024-08-10"**

**},**

**{**

**"\_id": "order4",**

**"user\_id": "user3",**

**"product": "Tablet",**

**"amount": 25000,**

**"order\_date": "2024-08-12"**

**},**

**{**

**"\_id": "order5",**

**"user\_id": "user4",**

**"product": "Smart Watch",**

**"amount": 8000,**

**"order\_date": "2024-08-15"**

**}**

**]**

**Data for Aggregate Framework**

**[{"maker":"Hyundai","model":"Creta","fuel\_type":"Diesel","transmission":"Manual","engine":{"type":"Naturally Aspirated","cc":1493,"torque":"250 Nm"},"features":["Sunroof","Leather Seats","Wireless Charging","Ventilated Seats","Bluetooth"],"sunroof":true,"airbags":6,"price":1500000,"owners":[{"name":"Raju","purchase\_date":"2021-03-15","location":"Mumbai"},{"name":"Shyam","purchase\_date":"2023-01-10","location":"Delhi"}],"service\_history":[{"date":"2022-04-10","service\_type":"Oil Change","cost":5000},{"date":"2023-07-18","service\_type":"Brake Replacement","cost":12000}]},{"maker":"Maruti Suzuki","model":"Baleno","fuel\_type":"Petrol","transmission":"Automatic","engine":{"type":"Naturally Aspirated","cc":1197,"torque":"113 Nm"},"features":["Projector Headlamps","Apple CarPlay","ABS"],"sunroof":false,"airbags":2,"price":800000,"owners":[{"name":"Baburao","purchase\_date":"2020-08-22","location":"Pune"}],"service\_history":[{"date":"2021-05-12","service\_type":"Tire Rotation","cost":2000},{"date":"2022-11-05","service\_type":"Battery Replacement","cost":7000}]},{"maker":"Mahindra","model":"XUV500","fuel\_type":"Diesel","transmission":"Manual","engine":{"type":"Turbocharged","cc":2179,"torque":"360 Nm"},"features":["All-Wheel Drive","Navigation System","Cruise Control"],"sunroof":true,"airbags":6,"price":1800000,"owners":[{"name":"Raju","purchase\_date":"2019-11-30","location":"Bangalore"},{"name":"Shyam","purchase\_date":"2022-02-15","location":"Hyderabad"}],"service\_history":[{"date":"2021-02-25","service\_type":"Transmission Repair","cost":35000},{"date":"2023-03-10","service\_type":"Tire Replacement","cost":15000}]},{"maker":"Honda","model":"City","fuel\_type":"Petrol","transmission":"Automatic","engine":{"type":"Naturally Aspirated","cc":1498,"torque":"145 Nm"},"features":["Keyless Entry","Auto AC","Multi-angle Rearview Camera"],"sunroof":false,"airbags":4,"price":1200000,"owners":[{"name":"Baburao","purchase\_date":"2020-05-20","location":"Chennai"}],"service\_history":[{"date":"2021-08-10","service\_type":"Oil Change","cost":5000},{"date":"2022-10-25","service\_type":"Brake Replacement","cost":10000}]},{"maker":"Tata","model":"Nexon","fuel\_type":"Petrol","transmission":"Automatic","engine":{"type":"Turbocharged","cc":1199,"torque":"170 Nm"},"features":["Touchscreen","Reverse Camera","Bluetooth Connectivity"],"sunroof":false,"airbags":2,"price":1100000,"owners":[{"name":"Raju","purchase\_date":"2021-12-05","location":"Kolkata"}],"service\_history":[{"date":"2022-12-01","service\_type":"Oil Change","cost":6000},{"date":"2023-06-15","service\_type":"Tire Rotation","cost":3000}]},{"maker":"Hyundai","model":"Venue","fuel\_type":"Petrol","transmission":"Automatic","engine":{"type":"Turbocharged","cc":998,"torque":"172 Nm"},"features":["Sunroof","Touchscreen Infotainment","Keyless Entry","Rear Camera","Cruise Control"],"sunroof":true,"airbags":4,"price":1200000,"owners":[{"name":"Amit","purchase\_date":"2020-05-20","location":"Bangalore"},{"name":"Priya","purchase\_date":"2022-11-05","location":"Chennai"}],"service\_history":[{"date":"2021-07-15","service\_type":"Oil Change","cost":4000},{"date":"2023-03-22","service\_type":"Tire Replacement","cost":8000}]},{"maker":"Hyundai","model":"i20","fuel\_type":"Petrol","transmission":"Manual","engine":{"type":"Naturally Aspirated","cc":1197,"torque":"114 Nm"},"features":["Apple CarPlay","ABS","Projector Headlamps","Wireless Charging"],"sunroof":false,"airbags":2,"price":900000,"owners":[{"name":"Rohit","purchase\_date":"2021-06-15","location":"Delhi"}],"service\_history":[{"date":"2022-09-10","service\_type":"Battery Replacement","cost":7000},{"date":"2023-05-25","service\_type":"Tire Rotation","cost":2500}]},{"maker":"Maruti Suzuki","model":"Swift","fuel\_type":"Petrol","transmission":"Manual","engine":{"type":"Naturally Aspirated","cc":1198,"torque":"113 Nm"},"features":["Touchscreen Infotainment","ABS","Keyless Entry","Rear Parking Sensors"],"sunroof":false,"airbags":2,"price":750000,"owners":[{"name":"Vijay","purchase\_date":"2019-03-20","location":"Hyderabad"}],"service\_history":[{"date":"2020-05-18","service\_type":"Oil Change","cost":3000},{"date":"2022-08-10","service\_type":"Brake Replacement","cost":5000}]},{"maker":"Tata","model":"Harrier","fuel\_type":"Diesel","transmission":"Automatic","engine":{"type":"Turbocharged","cc":1956,"torque":"350 Nm"},"features":["Panoramic Sunroof","Leather Upholstery","Terrain Response System","Auto-Dimming IRVM"],"sunroof":true,"airbags":6,"price":2000000,"owners":[{"name":"Deepak","purchase\_date":"2022-01-10","location":"Mumbai"}],"service\_history":[{"date":"2022-10-15","service\_type":"Transmission Repair","cost":45000},{"date":"2023-04-20","service\_type":"Brake Replacement","cost":15000}]},{"maker":"Honda","model":"Amaze","fuel\_type":"Diesel","transmission":"Manual","engine":{"type":"Naturally Aspirated","cc":1498,"torque":"200 Nm"},"features":["Keyless Entry","Auto AC","Rear Parking Camera","Cruise Control"],"sunroof":false,"airbags":4,"price":1000000,"owners":[{"name":"Anil","purchase\_date":"2020-11-25","location":"Kolkata"}],"service\_history":[{"date":"2021-12-10","service\_type":"Oil Change","cost":4500},{"date":"2022-08-15","service\_type":"Tire Rotation","cost":2500}]},{"maker":"Tata","model":"Nexon EV","fuel\_type":"Electric","transmission":"Automatic","engine":{"type":"Electric Motor","battery\_capacity":"30.2 kWh","torque":"245 Nm"},"features":["Touchscreen Infotainment","Wireless Charging","Connected Car Tech","Sunroof"],"sunroof":true,"airbags":6,"price":1400000,"owners":[{"name":"Vikas","purchase\_date":"2021-05-20","location":"Bangalore"}],"service\_history":[{"date":"2022-06-10","service\_type":"Battery Check","cost":0},{"date":"2023-03-15","service\_type":"Tire Rotation","cost":3000}]},{"maker":"Hyundai","model":"Kona Electric","fuel\_type":"Electric","transmission":"Automatic","engine":{"type":"Electric Motor","battery\_capacity":"39.2 kWh","torque":"395 Nm"},"features":["Wireless Charging","Ventilated Seats","Sunroof","Auto AC"],"sunroof":true,"airbags":6,"price":2300000,"owners":[{"name":"Sneha","purchase\_date":"2022-01-15","location":"Mumbai"}],"service\_history":[{"date":"2022-09-10","service\_type":"Battery Check","cost":0},{"date":"2023-06-05","service\_type":"Brake Replacement","cost":8000}]},{"maker":"Maruti Suzuki","model":"WagonR","fuel\_type":"CNG","transmission":"Manual","engine":{"type":"Naturally Aspirated","cc":998,"torque":"90 Nm"},"features":["Manual AC","ABS","Power Windows"],"sunroof":false,"airbags":2,"price":600000,"owners":[{"name":"Rahul","purchase\_date":"2019-07-22","location":"Delhi"}],"service\_history":[{"date":"2020-11-10","service\_type":"CNG Kit Checkup","cost":2000},{"date":"2021-08-15","service\_type":"Tire Rotation","cost":1500}]},{"maker":"Honda","model":"Amaze","fuel\_type":"CNG","transmission":"Manual","engine":{"type":"Naturally Aspirated","cc":1199,"torque":"110 Nm"},"features":["Keyless Entry","Auto AC","Rear Parking Camera","Cruise Control"],"sunroof":false,"airbags":4,"price":800000,"owners":[{"name":"Sanjay","purchase\_date":"2021-03-18","location":"Pune"}],"service\_history":[{"date":"2021-09-10","service\_type":"CNG Kit Checkup","cost":2500},{"date":"2022-05-15","service\_type":"Oil Change","cost":3500}]}]**

**Python Program**

from pymongo import MongoClient   
   
# Replace with your MongoDB connection string   
client = MongoClient('mongodb://localhost:27017/')

db = client.todo\_db # Create or connect to a database named "todo\_db"   
tasks\_collection = db.tasks # Create or connect to a collection named "tasks"

def create\_task(description):   
 task = {   
 'description': description   
 }   
 result = tasks\_collection.insert\_one(task)   
 print(f'Task created with id: {result.inserted\_id}')

def read\_tasks():   
 tasks = tasks\_collection.find()   
 print("\nYour To-Do List:")   
 for task in tasks:   
 print(f"- {task['description']}") 

while True:   
 print("\n1. Create Task")   
 print("2. View Tasks")   
 print("3. Exit")   
   
 choice = input("Enter your choice: ")   
   
 if choice == '1':   
 description = input("Enter task description: ")   
 create\_task(description)   
 elif choice == '2':   
 read\_tasks()   
 elif choice == '3':   
 break   
 else:   
 print("Invalid choice. Please try again.")

**Queries Used in Video**

db.cars.aggregate([

{$group: {

\_id: "$fuel\_type",

TotalCars: {$sum: 1

}

}

}

])

db.cars.aggregate([

{$match: {

maker: "Hyundai"

}

},

{$project: {

\_id: 0,

maker: 1,

model: 1,

fuel\_type: 1

}

},

{$sort: {model: 1

}

}

])

db.cars.aggregate([

{$sortByCount: "$maker"

}

])

db.cars.aggregate([

{$match: {maker: "Hyundai"

}

},

{$project: {

\_id: 0,

Car\_Name: {$toUpper: {$concat: [

"$maker",

" ",

"$model"

]

}

}

}

},

{$out: "hyundai\_cars"

}

])

db.cars.aggregate([

{$project: {

\_id: 0,

model: 1,

is\_diesel: {

$regexMatch: {

input: "$fuel\_type",

regex: "Dies"

}

}

}

}

])

   
db.cars.aggregate([

{$project: {

\_id: 0,

model: 1,

price: 1

}

},

{$addFields: {

price\_in\_lakhs: {

$round: [

{$divide: [

"$price",

90000

]

},

1

]

}

}

}

])

db.cars.aggregate([

{ $match: { maker: "Hyundai"

}

},

{ $set: {

total\_service\_cost: {

$sum: "$service\_history.cost"

}

}

},

{ $project: {

\_id: 0,

model: 1,

total\_service\_cost: 1

}

}

])

db.cars.aggregate([

{$project: {

\_id: 0,

maker: 1,

model: 1,

fuel\_cat: {

$cond: {

if: {$eq: [

"$fuel\_type",

"Petrol"

]

},

then: "Petrol Car",

else: "Non\_petrol Car"

}

}

}

}

])

db.cars.aggregate([

{$project: {

\_id: 0,

maker: 1,

model: 1,

budget\_cat: {

$switch: {

branches: [

{ //If car is less than 5 Lakhs

case: {$lt: [

"$price",

500000

]

},

then: "Budget"

},

{

//Car price range between 5-10 lakhs

case: {$and: [

{$gte: [

"$price",

500000

]

},

{$lt: [

"$price",

1000000

]

}

]

},

then: "Mid-Range"

},

{

case: {$gte: [

"$price",

1000000

]

},

then: "Premium"

}

],

default: "Unknown"

}

}

}

}

])

db.cars.aggregate(

{$project:

{

\_id: 0,

model: 1,

date: "$$NOW"

}

})

db.users.aggregate([

{$lookup:{

from:"orders",

localField:"\_id",

foreignField:"user\_id",

as: "orders"

}}

])

   
db.createCollection("users3", {

validator: {

$jsonSchema: {

bsonType: "object",

required: ["name", "phone"],

properties:{

name:{

bsonType: "string",

description: "Name should be string"

}

}

}

},

validationLevel: "strict",

validationAction: "error"

})

db.users.find().count()

db.users.find({name: 'Anthony Hurst'})

db.movies.find({title: 'The Ace of Hearts'}).explain("executionStats")

db.users.createIndex({ name: 1 })

db.users.dropIndex("name")