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| **1.** | Overview of current big data tools & technologies  **MongoDB:**  MongoDB overview, MongoDB installation  **MongoDB shell commands / queries:** view all databases, create new database, drop existing database, view current database, and switch over to a given database, db. help(), display statistics of a given database, display current version of MongoDB server, display list of collections in current database.  Create collection, drop collection, data types, insert document, update document, delete document |
| **2.** | Create a new MongoDB database called “TEACHER”.  Within “TEACHER” database, create a collection named “TEACHER\_MASTER”.  Assume an appropriate Schema consisting of fields like Name, Age, Subject(array), DOB, Gender, Salary, City  1. Insert 7 documents into the above collection.  2. Display Name, Subject, Gender and Salary.  3. Display teacher, which are from the city “Ahmedabad”.  4. Display the teacher id, name, city and DOB.  5. Display the teachers whose gender is female and teach either “Hindi” or “English” subject.  6. Update all those documents where name of teacher is “Anil” with the new value of subject as “English”.  7. Delete data of all those teachers who were born on date 1st January 1980.  8. Remove field age.  9. Display the teachers that do not teach “English” subject and their salary is more than 30000.  10. Find all the teachers having gender “Male” and display salary for them. |
| **3.** | Create a new MongoDB database called “EMPLOYEE”.  Within “EMPLOYEE” database, create a collection named EMPLOYEE\_MASTER”  assume an appropriate schema consisting of fields like Empno, Name, Designation, DOJ, Department, Salary, Gender, Skills(array)  1. Insert 7 documents into the above collection.  2. Display Name, Department, Gender and Salary.  3. Display the list of employees from the department “HR”.  4. Display the employee id, name, department and DOB.  5. Display the employees whose gender is female and designation either “Engineer” or “Scientist”.  6. Update all those documents where name of employee is “Akash” with the new value of designation as “Engineer”.  7. Delete all those documents where DOJ is 1st January 1999.  8. Display the employees whose salary is greater than 25000 and have skills Java or PHP.  9. Find all the employees having designation “Engineer” and display salary for them.  10. Display only those documents where the name of employee is “Amit” and designation is “Accountant”. |
| **4.** | Create a Student Master database with a collection called “Student” containing  documents with some or all of the following fields: StudentRollNo, StudentName,  Grade, Hobbies, and DOJ.  Perform the following operations on the database:  a) Insert 10 Records in the database.  b) Find the document where in the “StudName” has value “Akhay”.  c) Find all documents in proper (like tabular) format. (Without \_Id field)  d) Retrieve only Student Name and Grade.  e) Retrieve Student Name and Grade of student who is having \_id column is 1.  f) Add new field “Address” in Student collection.  g) Find those documents where the Grade is set to ‘VII’.  h) Find those documents where the Grade is not set to ‘VII’.  i) Find those documents where the Hobbies is set to either ‘Chess’ or is set to  ‘Dancing”.  j) Find those documents where the Hobbies is set neither to ‘Chess’ nor is set to  ‘Dancing”. k) Find those documents where the student name begins with ‘M’.  l) Find those documents where the student name has an “e” in any position.  m) Find those documents where the student name ends in “a”.  n) Find total number of documents.  o) Find total number of documents where Grade is ‘VII’.  p) Sort the documents in ascending order of student name.  q) Display the last two records. |
| **5.** | Create a Movie\_Maker database with a collection called “Movie“ containing  documents with some or all of the following fields: titles, directors, years, actors.  Perform the following operations on the database:  a) Retrieve all documents.  b) Retrieve all documents with Director set to "Quentin Tarantino".  c) Retrieve all documents where actors include "Brad Pitt".  d) Retrieve all movies released before the year 2000 or after 2010.  e) Add a synopsis to "The Hobbit: An Unexpected Journey”: "A reluctant hobbit,  Bilbo Baggins, sets out to the Lonely Mountain with a spirited group of dwarves  to reclaim their mountain home - and the gold within it - from the dragon  Smaug."  f) Add a synopsis to "The Hobbit: The Desolation of Smaug”: "The dwarves, along with Bilbo Baggins and Gandalf the Grey, continue their quest to reclaim Erebor, their homeland, from Smaug. Bilbo Baggins is in possession of a mysterious and magical ring."  g) Add an actor named "Samuel L. Jackson" to the movie "Pulp Fiction"  h) Find all movies that have a synopsis that contains the word "Bilbo".  i) Find all movies that have a synopsis that contains the word "Gandalf".  j) Find all movies that have a synopsis that contains the word "Bilbo" and not the word "Gandalf".  k) Find all movies that have a synopsis that contains the word "dwarves" or  "hobbit"  l) Find all movies that have a synopsis that contains the word "gold" and "dragon".  m) Delete the movie "Pee Wee Herman's Big Adventure” |
| **6.** | Create “Mymenu” database with a collection called “Restaurants”, containing documents with some or all of the following fields: Restaurant Id, Restaurant Name, Grades (Note: An array is expected), Cuisine, Address (Note: Must include Building Name, Street, Area, City, ZipCode), and Date of Establishment (Note: Use Proper Date format), Score and Rating. Perform the following operations on the database. (Insert at least 10 documents)  1. Find the Restaurant Names, who have established after January 2010.  2. Find the restaurants that do not prepare Cuisine of “American”, and their Score is more than 70.  3. Update the Rating of the restaurant “Mirch Masala”.  4. Display the restaurants, which are located in “Ahmedabad”.  5. Find the Restaurant Names and Cuisine, for those restaurants which contain ‘chen’ (Example: “Kitchen”) as the last three letters.  6. Find the Restaurant Id’s and Restaurant Names of those restaurants, which are situated in “Ahmedabad” (City) but not in “ISKON” (Area).  7. Add a field “Borough” with value “Bronx”, for restaurants with \_id: 3 and 4.  8. Remove the field Cuisine for restaurants whose name is “Jassi De Paratha”.  Remove the document, with restaurant named “Barbeque Nation”. |
| **7** | Create the HotelBookings collection and insert sample documents  {  HotelId: "HOT0395",  HotelName: "Royal Inn",  HotelType: ["3 Star", "4 Star"],  TotNoOfRooms: 40,  CityName: "New York",  DateOfRegistration: ISODate("2022-08-15T00:00:00Z"),  ContactNumber: "1234567890",  Ratings: 4.5,  Owners: [{ OwnerName: "John Doe" }, { OwnerName: "Jane Doe" }],  Bookings: [  {  BookingId: "B001",  BookingDate: ISODate("2023-01-10T00:00:00Z"),  RoomType: ["Deluxe", "Twin"],  CustomerName: "Alice Brown",  NoOfRoomsBooked: 2,  Price: 200,  Discount: 10  }  ]  }   1. Find hotels where Ratings are greater than 4 2. Count the number of hotels in each CityName 3. Find hotels that have "Star" in their HotelType 4. Retrieve all hotels that have at least one booking 5. Find the highest-rated hotel 6. Retrieve all hotels where the ContactNumber starts with '12' 7. Count the total number of rooms available in all hotels 8. Find hotels where the discount given is greater than 5% in any booking 9. Find hotels that have more than 2 owners 10. Count the number of hotels in each CityName |
| **8** | Vehicle dataset created in the same format as the Students collection, with relevant fields like VehicleId, Make, Model, Year, Mileage, Price, FuelType, Location, OwnerName, BookingStatus, BookingDate, and OwnerDetails (City, ZipCode):  Vehicle Collection Schema Example  {  "VehicleId": "V12345",  "Make": "Toyota",  "Model": "Camry",  "Year": 2020,  "Mileage": 25.5,  "Price": 25000,  "FuelType": "Petrol",  "Location": "California",  "OwnerName": "John Doe",  "BookingStatus": "Booked",  "BookingDate": "2023-01-15",  "OwnerDetails": {  "City": "Los Angeles",  "ZipCode": "90001"  }  }   1. Find vehicles with a price greater than $25,000. 2. Count the number of vehicles for each fuel type. 3. Find vehicles manufactured after 2018. 4. Retrieve vehicles that have a mileage greater than 15 miles per gallon. 5. Find vehicles whose make contains "Honda" or "Toyota". 6. Sort the vehicles by year in ascending order. 7. Find vehicles located in "California" or "Nevada" 8. Count the number of vehicles in each location (city/state). 9. Find vehicles whose model starts with the letter "A". 10. Retrieve vehicles with exactly 3 owners. 11. Find vehicles whose owner name contains "John". 12. Sort vehicles by mileage in descending order. 13. Find vehicles whose fuel type is not "Petrol". 14. Retrieve vehicles with a price between $15,000 and $40,000. 15. Find vehicles whose booking status is "Booked". 16. Find vehicles located in "New York". |