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Experiment: 9. Implement basic database queries using MongoDB.

Problem Statement: Implement CRUD operations using MongoDB for a given set of questions.

Questions:

1. Create a database 'student_db', Create collection 'student' in 'student_db' and print the collection.

```
Command Prompt - mongo
> use student_db
switched to db student_db
> db.createCollection('student')
{ "ok" : 1 }
>
```

2. Create a database 'teacher_db', Create collection 'teacher' in 'teacher_db' and print the collection.

```
Command Prompt - mongo
> use teacher_db
switched to db teacher_db
> db.createCollection('teacher')
{ "ok" : 1 }
>
```

3. Insert following documents in collection 'student'.

_id	roll_n	fname	lname	address	contact
	o				
1	10	rakesh	patil	sangli	9834502187
--	11	mohit	jain	--	9055783241
	a				

```
> db.student.insert( { _id:1, roll_no:10, fname:'rakesh', lname:'patil', address:'sangli',
contact:9834502187 } )
WriteResult({ "nInserted" : 1 })
>
> db.student.find()
{ "_id" : 1, "roll_no" : 10, "fname" : "rakesh", "lname" : "patil", "address" : "sangli",
"contact" : 9834502187 }
>
```

```
> db.student.insert( {roll_no:11, fname:'mohita', lname:'jain', contact:9055783241} )
WriteResult({ "nInserted" : 1 })
>
> db.student.find()
{ "_id" : 1, "roll_no" : 10, "fname" : "rakesh", "lname" : "patil", "address" : "sangli",
"contact" : 9834502187 }
{ "_id" : ObjectId("60a0e6beefc8953800feb261"), "roll_no" : 11, "fname" : "mohita", "lname" : "jain", "contact" : 9055783241 }
>
```

4. Insert following documents in a collection 'student' using save() method.

_id	roll_no	fname	lname	address	contact
1	10	malini	vyas	satara	976590342
--	10	rakesh	patil	sangli	983450218

```
> db.student.find()
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "
contact" : 9765903421 }
{ "_id" : ObjectId("60a0e6beefc8953800feb261"), "roll_no" : 11, "fname" : "mohita", "lname" : "jain", "contact" : 9055783241 }
>
```

```
> db.student.save( {roll_no:10, fname:'rakesh', lname:'patil', address:'sangli', contact:9834502187} )
WriteResult({ "nInserted" : 1 })
>
> db.student.find()
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "
contact" : 9765903421 }
{ "_id" : ObjectId("60a0e6beefc8953800feb261"), "roll_no" : 11, "fname" : "mohita", "lname" : "jain", "contact" : 9055783241 }
{ "_id" : ObjectId("60a0f4c4efc8953800feb262"), "roll_no" : 10, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187 }
>
```

5. Print all the documents from collection 'student'.

```
> db.student.find()
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "
contact" : 9765903421 }
{ "_id" : ObjectId("60a0e6beefc8953800feb261"), "roll_no" : 11, "fname" : "mohita", "lname" : "jain", "contact" : 9055783241 }
{ "_id" : ObjectId("60a0f4c4efc8953800feb262"), "roll_no" : 10, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187 }
>
```

6. Print all the documents from collection 'student' in a formatted manner.

```

> db.student.find().pretty()
{
  "_id" : 1,
  "roll_no" : 10,
  "fname" : "malini",
  "lname" : "vyas",
  "address" : "satara",
  "contact" : 9765903421
}
{
  "_id" : ObjectId("60a0e6beefc8953800feb261"),
  "roll_no" : 11,
  "fname" : "mohita",
  "lname" : "jain",
  "contact" : 9055783241
}
{
  "_id" : ObjectId("60a0f4c4efc8953800feb262"),
  "roll_no" : 10,
  "fname" : "rakesh",
  "lname" : "patil",
  "address" : "sangli",
  "contact" : 9834502187
}
>

```

7. Print all the databases.

```

> show dbs
admin          0.000GB
config         0.000GB
customer_db    0.000GB
food_db        0.000GB
local          0.000GB
student_db     0.000GB
teacher_db     0.000GB
>
> db
student_db
>

```

8. Update the document of collection 'student' with 'age=25' where 'roll_no=11'.

```

> db.student.update( {roll_no:11}, { $set: {age:25} } )
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
>
> db.student.find()
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421 }
{ "_id" : ObjectId("60a0e6beefc8953800feb261"), "roll_no" : 11, "fname" : "mohita", "lname" : "jain", "contact" : 9055783241, "age" : 25 }
{ "_id" : ObjectId("60a0f4c4efc8953800feb262"), "roll_no" : 10, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187 }
>

```

9. Update the document of collection 'student' with 'roll_no=12' where 'fname=rakesh'.

```
> db.student.update( {fname: 'rakesh'}, {$set: {roll_no: 12}} )
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
>
> db.student.find()
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421 }
{ "_id" : ObjectId("60a0e6beefc8953800feb261"), "roll_no" : 11, "fname" : "mohita", "lname" : "jain", "contact" : 9055783241, "age" : 25 }
{ "_id" : ObjectId("60a0f4c4efc8953800feb262"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187 }
>
```

10. Update all the documents of 'student' collection with 'clg=sgu'.

```
> db.student.updateMany( {}, {$set: {clg:'sgu'}} )
{ "acknowledged" : true, "matchedCount" : 3, "modifiedCount" : 3 }
>
> db.student.find()
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu" }
{ "_id" : ObjectId("60a0e6beefc8953800feb261"), "roll_no" : 11, "fname" : "mohita", "lname" : "jain", "contact" : 9055783241, "age" : 25, "clg" : "sgu" }
{ "_id" : ObjectId("60a0f4c4efc8953800feb262"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
>
```

11. Update else insert following records in 'student' collection and observe the output.

_id	roll_n o	fname	lname	age	UPSERT
1	10	malini	vyas	26	true
2	13	rohit	pawar	24	true
3	14	priti	joshi	--	false

```
> db.student.update( {_id:1}, {$set: {roll_no:10, fname:'malini', lname:'vyas', age:26}}, {upsert: true} )
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
>
> db.student.update( {_id:2}, {$set: {roll_no:13, fname:'rohit', lname:'pawar', age:24}}, {upsert: true} )
WriteResult({ "nMatched" : 0, "nUpserted" : 1, "nModified" : 0, "_id" : 2 })
>
> db.student.update( {_id:3}, {$set: {roll_no:14, fname:'priti', lname:'joshi'}}, {upsert: false} )
WriteResult({ "nMatched" : 0, "nUpserted" : 0, "nModified" : 0 })
>
> db.student.find()
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
{ "_id" : ObjectId("60a0e6beefc8953800feb261"), "roll_no" : 11, "fname" : "mohita", "lname" : "jain", "contact" : 9055783241, "age" : 25, "clg" : "sgu" }
{ "_id" : ObjectId("60a0f4c4efc8953800feb262"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
{ "_id" : 2, "age" : 24, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
>
```

12. Delete the document from 'student' collection where 'roll_no=11'.


```
> db.student.remove( {roll_no: 11} )
WriteResult({ "nRemoved" : 1 })
>
> db.student.find()
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
{ "_id" : ObjectId("60a10631efc8953800feb264"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "satara" }
{ "_id" : 2, "age" : 24, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
>
```

13. Delete the field 'contact' from a document of a 'student' collection where 'lname=patil'.

```
> db.student.update( {lname:'patil'}, { $unset: {contact:9834502187} } )
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
>
> db.student.find()
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
{ "_id" : ObjectId("60a10631efc8953800feb264"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "clg" : "satara" }
{ "_id" : 2, "age" : 24, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
>
```

14. Delete the field 'age' from a document of a 'student' collection where 'roll_no=13'.

```
> db.student.update( {roll_no:13}, { $unset: {age:24} } )
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
>
> db.student.find()
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
{ "_id" : ObjectId("60a10631efc8953800feb264"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "clg" : "satara" }
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
>
```

15. Find all the documents from a 'student' collection where 'clg=sgu'.

```
> db.student.find( {clg: 'sgu'} )
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
>
```

16. Find 'roll_no' from a document of a 'student' collection where 'address=satara'.

```
> db.student.find( {address: 'satara'}, {roll_no:1} )
{ "_id" : 1, "roll_no" : 10 }
>
```

17. Display 'fname' from all the documents of a 'student' collection. _id shouldnot be displayed.

```
> db.student.find( {}, {fname:1, _id:0} )
{ "fname" : "malini" }
{ "fname" : "rohit" }
{ "fname" : "rakesh" }
>
```

18. Find the document of a 'student' collection where 'fname=rohit' and 'lname=pawar'.

```
> db.student.find( {fname:'rohit', lname:'pawar'} )
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
>
```

19. Find all the documents from a 'student' collection where 'roll_no' is not equal to 12.

```
> db.student.find( {roll_no: {$ne: 12}} )
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
>
```

20. Find all the documents from a 'student' collection where 'address' is set to either 'sangli' or 'satara'.

```
> db.student.find( {address: {$in: ['sangli', 'satara']}} )
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
>
```

21. Find all the documents from a 'student' collection where 'address' is not set to either 'sangli' or 'satara'.

```
> db.student.find( {address: {$nin: ['sangli', 'satara']}} )
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
>
```

22. Find all the documents from a 'student' collection where 'fname' begins with 'r'.

```
> db.student.find( {fname: /^r/} )
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
>
```

```
> db.student.find( {fname: {$regex: '^r'}} )
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
>
```

23. Find 'roll_no' of all the documents from a 'student' collection where 'fname' begins with 'r'.

```
> db.student.find( {fname: /^r/ }, {roll_no:1} )
{ "_id" : 2, "roll_no" : 13 }
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12 }
>
```

```
> db.student.find( {fname: {$regex: '^r'}} , {roll_no:1, _id:0} )
{ "roll_no" : 13 }
{ "roll_no" : 12 }
>
```

24. Find all the documents from a 'student' collection where 'lname' ends with 'l'.

```
> db.student.find( {lname: /l$/ } )
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
>
```

```
> db.student.find( {lname: {$regex: 'l$'}} )
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
>
```

25. Find 'clg' of all the documents from a 'student' collection where 'lname' ends with 'l'.

```
> db.student.find( {lname: /l$/ }, {clg: 1} )
{ "_id" : ObjectId("60a10981efc8953800feb265"), "clg" : "sgu" }
>
```

```
> db.student.find( {lname: {$regex: 'l$'}} , {clg: 1, _id:0} )
{ "clg" : "sgu" }
>
```

26. Find all the documents from a 'student' collection where 'lname' contains 'a' in any position.

```
> db.student.find( {lname: /a/ } )
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
>
```

```
> db.student.find( {lname: {$regex: 'a'}} )
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
>
```

27. Count all the documents from a 'student' collection.

```
> db.student.count()
3
>
```

28. Count all the documents from a 'student' collection where 'fname' begins with 'r'.

```
> db.student.count( {fname: /^r/ } )
2
>
```

29. Retrieve first 2 documents from a 'student' collection where 'lname' contains 'a' in any position.

```
> db.student.find( {lname: /a/ } ).limit(2)
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
>
```

30. Sort the documents from a 'student' collection in ascending order of 'fname'.

```
> db.student.find().sort( {fname:1} )
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
>
```

31. Sort the documents from a 'student' collection in descending order of 'fname'.

```
> db.student.find().sort( {fname:-1} )
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
>
```

32. Sort the documents from a 'student' collection first on 'fname' in ascending order and then on 'lname' in descending order.

```
> db.student.find().sort( {fname:1, lname:-1} )
{ "_id" : 1, "roll_no" : 10, "fname" : "malini", "lname" : "vyas", "address" : "satara", "contact" : 9765903421, "clg" : "sgu", "age" : 26 }
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
>
```

33. Find all the documents from a 'student' collection by skipping first document from the output.

```
> db.student.find().skip(1)
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
>
```

34. Sort the documents from a 'student' collection in ascending order of 'fname' and skip the first document from the output.

```
> db.student.find().sort( {fname:1} ).skip(1)
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
{ "_id" : 2, "fname" : "rohit", "lname" : "pawar", "roll_no" : 13 }
>
```

35. Find and display last document from a 'student' collection.

```
> db.student.find().skip(db.student.count()-1)
{ "_id" : ObjectId("60a10981efc8953800feb265"), "roll_no" : 12, "fname" : "rakesh", "lname" : "patil", "address" : "sangli", "contact" : 9834502187, "clg" : "sgu" }
>
```