1.Establishing Connection a DB using pymongo

```python
db.py > ...
1    import pymongo
2
3    client = pymongo.MongoClient("mongodb://localhost:27017/")
4
5    database_list = client.list_database_names()
6    print("Available databases:", database_list)
7
8
9    |
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   Code

```
[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
Available databases: ['Hotel', 'University', 'admin', 'assignment-noSQL', 'config', 'local', 'local_library', 'my_database', 'test']
```

2.Create Employee Database (Pymongo) (i) & (ii)

```python
db.py > ...
1    import pymongo
2
3    # Connect to the MongoDB server
4    client = pymongo.MongoClient("mongodb://localhost:27017/")
5
6    #database name
7    database_name = "Employee"
8
9    db = client[database_name]
10
11   employee_collection = db["employees"]
12
13   employees_data = [
14       {
15           "name": "Rajesh Sharma",
16           "age": 28,
17           "position": "Software Developer",
18           "department": "IT",
19           "salary": 600000,
20           "city": "Mumbai",
21           "state": "Maharashtra",
22       },
23       {
24           "name": "Priya Patel",
25           "age": 24,
26           "position": "Data Analyst",
27           "department": "Analytics",
28           "salary": 500000,
29           "city": "Bengaluru",
30           "state": "Karnataka",
31       },
32       {
33           "name": "Amit Singh",
34           "age": 32,
35           "position": "Project Manager",
36           "department": "IT",
37           "salary": 800000,
            "city": "Delhi"
```

```
31          },
32          {
33              "name": "Amit Singh",
34              "age": 32,
35              "position": "Project Manager",
36              "department": "IT",
37              "salary": 800000,
38              "city": "Delhi",
39              "state": "Delhi",
40          },
41          {
42              "name": "Neha Gupta",
43              "age": 26,
44              "position": "UI/UX Designer",
45              "department": "Design",
46              "salary": 550000,
47              "city": "Pune",
48              "state": "Maharashtra",
49          },
50          {
51              "name": "Sandeep Kumar",
52              "age": 30,
53              "position": "Database Administrator",
54              "department": "IT",
55              "salary": 700000,
56              "city": "Hyderabad",
57              "state": "Telangana",
58          },
59          {
60              "name": "Anjali Verma",
61              "age": 29,
62              "position": "Software Engineer",
63              "department": "IT",
64              "salary": 650000,
65              "city": "Chennai",
66              "state": "Tamil Nadu",
67          },
```

```
        department : IT ,
        "salary": 650000,
        "city": "Chennai",
        "state": "Tamil Nadu",
    },
    {
        "name": "Rahul Sharma",
        "age": 35,
        "position": "HR Manager",
        "department": "Human Resources",
        "salary": 750000,
        "city": "Kolkata",
        "state": "West Bengal",
    },
]

# Insert the Indian-based employee documents into the collection
employee_collection.insert_many(employees_data)

# Check the number of documents in the collection
num_documents = employee_collection.count_documents({})
print(f"No of Databases : {client.list_database_names()}    ,Number of documents in 'employees' collection: {num_documents}")
```

```
[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
No of Databases : ['Employee', 'Hotel', 'University', 'admin', 'assignment-noSQL', 'config', 'local', 'local_library', 'my_database', 'test']    ,Number of
documents in 'employees' collection: 7
```

iii.

```python
import pymongo
client = pymongo.MongoClient("mongodb://localhost:27017/")
database_name = "Employee"
db = client[database_name]
employee_collection = db["employees"]
all_employees = employee_collection.find()

for employee in all_employees:
    print(employee)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
{'_id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 28, 'position': 'Software Developer', 'department': 'IT', 'salary': 600000, 'city':
'Mumbai', 'state': 'Maharashtra'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bb'), 'name': 'Priya Patel', 'age': 24, 'position': 'Data Analyst', 'department': 'Analytics', 'salary': 500000, 'city':
'Bengaluru', 'state': 'Karnataka'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bc'), 'name': 'Amit Singh', 'age': 32, 'position': 'Project Manager', 'department': 'IT', 'salary': 800000, 'city': 'Delhi',
'state': 'Delhi'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bd'), 'name': 'Neha Gupta', 'age': 26, 'position': 'UI/UX Designer', 'department': 'Design', 'salary': 550000, 'city':
'Pune', 'state': 'Maharashtra'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687be'), 'name': 'Sandeep Kumar', 'age': 30, 'position': 'Database Administrator', 'department': 'IT', 'salary': 700000,
'city': 'Hyderabad', 'state': 'Telangana'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bf'), 'name': 'Anjali Verma', 'age': 29, 'position': 'Software Engineer', 'department': 'IT', 'salary': 650000, 'city':
'Chennai', 'state': 'Tamil Nadu'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687c0'), 'name': 'Rahul Sharma', 'age': 35, 'position': 'HR Manager', 'department': 'Human Resources', 'salary': 750000,
'city': 'Kolkata', 'state': 'West Bengal'}
```

iv.

```python
import pymongo
client = pymongo.MongoClient("mongodb://localhost:27017/")
database_name = "Employee"

db = client[database_name]
employee_collection = db["employees"]

result = employee_collection.find_one({ "name": "Rajesh Sharma" })

if result:
    print("Found employee:")
    print(result)
else:
    print("No employee matching the condition found.")
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
Found employee:
{'_id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 28, 'position': 'Software Developer', 'department': 'IT', 'salary': 600000, 'city':
'Mumbai', 'state': 'Maharashtra'}
```

v.)

```
1   import pymongo
2   |
3   client = pymongo.MongoClient("mongodb://localhost:27017/")
4
5   database_name = "Employee"
6
7   db = client[database_name]
8
9   employee_collection = db["employees"]
10
11  limited_employees = employee_collection.find().limit(2)
12
13  for employee in limited_employees:
14      print(employee)
15
```

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS                                    Code

[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
{'_id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 28, 'position': 'Software Developer', 'department': 'IT', 'salary': 600000, 'city':
'Mumbai', 'state': 'Maharashtra'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bb'), 'name': 'Priya Patel', 'age': 24, 'position': 'Data Analyst', 'department': 'Analytics', 'salary': 500000, 'city':
'Bengaluru', 'state': 'Karnataka'}
```

vi)

```
1   import pymongo
2
3   client = pymongo.MongoClient("mongodb://localhost:27017/")
4
5   database_name = "Employee"
6   db = client[database_name]
7
8   employee_collection = db["employees"]
9   limited_employees = employee_collection.find().skip(4).limit(2)
10
11  for employee in limited_employees:|
12      print(employee)
13
```

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS                                    Code

[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
{'_id': ObjectId('65229a8cb9fa5cef0e6687be'), 'name': 'Sandeep Kumar', 'age': 30, 'position': 'Database Administrator', 'department': 'IT', 'salary': 700000,
'city': 'Hyderabad', 'state': 'Telangana'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bf'), 'name': 'Anjali Verma', 'age': 29, 'position': 'Software Engineer', 'department': 'IT', 'salary': 650000, 'city':
'Chennai', 'state': 'Tamil Nadu'}
```

vii)

```python
import pymongo
client = pymongo.MongoClient("mongodb://localhost:27017/")
database_name = "Employee"
db = client[database_name]
sorted_employees = db["employees"].find().sort("age", pymongo.ASCENDING)
for employee in sorted_employees:
    print(employee)
```

```
[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
{'_id': ObjectId('65229a8cb9fa5cef0e6687bb'), 'name': 'Priya Patel', 'age': 24, 'position': 'Data Analyst', 'department': 'Analytics', 'salary': 500000, 'city':
'Bengaluru', 'state': 'Karnataka'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bd'), 'name': 'Neha Gupta', 'age': 26, 'position': 'UI/UX Designer', 'department': 'Design', 'salary': 550000, 'city':
'Pune', 'state': 'Maharashtra'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 28, 'position': 'Software Developer', 'department': 'IT', 'salary': 600000, 'city':
'Mumbai', 'state': 'Maharashtra'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bf'), 'name': 'Anjali Verma', 'age': 29, 'position': 'Software Engineer', 'department': 'IT', 'salary': 650000, 'city':
'Chennai', 'state': 'Tamil Nadu'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687be'), 'name': 'Sandeep Kumar', 'age': 30, 'position': 'Database Administrator', 'department': 'IT', 'salary': 700000,
'city': 'Hyderabad', 'state': 'Telangana'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bc'), 'name': 'Amit Singh', 'age': 32, 'position': 'Project Manager', 'department': 'IT', 'salary': 800000, 'city': 'Delhi',
'state': 'Delhi'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687c0'), 'name': 'Rahul Sharma', 'age': 35, 'position': 'HR Manager', 'department': 'Human Resources', 'salary': 750000,
'city': 'Kolkata', 'state': 'West Bengal'}
```

viii)

```python
import pymongo

client = pymongo.MongoClient("mongodb://localhost:27017/")
database_name = "Employee"
db = client[database_name]

employee_collection = db["employees"]
condition = {"department": "IT"}
employees_in_it = employee_collection.find(condition)
for employee in employees_in_it:
    print(employee)
```

```
[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
{'_id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 28, 'position': 'Software Developer', 'department': 'IT', 'salary': 600000, 'city':
'Mumbai', 'state': 'Maharashtra'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bc'), 'name': 'Amit Singh', 'age': 32, 'position': 'Project Manager', 'department': 'IT', 'salary': 800000, 'city': 'Delhi',
'state': 'Delhi'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687be'), 'name': 'Sandeep Kumar', 'age': 30, 'position': 'Database Administrator', 'department': 'IT', 'salary': 700000,
'city': 'Hyderabad', 'state': 'Telangana'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bf'), 'name': 'Anjali Verma', 'age': 29, 'position': 'Software Engineer', 'department': 'IT', 'salary': 650000, 'city':
'Chennai', 'state': 'Tamil Nadu'}
```

ix)

```
db.py > ...
1   import pymongo
2   client = pymongo.MongoClient("mongodb://localhost:27017/")
3   database_name = "Employee"
4   db = client[database_name]
5   employee_collection = db["employees"]
6   condition = {"name": "Rajesh Sharma"}
7   new_employee_data = {
8       "name": "Rajesh Sharma",
9       "age": 29,
10      "position": "Software Developer Manager ",
11      "department": "IT",
12      "salary": 1200000,
13      "city": "Mumbai",
14      "state": "Maharashtra",
15  }
16
17  print('before :' ,employee_collection.find_one(condition))
18  |
19  result = employee_collection.replace_one(condition, new_employee_data)
20
21  print('after :' ,employee_collection.find_one(condition))
22
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   Code

```
[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
before : {'_id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 29, 'position': 'Senior Software Developer', 'department': 'IT', 'salary':
700000, 'city': 'Mumbai', 'state': 'Maharashtra'}
after : {'_id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 29, 'position': 'Software Developer Manager ', 'department': 'IT', 'salary':
1200000, 'city': 'Mumbai', 'state': 'Maharashtra'}
```

x)

OR

```
1   import pymongo
2   client = pymongo.MongoClient("mongodb://localhost:27017/")
3   database_name = "Employee"
4   db = client[database_name]
5   employee_collection = db["employees"]
6   condition = {
7       "$or": [
8           {"department": "IT"},
9           {"department": "Analytics"}
10      ]
11  }
12  qualified_employees = employee_collection.find(condition)
13  for employee in qualified_employees:|
14      print(employee)
15
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   Code

```
[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
{'_id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 29, 'position': 'Software Developer Manager ', 'department': 'IT', 'salary': 1200000,
'city': 'Mumbai', 'state': 'Maharashtra'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bb'), 'name': 'Priya Patel', 'age': 24, 'position': 'Data Analyst', 'department': 'Analytics', 'salary': 500000, 'city':
'Bengaluru', 'state': 'Karnataka'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bc'), 'name': 'Amit Singh', 'age': 32, 'position': 'Project Manager', 'department': 'IT', 'salary': 800000, 'city': 'Delhi',
'state': 'Delhi'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687be'), 'name': 'Sandeep Kumar', 'age': 30, 'position': 'Database Administrator', 'department': 'IT', 'salary': 700000,
'city': 'Hyderabad', 'state': 'Telangana'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bf'), 'name': 'Anjali Verma', 'age': 29, 'position': 'Software Engineer', 'department': 'IT', 'salary': 650000, 'city':
'Chennai', 'state': 'Tamil Nadu'}
```

AND.

```
1   import pymongo
2   client = pymongo.MongoClient("mongodb://localhost:27017/")
3   database_name = "Employee"
4   db = client[database_name]
5   employee_collection = db["employees"]
6   condition = {
7       "$and": [
8           {"department": "IT"},
9           {"salary": {"$gte": 600000}}
10      ]
11  }
12  qualified_employees = employee_collection.find(condition)
13  for employee in qualified_employees:
14      print(employee)
15
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
{'_id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 29, 'position': 'Software Developer Manager ', 'department': 'IT', 'salary': 1200000,
'city': 'Mumbai', 'state': 'Maharashtra'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bc'), 'name': 'Amit Singh', 'age': 32, 'position': 'Project Manager', 'department': 'IT', 'salary': 800000, 'city': 'Delhi',
'state': 'Delhi'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687be'), 'name': 'Sandeep Kumar', 'age': 30, 'position': 'Database Administrator', 'department': 'IT', 'salary': 700000,
'city': 'Hyderabad', 'state': 'Telangana'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bf'), 'name': 'Anjali Verma', 'age': 29, 'position': 'Software Engineer', 'department': 'IT', 'salary': 650000, 'city':
'Chennai', 'state': 'Tamil Nadu'}
```

LT,LTE.

```
db.py > ...
1   import pymongo
2   client = pymongo.MongoClient("mongodb://localhost:27017/")
3   database_name = "Employee"
4   db = client[database_name]
5   employee_collection = db["employees"]
6   condition1 = {"age": {"$lt": 30}}
7   condition2= {"age": {"$lte": 30}}
8   qualified_employees1 = employee_collection.find(condition1);
9   qualified_employees2 = employee_collection.find(condition2);
10
11  for employee in qualified_employees1:
12      print('lt', employee)
13
14  for employee in qualified_employees2:
15      print('lte' ,employee)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
lt {'_id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 29, 'position': 'Software Developer Manager ', 'department': 'IT', 'salary':
1200000, 'city': 'Mumbai', 'state': 'Maharashtra'}
lt {'_id': ObjectId('65229a8cb9fa5cef0e6687bb'), 'name': 'Priya Patel', 'age': 24, 'position': 'Data Analyst', 'department': 'Analytics', 'salary': 500000, 'city':
'Bengaluru', 'state': 'Karnataka'}
lt {'_id': ObjectId('65229a8cb9fa5cef0e6687bd'), 'name': 'Neha Gupta', 'age': 26, 'position': 'UI/UX Designer', 'department': 'Design', 'salary': 550000, 'city':
'Pune', 'state': 'Maharashtra'}
lt {'_id': ObjectId('65229a8cb9fa5cef0e6687bf'), 'name': 'Anjali Verma', 'age': 29, 'position': 'Software Engineer', 'department': 'IT', 'salary': 650000, 'city':
'Chennai', 'state': 'Tamil Nadu'}
lte {'_id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 29, 'position': 'Software Developer Manager ', 'department': 'IT', 'salary':
1200000, 'city': 'Mumbai', 'state': 'Maharashtra'}
lte {'_id': ObjectId('65229a8cb9fa5cef0e6687bb'), 'name': 'Priya Patel', 'age': 24, 'position': 'Data Analyst', 'department': 'Analytics', 'salary': 500000, 'city':
'Bengaluru', 'state': 'Karnataka'}
lte {'_id': ObjectId('65229a8cb9fa5cef0e6687bd'), 'name': 'Neha Gupta', 'age': 26, 'position': 'UI/UX Designer', 'department': 'Design', 'salary': 550000, 'city':
'Pune', 'state': 'Maharashtra'}
lte {'_id': ObjectId('65229a8cb9fa5cef0e6687be'), 'name': 'Sandeep Kumar', 'age': 30, 'position': 'Database Administrator', 'department': 'IT', 'salary': 700000,
'city': 'Hyderabad', 'state': 'Telangana'}
lte {'_id': ObjectId('65229a8cb9fa5cef0e6687bf'), 'name': 'Anjali Verma', 'age': 29, 'position': 'Software Engineer', 'department': 'IT', 'salary': 650000, 'city':
'Chennai', 'state': 'Tamil Nadu'}
```

IN

```python
import pymongo
client = pymongo.MongoClient("mongodb://localhost:27017/")
database_name = "Employee"
db = client[database_name]
employee_collection = db["employees"]
condition = {"city": {"$in": ["Pune" , 'Mumbai']}}

qualified_employees = employee_collection.find(condition);

for employee in qualified_employees:
    print( employee)
```

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

[Running] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
{'_id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 29, 'position': 'Software Developer Manager ', 'department': 'IT', 'salary': 1200000,
'city': 'Mumbai', 'state': 'Maharashtra'}
{'_id': ObjectId('65229a8cb9fa5cef0e6687bd'), 'name': 'Neha Gupta', 'age': 26, 'position': 'UI/UX Designer', 'department': 'Design', 'salary': 550000, 'city':
'Pune', 'state': 'Maharashtra'}
```

ALL

```python
import pymongo
client = pymongo.MongoClient("mongodb://localhost:27017/")
database_name = "Employee"
db = client[database_name]
employee_collection = db["employees"]
condition = {"position": {"$all": ["Software Developer", "Project Manager"]}}


qualified_employees = employee_collection.find(condition);

for employee in qualified_employees:
    print( employee)
```

```python
import pymongo
client = pymongo.MongoClient("mongodb://localhost:27017/")
database_name = "Employee"
db = client[database_name]
employee_collection = db["employees"]
condition = {"state": {"$exists": True}}

qualified_employees = employee_collection.find(condition);

for employee in qualified_employees:
    print( employee)
```

```
BLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

nning] python -u "c:\Users\rahul\Desktop\NoSql\db.py"
id': ObjectId('65229a8cb9fa5cef0e6687ba'), 'name': 'Rajesh Sharma', 'age': 29, 'position': 'Software Developer Manager ', 'department': 'IT', 'salary': 1200000,
ty': 'Mumbai', 'state': 'Maharashtra'}
id': ObjectId('65229a8cb9fa5cef0e6687bb'), 'name': 'Priya Patel', 'age': 24, 'position': 'Data Analyst', 'department': 'Analytics', 'salary': 500000, 'city':
ngaluru', 'state': 'Karnataka'}
id': ObjectId('65229a8cb9fa5cef0e6687bc'), 'name': 'Amit Singh', 'age': 32, 'position': 'Project Manager', 'department': 'IT', 'salary': 800000, 'city': 'Delhi',
ate': 'Delhi'}
id': ObjectId('65229a8cb9fa5cef0e6687bd'), 'name': 'Neha Gupta', 'age': 26, 'position': 'UI/UX Designer', 'department': 'Design', 'salary': 550000, 'city':
ne', 'state': 'Maharashtra'}
id': ObjectId('65229a8cb9fa5cef0e6687be'), 'name': 'Sandeep Kumar', 'age': 30, 'position': 'Database Administrator', 'department': 'IT', 'salary': 700000,
ty': 'Hyderabad', 'state': 'Telangana'}
id': ObjectId('65229a8cb9fa5cef0e6687bf'), 'name': 'Anjali Verma', 'age': 29, 'position': 'Software Engineer', 'department': 'IT', 'salary': 650000, 'city':
ennai', 'state': 'Tamil Nadu'}
id': ObjectId('65229a8cb9fa5cef0e6687c0'), 'name': 'Rahul Sharma', 'age': 35, 'position': 'HR Manager', 'department': 'Human Resources', 'salary': 750000,
ty': 'Kolkata', 'state': 'West Bengal'}
```