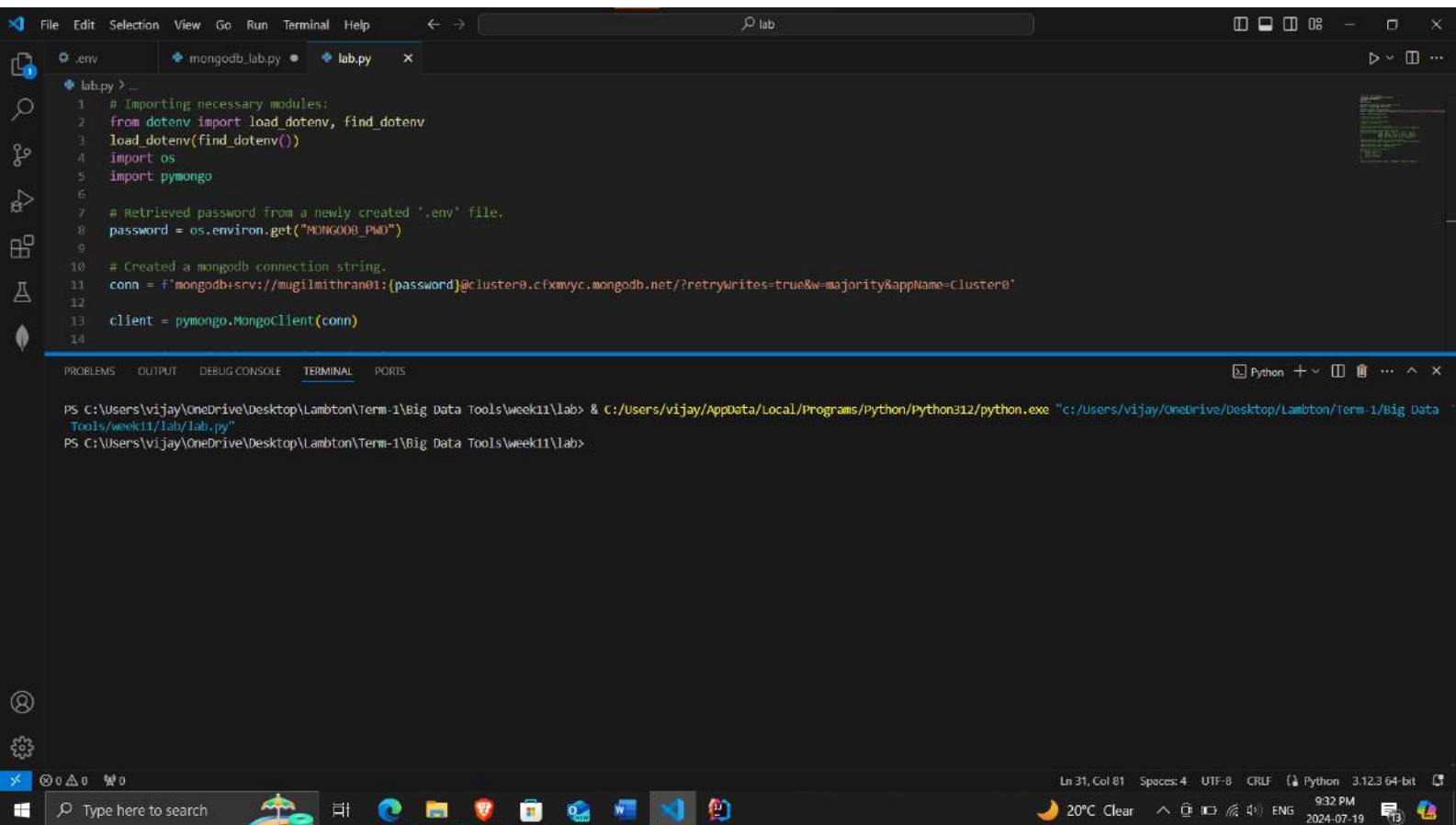


Name: Mugilmithran Kathiravan  
Std ID: C0934419  
Lab: MongoDB

## 1. Setting up MongoDB and connecting the database by using connection string using python pymongo as a driver



The screenshot displays the Visual Studio Code interface. The editor window shows a file named `lab.py` with the following Python code:

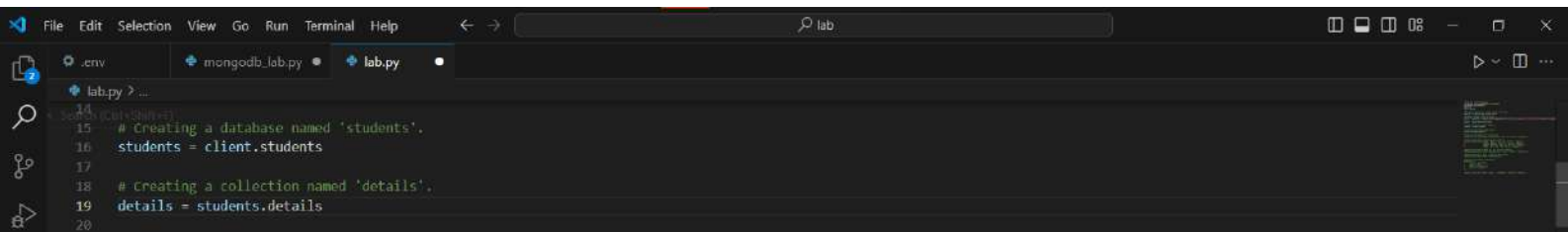
```
1 # Importing necessary modules:
2 from dotenv import load_dotenv, find_dotenv
3 load_dotenv(find_dotenv())
4 import os
5 import pymongo
6
7 # Retrieved password from a newly created '.env' file.
8 password = os.environ.get("MONGODB_PASSWORD")
9
10 # Created a mongodb connection string.
11 conn = f'mongodb+srv://mugilmithran01:{password}@cluster0.cfxmxyz.mongodb.net/?retryWrites=true&w-majority&appName=Cluster0'
12
13 client = pymongo.MongoClient(conn)
14
```

The terminal window at the bottom shows the command prompt running the script:

```
PS C:\Users\vijay\OneDrive\Desktop\Lambton\Term-1\Big Data Tools\week11\lab> & C:/Users/vijay/AppData/Local/Programs/Python/Python312/python.exe "c:/Users/vijay/OneDrive/Desktop/Lambton/Term-1/Big Data Tools/week11/lab/lab.py"
PS C:\Users\vijay\OneDrive\Desktop\Lambton\Term-1\Big Data Tools\week11\lab>
```

The status bar at the bottom indicates the file is `Ln 31, Col 81`, using `UTF-8` encoding with `CRLF` line endings, and the Python version is `3.12.3 64-bit`. The system tray shows the date and time as `9:32 PM 2024-07-19`.

2. Created 'students' database and 'details' collection.



The screenshot shows a code editor with a dark theme. The top menu bar includes File, Edit, Selection, View, Go, Run, Terminal, and Help. Below the menu bar, there are tabs for .env, mongodb\_lab.py, and lab.py. The lab.py tab is active, showing the following Python code:

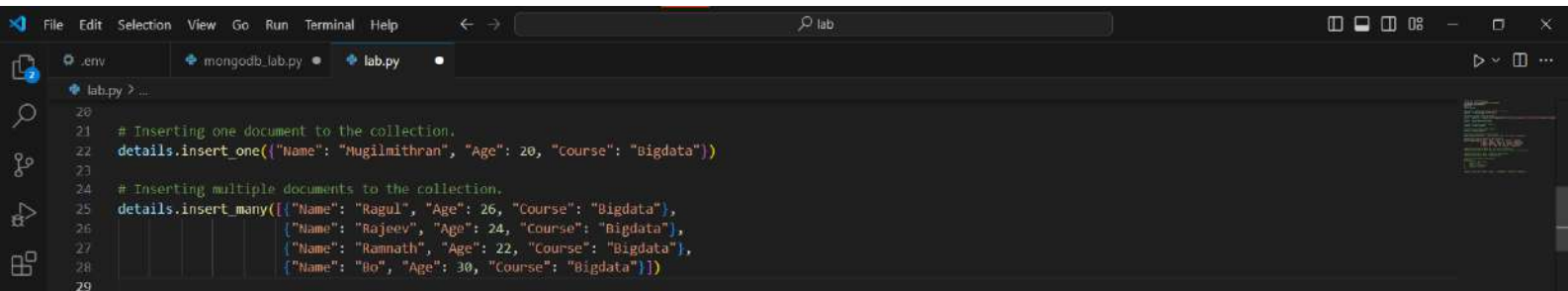
```
14  
15 # Creating a database named 'students'.  
16 students = client.students  
17  
18 # creating a collection named 'details'.  
19 details = students.details  
20
```

### 3. Output of database and collection creation.

The screenshot displays the MongoDB Atlas web interface. The top navigation bar includes the Atlas logo, a dropdown menu for 'mugilmithra...', and links for 'Access Manager' and 'Billing'. On the right, there are links for 'All Clusters', 'Get Help', and a user profile dropdown for 'mugilmithran'. The left sidebar contains navigation options: 'Overview', 'DEPLOYMENT', 'Database', 'Data Lake', 'SERVICES', 'Device & Edge Sync', 'Triggers', 'Data API', and 'Data Federation'. The 'Database' section is expanded, showing a list of databases: 'mydata', 'newdatabase', 'products', 'sample\_mflix', 'students' (selected), and 'details'. The main content area shows the 'students' database details, including a '+ Create Database' button, a search bar for namespaces, and a table of collections. The table has columns for 'Collection Name', 'Documents', 'Logical Data Size', 'Avg Document Size', 'Storage Size', 'Indexes', 'Index Size', and 'Avg Index Size'. The 'details' collection is listed with 5 documents, a logical data size of 442B, an average document size of 89B, a storage size of 36KB, 1 index, and an index size of 36KB. A 'CREATE COLLECTION' button is visible in the top right corner of the collection list.

Collection Name	Documents	Logical Data Size	Avg Document Size	Storage Size	Indexes	Index Size	Avg Index Size
details	5	442B	89B	36KB	1	36KB	36KB

#### 4. Inserting single and multiple documents to the collection.



The screenshot shows a code editor with a dark theme. The menu bar includes File, Edit, Selection, View, Go, Run, Terminal, and Help. The breadcrumb navigation shows the file path as lab.py. The code is as follows:

```
20
21 # Inserting one document to the collection.
22 details.insert_one({"Name": "Mugilmithran", "Age": 20, "course": "Bigdata"})
23
24 # Inserting multiple documents to the collection.
25 details.insert_many([{"Name": "Ragul", "Age": 26, "Course": "Bigdata"},
26                      {"Name": "Rajeev", "Age": 24, "Course": "Bigdata"},
27                      {"Name": "Ramnath", "Age": 22, "Course": "Bigdata"},
28                      {"Name": "Bo", "Age": 30, "Course": "Bigdata"}])
29
```

## 5. Output of inserting single document.

The screenshot displays the MongoDB Atlas web interface. The top navigation bar includes the Atlas logo, a project name 'mugilmithra...', and links for 'Access Manager' and 'Billing'. On the right, there are links for 'All Clusters', 'Get Help', and a user profile 'mugilmithran'. The left sidebar shows a navigation menu with 'Overview', 'DEPLOYMENT', 'Database', 'Data Lake', 'SERVICES', and 'Device & Edge Sync'. The 'Database' section is expanded, showing a list of namespaces: 'mydata', 'newdatabase', 'products', 'sample\_mflix', 'students', and 'test'. The 'students' namespace is selected, and the 'details' collection is highlighted. The main panel shows the 'students.details' collection with statistics: 'STORAGE SIZE: 20KB', 'LOGICAL DATA SIZE: 74B', 'TOTAL DOCUMENTS: 1', and 'INDEXES TOTAL SIZE: 20KB'. Below the statistics, there are tabs for 'Find', 'Indexes', 'Schema Anti-Patterns', 'Aggregation', and 'Search Indexes'. The 'Find' tab is active, showing a query filter input field with the placeholder text 'Type a query: { field: 'value' }'. To the right of the input field are 'Reset', 'Apply', and 'Options' buttons. Below the input field, the query results are displayed: 'QUERY RESULTS: 1-1 OF 1'. The result is a single document with the following fields: '\_id: ObjectId( "669b08843e5f3c43bc9e9a1a" )', 'Name: "Mugilmithran"', 'Age: 29', and 'Course: "Bigdata"'.

Atlas mugilmithra... Access Manager Billing All Clusters Get Help mugilmithran

Project 0 Data Services App Services Charts

Overview

DEPLOYMENT

Database

Data Lake

SERVICES

Device & Edge Sync

Triggers

Data API

Data Federation

Atlas Search

Stream Processing

Migration

+ Create Database

Search Namespaces

mydata

newdatabase

products

sample\_mflix

students

details

test

students.details

STORAGE SIZE: 20KB LOGICAL DATA SIZE: 74B TOTAL DOCUMENTS: 1 INDEXES TOTAL SIZE: 20KB

Find Indexes Schema Anti-Patterns Aggregation Search Indexes

Generate queries from natural language in Compass

INSERT DOCUMENT

Filter Type a query: { field: 'value' } Reset Apply Options

QUERY RESULTS: 1-1 OF 1

```
{
  "_id": ObjectId( "669b08843e5f3c43bc9e9a1a" ),
  "Name": "Mugilmithran",
  "Age": 29,
  "Course": "Bigdata"
}
```

## 6. Output of inserting multiple documents.

The screenshot displays the MongoDB Atlas web interface. The left sidebar shows the navigation menu with sections: Overview, DEPLOYMENT, Database (selected), Data Lake, SERVICES, Device & Edge Sync, Triggers, Data API, Data Federation, Atlas Search, Stream Processing, Migration, SECURITY, and Quickstart. The 'Database' section is expanded, showing a list of databases: mydata, newdatabase, products, sample\_mflix, students (selected), and test. The 'students' database is selected, and the 'details' view is active. The main panel shows the 'Find' tab with a search bar and a 'Filter' button. Below the search bar, there is a 'Type a query: { field: 'value' }' input field. The results section displays three documents inserted into the 'students' collection:

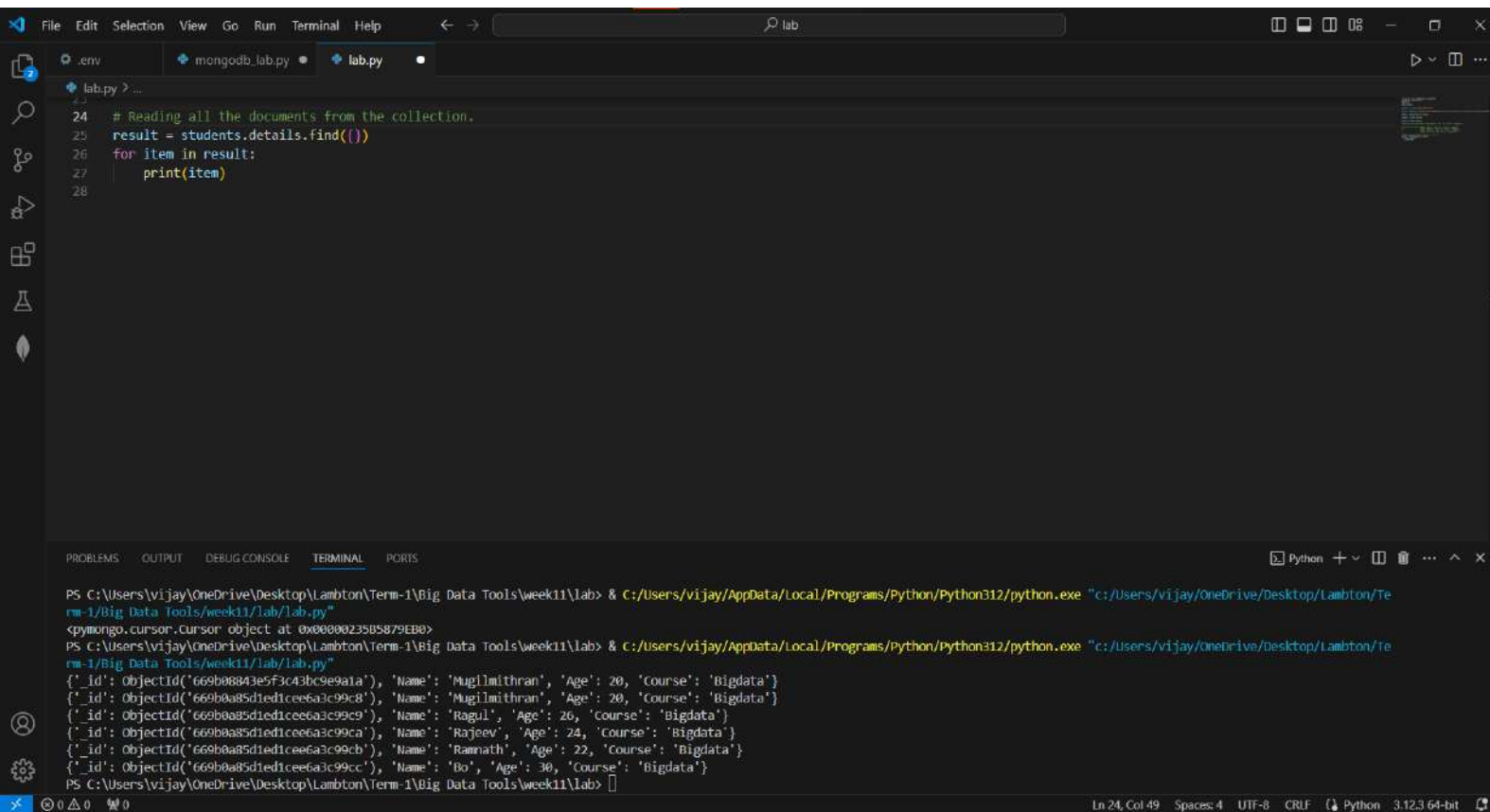
```
{ "_id": ObjectId("669b0a85d1ed1cee6a3c99ca"), "Name": "Mugilmithran", "Age": 28, "Course": "Bigdata" }
```

```
{ "_id": ObjectId("669b0a85d1ed1cee6a3c99c9"), "Name": "Ragul", "Age": 26, "Course": "Bigdata" }
```

```
{ "_id": ObjectId("669b0a85d1ed1cee6a3c99ca"), "Name": "Rajeev", "Age": 24 }
```

The top of the interface shows the 'Project 0' dropdown, 'Data Services' tab, and 'App Services' and 'Charts' tabs. The top right corner includes 'All Clusters', 'Get Help', and a user profile dropdown for 'mugilmithran'.

## 7. Reading all the documents in the collection.

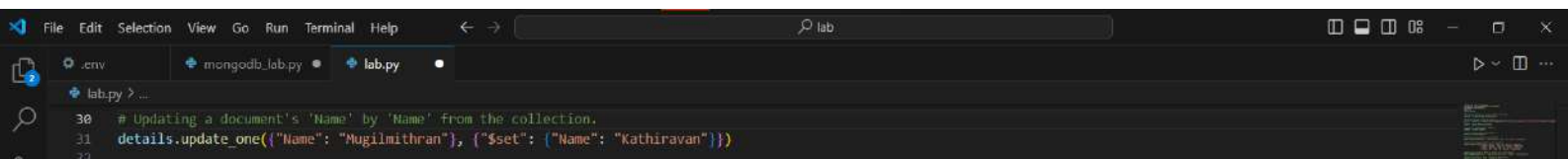


The screenshot shows a Visual Studio Code editor with a Python file named `lab.py` and a terminal window. The Python script reads all documents from a MongoDB collection named `students.details`. The terminal output shows the execution of the script, displaying the details of five students.

```
24 # Reading all the documents from the collection.
25 result = students.details.find({})
26 for item in result:
27     print(item)
28
```

```
PS C:\Users\vijay\OneDrive\Desktop\Lambton\Term-1\Big Data Tools\week11\lab> & C:/Users/vijay/AppData/Local/Programs/Python/Python312/python.exe "c:/Users/vijay/OneDrive/Desktop/Lambton/Term-1/Big Data Tools/week11/lab/lab.py"
pymongo.cursor.cursor object at 0x00000235B5879EB0>
PS C:\Users\vijay\OneDrive\Desktop\Lambton\Term-1\Big Data Tools\week11\lab> & C:/Users/vijay/AppData/Local/Programs/Python/Python312/python.exe "c:/Users/vijay/OneDrive/Desktop/Lambton/Term-1/Big Data Tools/week11/lab/lab.py"
{'_id': ObjectId('669b08843e5f3c43bc9e9a1a'), 'Name': 'Mugilmithran', 'Age': 20, 'Course': 'Bigdata'}
{'_id': ObjectId('669b0a85d1ed1cee6a3c99c8'), 'Name': 'Mugilmithran', 'Age': 20, 'Course': 'Bigdata'}
{'_id': ObjectId('669b0a85d1ed1cee6a3c99c9'), 'Name': 'Ragul', 'Age': 26, 'Course': 'Bigdata'}
{'_id': ObjectId('669b0a85d1ed1cee6a3c99ca'), 'Name': 'Rajeev', 'Age': 24, 'Course': 'Bigdata'}
{'_id': ObjectId('669b0a85d1ed1cee6a3c99cb'), 'Name': 'Ramnath', 'Age': 22, 'Course': 'Bigdata'}
{'_id': ObjectId('669b0a85d1ed1cee6a3c99cc'), 'Name': 'Bo', 'Age': 30, 'Course': 'Bigdata'}
PS C:\Users\vijay\OneDrive\Desktop\Lambton\Term-1\Big Data Tools\week11\lab>
```

## 8. Updating single document's 'Name' field.



The screenshot shows a code editor with a dark theme. The menu bar includes File, Edit, Selection, View, Go, Run, Terminal, and Help. The breadcrumb shows the file path as lab.py. The code is as follows:

```
30 # Updating a document's 'Name' by 'Name' from the collection.  
31 details.update_one({"Name": "Mugilmithran"}, {"$set": {"Name": "Kathiravan"}})  
32
```



9. Output of updated document. Name changed to 'Kathiravan' from 'Mugilmithran'

Atlas

mugilmithra...

Access Manager

Billing

All Clusters

Get Help

mugilmithran

Project 0

Data Services

App Services

Charts

Overview

DEPLOYMENT

Database

Data Lake

SERVICES

Device & Edge Sync

Triggers

Data API

Data Federation

Atlas Search

Stream Processing

Migration

SECURITY

Quickstart

Backup

Database Access

Network Access

MUGILMITHRAN'S ORG - 2024-06-02 > PROJECT 0 > DATABASES

Cluster0

VERSION 7.0.12

REGION AZURE Toronto (canadacentral)

Overview

Real Time

Metrics

Collections

Atlas Search

Performance Advisor

Online Archive

Cmd Line Tools

DATABASES: 6

COLLECTIONS: 16

VISUALIZE YOUR DATA

REFRESH

+ Create Database

Search Namespaces

mydata

newdatabase

products

sample\_mflix

students

test

students.details

STORAGE SIZE: 36KB

LOGICAL DATA SIZE: 414B

TOTAL DOCUMENTS: 6

INDEXES TOTAL SIZE: 36KB

Find

Indexes

Schema Anti-Patterns

Aggregation

Search Indexes

Generate queries from natural language in Compass

INSERT DOCUMENT

Filter

Type a query: { field: 'value' }

Reset

Apply

Options

QUERY RESULTS: 1-6 OF 6

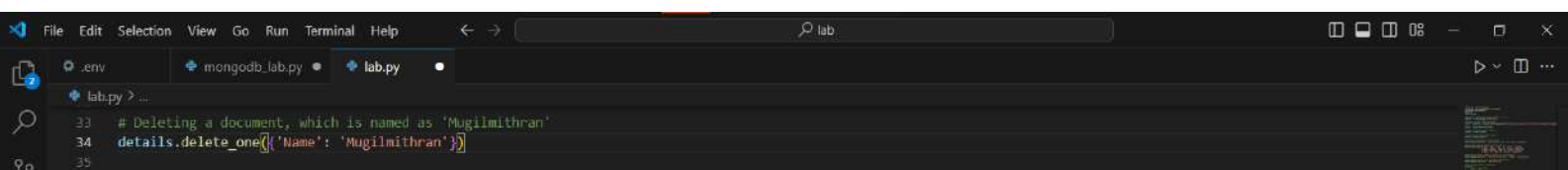
\_id: ObjectId('669b08843e5f3c43bc9e9a1a')

Name : "Kathiravan"

Age : 20

Course : "Bigdata"

## 10. Deleting a document, where name is 'Mugilmithran'



The screenshot shows a code editor with a dark theme. The menu bar includes File, Edit, Selection, View, Go, Run, Terminal, and Help. The breadcrumb navigation shows the file path as lab.py. The code editor contains the following Python code:

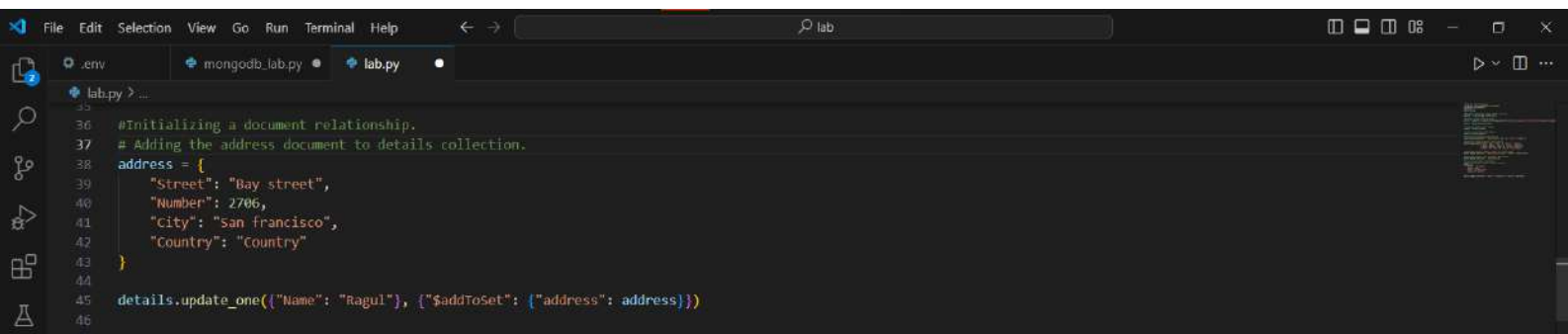
```
33 # Deleting a document, which is named as 'Mugilmithran'
34 details.delete_one({'Name': 'Mugilmithran'})
35
```

11. Output of deleting a document. The number of documents reduced from 6 to 5.

The screenshot displays the MongoDB Atlas web interface. The left sidebar shows the navigation menu with sections for Overview, DEPLOYMENT, Database, SERVICES, and SECURITY. The 'Database' section is expanded, showing a list of databases and collections. The 'students' collection is selected, and its 'details' view is shown. The main panel displays the 'Find' tab with a search bar and a 'Filter' button. Below the search bar, the 'QUERY RESULTS: 1-5 OF 5' are shown, listing two documents. The first document has a Name of 'Kathiravan' and Age of 28. The second document has a Name of 'Ragul' and Age of 26. Both documents have a Course of 'Bigdata'.

System Status: All Good  
©2024 MongoDB, Inc. Status Terms Privacy Atlas Blog Contact Sales

12. Initializing a document relationship. Used 'address' document in details collection's document



The screenshot shows a code editor with a dark theme. The top bar includes a menu (File, Edit, Selection, View, Go, Run, Terminal, Help), a search bar with the text 'lab', and window management icons. The editor has three tabs: '.env', 'mongodb\_lab.py', and 'lab.py'. The 'lab.py' tab is active, showing the following Python code:

```
36 #Initializing a document relationship.
37 # Adding the address document to details collection.
38 address = {
39     "Street": "Bay street",
40     "Number": 2706,
41     "City": "San francisco",
42     "Country": "Country"
43 }
44
45 details.update_one({"Name": "Ragul"}, {"$addToSet": {"address": address}})
46
```

## 13. Output of initializing a document relationship.

The screenshot displays the MongoDB Atlas web interface. The left sidebar contains navigation menus for 'Project 0', 'Data Services', 'App Services', and 'Charts'. Under 'Data Services', the 'Database' section is expanded, showing collections like 'mydata', 'newdatabase', 'products', 'sample\_mflix', 'students', and 'test'. The 'students' collection is selected, and its 'details' view is shown. The main panel displays a document with the following structure:

```
{
  "_id": ObjectId('669b0a85d1ed1cee6a3c99c9'),
  "Name": "Ragul",
  "Age": 26,
  "Course": "Bigdata",
  "address": Array (1)
  0: Object
    Street: "Bay street"
    Number: 2706
    City: "San Francisco"
    Country: "Country"
}
```

Below the document, another document is partially visible with the same structure. The bottom of the interface shows the system status as 'All Good' and copyright information for MongoDB, Inc. (2024).