UNIVERSITI TEKNIKAL MALAYSIA MELAKA
FAKULTI TEKNOLOGI DAN KEJURUTERAAN ELEKTRONIK DAN KOMPUTER

BERR 2243
DATABASE & CLOUD SYSTEM

SEM 2 2024/2025

EXERCISE : WEEK 1

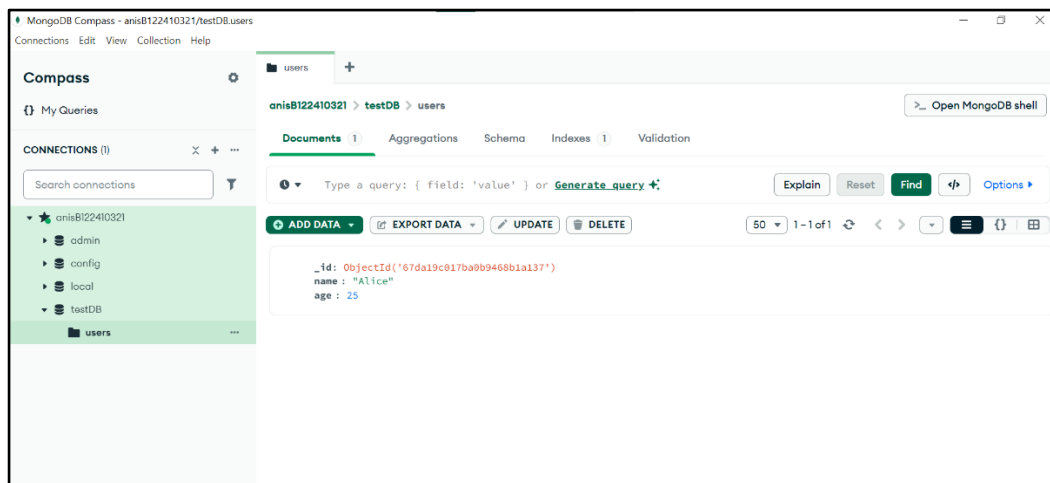| No	Name	Matrix No	Photo
1	NURUL ANIS HAFIFZA BINTI AMRAN	B122410321	
2	NUR AIN HIDAYAH BINTI ABDUL RAHIM	B122410323	

NURUL ANIS HAFIFZA BINTI AMRAN (B122410321)

1. **GitHub Repository** : https://github.com/anishafifza

2. **Screenshots of :**

   - MongoDB connection with NodeJS

   - **Document in MongoDB Compass**

Exercise Questions

Answer :

1. **Code Execution & Output**

   After running your index.js script:

   - What exact text does the console display when the document is inserted?
   - What _id value is automatically assigned to the document?

   ```
   ● PS D:\UTeM\TAHUN 2-2\DATABASE\LAB1> node index.js
     Connected to MongoDB!
     Document inserted
     Query result: {
       _id: new ObjectId('67da19c017ba0b9468b1a137'),
       name: 'Alice',
       age: 25
     }
   ```

2. **Modify and Observe**

   Change the name field in index.js to your own name and the age to your birth year. Run the script again.

   - What **new _id** is generated for this document?

   ```
   ● PS C:\Users\user\OneDrive\Desktop\database\LAB1> node index.js
     Connected to MongoDB!
     Document inserted
     Query result: {
       _id: new ObjectId('67dca40ec3dded5488197cc6'),
       name: 'Anis Hafifza',
       age: 2002
   ```

   - What error occurs if you forget to call **await client.connect()**?

   ```javascript
   const { MongoClient } = require('mongodb');

   async function main() {
       const uri = "mongodb://localhost:27017/";
       const client = new MongoClient(uri);

       try {
           // **Do NOT call await client.connect();**
           const db = client.db("testDB");
           const collection = db.collection("users");

           // **Add this check before performing operations**
           if (!client.topology || !client.topology.isConnected()) {
               throw new Error("Client is not connected to MongoDB!");
           }

           await collection.insertOne({ name: "Anis Hafifza", age: 2002 });
           console.log("Document inserted successfully.");
       } catch (err) {
           console.error("Error:", err.message);
       } finally {
           await client.close();
       }
   }

   main();
   ```

   ```
   PS D:\UTeM\TAHUN 2-2\DATABASE\LAB1> node index.js
   Error: Client is not connected to MongoDB!
   PS D:\UTeM\TAHUN 2-2\DATABASE\LAB1>
   ```

3. MongoDB Connection Failure

Intentionally break the MongoDB connection string (e.g., change the port to 27018)

- What **error message** does NodeJS throw?

```
PS D:\UTeM\TAHUN 2-2\DATABASE\LAB1> node index.js
● Error: MongoServerSelectionError: connect ECONNREFUSED ::1:27018, connect ECONNREFUSED 127.0.0.1:27018
    at Topology.selectServer (D:\UTeM\TAHUN 2-2\DATABASE\LAB1\node_modules\mongodb\lib\sdam\topology.js:321:38)
    at async Topology._connect (D:\UTeM\TAHUN 2-2\DATABASE\LAB1\node_modules\mongodb\lib\sdam\topology.js:200:28)
    at async Topology.connect (D:\UTeM\TAHUN 2-2\DATABASE\LAB1\node_modules\mongodb\lib\sdam\topology.js:152:13)
    at async topologyConnect (D:\UTeM\TAHUN 2-2\DATABASE\LAB1\node_modules\mongodb\lib\mongo_client.js:233:17)
    at async MongoClient._connect (D:\UTeM\TAHUN 2-2\DATABASE\LAB1\node_modules\mongodb\lib\mongo_client.js:246:13)
    at async MongoClient.connect (D:\UTeM\TAHUN 2-2\DATABASE\LAB1\node_modules\mongodb\lib\mongo_client.js:171:13)
    at async main (D:\UTeM\TAHUN 2-2\DATABASE\LAB1\index.js:9:9) {
  errorLabelSet: Set(0) {},
```

- What is the **exact text** of the error code (e.g., ECONNREFUSED)?

```
    at internalconnectmultiple (node:net:1139:18)
    at afterConnectMultiple (node:net:1712:7) {
  code: 'ECONNREFUSED',
  [errors]: [Array]
```

4. MongoDB Shell Query

Use the **MongoDB shell** (not Compass) to:

- List all documents in the testDB.users collection.
- What command did you use? Paste the **full output**.

```
PS D:\UTeM\TAHUN 2-2\DATABASE\LAB1> mongosh
Current Mongosh Log ID: 67da1fadd1329bb0b0b71235
Connecting to:          mongodb://127.0.0.1:27017/?directConnection=true&
serverSelectionTimeoutMS=2000&appName=mongosh+2.4.2
Using MongoDB:          8.0.5
Using Mongosh:          2.4.2

For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/

------
   The server generated these startup warnings when booting
   2025-03-19T06:43:43.668+08:00: Access control is not enabled for the database. Read and write access to data and configuration i
------

test> use testDB
switched to db testDB
testDB> db.users.find().pretty()
[
  { _id: ObjectId('67da19c017ba0b9468b1a137'), name: 'Alice', age: 25 },
  {
    _id: ObjectId('67da1bc56ce0a9343669fcd8'),
    name: 'Anis Hafifza',
    age: 23
  }
]
testDB>
```

5. File System & Dependencies

- What is the **absolute path** to your project's package-lock.json file?
- What **exact version** of the mongodb driver is installed?

```
PS D:\UTeM\TAHUN 2-2\DATABASE\LAB1> (Get-Item package-lock.json).FullName
D:\UTeM\TAHUN 2-2\DATABASE\LAB1\package-lock.json
PS D:\UTeM\TAHUN 2-2\DATABASE\LAB1> npm list mongodb
lab1@1.0.0 D:\UTeM\TAHUN 2-2\DATABASE\LAB1
└── mongodb@6.15.0
```

6. Troubleshooting Practice

Stop the MongoDB service and run the script.

- What error occurs?

```
Administrator: Windows PowerShell

Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Windows\system32> net stop MongoDB
The MongoDB Server (MongoDB) service is stopping.
The MongoDB Server (MongoDB) service was stopped successfully.

PS C:\Windows\system32>
```

```
[cause]: MongoNetworkError: connect ECONNREFUSED ::1:27017, connect ECONNREFUSED 127.0.0.1:27017
    at Socket.<anonymous> (D:\UTeM\TAHUN 2-2\DATABASE\LAB1\node_modules\mongodb\lib\cmap\connect.js:285:44)
    at Object.onceWrapper (node:events:633:26)
    at Socket.emit (node:events:518:28)
    at emitErrorNT (node:internal/streams/destroy:170:8)
    at emitErrorCloseNT (node:internal/streams/destroy:129:3)
    at process.processTicksAndRejections (node:internal/process/task_queues:90:21) {
  errorLabelSet: Set(1) { 'ResetPool' },
  beforeHandshake: false,
  [cause]: AggregateError [ECONNREFUSED]:
    at internalConnectMultiple (node:net:1139:18)
```

- What command restarts the service?

```
PS C:\Windows\system32> net start MongoDB
The MongoDB Server (MongoDB) service is starting.
The MongoDB Server (MongoDB) service was started successfully.

PS C:\Windows\system32>
```
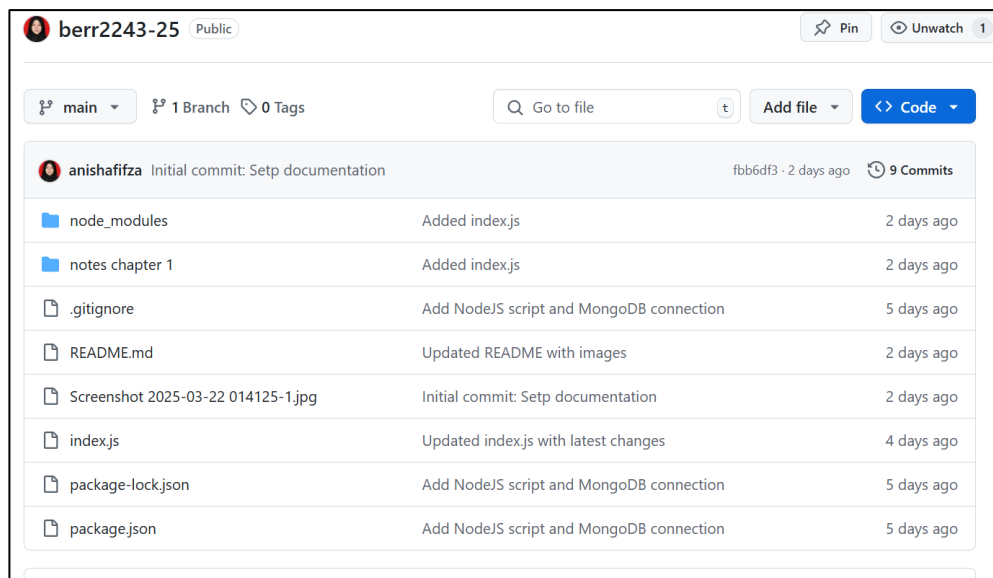
7. GitHub Repository Structure

On GitHub, navigate to your repository's.

- What **timestamp** is listed for your last commit?

  `Commits on Mar 22, 2025`

- How many files are present in this branch?
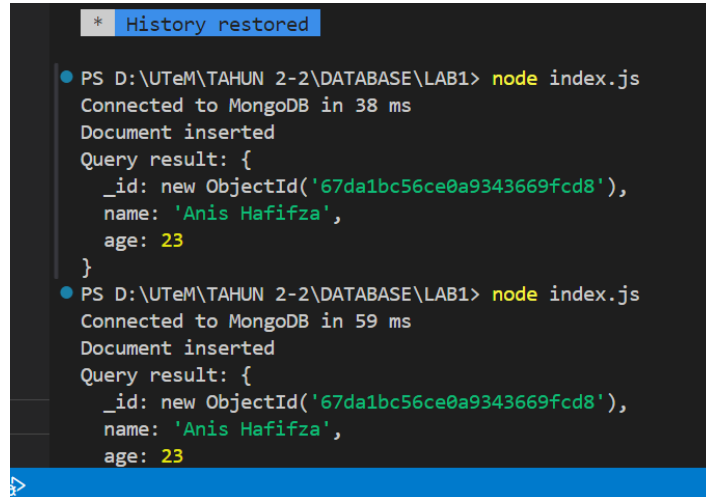

8. Performance Observation

Time how long it takes for the script to print "Connected to MongoDB!".

- What is the **duration** (in milliseconds)?

- Does this time change if you run the script again? Why?

  Yes, when I run the script again the duration for print "Connected to MongoDB" was changed because MongoDB server load for handling other requests.

```
 *  History restored
● PS D:\UTeM\TAHUN 2-2\DATABASE\LAB1> node index.js
  Connected to MongoDB in 38 ms
  Document inserted
  Query result: {
    _id: new ObjectId('67da1bc56ce0a9343669fcd8'),
    name: 'Anis Hafifza',
    age: 23
  }
● PS D:\UTeM\TAHUN 2-2\DATABASE\LAB1> node index.js
  Connected to MongoDB in 59 ms
  Document inserted
  Query result: {
    _id: new ObjectId('67da1bc56ce0a9343669fcd8'),
    name: 'Anis Hafifza',
    age: 23
```

NUR AIN HIDAYAH BINTI ABDUL RAHIM (B122410323)

1. **GitHub Repository** : https://github.com/b122410323/berr2243-25

2. **Screenshots of :**

- MongoDB connection with NodeJS

- **Document in MongoDB Compass**
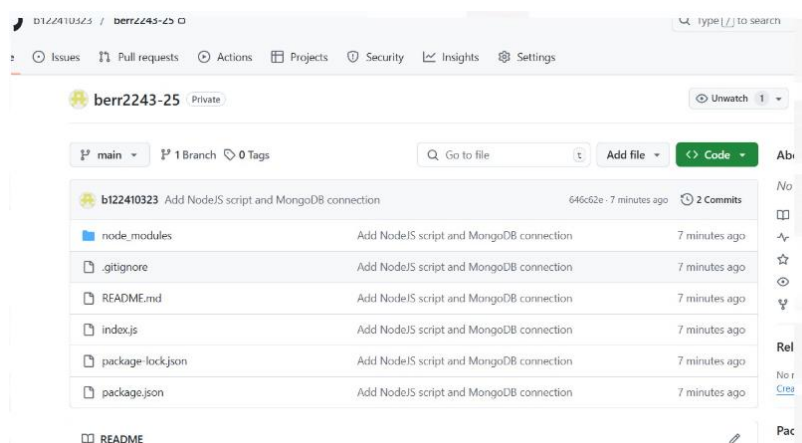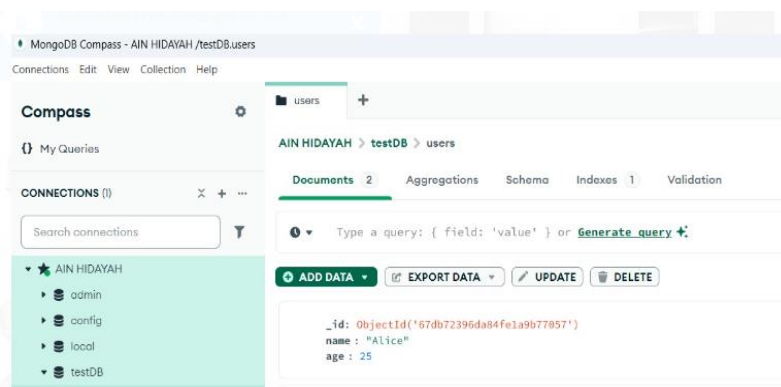
Exercise Questions

Answer :

1. Code Execution & Output

After running your index.js script:

-What exact text does the console display when the document is inserted?

Connected to MongoDB

-What _id value is automatically assigned to the document?

67db72396da84fe1a9b77067

```
Connected to MongoDB!
Document inserted
Query result: {
  _id: new ObjectId('67db72396da84fe1a9b77057'),
  name: 'Alice',
  age: 25
}
○ PS C:\Users\user\OneDrive\Desktop\database\LAB1>
```

2. Modify and Observe

Change the name field in index.js to your own name and the age to your birth year. Run the script again.

-What **new _id** is generated for this document?

67dca4640ad1279277dd7be3

```
● PS C:\Users\user\OneDrive\Desktop\database\LAB1> node index.js
  Connected to MongoDB in 25 ms
  Document inserted
  Query result: {
    _id: new ObjectId('67dca4640ad1279277dd7be3'),
    name: 'Ain Hidayah',
    age: 2002
  }
}
```

-What error occurs if you forget to call **await client.connect()**?

3. MongoDB Connection Failure

Intentionally break the MongoDB connection string (e.g., change the port to 27018)

-What **error message** does NodeJS throw?

A connection failure "MongoServerSelectionError: connect ECONNREFUSED 127.0.0.1:27018"

-What is the **exact text** of the error code (e.g., ECONNREFUSED)?

ECONNREFUSED

4. MongoDB Shell Query

Use the **MongoDB shell** (not Compass) to:

-List all documents in the testDB.users collection.
-What command did you use? Paste the **full output**.

```
PS C:\Users\user\OneDrive\Desktop\database\LAB1> mongosh
Current Mongosh Log ID: 67dcb283cce41745ceb71235
Connecting to:          mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.4.2
Using MongoDB:          8.0.5
Using Mongosh:          2.4.2

For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/

------
   The server generated these startup warnings when booting
   2025-03-20T13:47:10.014+08:00: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted
------

test> use testDB
switched to db testDB
testDB> db.users.find().pretty()
[
  { _id: ObjectId('67db72396da84fe1a9b77057'), name: 'Alice', age: 25 },
  {
    _id: ObjectId('67dca4640ad1279277dd7be3'),
    name: 'Ain Hidayah',
    age: 2002
  }
]
testDB>
```

5. File System & Dependencies

-What is the **absolute path** to your project's package-lock.json file?
-What **exact version** of the mongodb driver is installed?

```
PS C:\Users\user\OneDrive\Desktop\database\LAB1> (Get-Item package-lock.j
son).FullName
C:\Users\user\OneDrive\Desktop\database\LAB1\package-lock.json
PS C:\Users\user\OneDrive\Desktop\database\LAB1> npm list mongodb
lab1@1.0.0 C:\Users\user\OneDrive\Desktop\database\LAB1
└── mongodb@6.15.0

PS C:\Users\user\OneDrive\Desktop\database\LAB1>
```

6. Troubleshooting Practice

Stop the MongoDB service and run the script.

-What error occurs?

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Windows\system32> net stop MongoDB
The MongoDB Server (MongoDB) service is stopping.
The MongoDB Server (MongoDB) service was stopped successfully.
```

-What command restarts the service?

Net start MongoDB

7. GitHub Repository Structure

On GitHub, navigate to your repository's.

-What **timestamp** is listed for your last commit?

Commits on Mar 20, 2025

-How many files are present in this branch?

5 files

8. Performance Observation

Time how long it takes for the script to print "Connected to MongoDB!".

-What is the **duration** (in milliseconds)?
 22ms

```
● PS C:\Users\user\OneDrive\Desktop\database\LAB1> node index.js
  Connected to MongoDB in 22 ms
  Document inserted
  Query result: {
    _id: new ObjectId('67dca4640ad1279277dd7be3'),
    name: 'Ain Hidayah',
    age: 2002
  }
```

-Does this time change if you run the script again? Why?
   Yes, it is can be faster or slower after the initial connnection because of the
   caching

```
● PS C:\Users\user\OneDrive\Desktop\database\LAB1> node index.js
  Connected to MongoDB in 22 ms
  Document inserted
  Query result: {
    _id: new ObjectId('67dca4640ad1279277dd7be3'),
    name: 'Ain Hidayah',
    age: 2002
  }
● PS C:\Users\user\OneDrive\Desktop\database\LAB1> node index.js
  Connected to MongoDB in 25 ms
  Document inserted
  Query result: {
    _id: new ObjectId('67dca4640ad1279277dd7be3'),
    name: 'Ain Hidayah',
    age: 2002
  }
```