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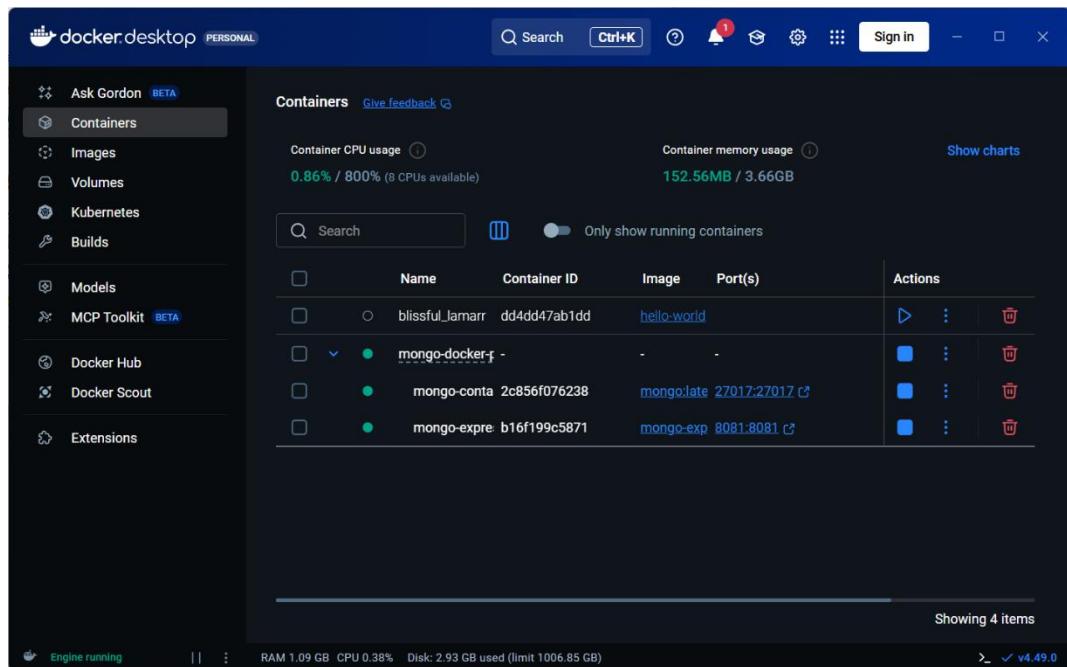
KELAS: SI 31

MATKUL: SISTEM BASIS DATA

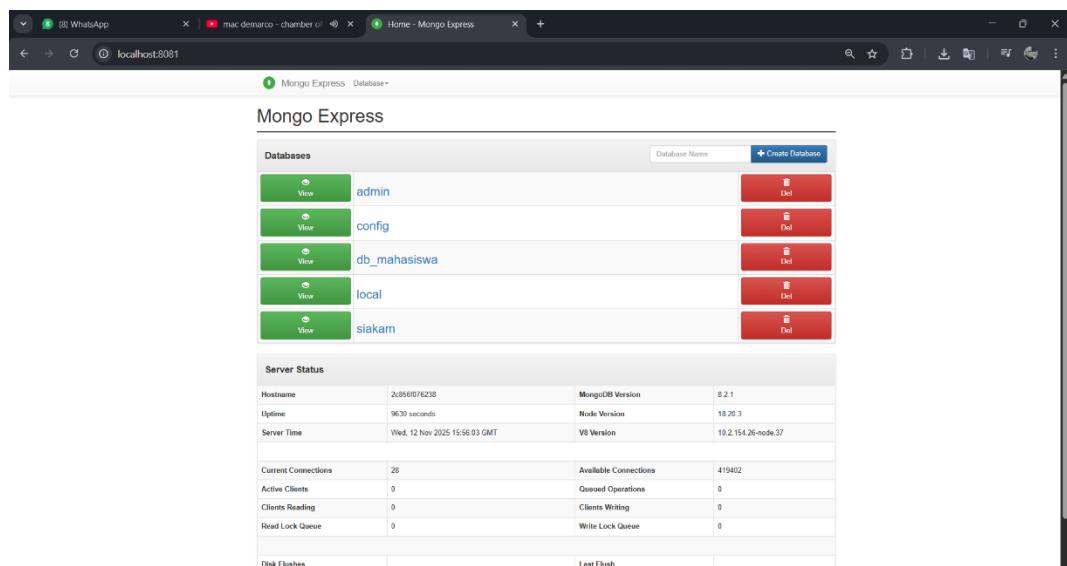
TUGAS: Instalasi dan Project Mini: Sistem Informasi Mahasiswa (Mongo Express GUI, MongoDB Compass, VSCode, dan Docker Desktop)

A. Dokumenstasi Instalasi:

Tampilan Docker



Tampilan Mongo Express GUI



Tampilan MongoDB Compass

The screenshot shows the MongoDB Compass interface connected to 'localhost:27017'. The left sidebar displays 'CONNECTIONS (1)' with 'localhost:27017' selected, showing its database structure. The main area lists databases: 'admin', 'config', 'db_mahasiswa', 'local', and 'siakam'. Each database has associated storage size, collection count, and index count. A '+' button is available to create a new database.

| Database name | Storage size | Collections | Indexes |
|---------------|--------------|-------------|---------|
| admin | 40,96 kB | 2 | 3 |
| config | 36,86 kB | 1 | 2 |
| db_mahasiswa | 36,86 kB | 2 | 2 |
| local | 36,86 kB | 1 | 1 |
| siakam | 36,86 kB | 2 | 2 |

Tampilan VSCode

The screenshot shows a VSCode workspace titled 'mongo-docker-praktik'. The Explorer sidebar shows files 'app.py' and 'docker-compose.yml'. The 'TERMINAL' tab shows the output of a Python script named 'app.py' which connects to a MongoDB instance running in a Docker container. The terminal output includes:

```
PS C:\Users\riesr\mongo-docker-praktik> & 'c:\users\riesr\appdata\local\programs\python\python313\python.exe' 'c:\users\riesr\.vscode\extensions\ms-python.python\_debugpy-2025.14.1-win32-x64\bundled\libs\debugpy\launcher' '61145' '--' 'c:\users\riesr\mongo-docker-praktik\app.py'
[✓] Terhubung ke MongoDB!
Daftar koleksi: ['delete_me', 'mahasiswa']
PS C:\Users\riesr\mongo-docker-praktik>
```

B. Project Mini: Sistem Informasi

Soal:

Buat database (siakam) dan Koleksi (mahasiswa)

1. Insert 5 data mahasiswa dengan jurusan berbeda.
2. Cari mahasiswa dengan IPK > 3.5.
3. Update status mahasiswa menjadi “Lulus”
4. Hapus mahasiswa dengan nim tertentu.
5. Hitung jumlah mahasiswa per program studi.

Jawab:

1. Insert 5 data mahasiswa dengan jurusan berbeda.

| Mongo Express Database: siakam - Collection: mahasiswa | | | | | | |
|---|---------|------------|---------------|---------------|---------------------------------|--|
| _id | nim | nama_depan | nama_belakang | tanggal_lahir | email | program_studi |
| 691497523d19991c15fa9c1 | 2023001 | Budi | Santoso | 2002-03-15 | budi.santoso@universitas.ac.id | <pre>{ "kode": "TI", "nama": "Teknik Informatika", "fakultas": "FTI" }</pre> |
| 6914981923d19991c15fa9c2 | 2023002 | Fuad | Ngopi | 2002-08-11 | fuad.ngopi@universitas.ac.id | <pre>{ "kode": "SI", "nama": "Sistem Informasi", "fakultas": "FTI" }</pre> |
| 6914997765e2ced2fa50b5ed | 2023005 | Vergil | Sparda | 2001-05-05 | vergil.sparda@universitas.ac.id | <pre>{ "kode": "EL", "nama": "Teknik Elektro", "fakultas": "FTI" }</pre> |
| 69149c9cfb89d0bae4e6137b | 2023013 | Dante | Sparda | 2002-05-05 | dante.sparda@universitas.ac.id | <pre>{ "kode": "DKV", "nama": "Desain Komunikasi Visual", "fakultas": "FSRD" }</pre> |
| 69149d51fb89d0bae4e6137c | 2023014 | Bruce | Wayne | 2002-08-22 | bruce.wayne@universitas.ac.id | <pre>{ "kode": "MANJ", "nama": "Manajemen", "fakultas": "FEB" }</pre> |
| 69149e17fb89d0bae4e6137d | 2023011 | Arthur | Fleck | 2002-12-12 | arthur.fleck@universitas.ac.id | <pre>{ "kode": "ARSS", "nama": "Arsitektur", "fakultas": "FT" }</pre> |

2. Cari mahasiswa dengan IPK > 3.5.

Mongo Express Database: siakam Collection: mahasiswa

Simple Advanced

Projection Aggregate query

Find

Delete all 3 documents retrieved

| id | program_studi | semester | status | ipk | mata_kuliah_diambil | prestasi | create_at | update_at |
|------------------------------|--|----------|--------|-----|--|--|----------------------|----------------------|
| .santoso@universitas.ac.id | <code>{ "kode": "TI", "nama": "Teknik Informatika", "fakultas": "FTI" }</code> | 4 | Aktif | 3.8 | <code>[{ "kode": "TI", "nama": "Teknik Informatika", "fakultas": "FTI" }, { "kode": "EL", "nama": "Teknik Elektro", "fakultas": "FTI" }, { "kode": "MNJ", "nama": "Manajemen", "fakultas": "FEB" }]</code> | Juara 2 Hackathon 2023, Asisten Lab Basis Data | 2023-09-01T10:00:00Z | 2024-01-15T14:30:00Z |
| il.ssparda@universitas.ac.id | <code>{ "kode": "EL", "nama": "Teknik Elektro", "fakultas": "FTI" }</code> | 4 | Aktif | 3.7 | <code>[{ "kode": "TI", "nama": "Teknik Informatika", "fakultas": "FTI" }, { "kode": "EL", "nama": "Teknik Elektro", "fakultas": "FTI" }, { "kode": "MNJ", "nama": "Manajemen", "fakultas": "FEB" }]</code> | Lolos Program Magang Kampus Merdeka, Asisten Dosen Elektronika | 2023-09-01T10:00:00Z | 2024-01-15T14:30:00Z |
| e.wayne@universitas.ac.id | <code>{ "kode": "MNJ", "nama": "Manajemen", "fakultas": "FEB" }</code> | 4 | Aktif | 3.9 | <code>[{ "kode": "TI", "nama": "Teknik Informatika", "fakultas": "FTI" }, { "kode": "EL", "nama": "Teknik Elektro", "fakultas": "FTI" }, { "kode": "MNJ", "nama": "Manajemen", "fakultas": "FEB" }]</code> | Ketua Himpunan Mahasiswa Manajemen | 2023-09-01T10:00:00Z | 2024-01-15T14:30:00Z |

3. Update status mahasiswa menjadi "Lulus" (Karna di versi terbaru Mango Express tidak bisa, saya melakukannya di MongoDB Compass)

MongoDB Compass - localhost:27017/siakam.mahasiswa

Connections Edit View Collection Help

Compass

My Queries

Data Modeling

CONNECTIONS (1)

localhost:27017

- admin
- temproles
- tempusers
- config
- settings
- db_mahasiswa
- delete_me
- mahasiswa
- local
- siakam
- delete_me
- mahasiswa

localhost:27017 > siakam > mahasiswa

Documents 6 Aggregations Schema Indexes 1 Validation

Generate query Explain Reset Find Options

ADD DATA EXPORT DATA UPDATE DELETE

Document modified.

```

1 _id: ObjectId("6914981923d19991c15fa9c1")
2 nim : "2023002"
3 nama_depan : "Budia"
4 nama_belakang : "Santoso"
5 tanggal_lahir : "2002-03-15"
6 email : "budi.santoso@universitas.ac.id"
7 program_studi : Object
8 semester : 4
9 status : "Belum Lulus"
10 ipk : 3.8
11 mata_kuliah_diambil : Array (2)
12 prestasi : Array (2)
13 create_at : "2023-09-01T10:00:00Z"
14 update_at : "2024-01-15T14:30:00Z"

```

CANCEL UPDATE

4. Hapus mahasiswa dengan nim tertentu

Viewing Collection: mahasiswa

The screenshot shows the MongoDB Compass interface with the "Simple" tab selected. In the search bar, the query `{"nim": "2023005"}` is entered. The results table displays one document with the following fields:

| _id | nim | nama_depan | nama_belakang | tanggal_lahir | email | program_studi | semester |
|-------------------------|---------|------------|---------------|---------------|----------------------------------|--|----------|
| 69149977682ced2fa50b5ed | 2023005 | Vergil | Sparda | 2001-05-05 | vergil.ssparda@universitas.ac.id | <pre>{ "kode": "EL", "nama": "Teknik Elektro", "fakultas": "FTI" }</pre> | 4 |

A green circle highlights the delete icon (trash can) next to the document's _id field. A red bar at the bottom indicates "Delete all 1 documents retrieved".

5. Hitung jumlah mahasiswa per program studi.

The screenshot shows the MongoDB Compass interface with the "Advanced" tab selected. An aggregate query is defined in the left panel:

```
[  
  { "$group": { "_id": "$program_studi.nama", "jumlah": { "$sum": 1 } } },  
  { "$project": { "_id": 0, "program_studi": "$_id", "jumlah": 1 },  
    { "$sort": { "jumlah": -1 } } }]
```

The results table shows the count of students for each program:

| jumlah | program_studi |
|--------|--------------------------|
| 1 | Manajemen |
| 1 | Sistem Informasi |
| 1 | Teknik Informatika |
| 1 | Teknik Elektro |
| 1 | Arsitektur |
| 1 | Desain Komunikasi Visual |

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