Fachhochschule Kiel
University of Applied Sciences

Big Data Technologies – NoSQL Databases

Following is **Part 1** of the **Portfolio Examination** of the module **Big Data Technologies** in **Summer Semester 2024**. Please **upload** your **documents** and **program files** to the corresponding course in **Moodle** Learn **latest until 17.05.2023 at 23:59**.

InfluxDB

Please prepare a presentation about the time series database InfluxDB and install, configure, and program it with Python due to the following guidelines:

1. Install and configure InfluxDB on your laptop. You can use the official Docker image or make a native installation for your operating system.

2. Create an organization, user, bucket, and an API token via the web browser or the CLI.

3. Install the InfluxDB Python Client Library and create a Python file or Jupyter notebook to test the database connection.

4. Develop a Python application that creates random measurements of your choice (e.g., temperature, moisture, wind speed, or other kind of measurement data) as time series data (minimum 100 measurements) due to a useful data model to demonstrate writing of data.

5. Develop a Python application that extracts and displays the time series data to demonstrate reading and filtering of data.

6. Prepare a (PowerPoint) presentation about InfluxDB that contains at least information about time series data and time series databases, the company, the licensing, the product portfolio, the IT architecture, the data models, the client libraries, the use cases as well as the installation, configuration, and programming of InfluxDB.

The **deliveries** are the presentation (as a PDF file) as well as the Python program file(s) or Jupyter notebook(s).

MongoDB

Please prepare a presentation about the document database MongoDB and install, configure, and program it with Python due to the following guidelines:

1. Install and configure MongoDB on your laptop. You can use the official Docker image or make a native installation for your operating system.

2. Create a database and a collection via the shell or the GUI.

3. Install the MongoDB Python Client Library and create a Python file or Jupyter notebook to test the database connection.

4. Develop a Python application that creates random JSON-style documents of your choice (e.g., students, books, authors, or other kind of JSON-style documents) as document data (minimum 100 documents) due to a useful data model to demonstrate ingestion of data.

5. Develop a Python application to demonstrate how to insert, update, query, and delete documents.

6. Prepare a (PowerPoint) presentation about MongoDB that contains at least information about documents and document databases, the company, the licensing, the product portfolio, the IT architecture, the data models, the client libraries, the use cases as well as the installation, configuration, and programming of MongoDB.

The **deliveries** are the presentation (as a PDF file) as well as the Python program file(s) or Jupyter notebook(s).