

## IT2234: Web Service and Server Technologies - Practical

### Assignment 04

#### Department of Physical Science

#### Faculty of Applied Science, University of Vavuniya

#### *Answer All Questions*

**Duration: 2 hours**

**10<sup>th</sup> of June 2024**

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This exercise will guide you through the query operations using MongoDB's command-line interface (**mongosh**) or MongoDB Compass. The sample data is available in the Assignment 4 text file.

Scenario:

#### *One-to-Many Relationship*

A library has multiple books. Each book belongs to one library, but each library can have many books.

#### *Many-to-Many Relationship*

Books can have multiple authors, and authors can write multiple books.

1. Create a Database Library.
2. Create collections named libraries, books and authors.
3. Insert some sample documents into the collections.
4. Find all books in the "Central Library".
5. List all libraries along with the number of books they have.
6. Find all books written by "J.K. Rowling".
7. List all authors along with the books they have written.
8. Find all books along with their authors' details.
9. List all libraries and the number of books they have, including libraries with no books.
10. Calculate the average number of books per library.
11. Find all authors who have written more than one book.
12. Retrieve all books along with their authors' names and the library they belong to.
13. List all authors who have not written any books.