W6
PRACTICE

My SQL

At the end of his practice, you should be able to…

- ✓ Establish a **MySQL connection** on the back-end app
- ✓ Implement a **repository** layer using **MySQL queries**
- ✓ **Test the endpoints** (REST API client + front-end app)
- ✓ **Extends the project** to handle **4 tables** in the database

How to start?

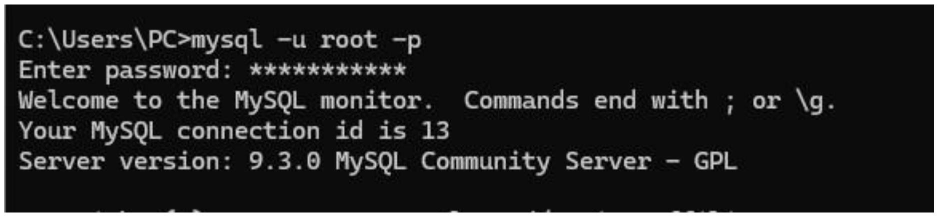
EXERCISE 1 – MySQL ***Manipulation***

Before starting !

You should have a MySQL Server running. Check it out with bellow command:

```
mysql -u root -p
```

You should see MySQL monitor run properly:



```
C:\Users\PC>mysql -u root -p
Enter password: ***********
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 13
Server version: 9.3.0 MySQL Community Server - GPL
```

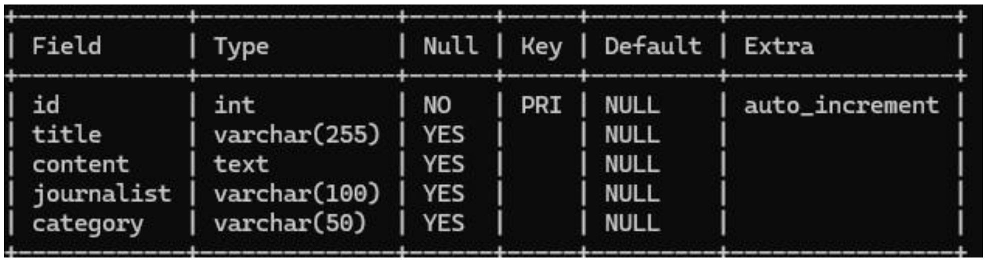
If not, you need to install and configure MySQL server properly.
https://dev.mysql.com/doc/refman/8.4/en/windows-installation.html

Q1 - Create the database and the table of articles

- Open the terminal and launch MySQL monitor:

```
mysql -u root -p
```

- Create a new database (e.g. **week6Db**) using the command line
- Create a new table (articles) with the columns below:



```
+------------+--------------+------+-----+---------+----------------+
| Field      | Type         | Null | Key | Default | Extra          |
+------------+--------------+------+-----+---------+----------------+
| id         | int          | NO   | PRI | NULL    | auto_increment |
| title      | varchar(255) | YES  |     | NULL    |                |
| content    | text         | YES  |     | NULL    |                |
| journalist | varchar(100) | YES  |     | NULL    |                |
| category   | varchar(50)  | YES  |     | NULL    |                |
+------------+--------------+------+-----+---------+----------------+
```

Q2 - Review My SQL queries

- Complete the bellow table with the appropriate MySQL query

Use case	My SQL Query
Get all articles	SELECT * FROM articles
Get articles written by the journalist 'RONAN"	SELECT * FROM articles WHERE journalist = 'RONAN'
Add an article	INSERT INTO articles VALUES(ID, TITLE, CONTENT, JOURNALIST, CATEGORY)

Delete all articles whose title starts with “R”	DELETE FROM articles WHERE title like ‘R%’

*EXERCISE 2 – MySQL on **Backend***

For this exercise, you start with a start frontend and a backend code.

The goal for this exercise is to replace the provided mock repository with a MySQL repository.

Q1 - Run Frontend & Backend

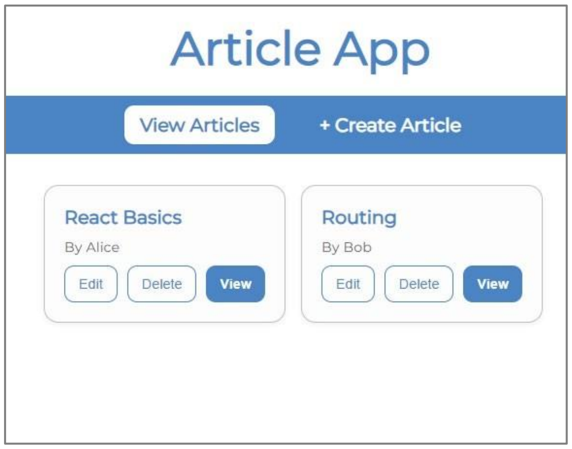
Open a dedicated terminal to run the server:

```
cd back npm
i npm run
dev
```

Open a dedicated terminal to run the client:

```
cd front
npm i npm
run dev
```

Open the browser and check the front end is correctly **connected with the back end** :



The project already works as we provide fake data (mock repository). *Let’s understand in detail the back and front ends.*

FRONT-END

Q2 - Look at ArticleForm

How does the component know whether to create a new article or update an existing one?

```
When the isEdit parameter is false, it will create a new article and if the
isEdit parameter is true, it will update an existing one.
```

Why is the **useParams hook** used in this component? What value does it provide when isEdit is true?

```
We used useParams hook to get the id when we navigate to specific article.
When isEdit is true, it provides “Edit Article” Value.
```

Explain what happens inside the **useEffect** hook. When does it run, and what is its purpose?

```
This useEffect checks if the component is in edit mode (isEdit is true) and
if an id exists. If both are true, it runs fetchArticle(id) to load the
article's data. This happens when the component first renders or whenever
isEdit or id changes.
```

Q3 - Look at the ArticleList

How are the three promise states (loading, success, and error) handled in the fetchArticles function?

```
- setLoading(true) is called before the request starts.
- setArticle(data) is called with the response data.
- setError() is called if something goes wrong.
```

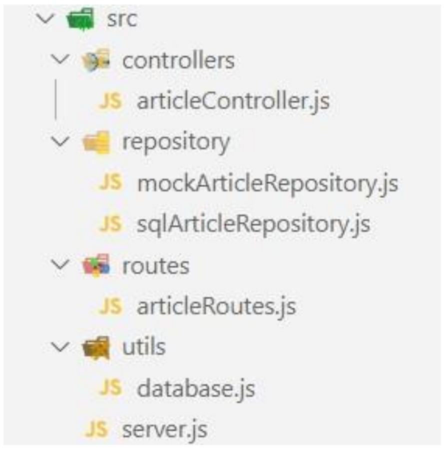
What is the role of the ArticleCard component, how does it communicate with the parent ArticleList?

```
The ArticleCard displays a single article. It receives data and functions
from ArticleList via props and communicates back using callback functions
like onDelete or onEdit
```

BACK-END

Q4 - Why 3 layers ?

The backend is composed of the below 3 layers : routes, controllers and repository :



```
src
  controllers
    articleController.js
  repository
    mockArticleRepository.js
    sqlArticleRepository.js
  routes
    articleRoutes.js
  utils
    database.js
  server.js
```

Describe the **responsibility** of each **layer** by completing the table below:

LAYTER	RESPONSABILITIES
Routes	Handle HTTP requests and send them to the right controller.
Controller	Contain the business logic and handle request processing.

Repository	Interacts with the database, handling data access and queries.

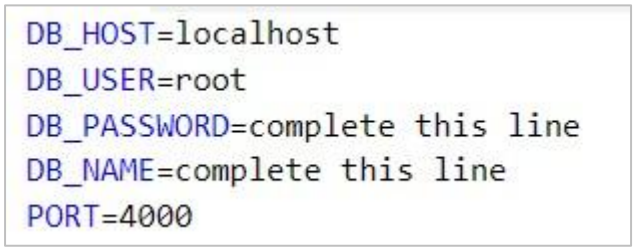
Q5 - Implement the database connection

Here are the files you need to update to **connect the backend to the database**:

FILE	RESPONSABILITIES
/.env	securely store your MySQL database credentials
/utils/ database.js	Holds the **MySQL connection setup** logic *Responsible for creating and exporting a **connection pool** that other parts of the application can use.*
/repository/sqlArticleRepository.js	Provides **a clean, reusable interface** to interact with the articles table in your **MySQL database**. *Encapsulates all the SQL queries related to articles and exposes them as functions that the rest of your application can call.*

Here is what you need to do:

- **.env file**
  Create a .env file to securely store your MySQL database credentials.
  See https://www.npmjs.com/package/dotenv



```
DB_HOST=localhost
DB_USER=root
DB_PASSWORD=complete this line
DB_NAME=complete this line
PORT=4000
```

- **utils/database.js** ○ Create a **MySQL connection pool** using the credentials from the .env file.
  https://sidorares.github.io/nodxe-mysql2/docs#using-connection-pools

  ○ Export this connection pool so it can be used by other modules in the project.

- **repositories/sqlArticleRepository.js**

Implement the following functions to interact with the articles table in the database:

```
getAll() — fetch all articles getById(id) —
fetch one article by ID create(article) — insert
a new article update(id, article) — update an
existing article remove(id) — delete an article
by ID
```

Use the connection pool from database.js to **execute the SQL queries** inside these functions.

As an example, to implement getAll() :

```
export async function getArticles() {   const [rows] = await
pool.query("SELECT * FROM articles");   return rows;
}
```

Q6 - Test the endpoints

To test the implementation of MySQL repository (*create, update, remove, get articles…)*

- First, perform tests using a **REST API client** (thunder or postman)
- Then, run the **front-end project** and asset the views work properly

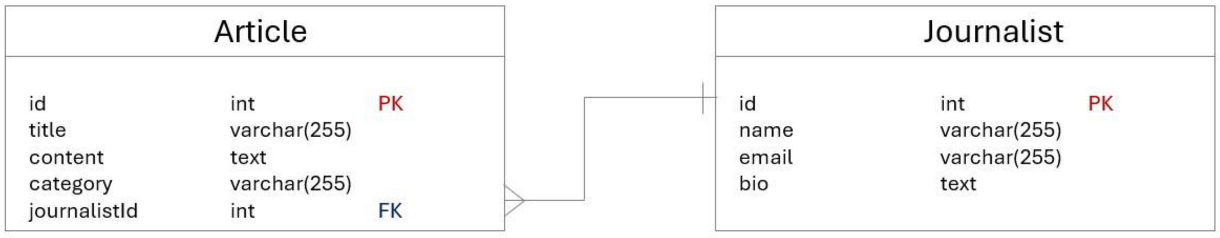
*EXERCISE 3 – Handle **Journalists***

For this exercise, you continue on the previous exercise code.

Now, users want to see **who wrote each article** to better understand the source.

- You will need to update the app, so the article page shows the **journalist's name and info.**
- You will need to provide a journalist view, showing all articles written by a specific journalist.

Database



Update your database structure to handle the journalist table

- Create **journalists table** with fields: id, name, email, bi
- Update **articles table** to include journalist_id foreign key
- **Populate the database** with some fake data

Back End

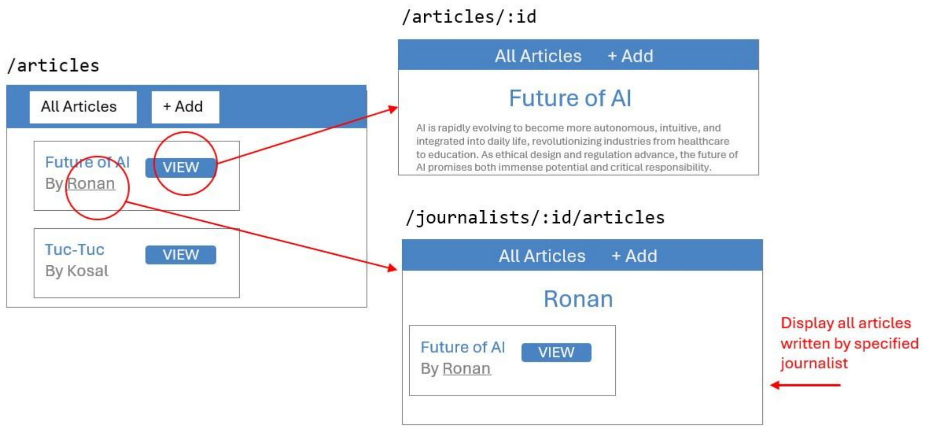
- Implement **repository** methods:
    - Fetch articles with joined journalist name (using **SQL JOIN**)

- Fetch all articles written by a specific journalist name (using **SQL JOIN**)

- Add **controller** functions:
  - Get all articles by journalist ID

- Define **new API routes**:
  - `GET /api/articles/:id` article + journalist name. ○ GET `/api/journalists/:id/articles` articles list by journalist.

Front End



AI is rapidly evolving to become more autonomous, intuitive, and integrated into daily life, revolutionizing industries from healthcare to education. As ethical design and regulation advance, the future of AI promises both immense potential and critical responsibility.

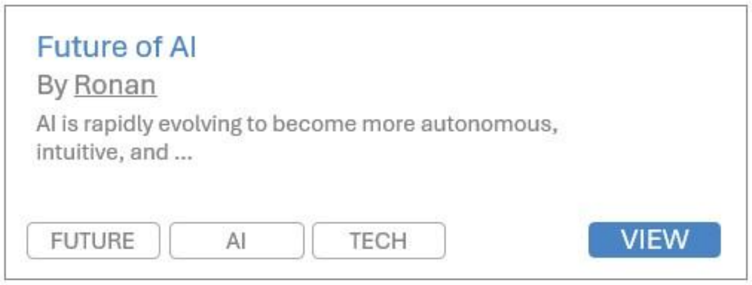
An additional view shall display all articles written by the specific journalist

- Update **Article Details page**:
  - Display journalist name alongside the article.
- Create **Journalist Articles List page**:
  - Display all articles by selected journalist.
- Add navigation:
  - From Article Details page, allow users to click journalist name to view **that journalist's articles.**
- Update API calls:
  - Fetch combined article + journalist data. ○ Fetch articles filtered by journalist ID.

*EXERCISE 4 – Handle **Tags*** ***BONUS***

For this exercise, you continue on the previous exercise code.

Now, users want to easily **assign tags to articles**.
The users can then filter articles by selecting different tags.


Future of AI
By Ronan
AI is rapidly evolving to become more autonomous, intuitive, and ...
FUTURE
AI
TECH
VIEW

You will need to add categories to articles and let users filter the article list by selecting a category.

Database

- Create a new **table** Category (id, name).
    - *What kind of relationships do we have between articles and categories?*

Back End:

- Implement repository methods to:
    - Retrieve all categories.
    - Retrieve all articles filtered by category, using JOIN to include category name.
- Add a new API endpoint to get articles by category ID.

Front End:

- Add a **multiple categories filter UI component** on the **article list page** (multiple choice dropdown, chipset selector).
- When categories are selected, fetch and display only articles in those categories.
- Display categories names alongside articles in the list.