**Case Study: Data Management System**

**Objective:**

Develop a menu-based console application to assess your proficiency in Core Java, MySQL, and JDBC. The application will simulate a data management system for a life sciences research lab, allowing users to manage experiments, samples, and researchers.

**Functionalities:**

1. **Experiment Management:**
   * Add a new experiment
   * View experiment details
   * Update experiment information
   * Delete an experiment
2. **Sample Management:**
   * Add a new sample
   * View sample details
   * Update sample information
   * Delete a sample
3. **Researcher Management:**
   * Add a new researcher
   * View researcher details
   * Update researcher information
   * Delete a researcher

**Database Schema:**

* **Experiment Table:**
  + experiment\_id (Primary Key)
  + name
  + description
  + start\_date
  + end\_date
* **Sample Table:**
  + sample\_id (Primary Key)
  + experiment\_id (Foreign Key references Experiment Table)
  + name
  + type
  + quantity
* **Researcher Table:**
  + researcher\_id (Primary Key)
  + name
  + email
  + phone\_number
  + specialization

**Requirements:**

* Develop a menu-based console application using Core Java.
* Use JDBC for interactions with the MySQL database.
* Implement menu options for managing experiments, samples, and researchers.
* Ensure that the application handles the association between experiments and samples, and updates sample information based on experiment requirements.
* Handle exceptions effectively and provide user-friendly error messages.
* Ensure the application code is clean, well-documented, and follows standard coding conventions.

**Submission:**

* Submit the complete source code along with a README file that provides setup and usage instructions.
* Share your project by uploading it to a public GitHub repository.
* Provide the link to the GitHub repository to the coaches.