

# DBD Exam Project

In the modern IT world, many businesses provide their products or services on-line, using Internet as a channel of communication with their customers. During economically hard times as Corona isolation for many it remains the only platform for marketing and retailing. To meet the requirements of the on-line digital transition, modern applications work with purpose-built and decoupled data stores, where different application components can be mapped to different data sources, rather than to a single database. This approach is implemented in the microservices architecture, as well as in polyglot persistence applications.

## Project Objective

Your objective is to provide, as a proof of concept, database support to an application or related applications, where multiple diverse database models are built and implemented for different purposes.

## Project Tasks and Requirements

- **Choose** an enterprise or an application that operates with large amount of data of various origin and different implementation. It can be any business of your choice where databases have a central role. Inspiration:
  - Food delivery
  - Book borrowing
  - IT Training
  - Travel related services
  - Medical consultations and drug delivery
- **Define functional and non-functional requirements** to your project. Avoid limiting the project to performing maintenance operations only. Inspiration for business and implementation scenarios and database operations:
  - Management of staff, partners and fleet
  - Warehousing
  - Product catalogue and versioning
  - User accounts and authentication management
  - Customer Relationship Management
  - Customer Order Management
  - Shopping card and payment
  - Fraud detection
  - Analytics-based customer experience
  - Recommendation systems
  - Activity logging
  - Session and Transaction Management
- **Plan and motivate your decision** on appropriate database types that could support the operability of the application. Consider using minimum three different database types from those introduced in class. As the databases operate in the same business domain, transformation and transition of data between the various database models is encouraged.

- **Design and create the databases**, populated with large amount of real or synthetic data that is sufficient to illustrate the database transactions management in a meaningful way. Consider validation and testing of your design and development process.
- **Deploy the databases** on localhost or other servers of choice, from where they can be accessed by the demo applications. Consider deploying one or more of the databases in a cluster, as appropriate to ensure performance optimization, ACID and CAP qualities.
- **Create** one or more simple related applications and implementation cases to **demonstrate** communication of clients and administrators with the specified database services and operations. No fancy graphical interfaces are expected. **Alternatively**, developer-supporting tools, such as database administration and maintenance dashboards, Postman, curl, or online platforms can be used. Keep in mind the data integration, though.
- **Write** an up-to-seven pages report, documenting your considerations on the development process and created product, covering all stages and components. Consider including installation instructions, if necessary.

Apply the best of your networking, programming, visualizing, and writing technical documentation skills, but remember that the database issues are in focus at this project and exam.

## Project Work and Delivery

It is a group project. The recommended size of a group is 2-4 students. The report and supporting materials have to be uploaded to Wiseflow in a .zip file before the exam, as scheduled. A link to a GitHub repository, containing the database scripts, the application code, and the data sources must be attached to the delivery, as well. The application and the demonstration cases must be reproducible.

**Deadline: 2/6-2021.**

## Exam

The exam is individual and censored. It takes place on-line in Zoom, scheduled as 30 minutes per student, including about 10 minutes presentation, about 15 minutes dialogue with the examiners, and 5 minutes grading and transition. At the day of the exam, students gather in the waiting room, appointed in Wiseflow, at least 30 minutes before their scheduled time, from where they are individually invited to enter the exam room and join the examiners. It is required to join the exam room with sound and video camera on. The common exam rules apply.