Large Scale and Multi-Structured Data Bases
University of Pisa
Academic Year 2019-2010
Workgroup Task 1

Title: Designing and Implementing a simple JAVA application connecting to a relational DB using JPA
and
Feasibility Study on the use of a Key-Value Data Storage

The workgroup must design and implement a simple application connecting to a relational data base. The manipulation of the data base must be carried out using a standard implementation of the Java Persistency API.

The steps to carry out and to ***describe in the final documentation*** are:

1) To deepen the knowledge of how handling one-to-many and many-to-many relationships with JPA.
2) To brief describe the proposed application by words, like a sort of storytelling towards non experts in the field of computer engineering (if not previously discussed for task 0 by the teacher, this description must be sent to him for the ***approval***).
3) To identify the main actors of the application and to define the main functional and non-functional requirements.
4) To draw the UML diagram of the main Use Cases
5) To draw the UML diagram of the Analysis Classes
6) To design the main entities involved in the application and the data base (ER diagram of the DB).
7) To implement and to test the application (including the description of the software architecture).
8) To write a short manual of usage of the application.

Minimum Requirements of the Application:
1. The DB should contain at least 3 tables, including at least one one-to-many or one many-to-may relationship
2. A set of CRUD (Create/Insert, Read, Update and Delete) operations must be performed on the DB using JAVA code with JPA.
3. To define an interface for user interaction with all the functionalities of the application (the application must not be compiled each time for showing different functionalities).

Moreover, a short report discussing the usage of JPA, in the form of a ***tutorial***, must be produced.

Finally, the group must carry out a ***feasibility study*** on the possibility of translating their data model (even just a portion of it) to a key-value model. ***Implementation*** of the possible new data model will be ***appreciated***.

All the artifacts (reports, code, database dump and executable files) must be uploaded *only by the reference person* of the group. Avoid multiple uploads.
Groups *may use git archive*. In this case, the reference person must specify the address to download the repository. Please upload documentation always on the e-learning platform.

Deadline: November 5, 2019.