MINISTRY OF EDUCATION AND SCIENTIFIC RESEARCH

TECHNICAL UNIVERSITY
OF CLUJ-NAPOCA

FACULTY OF AUTOMATION AND COMPUTER SCIENCE
COMPUTER SCIENCE DEPARTMENT

DISTRIBUTED SYSTEMS

Project Specification

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2018

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1. General Requirements

The semester project for the Distributed Systems laboratory will be developed by each student **individually** with the following minimal requirements:

- Technologies used:
  - **Backend**: ORM + Spring REST **or** .NET C# WEB API with REST controllers
  - **Frontend**: Angular JS pages that will use the REST services of the backend
- The project will have a **layered architecture**.
- The services from the backend will be exposed as REST services, thus enforcing interoperability and portability of the system.
- The front end will use the services from the backend.
- The functional requirements of the project will be defined by each student. As minimal complexity, the projects should have:
  - a DB of around 3-4 tables, at least two FK relationships (one-to-many, many-to-many, etc.)
  - CRUD operations implemented on the DB tables and exposed as REST functionality
  - Two more complex operations, such as reports with charts, mail sending to users, shopping cart for online shop, reservation system for hotel management, etc.

2. Milestones

1. Week 4 - Projects Evaluation 1 – individual specification and requirements

Each student will bring a document (2-4 pages) containing its own project specification, containing at least the following:

- General project description
- Project functional requirements
- Project non-functional requirements
- Main use-cases describing the complex operation functionality

2. Week 10 - Projects Evaluation 2

- The Spring REST backend will be evaluated.
- If the project does not compile or it has run-time errors it will be rejected.
- The students will have to show tests for most of the CRUD functionalities (integration tests)
- REST functionality evaluation with REST Console Applications (ex. POSTMAN)

3. Week 12-14 – Final Project Evaluation

- The entire project will be evaluated.
- The project will be run and the UI functionality will be tested.

3. Evaluation Example

(Items can be added here by each lab teaching assistant)

1. Project Evaluation - Part 1 (complexity, description, functional and non-functional requirements, use cases)

The students must pay special attention to this part.
Based on this part, the project complexity is evaluated and the maxim grade is computed. If the project specification is simple, the maxim grade for the implementation will not be 10.
The project implementation will be assessed according to the specification document. If the document is incomplete (e.g. the complex functionality is missing) the missing items will not be taken into account for the implementation parts, even if implemented. The implementation must follow closely the project specification.

2. Project Evaluation Part 2 (Backend)

4 p: CRUD on tables (minimum 3 tables)
4 p: two complex operations (rating, comments, shopping cart etc.)
1 p: login & session keys
1 p: code styling, application architecture and good practices

3. Project Evaluation Part 3 (Frontend)

4 p: CRUD on tables on different pages
1 p: error messages and error pages
2 p: appropriate UI for complex functionality
1 p: code styling, application architecture and good practices
2 p: pretty view