DATABASE MANAGEMENT SYSTEMS ASSIGNMENT

1. Assignment content

1.1. Application domain

The students free to choose an application domain where its business requirements can be studied appropriately for the assignment. Some typical application domains are: retail, manufacturing, banking, education, and healthcare. These application domains are widely supported with a diversity of users and data that need to be supported. As a result, it is easy for the students to select and build an application successfully.

1.2 Topic: Practicing several main functionalities of two DBMSs (SQL vs NoSQL) and developing an application in a chosen application domain to select an approriate DBMS

For the assignment, the following topics of the course are considered:

i. Data storage & management
ii. Indexing
iii. Query processing
iv. Transaction
v. Concurrency control
vi. Data backup and recovery

The materials of topics from any sources can be reused with reported references and citations. ***Each student is asked to study at least one topic on top of two DBMSs and compare the results from two DBMSs to conclude which DBMS is suitable for the context set up by the student.*** As a result, the number of topics is the number of members in each assignment group. The other topics can be studied and reported for bonuses.

Besides, the students are asked to ***develop an application on at least one of the two given DBMSs in a chosen application domain***. Application architecture and its technologies can be decided by the students but asked to be reported. Client-server, n-tier, MVC, or service-oriented architecture is desired. The application can be of any type: traditional web application, mobile application, window-form application, … However, web applications are expected. Other supporting technologies are determined by the students.
The application needs to have the functionalities to support at least ***n*** **functional requirements of the users, not including log-in/log-out requirements where *n* is 2*the number of members**

in each group. Data requirements are decided by the students. Nonetheless, they need to be supported with the following query-update types:

a. **Insert**
b. **Delete**
c. **Update**
d. **Query with a single condition**
e. **Query with a composite condition**
f. **Query with a join**
g. **Query with a subquery**
h. **Query with aggregate functions**

1.3. Working style

The students work in team. Each group is randomly formed by the instructor, including 3-4 members. Special groups are accepted as desired. Any contribution of each member to the assignment must be reported.

2. Outcome

The expected outcome of the assignment includes:

- Demonstrations on the two DBMSs and the comparisons for the topics
- An application that must be executed smoothly on at least one DBMS

3. Assessment

- **Report:** a technical report in **pdf** files.
- **Product:** the application that can be executed on at least one DBMS.
- **Presentation:** an oral presentation in video files (mp4). All members are expected to present their own parts. Demonstrations with the two DBMSs and application need to be included. Please prepare separate video files for the practice on the DBMSs and those for the application.
- **Submission**: The team leader submits your work (soft copy) to LMS with only one single zip file.
- **Due date**: week 15 of the course

- **Assessment criteria**:

Descriptions	0-<4 points	4-<6.5 points	6.5-<8.5 points	8.5-10 points
Structure of the report (10%)	The report is not structured in any way.	The report is structured but its structure is not appropriate (too many sections (>7 sections) or too few sections (<4 sections).	The report is well structured but at least 2 sections are not appropriately organized in detail. The report doesn't have Introduction to the entire project, Conclusion with self-assessment, or References.	The report is well structured and the detailed structure of each section is appropriate. All basic sections like Introduction to the entire project, Conclusion with self-assessment, and References are included.
Content of the report (10%)	The report contains less than 25% requirements of the assignment.	The report contains 25-60% requirements of the assignment.	The report contains 75-90% requirements of the assignment.	The report contains more than 90% requirements of the assignment.
Presentation (10%)	Boring with unclear details about demonstrations and application	Either demonstrations on DBMSs or application are presented.	Both demonstrations and application are presented in a confident manner; but some parts are not detailed enough.	Both demonstrations and application are presented clearly, confidently, and appropriately.
Teamwork (10%)	No teamwork report	Teamwork is reported but unclear to determine the contribution of each member.	Teamwork is reported in detail but no meeting minute is attached.	Teamwork is reported in detail with at least one meeting minute attached.
Demonstration (30%)	No demonstration	At least one topic is not demonstrated.	All the topics are demonstrated but part of the demonstrations is incorrect.	All the topics are demonstrated properly.
Application (30%)	Less than 20% functional	20-50% functional	50-85% functional	More than 85% functional

Descriptions	**0-<4 points**	**4-<6.5 points**	**6.5-<8.5 points**	**8.5-10 points**
	requirements and query-update types are supported.	requirements and query-update types are supported.	requirements and query-update types are supported properly.	requirements and query-update types are supported properly. GUIs are user-friendly with best practices.

4. Bonus policy

A bonus is given for the work with additional features and excellent outcomes. Its range is 1 to 2 points.

- 0.5 point: additional/excellent work from the theoretical perspectives
- 1 point: additional/excellent work from the theoretical perspectives with examples and comparisons between DBMSs
- 1.5 points: additional/excellent work from the theoretical perspectives and partly included in the application
- 2 points: additional/excellent work from the theoretical and practical perspectives and completely included in the application