The following sections will be graded in this exam

1. Exercise 1 – Data modelling [max 18 points]
2. Exercise 2 – SQL dump file creation [max 6 points]
3. Exercise 3 – Queries [3 points each, max 18 points]

Guide:

- **Important:** Read this exam document carefully through before starting the exam!

- You can use all material, **but notice the following**:

  - Each student must do **independent work**.

  - All communication with other students or other people regarding this exam **is prohibited** (Teams, social media, IRC, web-chat etc.).

  - The solutions you provide for the exam **must only be shared with the teacher**.

  - Failure to follow the above instructions will result in the exam being rejected.

- Before starting the exam, ensure you have an empty database created for the exam.

- You may use XAMPP installation or any other database platform during the exam for implementing your database.

- Check the returning guide from the end of this document to make sure you have all required files for the return.

- Contact teacher if you face any technical problems during the exam.

- Do not leave your returns for the last minute so you can return the files before the end of the exam. Exam files **will only be accepted through the exam return box**.

- Remember to give course feedback under the Course feedback tab in Moodle environment after the exam. Thank you! ☺

Database for reporting fire department missions

1. Specification from the customer

Fire department has multiple different missions where human lives, property and environment are protected from the effects of fire. These missions can include for example fire prevention and medical emergencies. Fire department has 10 units, and each unit may have several vehicles and employees (officer, firefighters and paramedics). Let's assume that each employee and vehicle must belong to one unit.

Fire department has an urgent need for the database where all the necessary information related to missions occurring in the field will be stored. Information for a single alarm should include the timing information (when did the mission start and how long did it last), the location of the mission and which units were involved in the mission. In addition, the severity and type of the mission should also be reported with description (a report on the different phases of the task). Employee and vehicle information should also be stored into the database. You do not need to report vehicles and employees participating the mission, only units.

2. Import your database model

When you think your database model is ready, use Forward Engineer feature in MySQL Workbench and import your model to your empty database created for this exam (*Database → Forward Engineer …*). If you encounter errors during the import process, check that your database model definitions are correct (for example the foreign key settings which are typically numbered as 12x or 15x). If you cannot import your database after searching for the cause for error, consult the teacher. In addition, remember to remove the VISIBLE words from the script before running it!

3. Insert data to your database

Insert at least three rows of data to each table in your database. You can choose the data freely.

4. Database queries

After the data insertion, run the following queries to your database. You can select columns for result set freely if not stated otherwise in the question. Try to select columns that will give the necessary information for each question. It doesn't matter whether you have the exact data that matches the query, but more importantly that your query is valid and can be run to database you have designed.

a) Select one mission report of your choice and include all information related to it (timing, location, severity and description).
b) Select all missions that occurred in year 2022.
c) Select all missions that had at least two participating units.
d) Select all missions that have lasted at least five hours.
e) Count how many missions have occurred for each severity.
f) Show unit (name or ID is enough) that has participated least on missions.

Databases   Exam

Guide for returning the exam:

Database model (Exercise 1)

File → Save Model As ... → exam_exercise_1.mwb

SQL file creation (Exercise 2)

Do this after you have inserted the data so that INSERT statements will be included! Also, if you encounter errors during the export process, remember to set the path for the mysqldump.exe in your MySQL Workbench before doing the export.

1. Connect to your database
2. Open **Management tab** under the **Navigator view**
3. Choose **Data Export**
4. Choose your exam database under the **Tables to Export** section
5. Under **Export Options** choose **Export to Self-Contained Fil**e and choose the place from your computer where you want to save the file. Save the file with the name *exam_exercise_2.sql*
6. Click **Start Export**
7. Open the saved SQL file and check that it contains the create table and insert statements

Queries (Exercise 3)

Save queries in the separate text file called *exam_exercise_3.txt*. Queries should be formed in the following manner:

1. Question
   Query as an answer for the first question
2. Question
   Query as an answer for the second question

Return the exam

Return all three exercises in the exam return box found in the Moodle workspace before the end of the exam.