The following sections will be graded in this exam

1. Exercise 1 – Data modelling [max 20 points]
2. Exercise 2 – SQL dumpfile creation [max 6 points]
3. Exercise 3 – Queries [3 points each, max 24 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.
- 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.
- Exam will start at 7.00 AM (UTC) and will end at 11.00 AM (UTC). All required exam files should be returned in the return box in Moodle workspace before 11.00 AM (UTC).
- Check the returning guide from the end of this document to make sure you have all required files for the return.

Modern grocery store

1. Specification from the customer

Customer called Steve has three grocery stores in the city area. He wants to modernize his business to meet today's standards and requirements. Grocery store provides the selection of groceries from different categories (beverages, bread and bakery, canned food, meat etc.). Now Steve has contacted you and wants you to design a database for his business.

Online order placement should be possible so that clients can then pick up their orders at the specified day (during one day, for example 25th of March). Steve also wants to know the date when customer has placed the order. Online orders require customer contact information so customer can receive the confirmation email or text message about the order. Location and contact information for each grocery store should be available and in addition, the storage information should also be stored into the database so Steve can tell what and how many products are available in each grocery store.

Bonus: Steve has a wish that he could tell from what storage each grocery is in customer's online order (for example, customer can have two groceries from first store's storage, five from second and seven from third).

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.

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 all groceries from the category of your choice.
b) Select groceries with first letter in the name being between A-M.
c) Select groceries that are missing the price information.
d) Select customers who have made more than one online order.
e) Create a receipt of one online order of your choice. Receipt should include customer name, order number, the order creation date and the pickup date for the order.
f) Select all orders that have been made more than a week ago.
g) Show the storage count for all groceries in total for each grocery store (how many groceries are stored in each grocery stores storage).
h) Count the total price of all groceries within one customer order of your choice.

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, remember to set the path for the mysqldump.exe in your MySQL Workbench (guide found in Teams channel) 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 (25th of March 11.00 UTC).