

**The following sections will be graded in this exam**

1. Exercise 1 – Data modelling [max 20 points]
2. Exercise 2 – SQL dump file creation [max 4 points]
3. Exercise 3 – Queries [2 points each, max 16 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.
- 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.

## **Racing results database**

### **1. Specification from the customer**

Ralph Racing Company Inc. arranges car race events in weekly basis throughout the country. Company needs a database in order to provide the results for all arranged race events. They contact you and ask you to provide the database with the required information.

There are ten racers competing in each race. Each racer's personal information as well as the car information they drive should be stored into the database. There are three types of race events each of which have different amount of laps: short (2 laps), intermediate (4 laps) and long (6 laps). Each race event has its own name, date of occurrence and track information. In other words, also the track information should be stored: name, location, the length of the track. The race event results are one of the most important information for the company so those must be included. Each participating racer should have the total race time recorded (all lap times in total so individual lap times are not required).

### **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 all race events with intermediate length.
- b) Select drivers whose first name starts with either A, C or J.
- c) Select drivers who have no races recorded to the database.
- d) Select tracks where races have been held at least two times.
- e) Show results from one race event of your choice so that only fastest three racers will be listed.
- f) Select drivers who have been in podium more than three times (places 1, 2 and 3). Show two columns in the result set: driver name in one column and podium place count in another.
- g) Show track record for each track.
- h) List slowest and fastest time for each race event. In addition to slowest and fastest times, include race event name, track name, race event type and the total length of the race event (number of laps \* track length) in the result set.

**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 File** 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.