

# CS2102-2310: Database Systems

## Midterm

Date: 03 October 2023, Time: 12:30–13:30

### Submission Instructions

1. Please read **ALL** instructions carefully.
2. All the assessment is to be done using Exemplify; the assessment contains:
  - (a) MCQ/MRQ: Questions 1–8
  - (b) SQL Queries: Questions 9–17 (note: Q11-15 relate to the same query!)
3. This is an open-book assessment.
4. Your Internet connection will be blocked for the duration of the assessment.
5. This assessment starts at 12:30 and ends at 13:30.
  - Submit your answers by 13:30
  - No additional time will be given to submit.
6. For the MCQ/MRQ questions: Please note that the order of the answers might differ from the order in the PDF due to randomization!
7. For the SQL questions, there are additional instructions below; in a nutshell:
  - Use an IDE or text editor to write your queries and test them using `psql` or `pgAdmin`.
  - Prepare your final answer before submitting it to Exemplify according to the instructions in the SQL Part.
  - Allocate sufficient time to prepare your final answers and to copy-&-paste them into Exemplify.
8. Failure to follow each of the instructions above may result in deduction of your marks.

**Good Luck!**

## SQL Queries

(12 Marks)

In this part of the exam your task is to formulate queries in SQL. We use the same database that we introduced in Assignment 1. This means you can directly run and test your queries using `psql`. If needed, we provide the ER diagram and the `CREATE TABLE` statements for the database schema in the Appendix.

**Instructions.** To ensure successful submission and grading of your SQL queries adhere to the following instructions:

- For each question, you are to write a **single SELECT SQL statement** to answer the question.
- You are only allowed to use SQL constructs that have been covered in the lectures (e.g., CTEs are not allowed).
- Each answer must be a syntactically valid SQL query and executable on PostgreSQL. Test with `psql` or pgAdmin!
- Each question must be answered independently of any other questions.
- You must not enter any extraneous text for your answer (e.g., “My answer is: ...”), or enter multiple answers (i.e., submit multiple SQL statements). Your answer should not contain any comments.
- Note: The exact names of the columns in the result do not matter!

**Recommendations.** We recommend the following steps to answer each question:

- Write the answer query using your IDE or text editor of choice, and test it on your machine with `psql` or pgAdmin.
- Once you are happy with your query, copy the **SELECT** statement for the question into the corresponding answer field in Exemplify.

# Appendix

## Database Schema for SQL Queries

For this test, we use the same database as for Assignment 1. You should therefore be already familiar with it. For convenience, we include the schema of the database.

- regions(name)
- subregions(name, region)
- countries(code, name, subregion)
- teams(name, country)
- riders(bib, name, dob, country, team)
- locations(name, country)
- stages(nr, day, start, finish, length, type)
- sprints(stage, location, distance)
- mountains(stage, location, distance, height, length, percent, category)
- results\_individual(stage, rank, rider, time, bonus, penalty)
- results\_sprints(stage, location, rank, rider, points)
- results\_mountains(stage, location, rank, rider, points)
- results\_combative(stage, rider)