DBS Mandatory Hand-in 3

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Spring 2022

Introduction

The third and final of the three mandatory hand-ins in DBS deals primarily with normalisation. It is divided into two parts: a Wiseflow part and a written part. The Wiseflow part consists of last year's SQL Exam case. It also consists of a number of normalisation exercises. At the end of the Wiseflow part we ask you to evaluate the **form** of the normalisation exercises and we will use this input when we create the exam cases about normalisation.

The written part deals with the student-movie relation we worked with in the first two hand-ins.

The assignments must be made in the groups that correspond to the groups which you defined in DBS Mandatory Hand in 1. Under each sub-assignment it is specifically written which material you should use, what the deliveries are, and how to upload. Make sure you read each assignment carefully.

Please note that all students must complete the Wiseflow exercises individually but naturally you are allowed to do them together with your group. Just make sure that all group members enter the answers in Wiseflow.

If at any point you need to enter a passcode in Wiseflow, it will always be 0000.

Part 1: Wiseflow

The 2021 SQL Exam takes up the first 11 Wiseflow pages. Then two pages follow with different exercises within normalisation and functional dependencies. Each sub-question has a label ('FD & NF 1', 'FD & NF 2', etc.) The final page consists of your assessment of the normalisation assignments and they reference the label.

Please note that the final exam will not include as many FD and NF exercises as there are in this hand in. We have simply created multiple types of exercises so that you can help determine which are most easily understood.

1a: SQL

The first sub-assignment in Wiseflow is last year's SQL exam or more specifically the DQL part of the SQL. In order to complete the assignment, you must create the DVDRental database which is attached to the flow and in Itslearning. It is important that you do not use other versions of DVDRental like the one we used in class. The one attached to the flow and in Itslearning is the correct DDL and data for these questions. Remember to import the DDL and data correctly (at the beginning of all Codelab-exercises there was a small guide on how to do this). The relevant DDL and data can be found in the file 'DVDRental_Exam.zip'. At the exam, you will receive the exam database and data around 24 hours before the exam begins so make sure your database works before going to the exam.

Students have approximately 1 hour to complete this task.

1b

Complete sub-assignments 'FD & NF 1-5'.

1c

Complete sub-assignments 'FD & NF 6-11'.

1d

Fill out the assignment evaluation. Please take this seriously as it will affect how your exam will look.

Part 2: Who are you, again!

For Part 2 we return to our 2nd semester database. Throughout the previous assignments we have worked with three types of data: 1) The student relation, 2) The movie relation, and 3) The courses relation. Assume that these three types of data are given in the following two relations:

student-movie	(stud_id, f_name, l_name, email, phone, dob, birth_town, nationality, group_name, role, movie_id, movie_title, movie_release_year rating, review, class)
courses	(course_id, course_name, teacher_name, staff_ids, ECTS, difficulty, workshop, instructors, last_update, student_id)

You've more or less seen instances of the student-movie relation. But here we present it once again (with made up data). Please notice that here a student can watch and rate multiple movies:

Stud_no	f_name	l_name	Email	Phone	Dob	Birth_town	Nationality	Group_name	Role	Movie_id	Movie_title	Movie_release_year	Rating	Review	Class
215168	Igor	Igorsen	215168@via.dk	+4571865378	2000-08-01	Warsaw	Polish	DBS-Rules	developer	5	Donnie Darko	2001	10	This Isn't your regular ...	IT-DBS1X-S22
215185	Tomas	Tomasen	215185@via.dk	+4581931855	2001-09-28	Presov	Slovak	SEP2Z-G13	coordinator	3	Interstellar	2014	10	I have seend this movie ...	IT-DBS1Z-S22
215168	Igor	Igorsen	215168@via.dk	+4571865378	2000-08-01	Warsaw	Polish	DBS-Rules	developer	1	Fight Club	1999	10	Super movie	IT-DBS1X-S22

And here we present an instance of the courses relation:

course_id	coursename	teacher_name	staff_ids	ECTS	difficulty	workshop	instructors	last_update	student_id
IT-DMA1	Discrete Mathematics and Algorithms	Io Odderskov	IOOD	5	3	Yes	101235	2021-08-01	112987
IT-SEP1	Semester Project: Single User System	Mona W. Andersen Steffen Vissing	MWA SVA	10	2	No		2021-08-01	112988
IT-SDJ1	Software Development with UML and Java	Steffen Vissing Klaus Bøgestrand	SVA KLAB	10	4	Yes	101232	2021-08-02	112988
IT-DMA1	Discrete Mathematics and Algorithms	Richard Brooks	RIB	5	5	Yes	101233	2021-08-01	112988

You must hand in this part in Itslearning as a pdf-document with answers to the questions below.

2a

Determine the primary keys for each of the two relations.

2b

Determine all full and partial functional dependencies for each of the two relations

2c

Explain whether the two relations satisfy 1st Normal Form. In case of violations, bring the relation(s) to 1st Normal Form.

2d

Explain whether the two relations satisfy 2nd Normal Form. In case of violations, bring the relation(s) to 2nd Normal Form.

2e

List transitive functional dependencies of your current relations.

2f

Explain whether your relations satisfy 3rd Normal Form. In case of violations, bring the relations to 3rd Normal Form.

2g

Compare this result to the relational schema obtained in Hand In 2 – Assignment 3b. Discuss any differences.