University of Glasgow | School of Computing Science

Assessed Coursework

Course Name	**Practice 2022**			
Coursework Number	**1/1**			
Deadline	**Time:**	**16h00**	**Date:**	**26/11/2021**
% Contribution to final course mark	**20%**			
Solo or Group ✓	**Solo**	✓	**Group**	
Anticipated Hours	**Average 20 hours**			
Submission Instructions	**Submission of only <u>one</u> PDF document; please read in the description.**			
Please Note: This Coursework cannot be Re-Assessed				

Code of Assessment Rules for Coursework Submission

Deadlines for the submission of coursework which is to be formally assessed will be published in course documentation, and work which is submitted later than the deadline will be subject to penalty as set out below.

The primary grade and secondary band awarded for coursework which is submitted after the published deadline will be calculated as follows:

(i) in respect of work submitted not more than five working days after the deadline
   a. the work will be assessed in the usual way;
   b. the primary grade and secondary band so determined will then be reduced by two secondary bands for each working day (or part of a working day) the work was submitted late.

(ii) work submitted more than five working days after the deadline will be awarded Grade H.

Penalties for late submission of coursework will not be imposed if good cause is established for the late submission. You should submit documents supporting good cause via MyCampus.

Penalty for non-adherence to Submission Instructions is: 2 bands

Practice 2022

British Telecom (BT) stores the incoming job application interviews regarding Software Engineer posts as shown in the Table 1. An applicant (*interviewee*) can have multiple interviews on the same day with different or the same *interviewer*. Normally, there are multiple interviews on the same day at the same time, but in different interview rooms with different interviewers. The applicants are only interviewed by a single interviewer at a given time.

Table 1. Interviews for the BT Software Engineer post.

ID	INTERVIEWEE NAME	DATE	TIME	INTERVIEWER ID	INTERVIEW ROOM ID	ROOM PHONE (EXT.)
1	Chris	10/10/2021	10h00 13h00	31 30	R114 R123	114 123
2	Phil	10/10/2021	10h00 12h00	30 30	R123 R123	123 123
3	Stella	10/10/2021 12/10/2021 12/10/2021	12h00 12h00 14h00	31 31 30	R114 R123 R123	114 123 123

For instance, Phil has two interviews on the same day (10 OCT 2021) at 10h00 and 12h00 with the same interviewer (with id 30) in the room R123. Chris has two interviews on 10 OCT 2021 at 10h00, with the interviewer 31 in R114, and at 13h00, with the interviewer 30 in R123. Our aim is to store the interviews information to a relational database.

Task 1: Normalize the Table 1 in the 1 NF. If we assume that we need to update the name of the interviewee 'Phil' to 'Philip', how many rows/tuples do we need to update? Briefly explain your answer.

[10 Marks]

Task 2: Identify the Functional Dependencies and normalize to 3NF. Provide the Primary Keys and Foreign Keys of the derived relations. Briefly explain your answer.

[20 Marks]

Task 3: Provide the SQL CREATE TABLE statements of your relations in 3NF including the integrity and referential constraints in each relation/table along with any ON DELETE/ON UPDATE statements required to ensure consistency in your database schema. Briefly explain your answer.

[20 Marks]

Task 4: Write the following SQL queries.

SQL1: For each interviewee, show their ID and name (order by name), and for each of their interviews, show the date, time, interviewer ID, room ID and phone extension. Indicatively, based on Table 1, you could expect to get the following rows in the result set.

[10 Marks]

	id integer	name character varying (10)	idate date	itime character varying (4)	rid integer	roomid integer	phone character varying (3)
1	1	CHRIS	2021-10-10	1300	30	123	123
2	1	CHRIS	2021-10-10	1000	31	114	114
3	2	PHIL	2021-10-10	1200	30	123	123
4	2	PHIL	2021-10-10	1000	30	123	123
5	3	STELLA	2021-10-12	1400	30	123	123
6	3	STELLA	2021-10-10	1200	31	114	114
7	3	STELLA	2021-10-12	1200	31	123	123

SQL2: Show the ID and the name of those interviewees who are having more than one interview. Indicatively, based on Table 1, you could expect to get the following rows in the result set (i.e., Phil, Stella and Chris are all having more than one interview).

[10 Marks]

	id integer	name character varying (10)
1	2	PHIL
2	3	STELLA
3	1	CHRIS

SQL3: Show those interviewees (ID and name), who will be having interviews with more than one interviewer (at any date). Indicatively, based on Table 1, you could expect to get the following rows in the result set (i.e., Stella and Chris are both having interviews with more than one interviewer each).

[10 Marks]

	id integer	name character varying (10)
1	1	CHRIS
2	3	STELLA

SQL4: For those interviewees with more than one interview, who will be having interviews in different rooms (at any day)? Indicatively, based on Table 1, you could expect to get the following rows in the result set (i.e., Stella is having three interviews which will be held in two different rooms (R114 and R123) and Chris is having two interviews, which will be held in two different rooms (R114 and R123). Phil's interviews will be held in only one room (R123), thus, Phil is not included in the results set).

[20 Marks]

	id integer	name character varying (10)
1	1	CHRIS
2	3	STELLA

Submission: Answer to all the tasks and submit only **one** PDF document/file including your SQL CREATE TABLE and SQL SELECT queries/statements.