

Databases and Information Systems

Course code: CS-303

Assignment 2

Total: 37 marks

1. Suppose that we have a relation marks(ID, score) and we wish to assign grades to students based on the score as follows: grade F if $\text{score} < 40$, grade C if $40 \leq \text{score} < 60$, grade B if $60 \leq \text{score} < 80$, and grade A if $80 \leq \text{score}$. Write SQL queries to do the following: **2*2= 4 marks**

- a) Display the grade for each student, based on the marks relation.
- b) Find the number of students with each grade.

2. Consider the following tables:

11*2= 22 marks

employee (employee name, street, city)
works (employee name, company name, salary)
company (company name, city)
manages (employee name, manager name)

Write SQL queries for the following:

- a. Give all employees of “First Bank Corporation” a 10 percent raise.
- b. Give all managers of “First Bank Corporation” a 10 percent raise.
- c. Delete all tuples in the works relation for employees of “Small Bank Corporation”.
- d. Find all employees in the database who live in the same cities as the companies for which they work.
- e. Find all employees in the database who live in the same cities and on the same streets as do their managers.
- f. Find all employees who earn more than the average salary of all employees of their company.
- g. Find the company that has the smallest payroll.
- h. Find the company that has the most employees.
- i. Find those companies whose employees earn a higher salary, on average, than the average salary at “First Bank Corporation”.
- j. Modify the database so that “Jones” now lives in “Newtown”.
- k. Give all managers of “First Bank Corporation” a 10 percent raise unless the salary becomes greater than \$100,000; in such cases, give only a 3 percent raise.

3. Consider the following 2 tables - “users” and “training_details”:

5 marks

Users

user_id	username
1	John Doe

2 Jane Don
 3 Alice Jones
 4 Lisa Romero

training_details:

	user_training_id	user_id	training_id	training_date
1	1	1	"2015-08-02"	
2	2	1	"2015-08-03"	
3	3	2	"2015-08-02"	
4	4	2	"2015-08-04"	
5	2	2	"2015-08-03"	
6	1	1	"2015-08-02"	
7	3	2	"2015-08-04"	
8	4	3	"2015-08-03"	
9	1	4	"2015-08-03"	
10	3	1	"2015-08-02"	
11	4	2	"2015-08-04"	
12	3	2	"2015-08-02"	
13	1	1	"2015-08-02"	

Write a query to get the list of users who took a training lesson more than once in the same day, grouped by user and training lesson, each ordered from the most recent lesson date to oldest date.

4. Consider the following tables - 'runners' and 'races'

2 marks

Runners

id	name
1	John Doe
2	Jane Doe
3	Alice Jones
4	Bobby Louis
5	Lisa Romero

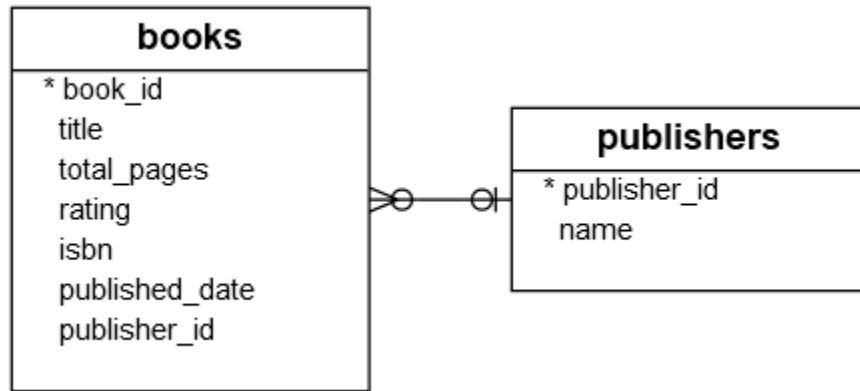
Races

id	event	winner_id
1	100 meter dash	2
2	500 meter dash	3
3	cross-country	2
4	triathlon	NULL

What is the meaning of the query given below?

SELECT * FROM runners WHERE id NOT IN (SELECT winner_id FROM races)

Q5. Consider the following 2 tables: books and publishers. Book_id and publisher_id are primary keys in the corresponding tables. **4 marks**



A publisher may have zero or many books while a book may belong to zero or one publisher. The relationship between the books table and the publishers table is zero-to-many.

Based on the information given above, write queries for the following:

- A query which will return information about books with publishers, irrespective of whether a book has associated publishers or not.
- A query which will return information about books with publishers, irrespective of whether the publisher has any published books or not.

NOTE:

- Due date for Assignment is **28th September 2022(11 PM)**.
- Answer all the questions and submit the answers in LATEX format on Moodle.
- Mode of submission is moodle.
- We will run a plagiarism check for all the submissions.
- Penalty for late submission is 15% of secured marks.
- Penalty for plagiarism is 100% of the secured marks.