

# SE Factory

## Week 4 - Assignments

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version 03BD\_1701

### Change Log

- Typo corrections
- Output values correction for procedure #7

## Relational Databases

### Exercise 1

Using MySQL create a new database named `FinanceDB`. This database will contain only 1 table named `FiscalYearTable`. This table will only store date ranges for determining what fiscal year any given date belongs to. For example, the federal government runs its fiscal year from October 1 until the end of September.

The information lookup from this table will be done using:

```
SELECT FT.fiscal_year
FROM `FinanceDB`.`FiscalYearTable` as FT
WHERE outside_date BETWEEN FT.start_date AND FT.end_date
```

Your job is to add all the constraints you can think of to the table to guarantee that it contains only correct information. When executing a query that violates the constraints your solution should throw an error message and prevent the data from being inserted.

Given that MySQL does not support CHECK constraints, you will use `Triggers` instead.

The output of this exercise is the SQL statement for creating the database and table along with the validation rules that will be executed and tested on a fresh environment.

### Note

- DATE format is: YYYY-MM-DD i.e. 2010-12-23

### Exercise 2

Anesthesiologists administer anesthesia during surgeries in hospital operating rooms. Information about

each anesthesia procedure is recorded in a table.

Procedures			
proc_id	anest_name	start_time	end_time
=====			
1	'Albert '	08:00	11:00
2	'Albert '	09:00	13:00
3	'Kamal '	08:00	13:30
4	'Kamal '	09:00	15:30
5	'Kamal '	10:00	11:30
6	'Kamal '	12:30	13:30
7	'Kamal '	13:30	14:30
8	'Kamal '	18:30	19:00

Note that some of the times for a given anesthesiologist **procedures overlap**. This is not a mistake. Unlike surgeons, anesthesiologists can move from one operating room to another while surgeries are underway, checking on each patient in turn, adjusting dosages, and leaving junior doctors to monitor patients on a minute-to-minute basis.

Pay for the anesthesiologist is per procedure, however, the scale of remuneration changes for each procedure based on the maximum count of simultaneous procedures that an anesthesiologist has underway. The higher the count, the lower the amount paid for the procedure.

For example, for procedure #1 the **maximum count** for the total number of procedures in which 'Albert' was involved was 2.

The problem is to determine for each procedure over its duration, the maximum, instantaneous count of procedures carried out by the anesthesiologist.

The correct answer **is not the number of overlapping procedures** but the maximum instantaneous count per procedure.

Your job is to create a new database `HospitalRecords` that contains a table named `AnestProcedures` with the following columns:

```
proc_id      : Unique Procedure's ID
anest_name   : Anesthesiologists First Name
start_time   : Procedure Start Time
end_time     : Procedure End Time
```

The desired result for the sample data is:

proc_id	max_inst_count
1	2
2	2
3	3
4	3
5	3
6	3
7	2
8	1

The output of this exercise are all the SQL queries necessary to create the database, table, populate it with the same data and to output solution for the problem.