Structured Query Language

Working Group II

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Data Bases and Programming

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Working Group Details

- Groups of 2 or 3 elements
- Each group need to select one theme from the list
- Deliverable date on Moodle: 5/01/2020
- Submit a zip file with: entity–relationship model, relation model, sql source code and report
- The entity-relationship model has a weight of 25 % of the grade
- The relational model has a weight of 25 % of the grade
- The source code has a weight of 25 % of the grade
- The report has a weight of 25 % of the grade
  The report must contain: Abstract, Introduction, ER model, Relational Model, SQL and Conclusions

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Theme 1

A tour operator manages the occupations of various hotels. Each hotel is in a tourist region and has a category (5 stars, 4...) and each has a range of equipment available for guests (pool, gym, tennis, etc.). Each hotel has accommodation of various types (double room, single room, apartment, etc) with a certain capacity in number of people. Each type of accommodation will have different facilities for guests (tv, internet access, fridge, etc.). For different times of the year there are prices that are specified by type of accommodation.
Each time a customer wants accommodation for one or more days, an order must be created, which will go through several states (request, reservation, confirmed, cancelled, occupied, invoiced, received) that must be known. In each accommodation occupation it will be necessary to indicate the number of people and daily consumption of extras (drinks, pay TV, etc.) that will have to be included in the final order amount when passing the invoice.

Theme 1

- Entity-relationship model
- Relational model
- SQL
  - List for a client request the facilities of the selected accommodation.
  - List for a period in a hotel the available accommodation quantity by accommodation type.
  - List for an order the total amount of extras consumed.
  - Count the different clients of a hotel in a period by type of accommodation.
  - List the clients with the most accommodations in a period, showing the total of extras consumed.

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Theme 2

A public passenger transport company organises the various lines creating routes with sequence of stops. For each line there will be a time for all or some of the days of the week. At the time will be specified the start time (hour: min) of each route to make. The stops in each line will be stored in seconds from the previous stop. At the time a delay factor will be stored as a function of the expected traffic for that start time and, in the stop, route another factor will be stored for each section between stops. Buses will be of one brand model and will have an associated type. For each type there will be several seating and another for standing, and other features. Each type of bus may make a few lines. For each day the journey of each bus with a driver is planned and the list of lines to be made in one of their schedules, and for each, which eventual inspector will supervise it. For each line made it will be necessary to store the total number of passengers entered as a result of the passengers entering each point of the route. For each driver you need to know if you are qualified to drive the type of bus.

Theme 2

- Entity-relationship model
- Relational model
- SQL
  - List the buses of a brand.
  - For a type of bus, list qualified drivers.
  - For an inspector, list the lines in which he worked in a period of days.
  - For a bus, count the number of lines made in a period of days.
  - List for a period the lines and start times when the buses were with the most passengers.

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Theme 3

A city has its police force distributed by several police stations. In each squadron there is a set of police officers, which remain for some periods and which may change for others. The record of each force element changes its patent over time, and it is necessary to keep track of all previous ones. Each squadron will have to carry out various missions of defined types, in established locations, for which from its initial date to the final date / time, it will be necessary to choose who will be the personnel who will carry them out. During the mission, occurrences of some kind may have to be recorded. For each mission type the number of elements per patent to be included are defined, and in choosing personnel, your current patent must be registered. For each mission you will need to identify the equipment that will be used, and which should be of the predefined types for the mission type. There is a type of mission that does not occur in one place but consists in travelling a patrol route for which all the crossing points have been previously identified, characterised by the kilometres and time from the beginning of the route to each one.

Theme 3

In the accomplishment of these missions, the times to each way point will have to be recorded and if any occurrence should be recorded with the last way point.

- Entity-relationship model
- Relational model
- SQL
  - List for a period the numbers of a squad considering only its highest rank, if they have changed.
  - Validate that for a mission there are all the necessary equipment's.
  - List all the missions of a specific police officer.
  - Determine three patrol routes that in a given period have the largest actual (positive or negative) time deviations for the predicted time.
  - Count how many different squadrons a police man participated.