

Database Design

CmpE 226

Practice Problems

Practice Problem (08)

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1. Design a database with at least 10-12 of tables or ((**constraint tables. The constraint tables should use the full power of linear constraints. (For example, the equality constraint $x = 1$ does not use the full power of linear constraints. So don't use only equality constraints in your database.**)) The tables should contain a reasonable number of tuples or (**constraint tuples**), not too few and not too many.
 2. Prepare traditional class diagram for the following problems showing at least 10 relationships among the following object classes, including associations, aggregations, and generalizations. Show multiplicities in your diagrams. Your model should have 3-5 attributes and 3-5 operations per class. Use association and role names when needed. As you prepare the diagrams, you may add additional object classes.
 3. **If you use MLPQ**, find at least 4 iconic queries or sequence of iconic queries. Explain what they mean and write them down in the style of the examples in the MLPQ system manual. (**Iconic queries are shown in Figure 1 MLPQ Graphical Interface in the MLPQ Specifications, such as Intersection, Union, Difference, Max, Min, etc.**)
 4. Find at least 4 SQL queries of each of the following kind: **Basic, Aggregation, Sets, and Nested.** (That is, a total of 16 queries.)

GPS based Emergency Services System

Addgroup

Abstract:

For every country, emergency (EMR) medical system is very critical in saving human life. When an emergency erupts, an extra second or two can mean the difference between a life saved and a life lost. Adding GPS tracking to emergency systems would be a valuable support. GPS is a global positioning system based on satellite technology. All EMR centers are equipped with centralized GPS emergency system. When emergency calls are made, the call reaches the nearest EMR center based on the area the call is coming from. The emergency call is immediately updated in the centralized system.

The basic purpose of our GPS based emergency system is to get people rescued as fast as possible. The system can show the entire area on a digital map allowing emergency calls to be pinpointed instantly. Emergency vehicles are displayed as icons so the nearest available unit can be determined.

Domain Description

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The GPS based emergency services system includes a GPS receiving unit that is provided on the emergency vehicle. This unit receives GPS signals from GPS satellites and determines location information of the emergency vehicle. The system also includes a radio-wave transmitter unit that is provided on the emergency vehicle. This unit transmits the emergency vehicle location information by way of an emergency vehicle location signal to a radio-wave receiver unit that is provided in the EMR center. The registered patients are given handsets with GPS-enabled chipsets and transmitters. These handsets are location-aware portable wireless networked devices. When an emergency occurs, he presses the button on the handset. EMR center will receive the signal through the receiver. The system pinpoints the location of both the registered patient and the nearest emergency vehicle on a computer map. The database will be updated every one minute with the current location of emergency vehicles

Major services provided by this system are listed as follows:

Tracking of nearest emergency vehicles:

All EMR vehicles are tracked by GPS system so as to attend any patients in a short period. The centralized system identifies the nearest vehicle for this patient, directs it to patient and then to the hospital.

Finding Available Medical service:

This system maintains the list of emergency hospitals, physicians, staffs and emergency rooms. This system will help the patient by finding the nearest hospital with available doctors, staffs and emergency rooms.

GPS for critical patients:

Some patients have more probability to get admitted. For instance, aged people, heart patients etc. They could register their names in GPS system and get the immediate response in case of emergency. They need to only press the button for calling this emergency system. This system even maintains the list of persons to contact so that the information could be passed to them. Then the same procedure would be followed to get nearest emergency vehicle as well as medical service.

Medical Inventory Database:

This system will direct the emergency vehicles to reach the nearest inventory and to get needed medicines and first aid equipments like first aid kit, oxygen cylinder .Any emergency medical center make use of this system.

