

Invoice Problem (Problem 1)

Part 1:

The future system will be called SIGRE and aims to automate the billing process of the company Chispas S.L. The company wants to computerize the financial management. The job of this company is to send technicians to homes and repair the appliance in situ. The system must be in charge of managing the clients that the company has, the repairs that have been made, and the invoices collected based on such repairs. The functionality of the system can be summarized next points:

- Register a new client: this functionality aims to save the history of customers. For each client, the secretary of the company must have the following information: DNI, Name, Surname, Address, Zip Code, City, Telephone. Customers should list customers information.
- Register a new repair report: when the technician returns to make a repair, the secretary must create a repair report with the following information: the customer, the date of repair, a description, the repair price amount and the name of the technical manager who made the repair. The repair report is considered unpaid when it is created, since the customer has not yet paid the technician. The payment process is done later. The secretary must be able to list all the repair reports.
- Create invoice with all unpaid repair cards: the company usually works with hotels, so it usually does more than one repair per client in a short period of time. These customers usually pay all repairreports all at once. When a client pays, the secretary creates an invoice with all the repairs that are pending until that moment. When the invoice is created for a client, all the pending repairs for that client are considered as paid. The secretary must enter the creation date of the invoice and the client. The total amount to pay with the invoice is the sum of all the expenses of the repair reports. This data must be calculated automatically. The secretary must list all the existing invoices, including the total amount to pay.

Part 2:

Apart from repairs, our company also has a line of work to teach courses related to repair electronic devices. The functionality of the system is the following:

- Manage courses: the secretary is in charge of managing (registrations, removals, modifications and lists) the courses and their subjects. An example of a course could be, for example, about maintenance of washing machines, with the subjects of decalcification and electronics. For each course, the system must store: the name of the course, the duration (in hours), the price of the course, the maximum number of clients that can be enrolled in the course, the start date and the end date. Once the course is created, the secretary must assign the subjects that make up the course, since a course can be composed of more than one subject. For each subject we are interested in storing: the name and the hours of the subject. In this way, the duration of the course is automatically calculated as the sum of the hours of its subjects.
- Manage teachers: the secretary of the company is responsible for finding professors to teach the subjects. For each teacher, the system must store: name, surname, address, telephone and salary. The secretary can create, modify, delete and list the teachers who work in the courses. A subject can only be taught by a single teacher.
- Register clients to the courses: the secretary phones each client we have in the database to see if they want to participate in any of the courses offered by the company. The secretary registers each client in the chosen course. Clients can be registered in a course only when the maximum number of students per course has not been exceeded. The secretary must see which clients are registered in which courses.

Part 3:

External auditors come to the company to verify if repairs have been made properly. These auditors are paid according to the amount of repairs they audit. The functionality of the system is the following:

- Create auditor: the services of external auditors are contracted to audit the repairs. For each auditor, the system must store: name, surnames, CIF of the audit company, audit's name, audit's address and telephone. The secretary must list all these details.
- Manage materials for audits: some audits need some materials, for example, welders, voltage reader, etc. It is the secretary's job to keep the repository of materials available to the auditors (registration, cancellation, modification and listing).
- Create audit: the secretary assigns a set of finished repairs to an auditor. The secretary must specify the creation date and the auditor that will develop it. Once the audit is created, the secretary assigns the set of repairs that will compose the audit and the necessary materials. The auditor's salary is calculated automatically as 20% of the payments of the repairs that compose the audit. The secretary must list all audits together with the salary to pay to the auditor.
- Finish audit: When the auditor has completed the audit of all repairs, the secretary records the end date of the audit. The end date must be greater than the date of creation. Once completed, you can no longer assign repairs to that audit.