Database projects

1. Order in an online shop.

Every customer has an unique number, name, address, purchase limit. The list of his orders must be memorized.

Every order has a number, date, total amount, and would be reduction. The client emiting the order its status are known. The order execution must be followed in every moment.

Every line concerns a product its quantity and the amount.

The product has a number, label, unit of mesurement, unit price.

Student: **Pers. No**

2. Electronic element warehouse.

The product has a number, name, label, unit price, category, parameters, stock.

The category can contain other categories or products

The warehouse can sell to registered customers and to be supplied from registered suppliers.

The DB must maintain the the stock, and amount in every moment by following the sales and deliveries.

Student: **Pers. No**

3. Production

One company decided to design a database to assist in managing production.

. Each product is associated with a number that identifies it. A product also has a name, a unit of measure and a price. A unit quantity of finished or semi-finished product is always made from fixed quantities of other semi-finished and / or raw materials that control manufacturing unit deposit.

An order initiates the production of a given quantity of a product. The raw materials are purchased and the finished products are sold.

The DB must follow the deliveries, production and sales and maintain the every product quantity

Student: **Pers. No**

4. Library1

A library manages books she that are in one or more copies.

A book is identified by number and characterized by a title, publisher and date of publication.

A book usually has an author who has a name. Some books have multiple authors and others have none (proceedings, for example

Each book also has one or more dimensions (= numbers) who are content with respect to a standard classification in force in this library. This nomenclature is hierarchical: each level is a refinement of the higher classification. The number of each level reflects this hierarchy: (Example:

3	Applications	321	Chemical
31	Natural science	322	Civil
32	Engineering	333	Electronic

The ratings assigned to a work may belong to all levels of this hierarchy. A copy is identified by the number of the book and a copy number (and three copies of the same book CG123 are they identified respectively by CG123 / 1 CG123 / CG123 and 2 / 3, for example).
The DB must maintain the stock and to give the possibility to make queries about the numbers of copies of a book and its classification.

5. Library2

A library manages readers and books that can have one or more copies.
A book is a known object in the library, identified by the name of his (first) author and book title.
A book is available in one or more editions. An edition is characterized by number and year of publication. For a book, there is no two editions with the same number.
An edition of book can exist in one or more copies. A copy is characterized by a unique internal number. Each reader has a unique card number in the library.
A loan is always personal, is for a single copy and is performed at a given date.
The library also manages loan applications of a copy not available (already taken) at the time of application. Such an application is registered on a given date.
When a copy is returned by the reader, it is archived with the date of the loan, the date of return and a possible compensation for delay. The allowance is an Euro a day of delay, the delay count from the 15th day of borrowing.

6. Lending audio disks

The database manages lenders and audio disks that can have one or more copies.
A disk is a known object in the library, identified by its ID, album name duration, year of issue, type of music (rock, rap, folk, etc.).
Each album can be composed by one or more songs, played by one or more artists (bands) and to have one or more authors.
A loan is always personal, is for a single copy and is performed at a given date.
When a copy is returned by the lender, it is archived with the date of the loan, the date of return and a possible compensation for delay. The allowance is an Euro a day of delay, the delay count from the 15th day of borrowing.

7. Lending video disks

The database manages lenders and video disks that can have one or more copies.
A disk is a known object in the library, identified by its ID, film name duration, year of issue, type of film (triller, comedy, criminal, action romantic, drama etc.).
Each film has one or more directors and has a cast (list of actors).
A loan is always personal, is for a single copy and is performed at a given date.
When a copy is returned by the lender, it is archived with the date of the loan, the date of return and a possible compensation for delay. The allowance is an Euro a day of delay, the delay count from the 15th day of borrowing.

Student: **Pers. No**

8. Student Status

The database manages the students and their notes for a year.
Each student is characterized by a name, fac. №, and personal data.
Each subject has a name and Id number,
Each professor can teach only one subject but every subject can be taught by more profs.
Each student can join a course and he can choose the professor. At the end the professor examines the student and puts him a note.

Student: **Pers. No**

9. Student Status 2

The database manages the students and their notes for a year.
Each student is characterized by a name, fac. №, and personal data.
Each subject has a name and Id number,
Each professor can teach only one subject and every subject can be taught by more profs.
Each student can join a course and he can choose the professor. At the end the professor examines the student and puts him a note.

Student: **Pers. No**

10.   Travel Expenses

The Authority employees receive travel allowances when they accomplish external services. Each trip, taking place at a given date is defined by the municipality of residence of the employee and the common point of delivery.

Some municipalities are grouped into agglomerations, characterized by their center is one of their communes. If the home commune or the target commune belongs to an agglomeration, it is conventionally replaced by its center (in the calculation of travel expenses).

The distance between two municipalities, real or conventional, is given by a table of official distances.

The allowance for a trip also depends on the vehicle of the employee pricing being kilometer depending on the power of his vehicle. But the power effectively taken into account is subject to a ceiling that depends on the position of the employee.

Benefits are calculated monthly and paid to the employee's account.

The information structure is to calculate the monthly allowances of employees, knowing that each declaration specifies the displacement of the employee code, date and the served community.

Student: **Pers. No**

11.   Offices and employees

One company decided to develop a database of its departments, offices (= places), its projects and its employees.

A department is identified by a number (single company). It is headed by a department head - who is an employee of this department - and has a certain budget. A department employee is working on projects, which it is responsible, and has a number of offices.

An office, identified by a number (single company) and characterized by surface area (in m2), is available to a department. One or more telephones are connected in an office. A telephone, placed in an office, has a single number.

An employee works for one department and can not therefore be the leader of only one department. An employee has an office and is accessible by a single number. The other way about, several employees from one office may be called by the same telephone number.

The company has established an inventory of features (designer, analyst, programmer, ...) identified by number and characterized by a wage floor and a salary cap. The company wants to store the historical functions of each employee with the date of commencement of employment and starting salary that was assigned

Student: **Pers. No**

12.   Offices and projects

One company decided to develop a database of its departments, offices (= places), its projects and its employees.

A department is identified by a number (single company). It is headed by a department head - who is an employee of this department - and has a certain budget. A department employee is working on projects, which it is responsible, and has a number of offices.

An office, identified by a number (single company) and characterized by surface area (in m2), is available to a department. One or more telephones are connected in an office. A telephone, placed in an office, has a single number.

A project is managed by a department and is identified by a number (in a single department). Each project is assigned an operating budget of its own. An employee is identified by a serial number (unique within the company). An employee works for one department and can not therefore be the leader of only one department. An employee is assigned to a project, has an office and is accessible by a single number. The other way about, several employees from one office may be called by the same telephone number.

13.   Computer seller

A seller of computer equipment plans to automate its maintenance activities to facilitate the monitoring equipment placed with customers.

After each intervention with a client with a known number (unique), name, address and telephone technicians must register their intervention report.

An intervention report focuses on a single device with a known type, purchase date, type of maintenance contract, and the owner. All equipment has a serial number as its own. A report also includes a serial number assigned by composting, date and nature of the intervention.

It should finally be able to specify the operations assured by technicians.

Each operation is planned and listed by the manufacturer that specifies the description and the average duration. For each service you wish to record its actual length. the various services of a given intervention can be performed by different technicians, identified by their name and surname.

14.   Computer seller 2

A seller of computer equipment plans to automate its maintenance activities to facilitate the monitoring equipment placed with customers.

After each intervention with a client with a known number (unique), name, address and telephone technicians must register their intervention report.

An intervention report focuses on a single device with a known type, purchase date, type of maintenance contract, and the owner. All equipment has a serial number as its own. A report also includes a serial number assigned by composting, date and nature of the intervention.

It should finally be able to specify the operations, components replaced and installed software. Each operation is planned and listed by the manufacturer that specifies the description and the average duration. For each operation you wish to record its actual length..

An operation may also have required the replacement of a number of components, each component has a number (its own), a label, and unit price.

An operation may finally have focused on installing software included in the catalog. No two of them have the same software license numbers and version. There is a brief description for each software.

Student: **Pers. No**

15.   Service-station 1

A car dealer plans to automate some of its administrative activities and management. To facilitate billing, the foreman must be able to save, using a terminal, data relating to work performed.

When a vehicle arrives at the workshop, reception has been prepared and recorded a repair order (RO) and affixed to the vehicle roof-block numbered magnet. An RO is is assigned on a single vehicle with a known name, address and telephone number of the owner and the chassis numbers and plaque. A RO also incorporates a serial number assigned by composting (+1 for each RO), the opening date, the nature of the work required and the number of allocated block magnet.

The RO. remains "open" to exit the vehicle to the shop and is gradually completed by the foreman on the basis of work actually performed. These works correspond to one or more intervention

For each intervention performed by a mechanic, a record is saved including a number of standard intervention, time of beginning and end of intervention. For simplicity, we consider that there are standard interventions and that these are not interruptible. All standard interventions are listed and have a unique number, description, estimated average time and an hourly rate. The various operations of a single RO can be performed by a different mechanic. Every mechanic, whose name is known, of course, carries a device that allows the foreman to call him individually; his phone number is actually the internal employee number. After repair, the shop foreman closing RO mentioning therein the date, and removes the roof-block that is returned to the reception.

Student: **Pers. No**

16.   Service-station 2

A car dealer plans to automate some of its administrative activities and management. To facilitate billing, the foreman must be able to save, using a terminal, data relating to work performed.

When a vehicle arrives at the workshop, reception has been prepared and recorded a repair order (RO) and affixed to the vehicle roof-block numbered magnet. An RO is assigned on a single vehicle with a known name, address and telephone number of the owner and the chassis numbers and plaque. A RO also incorporates a serial number assigned by composting (+1 for each RO), the opening date, the nature of the work required and the number of allocated block magnet.

The RO. remains "open" to exit the vehicle to the shop and is gradually completed by the foreman on the basis of work actually performed. These works correspond to one or more intervention

For each intervention performed a record is saved including a number of standard intervention, time of beginning and end of intervention. For simplicity, we consider that there are standard interventions and that these are not interruptible. All standard interventions are listed and have a unique number, description, estimated average time and an hourly rate.

An OR may finally require the provision of a certain quantity of consumable materials (oil, ...). These are characterized by a unique code, a unit of measure, a price per unit of measure and the volume available at the workshop. After repair, the shop foreman closing RO mentioning therein the date, and removes the roof-block that is returned to the reception.

Student: **Pers. No**

17.   Service-station 3

A car dealer plans to automate some of its administrative activities and management. To facilitate billing, the foreman must be able to save, using a terminal, data relating to work performed.

When a vehicle arrives at the workshop, reception has been prepared and recorded a repair order (RO) and affixed to the vehicle roof-block numbered magnet. An RO is assigned on a single vehicle with a known name, address and telephone number of the owner and the chassis numbers and plaque. A RO also incorporates a serial number assigned by composting (+1 for each RO), the opening date, the nature of the work required and the number of allocated block magnet.

The RO. remains "open" to exit the vehicle to the shop and is gradually completed by the foreman on the basis of work actually performed. These works correspond to one or more intervention

For each intervention performed a record is saved including a number of standard intervention, time of beginning and end of intervention. For simplicity, we consider that there are standard interventions and that these are not interruptible. All standard interventions are listed and have a unique number, description, estimated average time and an hourly rate.

An RO may also include replacement and therefore the acquisition of a number of spare parts stored at the store. These are identified by number and have a description, unit price and quantity available in stock. After repair, the shop foreman closing RO mentioning therein the date, and removes the roof-block that is returned to the reception.

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Student: **Pers. No**

18.   Manufacturing

All parts of a production plant is made of parts bought from outside and others made in the workshop. A piece is referenced by a unique number and characterized by a label.

For a piece bought from outside, we know more its purchase price and the incumbent with a known name, address and phone.

By contrary, for a part manufactured in the workshop, we know its manufacturing group. It has a unique reference and consists of a sequence of operations to be performed.

An operation has a number which identifies a name and a mean time of execution. The sum of these durations for the operations of a group gives an estimate of its duration. An operation can be used in several sequences and several times in the same sequence. An operation is performed on a specific .workplace that has a name and position in the workshop

Student: **Pers. No**

19.   Manufacturing 2

All parts of a production plant is made of parts bought from outside and others made in the workshop. A piece is referenced by a unique number and characterized by a label.

For a piece bought from outside, we know more its purchase price and the incumbent with a known name, address and phone.

By contrary, for a part manufactured in the workshop, we know its manufacturing group. It has a unique reference and consists of a sequence of operations to be performed.

An operation has a number which identifies a name and a mean time of execution. The sum of these durations for the operations of a group gives an estimate of its duration. An operation can be used in several sequences and several times in the same sequence. An operation is executed by a suitable machine.

A machine has a unique serial number, name and location of storage. In addition, some machines are substitutable, that is to say that they can be replaced by another to perform any operation.

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Student: **Pers. No**

20.   Show

A subscriber is characterized by a number (single), address, telephone and credit card (with its type, its number and expiration date). A subscriber is a registered person and could book tickets for performances offered.

Performance on a play is characterized by a performance date, a number of places (yet) available and the price of a seat. There are no two performances of the same play on the same date. For each play, we know in addition to its title, which is unique, the company producing him and his producer.

A subscriber can get more bookings. Each bookings is made, attached to a single subscriber is assigned a unique number in addition to its date of registration and the total amount payable. The date when the subscriber passes the booking must be prior to the expiry of his credit card. A booking consists of one request. A reservation request is made for a performance for which the customer books a certain number of seats reserved by their price.. The number of booked places at one time for a performance must always be less than the number of places available. This requirement may lead to having to adjust the number of seats actually requested by a subscriber.

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Student: **Pers. No**

21.   Pharmacy

In the pharmacy of Paul only part of salesmen are licensed pharmacists. Only licensed pharmacists have the right to dispense drugs on prescriptions. Each prescription contains a drug and can be used only once. All drugs in the prescriptions are paid by the health fund. The others are paid in cash. A salesman is responsible for every sale and he receives a commission at the end of the month.

Each drug or medical equipment is identified by a code name, manufacturer, suppliers, and price. Each drug can replace and be replaced by another drug Paul still wants to know the quantity in stock. He must send weekly reports to the fund for drug prescriptions issued on. Each customer (with orders) has its code name, personal number and address.

Paul must do the following transactions:

- Add, edit or delete customers.
- Deliver prescription drugs
-- Record sales..
 Send reports to the case of health
- Replace the stock when an item is sold.
- Print annual reports for each client, showing the drugs purchased during the year
- Calculate the commission for each sale.
- Calculate the commission from each salesman at the end of the month.
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Student: **Pers. No**

22. Supermarket

In order to optimize its replenishment, the manager of a supermarket chain wants at any time for information on the contents of its stores.

It will include, for each product, the number of units of this product identified in each store.

A product has a brand and a unit price. A store is identified by number and is characterized by its address and telephone number.

For a product line, we know its label (eg canned fish, detergent, dishes, dog food, ...) and the family in which it is classified. A product is also characterized by a capacity (eg 800 g, 2 l., 25 pieces, ...) and the product range to which it corresponds.

Thus the following are three different products of the product range "canned fish":

• peas- canned brand "Mary" and capacity "800 g."

• peas- canned brand "Mary" and capacity "400 g."

• peas- canned brand "Rene" and capacity "400 g".

We also want to know, for each product of a range of products, the number of units that exist on all stores.

A family of products can be decomposed into families (eg family "vegetables" is broken down into families "fresh," "frozen vegetables" and "canned-vegetables"). No matter decomposable or not, a family may itself be part of several families (eg family "canned-vegetables" may be part of families "preserved" and "vegetables"). We know the name of the manager of each store.

A range of products is identified by number and belongs to a single family non-decomposable. A range of products is defined conditionally on the existence of a product of any brand for this range

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Student: Pers. No

23. Real Estate

A real estate agency manages the following information:

For an owner, you know his name, address, phone and the list of goods that the agency is responsible for negotiating for them.. There is also an unique file number assigned to. every owner

For a property, we know his number is unique for a file number. It also knows its owner, status (available or not), type of property (house, apartment, office ...), its mode of supply (purchase or lease) its size and price. This is the monthly rental price if it is a rental or purchase price if a purchase.

There is a also a list of customers who have asked to visit a property with the date and time of visit. It goes without saying that a customer can visit both properties simultaneously. On the other hand, nothing prevents a customer visiting several properties at different times.

When a customer decides to purchase a property, provided the purchase, we record the purchase date and the final price paid by the buyer client. A property can be purchased by one customer.

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Student: Pers. No

24.　　Real Estate 2

To register claims for clients wishing to rent or buy property, an agency managing a memory that includes the following information:

A customer is characterized by a number, a name, address, telephone and a list of desired property classes.

A standard class of property is identified by a code and characterized by a type of property (owned, home, office ...), a mode of supply (purchase or rental), a minimum size and a maximum price. For the lease, the maximum corresponds to a maximum monthly rental price. If purchased, it is the maximum purchase price. At any time, also the list of customers who are demanding this type of property must be known.

The application of a type of property by a client includes the date of the application, the maximum price and minimum size allowed by the client. The maximum price you want is always less than or equal to the maximum price for the standard class attached to the application. On the other hand, the minimum area required is always greater than or equal to that of class attached.

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Student:　　　　　　　　　　　　　　　　　**Pers. No**

25. Vehicle Registration

The state administration wants to know information about the owners and transactions (purchase / sale) carried on vehicles.

Each vehicle is assigned a registration number. There are no two vehicles with the same registration number.

At any time a vehicle belongs to only one owner who is either a manufacturer, either a dealer, or a private person. It may have been owned by several owners (at separate times). A builder, a garage or a private person is known to the administration of vehicle registration, i.e. considered to be part of all owners if owned or owned a vehicle.

No matter manufacturer, dealer or private person, a homeowner is characterized by an ID number. For a manufacturer, we know his name, address and the garage he works with (car dealers). A dealer is characterized by a name, address and phone number of the commercial register. We know the name, surname and address of a private person.

For any transaction using a vehicle, you know the seller (original owner), the buyer (new owner), date of transaction and the purchase price / sales. A vehicle may be several transactions (at different times). It is possible that two transactions on different dates may be on the same vehicle, same vendor and one buyer.

A manufacturer can sell its cars to other manufacturers or directly to private. It sells them to its dealers. He does not buy any vehicle. A dealer may sell or buy vehicles to private individuals or other dealers. It may, of course, also buy vehicles from manufacturers to which it is the concessionaire. A private person may sell or buy vehicles that private individuals or dealers. This means that only the vehicles owned by a manufacturer, have not been the subject of any transaction yet.

Student: **Pers. No**

26. Vehicle Registration2

The state administration wants to have an information system on vehicle manufacturers.

For each manufacturer, we want to know all the cars he built. A vehicle is characterized by a model, date of manufacture, the manufacturer and serial number assigned by the manufacturer. This serial number identifies it among all the vehicles produced by that manufacturer.

A manufacturer is identified by name and has an address. He works with a number of dealers (car dealers). A distributor is characterized by a name and has an address. No two distributors of the same name in the same locality. A distributor can work with several manufacturers.

A vehicle model is produced by only one manufacturer. All vehicles of the same model are characterized by consumption, the same for each vehicle model. It is possible that no vehicle matching a pattern produced by a manufacturer is already built.

Student: **Pers. No**

27. Insurance

An office of insurance brokerage is an intermediary between insurance companies and customers. Its main activities include prospecting customers, management of the policies and of the claims. To do this, it manages the following information:

A customer is anyone who had signed at least one insurance policy with a company through the brokerage. It assigns an identification number to each customer who knows the name, address, date of birth, bank account and a list of insurance policies.

The office also knows the name, location, phone number and certified experts from each company. No two companies with the same name in the same locality. Each expert is identified by name, address and specialty.

An insurance policy is underwritten by a single client and emitted by one company. About each policy, the office knows the unique number given by the company that published it, the type of insurance, the dates of issuance, effect and purpose, the amount and frequency of the premium. A disaster is the realization of a risk covered by at least one police and reported by a customer. About each disaster, the client who has declared it, is known and the claim number assigned by the company, the date and place of disaster, its description, the declaration date, the list of policies that cover it are known as well. If necessary the expert contacted, the date he was contacted and the date of expertise are known..

It is important to be known that a disaster may be declared only by a customer who has bought a policy covering this disaster.

Student: **Pers. No**

28. Aeroclub

A flying club wants to structure the information it manages on its aircraft, its pilots and flights affiliates.

The planes belong to a listed category of aircraft. Each category is identified by a reference and is characterized by a description. Each plane has a single registration. A description specifies its navigation equipment. The Aero Club also sets an hourly rate of hiring. At any time, we know the hourly meter reading of the aircraft.

For a pilot, it registers its name and address. Currently, there are no two pilots with the same name and same first name. A pilot has a license of some kind that has received on a certain date. It can also be qualified for a few categories of aircraft. We know his graduation date and the number of hours flown for the relevant category. We also know the number of hours flown by a pilot in all categories.

When a pilot does a flight on a plane of certain category, the time counter of the aircraft before and after the flight and the number of landings made are recorded. A flight is identified by a serial number, the line of flight log of the aircraft.

The cost of a flight can be obtained from the hourly rate of the aircraft and the state of his meter before and after the flight. The cost of each flight is debited from the account of the pilot..

Student: **Pers. No**

29.   Flight school

A flight school wants to structure the information it manages on its aircraft, its pilots and flights affiliates.

The planes belong to a listed category of aircraft. Each category is identified by a reference and is characterized by a description. Each plane has a single registration. A description specifies its navigation equipment. The Aero Club also sets an hourly rate of hiring. At any time, we know the hourly meter reading of the aircraft.

The instructor has a number, name and addresss. He owns a license for the categories he is qualified for.

For a student, it registers its name and address. Currently, there are no two pilots with the same name and same first name. A pilot has a license of some kind that has received on a certain date. It can also be qualified for a few categories of aircraft. We know his graduation date and the number of hours flown for the relevant category. We also know the number of hours flown by a pilot in all categories.

When a pilot does a flight on a plane of certain category, the instructor, the time counter of the aircraft before and after the flight and the number of landings made are recorded. A flight is identified by a serial number, the line of flight log of the aircraft.

The cost of a flight can be obtained from the hourly rate of the aircraft and the state of his meter before and after the flight. The cost of each flight is debited from the account of the pilot..

Student: **Pers. No**

30.   Bank loan

The various information that the bank X handles in the procedure for granting a loan are: Concerning a client, you know his case number (unique), name, address and monthly salary. Also known is the list of loans that it has possibly contracted with Bank X or another financial institution and for each of them, the way it reimburses (regular, late or bad). Finally we know the list of loan applications that may already issued from the bank X and, if they were accepted, the various proposals that have resulted. To apply for a loan, we take the amount requested, the duration requested, the date of submission of the request and the reason for the loan. Each application has a number originally assigned by composting.

For a financial institution, we know his name and type as well as the list of loans made by customers of the bank X with that institution.

For a loan, we know the number that identifies the amount, duration, the client has contracted and the body with which it was contracted, if it is a different institution of bank X. It also knows the type of maturity (monthly, quarterly or annually), dates of beginning and end of repayment, and the interest rate applied to loans and the amount to repay (the loan amount plus interest).

Student: **Pers. No**

31.   Bank loan 2

The various information that the bank X handles in the procedure for granting a loan are:
Concerning a client, you know his case number (unique), name, address and monthly salary.
Also known is the list of loans that it has possibly contracted with Bank X or another financial institution and for each of them, the way it reimburses (regular, late or bad). Finally we know the list of loan applications that may already issued from the bank X and, if they were accepted, the various proposals that have resulted. To apply for a loan, we take the amount requested, the duration requested, the date of submission of the request and the reason for the loan. Each application has a number originally assigned by composting.
 For a loan proposal, we know the date, duration, the amount of the proposed loan and the interest rate offered. Known as the discount rate by which the interest rate was determined. When it actually resulted in a loan, it is compared with that loan. The proposals for the same application have different numbers. All loans granted by Bank X had previously required a loan proposal.
It is known periodic discount rate that allows the bank X to calculate the rate of interest applicable. This is actually determined by the motive, the amount of the loan and the discount rate.
The values of different information on a loan are mandatory identical to those of the corresponding proposal, if it exists.

Student: Pers. No

32.   Household appliances

To improve customer service, a seller of household appliances is planning to automate some of its activities.
In particular, he wants to facilitate consultation of the catalog. The catalog is in types of appliances.
The types of appliances are described in the catalog by brand, a label, a model, the recommended retail price, the list of suppliers which can be contacted for order and the purchase price and the time delivery specific to each supplier. The recommended retail price depends exclusively on the device type: it is a standard price established by consensus among all eligible suppliers to provide it. Among the types of appliances of the same brand, some may have the same labels. In this case, they are necessarily of different models.
We know the name, location, phone number of each supplier, possibly the annual period of closure of his establishment. There are no two suppliers of the same name in the same place.
For each unit included in the catalog, we know at least one supplier
The vendor also wants to manage its inventory of appliances. To do this, you know, for each appliance (in addition to information above) the quantity in stock..
it is also known, about each unit held in stock the type of device to which it belongs, the supplier has shipped it, the date of and the serial number unique to the device.

Student: Pers. No

33. Spare parts for household appliances

To improve customer service, a seller of household appliances spare parts is planning to automate some of its activities.

In particular, he wants to facilitate consultation of the catalog.

The types of appliances are described in the catalog by brand, a label, a model.

Spare parts are characterized by a name, a model, a unit price recommended. Also it is known the types of appliances for which they may be convenient, the various suppliers with whom we can obtain them and corresponding purchase price. The recommended unit price depends exclusively on the part: It hass a standard price set by consensus among all providers that can provide the room. The delivery delay of spare parts is also known. This period depends solely on the supplier: for a given supplier, all parts that can provide are within a single delivery. Different parts can have the same name. In this case, it may not be the same model. We know the name, location, phone number of each supplier, possibly the annual period of closure of his establishment. There are no two suppliers of the same name in the same place.

For each part included in the catalog, we know at least one supplier.

The vendor also wants to manage its inventory of aircraft and parts.

To do this, you know, for each piece (in addition to information above) the quantity in stock and a single internal part number.

Student: Pers. No

34. Car rental

The car rental company has several models .Each model is characterized by a class of pricing, brand (eg Opel, ...), a type (eg Vectra ...) and a power..

There is at least one vehicle of each model. A vehicle is characterized by number, purchase date and price, current mileage, model, and if it is in service-station its scheduled return date. There are no two vehicles with same number of the same model.

Each class of pricing has an unique name, types of insurance contracts underwritten (eg RC, casco, ...). All insurance contracts of the same type are purchased from one insurer with a known name, address, phone and fax.

Three rental options are available to customers for each model: the daily rental, weekly and weekend.

Each rental formula is a maximum mileage. It specifies the number of miles that the customer can be carried out under the lump sum method applied to this location. The maximum mileage depends only on the rental formula while the lump sum depends not only on rent but also how the class corresponding rates. At each rate class has an associated price per kilometer. This is the amount that the customer will be charged for every mile he has performed beyond the mileage determined by the rental formula chosen.

Student: Pers. No

35.   Car rental 2

The car rental company has several models in its fleet. Each model is characterized by a class of pricing, brand (eg Opel, ...), a type (eg Vectra ...) and a power..

There is at least one vehicle of each model. A vehicle is characterized by number, date and purchase price, current mileage, model, and if it is in service-station its scheduled return date. There are no two vehicles with same number of the same model.

Each class of pricing has an unique name.

Three rental options are available to customers for each model: the daily rental, weekly and weekend.

 The leasing company also wants to automate the management of reservations of vehicles by customers:

When a client comes to the reservation, he mentions his need for specifying the model of vehicle they wish to rent, one of three methods proposed lease and the rental period desired. If a vehicle is available for the desired time, the reservation of the vehicle is registered. Each reservation is characterized by the date of reservation, the reserved vehicle, the rental formula, the customer and the rental period, as a start date and end date of hire. Moreover, each reservation is assigned a unique internal number.

Each client has a name, address, phone and age.

Among the reservations, there are those that were canceled by the client's wishes. In this case, it records the date of cancellation. It does not delete the reservations canceled by the customer from the information system.

Student: **Pers. No**

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36.   Airline

An airline wants to computerize its system of managing air links:

We consider scheduled flights conducted on a regular basis. A flight connects two airports possibly via a number of stops, which are airports too. Each flight is identified by a unique number. It also knows the day of the week when it occurs, the scheduled time of departure and arrival and the type of aircraft which is generally used for this flight.

Based on a stopover, consists of a number of legs. For each leg, we know the origin airport, the destination, length in kilometers, estimated departure hour (local) and arrival hour. Every leg of a flight has a different number. These numbers show the sequence of legs. Coherence between flights and legs is supposed to guarantee any time.

An airport is known by a name and a code. There are no two airports with the same code.

Student: **Pers. No**

37. Furniture

Background:

A factory sells wooden furniture it sells as a kit. It therefore offers furniture components that customers can purchase separately and assemble them according to taste. Each element has a number of parts ready to be assembled by the customer. The catalogs offered by the manufacturer, items are grouped into collections. These are sets of elements of the same style, made in the same wood and in the same color.

Statement:

The data represented are the following: A collection is a set of elements of the same style, made in the same wood and in the same color. A collection is indexed by a number and a name.

For each element, we know its number, name, collection number, weight and an indication of its size (high or low). There are no two elements having the same series and the same number. An element is also characterized by the length, height and depth of the package containing all parts of the element.

The elements consist of a collection of parts. Each part, which the company attributed a unique number, carries a label. It also has a weight and size. It is made of a wood and is in some color. The collection to which is attached a part must be of the same wood and must have the same color.

A part may intervene in the composition of several elements in a collection. The weight of an element corresponds to the weight of its parts.

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