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Unit 4

Office databases: Access

ASIR

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Introduction to Access

As we reviewed in previous units, to design and build a database you should:

1. Collect and define all the requirements
2. Design de E/R model
3. Transform your E/R to relational model
4. And then, you could build the tables and the relationships
5. After that, you will build queries, forms and report to help to manipulate and analyze the information

We are going to use Access to understand the main concepts on the physical part, when we are building and populating physically the database.

Introduction to Access

Microsoft Access is a **relational database management system** and is part of the Microsoft Office suite.
This office database management system allows us to carry out all these types of operations by using wizards and tools provided by the manager itself.
Remembering, a relational database implies there is an structured and related data and the objects that define and manage that data.

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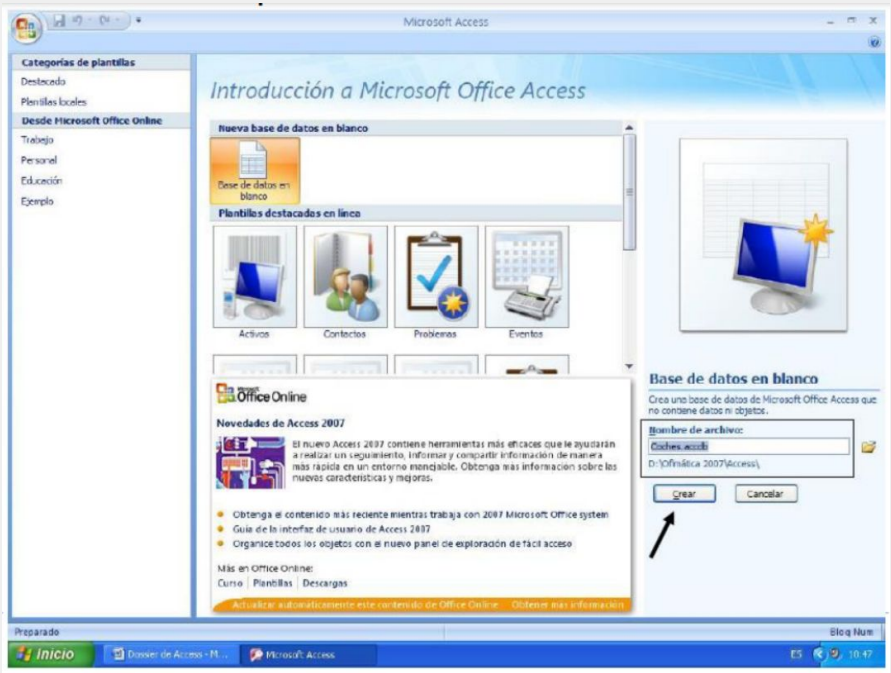
Create a new database

Several databases can coexist on a disk on a disk, in several files, absolutely independent of each other.
Let's build a new EMPTY database:



Access' objects

- **Tables.** Tables store data in an organised way, which is essential for the effective manipulation of information.
- **Queries.** They provide a concrete information from all the database which could be answers to questions. For example: "Select only the name of those customers with more sales in Seville"
- **Forms**. Forms allow data to be displayed in a different way to that of a table, making it more pleasant, attractive and efficient. It serves also to introduce information in a easier way

Access' objects

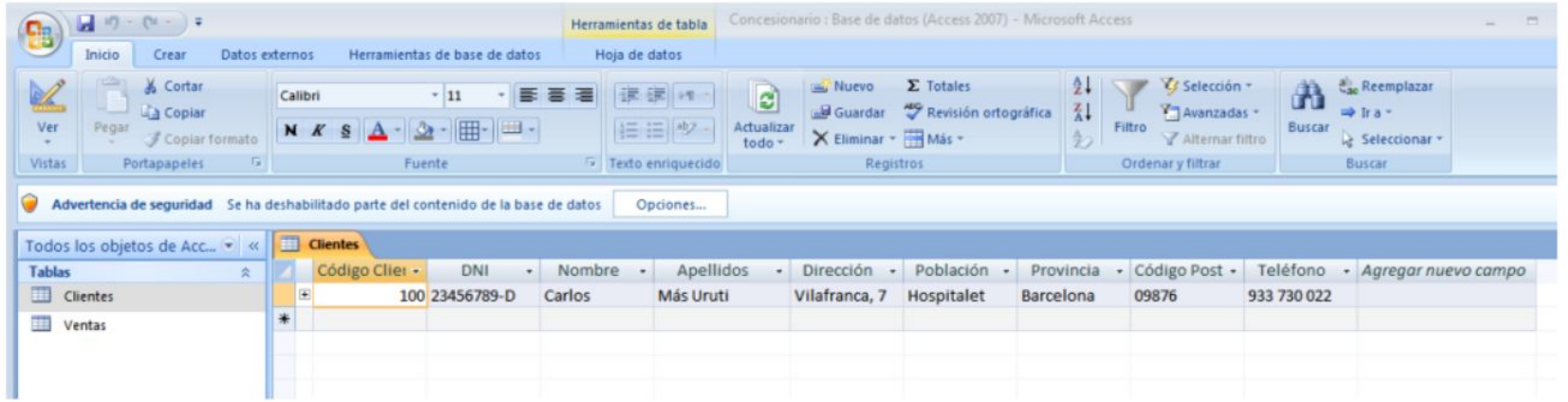
- **Reports.** Reports allow to obtain the printout of the data stored with the model designed by the user.
- **Macros.** Macros in Access can be thought of as a **simplified programming language**, which can be used to programming language, which can be used to increase the functionality of the database. Macros contain actions that **perform tasks**, such as opening a report, executing a query or closing the database. Almost all database database operations that are normally performed manually can be automated through macros, which can be used to increase database functionality, thus saving a lot of time.
- **Modules**: They are similar to macros because they allows you to perform tasks to increase the functionality. However, macros are made easier, selecting actions from a list and modules are programing in Visual Basic for applications (VBA). It is a more powerful tool but it implies a more technical knowledge.

Tables

With the relational model you have some tables from entities and some from relationships. However, **Access** is a office database and, there, **you only should build a table for each entity table** because we are going to relate tables with relationships.

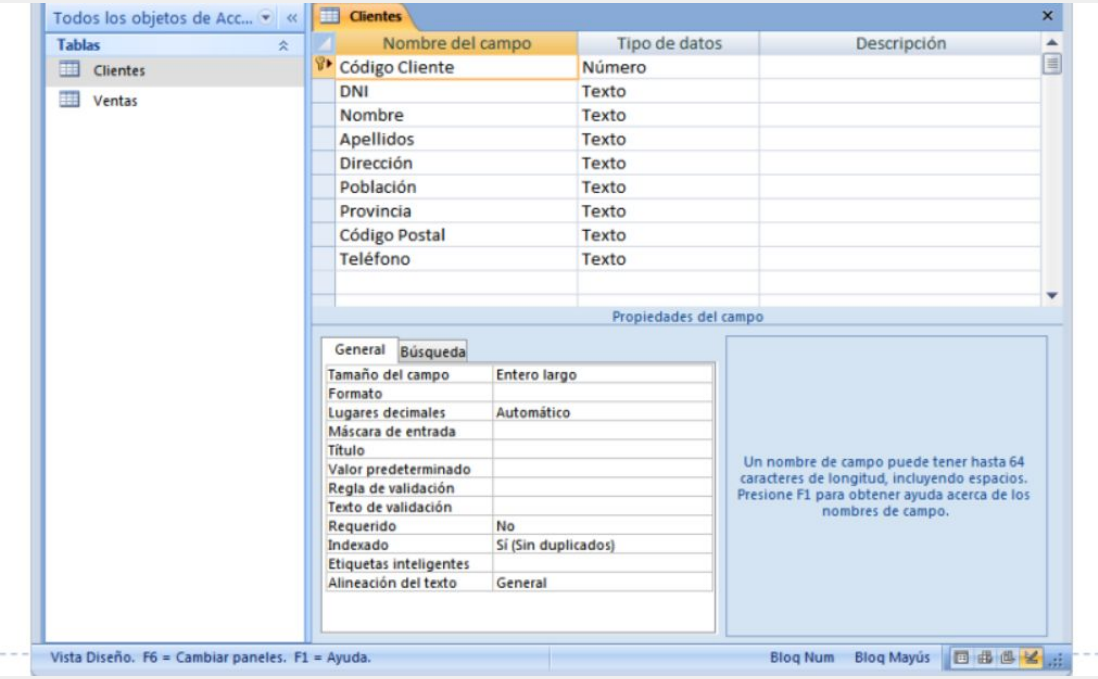
There are two views or ways to manage tables:

- **Data view**. There you could introduce information adding rows and fields. Important: you can´t modify the structure of the table working on this view. Remember this view is only to **populate the table**



Tables

- **Design view**. There, it is possible to create fields adding the data types and their properties.



To change the view you could click on

Tables: Fields

For each field you should define:

- **Field** name: the names of the fields.
- **Data type**: text, numeric, date/time, counter, Yes/No, memo, currency, OLE object.
- **Description**: in this column the description of the field content or its purpose.
- **Field properties:** You could control the appearance of the data. It is a validation for the data to prevent data from being entered incorrectly.

Tables: Data type

- **Text**: to store character string (even number if you are not going to perform any operation).
- **Numeric**: This type stores numbers and then you could perform mathematical operations. There are five sizes:
  - Byte: to store the range from 0 to 255.
  - Integer: for the range between -32768 and 32767
  - Long Integer: for the range between-2,147,483,648 and 2,147,483,647
  - **Single**: for decimal numbers between -3.4x 1038 and 3.4x 1038 with **7 decimals**
  - Double: Double for numbers between -1.797x 1038 with 15 decimal places.
- **Date/time:** General date and time, long date and time, short date and time.

Tables: Data type

- **Autonumeric:** A numeric value which increments automatically each time a record is added. It cannot be changed manually.
- **Yes/No:** To store data that has only two possibilities: yes-no, 0-1, true-false, black-white...
- **Memo:** To store long text, up to 64000 bytes.
- **Currency:** To store currency values.
- **OLE object:** Objects such as graphics, text, images, created in other applications, that have been applications, which have been embedded or linked.

Tables: Data type

- **Hyperlink:** It links to an Internet resource, e.g. a web page address, if you click on it, if you click on it, it will automatically links you to that page.
- **Search Assistant**: It allows you to restrict the field type to only accept data from a list of values or from a field in another table.

Relationships

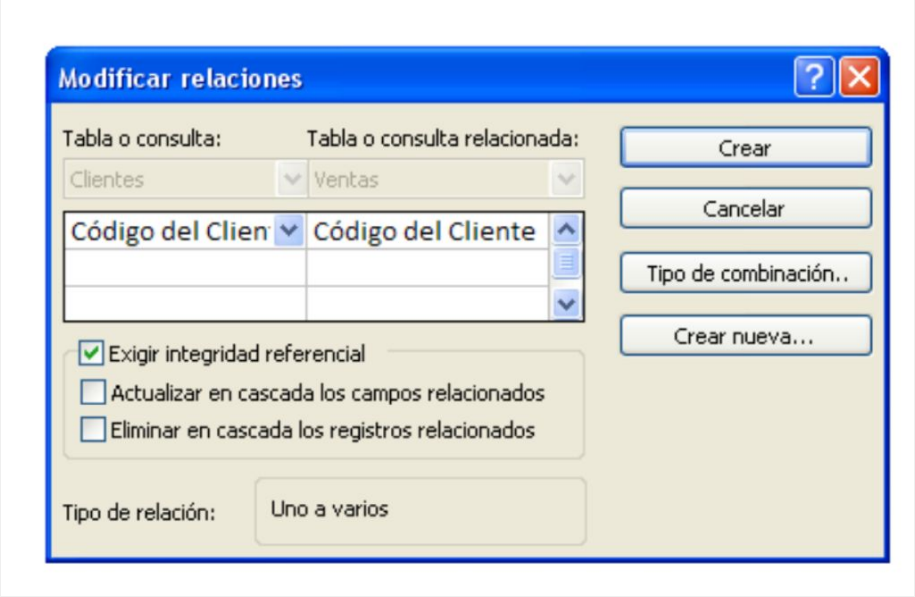
To relate two tables:

1. We should click on 

2. After that we should add the two tables.

Relationships

3. For example, we will click over the *Customer Code* field in the Customers table and holding down the left mouse button we will place ourselves above the Customer Code field of the Sales table. When we release the mouse we will see the following window:



Relationships

There you could choose:

- The type of relationship
- Referential integrity or not if it a foreign key.

Operations on tables

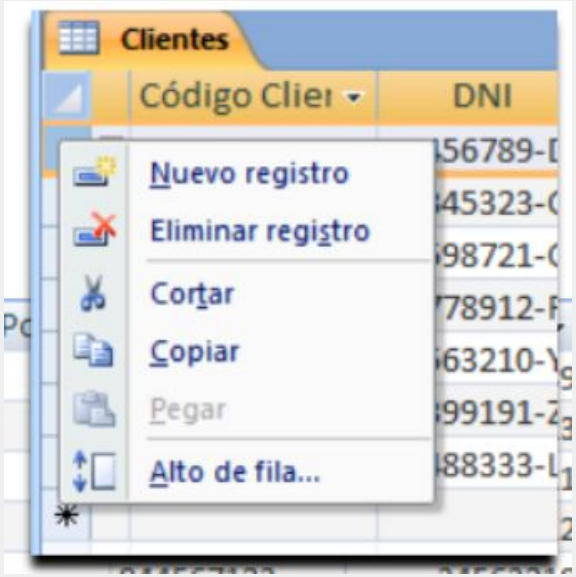
- Insert and delete rows or records
- Operations with columns (fields)
- Sort records
- Find records
- Apply filters

Operations on tables: Insert or delete

Choose Data View and there, there are different ways:

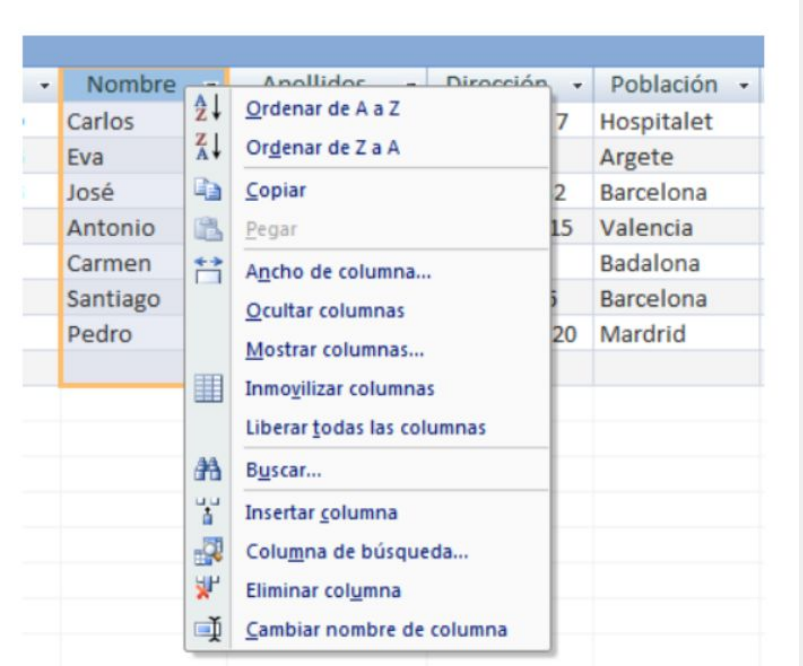
- Clicking Inicio/Registers
  New

- On the table, placing yourself on the last line of the table marked with an asterisk.
- Clicking



Operations on tables: Columns Operations

- Order registers based on this column
- Show/hide columns
- Search register
- Insert/delete columns
- Change the name for a column



Operations on tables: More operations

You could also do some operations with these menus:

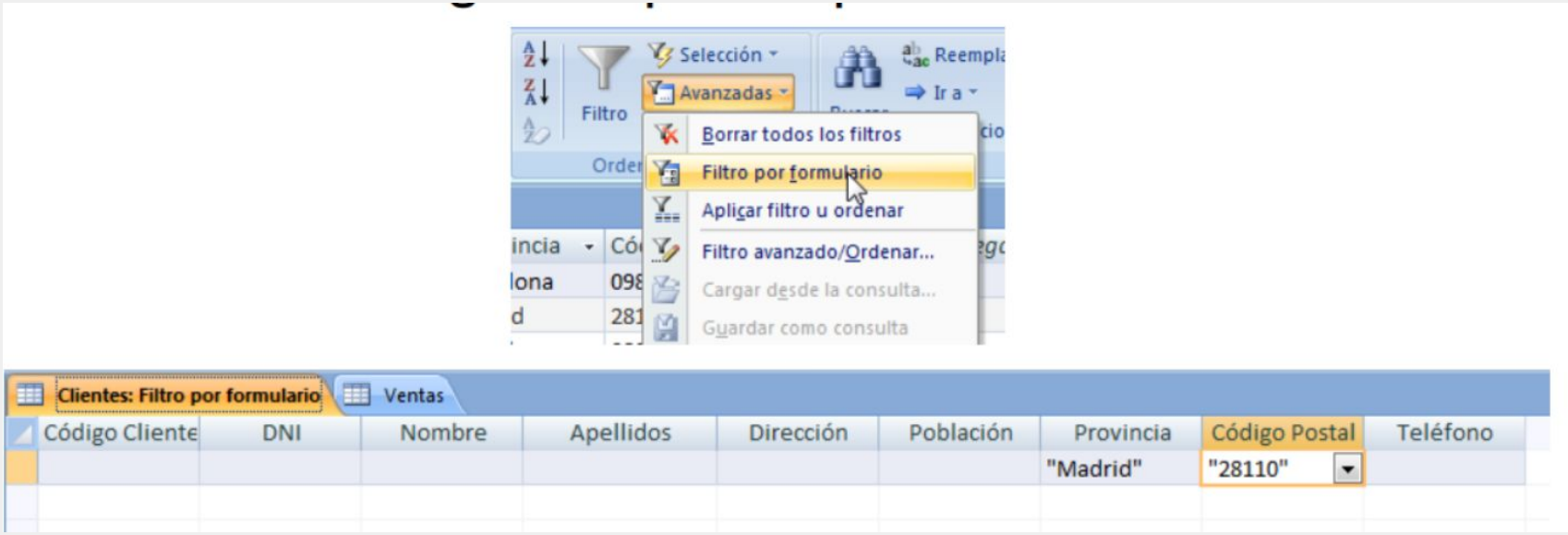
Order registers:

Search registers:

Operations on tables: More operations

Filter Registers:

- Filter by a form. You could use the method if you want to filter using different values or/and different fields



Operations on tables: More operations

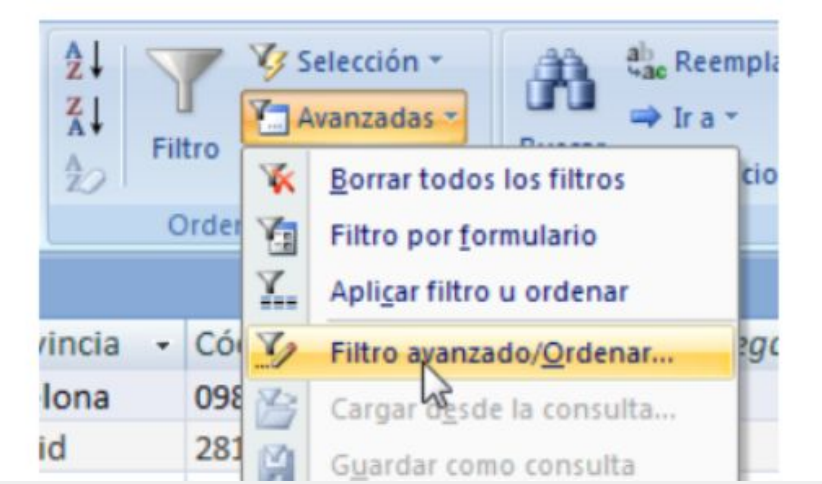
Filter Registers:

- Filter by selecting. You select a value and click on:

Operations on tables: More operations

Filter Registers:

- Advanced filter or order. You could store the criteria



References