

# Terms and Concepts Visual FoxPro for Users

## Term and Concepts

### Chapter 1

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## Objectives

You will learn:

- What a database is.
- Databases in Visual FoxPro.
- Tables and databases.
- Fields and records.
- Index.
- Key fields and primary keys.
- Referential integrity.

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### What is a Database?

- A database is used to organize information.
- We use many databases in our day-to-day lives. Common databases include:
  - address books
  - telephone books
  - the index in the back of a textbook.
- What makes up a database?
  - The structure of a database is based on fields, records, and files.

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### Databases in Visual FoxPro

- **Databases provide an architecture and working environment for associating, organizing, and working with tables and views.**
- **Databases can be used independently or included in an application project.**
- **When a database is created, Visual FoxPro creates and opens a database (.dbc) file exclusively.**
  - **The database file, which is a table, stores all the information about the database including the names of files and items associated with it.**

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### Databases in Visual FoxPro

A Database provides additional benefits:

- **Associating tables with a database.**
- **Creating persistent relationships between tables.**
- **Ability to create field and record-level validation rules without writing code.**
- **Creation of rules for preserving the relationships between database tables when adding, updating, or deleting records.**
- **Creation of stored procedures.**
- **Creation of views from local and remote tables.**

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### Tables in Databases

- **Tables can be associated with a database as part of the creation process or by adding them to a database.**
- **Tables in Visual FoxPro can exist as a free table or as a database table.**
  - **A free table is a table (.dbf) file that is not associated with any database.**
  - **A database table is a table file that is associated with a database.**
    - **Database tables can have properties which are not available with a free table; such as field-level and record-level rules, triggers, and persistent relationships.**

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### Fields

- Fields are the smallest unit in a database.
- Fields contain single pieces of information about "something."
  - Example:
    - Creation and use of use a database that contains all of our students' names, addresses, and parents information.
    - Individual pieces of data that should be included would be:
      - Student name
      - Parent's name
      - Address
      - Phone number
      - Teacher comments

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### Record or Row

- Fields make up records.
- All of the information about one entity (our "something") is a record.
- In the student database example, all of the information about one student would be one record.

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### Columns/Fields

- **Fields can be defined by specifying a:**
  - field name
  - data type
  - field width
- **When creating a table, it will be necessary to define the fields that the table contains.**
  - Visual FoxPro tables can contain up to 255 fields.

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### Fields

**The general attributes specified when creating a field are:**

- Name of the field.
- Type of data that the field contains.
- Width of the field.
- Number of decimal places if the field contains numeric or float values.
- An index on the field.
- Whether the field accepts null values.

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### Fields

**The following tasks can also be performed when working with fields:**

- **Specifying default values for the field.**
- **Adding comments for the field.**
- **Specifying input masks for entering and storing data in the field.**
- **Setting automatically incrementing values in fields.**

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### Index

- A summary table which provides the capability for locating a particular record or group of records in a table.
  - An index in a book is used for expediently locating information about a subject.
  - A database index works in a similar way.
- An index can be created on any field in a table.

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### Key Field

- Both a sort and rapid retrieval of information can be implemented on a database by choosing one or more fields to act as keys.
- For example, in a students table a combination of the last name and first name fields can be used as a key field.

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### Primary Key

- A primary key is a field that uniquely identifies a record in a table.
- In a students table, a key built from last name + first name might not provide a unique identifier.
  - For example, there might be two or more Jane Does in the school.
- In order to uniquely identify each student, a special Student ID field might be a sound choice as the primary key.

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### Referential Integrity

### Between Database Tables

- **A set of rules can be created to preserve relationship definitions between database tables when adding, updating, or deleting records.**
  - The process of creating these rules is known as building referential integrity.
- **By creating rules which enforce referential integrity, Visual FoxPro prevents the following actions:**
  - Adding records to a related table when no associated record exists in the primary table.
  - Changing values in a primary table that results in orphan records in a related table.
  - Deleting records from a primary table when there are matching related records.

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### Code Elements

- As with every spoken language which contains nouns, verbs, adjectives, and grammatical rules; every computer programming language contains fundamental features and syntax.
- Microsoft's Visual FoxPro's language is comprised of the following facilities and syntax:
  - Native commands and built-in functions to perform pre-defined actions.
  - Literals and named constants that are used as-is in program operations.
  - Memory variables and arrays to hold transient values of various types.
  - Permanent data stored in tables, and the capability to perform I/O manipulations on these structures.
  - Arithmetic operators to use with numbers, and string operators to manipulate character data.
  - Logical evaluators to compare entities and select an appropriate response path.
  - Looping constructs that specify conditions for repetitively executing portions of code.
  - Comments.
  - Syntax, packaging rules, and construction principles that define how all the elements fit together.

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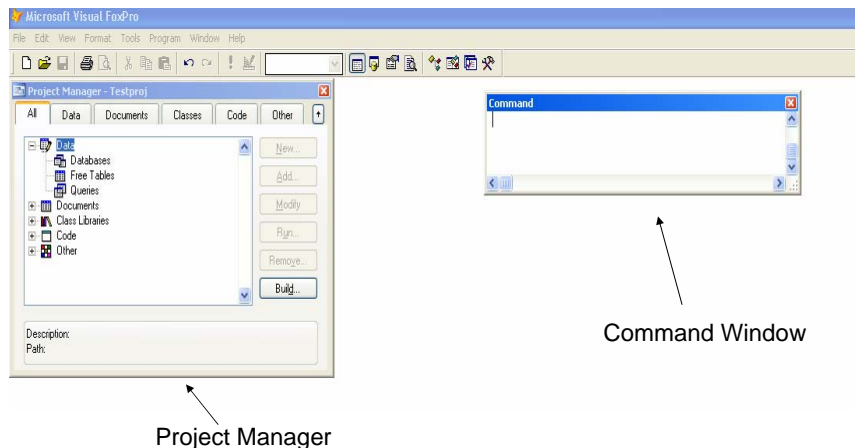
### Tables

- **Visual FoxPro uses tables to store data in row and column format.**
  - These rows and columns are known as records and fields, respectively.
- **Building databases also includes creating tables.**
  - When designing a database, it will be necessary to determine the items required in databases, such as tables, fields, and relationships, for an application.
- **When creating tables, it will be necessary to make specific choices concerning the details of those items.**
  - For example:
    - Data types, captions, and possible default values for each field, triggers for each table, and table indexes need to establish relationships between tables.

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### Initial Screen



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