

# Knowledge organiser: Database development *Build and interrogate your own software system*

## Summary

A **database** is a way of storing information in an organised, logical way. **Validation and verification** are two ways to check that the data entered into a computer is correct. Data entered incorrectly is of little use.

There are two main methods of verification:

**Double entry** - entering the data twice and comparing the two copies. This effectively doubles the workload, and as most people are paid by the hour, it costs more too.

**Proofreading data** - this method involves someone checking the data entered against the original document. This is also time-consuming and costly.

**Validation** is an automatic computer check to ensure that the data entered is sensible and reasonable. It does not check the accuracy of data.

## Key Vocabulary

<b>Criteria</b>	A set of rules or conditions that must be met. Often used in searches.
<b>Database</b>	A data store designed in an organised way, making it easier to search for the information you need.
<b>Field</b>	An element of a database record in which one piece of information is stored. For example 'name' in an electronic address book.
<b>Front-end</b>	The part of an application seen and used by the end user.
<b>Flat-file database</b>	A database in which all the data is stored in a single table is known as a flat file database.
<b>Key Field</b>	A unique identifier for a database record or table entry.
<b>Multi-Access</b>	A system that can be used by several users simultaneously via a local area network (LAN).
<b>Query</b>	A search or question performed inside a database.
<b>Record</b>	All of the data relating to one entity in a database.
<b>Validation</b>	Checking input data is sensible and in the right format.
<b>Verification</b>	Verification is performed to ensure that the data entered exactly matches the original source.

## Relational databases

A relational **database** has more than one table and the tables are linked using **key fields**. For example, a library database could have three tables:

**Customer** - when a customer joins the library a **record** is created. It stores their details such as their first name and surname and includes a unique Customer ID.

**Book** - each book in the library has a record. It stores details about the book, such as the author and title and includes a unique book ID.

**Lending** - when a customer borrows a book, the lending table stores the customer's unique ID and the book's unique ID in a record. The record could also include additional information such as when the book was borrowed and when it's due back.

## Why use a database?

- ◆ Databases can store very large numbers of records efficiently (they take up little space).
- ◆ It is very quick and easy to find information.
- ◆ It is easy to add new data and to edit or delete old data.
- ◆ Data can be searched easily, e.g. 'find all Ford cars'.
- ◆ Data can be sorted easily, for example into 'date first registered' order.
- ◆ Data can be imported into other applications, for example a mail-merge letter to a customer saying that an MOT test is due.
- ◆ More than one person can access the same database at the same time - multi-access.

## Data capture

Before setting up a database the data must be collected. This can be done using a data capture form.

**A data capture form is designed to collect specific data.**

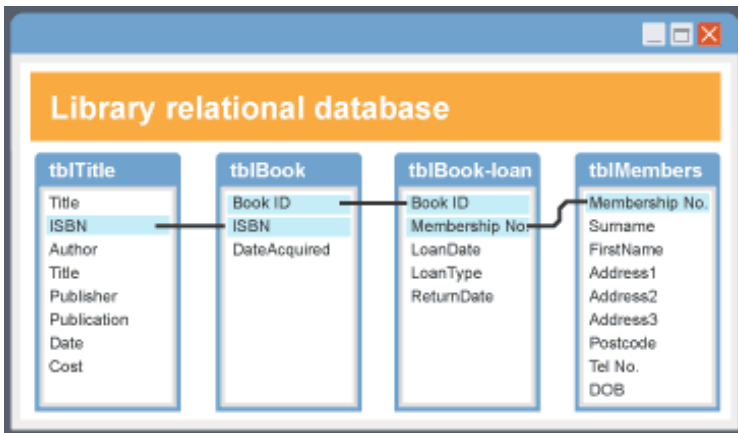
## Validation

For example, a secondary school student is likely to be aged between 11 and 16. The computer can be programmed only to accept numbers between 11 and 16. This is a **range check**.

## Types of validation

There are a number of validation types that can be used to check the data that is being entered.

- ◆ **Lookup table**
- ◆ **Range check**
- ◆ **Spell check**
- ◆ **Format check**
- ◆ **Presence check**
- ◆ **Length check**



## Boxes

The form 'Deals on Wheels' has the following fields:

- Registration No.: D O S T V Y
- Make: MINI
- Model: COOPER S
- Price: £ 6 5 0 0
- Sold: Y  N
- Date sold: 0 2 0 1 2 0 1 4

## Set amount of spaces

Data capture forms often use **boxes** or a **set amount of spaces** and occasionally provide examples too.

This is to make sure each field is completed correctly.