THE BASICS OF MICROSOFT ACCESS

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Introduction

We all use databases all day long. Whether it's looking up someone's number on your mobile phone (a contacts database) or using the web to check out the time of the latest films at your local cinema (an events database) we all depend on databases and data.

But when you're tasked with building a new database, or you have to maintain the data in a database, some more formal terminology and a few essential building blocks can be really useful. This guide is designed to give you the basics of database terminology, and an overview of how Access objects fit into these terms. On the reverse are a few pointers to help should you need to create a new database.

WHAT IS A RELATIONAL DATABASE?

A database is a tool to provide structured way to store, update and retrieve data. Word tables, Outlook contacts and Excel spreadsheets are all examples of databases.

But imagine you have a contact list of students in an Excel spreadsheet, and then on a second sheet, all their marks for a set of exams. On the exam sheet, each student is identified by a unique ID, to save you having to type their name again (risking typing errors) – when you want to know their name, you just look up the ID on the first sheet.

This all works well until you discover that one of the students has been accidentally deleted from the first sheet, meaning that now you have marks on the second sheet belonging to a mysterious ID number, but no way of looking up who that is. It is this potential problem (among others) that relational databases are designed to overcome.

TABLES, ROWS AND COLUMNS

In a relational database, you can think of the data being stored in a grid format, much like an Excel worksheet. This is called a *table*.

In our table, each row holds all the information we have about one thing – such as a student. A row might hold a student's name, their phone, their email, their date of birth and so on. In Access, a row is sometimes known as a *record*.

Each column holds one part of this information – such as the email address – but for every student. So, one column holds all email addresses, another all the first names and so on. In Access, these columns are sometimes called *fields.*

RELATIONSHIPS

Unlike in Excel worksheets within a workbook, these tables are not stored in isolation. Each table may be linked to a number of other tables, and these links are called *relationships.* Such relationships work to ensure that your data will always match up – that you can't delete a student if they have scores, for example. This is known as "enforcing referential integrity". It's one of the things that makes a relational database more robust than an Excel workbook for storing large amounts of data. Access takes care of this for you, as long as you take the time to get this initial design right

FORMS

In most large-scale databases, such as SQL Server, or Oracle, the data is stored securely. But if you want to make it look good (such as having a photo displayed of the student, or highlighting in a particular colour those students who have done very well or badly), you need to create an "application". This application is sometimes said to be the *Front End* of the database, whereas the tables and relationships are the *Back End* of the database.

Microsoft Access gives you tools to make this front end; the elements that make up these on-screen tools for working with your data are called *Forms*.

Forms can display data in a variety of ways, showing you one row at a time, or multiple rows, applying formatting, giving you navigation and search functions, displaying calculations based on your data and lots more. They are the primary way of allowing users to interact with the data in a database.

But remember – it's the tables that store the data. If you update data in a form, all you're really doing is using the form to update the table.

REPORTS

Just as you can use forms to create interactive, visually rich ways of working with your data on screen, so Access has a tool for laying out your data effectively on the printed page.

Whether it's printing a mark sheet for an examiner to fill in, creating a 3-page profile of the student's performance for the past 5 years, or a one-sheet list of everyone's contact details, if you want your data printed on paper, you'll be using a *report.*

Bear in mind, though, that unlike forms, reports are static. After all, once the data is printed, it's going to be pretty static! So, reports are designed to be a read-only view of your data. If you want to update it, you'll be needing a form.