Databases

Databases are involvd with everything we do online. From social ntworking to the BBC website, databases are crucial tools used to store large amounts of data in an organised way.

Database uses

Microsoft Office Access is a popular database package but there are alternatives such as OpenOffice Base.

Databases are widely used. Schools, the NHS, supermarkets, Facebook, Google and YouTube all make use of databases. Any company or organisation that stores large amounts of data almost certainly stors it in a database.

The services and companies mentoned above use their databases to:

send letters or emails to employees, clients or customers

manage appointments

trak the products cstomers buy

serve adverts based on what a user searches for suggest related videos, depending on videos a user has already watched

know whch friends two individuals have in common

Your school probably keps track of the most poular dishes on the canteen menu so that it always has enugh to serve to students.

Databases vs. paper

Databases can store huge amounts of data without taking up any space in the real world.

It is muh quicker to query or search a database than it is to riffle through hundreds or even thousands of paper records.

Advantages of using a database

It’s easy to add to or amend existing records.

Data cn be sorted easily, eg date first registered.

Other applcations can import data, for example mail-merge templaes make use of databases to send personalised letters to customers.

Multiple people can access a database at the same time.

Security can be beter than paper files, eg using a passwrd to view or edit a file.

The difference between data, information and knowledge

It’s easy to gt confused between the three. This is how they differ:

Data is a value with no obvious meaning, eg 9.

Information is data with meaning, eg the average man’s shoe size is 9.

Knowledge is making use of information, eg I’m opening a shoe shop, I should stock plenty of size 9 shoes for men.

Data isn’t just numbers. Someone’s name, address and favourite colour are all examples of data.

Tables

Storing data in tables

Databses store data in tables. Tables are made up of fields and records.

A prison might use a database to keep records of its inmates. A criminal’s record may contain the following fields:

first nam

last name

height

crime

release date

A table consists of related records, eg criminals, and a record conssts of related fields, eg Paul Smith who is 1.8 m, committed a robbery and is being released on 26.01.2015.

Creating a table

To create a table in Micrsoft Office Access, use Dsign view. Start by writng a list of sensible field names, eg ‘Crime’ would be a better field name than ‘Act of questionable judgement’ because ‘Crime’ is short and to the point.

Data types

Access wll automatically choose a field’s data typ based on the data entered. For example, if a phone number is entered into a field its data type will be automatically set to 'Number'. Other data types include:

'text' – writing

'date/time' – date or time

'currency' – euro, pound, dollar, etc

'autonumber' – number increases by one each time

'yes/no' – only yes or no can be entered

Setting a primary key

The primary key is a field that contains data that is unique for each record. A car dealership may use a car's registation or number plate as a primary field to set apart two cars of the same colour, make and model.

Validation rules

Data is validated or chcked to see if it meets certain rules when entered into a field. It cannot be checked for accuracy. For example, a vlidation rule may only allow mobile phone numbers that are 11 digits long, but the mobile number itself could be wrong.

Field length check – only allows a specific number of characters to be entered.

Range check – number entred must be within a certain range, eg between 1-100.

List check – only specific data can be entered, eg male or female.

Present check – th field cannot be left empty.

Input mask – data must be entered in a specific way, eg including a space between the first and last part of a postcode.

Queries

Running queris

Databases can hold huge amounts of data. Quries find specific data based on set criteria.

Query scenrio

A burglary has happened in a local village. The polce create a query to search their database for suspects. The fields queried are:

first name

last name

known for

The tble queried is ‘Crimnals’. The results retrn a list of first names and last names and the crimes each indivdual is known for. One man is knwn for burglary.

Narrowing down the results

The polce add the field ‘In prison’ to th query and add search criteria so that it only returns criminals currently in prison. The man comes up as a result, so he cannot have committed the crime because the police know he was in prison.

Forms and reports

Tabls and queries are great for entering and fnding data. But it’s esier to enter dta using form and present it using reports.

Frms

Frms make entering data into a database simple.

Use the wizard to create a form. Start by choosing the fields that need to appear on your form. To change a form’so appearance, click the 'View' button.

Reports

Reprts present data clearly, so that they are easy to read.

Use the wizard to create a rport. Choose a qury to base the reprt on and follow the onscren options.