

Design Principles

Designing a database takes time and thought!
The more care you put in at the start, the more effective it will be later!

What is the purpose of my database?

What do you want the database to do for you?
What will other people need the database to do?
Do you already use some paper forms in a manual system? This information could be valuable!

The key question I must ask – What information do I want out of my database?

Start working on paper first!

List all the information that you want **out**
Spend time ensuring you have thought of everything

Why should information never be keyed in twice?

Information in a database should only ever need to be typed once!

Typing information a second time:

For example, you should never find yourself typing in the name and details of a person a second time. The reasons are:

Wasted time and effort

Potential inconsistency when typing in the information more than once

Storing out of date information (if for instance any of the details change, you would have to remember to make the changes in ALL the places they appear in your database)

LASTNAME	FIRSTNAME	INITIAL	GENDER	DEPARTMENT	TRAINING
Adams	Nathan	N	Male	SALES	Access Essentials
Anderson	Debbie	D	Female	EXECUTIVE	Access Essentials
Anderson	Debbie	D	Female	EXECUTIVE	Access Advanced
Barnett	Lena	L	Female	SALES	Word Intermediate

In our example Debbie Anderson has been on two training courses so she appears twice – this could cause problems later as mentioned above!

Duplicating fields:

You should also never duplicate fields in one table, for example Training 1, Training 2, Degree 1, Degree 2, etc. The reasons are:

Difficulty in searching for information if it could be held in more than one field

Difficulty in producing statistics on more than one field

LASTNAME	FIRSTNAME	TRAINING 1	TRAINING 2	TRAINING 3
Adams	Nathan	Access Essentials		
Anderson	Debbie	Access Essentials	Access Advanced	
Barnett	Lena	Word Intermediate	Word Advanced	Access Essentials

Although this gets around the problem of repeated information for Debbie Anderson, I would have problems if I needed to find everyone who had attended an Access Essentials course – which column would I search on!

The solution:

If you cannot see a way to avoid storing the information twice, you need to use more than one table and relate them together:

In our example:

Create one table for the staff information

Create another table for the training information

Then, you link the two tables through a common field. This creates a ONE to MANY relationship between the two tables.

ONE member of staff can go on MANY training days:

EMPLOYER ID	LASTNAME	FIRSTNAME	INITIAL	GENDER	DEPARTMENT
15	Adams	Nathan	N	Male	SALES
44	Anderson	Debbie	D	Female	EXECUTIVE
14	Barnett	Lena	L	Female	SALES

MANY

Employer ID	Training Course
15	Access Essentials
44	Access Essentials
44	Access Advanced
14	Word Intermediate
14	Word Advanced
14	Access Essentials

(For more information on creating a relationship – see the complete section on relational databases.)