

The concepts of Cardbox

In terms of usability and ease of explanation, the best product we've ever seen is the screwdriver. When you use a screwdriver you don't need an instruction manual. You know you can use it to open tins of paint, stir the paint, and also drive in screws or take them out again; you also know that you are unlikely to be able to bang in nails with it. You know all this without thinking, because you have an instinctive feeling for the way the physical world works and what a slender piece of metal is capable of.

The aim of the Concepts section is to give you the same sort of instinctive feeling about what Cardbox can do. Once you've read it, you should have understand what Cardbox is and you should know, without thinking, what kind of things it can do and what kind of things it can't. After that, you've done the hardest work and everything else is (in a sense) just filling in the details.

Databases and records

A Cardbox database is a collection of records. It is up to you to decide what those records represent. They can be physical objects, or documents, or people, or messages, events or financial transactions. They can even be chapters in a book you're writing. If you can make a list of something, you can make database records out of it.

The current selection



Whenever you are using Cardbox you are always looking at a selection of records, and you can always browse through that selection using the record scrollbar or the keyboard, one step at a time or in great jumps.

When you first open a database, Cardbox doesn't know what you want to see so it shows you every record (as a list if the records are small, or one record at a time if the records are big). Whenever you make a search, Cardbox finds the records that match your search and makes them into the new "current selection". Again you can browse through it to see if you're on the right track, perhaps as a preliminary to making an extra search to refine the selection further.

Most actions – printing, batch editing, data export – work on the current selection, but selections are more than a shorthand for "the records that Cardbox has found for you", they are entities in their own right. When you've made a selection you can give it a name and store it for later use: you can cancel the search and do another one, and come back to your stored selection later on – or you can even combine selections together.

Levels of selection

Every time you perform a search command, it acts on whatever is in your current selection. This means that if you enter two searches in a row then you'll only find the records that fit them both. Combining searches in this way is a good way of building up complex Boolean searches. The status bar has a Level indicator that shows how many combined searches you've made: level 3 means that you've combined 3 searches, and level 0 means that you haven't done any searches at all and you're looking at the whole database.

Fields

Fields are subdivisions of records. You design how records are divided into fields when you design your database, and you can add or remove fields later on if the design evolves or you change your mind about it: this is very easy and it won't cause any upheaval to the records that you've already got in your database.

In a database of people you might have fields for name, address, telephone number, date of last or next contact. In a database of books you might have fields for author, title, publisher, subject, keywords, shelfmark, and so on.

The thing about fields is that they add meaning to what you put in them. Think of a book: "London" could be the name of the author, or part of the title, or the place of publication, or the subject. By putting "London" into one field rather than another, you define what it actually means.

You could have a database with just one field but it would be pretty specialised. We'll cover database design later on, but basically you use fields to distinguish things that

- have different meanings.
- need to be searched separately.
- need to be positioned differently.
- don't always need to be visible at the same time.

Cardbox lets you have up to 4,000 fields, so you really aren't going to run out of them. Fields can be as short as one character or big enough to hold several pages of text.

The one-field database

To make a database with one field, just draw a huge field on the screen and then type text into each record. It could be a diary, or a notebook rather like the Memo Pad application in your palmtop. You can search for records, view them, print them out: it works. But pretty soon you'll want to search on the date the note was made on, and that has to be a separate field to distinguish this date from other dates that happen to be mentioned in the text. And perhaps you'll need a category name as well, just like Memo Pad... so that's three fields in total. So the one-field database was OK to start with, but having two more fields made all the difference.

The Extra Text field

If you think of a Cardbox record as an index card, you can think of Extra Text as a sheet of paper stapled to the back of the card. Extra Text is what it says it is: a lot of text (there's no limit) attached to a Cardbox record. Some other databases have a similar concept, which they call Memo fields.

Not everyone finds Extra Text useful or even interesting, so if you can't think of a use for Extra Text, don't bother with it. But when you do need it, it can be invaluable. It's flexible and of unlimited length, whereas Cardbox records usually have a fixed layout and a fixed height for each field. Because it's attached to a record you can (at a press of the F6 key) view the Extra Text on its own, or the record on its own, or (with Shift + F6) both together; and you can print it separately as well, if you want. The only thing you can't do with Extra Text is index it, although you can still do unindexed searches on it.

Here's an example of a database used as a text repository. Extra Text contains the text, and the main record is just a way of finding that content or sorting it into a desired order.

ID: Ps12:6-7	Code: Che Name:
ID: Ps120	Code: MJK Name: Psalm 120
ID: Ps121	Code: MJK Name: Psalm 121
ID: Ps121:1-2,4-5,6-9	Code: Che Name:
ID: Ps121:1-5	Code: Che Name:
ID: Ps122	Code: MJK Name: Psalm 122
ID: Ps122:1-2	Code: Che Name:
ID: Ps123	Code: MJK Name: Psalm 123
ID: Ps123:2-5,7-8	Code: Che Name:
ID: Ps124	Code: MJK Name: Psalm 124
ID: Ps125	Code: MJK Name: Psalm 125
ID: Ps126	Code: MJK Name: Psalm 126
ID: Ps127	Code: Che Name:
ID: Ps127:1-2,4-5	Code: Che Name:
ID: Ps127:1-5	Code: Che Name:
ID: Ps129	Code: MJK Name: Psalm 129
ID: Ps129:1,4,7-8	Code: Che Name:
ID: Ps129:1-6	Code: Che Name:
ID: Ps130	Code: MJK Name: Psalm 130
ID: Ps131:1-10	Code: MJK Name: Psalm 131
ID: Ps131:1-5,11-14	Code: Che Name:
ID: Ps131:11-14,17-18	Code: Che Name:
ID: Ps131:11-18	Code: MJK Name: Psalm 131
ID: Ps131:6-10	Code: Che Name:
ID: Ps133	Code: MJK Name: Psalm 133
ID: Ps134:1-12	Code: MJK Name: Psalm 134
ID: Ps134:1-6	Code: Che Name:
ID: Ps134:13-21	Code: MJK Name: Psalm 134
ID: Ps135:1-3,16-18,21	Code: Che Name:
ID: Ps135:1-9	Code: MJK Name: Psalm 135
ID: Ps135:10-15	Code: MJK Name: Psalm 135
ID: Ps135:10-26	Code: MJK Name: Psalm 135
ID: Ps135:1-10,15-23,26	Code: Che Name:

ID: Leo.OR.R2	The special obligations of our ministry
<p>Although the universal Church of God is constituted of distinct orders and degrees, the Church subsists as an integral whole, just as the Apostle Paul says: "the Church, which is the body of Christ, is united together in one Spirit and one bond, out of which the members are joined together, so great that anyone can be separated from the body, but the body itself is not divided. There is one Lord, one faith, one baptism, one God and Father of all, who is above all, through whom all things were created. And again: #But you are a chosen people, a royal priesthood, a holy nation, a peculiar treasure. For all, regenerated in Christ, are members of His body, of the flesh and bones, united in the Holy Spirit, so that beyond the special services of each, there is one common service: to offer yourselves as living sacrifices, holy and pleasing to God, which is your true worship. Keep with a religious attitude for the glory of God, who is the Father, through Jesus Christ, our Lord. For indeed one sacramental priesthood is celebrated through the sacrifice of the Mass, which consecrates us has richer effects in the higher grades, yet it is not separated from the common priesthood of the faithful." (Catechism of the Catholic Church, 896-900)</p>	

One Cardbox user wrote an entire reference book in this way. The Extra Text was what he was actually writing, while the record's main fields gave headings and a sequence number: when he wanted to move sections around, he just changed its number. At the end of the process he sorted the database into numerical order, printed it out and sent the result to the publisher.

Formats

A format is what gives shape to your data. It is everything you see on the screen when you look at a record, except for the actual data. It covers the way your fields are laid out (and which ones appear at all), plus any captions, lines, boxes, and so on. A Cardbox database can have as many formats as you like.

Put like that, it's pretty abstract, but the format mechanism is more powerful than it sounds and it's worth getting to know it early in your acquaintance with Cardbox.

1 Name:	NA	Date:	DA	By:	BY	Ref.:	RE
Position:	PO	Last contact:		LP	Next contact:		NF
Org'sation:	ORGANISATION	Sales Rep.:		DI			
Address:							Products of interest:
AME1							PI
County:	CO	Area:	AR	How heard of products:			
Postcode:	PC	MailCode:	MC	HH			
Country:	CY	Name:		NS			
Business:	BU	Tel:	TE	Fax:	FX		
Dear:	DE	Transferred to:		TRANSFERRED			
Contacts history:							CH

Here's a format that looks like a form to be filled in. Most databases have a format like this to make data entry easier. The format has plenty of captions and boxes to guide you when entering data. You can have more than one format of this kind if circumstances justify it: perhaps a terse format for experts and a long-winded one for novices, or specialised ones for different stages in the use of a record. On the next page you can see what this format looks like when you put some data into it.

Name	Organisation	First contact	How heard & source	Ref.
NA	ORGANISATION	DA	{HH} {NS}	RE

Many database programs call this sort of format a "list view".

Here's a format that works as a summary. This sort of format is useful for printed summaries but it's also very good when searching, because if the records are just one line high then you can see a lot of them on the screen at once and get a good idea of whether your search is finding the right sort of things.

There's nothing to stop you using a summary format for data entry as well: this is what we do ourselves with our accounting databases, where we have an elaborate form that explains everything in detail but we use the one-line version a lot because we know what we're doing and we don't need all the captions and explanations.

1 Name: Dr A. Scouler Position: Partner Org'sation: Leggott Auction House Address: 29-31 Tyssen Road Huddersfield	Date: 1/7/2003 By: SFE Ref: 40
County: West Yorkshire Area: NM Postcode: HD2 8BE MailCode: 1 Country:	Last contact: 22/7/2003 Next contact: 15/11/2007 Sales Rep.: Peter Mulliner
Business: Auctioneer	Products of interest: DATABASE
Dear: Dr Scouler	How heard of products: Name:
Contacts history:	Tel: 01484 230707 Fax:
	Transferred to:

This is what the big format on the previous page looks like when it has some data in it. The multicoloured appearance is because we've chosen to use bold red text to indicate the words that have been marked for indexing: this is useful when you're entering data, so that you know what's indexed and what isn't (note that only the surnames of the contact and the sales representative are indexed), but it's not compulsory and you normally wouldn't use it when designing a format that's going to be printed out.

Name	Organisation	First contact	How heard & source	Ref.
H. Holdup	Simkin Personnel	1/7/2003	Word	32
E. Meyrick	McCracken & Moore	1/7/2003	Mailshot AW02	33
T. Smith	Pearce, Reynolds & White	1/7/2003	Mailshot AW02	34
Tony Riley	Knight & Mahony Electricals	1/7/2003	User	35
N. Friis	Danish Foods	1/7/2003	Advertisement JID 6/03	36
B. Pope	Chester Castle Library	1/7/2003	Dealer	37
B. Drummond, Esq	Drummond Gallery	1/7/2003	User Crown Arts	38
David King	Davenant Gallery	1/7/2003	User	39



On the left is an example of a barcoded label produced by a Cardbox format. A field in the record contains the number, and Cardbox draws the barcode automatically. You could use this in a library, with each label identifying one book. The record for the book would contain all its bibliographical details, plus its location and loan status. Given a suitable barcode reader and a bit of programming, you'd have the core of a library automation system.

The screenshot displays a detailed candidate profile for Jerry Fisher. The interface includes a toolbar at the top with various icons for navigation and actions. The main content area is divided into several sections:

- Header:** Candidate ID 148850, Title Mr, Dear Jerry, Born 19 67, Availability AV, and Name Jerry Fisher.
- Personal Information:** Address AD (3 Lily Walk, Moreton-in-Marsh, Gloucestershire, GL56 9QP), Telephone Nos. (HOME NH 01207 380102), and Work/Mobile numbers (W/K/M/W, MGB NM).
- Employment History:** Underwater constructor (Potter Engineering), Transport TR yes (Radius RA), and Previous Employment PS.
- Qualifications and Skills:** Updated 25/11/2002 CT, Experience EX, and Computer Systems CS (22/03/2004 M.J.D.S.).
- Administrative Fields:** Position PO, Staff SE, S/X, CV Received, SAL/RT SA, and Quails QU.
- CV Status:** Waitfor, DeferType, Resume, WORD, PERM CV, and CV Update.
- Notes and Dates:** Notes NO, PER/CONT PC, DATE DA (19/03/2004 Un), and SOURCE SO.
- Footer:** Last Edit 19/03/2004, UnknownID, and time 17:47.

Setting up pushbuttons and macros is a feature of the Professional Edition.

Finally, here is an epic format. This is the nerve centre of a recruitment agency that deals with over 25,000 candidates. Each record contains a candidate's details, CV, qualifications, references, and a complete history of every conversation, interview, and job offer. The designer has filled the format with pushbuttons for every conceivable purpose: making a note of a conversation, planning the date of the next contact, dialling a telephone number, offering a job. This format scrolls through many screens, and half a dozen different formats (also activated by pushbuttons) zoom in on different stages of the recruitment process. A vast array of standard letters covers CV updating, job offers, and interview results.

Native and alternative formats

The very first format you create for a Cardbox database is called the native format, and it's special.

Most formats tell Cardbox where to draw your fields, but before it can even do this, Cardbox needs to know something more fundamental – **what fields exist?**

The native format answers this question: if a field is in the native format, it exists in the database. If it isn't, it doesn't. Drawing a field in the native format causes it to exist in the database. Deleting a field from the native format destroys the field itself and all its data.

The native format also tells Cardbox more about each field:

- What it contains (text, images, or objects).
- How it is to be indexed (every word, nothing at all, or under user control).
- Its name.
- A short description.

Apart from this special role, the native format is a format like any other. In really simple databases the native format may be the only format you need.

Alternative formats

Any format other than the native format is called an alternative format. It can use any field that exists in the native format but it doesn't have to use them all and the fields don't have to be the same size or laid out in the same way. You can have as many alternative formats as you like.

For detailed information on how to set up alternate field views, see page 192.

Alternate field views

The normal way of viewing a field is as text. You type it in, and later on you look at it or print it out. But for fields that represent a restricted set of options, there are more graphical approaches that may be easier to use.

An alternate field view is like a filter that inserts itself between the text and what you actually see. Underneath it all, the field still contains ordinary text; but on the surface, what you see is a set of radio buttons or check boxes, or a drop-down list.

For data entry this is good because you don't have to type, you can just click. Because the field view does the typing for you, you can be sure that it doesn't make any spelling mistakes.

Not every format has to have the same view of the field. It's often a good idea to use an alternate view to make things easier for data entry but switch to ordinary text when it comes to summaries or printed reports.

The labels shown in the alternate views don't have to be identical to the real text of the underlying field. You can use long explanatory labels ("Business Insurance", "Company Accounts") in the view but short codes (such as INS and ACC) in the field text. When you display your data in summary form, the short codes will save space.

- Having labels different from the field text can also be good in a multinational context, because you can design formats in English, French, Spanish and so on, while still maintaining one consistent set of codes within the actual database.

Company Accounts
Business Insurance
Company Accounts
General
Pension Fund
Personal
Trusts

3.1 95 98 ME NT 2000 XP

Appearance

“Appearance” is shorthand for “font and colour and size and boldness and italics and underlining and line thickness and background” – in other words, everything that makes your text look the way it does.

For details of how to control appearance, see page 107.

Word processors give you infinite control over appearance and they will let you make every letter of every word a different colour if you really insist. Cardbox is less generous: appearance is assigned to fields, not to individual characters. The only variation within a field is that you can make indexed words look different from unindexed ones, and captions can look different again.

Appearances are assigned when you design your format. You can have one appearance for the format as a whole, and then, if you want, you can make exceptions for particular fields and other format items. Don't go overboard on this: a screen with every field in a different font will look a terrible mess.

Whatever the appearance that is stored in the format, you can override it when you are viewing it on the screen. You won't usually need to do this, but it's good for experimentation and, as one of our programmers discovered, it is useful if you're colour-blind and need to use a colour scheme that everyone else hates.

Indexing

To make searching faster, Cardbox creates an index of your database. That way, instead of having to look through every single record to find the ones you're looking for, Cardbox can look at the index and find what you want in a fraction of the time. The bigger the database, the bigger the benefit.

Indexing is something that all databases do to some extent, but here's how Cardbox is different:

- It can index every word, number, or date in a field.
- Within a single field, it can let you choose which words (or numbers, or dates) to index.

These are such obvious things to do that we don't understand why other databases don't do them. The benefits are clear: you don't have to twist names round to fit the way the computer wants them – "Public, John Q." – or even "John | Q | Public" in three separate fields. You don't have to have artificial fields (KEYWORD 1, KEYWORD 2, KEYWORD 3) or use sophisticated programming. You just mark the words you want to be indexed, and Cardbox indexes them.

For each field, you decide the indexing strategy when you design the field; although like everything else in Cardbox, you can go back and change your mind afterwards. The simplest indexing modes are All, which indexes everything in a field, and None, which indexes nothing. More interesting is Manual, which lets you mark individual words for indexing as you type them in (or you can go back and mark or unmark them later). There is also Auto, which is rather like Manual backwards: everything's indexed unless you tell Cardbox not to index it.

Marking indexed words

If you tell Cardbox to index everything in a field, or to index nothing, there's no real need for words to look different when they're marked for indexing. But if you do want to control indexing manually, then it helps if indexed words look different from unindexed ones. By default, Cardbox shows you indexed words in red and unindexed words in black, but if you don't like the piebald appearance this gives, you can change it. In printouts in particular, a consistent single colour makes more sense.

You can turn indexing on and off for a word by tapping the Ctrl key, or by right-clicking and using the pop-up menu. You can also use validators to control indexing. Validators look at what you have entered into a field, and make changes (such as indexing) based on what they see. Validators can implement stoplists (lists of common words not to be indexed) or they can do the exact opposite, indexing certain key words whenever they see them. They are especially useful if many different people are going to be entering records and they have different ideas about

See page 206. Setting up validators is a feature of the Professional Edition.

what ought to be indexed. A validator can automate the process of deciding what to index and keep the policy consistent.

Cardbox has two indexes

There are a couple of problems when it comes to indexing numbers, because numbers behave differently from words. This difference is especially significant when you are trying to search on ranges of values (“give me numbers between 30 and 40”) or when you sort records into alphabetical or numerical order. It’s easy to see the problem with a couple of simple examples. If you are looking for words between ANT and DOG in the alphabet, it’s obvious that BABY fits within the range. On the other hand, if you are looking for numbers between 100 and 400, it’s equally obvious that 3105 is far outside that range. In other words: when you compare words, you compare one letter at a time, but with numbers, the longer number is always bigger than the shorter one.

Cardbox handles this by having two separate indexes for every field. The word index handles words and is in alphabetical order, and the numeric index handles numbers (and dates) and is in numerical order.

ALBANIA	1
ARGENTINA	2
ARUBA	3
AUSTRALIA	8
AUSTRIA	2003.0128
BARBADOS	2003.0204
BELARUS	2003.0207
BELGIUM	2003.0213
BENIN	1370434
BOTSWANA	1370713
BULGARIA	1370996
CAMEROON	1371370
CANADA	1371486
CAPE VERDE	1372590
CHILE	1373771
CHINA	1373935

Cardbox chooses the index automatically when it looks at the term (word, number or date) to be indexed. When you are doing a search, Cardbox looks at the search term you’ve entered and deduces which index you want to search.

How Cardbox indexes

When Cardbox starts indexing text, it splits it into terms (words, numbers or dates). Terms are separated by spaces, so if you inadvertently type "SMITH,JONES" instead of "SMITH, JONES", it will end up being treated as a single term.

Older versions of Cardbox did this differently: see Help Point 552.

To decide whether a term is a word or a number, Cardbox looks through it. If it sees any alphabetic characters then it treats the term as a word: this means that 3M and 3RD both count as words.

Indexing words

If the word is a very long one (more than 64 characters long) Cardbox truncates it. It then goes through the word removing all non-alphabetic characters. It removes any accents from the letters and converts them to upper case: it also does useful things such as converting the German double-S 'ß' to 'SS'. This converted upper-case word is what actually goes into the index.

There are a couple of exceptions to the "remove non-alphabetic characters" rule. Underlines are treated as if they were a letter of the alphabet, and hyphens are treated specially. Hyphens divide a word, so that every piece of a hyphenated word is indexed as if it were a separate word – so 'fer-de-lance' is indexed as FER, DE, and LANCE – and then the whole word, without hyphens, is indexed again – FERDELANCE. This sounds a little eccentric but it is the best way of ensuring that the word can be found and that records containing it can also be sorted into the right order.

For more about collating sequences, see Help Point 533.

For specialised applications, you can change all these indexing rules by setting a specific collating sequence for the database. Collating sequences are an advanced feature and are part of the Professional Edition only, although all editions of Cardbox will understand and obey a database's collating sequence if one has been set.

Indexing numbers

When Cardbox indexes a number, it ignores non-numeric characters other than decimal points, slashes, and hyphens. Cardbox indexes numbers according to their value, which means that 3, 3.0 and 3.00 (etc) are all indexed identically. When you view the database index (for example, when previewing the results of a search you plan to make) Cardbox will show you the simplest possible form of the number, omitting any trailing zeroes.

Date formats and Cardbox

There are many different ways of writing dates. Even the sequence of the components varies: 'day, month, year', 'month, day, year' and 'year, month, day' are all used in different parts of the world. Because Cardbox databases can be international, Cardbox cannot deduce the date sequence from the location where you're using it. Instead, it looks at the way you typed the date: specifically, at the character that you used to separate the different parts of the date. Here is the 19th of April 1962:

Separator	Format	Example
/ (slash)	day/month/year	19/4/1962
- (hyphen)	month-day-year	4-19-1962
. (decimal point)	year.month.day	1962.4.19

- The day and the month can be one or two digits long: 04 is the same as 4.
- Cardbox identifies the date format by looking at the separator, so you cannot enter something like 4/19/1962 and expect Cardbox to handle it properly.

When Cardbox indexes a date, it reshuffles it into a number, in a standard format. All the date formats shown in the example above will be indexed as the same number, 1962.0419. This has the advantage that when records are sorted into numerical order, this will yield exactly the right date sequence as well.

As a result of the way that Cardbox indexes dates, when you are previewing an indexed search, the preview listing will show all your dates as numbers.

Years and centuries

If you have the Professional Edition, you can set up a validator that automatically reformats the dates you type in. See page 206.

You will have to decide on your own convention for the year. Either use 2-digit years throughout (62) or 4-digit years (1962). Now that the 20th century is over, you may choose to use 2-digit years to save typing (though not for dates of birth, obviously!). But you must be consistent, because Cardbox sees no resemblance at all between 04 and 2004 or between 68 (death of the emperor Nero) and 1968 (death of Martin Luther King).

Specialised date formats

See Help Point 522 for details of how these date and time formats work.

If days aren't interesting to you, you can use dates in 'month/year' or 'month-year' format: Cardbox will assume the day to be zero.

As well as dates, you can index times, either on their own ('hour.minute.second') or together with a date.

Validators

Only the Professional Edition of Cardbox is able to set up validators. Once they've been set up, any edition can use them.

Cardbox's great strength is that you don't need to declare your text fields as being of any particular type. Once you've drawn the field in your format, it will accept anything: numbers, dates, codes, long text, single letters. A field is a field is a field.

There are times, however, when you do want to restrict what is allowed to be put into a field. This is especially the case when more than one person is responsible for editing records, since the more people are involved, the harder it is to trust all of them to keep to the same conventions.

Validators can only be set up by the Professional Edition (its Advanced Features manual gives full details of the available validators and how to set them up), but once they have been set up, a database with validators can be used by anyone, so it's important for you to know what to expect.

See "Using Validators", page 152.

There are several different kinds of validators but they all behave in a similar way: they watch as you are editing a record, and as you move off each field, they check that field or make changes to it.

Validators that check things

Validators can check that an entry has been made in a particular field; they can check the types of terms that have been entered (word, number, date); they can control how many of them there are and how long each of them should be; they can even restrict entries to certain specific values.



If there is something wrong with a field, a warning button flashes in the toolbar, and if you try to save the record, a warning message pops up and asks you to correct the problem.

Validators that change things

Validators can automatically index or unindex words for you (thus enforcing stoplists or keyword lists) and they can also reformat dates so that the date format is consistent throughout the database.

Validators that type things

Validators can automatically type text into a field for you. You can use this to put codes in automatically (for example, the user's initials) or to create timestamps to say when a record has been created or edited.

Images

Not everything you want to store in a database is necessarily text. There are also photographs, drawings, and scanned documents. Because they have so much in common we lump them together in Cardbox as one thing: “images”.

An image is anything that can be displayed on the screen or printed on a printer. It comes into Cardbox from a camera or a scanner or simply by being imported from an image file in any of the standard formats (BMP, JPEG, GIF, TIFF). Cardbox stores images in an image field: you can only have one image field in a format but that field can hold as many images as you like, so if you want to scan an 80-page document into Cardbox then that’s not a problem.

The one thing Cardbox can’t do with images is search inside them. If you want to find a picture of a clown with green hair, you can’t expect Cardbox to look inside each image to find a likely-looking patch of green. On the other hand, there’s nothing to stop you having a text field that describes in words what the image contains and then indexing it. In that case searching for CLOWN GREEN HAIR will probably find what you’re looking for.

Images can be pretty large lumps of data – a picture takes as much space as ten thousand words – so Cardbox compresses them to save disk space. There are two levels of compression, a light one which preserves image quality and a heavier one which makes the image look less good but saves a lot of space. You can choose which level to use each time you import an image into Cardbox.

Only the Professional Edition of Cardbox is able to set up object fields.

OLE is a Microsoft term. It stands for "Object Linking and Embedding"

Objects

Not everything you want to store in a database is necessarily text. We've covered images already. Images are just a set of passive pixels, but objects are altogether more dynamic. Here are some examples of objects:

- Microsoft Word documents.
- Microsoft Excel spreadsheets.
- MP3 sound recordings.
- Video clips.
- Adobe Photoshop images.

These things all have one thing in common: they belong to other programs. Cardbox doesn't know what to do with Word documents, Excel spreadsheets, or Photoshop images: Word, Excel, and Photoshop do. The core of OLE is that these objects can live inside Cardbox but work where they are understood. An embedded object doesn't need to exist in an ordinary file, it lives entirely inside the Cardbox database.

Here are a couple of examples:

- A firm of investment analysts indexes company accounting information. Cardbox gives the main information about the company, but the accounts themselves are stored in Excel spreadsheets that are embedded in each company's Cardbox record.
- We maintain a daybook database that contains all our incoming and outgoing correspondence. Incoming letters are scanned into an image field, but we can store outgoing letters, as Word documents, in an object field: this means we can not only read the letters we write but reuse them in other circumstances. We could even put the daybook on our Internet server and access it from anywhere in the world.

Some warnings

OLE is a way of linking programs with other programs. We didn't write those other programs and we can't guarantee how well they will work with embedded objects. If they don't work well, it's not our fault. Try out the actual software before you embark on any big projects.

An OLE object is useless without a program that understands how to make it work. This is an important thing to remember on a network. You may store an Excel spreadsheet inside your Cardbox record, but if you view it from a computer that doesn't have Excel, you will be able to see the record but you won't be able to open the spreadsheet. Make sure that everyone who should be able to open your objects has software that will let them do so.

User profiles

Only the Professional Edition is able to set up user profiles, but any edition of Cardbox can use them once they have been set up.

See “Passwords and User Profiles”, p.253.

Your copy of Cardbox lets you do anything you like to the databases you create. This is only fair, since it's your copy of Cardbox and your data.

But as soon as someone else is involved – if you're using their data or they're using yours – it is better to be a little less trusting. You may be able to redesign your formats, edit records, delete records, and so on, but it doesn't follow that everyone else should be able to do the same. Moreover, you may have confidential information that you only want some people to be able to see, while less privileged users only see selected portions of your data.

The setting up of profiles is an advanced feature of the Professional Edition, but you may very well find yourself on the receiving end of a user profile system when you open a database that someone else has created, on a network or on the Internet, so here is what to expect.

- A user profile has a name and, optionally, a password.
- For each field, the profile defines whether you are allowed to edit its contents or indeed whether you're allowed to see it at all.
- The profile does the same thing for formats, so you may only be allowed to see and use a small number of formats. Even the native format may be invisible to you.
- The profile can control the commands you are allowed to use. In a public database it'll probably stop you from making any changes at all, and it may even stop you from printing anything out. In a corporate database it may let you add records but not edit or delete them, or add and edit records but not edit formats. There are a wide range of possibilities, but it is always easy to tell what is happening because any commands that you are not allowed to use will be disabled in your menus and on your toolbar.

How all this affects you depends very much on how the database owner has set things up. It is possible to create profiles that don't need a password, so you may not notice anything at all (except that some commands aren't available) or you may find that you're asked for a password even before you can get into the database.

If you are more privileged than ordinary users of the database, the database owner may give you the name and password of a different user profile: in that case you can use the command **File > User Profile** to switch to the chosen profile. You'll normally have to enter the password every time you open Cardbox and it tries to reopen the database for you, but you can make your workspace remember your passwords for you: for how to do this, and the security implications, see page 63.

Networking

You can happily spend all your time creating and using your own databases on your own computer and not bothering about anyone else. If that's the case then you can skip the rest of this section; but if you use shared databases on a corporate network or public databases on the Internet, read on.

When someone wants a Cardbox database to be accessible to several people, he sets up a copy of the Cardbox Server and tell it what databases to share. The Cardbox Server is a separate product with a separate manual, so we won't cover it further in this book.

If you look closely at the Open File box, you'll see that it has two tabs. The My Computer tab lets you open databases on your own computer, and the Server tab lets you open databases on other computers: to open a database, you need to know the name of the server and the name of the database. In a corporate network, your system administrator will tell you the name of your server (indeed, it may be in your list already) and if you're opening an Internet database, the owner's web site will tell you the server name. For some more information, see "Opening Databases", p.57.

And that's really all you need to know. Everything else behaves just as it does when you're using your own databases. Cardbox coordinates everything. If someone else changes a record and saves it while you're looking at it, it'll change on your screen as well. If two people try to edit a record at the same time, Cardbox lets one of them do it and tells the other to try again later.

The Cardbox web site tells you more about the Cardbox Server and how to get hold of it. The Cardbox Server comes with a separate manual that gives you detailed information about setting up the server and sharing databases.

Unicode

Here are all the characters that you can type into your computer using the standard Windows character set:

! " # \$ % & ' () * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < =
 > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
 [\] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w
 x y z { | } ~ € , f " ... † ‡ ^ % Š < Œ Ž ' ' " " • - - ~ ™
 š > œ ž Ÿ i ç £ ¤ ¥ ¦ § ¨ © ª « ¬ - ® ¯ ° ± ² ³ ´ µ ¶ ·
 ¸ ¹ º » ¼ ½ ¾ ¿ À Á Â Ã Ä Å Æ Ç È É Ê Ë Ì Í Î Ï Ð Ñ Ò Ó Ô
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 ò ó ô õ ö ÷ ø ù ú û ü ý þ ÿ

See Help Point 544 for how to set up a Cardbox database in Unicode.

This is adequate for most Western European languages but not for the rest of the world. The computer industry has designed a new standard, Unicode, to allow you to type any character from any language in the world. Cardbox supports version 3.2 of Unicode.

The characters that Cardbox supports

If you really need Cardbox to support a right-to-left or complex script, please let us know.

At present, Cardbox can display characters from any script that is written from left to right and is not a “complex” script (complex scripts are ones where the letters change shape depending on the adjacent letters in the word, as in the Devanagari scripts of India). Cardbox may have got better at displaying other scripts by the time you read this: check Help Point 553 or our web site for details. Some samples of scripts that Cardbox can handle are shown in the margins of this page.

Displaying and printing Unicode

For more about fonts, see Help Point 545.

Not all fonts contain all characters, and this can be a problem if you use Unicode. It is one thing to be able to type classical Greek and quite another to find a font to see it in. Windows XP contains technology that should help with this – it claims to be able to “borrow” missing characters from similar-looking fonts – but you should check on the availability of the fonts you need before embarking on a big project. As a simple test, try typing the characters you want into Wordpad: if they come out right, then Cardbox will be able to display them too.

Wędzony łosoś

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The Arial Unicode MS font, supplied with many Microsoft Office products, includes practically all Unicode characters, so if you have font problems it may be worth installing it on your system.

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