

THE CRACKER USER'S MANUAL

PROGRAM & DOCUMENTATION

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SOFTWARE TECHNOLOGY LIMITED

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INTRODUCTION

WHAT IS THE CRACKER?

THE CRACKER is at heart a spreadsheet program. A spreadsheet is the general name given to those utilities that lay out data, primarily numeric, in rows of lines and columns, similar to a balance sheet or calculation sheet written out on paper.

In the same way that a word processor program offers considerable advantages in terms of power and flexibility over a typewriter, so a spreadsheet can provide you with all sorts of useful and time saving features not available on a balance sheet. A spreadsheet will also allow you to work on a matrix far larger than could be managed on a simple paper display.

THE CRACKER and the computer that runs it are just tools designed to make life easier for you, and to make the tasks you find difficult or repetitive more enjoyable. Although it may at first seem that there is a lot to learn, you will find that THE CRACKER is just as happy multiplying 2*2 as it is solving complex engineering calculations. You should not be daunted by the size of the manual - THE CRACKER contains some very sophisticated features that allow extremely complex tasks to be tackled with ease. The information has been laid out so that you can quickly and easily find just those features that you require to use and ignore the rest. However, we recommend that you familiarize yourself with all the options available to discover the many inbuilt shortcuts designed to make life easier.

As well as providing all of the traditional features that you would expect from a spreadsheet program, THE CRACKER has been extended in many ways to give you completely flexible control over your everyday data handling and calculation problems. You will find that THE CRACKER can often be used instead of having to buy additional dedicated programs.

No programming language will have to be learnt in order to use THE CRACKER, although for greater flexibility it incorporates some looping features found in high level languages. It will allow you to do most day to day calculations, book keeping and accounts right up to complex scientific equations. The graphics features allow you to produce many different options of graph and chart display which can be sent to a printer or graphics screen (if supported). Simple database-like functions are provided for sorting and searching the data; Input/output functions can control peripherals or external equipment; date and time functions can be built into the sheets and incorporated into the decision making and machinery control.

You will also find that THE CRACKER is one of the most 'intelligent' programs available. Most computer utilities waste an enormous amount of their potential working time just sitting around waiting for the user to decide what has to be done next. You will find that THE

THE CRACKER Introduction
What is THE CRACKER?

CRACKER works much harder than that. For example, any commands or data that you enter are checked for mistakes as you type rather than at the end of a line, or even worse when the program attempts to do a calculation based on the entry. The result is that there is absolutely no ambiguity about where the error lies.

This error handling extends far beyond a simple check of whether the entry is valid in terms of what commands and entries the program will understand. THE CRACKER will also attempt to see whether the entry makes sense in terms of the whole sheet as it is currently set up. For example in most spreadsheets it is important to avoid a forward reference when entering data in a formula e.g. it is usually impossible to enter a calculation in row A, line 1 that reads 2*B2. You will understand that you want the value in B2 to be worked out BEFORE that in A1 or it doesn't make sense, but most programs will attempt to do it the other way around. THE CRACKER works out an 'Order of Recalculation' number for each item as it is entered which ensures that the logical results that you intended are preserved without any need to re-organise the arrangement of the rows and columns in the sheet.

These features often mean that people familiar with other spreadsheet programs find that many of the restrictions they have been accustomed to, simply do not exist.

This manual has been divided into logical sections designed to make it as useful as possible for both novices and more experienced users alike.

Section One is a Getting Started guide giving information on the way THE CRACKER should be configured on your machine together with details of various fundamental aspects of the program such as which keys can be used. It should be read by every new user of THE CRACKER.

Section Two is a comprehensive tutorial guide aimed at new users of the program, consequently not all aspects of the program are detailed. You are taken step by step through the various procedures involved in creating a new spreadsheet and entering and manipulating data, with examples of use given. The early chapters in this section are important as they familiarise you with the way that the program operates and handles data, but certain of the later chapters can be omitted if the lessons within are not of interest.

Section Three gives a quick overview of the various features provided by THE CRACKER and the ways in which they relate to each other. It is, in essence, a summary of the tutorial section and should be read either as a recap of the tutorial or by people who have not used this particular program before but have had previous experience of computing and spreadsheets. If you find some of the subjects hard to follow you should refer back to the tutorial section.

Section Four is designed as a Quickstart and reference guide for those who have had some experience in the use of THE CRACKER, or similar products, and who wish to find details of some commonly used options in a hurry. Page references are given, showing where more information on each section can be found. It is recommended that beginners use this only as a reference guide and supplement to the main index.

Section Five is THE CRACKER Complete Command Reference where full details of every command and feature are laid out in alphabetical order. This will probably be the most frequently consulted area of the book for those more experienced users who are aware of the program's capabilities and who wish to exploit more sophisticated routines.

A full alphabetical index is available at the end of the manual, together with appendices detailing the error messages and the use of THE CRACKER on certain specific systems. Consult the TYPE.ME file, if present on the disk, for the latest details on use of THE CRACKER. Use the DOS system command TYPE to inspect this file i.e.

A>TYPE TYPE.ME

Whilst we can teach you the various features of THE CRACKER it is not possible to give advice on all the many possible uses to which it can be put.

GETTING STARTED

SETTING THE CRACKER UP ON YOUR COMPUTER SYSTEM

THE CRACKER is available for a range of different microcomputers with different Disc Operating Systems (DOS). The DOS is a sort of master program that has overall control of the computer and which organizes the running of applications such as THE CRACKER. Your program may be running on PC-DOS, MSDOS, CP/M, MP/M or even Concurrent CP/M. In almost every respect Cracker will behave exactly the same no matter which DOS you use.

You need have no understanding of the workings of the DOS to use Cracker once it is up and running. However, on some machines you will have to be able to understand how to BOOT the DOS in from disk (start it running), and it is probable that you will also need to know how to use the DOS to handle the copying and renaming of data files.

You are strongly advised to prepare a backup version of your Cracker program disk and to keep the original in a safe place in case of accidents.

If you are in doubt about such operations then you should consult either your particular machine's manual or the dealer who sold you your computer. Genuine problems that arise during the use of THE CRACKER and which cannot be solved by reading this manual should be referred to your supplier or the author. We cannot, however, undertake to offer solutions to problems regarding the use of your computer system.

Details and advice on using THE CRACKER with some specific computer systems are given in the appendix.

Installation of THE CRACKER

In many cases you should find that THE CRACKER can be bought in a form that is already installed to work on your computer system. If not, you should find that there is a program called INSTALL supplied on the disk. By running this (simply type INSTALL at the DOS prompt with THE CRACKER disk in drive A) eg:

A>INSTALL

you will then be asked a series of questions about your computer which will tell THE CRACKER which machine it is working on and which internal adaptations to make.

Creating a work disk.

In order to function properly the program will need access to these files on the work disk:

- 8 bit computers CRACKER.COM
 CRACKER.OVR
- 16 bit computers CRACKER.COM (or CRACKER.OMD or CRACKER.EXE)

(8 and 16 bit are computer jargon terms that refer to the power of the internal microprocessor chip. If in doubt just look to see what files are present on your program disk.)

You will find that a file called CRACKER.HELP is also supplied. This file is not necessary to the running of THE CRACKER but you will need to have it on your program disk if you require help messages whilst you are using the program.

On 8 bit systems you will not need to have access to the file CRACKER.COM once the program has loaded UNLESS you are going to use the graphics facilities.

It is difficult to give definite advice on the best arrangement of program and data files for all systems, as this depends on the number of disc drives, the disc capacity, the computer's free memory, your intended use of the program etc. In general, however, on computers with two or more disc drives it is sensible to use THE CRACKER work disk in drive A and a data-only disk in drive B.

On 8-bit computers with one disc drive you will need to have at least CRACKER.OVR present on each disk that you use.

On computers that have a RAM disk you can transfer at least the CRACKER.OVR file into memory so that it can be accessed much more quickly and the program runs without interruption. You can then use the disc drive(s) for data discs. A specific example for Amstrad PCW computers will be found in the appendix.

Cracker data files

To help with the preparation and safeguard of working disks here is a brief summary of the way in which THE CRACKER handles data files. The information presented here will be covered in more detail in later sections of the manual and is not intended as a substitute for reading those. See also the Copy Command in the Complete Command Reference.

THE CRACKER can only read or write files with the following filetype extensions:

- .MEM
- .DAT
- .DIF
- .TXT

As you will see later, THE CRACKER treats each of these files in slightly different ways and sometimes expects the information in them to conform to certain types.

Any file that is saved with the same name as an existing file on the disk will cause the original to be renamed with the extension .BAC. If you then decide you want to re-access the data held within this backup, you will have to rename the file in such a way that it has the appropriate Cracker filename extension. If a third file is re-saved with the same name the second becomes the BACKUP file and the original is erased completely.

There are two ways of quitting THE CRACKER (other than resetting the computer). You can use the inbuilt Q for quit option which will automatically save your data in an emergency file called SECURITY.MEM. To guarantee the safety of your data whenever you have taken this option, you must remember to rename this file before you create another SECURITY.MEM on the same disk. This can be done either directly or by re-loading it into THE CRACKER and then re-saving it using a different name.

There is also an option to exit from Cracker and make an immediate return to the control of the DOS by pressing CTRL-C. Use this option with care as no security back up of your data will be made.

If a request is made to see the disk directory whilst THE CRACKER is running, only those files with recognized filename extensions or .BAC files are displayed. Files can be renamed directly from within THE CRACKER; Different User Number directories or sub directories can be accessed as well, depending on which DOS you are using.

If you are using Cracker to handle important data you MUST learn to be sensible with the discs that you use. To safeguard against the accidental loss of your work you should always save the data at frequent intervals, if necessary using a temporary filename. To do so use the Copy All to File command.

At the end of each work session it is advisable to make copies of your current data files on two separate discs, in case one becomes lost or damaged. Strong magnetic fields, power surges, coffee cups and fingerprints are all sufficient to corrupt a disc.

On those DOS systems that support Passwords you can add these from within Cracker by saving the data with a further eight letters preceded by the ':' symbol.

For example one such filename may be saved and loaded as

MYDATA.MEM;SECRET

The password extension will not be displayed in the disk directory but you must provide it in the format above before you can read, erase or rename any of the files. It is important to remember or make a note of any such password.

SOME POINTS ON USING THE CRACKER

Arrange THE CRACKER program and data discs in the way that suits your system best. Put the disc with CRACKER.COM in the current drive and type CRACKER<return>.

After a moment or two you should see a screen like this.

```
Next: Copy, Insert, Which files, Auto., Quit          65519
                                                Auto.

Press ? for HELP anytime

THE CRACKER
Copyright 1984-1986
I.W. Searle
All Rights Reserved
MSDOS
86-100000 V2.33
```

Don't do anything yet, but note that the only logical options open to you at this stage would be to load in an existing worksheet or to start a new one from scratch.

Towards the top of the screen you will see some words beginning 'Copy...'. These are a list of all the available commands at this stage.

The command you want if you are starting a new file is I for 'Insert'.

To load in an existing file type CF for 'Copy a File'.

To get a disc directory type W for 'Which files'.

If you type ? you will be provided with some extra help.

```

E23
54893
Auto.

(1)
Gen ABCDFGHIJKLMNOPQRSTUVWXYZ:~\./>.(/* arrows
Next:

PRIMARY COMMANDS

A Automatic calculation on/off
B Blank an area of worksheet
C Copy command (to Load & Save)
D Down cursor movement
E Edit the current cell
F Format set and make an entry
G Get or search for a string
H Insert lines or columns
I Jump to cell or across sheet
J Left cursor movement
K Move an area of worksheet
L New, change formats or width
M Out, set up the printer
N Partition screen into windows
O Quit the program
P Right cursor movement
Q Sort the lines

T Trace graph to screen or printer
U Up cursor movement
V Verify sheet or recalculate
W Which files, directory, utilities
X exchange rules(formulae)/results
Z Zap (delete) an area of worksheet
: Force a recalculation
+ Move screen down a page
- Move screen up a page
) or ; Move up or down a window
/ Move left or right a window
> Make entry with column format
> As above
( Expression entry, global format
) or * Text entry, global format
* Macro command
arrows Cell cursor movement
    
```

Type w now to get a list of all the demo files that are supplied on your program disk.

```

65519
Auto.

Next: UTILITIES
> .
> .
C: CRACKER SAMPLE1 BAC
> .
> .
IRR MEM
TAX MEM
SALES MEM
ADLIST MEM
TBEM MEM
PLOT2 MEM
PLOT1 MEM
SECURITYMEM
SAMPLE1 MEM
BUMMER MEM
SAVE1 MEM
SALES TXI
TABLE2 TXI
TAX TXI
EXAMPLE LAI
SECURITYBAC
PLOT BAC
    
```

RUNNING THE DEMONSTRATION WORKSHEETS PROVIDED

On the distribution disc you get THE CRACKER together with five example worksheets. These are the files with the extension .MEM.

You can select the file you wish to run by specifying the name when you first load THE CRACKER. Look at SALES.MEM, for example, by just typing:

A>CRACKER SALES

SALES.MEM is a sample commission calculation showing results based on a stepping scale and a sliding scale.

TAX.MEM is an example tax calculation for the self employed. This uses the function POS specially created for tax calculations, which has no effect if the argument is positive but gives a value of zero if the argument is negative.

TBEM.MEM shows how an engineer might work out the properties of a T-beam. With routines like this whole books of formulae and tabulated results can be dispensed with.

IRR.MEM shows how to work out the internal rate of return. The program in this case actively searches for an answer as this is the only way this problem can be solved. This worksheet uses DO and WHILE and several other useful functions. You won't be able to prepare this type of worksheet until you are quite experienced but it does show the level of sophistication to which you can go.

PLOT1.MEM and PLOT2.MEM are worksheets set up for graphics. See the TRACE command notes for details of how to use the graphics.

Also included are the two programs needed to convert files to and from the popular business database program DBASEII, these are MEMDBF.COM and DBFMEM.COM. DBF.DOC tells you how to use these programs.

WORDS

Before we can go on to discuss the finer features of THE CRACKER we must first deal with some matters of terminology. The spreadsheet is like an enormous piece of paper divided into a grid by vertical COLUMNS and horizontal rows or LINES. By convention the lines are numbered down the page from 1 and the columns are labelled alphabetically from left to right starting with A to Z, followed by a, b, etc.. (Remember that when referring to a column within the range A-Z you must use the SHIFT key to get a capital letter for specifying the coordinates. If you forget to do this you will get unexpected results or an 'Out of Range' error message.)

The smallest unit of the worksheet is a CELL, produced at the crossing point of one line and one column. Each cell is referred to by its column and line coordinates. e.g. A1, B12 etc. The cell is where you enter each individual unit of your data, and each piece of data is known as an ENTRY. The entry can be of three types, text, numbers or a mathematical formula known as an EXPRESSION that resolves to a numerical value.

Since you are concerned with entering information into one cell at a time, the currently active position is shown on screen by a 'cell cursor' denoted by an angled bracket on either side of the cell (i.e. < >) or possibly by a different screen colour. Information about the current cell is displayed on top of the screen, as we shall see later.

The lines of the sheet are, again by convention, only one character deep. The columns can be DISPLAYED as any size up to a maximum of 24 characters with the boundaries displayed by upright bar characters '|'. In fact, the size of each cell is not limited by the size of the display, but can hold any length of data you wish to enter up to a maximum determined by the width of the entry line on the screen (even this restraint can be overcome by the use of the '|' key as we shall see later). If the display size is smaller than the length of the data then THE CRACKER displays as much of it as it can if it is text, or some warning characters if it is numeric, so that you are not misled by truncated figures - in either case no information is lost.

Any data, text or numeric, that will be used by the program in its calculations or other manipulations must by necessity be restricted by the maximum size of the entry. It is important to understand, however, that it is not restricted by the apparent size of the cell on the screen, which can be shortened down to only one character wide. THE CRACKER will display as much of the information held in that cell as is possible given the limitation of the display and of the display FORMAT (don't worry about what a Format is just now, it will be dealt with in more detail later). The true value of the data is used in all calculations regardless of the way it looks in the display.

As an exception to the above rule it is possible to specify that Text data should be spread over several cells to act as permanently visible comments on the data that is being displayed.

The worksheet itself can be many times larger than can fit on screen at any one time - in fact, up to a maximum of 52 columns by 255 lines. You will find that as you move the current cell cursor position your view of the sheet will move with it, changing the cells that are displayed. In computer terms, you have a 'scrolling window' onto the sheet.

As well as entries, columns and lines THE CRACKER is also able to manipulate specified BLOCKS of the worksheet. Consider a block as a rectangular area of the sheet which you define by giving the coordinate of the top left and then the bottom right corners. You will find this feature very useful to collect your information together and then rearrange it in any way you like. A defined block can even be as big as the whole sheet if you wish to duplicate all of your work to date.

The full list of the parts of the worksheet is:

- Entry a single cell containing data.
- Column a vertical band.
- Line a horizontal row.
- Block a rectangle from within the sheet.
- All the whole of the sheet.

You will see later that only a couple of THE CRACKER's commands, Blank and Copy, can work on all five options. You will always be reminded which options are available via prompts displayed on the screen.

SINGLE KEY COMMAND ENTRY

All commands that are available with THE CRACKER work on a system whereby you are provided with prompts to remind you of what is available, you then select the desired command by a one letter keypress based on a mnemonic of the full command name. You will find this a very convenient and easy method to use, but beware typing the command name in full or you may end up in some unexpected places. Don't worry if this happens - just press [ESC]ape and you will be back to something you recognize with no harm done.

Watch the prompt line while you are finding your feet to keep track of all the available choices, and use the help option for more detailed information.

DETAILS OF THE SCREEN.

To introduce you to the display here is a quick rundown of what the various pieces of information on the screen stand for. If you have not used a spreadsheet program before don't worry if you can't take it all in at once, just use this section for reference as you progress through the tutorial course.

SECTION PROPERTIES OF T BEAM		D17 64911 Auto.	
AXL	ABCEFGIJKLMNOPQRSTUVWXYZ+-\>/'* arrows	B	C
Next:			D
1	<SECTION PROPERTIES OF T BEAM >		
2	3 DATA INPUT SECTION		
4	Width of top	150	
5	Depth of top	15	
6	Overall depth	160	
7	Flange thickness	15	
8	WORK AREA		
9	Depth below table	85	
10	Area of table	2250	
11	Area below table	1275	
12	RESULTS		
13	Area of section	3525	
14	Depth of neutral axis	25.59	
15	'I'		'R'
16	xx direction	0.2844E+07	28.41
17	yy direction	0.4243E+07	34.63
			3822.81
			56369

The screen is divided into two main areas, the worksheet itself which takes up the majority of the bottom of the display, surmounted by a three line status area giving information on the state of the sheet. Note that the actual worksheet display is determined by the chosen column widths, the selected format and the result of calculations performed on any formulae that are entered into the cells.

Starting with the top line of the status area, on the leftmost side is a figure showing the coordinates of the currently active cell. This is followed by the contents line which displays what information was actually entered in the current cell, as opposed to the information that has been calculated and displayed in the worksheet area. On the right side of this line is the coordinate of the bottom right cell in the currently defined sheet - this gives you an indication of the size of the work area.

The second line begins with a one or two letter indication of the display format that is in operation on the current cell, next to this is the prompt line on which you are presented with a summary of all the keypress options available to you at that time. The prompt line that you will see on first loading THE CRACKER presents you with the options:

Copy, Insert, Which files, Auto., Quit

However, when you have made certain choices, such as creating a new sheet you will be presented with this line

ABCDEFGHIJLWNPQRSTUWXYZ!+->.<('* arrows

This line can be regarded as the central command panel for THE CRACKER. At this point there is almost every available option open to you, in fact there are so many that it is impossible for the prompt line to give any more help than to provide you with the single key mnemonics. If at any time you cannot remember what any letter or symbol stands for, then press the '?' key and THE CRACKER will provide you with a more detailed explanation of the available options, as long as the file Cracker.hlp is on the current program disk.

```

A1 65519
Gen Next:
ABCDEFGHIJLWNPQRSTUWXYZ!+->.<('* arrows
                                PRIMARY COMMANDS
A Automatic calculation on/off      T Trace graph to screen or printer
B Blank an area of worksheet        U Up cursor movement
C Copy command (to Load & Save)     V Verify sheet or recalculate
D Down cursor movement              W Which files, directory, utilities
E Edit the current cell              X exchange rules(formulae)/results
F Format set and make an entry        Z Zap (delete) an area of worksheet
G Get or search for a string         ! Force a recalculation
H Insert lines or columns            + Move screen down a page
I Jump to cell or across sheet       - Move screen up a page
J Left cursor movement              < or ; Move up or down a window
K Move an area of worksheet          > Move left or right a window
L New, change formats or width      / Make entry with column format
M Out, set up the printer            ( As above
N Partition screen into windows     ) Expression entry, global format
O Quit the program                  * Text entry, global format
P Right cursor movement              . Macro command
S Sort the lines                    * arrows Cell cursor movement

```

On the right of the line is a figure representing the number of bytes of available memory left in your current sheet. THE CRACKER will keep track of this and will not let you lose your work if all the memory is used up.

The last line of the status area begins with the prompt 'Next:' followed by the entry line. The entry line displays the commands or data that you are currently typing into the sheet. In the case of the commands each single keypress is expanded into the full command word, or words, that it represents.

If the message AUTO appears at the end of the line then Automatic calculation is selected. This facility is detailed later.

A flashing character cursor (the cue) shows your current position on the entry line.

There is a second type of worksheet display that you can toggle on or off with the command X for exchange. In this case each cell shows the information that was entered directly into it irrespective of the result of any calculations or of the selected display formats. This is particularly useful for viewing formulae that have been entered as opposed to their results. It may be necessary to make adjustments to the column widths to be able to view all of the data or formulae that has been entered.

THE CRACKER Getting Started Alternative keys

ALTERNATIVE KEYS

It is unfortunately common for different computer manufacturers to give their machines different key arrangements. Usually we can rely on certain keys that are almost always provided and the bulk of this manual will be written as if these keys are present on every machine. Possible exceptions to the normal key arrangement are detailed here.

On some machines you may be able to use a backspace key to duplicate, or substitute for, the [DEL] key. On some machines the [DEL] key or keys can be made to work in two directions on screen, from right to left or from left to right. Wherever [DEL] is mentioned in this manual it should be taken to represent 'Delete from right to left'.

Some machines do not provide a cursor key cluster and it is common for programs to allow an alternative diamond shaped cluster of alphanumeric keys to be used in their place. This is the case with THE CRACKER which uses a combination of the Control and WADX keys to move the current cursor location.

The keys L,R,U,D can also be used to move around the sheet acting as mnemonics for the commands Left, Right, Up and Down. These have the additional advantage that they can easily be incorporated into a command Macro. As will be seen later these keys occasionally have a slightly different effect compared to the diamond cursor movement cluster or arrow keys in order to avoid ambiguity between the backspace key (see above) and the left arrow key.

THE CURSOR

U, up arrow,	CTRL-W	cursor up
D, down arrow,	CTRL-Z	cursor down
L, left arrow,	CTRL-A	cursor left
R, right arrow,	CTRL-D	cursor right
+		down one page.
-		cursor up one page.
J (cell coordinate)		cursor to specified cell

Other variations worthy of note are the use of an [ALT] key to substitute for the Control key and the use of [EXIT] to represent [ESC]. Both of these alternative key legends are found on the Amstrad PCW series.

If the single quote ' key is not directly available to you on your keyboard you can use the double quote " as an alternative. Similarly you can use a ';' semicolon instead of a '\' backslash.

THE CRACKER Getting Started The Keyboard

THE KEYBOARD

Again for reference purposes here is a rundown of some of the keys you will be using most often. Don't worry about trying to remember it all first time, practice will make them familiar.

You probably know about upper and lower case characters - you hold down a shift key while typing a letter to get the upper case capital form. You may not know that there is a second form of shift key which is marked CTRL for control. This is held down in the same way as the shift while a letter is typed. CTRL-H means hold down the CTRL and type the letter following the dash (in this case 'H').

The [ESC] or escape key is well named and very important. It is used to let you exit without harm from any commands that you may have set into motion and then regretted. You are returned back to the main primary command prompts ABC etc..

Most of the alphanumeric keys will be used at one time or another to represent various choices for the single-key-entry commands.

It is possible to enter commands faster than THE CRACKER can process them, but THE CRACKER has a built in type ahead facility which stores these commands until they can be processed. If the type ahead buffer becomes full, then you will hear a beep and the character you typed will be ignored.

HOW TO GET HELP

If at any time you find that you do not recognize or cannot remember the prompts that are displayed on the screen, entering the '?' character will call up explanatory text, provided that the CRACKER.HELP file is present on your program disc. Exceptions are when entering text or while actually editing a cell.

Press any key other than [ESC]ape to return to the situation before calling the help screen. Pressing [ESC]ape will return you to the primary command options.

WHAT TO DO WHEN YOU MAKE A MISTAKE

You will always know when you have made a mistake because THE CRACKER will give you a beep and an explanation of your error. THE CRACKER will make sure that whatever mistake you make it will do no harm to your work. Just press the [DEL] key to back up the cue to the place before your mistake. If your normal backspace key works then use it wherever the [DEL] key is mentioned. THE CRACKER usually checks for a mistake as each key is pressed and so you will rarely have to make long corrections. If you change your mind about an entry and want to abandon what you are doing just press the [ESC] key. This will stop the current entry and return the worksheet to the exact state before you started the entry.

Unfortunately, THE CRACKER cannot catch mistakes in your logic that are still legal commands.

LEAVING THE CRACKER

If at any time you want to leave the worksheet you can use the QUIT COMMAND. Type <Q> and your work will automatically be saved up to this point in a file called SECURITY.MEM. This file is automatically updated and overwritten every time you use the QUIT COMMAND. This is an EMERGENCY ONLY save of your work and normally you should copy all your work to file with your own choice of name.

SAVING YOUR WORKSHEETS

IT IS ESSENTIAL that you make very regular back ups of your work. Every half hour would be a good idea and so if the worst happens it will only take you half an hour to recover the situation. Keep asking yourself how you would feel if there was a sudden power failure, your equipment failed, or (heaven forbid) there was a bug in THE CRACKER that you happened to stumble across.

All you need to do is type CAPname<R> which means Copy All to filename "name" - the <R> means the Return key. You should choose your own filename which can be a single letter.

If you receive the message 'Disc full' don't panic - you have two possible options. First of all, you can use the Which Files option to erase some unwanted files from the disc. Alternatively, if there are no files that you can afford to lose, you can change the disc in the drive and attempt the save again.

THE CRACKER TUTORIAL

I. BASIC TECHNIQUES

CREATING A WORKSHEET

This is the picture you will have on your screen after first loading THE CRACKER.

```

Next: Copy, Insert, Which files, Auto., Quit
      Press ? for HELP anytime

      65519
      Auto.

      THE CRACKER
      Copyright 1984-1986
      I. W. Searle
      All Rights Reserved
      MSDOS
      86-100000 V2.33
  
```

Initially no sheet exists, so you will have to build one up as required. A full explanation of the following steps will be given later but for now just follow the directions.

The first command you will be using is I for Insert. Type the following sequence I<20><R><R> and as you type note that each letter is shorthand for a full word and that the program prompts you with all the available choices at every stage. Wherever possible, the commands will be given their full names on the prompt line but when there are too many options available then abbreviations will have to be used.

```

Next: Insert column, width 20
      Press ? for HELP anytime

      65519
      Auto.
  
```

THE CRACKER TUTORIAL I Creating a Worksheet

The <R> is only one keystroke and is shorthand for the RETURN or ENTER key.

The C in the above sequence stands for Column and the 20 tells THE CRACKER the width that you want this column to be. The 0-9 on the prompt line at this stage means that a numeral may be entered. Note that however big the number you want to enter the prompt remains at 0-9 because it only refers to the next character you are going to enter.

You will see from the prompt line that the G stands for General Format but don't worry too much about what that means just now. (The format is simply the system by which THE CRACKER decides how it is going to display the data, and the General format is a simple all-purpose display type similar to that which you would see on a calculator.)

```

Next: Default Format to be General
      Press ? for HELP anytime

      65519
      Auto.
  
```

The single key-stroke sequence used by THE CRACKER to symbolize each of the available commands should be extremely convenient to use, but you must remember not to try to type the commands in full or some unexpected effects or error messages may appear. A similar form of prompting is used in a lot of computer programs, and is normally referred to as a menu (i.e. a list from which you make your selection).

Now type I10I<R><R>. This stands for Insert 10 Lines (i.e. make the worksheet ten lines deep). The screens you will see are:

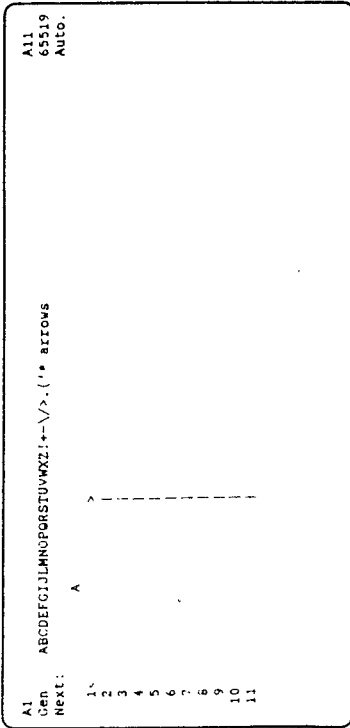
```

A1
Gen
Next: Insert 10 lines
      I<
      A
      <R>
  
```

```

A1
Gen
Next: Destination
      I<
      A
      End, Up, Down, Left, Right, arrows, Jump, <R>
  
```

After pressing <R> when prompted for the Destination you will see this.



The active cell is the cell that is ready for you to enter data into it. Try this now quickly by pressing the '.' key which signals to THE CRACKER that you want to type in some information. Type a few figures followed by <R> and you will see your data appear in the active cell.

Practice with the commands you have learnt so far - you can't do any harm to the program by experimenting.

If you have had enough for one session use the CTRL-C or QUIT options to leave the sheet.

Unless you particularly want a copy of the work you have done so far, there is no advantage in using QUIT, but it is probably a sensible habit to get into.

These commands have been used to define the width and depth of the worksheet, in this case one column of 20 characters and ten lines deep, and you now have created enough room to begin experimenting. Incidentally, you are always free to extend the worksheet any time that you wish.

If you make a mistake, just press the [DEL] key and you will go back to the stage before your error. If you want to abandon the sequence entirely press the [ESC] key and you will be returned to the opening menus. No harm will be done.

The numbers that you now see running down the screen are the worksheet line numbers and the A above them is the worksheet column letter. By defining the number of columns across and the number of rows down we have divided the sheet into a grid. Each individual unit of this grid is called a Cell.

The cell cursor is usually shown as a pair of angled brackets < > but on your screen it may be different. This cell cursor marks the current active cell which is where many of the commands you type in will take effect.

Each cell has a name, or coordinate reference, which you get by combining the column letter and the line number. At the moment, the cursor is in column A and line 1 so the coordinate reference is A1; as this is the active cell, you will see this coordinate displayed at the top left of the screen.

Type <R> for destination

```

A1      All
Gen     65519
Next:  Destination      End, Up, Down, Left, Right, arrows, Jump, <R>
      A
1<
2
3
4
5
6
7
8
9
10
11

```

Each new column you create will have its own default format, i.e. every single cell in the column is regarded as holding the same type of data (numbers or text), that is to be displayed in the same way, unless you specify otherwise. You will learn about formats later, for now in response to the 'Format?' prompt type G<R> for General:

```

A1      All
Gen     65519
Next:  Default Format to be General      <R>
      A
1<
2
3
4
5
6
7
8
9
10
11

```

Next try entering some extra lines with ISL<R><R> for Insert 5 Lines, destination above the cursor. You will see:

```

B1      B11
Gen     65519
Next:  Insert 5 lines      <R>
      A
1
2
3
4
5
6
7
8
9
10
11

```

INSERTING AND DELETING ROWS AND COLUMNS.

Now that you have had your first experience at using the sheet, it is time to look more closely at the commands used for creating and deleting parts of a spreadsheet.

As you have seen, we cannot enter data into a sheet until we have first told THE CRACKER to create one. Each sheet is built up by inserting a number of rows and columns to define the desired grid size, it follows from this that every sheet we create will be rectangular in shape.

Having defined a sheet of a certain size it is also important to be able to remove unwanted parts of the grid. For this we use the Zap command.

The Insert and delete (Zap) commands act on rows or columns, either one at a time or in groups. You can also clear anything you have done so far with ZA<R>Y<R> i.e. 'Zap All'. Note that THE CRACKER asks for confirmation before proceeding with this possibly disastrous command. For now just answer 'N' for No.

```

A1      All
Gen     65519
Next:  Zap (delete) all - Confirm N      <R>
      A
1<
2
3
4
5
6
7
8
9
10
11

```

Now type IC10<R> for 'Insert Column of width 10':

```

A1      All
Gen     65519
Next:  Insert column , width 10      0-9, <R>
      A
1<
2
3
4
5
6
7
8
9
10
11

```


THE CRACKER TUTORIAL. 1
Destinations

A NOTE ON DESTINATIONS

When you are inserting any lines or columns you will be prompted with this range of options for the Destination:

End, Up, Down, Left, Right, arrows, Jump, <R>

Of these options UDLR, arrows and J all serve to move the current cursor position. When you have the cursor positioned where you want it in the sheet use the <R> key to make the insertion.

A new column will be inserted to the left of the column containing the cursor when <R> is pressed. A new line will be inserted above the line containing the cursor when <R> is pressed.

'E'nd is a special command that simply tells THE CRACKER to add a new line or column at the end borders of the current sheet i.e. columns are added to the right of the sheet, lines are added to the bottom.

When using the End option the cursor is positioned in the new line or column ready for the insertion of data.

MOVING AROUND THE SHEET

Try moving the cell cursor around the sheet you have created by typing D for Down. Note that active cell coordinate at the top changes as the cursor moves down. Move the cursor back up again with U for Up.

If you have more than one column inserted you can use the L and R keys to move the cursor Left and Right. Make your sheet larger now by typing I5C10<R>G<R><R> and practice using all of the possible movement keys summarized below.

- U, up arrow, CTRL-W Any of these move the cell cursor up one cell.
- D, down arrow, CTRL-Z These move the cell cursor down.
- L, left arrow, CTRL-A These move the cell cursor left.
- R, right arrow, CTRL-D Right movement of the cell cursor.
- + Moves the cell cursor down one page.
- Moves the cell cursor up one page.

If you have to move the cursor some distance you will find it easier to use the Jump command. This command goes directly to the coordinate that you specify. Type JBz<R> and you will see:

THE CRACKER TUTORIAL. 1
Inserting and Deleting Rows and Columns

As well as asking WHAT you want to add to the grid THE CRACKER also needs to know WHERE you want to put it so it prompts you for the Destination of the inserted lines.

```

A1      B16
Con      65519
Next:    Auto.

      A      B
1 <----->
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

```

If you just type <R> when asked for this destination, as we did in the examples they will be put in front of the cursor. Your only alternative at the stage when only one line exists is E<R> for End, in which case it will be put after the cursor. When you have a more complex sheet already defined, there will be more possible options and you can insert new lines into the middle of the ones already defined.

By inserting columns and rows in this way, you can build the worksheet up to a possible maximum of 52 columns and 255 lines. The actual limitation on size will be useable memory available on your computer system. THE CRACKER is designed to use absolutely the minimum memory and so only those cells which are occupied with data use any memory at all. You can, therefore, start with as big a sheet as you like and fill in the detail later.

You can use the Z for Zap command to reduce the sheet by column, by line or as a whole (i.e. a clean start) with the ALL option. You will get more information about these later.

Experiment with inserting some more columns. You will notice that they can be inserted on either side of the current column, using either the left or right arrow keys; other options are at the beginning and end of the sheet.

B16
65519
Auto.

Gen: 0-9, <R>
Next: Jump to B2
A

B

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

and the active cell will move accordingly:

B16
65519
Auto.

Gen: ABCDEFGHIJKLMNOPQRSTUVWXYZ!+~\>{** arrows
Next:

A B

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

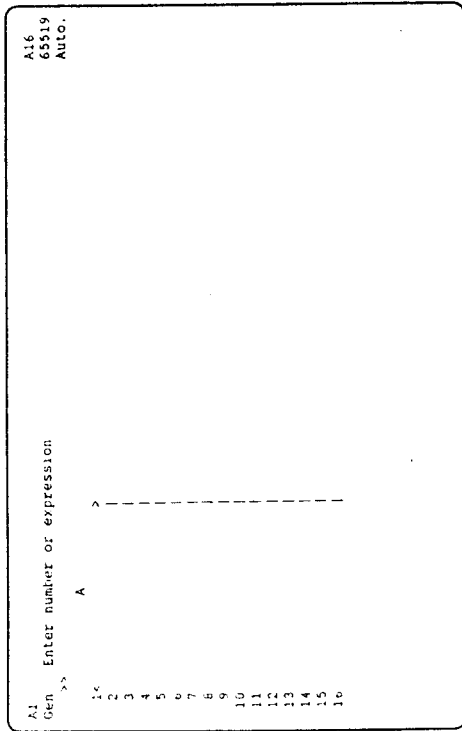
THE CRACKER TUTORIAL I
Moving around

There are two other possible jump destinations - Begin and End, which refer to long jumps to the specified edges of your worksheet.

At different times when working on the sheet you will find that you will need to use different cursor movement keys. For example when entering text data you cannot use the L, R, U, D keys for movement because THE CRACKER will interpret them as part of the text. On the other hand you will learn later that it is possible to define an inbuilt subroutine of commands called a MACRO. When using these you can enter LRUD as parts of the command, but it is impossible to do the same with the arrow keys.

ENTERING SOME SIMPLE DATA

Now that we know how to create a sheet, and how to move around it we can start to fill our grid with data. Start a new sheet by typing ZA<R>Y<R> and then IC20<R>G<R> and I15L<R><R>. Type ',' (the full stop) and the screen will change to show these prompts:

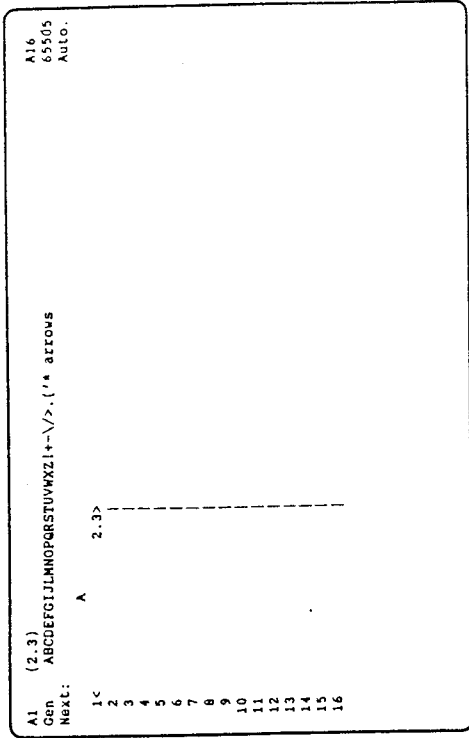


This is called entry mode and as you may have deduced THE CRACKER is now ready to accept some form of data. This can be possibly text, a number or an expression. These are the three types of entry that are possible. The possibilities open to you are determined by the broad choice of format type you have made, i.e. between a format suitable for text or one suitable for numbers.

The amount of data that can be entered into this cell is limited by the width of the Entry line.

The worksheet we have defined so far has used the format type G for General which is a format suitable for numeric data. The prompt you receive will reflect this. Try it now, enter a number 2.3 and press <R> (RETURN or ENTER). If you make a mistake press the [DEL] key and the cue will backspace removing the last character or command. Your data will return to the state it was in before you made the mistake.

Your screen will look like this:



Note that the contents line at the top now has your entry enclosed in (). The brackets are an indication that the entry is a number or expression. You will see later that if it had been an expression the contents line would show exactly what you had typed but the display would only show the calculated result. Note also that the memory has gone down a little.

You are next going to see the power of THE CRACKER. Move the cell cursor down with the D key and press ',' again. This time enter 2+A1<R> which is an expression meaning '2 plus the current value at coordinate A1'. You will now see:

A3	(2+A1)		
Gen	ABCDEFGHIJKLMNQRSTUWXYZ!+*~\>.<('* arrows		A16 65490 Auto.
Next:			
1		2.31	
2			
3		4.3>	
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Note that the RESULT has been calculated and shown in the display.

Go back to A1, select entry mode again and enter a new value. You will note that A2 changes at the same time. You have managed to enter an expression that uses a value from another cell and this expression works however you change that cell value. The same principle can be extended to operate over the most complex of worksheets and formulae.

Note that although the sheet display shows the RESULTS of the formula you enter the entry line still shows the expression that you entered in the brackets.

A1	(36.9)		
Gen	ABCDEFGHIJKLMNQRSTUWXYZ!+*~\>.<('* arrows		A16 65489 Auto.
Next:			
1		36.9>	
2			
3		38.9	
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Note also how easy it is to alter an existing cell entry by just typing in a new value.

Now look at this list to remind yourself of some of the features you have seen so far.

- I is used to insert columns and lines.
- U moves the cell cursor up.
- D moves the cell cursor down.
- ',' allows you to enter a number or expression.
- <R> stands for the RETURN OR ENTER key.
- [ESC] press this key to abandon the current operation, without harm.
- [DEL] use this key to backspace.

A1, A2 are cell coordinates and may be used if they are numbers in an expression.

It will now be coming apparent that you will be able to build complex expressions, and if you change the data in some cells you will always come out with a valid answer in the others.

THE CRACKER gives you the power to test the effect of different values on an answer and so do 'what if?' assessments of a situation.

ENTERING TEXT

Now you are going to create another column and insert some text instead of a number. Type IC20<R><R>IL<R>. Some of these commands we have met before. The IL command is the default format for the column we have created; I stands for Text which tells THE CRACKER what type of information to expect; L stands for Left justified which just means print the text from the left hand edge of the active cell.

You will see screens like these:

```

A1 (36.9)
Col 0-9, <R>
Next: Insert column, width 20
A 36.9
1<
2
3 38.9
4
5
6
7
8
9
10
11
12
13
14
15
16
    
```

```

A1 (36.9)
Col 0-9, <R>
Next: Default Format to be Text left justified <R>
A 36.9
1<
2
3 38.9
4
5
6
7
8
9
10
11
12
13
14
15
16
    
```

```

A1 Enter characters
TRIL >>
A >
B 36.9
38.9
1<
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
    
```

Column A is now set up for you to put in the text. Note that the original column has been shifted to the right and labelled B. This shows how easy it is to alter the dimensions of your worksheet grid at any time.

Before you go any further, press <R> and then use the R key to move the cursor to location B3 which contains the expression we have already typed in. If you look at the top line of the screen you will see that the A1 which you have typed in has now changed to B1 to keep track of the effect of entering another column. You can rest assured that your expression will still work the way you intended it to.

```
B3 (2*B1) B16 65487 Auto.
Cen ABCDEFGIJKLMNOPQRSTUVWXYZ:~\>.(/* arrows
Next:
1 1 36.9|
2 2 38.9|
3 3
4 4
5 5
6 6
7 7
8 8
9 9
10 10
11 11
12 12
13 13
14 14
15 15
16 16
```

Go back to A1 using the L key for left and the U key for up. Type ' ' and you will see this:

```
A1 B16 65489 Auto.
TxTL Enter characters
>>
1< A > B 36.9|
2 38.9|
3
4
5
6
7
8
9
10
11
12
13
14
15
16
```

The Entry Line will display a marker that reminds you of the current display width but this can be exceeded - the actual amount of data that can be entered is limited by the absolute width of the Entry line.

Now enter some text, type First number<R>. You should see:

```
A1 B16 65476 Auto.
TxTL ABCDEFGIJKLMNOPQRSTUVWXYZ:~\>.(/* arrows
Next:
1<First number A B 36.9|
2 38.9|
3
4
5
6
7
8
9
10
11
12
13
14
15
16
```

You should have seen the entry reflected in the contents line as you have typed it.

RECAP: You have now tried both expression entry and text entry.

- R moves the cell cursor right
- L moves the cell cursor left