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The phenomenal growth in demand for Atari computers means a much bigger home for the BIG show...

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ATARI USER NEWS REVIEW

Escape death row

A BUDGET price multi-level shoot-'em-up – Zybex – has been announced by Zeppelin Games (091 261 4401)

Zybex, a two-player on screen game sets you on an almost suicidal mission to escape death row To earn a stay of execution you must penetrate the heart of many strange worlds and collect teleport crystals

Each crystal gives access another level even more difficult than the last Your goal



Zybex screen

is to reach the ultimate level and face the final challenge – Zybex

The last crystal is all powerful and will ensure the removal of the death ring around your neck

To achieve success you have to shoot your way through several bizarre and colourful waves of aliens, and find exotic weapons with differing powers

Zybex boasts fast scrolling and superb sound



Zybex Level 8

effects Company policy is quality software at a budget price – hence the tag of just £2 99 on cassette from Zeppelin Games



Try flying a Mosquito

THE latest fighter simulation game for the Atari 8 bit – Ace of Aces – has been released by US Gold (021 356 3388)

The program captures the spirit – and puts you in the cockpit – of the Mosquito RAF fighter bomber of World War II

Your task is to down Nazi bombers sink U-boats, outrun V1 rockets and stop enemy trains

Fuel and weapons have to be chosen wisely, as once you're on a mission there is no going back

Price £9 99 on cassette and £14 99 on disc

More 8 bit games in the pipeline

DESPITE rumours to the contrary, Atari is still committed to supporting the 8 bit games market

Certainly the company is back in the software producing field itself after a layoff of more than a year That's confirmed by the recent appearance on tape of Twilight World the forthcoming release of Thunderfox and the prospect of popular titles being re-released on cartridge

But some software developers are less than impressed with the level of support Atari is prepared to provide, and note that the company seems to be directing most of its attention to the 16-bit market And that in turn could mean less Atari software

Red Rat, which has just launched two twin packs – Planet Attack/Mad Jax and Space Wars/Dreadnaught – is keeping a watchful eye on sales

"If these two die the death that'll be it" said Red Rat's Harry Nadler though if a really good 8 bit game came through we'd try again"

The problem – if there is one – seems to lie with distributors rather than with the software houses or the buying public

And with a diminishing number of companies prepared to import software, Atari users are missing out on a wealth of titles available in the States

Recent releases include Top Gunner from MicroProse at $19 99 and Chessmaster 2000 from Electronic Arts at $29 99 Given the current strength of the dollar at those prices it's worth thinking about buying direct

Bigger venue needed for next Atari show

EACH successive Atari User Show has left organisers Database Exhibitions with a happy problem – how to find a bigger better venue for the next one

An ever growing army of exhibitors and visitors means the event has constantly had be on the move to larger premises

Another big increase in demand for space has dictated that the impressive West Hall of Alexandra Palace, London will stage the next show in the series from April 22 to 24

Other premises that had coped well enough on previous occasions could not meet the additional requirements – they had quite literally run out of space for expansion

It wasn't easy finding a new location that was both large enough to cope with huge numbers of visitors yet prestigious enough to complement the event Happily Alexandra Palace fits the bill in both cases

Set in 296 acres of rolling countryside, Alexandra Palace has been completely renovated after the devastating fire in 1980

It is one of the most flexible display areas in the UK with more than 2 500 sq metres of exhibition space

So there will be no shortage of room for the hundreds of hardware and software special offers exhibitors have promised to bring along for Atari users

The Atari Show runs from Friday April 22 to Sunday, April 24 A money saving advance ticket order form is on Page 81

MUCH MORE THAN A MAGAZINE



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Toolkit boost for old Basic

AT last the gap between the old Atari Basic and the new up-to date Basic XL/XE cartridges has been reduced – by a new low cost software package from *Atari User*

A major criticism of Atari computers over the years has been its less than powerful Basic programming language which lacks such rudimentary commands as Renumber and Delete

The Toolkit utility, written by Mick Randle remedies these deficiencies – and enhances Atari Basic's capabilities as well

Designed to work on the XL/XE machines and the new XE Games Console the Toolkit only takes up 128 bytes of user ram This is achieved by placing the main program into the area of ram below the Basic rom chip and bank switching when required

When a Basic program is run the Toolkit will switch off and to re-enable it you simply press System Reset A help file explaining the Toolkit can be found on the disc or tape

And once it's installed in the computer you will have 10 new direct mode Basic commands at your fingertips

Toolkit's commands provide more control over variables, allowing you to change their names or to view esch name in memory together with the line that it appears on

And immediate access to drive directories from Basic is now possible A single command will turn the keyboard click on or off and a useful built in checksum program sits in memory all the time

Editing is easier too, with commands to delete any number of lines renumber Basic program lines in any increment and to automatically strip all REM statements from your program listings

The Listing command provides a full printout of the Atari control characters on an Epson-compatible printer, and the program also offers decimal hexadecimal and binary conversion from Basic

It also provides full English error messages, extensive built in user input error checking and a forgiving command syntax

Price £7 95 disc, £5 95 cassette



Mick Randle the author

The job's taped

IN search of a production team for an idea that's still under wraps Hewson (0235 832939) has come up with the novel idea of sending an audio cassette to interested candidates

The cassette lays down the job specifications – as you'd expect – but the voice over has to contend with a battery of sound effects gleaned from Hewson's previous best selling titles

Project Four – a five format game for 8 and 16 bit machines – isn't scheduled for release until September, but the concept is already drawn up

All Hewson needs now is a Project Four team

They're looking for a leader, two coders, a graphic artist and a freelance musician

THE GALLUP CHART TOP 20 ATARI SOFTWARE

THIS MONTH	LAST MONTH	TITLE (Software House)	PRICE
1	1	HENRY'S HOUSE *Mastertronic*	1.99
2	•	ACE OF ACES *US Gold*	9.99
3	4	180 *Mastertronic*	2.99
4	3	TRANSMUTER *Code Masters*	1.99
5	•	FOOTBALLER OF THE YEAR *Gremlin*	9.95
6	8	DIZZY DICE *Players*	1.99
7	5	STORM *Mastertronic*	1.99
8	7	PANTHER *Mastertronic*	1.99
9	•	SOCCER *Alternative*	1.99
10	•	RIVER RAID *Firebird*	1.99
11	•	CASTLE TOP *Alternative*	1.99
12	•	POLE POSITION *Atari*	12.99
13	9	DECATHLON *Firebird*	1.99
14	•	SPACE SHUTTLE *Firebird*	1.99
15	14	LEADERBOARD *Access/US Gold*	9.95
16	•	UNIVERSAL HERO *Mastertronic*	1.99
17	16	BMX SIMULATOR *Code Masters*	1.99
18	20	SILENT SERVICE *Microprose*	9.95
19	12	DN CUE *Mastertronic*	2.99
20	•	BASIL THE GREAT MOUSE DETECTIVE *Gremlin Graphics*	9.99

Compiled by Gallup/Microscope

NINE new entries in this month's chart with the spectacular Ace of Aces going straight to the number two slot Alternative Gremlin and Firebird have each got two new titles in the Top 20

Atari is bringing out new titles in addition to the charting Pole Position – look out for Thunderfox coming soon

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If you don't have an interface
Miracle WS2000 V21, V23 modem + Datatari interface + cable + Datatari software
Total price £149.95

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ATU3

NEW SERIES

It's a challenge!



Mike Cook throws down the programming gauntlet to all our readers

YOU are down on your luck, standing looking at the roulette wheel, when a shady character tugs at your sleeve. After exchanging a few pleasantries he persuades you to slip outside where he will tell you something to your advantage.

So after cashing your remaining chips you follow him out to the alley behind the casino. He whispers in your ear. For just a pony, Guv, I can tell you my foolproof plan to win.

Maybe it's the drink that softens your heart, or maybe it's the six-inch stiletto knife you feel poking through his coat into yours, but you decide to give him his money and listen to his advice.

It's all very simple', he says, pushing the money into his overcoat pocket without even bothering to count it. 'Just bet on the red.

Feeling cheated, you ask what happens if you lose. 'Even simpler', he replies, "bet on the red again, but this time double your stake. If you lose again, double again, eventually you will win because red is an even money chance'.

He continues. When you count your winnings you will find that you are up by your original stake. Drop your bet down again and do it all over again. You can't lose.

With that he slips into the night and you wander home to think about what he has said. Any bet on the red or the black for that matter, pays even money – what you bet plus your stake back.

So if you bet a pound and lose then bet two pounds and win, you get four pounds but have only paid out three – one for the first bet and two for the second. As the roulette wheel comprises black and red numbers in equal amounts, a red is bound to come up sooner or later. It's true, you can't lose!

However, you then remember the green – number zero. It's only one place on the wheel, but when that comes up the house wins all bets. That nudges the odds of the red coming up slightly away from even, but that is only one chance in 37.

Yes. It sounds like a really good scheme, so you go to bed dreaming of what you will spend your money on.

In the morning, once your head has cleared, you begin to think and wonder why, if it is that easy, had that man not done it and made himself a fortune?

Glancing over to your trusty Atari micro you decide to try it out first with pretend money by writing a program to simulate a roulette wheel and test this strategy.

You want to try this not once but many times to ensure it is no fluke. You need to know how many bets it will take to recover your initial outlay of £25 to the man.

What is the best size of bet? The larger the bet the faster you will make money but, also, the more money you will need when doubling. How much stake money will you have to have in reserve? Is it practical?

● *So it's over to you. Can you write the necessary program? If you have problems, next month's hints will help.*

START OF A NEW SERIES

So you want to understand Basic better . . .

No time like the present – start right now with ANDRÉ WILLEY

HAVE you ever been sitting at your keyboard at three o'clock in the morning, staring bleary eyed at a somewhat fuzzy looking television? *10 PRUNT "DONE"* you type through half closed eyes

The result is error – PRUNT indeed! And as you re-type the offending line your faithful friend Basic continues to monitor your progress letting you know whenever your fingers slip off the keys until finally sleep overtakes you and you slump over the keyboard.

The other effect that post midnight programming has on the cerebral cortex is to make your brain wander off at a tangent to the job in hand – and so it was one cold night about five years ago when I suddenly thought How does it do it?

Or more specifically how does Basic manage to check your typing so quickly and come to that, what does it do with the line you've typed anyway?

Tokenisation

After some research I had established the fact that a process known as *tokenisation* was at work. It seemed that when you type

```
10 PRINT
```

the computer actually stores the numbers 10, 0, 6, 6, 32 and 22 in memory. Hang on a minute. I hear you cry, that's only six bytes of data stored – and our program line is eight characters long. No wonder those programs only seem to work properly six out of eight times.

Well, what Basic is doing is making up a much shorter coded version of your line. In fact, the word PRINT itself is represented by just a single number 32 – known as a token. The first two bytes represent the line number and are followed by two length indicator bytes – both are six in this case because the coded line is a total of six bytes long. The line ends with a terminator byte – the final 22.

But why bother? What's the matter with storing the whole line of text. Well, there are a number of advantages to tokenising. In fact you've already seen a couple of them. To start with the stored version of the line is shorter than the original text – often by a considerable amount. Consider a line such as

```
14000 POSITION XDISTANCE,YDISTANCE
```

As a piece of text this line is 35 characters long including the carriage return at the end. Tokenised it becomes just nine bytes of data – and so uses just one quarter of the memory space which would otherwise have been required. On average a tokenised line is about one half to two thirds the size of the original text version – depending on such factors as the length of variable names and how long the command words are.

Also when the tokenisation process takes place any incorrect statements will immediately be flagged as ERROR lines, thus giving you an instant indication of both the fact that you made a mistake and also the position within the line where the tokeniser couldn't find the syntax it was expecting.

Many computers will let you enter anything at all as a program line even if it's complete rubbish – as is often the case at 3 o'clock in the morning – and you won't find out until you run the program.

Speed advantage

There is also an execution speed advantage to tokenised programs. The theory goes that the machine code routine to look up a single byte from a token table is very much faster than the code that would have to be used to search an entire Asc text line.

However, this speed advantage is unfortunately lost when you consider Atari Basic's maths routines which could hardly be described as particularly efficient. As with everything else in life – you win some, you lose some.

Basic's tokenisation process goes much further than just coding PRINT, POSITION and the other major commands. It also tokenises functions and operators – such as CHR$, INT, LEN, SQR, VAL and so on – and variables. We'll be looking at statements, operators and functions in greater detail next time, but for now let's see how Atari Basic deals with variables.

Variables

As an example, consider this simple program:

```
5 LET NUMBER=128
10 PRINT NUMBER
```

We'll examine line 5 in a moment, but since line 10 is so similar to the example we've already looked at let's see what difference the variable *NUMBER* makes to the final tokenised line.

Line 10 now tokenises as 10, 0, 7, 7, 32, 128, 22. If you've been following so far you'll remember that the initial 10 and 0 represent the line number and the next two numbers tell us how long the tokenised statement is – in this case seven bytes. As before, the 32 means PRINT and the final 22 is an end of line marker – so somehow 128 must represent the variable *NUMBER*.

In fact any token with a value over 127 represents some form of variable – which may be a normal numeric type, an array or a string. Each time you refer to a new variable when typing in a program – such as *NUMBER* in our example – a unique number is reserved for it. If you enter another line which contains a new variable name then it would be assigned the next free number – 129 in this case.

Since a single byte can only store a value of up to 255 we find that Atari Basic can thus only cope with 128 variables in any given program.

Variable name table

The variable names are stored at the beginning of the program in a table known, rather originally, as the variable name table. Each time you use a variable name when typing in a program Basic scans through each entry in the table looking to see whether you've used that one before. If you have it works out the number of the entry and uses it in the tokenised line.

If it comes to the end of the table before finding a match it assumes that you have used a brand new variable name and this will then be added to the end of the list and its number recorded for future reference. This does mean that a lot of mistyped lines can create an awful lot of useless extra entries in the variable name table, sometimes causing problems with more complex programs.

The quick answer is to LIST your program to tape or disc, then type NEW and re-ENTER it into memory. This will force Basic to create a new table containing only the currently required variable names.

While a program is actually running Basic never needs to look at the text in the name table – since every reference to a variable is now coded as a number between 128 and 255. In our example, each time the token 128 is found it knows that we are referring to the variable which we know as *NUMBER*.

Let's now go back to that first line of our program:

```
5 LET NUMBER=120
```

which tokenises into the following sequence:

```
5 0, 15, 15, 6 128 45 14
  65 18, 0 0 0, 0 22
```

Looking at the bits we already know about the 5 and the 0 at the start must be the line number. The two 15s tell us that the coded line is 15 bytes long and the 22 at the end signals the finish of the tokenised line. Since we know that the 128 refers to the variable *NUMBER* you will probably have realised that the 6 preceeding it must therefore mean LET.

As it follows straight after the variable name we can safely assume that the token 45 is the code for the equals sign, which just leaves us with the strange sequence 14 65 18 0 0 0 0 to somehow represent the rather innocuous looking number 120.

Atari maths

This is where the Atari maths system's complexities come into their own. Whereas most micros allow us to store numbers in a couple of different ways, Atari Basic allows only the most complex of these methods.

Some languages would allow us to place the number 120 into two bytes as an *integer* variable. All this means means is that the number is stored in memory in much the same way as we access memory addresses like the display list. To get the final value we take the contents of the first byte and then add on the second byte times 256. You might have seen lines such as:

```
DL=PEEK(560)+PEEK(561)*256
```

which use this very method.

This integer system has the advantages of much greater speed and of using less memory, but it can't handle numbers larger than 65535 or decimal fractions such as 1.5 or 0.37.

The alternative system, the only one available in Atari 8-bit, is known as floating point arithmetic which stores numbers in a scientific form very like the exponential form you might have used for large numbers in your own programs. If you saw 1.5E4 in a listing you would know that it meant 1.5 x 10^4 or 1.5 times 10,000.

The digit 14 in our tokenised line simply tells the computer that a floating point number follows, and this is composed of six bytes. The first of these gives sign information – plus or minus – and the *power of* – exponent – of the number. The other five bytes give the fractional part of the number using a system known as Binary Coded Decimal.

This is not as tricky as it sounds and all it really means is that each byte holds two separate numbers – one in the first four bits and the other in the second four.

In our example the first of these five BCD numbers is 18 which gives us the binary pattern 0001 0010. The first 0001 is a one in decimal while the second part 0010 means two. So our fractional part is actually 0.12 – see it really isn't as difficult as it looked.

We finally have to subtract 64 from the exponent byte before we use it – giving us 65 minus 64 – a grand total of one! Rather than using powers of 10 this system uses powers of 100 to make the work simpler so our final floating point number is 0.12 times 100 to the power of one. This is the same as 0.12 times 100 – or a value of 120, which is what we were hoping for. Perhaps you now see why floating point maths takes so long compared with simple integers.

● *Next month I'll be continuing this exploration of Atari Basic with a more detailed look at the tokenising process, plus a full breakdown of all the available tokens and what they represent. I might even manage to get some sleep in the meantime.*

Mapping your micros memory

Location	Label	Function
128/129	LOMEM	Lowest user accessible memory address
130/131	VNTP	Variable Name Table pointer (start address)
132/133	VNTD	Variable Name Table dummy (end address)
134/135	VVTP	Variable Value Table pointer (variable contents)
136/137	STMTAB	Statement Table (first address of tokenised program)
138/139	STMCUR	Current statement (Last direct command line)
140/141	STARP	String/Array pointer (string/array contents address)
142/143	RUNSTK	Runtime stack (internal GOSUB/FOR...NEXT addresses)
144/145	MEMTOP	End of current Basic program space

Figure 1. Basic's Zero Page Pointer Table

Now that you have a rough idea of how a tokenised program is made up, let's take a look at where everything can be found in your micro's memory.

All the information we require is held in a table of nine two-byte addresses held in zero-page memory as shown in Figure 1. Each of these is referred to as a pointer because you must use the value

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contained within it to point you to another memory location

As I mentioned before the second byte must be multiplied by 256 before being added to the first. The resulting figure is then the address you actually require.

Locations 128/129 point to the lowest address in memory that Basic is allowed to access (LOMEM). This normally would be either $700 for a cassette system or $1CFC if Dos 2.5 is loaded.

If you use another type of Dos you will find this location points to the first free location beyond Dos's memory. The next 256 bytes are reserved as a temporary work area for the tokenising routines.

Locations 130/131 point to the address of the Variable Name Table, 256 bytes on from LOMEM. It is here that your table of variable names will be stored in the same order that you first referred to them.

It is worth noting here that string variables have a $ sign stored after the name and array names are followed by a (sign. The last letter or symbol of each name entry is converted to inverse video in order to let Basic know where one name finishes and another begins.

Locations 132/133 point to the first byte after the Variable Name Table – which is normally a dummy zero byte. If you type in a line containing a new variable name it will be stored here and this value moved upwards to the end of the new name.

Locations 134/135 point to the address of the start of the Variable Value Table. It is here that the actual contents of your variables are stored. Each entry in this table is eight bytes long and may contain either a floating point number – in the case of normal variables – or a further pointer to the actual address of strings or arrays. See Figure II for more information.

Locations 136/137 point to the address of the tokenised program itself. If you type in the two line program we have been considering then you can PEEK from this address onwards if you want to see the token structure for yourself.

Locations 138/139 point to the first byte AFTER the tokenised program. It is here that Basic stores your direct command lines while it works out what to do with them. In fact the last direct command line used will always be available here – complete with an imaginary line number of 32,768. Try PEEKing the address given at 138/139 to find out.

Locations 140/141 point to the first byte after the current statement tokens and it is here that your arrays and strings are stored. The Variable Value Table, in fact, contains offsets into this area in order to access the various elements of arrays and strings.

Locations 142/143 point to Basic's runtime stack which will hold the return line numbers for all the GOSUB statements and FOR ... NEXT loops.

Finally, locations 144/145 point to the very last byte required for use by the program – which is also the end of the runtime stack.

Figure III brings all of this information together and shows how these pointers combine to keep track of our example program once it has been tokenised.

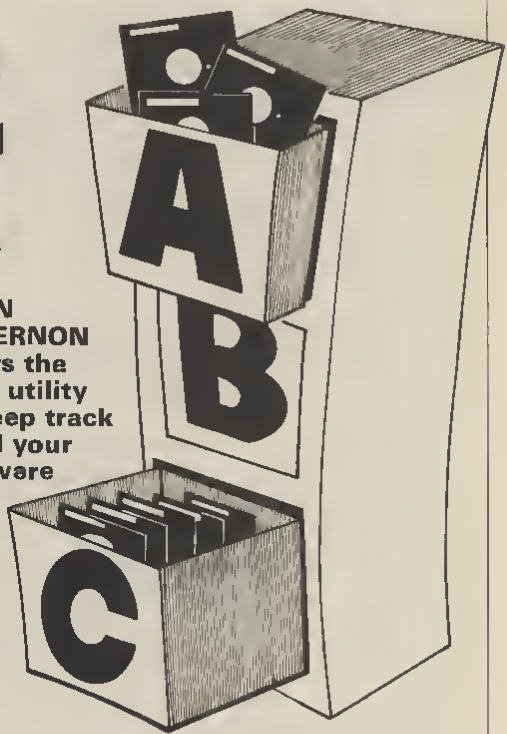
Byte number / Variable type	1	2	3 4 5 6 7 8		
Numeric	00	Entry number	Six byte Binary Coded Decimal number		
Array (DIMed)	65	Entry number	Offset from STARF	First DIM plus 1	Second DIM plus 1
String (DIMed)	129	Entry number	Offset from STARF	Current length	DIMed length
Array (unDIMed)	64	Entry number	not used		
String (unDIMed)	128	Entry number	not used		

Figure II Types of entry in the Variable Value Table

Label	Name	Bytes	Function
VNTP	Variable Name Table	78 85 77 66 69 210	Ascii for *NUMBER*
VNTD	Variable Name Table dummy	0	Zero byte at end of Variable Name Table
VVTP	Variable Value Table	0 0 85 16 0 0 0 0	BCD contents of variable 0 *(NUMBER)* = 120
STMTAB	Tokenised program	5 0 15 15 6 128 45 14 85 16 0 0 0 0 22 10 0 7 7 32 128 22	5 LET NUMBER=120 10 PRINT NUMBER
STMCUR	Immediate Mode statement	0 128 21 21 25 15 13 68 51 58 78 85 77 66 69 82 40 66 65 83 22	Last direct command used Try working it out!
STARP	String/Array contents	(None)	
RUNSTK	Runtime stack	(None – no program running)	
MEMTOP	End of reserved program area	(One byte beyond end of STMCUR)	

Figure III Areas of memory after a program has been tokenised

DISC FILER



ALAN McLERNON offers the ideal utility to keep track of all your software

IF, like me, you have numerous discs full of software ranging from utilities to arcade shoot 'em ups you will find that keeping an ongoing list is a bit of a toil. But with easy-to-use Alphabet ABC that tedious chore is made simpler. You can easily create a mini database of the programs on your discs and print them in alphabetical order.

When you first run the program you are presented with a menu of six categories – shown in Table 1. When you have selected the appropriate one – using keys 1 to 6 – you are asked if you want to use the international character set built in to the XL/XE computers.

You are then asked whether you want to load saved data or continue on to the edit mode. If you choose to load data type Y and all files on disc with the appropriate filename for that category will be loaded.

For example, if the Utilities section is chosen, the computer will load all files with the name UT at the beginning. If you choose to go straight to the edit mode type N followed by Return and the edit screen will appear.

The number of names that you have entered is shown at the top of the screen – this will be one when you first begin editing. Underneath is the filename the data will be saved under. You can now enter any information about the first file, but remember that you are restricted to 35 characters at a time.

The edit line allows you to enter the program name followed by which disc it is on, the side of the disc and whether it is loaded from a menu or by a boot load. When you have entered six names the computer saves them to disc. If, for example, you chose to enter names under the utilities category, the first six would be saved under the filename UT1.SAV, the following six under UT2.SAV and so on.

If at any time you want to finish editing and have the data sorted in alphabetical order, type D, followed by Return.

The computer will load all files on the disc previously saved under this category and ask you if you want to merge them with the data in memory – just type Y or N. The data is then sorted alphabetically and you are asked if you want to edit any before moving on to the next function. After this you have the option to print out the data.

You are then asked how many columns you want – 80 gives a very even and paper saving printout. When the file has been printed you are offered the option to save the newly amended data file to disc.

If you choose to do so you are prompted to format a blank disc before saving the data – just reply Y or N. Remember saving the new data will erase any files on the disc with the same filenames.

If at any time during the creation of the data file you notice an error it is possible to edit the data. Re-run the the program and select to load data from disc. Then select Y to edit it and enter the number of the file to edit. Make the new changes and re-save it.

The program is set up to work on an Atari 1029 printer, but if line 1340 is changed to

```
1340 LPRINT CHR$(27),CHR$(14),NAME$, L
PRINT : LPRINT
```

it will work on any Epson compatible printer.

Categories	Filenames
Utilities	UT
Adventures	AD
Arcades	AR
Strategy	ST
Simulations	SI
Music & Demos	MD

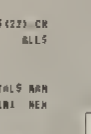
Table 1. File categories and filenames

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```
10 REM ************************
20 REM *     ALPHABET ABC      *
30 REM *                       *
40 REM *          BY           *
50 REM *                       *
60 REM *   BLAM MCLERNON       *
70 REM *                       *
80 REM *    (C)ATARI USER      *
90 REM ************************
100 GRAPHICS 0 CLR
110 KX=12678 EE=35:POKE 750,224 POKE 7
52 0 DIM B
120 DIM ALL$(KX) GAMES(48) WORD$(250),
COUNT$(3) YN$(3) MERGES(5) NAME$(20)
130 DIM B2$K$(10) COUNT2$(3) A$(5),50U
$(X) PROGRAMS$(40) BEWORATA$(40) LINES$(2
7) SPACE$(17) TOTAL$(45) PAGE$(35)
140 SETCOLOR 2 4 4 POKE 752 1
150 REM TAKING ALL THE GARBAGE OUT OF
      WORDS AND THE MAIN STRING ALL$
160 WORD$       WORD$(250) '    WORD$(2)
WORD$
170 ALL$ '    ALL$(KX)    ALL$(2) ALL$
200 REM SETTING SCREEN AND PRINTER
          DATA INTO STRINGS
250 T6TOL$ "                          YOU
HAVE A TOTAL OF    BEM 23 SPACES
280 PAGE$ "PLEASE CHANGE PAGE AND PRES
S RETURN
310 PROGRAM$ "PROGRAMME NAME      015K
 SIDE MENU
220 LINE$ "*                        *   *
  *     *"
230 REM SETTING UP TITLE SCREEN
240 ? CHR$(125) POSITION 12 2 ? "ALPHA
BET ABC" POSITION 11 4 ? "BY BLAM MCLE
RNON" POSITION 12 6 ? "(C) ATARI USER
250 POSITION 7 10 ? "PRESS A FOR UTILI
TIES"
260 POSITION 7 12 ? "PRESS B FOR ADVEN
TURES"
270 POSITION 7 14 ? "PRESS C FOR ARCAD
ES"
280 POSITION 7 16 ? "PRESS D FOR STRAT
EGY"
290 POSITION 7 18 ? "PRESS E FOR MUSIC
 &DEMOS"
300 POSITION 7 20 ? "PRESS F FOR MISC
 NEWS"
310 OPEN #4 4 0 "K" GET #4 K CLOSE #4
320 REM GIVING DISK FILENAME
                AND
          PRINTER DATA NAME
330 POKE 756 224
340 IF CHR$(K) "A" THEN B1$K$="0 UT
  NAME$ UTILITIES' SPACE$
    "GOTO 410 REM 15 SPACES
350 IF CHR$(K) "2" THEN B1$K$ "0 AD
  NAME$ ADVENTURES  SPACE$          1
2K     " GOTO 410 REM 15 SPACES
360 IF CHR$(K)="C" THEN B1$K$ "0 AR
 ' NAME$ 'ARCADES' SPACE$
    " GOTO 410:REM 15 SPACES
370 IF CHR$(K) "4" THEN B1$K$ "0 ST
 ' NAME$ STRATEGY' SPACE$
    " GOTO 410 REM 15 SPACES
380 IF CHR$(K) "5" THEN B1$K$="0 MU
  NAME$ MUSIC & DEMOS" SPACE$="
    " GOTO 410 REM 11 SPACES
390 IF CHR$(K)  6" THEN B1$K$="0 MI
 " NAME$ 'SIMULATORS' 15SPACES'
        GOTO 410 REM 15 SPACES
400 ? "K' POSITION 5,10;? " PLEASE ENT
ER 1 2 3 4 5 OR 6  FOR A"1 TO 600 NEXT
 N GOTO 140
410 ? CHR$(125) POSITION 3 17 ? "DO YO
U WISH TO USE INTERNATIONAL
  CHARACTERS Y/N
420 POSITION 14 20 ? "N/ONE ONLY"
430 OPEN #4 4 0,"K' GET #4 K CLOSE #4
IF CHR$(K)="Y" THEN 450
440 GOTO 470
450 ? ?  Remember to press CONTROL to
 print the international character set
 "
460 ? ? Press CAPS to return to stan
dard characters ' POKE 756 204 FOR DEL
AY 1 TO 2000 NEXT DELAY
470 ? CHR$(125) POSITION 2 11 ? "DO YO
U WANT TO ENTER SAVED DATA? Y/N  OPEN
 #4 4 0  K' GET #4 K CLOSE #4
480 IF CHR$(K)  Y  THEN 1050
490 REM TAKING AND SAVING DATA TO DISK
500 COUNT$  1" POKE 752 0
510 FOR A=1 TO 210 STEP 35 DIMUM DIMUM
 +1
520 ? A' POSITION 3 10 ? "INPUT NAMES
 DISK NUMBERS AND SIDE
530 POSITION 10 4 ? "NAMES ENTERED
 DIMUM POSITION 10,8 ? "FILE NAME ",01
5K$
540 POSITION 2 12 ? PROGRAMS
550 POSITION 2 14 ? LINES
560 POSITION 2 16 ? "WRITE 0  TO RETRI
EVE DATA FROM DISK
570 TRAP 1310:POSITION 2,10 INPUT GAME
$ IF GAME$(1)  0  ' THEN 780
580 IF LEN(GAME$)<15 THEN 600
590 GOTO 810
600 FOR G=LEN(GAME$)+1 TO 15:GAME$(G)
  ' NEXT G
610 WORD$(A)=GAME$(1 15)
620 NEXT A
630 REM SAVING C NAMES TO DISK
640 COUNT COUNT+1
650 COUNT$(1 3)  STR$(COUNT)
660 B1$K$(5) COUNT$
670 ? #"#" POSITION 5 10 ? "***SAVING D
ATA  ,B1$K$    TO DISK"
680 IF LEN(WORD$)<210 THEN 700
690 GOTO 710
700 FOR L LEN(WORD$)+1 TO 210 WORD$(L)
=    NEXT L
710 TRAP 750 OPEN #1 8 0 B1'K$
720 ? #1,WORD$
730 CLOSE #1
740 GOTO 810
750 ? "ERROR   PEEK(195) ?  "PRESS F TO
 FORMAT OR RETURN TO RETRY' INPUT YN$
CLOSE #1
760 IF YN$  F' THEN ?  "ARE YOU SURE Y/
N' INPUT YN$ IF YN$ "Y  THEN TRAP 750
NIX 754 #1 0 B  B 1
770 GOTO 710
780 ? "A' POSITION 3 10 ? "**LOADING
PROGRAM DATA NOW***"
790 FL FL+1 COUNT2$(I I)=;TA$(10L) DISK
$(5) COUNT2$ TRAP 850 OPEN #1 4 0 DISK
$ ? B2$K$
800 INPUT #1,WORD$
820 ALL$(FL*LEN(WORD$),FL*LEN(WORD$)+10
836 CLOSE #1
840 GOTO 730
850 FL FL 1 CLOSE #1 POSITION 1,5 ? "D
O YOU WANT TO MERGE DATA Y/N          INPU
T YN$ IF YN$  Y  THEN 1030
860 NAMES$ FL*5 MEM NAMES$(5 ? "  POST
TION 3 15 ? "GETTING TOPICS SORTED PLE
ASE WAIT      ' CLOSE #1
870 POSITION 3 17 ? "DATA LOADED      NO
WES " NAMES     BOTH LENGTH  ,MEM POKE
752 1
880 ALP 0
885 FOR Z 1 TO NAMES
900 X Z*25
910 Y X+35
920 IF Y>MEM THEN 550
930 IF ALL$(Y Y+10)=ALL$(X X+10) THEN
 950
940 WEAD$=ALL$(Y Y+24)
950 ALL$(Y)=ALL$(X,X+24)
960 ALL$(X)=WEAD$
970 ALL$(MAX+7B)=' '
985 ALP=ALP+1
990 NEXT Z
1000 IF ALP>0 THEN 880
1010 GOTO 1170
1020 TRAP 1050 ? "#" POSITION 5 15 ? '
DO YOU WANT TO PRINT YOUR DATA' OPEN #
4 4 0, K' GET #4 K
1030 CLOSE #4 IF CHR$(K)="Y" THEN 1100
1040 GOTO 1750
1050 REM ALL PRINTER ERRORS COME HERE
1060 CLOSE #3 IF PEEK(195)  138 THEN 10
80
1070 POSITION 5,20 ? "  ERROR PLEASE
TRY AGAIN' :GOTO 1020
1080 POSITION 5 20 ? "PRINTER NOT ON L
INE! TRY AGAIN" FOR DELAY 1 TO 500 NEX
T DELAY GOTO 1020
1090 ? "LOADING MERGE DATA NOW
#"
1100 MERGE=MENGE+1:MERGES STR$(MERGE)
B2$K$(5 7)=MERGES IF VAL(MERGE$) 10 TH
EN B2$ 0B2$1
1110 B1$K$(B2$)=" SAV"
1120 ? B2$K$
1130 TRAP 860 OPEN #1 4,0 DISK$ INPUT
#1 WORD$
1140 ALL$(DL*W*15+15) WERD$
1150 DL=DL+1
1160 CLOSE #1 GOTO 1100
1170 ? "#"
1180 FOR P 1 TO NAMES:PRINT P,    ALL$
(P*25 P*25+14)
1190 NEXT P
1200 POKE 752 0 ? ? ? ? POSITIO
N 5 20 ?  DO YOU WANT TO EDIT ANY DATA
 Y/N' INPUT YN$ IF YN$ "Y' THEN 1220
1210 GOTO 1020
1220 ? "ENTER FILE NUMBER TO EDIT OR P
RESS          RETURN TO LIST" TRAP
 1210 INPUT A IF A>0 THEN 1270
1230 ? "#" POSITION 5 17;? "WHEN DATA
IS LISTED PLEASE ENTER
 NO TO EDIT"
1240 FOR N=1 TO 100 NEXT N
1250 FOR P=1 TO NAMES POINT #;" ",ALL$
```

```
(PM)S PM3S+I41 FOR BELGY-1 TO 16 NEXT
BELGY NEXT P
1260 TRAP 1230 INPUT A
1270 ? "R" POSITION B I3;17 "   "; ALL$(
AM)S A+M3S+I41 POSITION 18 18 ? "ENTER
TNF NEW DATA"
1280 POSITION 3,12 ? PROGRAMS POSITION
 3 14 ? LINES POSITION 2 I3 INPUT BEME
NTA$ ALL$(AM)S AM3S+14)-NEME$:B$
1290 GOTO 800
1300 REM MAIN SCREEN INPUT ERRORS COME
 HERE
1310 ? "R  POSITION 5 15 ?  YOU BIN NO
 1 ENTER ANYTHING ' POSITION I6,17 ? "T
RY AGAIN" GOTO 510
1320 REM PRINTING
1330 REM HEADER FOR PRINTER
1340 LPRINT CHR$(27) CHR$(47) CHR$(14)+SPACE$(2
0)$ CHR$(27) CHR$(25);NAME$,CHR$(17) CHR$(2
6) LPRINT LPRINT
1350 LPRINT PROGRAMS '          PROGRAMS
 LPRINT RETURN
1360 POSITION 5 17 ? "HOW MAN MANY COL
UMNS' INPUT PCOL
13 0 FOR NAMES P=(P8/1) IF PCOL(80 THE
N I670
1380 IF NAMES)90 THEN 1480
1390 REM PRINTING DOUBLE COLUMN TO OR
 LESS NAMES
1400 GOSUB 1340 REM GO TO HEADER
1410 FOR N 1 TO PR
1420 TI N=P+ ? ALL$(N*35 N#35+34) ? ?
 ALL$(IT*35 IT#35+34) ?
1430 OPEN #3 8 0 "P " ? #1 LRA$(22) CH
R$(29) ALL$(N*35 N#35+34)          ALL$
(IT*35 IT#35+14) CLOSE #?
1440 NEXT N
1450 LPRINT LPRINT LPRINT TOTAL$ NAM
ES    NAMES FOR U # TO 78 LPRINT NEX
T U
1460 GOTO 1750
1470 REM PRINTING DOUBLE COLUMN 36 OR
 MORE NAMES
1480 G 1 R 45 T=45
1490 GOSUB 1340 REM GO TO HEADER
1500 FOR N=6 TO NAMES S#=5A+1
1510 P=N+M ? ALL$(N*38 N#15+34) ?  ? A
LL$(AM)S PM3S+14) ?  ?
1520 OPEN #1 8 0 "P " ? #2 CHR$(27) CH
R$(22) ALL$(N*35 N#35+34) '          ALLS
(P*35 PM3S+I41 CLOSE #2
1530 IF N=T THEN 1590
1540 NEXT N
1550 IF NAMES-(NM2)*90 THEN 1580
1560 G G$90:I=G*44 ? PAGE$;INPUT YN$;G
0SUB 1340 REM GO TO HEADER FOR NEW PAG
E
1570 GOTO 1580
1580 R=(NAMES P)*2 P=P+1
1590 ? PAGE$;INPUT YN$ KZ NAMES-(NM2)+
1
1600 GOSUB 1340 REM GO TO HEADER AND P
GINT LAST PAGE
1610 FOR Y KZ TO NAMES B NR=Y+6 ? ALL$
(Y*35 Y#35+34) ?  ? ALL$(NR*35 NR#35+I
41 ? ?
1620 OPEN #3 8 0 "P " ? #2 CHR$(27) CH
R$(23) ALL$(Y*35 Y#35+34) '          ",ALL$
(NR*35,NR*35+I4) CLOSE #3
1630 NEXT Y
1640 LPRINT :LPRINT TOTAL$;NAMES;' N
AMES;FOR U=A#2 TO 78 LPRINT  NEXT U
1650 GOTO 1790
1660 REM PRINTING SINGLE COLUMN
1670 PAGE 48 POKE 756 204
1680 LPRINT CHR$(27) CHR$(14)          ;
CHR$(27) CHR$(25) NAMES CHR$(27) CHR$(1
26) LPRINT  LPRINT  REM SINGLE HEADER
1690 LPRINT '          PROGRAMS LPRINT
1700 FOR N 1 TO NAMES
1710 IF N PAGE THEN ^ PAGE$ INPUT YN$
GOTO 1730
1720 GOTO 1760
1730 PAGE PAGE*45
1740 LPRINT CHR$(17) CHR$(14)          ',
CHR$(27);CHR$(25);NAME$;CHR$(27) CHR$(
26) LPRINT  LPRINT
1750 LPRINT '          PROGRAMS LPRINT
1760 ? ALL$(N*35 N#35+34)
1770 OPEN #3 8 0 "P:" ? #2 CHR$(17) CH
R$(23) '          ALL$(NM35 NM35+34) CLOSE #
1 NEXT N
1780 LPRINT  LPRINT :LPRINT TOTAL$ NAM
ES    ',NAMES FOR M # TO 78 LPRINT  NEX
T N
1790 ? "R";POSITION 5 13 ?  DO YOU WAN
T TO SAVE YOUR DATA Y/N  INPUT YN$ IF
YN$= "Y" THEN 1840
1800 IF YN$ "N" THEN 1960
1810 GOTO 1790
1820 IF PEEK(195) 17 THEN POSITION 18
 15 ? "R  ? "DAN DISK-DISCAMP DISK FUL
L Return ,          TO TRY AGAIN
1830 INPUT YN$
1840 ? "R" POSITION 5 16 ? "DO YOU WAN
T TO FORMAT A 3 1/2 Y/N  INPUT YN$ IF Y$
 "Y" THEN 1850
1850 GOTO 1910
1860 GRAPHICS 2 POSITION I 6 ? #6  ARE
 YOU SURE Y/N' INPUT YN$ IF YN$ "Y" TH
EN 1900
1870 GOTO 1910
1880 IF PEEK(195) 18 THEN ?  "TO MANY
 FILES ON DISK LASCAT  - WIPE DISK, PRE
SS RETURN TO TRY AGAIN  INPUT YN$
1890 GOTO 1790
1900 TRAP 1820 ? "R  POSITION 10 18 ?
 "FORMATING"  XIO 254 #1 0 0  0 1
1910 IRAP 1880 ?  "SAVING DATA" CLOSE #
1 MEMSAV  " MEM$(250)          WORD$(2) MO
RD$ SAI=0 DISK$(15 2)          BOT &
1918 FOR A=15 10 MEM STEP 230 WORD$ AL
L$(N*128)1 SB1 SA1$1 SBV$ ST$(SA1) D
I5$(5 2) SB05
1930 IF VAL(SB05) 10 THEN BOT BB191
1940 DISK$(BOT) ' SBV'
1950 ? #1$K$ OPEN #1 8 0 DISK$ ? #1 WO
RD$ CLOSE #1 NEXT N
1960 ? "R" POSITION 1 10 ?  DO YOU WAN
T TO DELETE USER FILES? Y/N '
1970 CLOSE #4 OPEN #4 4,0 0  GET #4 K
 CLOSE #4 IF LRA$(4) "I"  THEN 1990
1980 GOTO 2020
1990 ? "DELETING"
2000 DL=0
2010 DL=DL+1 CDUN1$(1,11) SIB$(DL) DISK
$(5)=CDUN1$ TRAP 2020 ? DISK$ XIO 33,#
1 8,0 DISK$ CLOSE #1 GOTO 2010
2020 GRAPHICS 2+16 COLOR 0 POSITION 5
 4 ? #6  ALL DONE  SETCOLOR 0 0 0 POKE #
 1 10 200 REM N END
```



10 CM) ?	"A N	690 RUC H	1010 INPUT YN$
20 CP((3	580 9JJ '	700 GW(P	1040 ? "R" POSITION 5 I6 ? "DO YOU WAN
30 CP3 (R	570 9??]'	710 MK" 3	T TO FORMAT A 3 1/2 Y/N INPUT YN$ IF Y$
40 CM+ (W)	760 WYC #)	720 YJ? '	"Y" THEN 1050
50 CP5 (1)	340 65C (J	730 MA$ (J	1050 GOTO 1910
60 CM$ (7)	400 4VD @)	740 BYE (A)	1060 GRAPHICS 2 POSITION I 6 ? #6 ARE
70 CM7 (X)	410 CKW (L)	750 CMM (U)	YOU SURE Y/N' INPUT YN$ IF YN$ "Y" TH
80 CM8 (B)	420 XLP (P)	760 UNF (M)	EN 1900
90 CM9 (Y)	430 BA5 (5)	770 RLE (Z)	1070 GOTO 1910
100 9QQ (C)	440 H7A (L)	780 LEN (T)	1080 IF PEEK(195) 18 THEN ? "TO MANY
110 P25 (O)	450 YMA (C)	790 X4T (J)	FILES ON DISK LASCAT - WIPE DISK, PRE
120 J8E (Z)	460 DMW (R)	800 T6K (J)	SS RETURN TO TRY AGAIN INPUT YN$
130 X12 (F)	470 SLE (D)	810 CPO (K)	1090 GOTO 1790
140 SU5 (O)	480 CRY (H)	820 B10 (J)	1100 TRAP 1120 ? "R POSITION 10 18 ?
150 8G8 (D)	490 DY5 (Y)	830 RAG (F)	"FORMATING" XIO 254 #1 0 0 0 1
160 5JO (8)	500 7FO (Y)	840 RUF (P)	1110 IRAP 1080 ? "SAVING DATA" CLOSE #
170 5U5 (E)	510 7F+ (R)	850 FS1 (Y)	1 MEM$= " MEM$(250) WORD$(2) MO
180 DU5 (D)	520 WVA (R)	860 6Q1 (L)	RD$ SA1=0 DISK$(15 2) BOT &
190 VM2 (5)	530 X9Q (7)	870 A4D (Y)	1120 FOR A=15 10 MEM STEP 230 WORD$ AL
200 7UL (J)	540 UC7 (6)	880 E=K (F)	L$(N*128)1 SB1 SA1$1 SBV$ ST$(SA1) D
210 WAH (M)	550 EPC (S)	890 CU7 (B)	I5$(5 2) SB05
220 AFM (C)	560 E3M (M)	900 LDH (B)	1130 IF VAL(SB05) 10 THEN BOT BB191
230 B7T (7)	570 ML1 (K)	910 L47 (V)	1140 DISK$(BOT) ' SBV'
240 U9C (K)	580 N57 (F)	920 BJ1 (V)	1150 ? #1K OPEN #1 8 0 DISK$? #1 WO
250 K47 (G)	590 RRC (Y)	930 A0E (F)	RD$ CLOSE #1 NEXT N
260 HLS (D)	600 HLQ (8)	940 EFU (S)	1160 ? "R" POSITION 1 10 ? DO YOU WAN
270 RYS (A)	610 3NU (R)	950 H55 (P)	T TO DELETE USER FILES? Y/N '
280 J=V (K)	620 PC6 (Y)	960 XM5 (M)	1170 CLOSE #4 OPEN #4 4,0 0 GET #4 K
290 NND (F)	630 R?X (Q)	970 B40 (E)	CLOSE #4 IF LRA$(4) "I" THEN 1190
300 N15 (I)	640 WF5 (P)	980 WWH (V)	1180 GOTO 1820
310 DEJ (J)	650 P?Q (K)	990 RQ9 (U)	1190 ? "DELETING"
320 O5L (V)	660 5A0 (5)	1000 DRA (J)	1200 DL=0
330 Y33 (5)	670 RRE (L)	1010 R19 (M)	1210 DL=DL+1 CDUN1$(1,11) SIB$(DL) DISK
340 R5R (C)	680 1K5 (2)	1020 EMT (M)	$(5)=CDUN1$ TRAP 1220 ? DISK$ XIO 33,#
			1 8,0 DISK$ CLOSE #1 GOTO 1210
			1220 GRAPHICS 2+16 COLOR 0 POSITION 5
			4 ? #6 ALL DONE SETCOLOR 0 0 0 POKE #
1 10 200 REM N END

10 0 UW (I)	1370 L=I (?)	1 1B 5N (L)
1040 FFO (M)	1380 037 (?)	1 2B ?V (9)
1050 ?AN (G)	1390 KVN (Y)	1730 W?P (A)
1060 B?5 (3)	1400 2NP (J)	1740 A?T (E)
1070 M?7 (?)	1410 5GE (?)	1750 ?7 (M)
1080 F4= (Y)	1420 JEM (B)	1760 Cw (N)
1090 EU5 (A)	1430 4G4 (O)	1770 HM2 (Z)
1100 JW5 (H)	1440 N55 (F)	1780 ?1Y (G)
1110 6AA (X)	1450 VA9 (U)	1790 UH# (Y)
1120 V0T (M)	1460 Q2D (J)	1800 ECX (?)
1?50 TVL (Q)	1470 0VN (M)	1810 HD? (M)
1140 H22 (A)	1480 52Q (4)	1820 C3V (?)
1150 T6Y (E)	1490 3A? (B)	1830 X=6 (M)
1160 058 (C)	1500 D0A (J)	1840 RM9 (M)
1170 HMA (I)	1510 5LA (K)	1850 VM2 (5)
2165 ?HN (I	1520 Y12 (L)	1860 7LW (V)
1190 NU5 (5)	1530 AVG (W)	1870 0KD (J)
1200 H?W (O)	1540 NW5 (4)	1880 KC? (3)
1210 P5V (M)	1550 TCN (I)	1890 8L0 (B)
1220 ANX (Y)	1560 ?0V (A)	1900 141 (5)
1230 ORJ (J)	1570 4?9 (H)	1910 Z8N (P)
12-0 M3X (4)	1580 0G2 (B)	1920 0HL (Y)
1250 JNY (G)	1590 0L5 (C)	1930 1DA (5)
1260 A?C (M)	1600 2VP (W)	1940 70X (K)
1270 2R6 (I)	1610 WVY (F)	1950 4E5 (G)
1280 W05 (L)	1620 5EP (W)	1960 5OP (R)
1290 PX5 (C)	1630 PN5 (U)	1970 U5U (G)
1300 RAN (D)	1640 Vv4 (W)	1980 QJZ (H)
1310 U6J (U)	1650 ?D? (R)	1990 Y81 (C)
1320 0?N (V)	1660 E2N (K)	2000 310 (9)
1330 DHN (U)	1670 5HU (2)	2010 FN5 (9)
1340 920 (U)	1680 L?Q (2)	2020 0?? (Y)
1350 H08 (9)	1690 357 (R)	
1360 AA4 (R)	1700 F?U (F)	

5 LINERS

DECIMAL TO BINARY CONVERTER
from Jason Peasgood

MANY programs have been published to perform the simple task of converting a decimal number to its binary equivalent but none of them have worked in quite the same fashion as this When first run the program sets up a machine code routine that resides in Page 6 – that useful little area of memory

To obtain a binary equivalent of a decimal number type the following expression followed by Return

```
X=USR(1536,n)
```

where n is any decimal number from 0 to 255 The computer will then instantly print the binary number on the inverse line at the top of the Graphics 0 screen

Before typing in the program enter POKE 82 0 so you can fit in the extra length of the lines Then save a copy before running it – if you mis type the data statements it could cause a crash so remember to use Get it Right! to check it

```
1 FOR A 1536 TO 1606 READ B:POKE A B N
EXT A:DATA 104 165 88 133,0,168,85 133
,1,162 8 104 104 141 164 6 169 19,169
2 DATA 120 145 0 136 192,255 208,245 1
66,2,189,162 145 6 208 169 233,145 6 2
08,169 238 145 6 208 169 225 145 6 208
,169
3 DATA 242 145 6 208 169,249 145 6,208
,208,169,141 145 6 169 8 169,120 141 1
65 6,169 64 141 166 6 169 32 141 167,6
,169
4 DATA 16 141 168 6 169 8 141 169 6 16
9 0 141 170,6 169,2 141,171 6 169,1 14
1,172,6,162 1 160 11 173,164 6 221,164
,6,48
5 DATA 9,253 164 6 32 137 6 76 138 6 2
2,145 6,208 232 224 9 208 238 96 141 1
94,6,169 145 145 0 96 169 144 145 0 96
,6,0
```

Get it right!

```
1 MAF (S)
2 SJT (N)
3 GXM (C)
4 KN4 (N)
5 PP5 (I)
```

RESISTANCE FINDER
from S. A. O'Hanrahan

THIS program is, in fact a little bit of a cheat and is actually six lines instead of five because I just couldn t fit it in!

It works out the resistance value of resistors from their coloured bands – very handy for the electronics enthusiast with a poor memory like me

As you probably know, most resistors have three coloured bands which, when you know the codes translate to give a resistance Some resistors have a fourth band – the tolerance value – and some even have a fifth band which is the temperature coefficient. This program only deals with the three *important* bands

When first run the program will prompt you to enter the three coloured bands of the resistor you want to check – these must be entered one at a time followed by Return

If at any time the computer doesn t recognise one or more of the inputs it will re-run the program It then prints on screen the value found – in ohms – and prompts to run again

PROGRAM BREAKDOWN

1 Clears the screen and turns the cursor off Sets the TRAP statement and dimensions four stringe

2 3 Checks other colours against the DATA to obtain the band values

4 Works out the resistance and then prints it to screen

5 6 DATA statements holding the allowable colours and their values

```
1 ? "GU":POKE 752 1:TRAP 1 DIM B$(10) B
$(10) C$(10),D$(10) INPUT A$ 6$ C$ RES
TORE FOR R 1 TO 12 READ B$ A $ B IF B$=
A$ THEN A 6#10
2 IF B$ C$ THEN Y A
3 IF B$=C$ THEN Z B IF B 1 THEN RUN
4 NEXT R RES= (A+Y)*10^Z ? ? 'Resistance
 IS' RES1 'ohms ' ? ? 'Any key to c
ontinue' OPEN #1 4 0 'K' GET #1 R:CLO
SE #1 RUN
5 DATA BLACK 0,1 BROWN 1 10 RED 2 100
ORANGE 3,1E3 YELLOW,4 1E4 GREEN 5 1E5,
BLUE 6,1E6 VIOLET,7 1E7
6 DATA GREY 8 1 WHITE 9 1 GOLD 1 1
,SILVER 1 01
```

Get it right!

```
1 2K3 (W)
2 32B (W)
3 5GC (I)
4 74U (V)
5 OX8 (U)
6 6HC (R)
```



IF you've written any useful or interesting five line programs why not send them to us to grace our pages?

We pay £25 for each one published

You should give a full description of the routine and any other details that are relevant. And remember if you want your material returning please enclose a suitably stamped package.

Win £25

Simply send a copy of the program on disc or tape together with the documentation – preferably as a word processed file – to

Atari User Europa House, Adlington Park, Adlington Macclesfield SK10 4NP

COLOUR CONTRAST
from David Manlove

IT can be very annoying when trying out colours to find one that is exactly the same luminance as the text. When this happens you lose sight of everything you type and System Reset isn't an elegant way of getting over the problem.

This program provides a constant contrast between background colour and text luminance by checking them 60 times a second. So if the screen is a light colour the text will be dark and vice versa. The program uses a vertical blank interrupt and the VVBLKD register at locations 548 and 549.

To test that the program is working correctly type SETCOLOR 2,4,10 before you run it. The text should vanish from the screen. Now run the program... type SETCOLOR 2,4,10 again and the text will be easily readable.

PROGRAM BREAKDOWN

10 Sets up the machine code in Page 6

20 Checks to see what revision of Basic the machine has got and changes the vectors accordingly

30 Changes the deferred Vertical Blank registers to point to the utility

40 Executes the demo and prints a message

50 The machine code data statements

```
10 GRAPHICS 0 FOR L=1536 TO 1586 READ
 D POKE L,D NEXT L
20 IF PEEK(741)=224 THEN POKE 1589,8
 2 POKE 1588,237
30 POKE 548,0 POKE 549,6 PRINT  PRINT
 "demo
40 FOR L=0 TO 255 POKE 710,L FOR D=0 T
 O 5 NEXT D NEXT L PRINT  PRINT  "now ty
 e it yourself
50 DATA 173,198,2,41,15,201,7,176,8,16
 9,14,141,197,2,76,92,6,169,0,141,197,2
 ,76,130,196
```




```
10 KEY (4)
20 SYN (5)
30 SAV (2)
40 SOU (3)
50 PAG (M)
```



BARPOUND SIGN
from P.D. and J. Badrick

I RECENTLY started writing a program for home accounting and this was when my problems arose – my Atari 800XL doesn't have a pound sign on the keyboard. So I decided to write a routine that would redefine a character that I don't use very often. I chose the exclamation mark as this will not interfere with my accounts program.

What you must remember is that after each change of graphics mode or if you press System Reset you must re-run the program because the pound sign will have gone back to being an exclamation mark. I found that the easiest answer to this was to use the program as a subroutine within my accounts program, and I simply go to it every time I need it – but remember to place a Return after it.

The program can also be used to convert the exclamation mark into any other character you require by simply altering the data statements.

PROGRAM BREAKDOWN

1 Prints a message to show the character set being moved into ram

2 Finds the top of memory and steps back eight pages

3 Puts the rom character set into ram. This can be seen happening when the program is first run

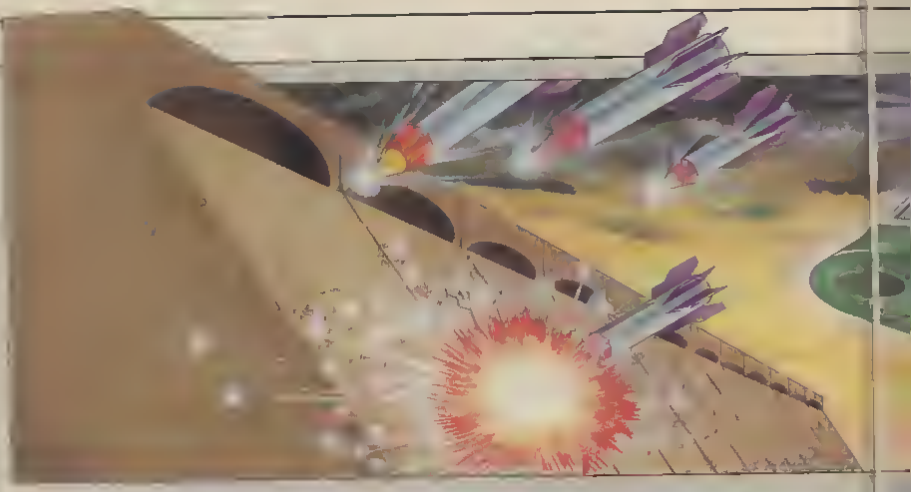
4 Finds the start of the eight byte data for the exclamation mark and pokes in the data for the pound sign

5 Data statements for the pound sign

```
0 ? CHR$(125) ? "  PLEASE WAIT..."
10 REM CHANGE MY EXCLAMATION MARK" ? T
HEN A POUND SIGN
20 RAMTOP=PEEK(106) - PAKE 756,RAMTOP
30 FOR X=0 TO 1023 POKE RAMTOP*256+X,PE
EK(57344+X) NEXT X
40 LOC=RAMTOP*256+8 FOR X=0 TO 7 READ B
YTE:POKE LOC+X,BYTE NEXT X
50 DATA 0,28,54,48,124,50,124,0
```




```
1 SCS (H)
2 ICL (N)
3 A90 (S)
4 WLF (N)
5 H00 (W)
```



DAM TROUBLE

By MICHAEL A. BAXTER

ONCE again mankind – or village kind – is crying out for your help Apparently some time ago an obscure individual by the name of Mustapha Drink – or Mr D – decided to gain control of the Federation for the Control of Water Supplies

However, the Federation refused his cash offer to buy them out, which left a non too pleased Mr D in a stinking mood

This was when he decided that if you can t join them beat them So he decided to destroy all the Federation reservoirs and cause chaos throughout the land Millions of people will be very upset when they get up in the morning grab their tooth brush turn on their taps and nothing comes out

Now spare a thought for the villagers of Floodsville They face the dubious honour of living in the only place in the country with a surplus of water – sited next to a huge dam holding back around 500 million gallons

But as luck would have it – and doesn t it always – you stumble across a £1€ million heli copter gunship Using this you may be able to destroy the missiles that are heading towards the Floodsville dam and prevent the impend ng disaster

So now the scene is set – only you stand between the missiles and an early bath for the village

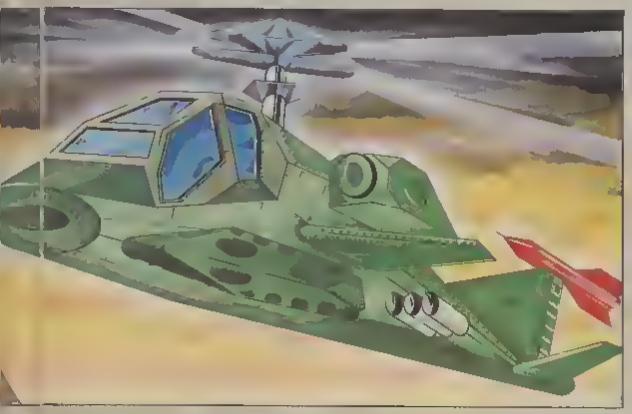
Type in the listing remembering to check it with Get it Right! and save it to tape or disc before running it Be especially careful when entering lines 1000 to 2403 as these contain a large amount of machine code

Three difficulty levels are incorporated, and you make your choice using the Select key The game ends if the incoming enemy missiles manage to blow a hole through the dam or if all your three helicopters have been destroyed

Each wave is progressively harder than the last – the enemy missiles get faster and your helicopter is positioned further away from the dam, giving you less time to react Remember Floodsville relies on you

PROGRAM BREAKDOWN

10 – 12	Initial se variables and strings
20 – 25	Set wave parameters and clear all collision detection registers
50 – 70	Main program loop controlling collision detection and movement of missiles
100 – 110	Move helicopter missile
150 – 157	Randomly select a new shape and position for the next enemy missile
200 – 250	Successful end of wave and bonus routine
300 – 330	Collapsing dam sequence and sound Check for a new high score
400 – 490	Helicopter explosion decrement lives and check for end of game
500	Clear all sound channels
1000 – 1050	Allocate a safe area of ram for the player missile graphics and initialise it
2000 – 2160	Install the vertical blank interrupt routine to control the helicopter animation of the rotor blades and enemy gunfire
2165 – 2167	Set up new screen display list
2180 – 2195	Set up a display list interrupt to change the colours
2200 – 2403	Allocate another area of ram for the new character set and define the new graphics
5000 – 7001	Draw game screen select skill level and start the game



VARIABLES

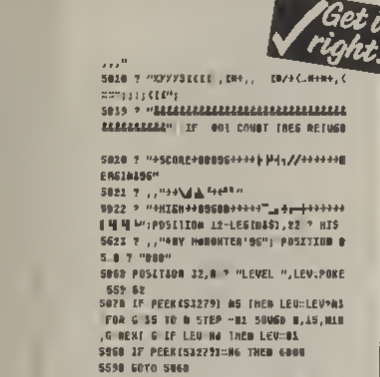
N to N10	Constants 0–10 used for speed reasons
WAVE	Wave number
LEV	Skill level
B$	String containing graphics for enemy missiles
SC SC$	Score
HI, HI$	High score
LI LI$	Lives remaining
CLEAR	Clear collision registers location
MISX	Helicopter missile X position
MHIT	Helicopter hit by missile collision detector
BX, BY	Enemy missile screen coordinates
MOVES	Contains machine code memory move routine
VBINS	Contains machine code to start the VBI routine
A, G	General purpose variables

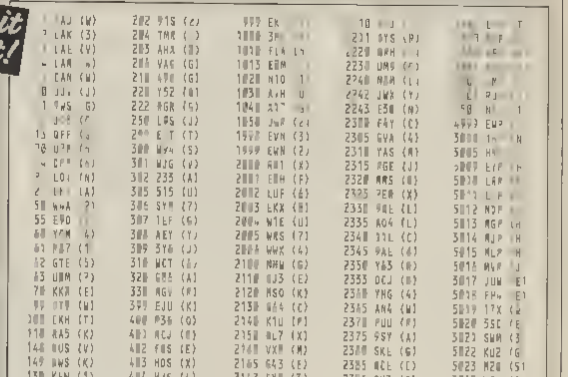
```
1 REM ********************
2 REM *    WAR TROUBLE    *
3 REM * BY MICHAEL BENTEN *
4 REM *    (C)ATARI USER  *
5 REM ********************
10 B=0 B1=1 N2=2 N3=3 N4=4 N5=5 N6=6 N
7=7 NN=N N9=9 N10=10 NM=17 MY=10 MIST
0 N WAVE=N1 LEV=N1
11 CHM MOVE$(121),N3(CN11,SC$(N6) HI$(N6
),LI$(N6),MS(3) N$=" FJ " MN1=-51254 NN
11=51255 CLEAR=51270 MISX=53254
12 CHM VBINS(14) VBINS="h▓▓▓▓ \@" N
13 "9" SC$ BI$:POKE 201 87 @AII-53283
14 GOTO 1000
20 L1:N6.MOVE=B1
24 SHUNN N,52,N4,84 POKE CLEAR,N COLOR
 52 PLOT 10,N
25 FOR G=N1 TO COUNT POSITION N9*6,N 7
 "&)" NEXT G"WS=STR$(WAVE) POSITION N0
-LEN(N$),N ? N$;TRAP 100
27 REM Main Play Area Loop Start Here
30 IF STRIG(N) N AND  NOT MSL THEN MSL
=N1 MX=NN+10 YM=PEEK(205) POKE MPL+YM,
170:DIST DIST+0 1
35 IF MSL THEN GOSUB 100
60 GM GM=DIST GM=INT(GM) CHECKIE NN N1,
NY,Z IF Z=17 THEN 150
61 POSITION BX,BY ? B$; SOUNN N1,GM,MS
0,60
62 IF PEEK(MMIX) THEN 151
63 IF PEEK(CHAIT) OR (PEEK(CHAIT)<>N AND
 PEEK(CHI)3()N43) THEN 600
70 GMIN 50
99 REM Move Helicopter Missile
100 MX=MX+NR POKE MISX MX SHUNN N1,M4,
N,N4 IF MX>211N THEN POKE MPL+YM,N MSL=
N SOUNN N1 N,N,N NISI NISI-0 1
110 RETURN
148 REM Clear Old Enemy Missile
149 REM Choose New Co-ordinates
150 POSITION BX-N1,BY ? "X",  G=SIN(I)
 POSITION NN-N1,N1 ? ")    "; GOTO 154
151 POSITION BN,BY ? "▯"; # SIN(1) POS
ITION BN,N1 ? "   " POKE 53276 N MM=21
0 SC SC+N5 SC$=STR$(SC)
152 POSITION 12-LEN(SC$),2N ? SC.COUNT
=COUNT-N1 IF COUNT N THEN 200
153 POSITION NI0+CHONI,N ?
154 NN 16 YN ON BY N1+INT(ANN(N)*16) Z
=INT(NNN(N)*NA) MSG=INT(RND(N)*87)+N2
NN Z GMIN 155 156,157
155 B$=")? " GOTO 61
156 B$="00 ":GOTO 61
157 B$="FJ " GOTO 61
199 REM End Of Wave Bonus Routine
200 GOSUB 500 POKE 707 N
202 MM=INT(N GOSUN 100 MOVE=MOVE+NI NNNU
S=S0+LEV GOSUN 220
209 IF LEV<NI THEN POSITION N,N:GOSUN
5000
215 IF LEV)NI AND NN<(12N THEN MB=NX+N5
 POKE 53248 NN:POKE 53249,MX+16
100 POSITION 0A BY ? "   ", BM=17
110 COUNT=2N MSN=BIN POKE 707,14 GOTO
24
220 RESTORE 250 FOR G=N1 IN NAMES 5C=5
C+N1 SC$=STR$(SC):READ A.IF # N1 THEN
 RESTORE 250 A=N
222 SHUNN N,A MIN,MIN POSITION I2-LEN(
SC$) 20'? SC; NEXT G RETURN
250 DATA 1N,10,20,25 22 25,0,21 N 25 N
,25,4,23 N-23 -1
299 REM Collapse Jam Routine
300 GOSUB 500 FOR G 30 TO 1 STEP  I M-
N1+INT(RND(N)*10) N=INT(RND(0)*MM1) SOU
NN N,NN,N,I5/G
301 POSITION N Y ? "0"  NEXT G
302 FOR G N1 TO 10 POSITION N,5! '
    ", NEXT G GG=N9
305 CHLON 121 FOR G=1N TO 15 STEP -N1
PLOT N G-RDAWTN 19 G-N-SIN(G) SOUNN N
N10,N,GG GG-GG-N1 NEXT G CHLNN 121
306 PLOT N,14 DRAWTO 39,14 CHLON 32 PL
OT N N1 POKE 707,N MP=21N GOSUN 100 PO
KE 7N4 N POKE 7N5 N
307 WESTONE 210 POSITION NIN 0IN
308 FOR G=N1 TO N5 READ A ? CHR$(A+12N
),"  ", FOR GG 1 TO 5N:NEXT GG NEXT G
309 FOR G 1 TO 100 NEXT G POKE 559 N
310 DATA 97,98,99,1NN 1E,101 102 1N0,1
01
320 IF VAL(SC$1)>VAL(HI$1 THEN HI$=SC$
31N GOTO 250N
199 REM Re-Draw Helicopter
400 N=USR(12740) POSITION NN NY ? '
, NN 21N GOSUN 10N GOSUN 50N POKE 5124
9 NX+80 POKE 707,N
```

Turn to Page 20 ▶

◀ From Page 19

```
481 LS EI 41
482 IF EI N1 THEN LIS="┤┤L  "
483 IF LI=N2 THEN EI$ "┤L    "
484 IF LI N1 THEN EI$="    "
410 GG=PEEK(23B5) FOR G=75 TO 81 STEP -
N2 POKE PLM+1024+GG+850(N1*50,PEEK(S37
701
420 POKE PLM+1300+GG+850(N3*N8,PEEK(S3
727N1
425 POKE 788,G/N5 POKE 789,G/N8:SOUND
N,75-G,N8-N9 SOUND N3,PEEK(S37701),50,N
6
430 NEXT G GOSUB 500
440 Z=USR(1750,PLM,19241):IF EI=N THEN
300
470 POKE 53248,NN POKE 53249,NN+18 POK
E 53256,1 POKE 704,10 POKE 705,10:POKE
 203,CC POKE 206 N2 N=USR(ADR(VBINS))
480 POKE 707,B5 POKE 708 N8:POKE CLEAR
,N POSITION 18,22 ? LI$; SOUND N 52,84
,N5 GOTO 184
490 REM Clear All 4 Sound Channels
500 FOR G N TO N4 SOUND G N N N NEXT G
:RETURN
999 REM Clear Player Missile Memory
1000 POKE 559 N GOSUB 2200 PM PEEK(106
)-18 GRAPHICS N:POKE 559,N POKE 54279,
PM:PLM=256*PM POKE 756,204
1010 RESTORE 1015 FOR I=1740 TO 1791 N
EXT I POKE I,N NEXT I
1015 DATA 104,160,N0,162,220,169,7 76,
92,220,104 104,133,204,104,133 203
1020 DATA 104 133 205,104,133 206,160
206,180 N,169,N,145,203 136 208,251,23
0 204
1030 DATA 202,48,N,290,244,164,209 200
,240,190,204,180,N 145,203 96
1040 Z=USR(1700 PEEK(204)*256+PEEK(203)
+N7
1050 POKE 53277 N3 POKE 53270,N POKE 5
3249 NN POKE 53256,N1:POKE 623,N4 POKE
 205 190
1990 REM Vertical Blank Interrupt
1995 REM To Move a Animate Multi Plex
2000 IF PEEK(1536) 173 THEN 2500
2001 RESTORE 2100 FOR I=1536 TO 1673 N
EXT I POKE I N:NEXT I
2002 ADDR=PLM+1024 N2 INT(ADR/256) LO
:ADDR-256*N1 POKE 1991,LO POKE 1592,N1
2003 ADDR PLM+1280 N1=INT(ADDR/256) LO
:ADDR 256*N1 POKE 1597,LO POKE 1598,N7
2004 ADDR=PEEK(1536)+N7 INT(ADDR/256) LO
:ADDR-256*N1 POKE 1623 LO POKE 1630 N1
:POKE 1642 LO:POKE 1643,N1
2005 ADDR=PEEK(1542)+N7 INT(ADDR/256) LO
:ADDR 256*N1 POKE 1626 LO:POKE 1617,N3
:POKE 1647,LO POKE 1646,N1
2006 ADDR PLM+1084 N1 INT(ADDR/256) LO
:ADDR 256*N1 POKE 1629,LO POKE 1630,N1
:POKE 1652,LO:POKE 1653,N7
2100 DATA 173,130,6,75,255,141,130,6,1
73,131,6,73,15,141 131,6,173,128,1,201
2110 DATA 14,240,8,201,13,240,12,208,1
0,165,205,201,42,144,12,169,195,208,8,
165
2120 DATA 205,201,205,176,2,230,205 16
0,0,164,205,189 128,6,153,0,0,232,129,
0
2130 DATA 155,0,0,200,222 224,3,208,23
0,195,206,134,133,2,133,206,141 3 208,
240
2140 DATA 3 76,98 228,164,207,153,ADR
 050,153,0,0,255,0,0,173,10,210,01,120
2150 DATA 133,207,100,169,128,153,000
 000,105,16,133,0,0,169,32,151,0,0,200
217
2160 DATA 0,19,00,99,03,7,3,1 0,0,255
 128,224 200,133,204,202,0
2165 REM 1790 Z187 FOR I 1675 TO 1705 N
EXT I:POKE I,0 NEXT I
2167 DATA 112,112,00,07,0,0,10,4,4,4,0
,4,4,4,4,4 4,4,4,4,4,4,144,00,
2,2,2,7,65 124 6
2175 REM Display List Interrupt To
2176 REM Change Screen Colors On
2177 REM The Last Four Lines
2180 RESTORE 2190 FOR I 1710 TO 1730 N
EXT I:POKE I,A NEXT I
2190 DATA 72,169,0 141,10,212,141,26,I
N0,169,0,141,20,200,169,12,141,21,200,
104 60
2195 GOTO 2500
2197 REM Redfine New Character Set
2200 G=PEEK(106)-N0 POKE 106 G IF PEEK
(17351 )THEN RETURN
2201 RESTORE 2210:FOR I 1 TO 32 READ A
 GOSUB(I-CHOS(8)) NEXT I
2210 DATA 104,104 133,204 104,133,203,
104,133,206,104,133,205,162,4 100,0,12
7,203,145,205,136,208,249,230 204,230
2211 DATA 200,202,208,240,24N,96
2220 G=G-N0 SET-G G=SET%256
2230 Z=USR(ADR(CHOUSE),57344,G)
2240 DATA 2243 RESTORE 2300
2242 READ G:G=G%N8 FOR I=G TO G+N7 REA
D N POKE SET%2041,A NEXT I:GOTO 2202
2253 POKE 1735 SET RETURN
2500 DATA 85,0,0,127,127,127,120,120,1
20,80,0,0 020,240,240,240,240,240
2305 DATA 87,0 0,255,255,255 199,195,1
99,00,0,0,10,159,159,159,159,159
2310 DATA 85,0,0,16,11,191,255,255 190
,70,0,0,0,0,40,40,40,00
2315 DATA 71,120,120,120 111,119,119,1
19,7 72,243,241,243,0,255,255,255,255
2320 DATA 72,255,255,190,7,241,211,231
,224,70,195,150,150,150 150,180,150,0
2325 DATA 75,205,239,79,15,10,15,15,0,
70,80,80,80,80,80,40,50,40
2330 DATA 77,60,50,50,50,80,80,50,60,60 7
0,0,120,200,150,224,224,220,224
2335 DATA 79 0,00,120,102,102,102,102,120,
60,00,0,119,119,119,119,127,127,02
2340 DATA 01,40,62,03,51,51,51,02,62,6
2,40,47,01,51,51,51,51,43
2345 DATA 03,0,240,200,120 224,120,240
,220,04,00,50,24,0,0,24,24,0
2350 DATA 51,0,62,95,66,6,0,124,0,79,0
0 62,96 96,192,192 02,0
2355 DATA 55,0,62,96,96,96,90,02,0 48,
0,124,102,102,102,102,102,0
2360 DATA 69,0,15,192,99,03,1,0,0,90,0
,254 60,140,146,254,252,0
2365 DATA 31 0 60,102,102,126 102,102
0,50,0,124,192,100,100,102 99,0
2370 DATA 7,0,24,24,24,40,0,0,0,0,16,0,50
,102,102,102,102,50,0,21,0,126,0,0,0,6
,0,0
2375 DATA 124,192,102,192,102,102,102,
102,102,12,0,255,255,0,0,0,255,255,0
2380 DATA 1,192,192,192,192,192,192,19
7,192,3,240,240,240,240,240,240,240,24
0
2385 DATA 0,252,202,252,202,202,252,251,25
3,202,5,255,205,255,255,255,205,25
9
2390 DATA 6,170,170,170,170,170,170,17
0,170,0,0,0,0 0,0,0,0,24
2395 DATA 5,240 190,0,0,0,0,0,192,140,10
,5,21,05,255,204 204,207,207
2395 DATA 11,64 80,04,252,204,204,202,
202 12,0 0,0,0,0,252 252,252 13,252,2
52,253 252,255,243 243,255
2396 DATA 14,0,00 64,63,253,63,63,255,
15,05 05,05,255,195,195,195,255
2397 DATA 20,0,0,0 0,2,10,42,42,27,0,0
,0,0,40,160,170,170,20,170,170,170,42,
4,4,4,4,29,170,170,170,160,16,16,16,16
2398 DATA 39,0,0,01,230,230,61,0 0 31,
15,50,202,252,252,252,50,15,22,194,240
 62,15,16,60,242,192
2399 DATA 36,4,243,60,240,240,180,15,1
31,30,1,12,48,239,233,50,12,1,42 3,12,
12,255,255,12,12,3
2450 DATA 127,0,0,0,0,86 00,05 05,0,90,2
04,40 15 204,51 204,203,203,203,12,255,253
 127,295,223,295,253,255
2401 DATA 122,192,243,127,250 222,235,
253 295,97,255,295,192,192 207,195,203
,255,50,60
2402 DATA 259,155,195,253,170,190,175,
99,195,195,259,255,155,195,195,196,100
,255,192,192,252,192,192,255,255,101
2403 DATA 255,195,195,190,195,195,295,
255,102,195,195,195,195,195,195,255,60
 195,202 195 195 253,251,195 195,N
2450 REM Set Values For A New Game
2500 POKE 82,N ? " POSITION N,N POKE
 756,PEEK(17351) POKE 752,N1:POKE 1079,
PEEK(560)-N15:N 0 OM=18 DM=560 HX=20
2501 CODDT 20 POKE 53250,NN POKE 53249
,NN+16
2502 POKE 1660 PEEK(203) POKE 880,135 P
OKE 561,86 POKE 512 174 POKE 513,N6 PO
KE 54286,192
2503 Z=USR(1750,PLM 20480) POKE 205 180
 POKE 206 N2:G=USR(ADR(VBINS)) POKE 70
7,14 POKE 704,12 POKE 705,14
2504 POKE 708 N0 SC=N SC$ "N"
4999 REM Screen Display Block Level
5006 ? "%%%" ? "YY" ? "XY" ? "YY!"
? "XY"
5005 ? "YXN" ? "XXX" ? "YXX" ? "YXN"
5009 ? "YX$"
5010 ? "YP$"
5011 ? "FX7"
5012 ? "FXX!"
5013 ? "FXXN"
5014 ? "XXP$"
5015 ? "XYX?"
5016 ? "XYXY!"
5017 ? "YPXXN                    ,          ;)
```





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The Basic route to drawing in 3D

THIS drawing program was first published in the July 1985 issue of *Atari User*. It was written for the Ateri ST by Grant Owen, but due to the lack of this sort of software for the 8 bit Atari I decided to convert it.

Although many simple drawing and doodling programs exist none of them allow you to draw a plan view of a shape and then convert it into a 3D image and view it from various angles.

Type in the listing – remembering to check it using Get it Right! – and then save a copy to tape or disc. When you run it follow the instructions that appear on screen. All the drawing must be done on the right hand side of the screen. To define a shape move the cursor – using the joystick plugged into port one – to a position on the screen and press fire to plot the point.

Now move the cursor to the next point you require, press the button again, and the computer will automatically join these points together. Continue this process until you have finished your flat design. You are allowed to plot a maximum of 30 points on screen – if you wish to plot less than this press Start to finish.

You are then asked how many faces you require the finished drawing to have – the maximum number is 30. If you choose this the drawing will be a smooth and rounded shape – selecting 10 will give a rough profile.

The computer will then work out all the points it needs to draw for the 3D shape. When all the calculations have been completed you are asked to enter the angle you wish to view it from. If you enter 0 the computer will draw a cross-sectional view of the image. I found that 0.25 and 0.5 were the best angles to use.

The program was written to work in graphics Mode 8, but with some work it can be made to work in a lower resolution with colour.

Test out this neat drawing routine by ROBIN EDWARDS

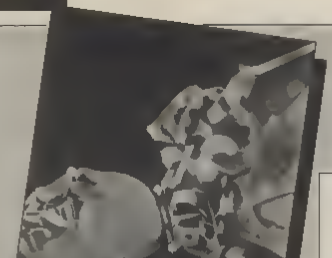
```
1 REM 3D DRAWER
2 REM CONVERTED BY ROBIN EDWARDS
3 REM FROM A PROGRAM ORIGINALLY
4 REM WRITTEN BY GRANT OWEN
5 REM (c)ATARI USER
10 RAD
20 GRAPHICS 8 SETCOLOR 2,8,0:POKE 752,
1
30 MPX=200:MPY=20
40 MAX1=30:DIM X(31,31),Y(31,31),Z(31,
31)
50 ?          WELCOME TO 3D DRAWER"?
60 ?          PRESS FIRE TO CONTINUE
70 IF STRIG(0) 1 THEN 70
75 ? CHR$(125)
80 PX=160:PY=96:LET POINT=0:PI=3.14159
26
90 COLOR 1:PLOT 160,1:DRAWTO 160,191

100 GOSUB 500
110 IF S=1 THEN GOSUB 300
120 IF PEEK(                THEN
130 PX=MPX:PY=MPY
140 IF POINT=1 THEN GOSUB 300
150 GOTO 100
160 ? "NUMBER OF FACES";:INP
170 ? :? "NOW HAVE TO WORK T
100 IF F=0 THEN E=0
190 SN=SIN(P
200 CS=COS(P
210 FOR L=2 TO E+1
220 IF L=2 THEN ? "WELL I'M HAL
230 FOR K=1 TO POINT
```

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```
350 Z(POINT,1)=0
360 GX=X(POINT 1,1)+160*GY=Y(POINT-1,
)
370 GX2=X(POINT,1)+160 GY2 Y(POINT,1)
380 IF POINT 1 THEN PLOT GX,GY DRAWT.
GX2,GY2
390 IF POIN  MAX1 THEN GOTO 160
400 RETURN
410 IF STRIG(0)=0 THEN RETURN
415 GOTO 410
420 ? INPUT ANGLE  INPUT NN
430 GRAPHICS 8 SETCOLOR 2,0,0
440 IF NN=99 THEN RETURN
450 FOR L T TO F
460 FOR K=2 TO POINT
470 H=160+X(K 1,L)
480 J=Y(K-1 L)-NN*Z(K-1,L1
490 N=160+X(K,L)
500 M=Y(K,L1 NN*Z(K,L)
510 PLOT H,J DRAWTO M,N
520 PLOT M,N DRAWTO 160-X(K,L-1) ::
=1) NN*Z(K,L+1)
530 NEXT K
540 NEXT L GOTO 420
550 RETURN
560 S=STICK(0)
570 X2=(S-7)  S- 1) Y2 (S-7?;  M
PX MPX+X2*3 MPY MPY+Y2*3
575 IF MPX 10  OR MPX 316 OR MP  1 J
MPY 155 THEN MPX=MPX X*3 MPY MPY  A
580 PLOT MPX,MPY PLOT MPX,MPY+1 PLOT M
PX+1,MPY PLOT MPX+1,MPY+1
```



```
 S  L K  L  NN  P L I M  M
   I Y  MPI  M  1 YP  L
F
S  UP J
  1 P4
57 1 M  I K L  P  I K  E
  K  L
  L I  M LM 1  U  P J
WI  L M P
PX  P1
  L  I  I 1 I2  :  E
MTL MPX MP  U  P1 YP  F  MP
580 EPX MPX EP1 MP1
590 RETURN
```




```
 1 CAJ (W        10 LPS (     WJ WMG (M)
 2 CAK (S)       12  MF  J     J WW (S)
 3 CAL (W)       14  M   (     WJ DJT (S)
 4 CAM (4)       16  M   M     W  U F (V)
 5 CAN (W)       18 (W)  5     5B  B3T (S)
 6 MM1 (O)       20  M   W     5  FUF (2)
 7 SJM (4)       22 (W)  W     5  AXU (G)
 8 UWC (P)       24  M   P     5  P35 (9)
 9 ZNL (B)       26 (J)  W     5  ZR5 (3)
10 YOU (K)       28 (H)  W     5  RTF (E)
11 BIO (X        30  KF  B     5  VHK (7)
12 GE0 (7)       32 (F)  P     5  LKA (A)
13 PWG (R        34  PA  W     5  NG  (W)
14 BTK (U        36  XP  W     5  ADC (L
15 AL3 (C)       38  DF  W     5  ZPF (X)
16 PZJ (S        40  LM  P     5  SA9 (P)
17 IIF (P)       42  UJ  B     7  DCY (V)
18 LUN (P)       44  IK  W     7  LMP (M)
19 YSN (M)       46  M  (Y)     7  LYY (W)
20 SHH (         48  AF  (K)     7  N4J (3)
21 DJ  (0        50  YS  (7)     7  NMY (G)
22 YU  (E        52  5A  (L)     7  NUJ (M)
23 CKT (K)       54  AU  H     8  GEA (Y)
24 RU  4)        56  Y5  (2)     8  AA  (X)
25 7H  (2)       58  T4  (B)
```


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Visions of success...

Neil Fawcett takes a look at a new software company, a new game and its seasoned author

IN an ever expanding software market it is always pleasing to see a new product arrive in the office – and Speed Ace certainly had us all buzzing

It is the first release for the Atari by a newly formed company Zeppelin Games which decided to enter the world of budget price software If all its products are as good as this one it has look to a prosperous future

The game is a one or two player motorcycle simulation which uses a split screen display similar to the old Scalextric II game After playing it for a while I was intrigued to find out why a full price product of this calibre is being released at only £2 99 So I packed my bag and headed for Newcastle on Tyne to talk to the author Brian Jobling, who is also one of the founders of the company

When you meet Brian the first thing that strikes you is his age At 19 he has already chalked up an impressive list of games on various computer formats His successes on the Atari include a while he was working for Microdeft—Winter Olympics Phantom Combat Dares Wins II and Mousetrap

To summise that it was the success of these games – especially Winter Olympics which sold over 4 000 copies in its first



Porsche at the tender age of 18

When I asked Brian why the game was so cheap his answer was very simple Zeppelin want to show that high quality software can be produced and sold at a budget price It has certainly done that with Speed Ace Unlike most budget companies who bring out up to 10 titles a month of an average quality Zeppelin will only produce around two or three games a month But because more time is spent on each the quality will be very high

Zeppelin was formed on 30 September last year by Derek Brewster, Brian O' Brian Joblin

They have their own in-house programmers and various free-lance writers and as well as supporting Atari they produce budget games for other micros

Derek is the man who got Brian interested in the world of programming He was converting games for the Amstrad CPC but since then Brian has moved on to better things Derek used to be an editor on a computer magazine

With all this experience the company has the potential to succeed but what really sells the products is their

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quality. The packaging has been produced in a very professional way. Original artwork and eye-catching style makes the product jump off the shelf at you. So best of luck Zeppelin and keep those quality products coming in.

NEW RELEASE



As with most budget releases, Speed Ace is only available on cassette. Being the first release for Zeppelin, they will be hoping for a huge success.

When loaded you are presented with the main menu from which to select your race options.

If you choose a one player game you will race against 19 other computer controlled riders on a full screen. The scrolling is very fast and simulated speeds of up to 192 kph are possible.

In two player mode you can race against a friend using a joystick plugged into port two. The screen is split into two each half giving an independent view with the two of you being the only riders. This technique slows the game down a little, but racing against someone other than the computer is great fun.

You can choose between nine different race tracks with from one to nine laps on each. The circuits include Brands Hatch, Silverstone, Jarama, Paul Ricard and Daytona.

The inlay card says that the computer tracks are identical to the originals, but not knowing them personally I can't dispute it – although Brian assures me they are.

To control your bike, push forward on the joystick to accelerate and pull back to slow down. If you collide with another rider it results in you temporarily losing control and it will take you a little time to regain speed.

Leaving the road or touching the kerb also slows you down dramatically, so take the bends at a comfortable speed and it will pay off in the long run. I found that under 140 kph was a safe speed for bends.

After a race you are presented with the score table which shows the best time for that particular track and the time you have just achieved. It also shows what position you finished the race and the best position you achieved.

The graphics are superb and the scrolling exceptionally well executed. Sound effects could be better – a catchy little tune on the main menu would have been nice. Having said that the constant sound of the engine revving and the crunch as you grate your legs into the ground as you go round a corner are adequate.

The feature I really liked was the way the bike leans to one side as it goes round corners. This is smoothly done and adds the finishing touch to a super motorcycle game – the first of its type that I have seen for the 8 bit Atari s.

At £2.99 this game is a bargain and must be a winner for Zeppelin and Atari computers alike. I will be very surprised if it doesn't turn out to be one of the best sellers in 1988.

COMING SOON



Zybex will be the next release by Zeppelin for the Atari 8 bit and although the version I saw wasn't finished, what I did see was superb. It promises to astound Atari games players with its quality and addictiveness.

The game involves two rebels – Rinser and Cassalana – who have been sent on an almost suicidal mission to escape the nightmare of Death Row.

To escape execution they must go to various strange worlds in the Czoken system and fight weird and deadly aliens. From each of these planets you must collect a teleport crystal. Each crystal gives you access to another world until you reach the restricted levels and face the ultimate challenge – the Zybex itself.

If you obtain this it will ensure that your captors remove death rings from your necks.

To help you with the mission you are given the Orbit weapon with power level one. This can be increased as the game goes on by picking up weapons of the same type.

There are others that you can get and these include the Rail Gun, the Wall, the 8-Way and the Pulse. The game is described as having a simultaneous two player option – two players on screen at the same time. Very nice to watch.

The graphics are stunning and the music was some of the best ever on a game for the Atari and believe me I've heard a lot.

The graphics for the backdrops are some of most original I have seen. A lot of thought has been put into designing the aliens you fight and the weapons that you use. All in all this game is a credit to Zeppelin.

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Service has new specialist role

ONE of the country s leading learned societies has joined MicroLink

The British Psychological Society has nearly 12,000 members and is involved with government the health and education services academic institutions and other organisations here and abroad

Last year its charter was changed to allow it to maintain a register of chartered psychologists which the general public will soon be able to consult

This gives the country a new breed of chartered specialists whose education and professional conduct the BPS oversees

The society is no stranger to the benefits of electronic mail For some time its members who work in academic institutions have been communicating via JANET the Joint Academic Network.

By joining a more widely used service like MicroLink, BPS members working in all areas of psychology can now communicate faster and more efficiently with the Society s offices in Leicester

In addition the society s extensive business activities, which include publications and software, will be enhanced by MicroLink Email and telex facilities

A bulletin board for business

MICROLINK has joined forces with the University College of Swansea to provide a unique electronic bulletin board for businesses

Subscribers can get advice free of charge from experts in various fields, and discuss business problems with others who may have experienced similar difficulties

As well as being instant and free, this access to professional expertise comes with no strings attached no axe to grind and no commercial bias

The wide range of business sectors covered includes legal matters exporting industrial relations management market research personnel and training, statistical and systems analysis

Expertise is also supplied in the areas of computing and computer systems electrical and electronic engineering, expert systems and artificial intelligence, and mechanical engineering

Users of the Business Bulletin Board can browse through the messages and replies for items of interest

All messages are read by the system operators who pass them on to the relevant expert

Translation back the same day

LANGUAGE expert and Swansea university lecturer Dr June Salmons has started what is probably the world s fastest translation service on MicroLink

Subscribers who send foreign language documents to her mailbox can get the translated material back the same day – a vast improvement over the post particularly for businesses

Initially I can offer translation facilities in Italian Spanish and French – but if the demand is there, other European languages can easily be added said Dr Salmons

Subscribers can use either the standard service where the translated document is returned via MicroLink the next day or the super fast same day service

Dr Salmons a lecturer in Italian said Europe has always been an important area for organisations to develop into However barriers are often erected solely because of linguistic difficulties

Hopefully a fast and efficient service like this should make it easier for more firms to enter Europe

Big cash savings

THE first commercial bulletin board on MicroLink has been launched

Called LoadLink it will help Britain s 2 000 removals firms avoid expensive wasted space on their vehicles

The service provides information about spare capacity – part loads – available throughout Britain and abroad

Firms using LoadLink can sell or buy space on part-loaded vehicles, enabling journeys to become more efficient and profitable

It also enables firms to give their customers better service by accepting small loads that were previously uneconomic

Britain's best-selling computer magazines!







The M[illegible] [illegible] [illegible] [

Grateful for small mercies



by Rouloc

AS I was saying to my great-great-great grandfather just the other day – we small folk are noted for our longevity you know, despite the fact that we dice with danger and dragons virtually every day of our lives – not a lot new seems to be happening at the moment

There's usually a post-Christmas lull on the games front and that goes for adventures too. Still this year it seems even quieter than ever, but then I probably say the same sort of thing every year.

When you think about it though not all that many companies are producing adventures these days even when the market is at its liveliest. Apart from Rainbird, Magnetic Scrolls, Infocom and Level 9, adventure producers seem remarkably thin on the ground.

There's Robico of course and even US Gold releases the occasional import – the Ultima and Electronic Novel series spring to mind – but you'd be hard put to think of any others that are still around.

And yet when you really start to look back over the years, that's the way it has always been. Only a handful of companies have ever gone in for adventures in a big way. We must be grateful for small mercies – as long as we adventurers remain hungry for new quests and challenges I believe that there will always be software houses willing to satisfy that demand.

The most cheering aspect is that the quality of the adventures being written today is, in most cases, better than ever.

The advent of more powerful and larger memory machines together with the development of more sophisticated programming techniques, means that we are no longer faced with wrestling with an adventure's vocabulary severely limited by simplistic two-word command structures or bored to distraction by barren descriptions.

For those that like them, many adventures now have superb graphics and some even sound effects.

We've come a long way in a few years and with the prospect of other exciting developments such as CD-ROM, the future of adventures looks assured.

Now turning to your letters, what happened to your response to my invitation for you to send in your personal lists of favourite adventures? Not a dicky bird have I heard! Can it be that none of you have played enough adventures to be able to supply such a list?

I can't believe it – surely most of you have experienced the joys of at least a dozen quests? If so, write in and let me know your favourites in order of preference. I just love comparing my own pet likes and dislikes with those of fellow adventurers, don't you?

Steve Wilson of Tamworth is desperate. Please, please, please, he writes, for goodness sake tell me who's the King of the Jungle in Mordon's Quest. Tarzan has spiffilicated Steve a hundred times and Steve has wandered around in misery for months trying to discover the answer.

He's going bald with worry and unless someone tells him soon, he's going back to Space Invaders – that shows you just how bad the situation is. I don't know the answer, but for the sake of Steve's health, can someone please supply what he and Tarzan want?

Brian Standing of Port Talbot takes me to task for forgetting what I am supposed to already know about Ultima IV. Similarly Ron Rainbird from near Crewe asks for my help with the same adventure, noting that I claimed to be an expert on the game.

Well I'm afraid I have a small confession to make. Like Dr. Who who regularly undergoes a transition to an entirely new personality, I too have undergone a change in recent months.

I am not what I was, if you catch my drift, and I have to admit that my knowledge of Ultima could be written on the head of a match. Now if it's info on Infocom games you're after...

However, Brian has supplied some more help with Ultima IV which I now pass on for the benefit of interested parties. The mandrake can be found either on an island to the east of the Fens of the Dead which are south of

Turn to Page 30 ▶

◀ From Page 29

the Island of Paws or, easier, in the Bloody Plains – look for the marsh symbol

Mandrake and nightshade can only be gathered at midnight – no moons. Nightshade is found at LAT J FLONG C O The three syllables of the word of passage are VER AMO and COR making VERAMOCOR – but Brian is not absolutely sure that is the correct order not having played it for quite a while

You should stock up on your full quota of spells before entering the chasm since it is an arduous journey to the bottom The most useful are Heal, Cure Dispel Awake Negate Sleep and Protection

Ron would like to know where Buccaneer a Den, Magincia Nostro the Runes for Valour and Spirituality and the secret entrance to Hythloth are to be found He would also like information on how to travel by ship into Lock Gate to see Mentorian for the Gate Travel spell Can anyone assist?

See you next month.

Hints & tips

THE PAWN
Solution – Part two

From the staircase room, go down to the room with the low ceiling Then go W then SW to the lounge, get the hard hat and wear it Search the cushions for the coin go to the lift and press the button

Enter the lift close the door and press the second button then at the rockface get the lumps using the trowel Go back to the lift and press the button then get the rope

Return to the grassy plain and buy whisky and beer bottles with coin and chit Go to the narrow track and climb over the rocks then go to the cavern and find small cave

Travel N N to the laboratory give rice then lumps to the alchemists then examine the tea chest and jars Drink liquid then cast a spell on the tomes and go NE to store room and get the aerosol Go SW NW, W and cross the rope bridge then go NE to the tunnel then N to the room

Tear paper wall with the trowel and tie the rope to the hook climb down and knock on the doors and keep on knocking Give whisky bottle to the porter then go E D and N to the annexe

Give the beer bottle to Jerry then go S E N and E to hell and ask the devil about the wristband then get the potion bottle Go to the dragon in the chamber via rope bridge and high ledge

● *Part three next month*

The truth about TELEX

How much does it cost to go on Telex?

You could go the conventional way and buy a dedicated Telex machine The cheapest will cost you £1 604 [the Whisper] the dearest £2 892 [the Cheetah] You will also need a separate telephone line costing £101 to install plus £404 a year rental That s a total outlay over the first year of a min mum of £2 109 [All prices include VAT]

[illegible]

How do I turn my Atari into a Telex machine?

All you need is a modem and appropriate communications software [see the advertisements in this issue] a telephone and a subscription to *MicroLink*

Telex is just one of a growing number of services available to Atari users on *MicroLink* With MicroLink you can also read the news as it happens go teleshopping create your own closed user group send telemessages and electronic mail right round the [illegible] and free telex to one [illegible] into your micro and much more

But why use Telex?

Because it s a standard means of instant communication between businesses Today there are 150 000 Telex machines in use in Britain – and more than 2 million worldwide It s used to dramatically speed up business communications – just as quick as using the phone but far more efficient because you have a hard copy of every conversation for your records

But there s a big bonus you get when you use *MicroLink* for Telex that the conventional way doesn t offer

With *MicroLink* you don t HAVE to be in your office to send or receive Telex messages You can just as easily use your computer at home [or even a portable] So now you can check whether there are any Telex messages waiting for you anywhere anytime How s that for your business efficiency?

How to join
See Page 3

Two discs crammed with the most popular programs from your favourite magazine!

These two exciting compilations bring together some of the very best listings from the pages of *Atari User*.

Whether you like games or prefer more serious pursuits there's something here for you – and you can also learn a great deal from examining and modifying the Basic listings.

Ten of the Best Games

Chopper Rescue – Take command of a helicopter to rescue lost soldiers

Des Bells – Rescue Esmerelda by negotiating the dangerous obstacles

Spacemaze – Fly your spacecraft through the deadly caverns below the lunar surface

Mazemunch – Guide your munch monster around the maze avoiding its deadly inhabitants

Moneybags – Gobble up all the money but beware of the sinister spiders

Frank the Fruit Fiend – Help Frank eat his favourite food in this platform game

Duck Dash – Dash round and chase up all the ducks before the storm hits the farm

Froggjump – Direct the frog across the busy road in this classic arcade game

Doctor Boris – Help the doctor build the new hospital but watch out for mad Norman

PLUS the latest Get It Right! program to help you correctly type in listings in Atari User

Ten of the Best Utilities

DiscError – Make sense of those Basic error numbers by turning them into words

DiscEdit – Modify those hidden sectors with this superb utility

DiscView – Take a look at all the useful information stored on your discs

Dump 15 – Make prints of your favourite pictures on your Epson or Atari 1029 printer

ArtShow – Load your AtariArtist pictures and create your own fantastic artwork

AutoDirectory – Gain instant access to disc directories without going to Dos

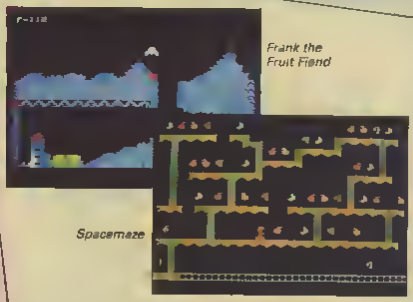
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Frank the Fruit Fiend

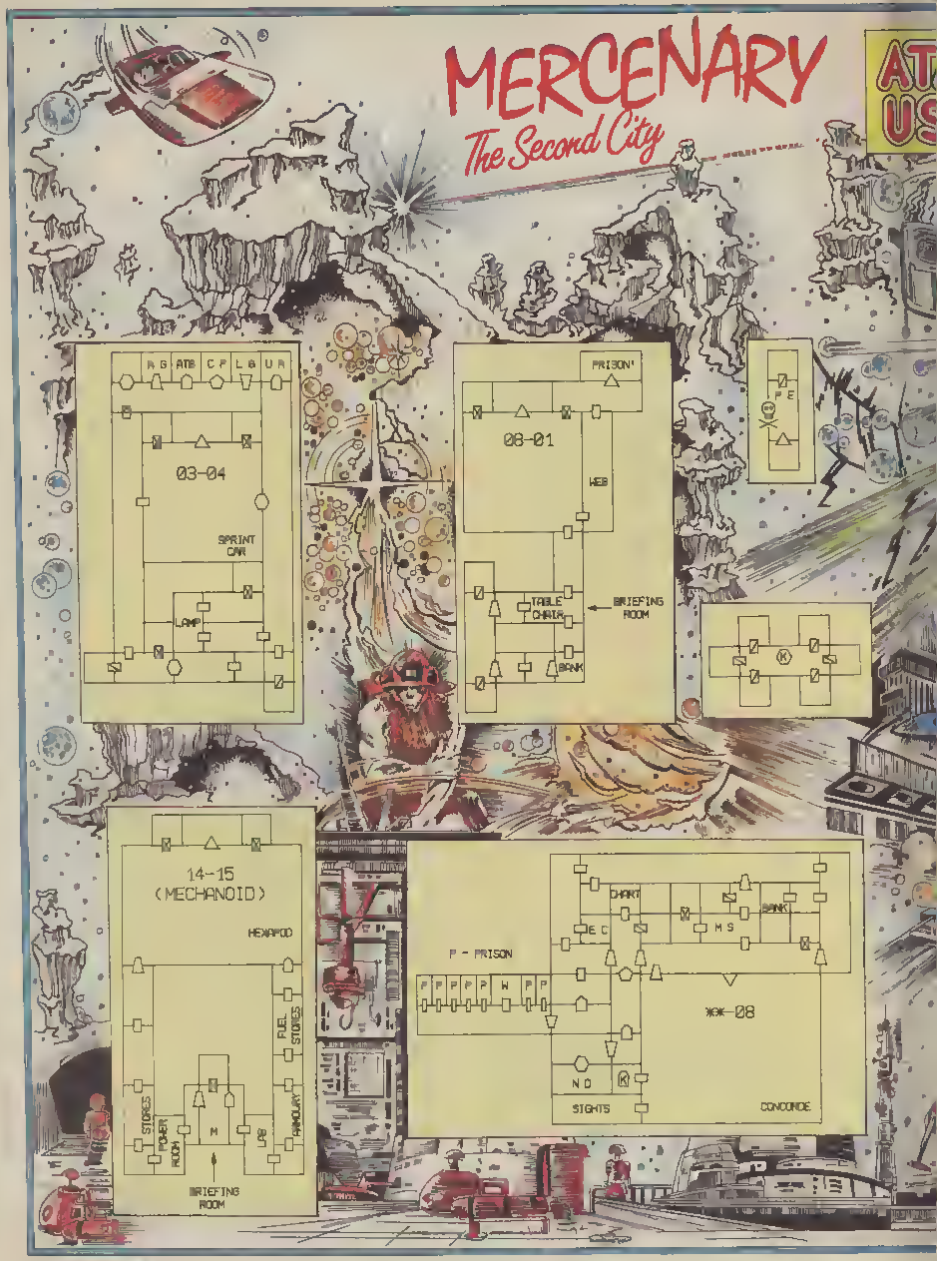
Spacemaze

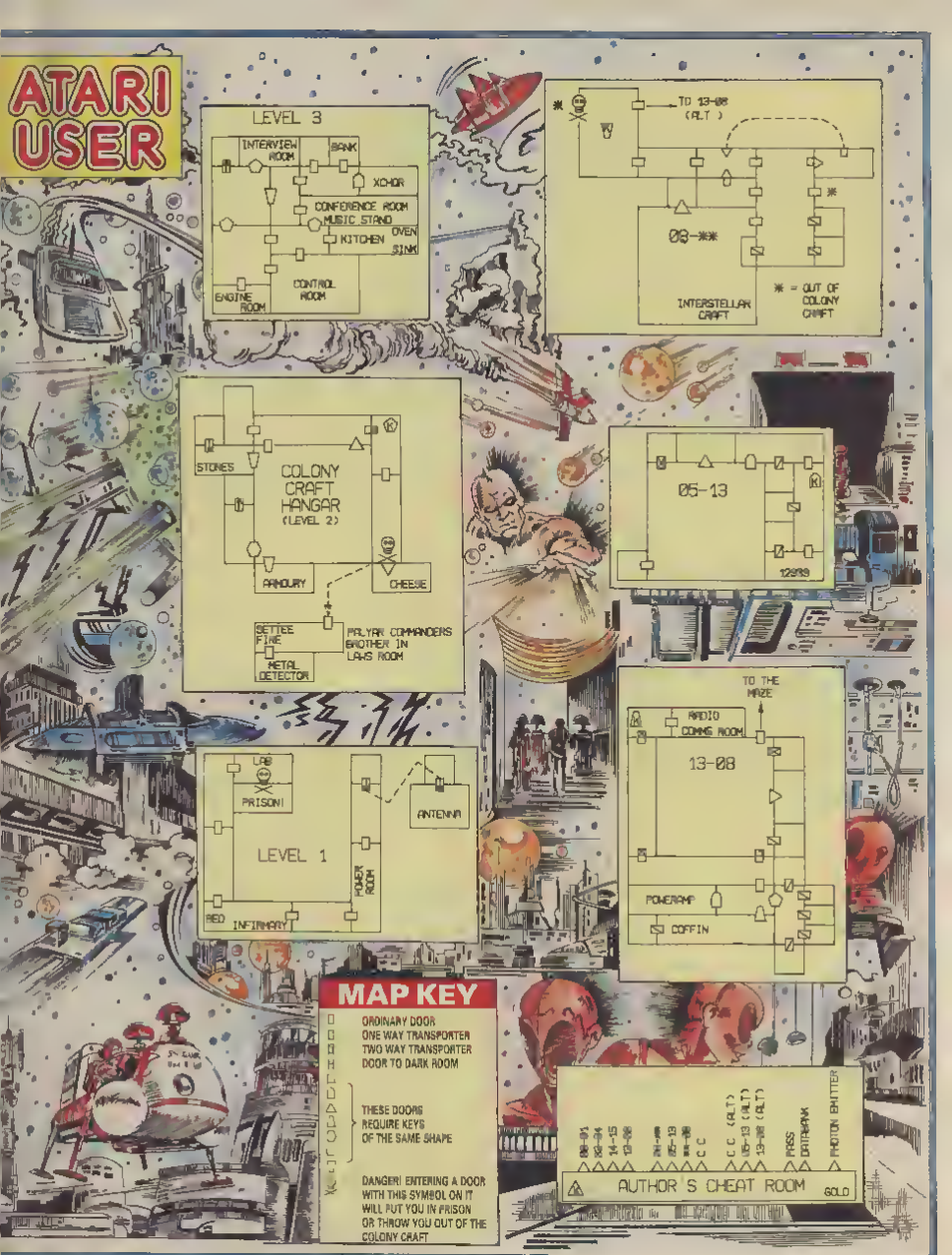
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M S
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A 2

SoftwarE SCENE

Batty but beautiful

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ONE of the main problems the software market suffers from is a lack of originality. At times it appears that programmers simply change the design of the aliens and call shoot em ups under another name.

Maybe it's time we went back to another old idea and jazz it up a bit and this is exactly what MicroValue has done with it's latest game Rebound. The title screen is very well done. There's no amazing picture but varying text fonts and colours are used to good effect.

The music is a superb percussion piece that really gets your foot tapping. It goes on for quite a while and changes all the time – not the usual monotonous dirge that some games give.

As you play the music can be heard in the background – a feature that I like.

The quality of games music seems to be getting better all the time – but that's not really surprising on the Atari machine.

Now on to the game itself. Imagine that you take a tennis court, cut it in half along the net, then place one half at the top of the screen and the other at the bottom.

You then have a bat at each end moving left and right and a ball and build the sides of the court up so the ball can rebound off them. There you have it – sounds very simple doesn't it?

There are three levels of play. One is just right for the novice, but don't try level three unless you have the speed and reactions of Boris Becker.

In one player mode you face the computer, but the fun really starts when you move to two player mode and challenge a friend.

The object is to score seven points or goals, which is done by making your opponent miss the ball so it passes his bat.

You can only score a point when it is your serve and the scores are displayed on a status line that separates the two halves of the court.

When a game is won a whistle blows and you are returned to the title screen.

An amusing feature is the animated audience seated on each side of the court. They are the strangest bunch of aliens I have ever seen since the cantina scene in Star Wars.

Whenever the player who they support scores a point they clap, jump up and down and generally squirm around in glee.

The game contains all the features needed to be a winner – smooth scrolling and superb graphics give an overall addictiveness, the animated audience is fun to look at and the music is superb.

Rebound will be released at Easter on Microvalue's Four Great Games – Volume Three. The pack will be worth buying for this game alone. Well done Microvalue – a superb product.

Neil Fawcett



Sound	8
Graphics	7
Playability	8
Value for money	7
Overall	8

SoftwarE SCENE

Flight of fancy

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EVER since the pocket calculator was invented complicated mathematics has receded. The development of spreadsheet computing or as some would call it financial planning, has brought business calculations well within the grasp of everybody's abilities and pocket.

A spreadsheet acts like a blank sheet of paper on which both text and numbers are placed. Numbers form the basis of calculations and if these change it often causes automatic recalculation of all the results.

Spreadsheets can be used for any calculation – not only financial but the majority of applications are usually for standard items such as profit and loss balance sheets, costing/estimating and analysis of expenditure.

The main benefit apart from time saved in accurate calculations is the possibility of *what if* predictions. Just changing a few pieces of data or even editing a formula can alter the forecast of any financial modelling.

Swift originates from the Commodore 64 version of Micro Swift. The disc contains XL and XE versions and the correct one for your computer is loaded automatically when you boot the disc.

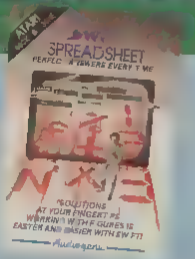
It comes with a 50 page manual covering basic information and gives plenty of examples and two tutorial lessons.

Unfortunately all the commands are laid out for the C64 but there's a separate quick reference card for the Atari indicating which keys to use.

Swift has all the usual features found in spreadsheets together with user defined screen colours and pop up menus to aid data input and manipulation.

The size of the spreadsheet allowed by this program depends on the size of the computer's ram. For the XL version there are 6600 cells – 26 columns and 254 rows – and the XE version has 64 columns and 254 rows – 16 256 cells.

To take advantage of the package's many features the unique pop up menu system allows you to select commands without having to enter a sequence of special characters.



Many instructions have been grouped together in a logical sequence to further aid data input.

The menus are small windows which overlay about a quarter of the sheet but do not interfere with the data behind.

Some commands have additional menus linked to them so there is often no need to type in specific instructions – just select the right one and press Start.

Using these menus can make the complicated calculating process structure seem easy to operate – see Figure 1.

To move round the spreadsheet, the Control+cursor keys are used for single cell jumps while for bigger moves the Goto key allows you to go directly to any cell.

Entering and editing data is simple – just place your cursor on a cell and type the data in.

Features include the standard preparation of cells for width, numbers, currency signs and decimal places. You can also format a disc from within the program or see the data in a basic graphical form.

One of the most important parts of any spreadsheet is the ability to be able to relate cell values to others. You do this using formulae.

For example you can say that the value of D10 is the result of D3 * D6. You can transfer or copy that formula to other cells.

The printer section has some good facilities. You can select the output width and insert printer commands to customise it. All data can be saved to disc.

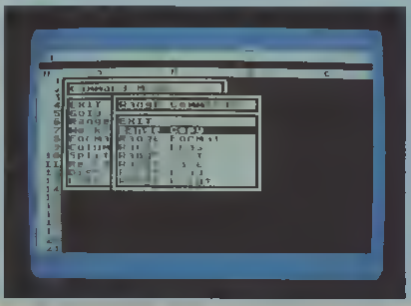
Swift operates effectively, but the programmers have tried too hard to be innovative.

Although the little pop-up menus are impressive, they are difficult to use, but overall using the program is still quite easy.

The tree like structure of the pop up menus save you having to memorise complicated commands.

Spreadsheets for 8 bit micros are few and far between and while Swift may not have the depth of other popular business programs it has very good capabilities is adaptable and well suited for beginners to both computing and financial modelling.

Alan Goldsbro



Command Menu

Menu I – Range Command

Menu II – Range Copy
Range Format – Menu III – Exit
Range Erase
Range Sort
Range Save
Range Load
Range Print

Negative Values
Currency Signs
Commas
%Sign
Zero suppression
Precision 0 – 8
Plot ***

Figure 1. The tree like structure of Swift's pop-up menus

TRANSDISK IV

Commercial tapes CAN be transferred to disk!*

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Are you tired of waiting for cassette games to load? Would you like to transfer them to disk for faster more reliable and convenient loading? You may have heard or read that this is not possible. Well not only is it possible but there is a program Transdisk IV that will do it all automatically you require no knowledge of cassette protection techniques! To put it simply Transdisk IV will read ANY Atari cassette (single multi stage non standard format 64K – no problem!) remove the protection then place it on to disk for you. Plus to load and run the new disk version of a cassette program requires just one keypress from a convenient autorun menu disk.

The cost of this the most powerful tape to disk utility for the Atari is just £24.95 inclusive of first class delivery. Also comes complete with comprehensive instructions which were specially written with the cassette upgrader and first time disk user in mind.

Requires Atari 800XL or 130XE Computer with disk drive and cassette recorder

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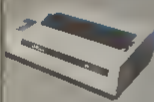
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PANTHER the new budget title from Mastertronic is a good old fashioned shoot em up You are inside a flying saucer and should get hours of entertainment as you disintegrate aliens in a hail of laser fire

You are the lone remaining pilot – sounds like Battlestar Galactica – in the Federal force and your city Xenon, is under attack

Most of the population have left and the remaining few must be picked up and taken to the spaceport on the other side of the city

Reminiscent of Blue Max 2001, the playfield scrolls right to left diagonally across the screen This looks good but it unfortunately prevents half the screen from being used – your movement is restricted to a narrow channel running from corner to corner

To me this is a sign of lazy programming is with a little bit of work the entire screen could have been used

The view of your flying saucer is from above and to the right – hence the scrolling techniques used Using the joystick, you can move up down left and right within strict limits

The aim of the game is to survive – which isn't easy – and to rescue stranded people who are taking refuge in triangular shaped bunkers scattered around

To make life difficult alien fighters constantly buzz the area and take great delight in zapping you – but don't they always?

The terrain is nicely varied and starts with desert – beware of the killer cacti Don't land on any green bits to pick up survivors because your craft will explode – a handy piece of information that the cassette inlay omits

Another problem with this level is that some of the aliens are the same colour as the background making them very difficult to see

Next you'll come to the deserted city which is laid out in a monotonously symmetrical fashion After this you arrive at the sea, complete with waves and very realistic they are too

Look out for oil platforms as you cross the screen as there could be survivors on them

After the sea you reach another city and the spaceport Flying is fun in the city as you try to go in under radar and round the skyscrapers

Below the main playing area is your saucer's control panel This displays your score, the number of people you have rescued how many ships you have left and a radar panel

The latter shows the position of the bad guys relative to you and is very useful because they can go off the screen and shoot you from behind whereas you can only shoot them if they are directly in front of you and at the same altitude

A novel approach I liked was that they call your death and rising from the ashes the Phoenix manoeuvre – you have five of these before the game is over

A failing is that there is no real height indicator – you have to guess the height by your shadow and compare it with the alien ships At least in Blue Max the enemy changes colour when you're at the same altitude

Another well-implemanted feature is the superb background music although it can get on your nerves after an hour or so Most of Mastertronic's recent games have been released with some very classy music, let's hope they keep it up

I was disappointed with some of the graphics Your ship resembles a strawberry that you have just trodden on – flat and horrible

The alien craft are just as boring but a saving grace is that the little people are well animated as they run out of the bunker to your ship

Despite these minor faults I enjoyed playing Panther. Excellent scrolling and sound effects make it pleasing to look at and hear For £1 99 you must buy this game for your collection, it's well worth it

Ruth James



Sound	7
Graphics	6
Playability	8
Value for money	8
Overall	7

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Your HINTS & TIPS

Mirax Force

IF you are having problems with this fast action shoot 'em-up don't worry – help is at hand. The author Chris Murray has built in a cheat mode.

His middle name is Peter and by typing his initials *CPM* at the title screen you will turn off the collision detection for your craft. You can still shoot the alien craft and destroy the super structure of the mother ship but they can't get you.

I have used this cheat to get all the way through the game and believe me some of the later screens are superb – **Michelle Nixon, London**

Zaxxon

WHEN you are flying through the second Space Fortress you need to get the heights exactly right for going through the space between the force fields and the wall.

Your height is indicated on the left of the screen as full and half blocks so here are the heights to fly at: 15 25 0 15 25 0 and 15 – **F Bowley Hockley Essex**

Ghost Chaser

If you are having problems playing the game and are losing lives fast type in FANDA and the program will give you extra lives – **Owen Paget, Ross-On Wye Herefordshire**

Mercenary: The Second City

HERE are tips on how to escape the planet with 9 000 000 credits.

- Steal the Dominion Dart.
- Sell the large box to the mechanoids.
- Sell everything else you can lay your hands on to the Palyars – including the Mechanoid.
- Shoot all Mechanoid occupied positions.

You will also need to be in possession of the

Grenade Prestinium	These make up the skeleton key
Photon emitter	

To get the Neutron fuel you will need to be in possession of the Anti grav which allows you to fly higher. It can be found at location 00 00 Altitude 08013.

You need the metal detector to identify Mechanoid positions – it turns the message bar blue when you are over one. You also need the pass because if you don't have it you will be rewarded with it and not get the 1 000 000 credits.

If you manage to shoot a Palyar position make a quick note of its coordinates then get the Anti Time bomb which will rebuild it and you can shoot it again.

A final warning. Don't enter the prison in the colony craft laboratory because there is no escape. For further help with this addictive game take a look at the map on Page 32 – **S Stevens Andover Hants**

Fidget

ON level 10 you will come across Flindel the spider. To pass her you have to stand at the bottom of the ramp and wait for her web to disappear.

Go up the ramp and then go on to the ledge that juts out on the left. Wait for her web to pass you and carry on up to the top then touch Flindel who will shrink and allow you to pass – **F Bowley, Hockley, Essex**

Alternate Reality: The Dungeon

ON level one go to see the Oracle who if you give him five gold pieces will give you information about quests to undertake. The ones that he speaks of are:

QUEST ONE

Seek the prison under the palace and free the prisoner with the silver key. To get it you must kill a master thief you encounter at a random location in the dungeon. After you get the key you must go to the palace dungeon on level one.

The prison is through the secret door in the sewer system. Once you have freed the prisoner you may learn a spell and you receive a staff piece. You will then be teleported in to a maze.

To solve this you must walk through the door immediately in front of you after you have been teleported. Then take the middle door, left door, left door, middle door and then the middle door again. This will take you to the tomb of Acrinimiral the wizard. After visiting there you are forced to go to death's door.

You are given the option of walking through it or using an item. If you try to walk through it a bug in the program seems to make it impossible to find any item to use with any effect. The only solution is to walk through a sewer door.

QUEST TWO

All you have to do is fight and kill the goblin king then fight the troll tyrant to recover two halves of an evil ring. Then take the two halves to the dwarven smithy on level two. He will reforge the ring for a gem or jewel. You then take the ring back to the Oracle.

QUEST THREE

Take the Margonna's tiara from level one to the war horse on level two. The tiara is found in the room with three wraiths in it. The war horse is found within the hall of mirrors on level two. Wear the tiara and you will have the chance to exchange it for a mirrored shield which you can use later.

QUEST FOUR

You are told to cross the river Stong at midnight. Unfortunately, I have been unable to do this has any reader finished this quest?

GENERAL TIPS

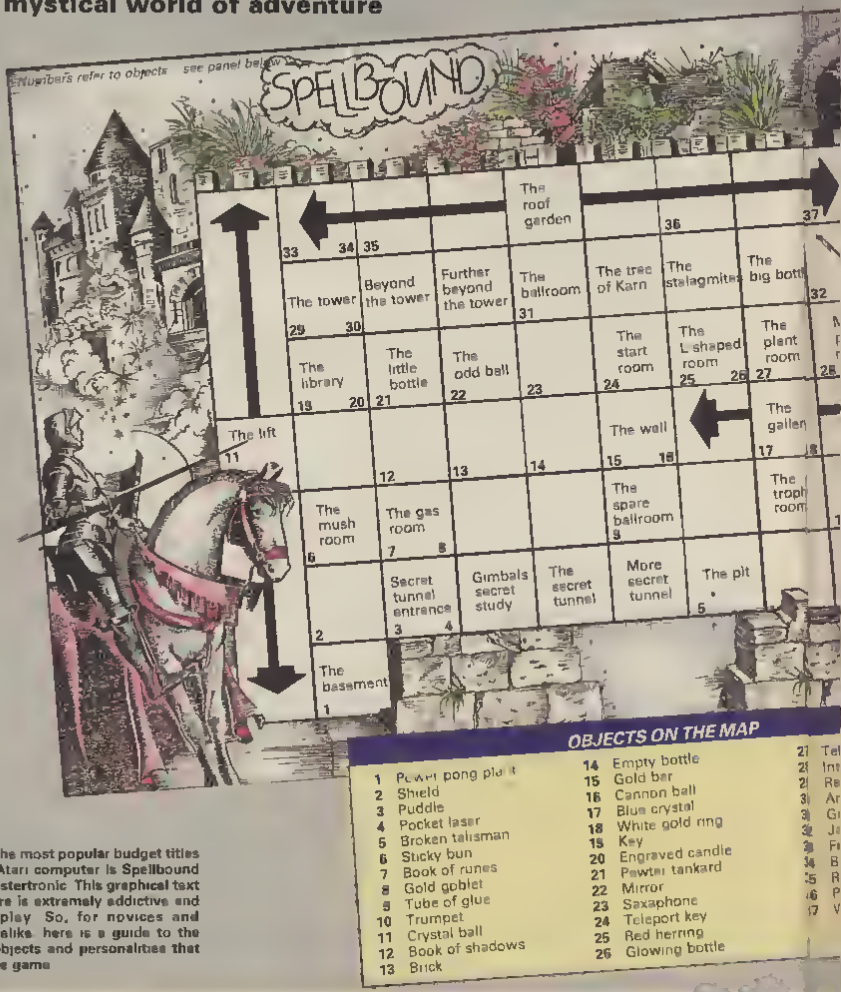
Fight only weak monsters at the beginning of the game – bats rats and so on – until you advance to higher levels. Many weapons can be found scattered around the dungeon – some of them magical.

Use magic to discover where secret doors are. To gain a very powerful weapon use the sword of the adept in the hall of adept on level two. Then use the amethyst rod and you will be teleported to a secret corridor on level one where you will find the weapon – **C V Howarth, Bowdon Altrincham**

SPELLBOUND

THE MAP

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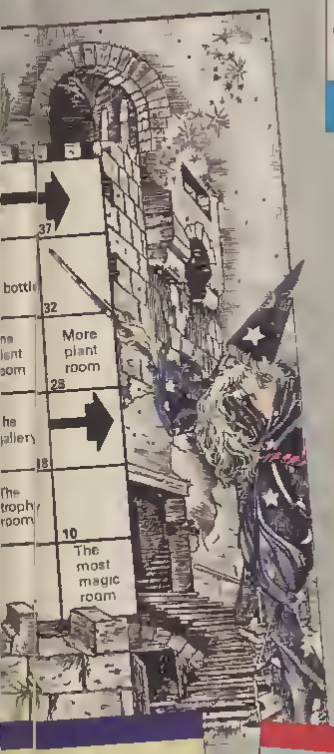


OBJECTS ON THE MAP

1 Power pong plant
2 Shield
3 Puddle
4 Pocket laser
5 Broken talisman
6 Sticky bun
7 Book of runes
8 Gold goblet
9 Tube of glue
10 Trumpet
11 Crystal ball
12 Book of shadows
13 Brick
14 Empty bottle
15 Gold bar
16 Cannon ball
17 Blue crystal
18 White gold ring
19 Key
20 Engraved candle
21 Pewter tankard
22 Mirror
23 Saxaphone
24 Teleport key
25 Red herring
26 Glowing bottle
27 Tel
28 Int
29 Re
30 An
31 Gr
32 Ja
33 Fr
34 B
35 R
36 P
37 V

ONE of the most popular budget titles for the Atari computer is Spellbound from Mastertronic. This graphical text adventure is extremely addictive and fun to play. So, for novices and experts alike, here is a guide to the spells, objects and personalities that grace the game.

Another exclusive from the ATARI USER mapping division



CHARACTERS AND WHAT THEY DO

Gimbal the Wizard	Will help you with the Release spell
Thor	Give him the mjolnir and he will help you get into the lift and in the tower
Florin the Dwarf	Give him the bottle of liquid and take it back to restore your energy Give him the tube of glue and the broken talisman and command him to help Florin will then mend the talisman and it will become the magic talisman
Orik the Cleric	Give him the crystal ball and he will help you get into the Most Magic room with the Crystallium Spectralis spell
Samsun the Strong	Give him the javelin and he will help you at the pit
Elrand the Halfelven	Give him the trumpet and he will help you at the wall after Thor has helped you at the tower
Lady Rosmar	Give her the pocket laser and she will help you in the secret tunnel entrance
The Banshee	Will tell you some clues if you command her to help

SPELLS AND THEIR USES

Fumaticus Protectium	You will need the red herring and the power pong plant to cast this spell It will protect you from the Gas room
Armouris Photonicus	You will have to stand on the puddle in the secret tunnel entrance to cast this spell It will allow you to go through the dark rooms without the glowing bottle
Candelium Illuminatus	You will need the engraved candle and the shield to cast this spell You will also need to put the four-leaf clover in the room Once the candle is lit you can use it to read the ancient scroll
Project Physical Body	You will need the crystal ball and the magic talisman to cast this spell which will allow you to teleport to any character
Crystallium Spectralis	You will need the three crystals and the white gold ring to cast this You will also need to give the crystal ball to Orik and summon him to the Most Magic room Once the spell has been cast throw the three crystals at gimbal in order to free him
Release Spell	You will need to be in the room with Gimbal after he is freed in order to cast this spell Once the spell is cast summon the characters in the order Elrand Samsun Thor Rosmar Banshee Florin Orik and Gimbal Make sure the characters are at full strength before you summon them

2. Teleport pad
2. Instruction book
2. Red crystal
3. Ancient scroll
3. Green crystal
3. Javelin
3. Four leaf clover
3. Bottle of liquid
5. Runestone
6. Prism
7. Wand of command

CLUES

- To get past the tower you need to take the two lumps of brickwork from the wall after Elrand has blown it down Drop them on top of each other near the tower
- To find the Banshee drop the glowing bottle However be careful only to do this after the Armouris Photonicus spell has been cast
- If the character does not want to be summoned or commanded by you then command it to be happy

OBJECTS ON PEOPLE

Florin	Axe
Samsun	Platform elf horn
Elrand	Mjolnir loaf of elfbread
Rosmar	Willow Rod, fast blow fuse

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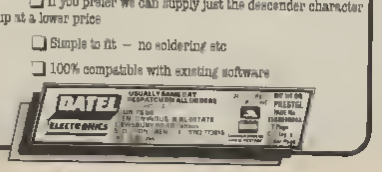
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SOFTWARE Solutions

Your programming problems solved by ANDRÉ WILLEY

LET s start off this month s column with a letter I received recently from Brian McIndoe from Bishops Cleeve in Cheltenham He has a few useful comments to make about the 1050 disc drive

I read with interest the letter in October s Software Solutions from A W Crawford who wanted to know whether or not it was possible to find out the density of a disc in a 1050 drive by interrogating the drive controller

Recently I wanted to do this in a machine language program I was writing I found that it does seem to be possible with an unmodified 1050 to find the current disc density by issuing a Status command First you should either read or write a sector on the disc – for example sector one Then issue a Status command

Bit 7 of location $2EA will be set to one if the drive has just read/written in dual density – otherwise it will be set to zero According to Mapping the Atari this bit indicates whether or not a device is intelligent and it is always set to one My program however can successfully determine the density of a disc using this method

Readers accessing the 1050 drive without using Dos may also be interested in knowing how to format a disc in dual density as this is not documented in either Mapping the Atari or De Re Atari You should use the command $22 – instead of $21 for single density The resident disc handler does not seem to recognise this command – at least not in Revision A – which means you have to access SIO directly rather than by using DSKINV

The data direction byte $303 should be set to receive $40 You should also set the buffer address to a spare point in memory because the list of any bad sectors – terminated by two $FF bytes – will be returned there A timeout value of $3F would seem to be adequate Mapping the Atari or De Re Atari *will give people more information on using SIO*

Thanks for the information Brian I must warn readers that modified 1050 drives seem to respond differently to the density check portion of the Status command

The other thing to bear in mind is that, to be sure of the result you recommend a sector read or write before issuing the status command If you re going to have to read a sector anyway why not just read sector 1000 and if you don t get an error 139 then you know for certain that you re working in dual density? This has the advantage of also working with other drive types – even an old 810

As to formatting in dual density you are quite right in stating that the *SIO* command *$22* will accomplish this task If you are using an XL or XE then you will find that the newer OS contained in your micro will enable you to use the *DSKINV* command as *$22* is now supported

Colour coding

Next a problem from **Mr J Taylor** from Dalton in Furness in Cumbria

I own an Atari 800XL with a 1050 disc drive which I use for monitoring the stock market forecasting pools results and the usual round of general household uses I have no interest in games so my Atari is used for text programs only usually in default graphics mode and colours

It would be useful if I could have different coloured text on a 40 column screen at the same time but I can t figure out how to do it

Could you please tell me how to get one line of text in default white and another in a different colour?

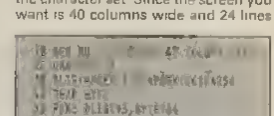
The answer to your question is to select ANTIC mode *$04* graphics – otherwise known as GRAPHICS 12 on an 800XL – but this isn t quite as simple as it sounds

To start with GRAPHICS 12 will only allow access to the screen by means of PRINT #6 commands and you also can t get ordinary text on the screen at the same time except for the default bottom four lines

Also GRAPHICS 12 is only available on XL and XE machines which would be fine for you but would mean that the program wouldn t work on an old 400 or 800 – of which there are still a good number about

There is also one other much more serious problem The standard character set is not designed for multi coloured characters in GRAPHICS 12 so you won t be able to read the text easily

Luckily all these problems can be overcome with a little work Let s tackle the first two before going on to the character set Since the screen you want is 40 columns wide and 24 lines



Program 1 – Multicoloured text

deep the display list will be almost identical to the standard GRAPHICS 0 version The display list for those who haven t been keeping up with their *Atari User* is a set of instructions which the graphics chip Antic uses to generate the display you see on the screen

Each line of text or graphics has an entry in the display list which tells ANTIC what colours to use the size of the pixels and information used for operations such as scrolling text. For a 24 line screen – such as GRAPHICS 0 – there are 24 numbers one for each screen line Similarly a full screen

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GRAPHICS 8 display would need 192 numbers

Program I on the previous page will find out where this display list is located in memory – line 30 then POKE into memory the 24 new numbers contained in the data statement on line 100. For each screen line you want to be in GRAPHICS 0 you should



Figure I Character A in Graphics 0

place a two in the data list and each GRAPHICS 12 line should have a four. The example program as printed just alternates between the two modes.

This routine can be incorporated into your own programs of course and should be run after each use of the GRAPHICS 0 command. All the normal screen editing and printing functions will continue as though nothing had happened.

Now on to the second problem – the character set. Because of the way the

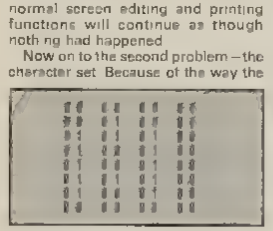


Figure II Character A in Graphics 12, SETCOLOR 0

graphics chip works, colour characters are made up on a 4 x 8 grid of dots rather than the usual 8 x 8 characters you are used to. This means that a special character set must be devised to take account of the changes.

In the normal set a byte of character data is used to represent eight dots across the screen – each bit controlling one pixel on or off. However in the case of coloured text each pixel must have colour information added on to on and off, so two bits are used per pixel – giving four possibilities: 00, 01, 10 and 11. Thus the limitation of four dots across each character – each byte can now hold the data for only four pixels.

A binary value of 00 selects the background colour (SETCOLOR register 4 or memory location 712 – otherwise used for the border colour). A value of 01 selects SETCOLOR register 0 (location 708) and 10 will select SETCOLOR 1 (location 709 – as used for the brightness of normal Mode 0 text).

A binary value of 11 in the character data performs a slightly different function. If the character is in the Ascii range 0 – 127 (normal text) it selects SETCOLOR 2 (location 710 – as used for the blue background area). If however the character is in inverse video (Ascii 128 – 255) the colour used is taken from SETCOLOR 3 (location 711). This in effect gives you five colours to work with – including the border/background – although it is a bit of a fudged method.

Figure I shows the way that a letter

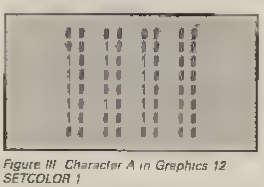


Figure III Character A in Graphics 12 SETCOLOR 1

is normally represented as bit data, and Figures II, III and IV show the same letter in three different colours for GRAPHICS 12. Note how I've left one pixel (two bits) of space at the side of the letter in each case, plus a space above and below the letter. This is to stop adjacent letters from butting into each other which would make them impossible to read.

If you are planning on using GRAPHICS 0 text on the same screen as multi coloured text you should alter your SETCOLOR registers so that the background and the border are both the same colour. For example to

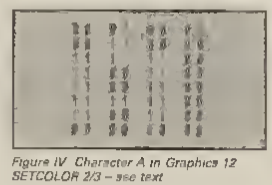


Figure IV Character A in Graphics 12 SETCOLOR 2/3 – see text

change them to black you would use SETCOLOR 2,0,0 and SETCOLOR 4,0,0.

Also don't forget that the brightness of GRAPHICS 0 text is governed by the same number as the colour of text with a bit-pattern of 10 – so don't make SETCOLOR 1 too dark or the writing will disappear.

As you are limited to 128 different characters at any one time you must decide which ones are not likely to be used and convert them into coloured letters using a character set editor such as that given in our ACE series in the April, May and June 1987 issues of *Atari User*.

I would suggest that the Control keys Ctrl A to Ctrl Z are converted to coloured versions of A to Z, and the lower case letters converted either to a second colour alphabet or numbers and punctuation marks, whichever prove to be the most useful in your program.

GAD screen dump

Let's finish this month with a quick one from **Phil Bonell** who is having problems with his 1029 printer.

'On asking for a printout GAD throws up four choices – three type of printer and OTHERS. Choosing OTHERS lets you enter you own printer configuration.

The manual informs me of the answers to three of the four questions, but I can't answer the third. What code do you send to set up your printer to receive one line – $3C0 or 960 decimal bytes – of double density bit image graphics?

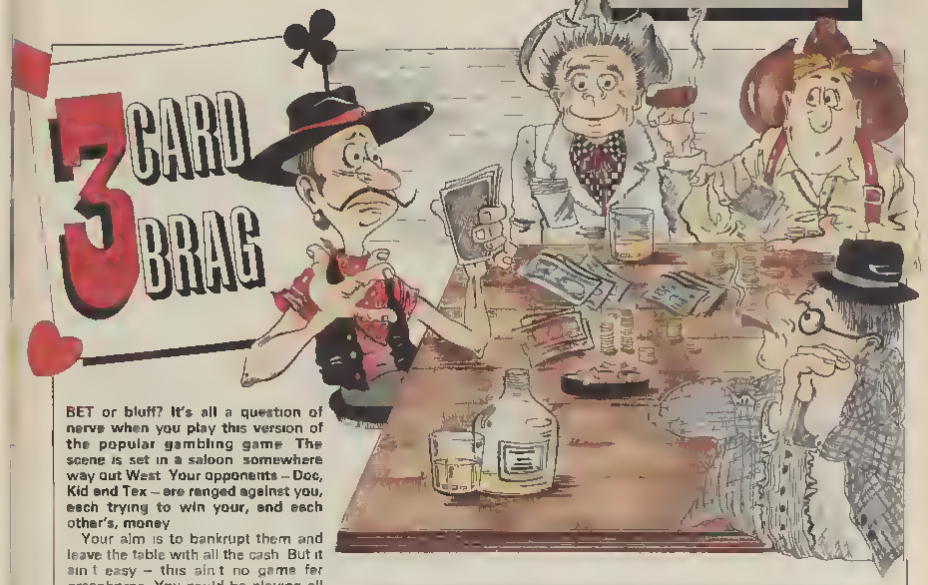
Could you possibly inform me if this program is compatible with the 1029 and if so what are the printer settings in hex and decimal?'

Well Phil, I'm sorry to say that GAD and the 1029 are just not compatible. GAD uses an industry standard method for doing bit image graphics – which is to send a long block of data bytes giving the bit patterns to print. Each byte sent represents eight dots on the printed page.

However the 1029 – for reasons known only to Atari's marketing department – uses a 7 bit system in which the last bit of data is ignored by the printer. From this information it is fairly straightforward to deduce a number of pertinent facts regarding Atari's marketing department – none of which I will go into here!

Your best bet would be to convert the GAD pictures to an alternative form – possibly a 62 sector bit image file – which can be handled by a screen dump program. You will find programs to do both of these tasks in the January 1988 issue of *Atari User*.

3 CARD BRAG



STEVE KNIGHT goes for his cards in this addictive simulation game

BET or bluff? It's all a question of nerve when you play this version of the popular gambling game. The scene is set in a saloon somewhere way out West. Your opponents – Doc, Kid and Tex – are ranged against you, each trying to win your, and each other's, money.

Your aim is to bankrupt them and leave the table with all the cash. But it ain't easy – this ain't no game for greenhorns. You could be playing all night or you could be knocked out of the game early. If this happens the session will continue without you until it's end.

At the start of each hand $5 is deducted from each player and placed in the pot. When it is your turn to play – the computer will prompt you – you will have three choices: Bet, See or Stack. If you think your hand is good enough to win and your opponents are bluffing, or perhaps wish to bluff yourself, press keys 1–9 to indicate your bet in dollars. This must be equal to or greater than the minumum bet indicated on the screen.

If you decide to stack – that is to take no further part in this hand – press S. If all the other players have stacked the last remaining player scoops the pot. If at any time only you and one other player are left in the game you can press C to see his hand.

This will bring the hand to an end with the player with the best cards winning. But remember, it costs at least double the current bet to see an opponent. In the event of the two hands being equal, it is the player who is *Seen* who wins the pot.

Table 1 lists all the possible hands in their order of strength. In the event of the major part of the hands being equal, the secondary elements are included. So, two Aces with a Queen will beat two Aces with a Jack. Similarly, a hand composed of Ace, King and Jack will beat a hand of Ace, King and three.

Title of hand	Composition
Prile of threes	Each of the three cards has a face value of three. This hand beats any other in Brag.
Prile	Any hand consisting of three cards of the same face value. The highest below threes is three Aces.
Run on the bounce	A run – see below – where all the cards are the same suit. Also known as a running flush.
Run	The three cards form a consecutive sequence, increasing by one. Ace, two, three is the highest, followed by Ace, King, Queen down to four, three, two.
Flush	Three cards of the same suit. Priority is decided as for High Card below.
Pair	Two cards of the same face value. A pair of Aces – or bullets – is the highest. In the event of a tie, the third card is used to resolve the issue.
High Card	All three cards are assessed on their individual face values. The best is Ace, King, Jack with the worst five, three, two.

Table 1. Scoring three card brag hands.

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PROGRAM BREAKDOWN

110 500	Game loop
160 320	Hand loop
1000-1990	Initialisation subroutine
2000 2130	Cards dealt to remaining players
2200 2260	Card dealing routine
2270-2350	Arrays are sorted
2360-2490	Each hand is scored according to its con tents
2500 2740	Reset arrays totals and so on at the end of a hand
2800-2900	Player out of game routine
3000 3900	Format and display new screen
4000-4400	Computer opponent options
4500-4700	Routine for human player
4800 4900	One player left in hand routine
5000 5300	Who won the game? routine
5500 5580	Title page
6000 6200	Winner routine
7000 7600	Music

VARIABLES

CARDS	Holds card suits and values
IDENT$	Player s names
MESS$ M2$	Messages and comments storage areas
ONJ$ NAME$	Hold names in comments and messages
CHECK$	Checks to see what cards have been dealt
SUMS	Holds hand scores cash totals and so on
PLAYERS	Number of players in the hand
LEFT	Number of players in the game
DEAL	Next player to be dealt
ARRAY	Common holding area for cards n deal
PAUSE	Music pause
NUM$	Display version of card numbers
SUT$	Display version of card suits
LIN$	Temporary hold for segment of *NUM$*
LIS$	Temporary hold for segment of *SUT$*
STK$ WIN$, LOSE$, SKINT$	Comments made at various points of the game
MINBET	Minimum bet
PF	Play factor calculated every game for computer player to determine how long he will stay in the hand
DIFF	Difference between the minimum bet and human player s bet

```
10 REM ********************
20 REM * THREE CARD BRAG *
30 REM *       BY       *
40 REM *  STEVE ASHCHT  *
50 REM *                *
60 REM *  (C)ATARI USER  *
70 REM ********************
80 REM
90 GOSUB 5500 REM TITLE PAGE
100 GOSUB 1000 REM INITIALISE
110 GOSUB 2000 REM DEAL THE CARDS
120 GOSUB 2500 REM RESET FOR NEW HAND
130 IF LEFT=1 THEN GOTO 6000:REM END
OF GAME
135 CLICK 1
140 GOSUB 3000 REM DISPLAY CARDS ETC
150 CLICK 0
160 IF SUMS(PLAY 9) 0 OR SUMS(PLAY I0)
=0 THEN 300
170 SCORE=SUMS(PLAY 2) :NAME$=IDENT$(PL
AYNI 2 PLAYRI)
200 IF PLAY=4 THEN GOSUB 4500 GOTO 220
 REM YOUR PLAY
210 GOSUB 4000 REM AIAPI BETS
220 IF PLAYERS=1 THEN GOSUB 4800 REM O
NLY ONE LEFT
240 GOSUB 1000 REM DISPLAY CARDS ETC
250 FOR B I TO 40 NEXT 0
300 IF FIRST=PLAY THEN GO GO+I
310 PLAY PLAY+I IF PLAY-5 THEN PLAY-I
320 IF PLAYERS)0 THEN 150
330 POSITION 20 19:? "Press   POSITI
ON 20 20 ? "RETURN  POKE 756 0
140 IF PEEK(7541()12 THEN 340
150 SOUND I,I0 12 14 FOR 0 I TO 5 NEXT
 0 SOUND 1,0,0,0
500 IF LEFT)I THEN 110
1000 REM ** INITIALISATION **
1010 DIM CARD(52 21 2 1
1015 REM ** FILL PACK **
1020 FOR K=1 TO 4
1030 FOR V=2 TO I4
1040 CARDS(Z,I4=V CARDS(Z,21 K
1050 Z Z+1
1060 NEXT V
1070 NEXT K
1080 DIM IDENT$(12) MESS$(401 M2$(40)
NAME$(6) CHECK$(52) OBJ$(6)
1090 IDENT$ "KIDIEXDOCYOU
1110 DIM SUMS(4 I0)
1115 FOR CT 1 TO 4 SUMS(CT I0)=I SUMS(
CT I)=200 NEXT CT
1120 PLAYERS 4 LEFT 4 PLAY=1 DEAL 1
1130 DIM ARRAY(3-2)
1135 PAUSE=2
1140 GOSUB 7000 REM ** MAKE MUSIC **
1200 DIM NUMS(501 NUMS '    2 23 34 4
5 56 67 78 89 9A TJ QQ KK AA
1410 DIM SUT$(16) SUTS    ♥ ♠ ♦ ♣
'
1220 DIM LIN$(3) LIS$(3)
1250 OPEN #1 4 0 "K "
1260 DIM STK$(250)
1265 SIN$(I) ' THE GAME S TOO HOT FOR

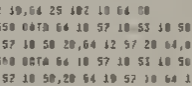
1270 STK$(31)-" MEBBE A TIMELY STACK O
Y
1280 STK$(613)="      YOU YELLER BELL
Y
1290 SIN$(911)=" BECK'NS YOU D MORE GUT
S "
1300 STK$(121) ' YOU LILY-LIVERED SKUN
K  '
1310 SIN$(1515  AIN T GONNA BE YOUR GA
ME,'
1320 STK$(1811-'  COULD BE A WISE MOU
E  '
1330 >IK$(2111=     NO TIME FER WEROI
CS,  '
1400 DIM WIN$(250)
1410 WIN$(1  I GOT TOO MUCH FOR YOU
,'
1420 WIN$(211 "  LOOKS LIKE YAN OLEW I
1 "
1430 WIN$(611  THIS S A ONE-WINNER TOW
N,"
1440 WIN$(911 "      LOOKS LIKE MY GAM
E "
1450 WIN$(1211 ' I KNEW YOU WUZ BLUFFI
N' '
1460 WIN$(1511 '      CALL THAT A HAN
D"
1470 WIN$(1811 "I GUESS I OUTSMARTED Y
OU
1480 WIN$(2111 '              EAT DI
RT
1500 DIM LOSE$(250)
1510 LOSE$(11-'  NOW YOU KNOW WHO'S BOS
S
```

```
1620 LOSE$(7)3)-"  YOU DON'T MESS WITH
ME "
1630 LOSE$(6)  '   MORE CENTS THAN SEN
SE '
1640 LOSE$(9)-'    MORE WHERE THAT > FR
OM "
1650 LOSE$(12)     LOOKS LIKE YOU BLEW
 IT,"
1660 LOSE$(15)  'YOU OVER-REACHED YOUR
ELF,"
1670 LOSE$(10)=          STICK TO BRIG
HT,
1680 LOSE$(21)-" YOU COULDN'T SEE AN
ALP    '
1690 DIM SKIN$(250)
1700 SKIN$(1)='                  TAKE A
 PONDER "
1710 SKIN$(31)-'   DON'T GO AWAY MAD
 JEST GO '
1720 SKIN$(66) " PUT THE CAT OUT AS Y
OU LEAVE
1730 SKIN$(91) 'THERE'S A STAGE AT E
ND OF IT
1740 SKIN$(12)                   GET ON
YER HORSE
1750 SKIN$(15)-'
HEAD WEST
1760 SKIN$(10)  ' AIN'T NO ROOM FER G
REENHORNS,
1770 SKIN$(21)='          THANKS FER
THE MONEY    '
1780 RETURN
1790 REM ** DEALCARDS **
1800 CHECK$ '
                                    :R
EM 58 SPADES
1810 PL-1
1820 IF SUM$(PL )0) 0 THEN 2120
1830 GOSUB 2200
1840 AC=1
1850 FOR DL-3 TO 0 STEP 2
1860 SUM$(PL DL) ARRAY(AC )):SUM$(PL D
L+1) ARRAY(AC 2)
1870 AC=AC+1
1880 NEXT DL
1890 SUM$(PL,2) SCORE
1900 PL PL+1 IF PL(5 THEN 1840
1910 RETURN
1920 REM ** FILL ARRAYS & SCORE HAND *
1930 FOR CT-1 TO 3
1940 X INT(RND(0)*52)+1
1950 IF CHECK$(X )) 'X" THEN GOTO 1930
1960 CHECK$(X,X)-"X"
1970 ARRAY(CT,1)-CARD$(X ) ARRAY(CT 2
)-CARD$(X,2)
1980 NEXT CT
1990 REM ** SORT ARRAY DESCENDING **
2000 FOR CT 1 TO 3
2010 FOR CK-1 TO 2
2020 IF ARRAY(CK )( ARRAY(CK+1 ) THE
N GOTO 2040
2030 HOLD-ARRAY(CK+1 ) ARRAY(CK+1 )
ARRAY(CK 1) ARRAY(CK ) HOLD
2040 HOLD-ARRAY(CK+1,2) ARRAY(CK+1,2)-
ARRAY(CK 2) ARRAY(CK,2)=HOLD
2050 NEXT CK
2055 NEXT CT
2060 REM ** NOW SCORE THE CARDS **
2070 SCORE 0
2080 X ARRAY(1 )) Y ARRAY(2 1) Z=ARRAY
(3,1)
2090 A=ARRAY(1 2) B ARRAY(2 2) C ARRAY
(3 2)
2095 REM ** PRICE **
2100 IF X-Y AND Y-Z THEN SCORE-10000 I
F X Y THEN SCORE 2000
2105 REM **  RUN  **
2110 IF CX+1 Y AND Y+1-Z) OR (X Z AND
X-1 AND Z 14) THEN SCORE-5000 IF A 0 A
ND B C THEN SCORE=8000
2120 IF SCORE)2 ERO THEN 2440
2125 REM ** FLUSH **
2130 IF A B AND B C THEN SCORE=4000
2135 REM ** PAIR **
2140 IF X Y OR Y Z THEN SCORE=2000
2150 IF X Z AND Y-X AND Z=14 THEN SCOR
E SCORE+1000:RETURN
2155 IF SCORE<)2000 THEN 2400
2160 IF X Y THEN SCORE-SCORE+(Y*100)+(
X*10)+Z GOTO 2490
2170 SCORE=SCORE+(Z*100)+(Y*10)+X GOTO
 2490
2180 SCORE SCORE+(Z*100)+(Y*10)+X
2190 RETURN
2200 REM ** MESH **
2205 GRAPHICS 18 SETCOLOR 2,12 2 SETCO
LOR 4,3 0 POKE 752 1
2210 KITTY 0 DIFF-0
2220 FOR CT 1 TO 4
2240 IF SUM$(CT,10)=0 THEN SUM$(CT )=
0 SUM$(CT 2) 0 GOTO 2250
2250 IF SUM$(CT,1))5 THEN KITTY-KITTY+
5 SUM$(CT 1)-SUM$(CT 1) 5 SUM$(CT 5)-1
 GOTO 2250
2260 GOSUB 2800 REM **WIPED OUT**
2270 NEXT CT
2280 PLAYERS-LEFT MINUS 1
2320 IF SUM$(DEAL 10)=0 THEN 2670
2330 PLAY-DEAL NAME$=IDENT$(DEAL*3-2,D
EAL*3) DEAL-DEAL+1 IF DEAL-5 THEN DEAL
 1
2350 MES$(1 3) NAME$ MES$(4) " TO PL
AY    GOTO 2700
2670 DEAL-DEAL+1 IF DEAL 5 THEN DEAL 1
2680 GOTO 2620
2700 SET 0 GO-0
2710 FIRST=PLAY
2720 IF LEFT=1 THEN GOTO 4000
2740 RETURN
2800 REM ** WIPED OUT **
2810 MES$(1 3) IDENT$(CT*3 2 CT*3) ME
S$(4)   WILL TAKE NO MORE PART
2840 A INT(RND(0)*10) RO-RO*10+1
2845 OBJ$(1) IDENT$(CT*3 ? CT*3)
2846 IF CT-4 THEN OBJ$(1)-"GRINGO"
2850 M2$(1)-SKIN$(RO,RO+29):M2$(31)=D
BJ$(1)
2860 LEFT=LEFT 1
2875 GOSUB 3420:REM *PRINT MESSAGE$*
2880 FOR D-1 TO 200 NEXT D
2890 SUM$(CT,10)-0
2900 RETURN
3000 REM ** SHOWALL **
3010 REM
3020 FOR CT 3 TO 7 STEP 2
3030 IF SUM$(I,10)-0 THEN 3100
3035 H=1 Y 0
3040 IF SUM$(L 9)-1 THEN GOSUB 3700 GO
TO 3060
3050 A SUM$(I CT) B SUM$(I CT+1) GOSUB
 3090
3060 POSITION 5 15 ? "RIB S";SUM$(I,1
) ' '
3100 IF SUM$(2,10) 0 THEN 3200
3110 K-10 Y-1
3120 IF SUM$(2 9) I THEN GOSUB 3700 GO
TO 3140
3130 A SUM$(2 C)) B SUM$(2,CT+1) GOSUB
 3090
3140 POSITION 17,6 ? "TEX S" SUM$(2,1)
 "  "
3200 IF SUM$(3 10) 0 THEN 3300
3210 K 27:Y=0
3220 IF SUM$(3 9) I THEN GOSUB 3700 GO
TO 3240
3230 A SUM$(3 C)) B-SUM$(3 CT+1) GOSUB
 3090
3240 POSITION 20,11 ? "DOC S";SUM$(3,1
),' "
3300 IF SUM$(4,10)-0 THEN 3400
3310 K-14 Y=10
3330 A-SUM$(4,CT) B=SUM$(4,CT+1) GOSUB
 3090
3340 POSITION 9 10 ? 'YOU" POSITION 9
21 ? "S" SUM$(4,1) '  "
3400 NEXT CT
3410 POSITION 19 10 ?  S" JKITTY) ' '
3420 POSITION 3 15 ? '
                    '
3430 POSITION 3,16 ? '
                    '
3440 POSITION 3,15; MES$
3450 POSITION 3 16 ? M2$
3470 MES$(1)-"  M2$(1)-"
3500 RETURN
3700 REM ** DRAW CARD BACKS **
3705 IF CLICK-1 THEN SOUND 0 0,0 0:SOU
ND 0 0,1 12
3710 X-K 5 K-K+(CT*2)
3720 FOR H Y TO Y+4
3730 POSITION K,H ? "**"
3740 NEXT H
3750 RETURN
3800 REM ** DRAW CARD **
3805 IF CLICK=1 THEN SOUND 0 0,0 0 SOU
ND 0 0 1,12
3810 LIN$ NUM$(A*3)
3820 LIN$ SUT$(B*3)
3830 X X 5 X K+(CT*2)
3840 POSITION X Y ? LIN$
3850 POSITION X Y+1 ? "  "
3860 POSITION X Y+2 ? LIN$
3870 POSITION X Y+3 ? "  "
3880 POSITION X Y+4 ? LIN$
3900 RETURN
4000 REM ** ATARIBET **
```

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```
4010 ME$$(1)=" ' M2$(1)  "
4020 SCORE=SUM5(PLAY I)
4030 IF SCORE<2000 THEN PF 0+(SCORE)11
00)+(SCORE)1400)
4040 IF SCORE)2000 AND SCORE(4000 THEN
 PF 1+(SCORE)2400)+(SCORE)2900)+(SCORE
)3300)
4050 IF SCORE)4000 AND SCORE(6000 THEN
 PF=5+(SCORE)4500)+(SCORE)5100)
4060 IF SCORE)6000 AND SCORE<8000 THEN
 PF 8+(SCORE)6500)+(SCORE)7200)
4070 IF SCORE)8000 THEN PF 15
4080 IF SCORE)9000 THEN PF=20
4090 IF SCORE)10000 THEN PF 10
4100 IF SCORE)12000 THEN PF=40
4110 PF=PF (5 *PLAYER5)
4120 R=INT(RND(1)*2)
4130 PF=PF+R
4140 PF PF=60+1
4150 IF MINDET)7 #00 SCORE(2000 AND R=
1 THEN PF PF-1
4160 IF PLAYER5-2 AND PF(I AND SCORE)1
350 THEN GOSUB 5000 STACK.0 GOTO 4300
REM ** SEE **
4170 IF PF)1 OR PLAYER5-1 THEN 4200
4180 SCORE=0 BE=0 PLAYER5=PLAYER5 1
4190 ME$$(1,1)="GAMES ME$$(4)=" HAS 5
TACKED  '
4195 R=INT(RND(0)*NO) AD R*30+1 M2$ STK
$(00 00+25) M2$(26) NAMES GOTO 4300
4200 IF PF)I OR SUM5(PLAY I)<20 THEN 0
T=MINDET GOTO 4300
4220 BT=BE+(4 *PLAYER5)
4210 00=INT(R00(11*I)
4260 BT=MINDET+(R-I)+(SCORE)4000)+(SCO
RE)5000)+00+CPEEK(201)>90
4300 IF BT)5 THEN BT 5
4305 FOR CT 0 TO BT SOUND 1,z,12 14 F0
R 0 1 TO 5 NEXT 0 SOUND 1 0 0 0 NEXT L
T
4310 IF STACK 0 THEN SUM5(PLAY 5) 0 RE
TURN
4320 MINDET BT
4340 ME$$(1 3) NAMES ME$$(4)=' HAS 0
ET $' ME$$(14) STR$(BT)
4350 IF DIFF)5 THEN M2$(1)="YOU DON'T
FRIGHTEN ME GRINGO" DIFF=0
4360 KITTY KITTY+BT
4370 SUM5(PLAY,1)=SUM5(PLAY 1)+BE
4380 SUM5(PLAY,9)=1
4390 RETURN
4400 REM ** YOUR PLAY **
4405 DIFF=0
4510 FOR 0=1 TO 100 NEXT 0
4520 ME$$(1)  YOUR PLAY  MINIMUM BE
$' ME$$(25)-S10$(MINDET)
4530 M2$(11 'PRESS  S  IO STACK  C  TO
 SEE
4550 GOSUB 1419 REM #PRINT MESSAGE>*
4560 GET #1,0
4565 DE1=0 40
4570 IF 0=83 OR 0=67 THEN 4500
4575 IF DE1(MINDET OR DE1)9 THEN 4560
4580 IF 0=67 AND PLAYER5()2 THEN M2$='
YOU MAY ONLY SEE <WITH 2 PLAYERS" GOTO
 4550
4581 IF 0=83 THEN DE1=1
4582 IF DE1=87 THEN DE1 MINDE1#2
4585 FOR CT=1 TO DET SOUND 1 10 12 14
FOR 0=1 TO 5 NEXT 0 SOUND 1 0 0 0,0 NEXT
 CT
4590 IF 0=87 THEN GOSUB 5000 GOSUB 300
0 RETURN
4600 IF A=83 THEN SUM5(4 9)=0 PLAYER5
PLAYER5-1 RETURN
4610 SUM5(4 1)=SUM5(4 1)  EA 40) DIFF (
A 40) MINDET MINDET A 40 KITTY KITTY+(
A 40)
4700 RETURN
4800 REM ** SEE YOU **
5010 ME$$(4)     M2$(1)  '
5020 NAME$(1) IDENT$(PLAYN I 2 PLAY*1)
5030 SCORE SUM5(PLAY I)
5040 MINDE1 MINDE1*2
5050 BT=MINDET
5060 KITTY=KITTY+BT
5070 SUM5(PLAY 1) SUM5(PLAY 1) BE
5080 FOR CT 1 TO 6
5090 IF PLAY CT OR SUM5(CT )3 0 OR SUM
5(CT 10) 0 THEN 5200
5095 OBJS(1)=IDENT$(CT*1 2 CT*1)
5100 ME$$(1)=NOMES ME$$(6)=" SOM  M
E$$(3) OBJS R=INT(RND(0)*NO) RA R*30+1
5110 IF SCORE)SUM5(CT 2) THEN SUM5(PLA
Y,1)=SUM5(PLAY,1)+KITTY ME$$(12)=' ON
0 MEN THE POT' M2$(1)=WIN$(RA,RA+25)
5140 IF SCORE(=SUM5(LE I) THEN SUM5(CE
,1)=SUM5(CT,1)+KITTY ME$$(12) ' AND L
OST  M2$(1)=LOSE$(RA RA+25)
5150 IF OBJS(1 1)  Y  THEN OBJS(1) 'GR
IN60'
5155 IF NAME$(1 1)="Y  THEN NAME$(1)
GRINGO"
5160 IF SCORE)SUM5(CT,2) THEN M2$(26)=
OBJS(3) GOTO 5200
5170 M2$(26) NAME$(4)
5200 SUM5(CT 9) 0
5210 NEXT CT
5220 PLAYER5=0
5300 RETURN
5500 REM ** TITLE PAGE **
5510 DEM
5520 GRAPHICS 18:SETCOLOR 4,1 2
5530 POSITION 3,1 ? #6 "WELCOME
5540 POSITION 5 5 ? #6 "GRINGO,"
5550 POSITION 3,7 ? #6 'Pull UP
5560 POSITION 8 9 ? #6 "A Chair
5500 RETURN
6000 REM ** WE HAVE A WINNER!' **
6010 REM
6020 FOR CT 1 TO 4 IF SUM5(CT,10)>0 EN
EN X CT POP  GOTO 6040
6030 NEXT CT
6040 GRAPHICS 18 SETCOLOR 0,7,2
6050 NAME$(1)=IDENT$(CT*1 2,CT*3)
6060 POSITION 0,0 ? #6 NAMES
6070 POSITION 7 2 ? #6 "KILLED
6080 POSITION 6 4 ? #6  Everyone'
6090 POSITION 6 6 ? #6 "OUR
6100 POSITION 0 8 ? #6 "THANKS FOR THE
 GAME
6120 POSITION 5 1 ? #6 "GENTLEMEN  '
6125 PAUSE=5
6130 GOSUB 7000 GOSUB 7000
6200 END
7000 REM ** MUSIC **
7005 RESTORE 7400
7010 FOR C1 1 10  '
7020 READ A READ B
7030 FOR N 1 TO B STEP PAUSE
7040 SOUND 0 A 10 14
7050 NEXT N
7060 SOUND 0 0 0 0
7070 NEXT C1
7500 DATA 114 10 108,10 102 10 64 25 )
02 10 64 25 102 10 64 00
7510 DATA 64,10 57 10,57 10 50 12 64 )
0 57 10,50 20,64,12 57 20 64 00
7520 DATA 114 10 108 10 10* 10 64 25 1
92 10 64 25 102 10 64,00
7530 DATA 64 10 60 10 72 10 76 10 64 1
9 57,10 50 20 57 10 64 10 76 10 57,00
7540 DATA 114,10 108,10 102 10 64 25 )
02 10,64 25 102 10 64 00
7550 DATA 64 10 57 10 53 10 50 12 64 1
0,57 10 50 20,64 12 57 20 64,00
7560 DATA 64 10 57 10 51 10 50,12 64 1
0,57 10 50,20 64 10 57 10 64 10 50 12
64 10 57 10 50 20
7570 DATA 64 10 57 10,53 10 50 12 64 1
0,52 10,50 20,64 12 57,25 64 70
7600 RETURN
```



LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	LP1 (1)	240	0?3 (H	110	00A (0
20	CP(*(	250	C4F (L)	120	EAV (9)
30	CP3 (X)	300	3V, (G)	130	6?S (D/
40	CP= (=)	310	3R6 (G)	135	TRK (P)
50	CP5 (Y)	320	JFG (I)	1140	2M6 (5)
60	CP6 (7)	330	3?F (O)	1200	JX1 (1)
70	CP7 (X)	340	MC4 (P)	1210	TXD (5)
80	CP8 (8)	350	2HM (M)	1220	GWQ (Q)
90	SBU (F)	500	CYW (*)	1250	14W (F)
100	PG2 (E)	1000	CXH (H)	1260	4?J (2)
110	PH2 (P)	1010	3?9 (?)	1265	A5G (R)
120	PX2 (0)	1015	N5N (G)	1270	COO (Y)
130	TH9 (U)	1020	X4J (9)	1280	Q2F (C)
135	QJP (J)	1030	4UF (H)	1290	ATR (P)
140	032 (B)	1040	BOT (O)	1300	EWT (O)
150	QEP (7)	1050	XMM (1)	1310	0X8 (H)
160	ACG (H)	1060	P35 (4)	1320	5CH (G)
130	7HL (7)	1070	P35 (1)	1330	CP1 (1)
200	9FK (P)	1080	ECE (7)	1400	4RJ (K)
210	P53 (G)	1050	LAR (L)	1410	36A (B)
220	JHL (A)	1110	0TR (5)	1420	FO2 (H)

LINE CHSUM	LINE CHSUM	LINE CHSUM	LINE CHSUM	LINE CHSUM	LINE CHSUM	LINE CHSUM	LINE CHSUM
1430 AVC (A)	2070 C3F (A)	2615 AMP (U)	2[illegible] (N)	[illegible] (N)	4050 2B1 (E)	4505 2[illegible]	5[illegible] EAM (Y)	6070 WTX (I)
1440 3B1 (S)	2080 2SE (G)	2620 BG9 (W)	2E[illegible] H EU (Q)	4060 2U6 (X)	4510 JT [illegible]	5070 WAS (T)	6080 QNG (U)
1450 JSP (G)	2090 S51 (O)	2625 QQP (K)	2[illegible] HM [illegible] (K)	4070 GWU (K)	4520 UF [illegible]	5080 +53 (H)	6090 VRF (H)
1460 AJA (I)	2100 PWT (X)	2630 XVV (K)	2[illegible] XI, N [illegible] MU T)	4080 5XC (9)	4530 G F (J	5090 U15 (A)	6100 YK5 (U)
1470 AMW (U)	2110 C8V (I)	2640 B4M (M)	2675 350 (T [illegible] 7-50 F2L (T)	4090 V4U (M)	4540 34J (3/	5095 N66 (E)	6120 90J (A)
1480 OA6 (D)	2120 PDN (2)	2650 PVJ (T)	2680 AMD (2/	3470 AFF (H)	4550 PVR (U)	5100 1LL (B)	6125 THQ (S)
1500 7WN (B)	2130 VAL (4)	2660 4BL (5)	2690 112 (F)	3500 LXM (N/	4560 FFY (E)	5105 TNW (A)	6130 L9N (W)
1510 E3R (2)	2200 SAP (O)	2670 LJA (6)	2900 WFL (H)	3700 DTN (K)	4570 TW3 (C)	5110 YLV (I)	6140 R9K (I)
1520 ALB (H)	2210 3UO (Y)	2680 S3T (V)	3000 CXO (M)	3705 R7K (H)	4580 LVF (E)	5120 FS2 (E)	6200 09K (I)
1530 BAK (6)	2220 WEE (H)	2690 W0L (T)	3040 4QA (H)	3710 CE3 (X)	4590 TEP (W)	5125 JYM (I)	6210 CXU (I)
1540 7TF (2)	2230 92V (W)	2500 OKP (W)	3050 C1U (L)	3720 7N0 (A)	4600 203 (U)	5130 NVL (4)	6220 9EY (B)
1550 BC6 (R)	2240 6AF (5)	2505 J06 (W)	3060 MNR (A)	3730 GUK (5)	4610 FAE (I)	5135 7SS (X)	6230 7M5 (D)
1560 H9V (W)	2250 YWR (L)	2510 9UD (7)	3065 W53 (3)	3740 P5U (4)	4620 SC5 (X)	5140 6YJ (N)	6240 OMN (2)
1570 BHT (7)	2260 WLT (R)	2520 4EB (D)	3070 GT, (4)	3750 WHM (I)	4630 R6[illegible] (E)	5150 N77 (4)	6250 SSW (V)
1580 G3P (J)	2270 BMP (W)	2540 0PX (O)	3080 PQ[illegible] (H)	3800 YX0 (I)	4640 G4L (X)	5160 JAH (E)	6260 V3M (L)
1600 C81 (U)	2280 4VO (O)	2550 9F9 (B)	3090 7KX (I)	3805 KCK (W)	4650 4JP (E)	5170 UBC (M)	6270 VPP (L)
1610 GSK (B)	2290 GGO (X)	2560 377 (C)	3100 NGH (E)	3810 72L (N)	4700 HN5 (5)	5180 W6N (O)	6280 OEY (B)
1620 JA3 (A)	2300 VYH (T)	2570 K5T (D)	3110 USE (J)	3820 7K6 (F)	4710 HAB (7)	5190 3XR (H)	6290 DMG (L)
1630 N36 (3)	2310 7UY (V)	2600 PD4 (D)	3120 S24 (G)	3830 CM3 (7)	4720 92V (V)	5200 W42 (G)	6300 XVF (3)
1640 OR3 (K)	2320 8U9 (G)	2620 W2R (L)	3130 PC7 (C)	3840 GY0 (0)	4730 H4X (C)	5210 W3P (4)	6310 04A (O)
1650 CC1 (U)	2340 U4T (F)	2630 MM9 (7)	3140 92C (P)	3850 3H7 (L)	4740 AC6 (B)	5220 W3F (Y)	6320 Y0P (7)
1660 4RW (N)	2350 UNT (S)	2650 YKU (3)	3200 NMA (X)	3860 JNN (Y)	4745 P6G (K)	5230 4EC (3)	6330 05N (O)
1670 WHG (L)	2355 5GP (O)	2670 CH9 (K)	3210 V12 (P)	3870 3H7 (Q)	4750 1PL (R)	5240 SP7 (S)	6340 Y4P (A)
1680 H62 (B)	2360 TV5 (K)	2680 QCW (J)	3220 5R6 (I)	3880 JWG (L)	4760 K9K (P)	5250 UD6 (W)	6350 H2R (N)
1690 KDK (A)	2370 NUU (K)	2700 TNL (I)	3230 PLA (M)	3900 WFR (H)	4770 WFW (E)	5260 LXT (W)	6360 0GY (G)
2000 CXP (G)	2380 ME7 (T)	2710 D0L (9)	3240 WAH (O)	4000 CXK (L)	4780 WH5 (D)	5300 LX5 (G)	6370 9D3 (W)
2010 WX7 (9)	2385 6YE (V)	2720 1TV (L)	3300 WTO (7)	4010 9KG (6)	4785 EJ9 (C)	5310 0KH (U)	6380 MR4 (X)
2020 4BE (L)	2390 5F9 (4)	2730 WFL (R)	3310 VGE (U)	4020 VV5 (O)	4790 WPR (A)	5320 3R5 (L)	6390 05X (J)
2040 TW3 (3)	2395 E1P (2)	2800 9XP (P)	3330 PV7 (W)	4025 GH0 (O)	4800 G7H (5)	5330 CE1 (A)	6400 UG6 (H)
2050 SM1 (S)	2400 LMX (1)	2810 217 (R)	3340 HTD (E)	4030 4UJ (2)	4840 VTN (7)	5340 E6R (U)	6450 MFR (A)
2060 DCJ (P)	2410 TEU (V)	2840 PQR (9	3400 RGU (5)	4040 ULP (8)	4500 0KR (6)	5350 A0[illegible] (F)	6460 VLK (R)

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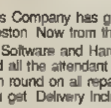
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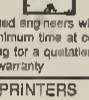
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It's time to find your position

LEN GOLDING continues his introduction to Basic programming

THIS month we start exploring the mysteries of computer games, and show you some of the techniques you will need to write your own text and graphics adventures. We begin by looking at the various methods of printing text and graphics characters anywhere on screen.

Along the way we'll encounter several punctuation marks with a personality of their own, the CHR$ function, and the Basic command POSITION.

There's a Basic utility program which automatically converts a screen full of text or graphics characters into PRINT statements for you.

Let's start by looking at the PRINT command in detail. Whenever Basic encounters a PRINT statement it looks to see where the cursor is currently positioned on screen and starts printing your text at that point. If the screen is already full, everything scrolls upwards to make room for the next line of text, so you lose any information that was stored at the top.

When printing is completed, Basic automatically returns the cursor to the left hand margin on the next line, scrolling the screen upwards again if it needs to.

This is fine while you're programming, and it's useful for very simple user input tasks. But for a text adventure or graphics game you will need much greater control over precisely what is printed, and where.

First let's look at Basic's desire to start a new line with every PRINT statement.

```
10 PRINT "HELLO THERE"
20 PRINT "HELLO,";"THERE"
30 PRINT "HELLO,"'"THERE"
```

Run the program above and you'll find that line 10 prints what you would expect, but line 20 prints

```
HELLO      THERE
```

with the two words on the same line and several spaces between them. Line 30, on the other hand, prints

```
HELLOTHERE
```

with no gap at all. The comma and semicolon are obviously acting as extra instructions to modify the PRINT command.

Both the comma and the semicolon instruct Basic to forget about starting a new line. A comma moves the cursor to the next available tabulator stop before printing anything else – there are normally four stops on each line, spaced at 10 column intervals. A semicolon, on the other hand, holds the cursor at its current position ready for the next character to be printed.

The system still works even if there are two PRINT statements on different program lines.

```
10 PRINT "HELLO,"
20 PRINT "THERE"
```

And there can be other Basic instructions between the two PRINT statements, so long as none of these alter the cursor's position. Here are a couple of examples.

```
10 DIM A$(40)
20 PRINT "PLEASE TELL ME YOUR NAME"
30 INPUT A$
40 PRINT "PLEASED TO MEET YOU ,";A$
```

or

```
10 PRINT "FUEL AVAILABLE - ";
20 F=500
30 PRINT F;" LITRES"
```

Notice that if you use a semicolon

between text strings, any spaces you want leaving between words must be printed as part of the strings themselves – that's why there's a space before LITRES in line 30. Try experimenting until you can be sure of printing exactly what you want on a single text line.

While we're on the subject of punctuation marks there are two others worth mentioning. The question mark (?) can be used instead of the word PRINT, as in

```
10 ? "HELLO"
```

And the colon (:) lets you put more than one Basic statement on a single line, as in

```
10 DIM A$(40):INPUT A$:?"HELLO ";A$
```

The colon tells Basic where one statement ends and the next begins and you can use it with any Basic command not just PRINT. This can reduce the number of program lines and also helps to speed up program execution. Remember though that a program line cannot occupy more than three screen lines so there's a limit to the number of statements you can squeeze in.

The comma and semicolon are fine when you're faced with relatively simple printing tasks but there are occasions when you have to print text at very precise locations on screen. The simplest way of doing this is to use the Basic command POSITION. Here's an example:

```
10 POSITION 14,11:PRINT "CENTRALISED"
```

The two numbers after POSITION tell the computer where to start printing. The first is the number of columns in from the left while the second is the number of rows down from the top. In this example, the word *CENTRALISED* will be printed 14 columns in and 11 rows down.

The screen mode we're using at the moment has 40 columns and 24 rows so you can use any number from 0 to 39 for the horizontal co-ordinate and any number from 0 to 23 for the vertical one. Remember that if you PRINT anything on the bottom line Basic will normally scroll the screen upwards to make room for its *READY* message.

Using POSITION you can send the cursor to any point within the screen's boundaries but it won't move until the next PRINT statement is executed. The command lets you insert scores into a text line or table without having to re-print the whole lot whenever the score changes. For example:

```
10 POSITION 2,15 :PRINT "YOUR NUMBER IS
20 POSITION 2,10 :PRINT "I'LL GIVE ME A NUMBE
   R FROM 0 TO 999"
30 INPUT N
40 POSITION 17,15:PRINT N;"."
50 GOTO 20
```

It's important to type this in and play with it, to see the differences between this screen format and the one produced by conventional PRINT statements. You'll see that the words *YOUR NUMBER IS* are printed only once though the chosen number – which is on the same line – can change as many times as you like. And there's no need for commas or semicolons because the POSITION statement moves the cursor to precisely where you want it, over riding Basic's natural tendencies.

Also notice that two spaces are printed after the new value of *N* – on line 40. This ensures that all digits of the old number are wiped out when the new number is printed. Leave out the spaces and see what happens when you type random numbers with one, two or three digits.

It's worth taking time to master the POSITION command, as you'll need it for all types of games, especially the arcade variety.

Let's move on now to a more unusual use of PRINT. Producing pictures on screen. You may have noticed that if you hold down the Control key, pressing most other keys will produce a graphics symbol which is different from the letter, number or symbol printed on the keytop. These are known as *control characters* and you can use them to produce pictures, tables, graphs or any other kind of two dimensional drawing.

These various characters were shown in last month's issue, together with the keystrokes which produce them. Each has its own unique number – known as its Ascii code – and these can be used in conjuction with a function called CHR$, as an alternative way of selecting characters to print on screen. For example:

```
10 PRINT CHR$(0)
```

will give you the heart character while

```
10 PRINT CHR$(28)
```

Turn to Page 54 ▶

◀ From Page 53

will produce a little ball Try this

```
10 PRINT CHR$(77),CHR$(65);CHR$(71),
CHR$(73),CHR$(67)
```

A few of the control characters act like commands For example if you tell the computer to PRINT CHR$(125) it will clear the screen while PRINT CHR$(253) will produce a short beep from the speaker

Table I shows the *Command* characters in more detail Their symbols cannot normally be printed on screen because any PRINT statement containing them will trigger the command function

There is a way however of temporarily disabling a command symbol by printing the Esc character – Ascii code 27 – immediately in front of it For example

```
10 PRINT CHR$(125)
```

will clear the screen but

```
10 PRINT CHR$(27) CHR$(125)
```

will print the clear screen symbol – a small bent arrow – without clearing the screen The Esc character does not appear – it is interpreted simply as an instruction to disable the command symbol which immediately follows The system works only once for each character so if you want to print more than one command symbol you must put the Esc code in front of each one like this

```
10 ? CHR$(27),CHR$(28) CHR$(27),CHR$(2
9) CHR$(27),CHR$(30) CHR$(27) CHR$(31)
```

If you want to type any command symbols directly into a literal string press the Esc key once before typing each character

The symbols will appear on the program line but when that string is printed during program execution the characters will carry out their command functions For example a bent arrow in a literal string will clear the screen when that string is printed Try this

```
10 PRINT "ESC CONTROL/CLEAR] SCREEN C
LEARED"
```

The square brackets indicate that we are talking about key presses not actual words so you press Esc followed by the Control+Clear keys simultaneously then the words *SCREEN CLEARED* The result will look like this

```
10 PRINT   SCREEN CLEARED
```

If you want a command character's symbol – not its function – to be generated when your literal string is printed press the Esc key three times before typing the character

After the second press the Esc character – a sort of double E – will appear then the third press followed by Control+Command will give you the command symbol Now when you run your program, the symbol will be printed just like an ordinary character

This all sounds a bit complicated, so compare this example with the one above

```
10 PRINT "ESC ESC ESC CTRL+CLEAR]SCRE
EN NOT CLEARED"
```

Using control characters you can

Ascii code	Symbol	Keystrokes to print symbol	Function
27	E	ESC	Disable command function (see text)
28	↑	ESC CTRL+	Move cursor up one row
29	↓	ESC CTRL+=	Move cursor down one row
30	←	ESC CTRL++	Move cursor left one column
31	→	ESC CTRL+*	Move cursor right one column
125	↰	ESC CTRL+CLEAR	Clear screen
126	◀	ESC BACK S	Erase character to left of cursor
127	▶	ESC CTRL+TAB	Advance to next tab stop
156	□	ESC SHIFT+BACK S	Delete line containing cursor
157	□	ESC SHIFT+>	Insert a line above the cursor line
158	□	ESC CTRL+TAB	Clear tab stop at cursor position
159	□	ESC SHIFT+TAB	Set tab stop at cursor position
253	□	ESC CTRL+2	Generate a short beep
254	□	ESC CTRL+BACK S	Delete character under cursor
255	□	ESC CTRL+>	Insert a blank space at cursor position

NB □ Denotes inverse character

Table I Command characters

build up pictures and tables on the screen However, it's a tedious job and involves a great deal of trial and error to get each character positioned correctly in its PRINT statement

The listing below makes life a good deal easier When you run it you can use all the keyboard's functions to put characters on the screen and move them around until they are exactly where you want them

When you're happy with the screen's appearance press Control+2 and follow instructions as they appear The end result will be a new Basic program which, when it is run will print the screenful of characters exactly as you designed it

The only characters you can't use are the command symbols and the double quotes ( ) because these cannot be written directly into literal strings and the program can't type Esc characters for you The symbols could however be inserted by hand when the rest of the screen has been encoded into PRINT statements To insert a double quotes character split the literal string at the desired point then insert CHR$(34) bracketed by semicolons For example

```
10 PRINT "THIS IS A LITERAL STRING
20 PRINT "THIS IS A "CHR$(34);"LITERAL
";CHR$(34), STRING
```

Before we leave the subject of command symbols there's one other technique you may find useful You can permanently disable all the command functions with a single statement POKE 766 1 Now the symbols will all behave like normal Ascii characters

This means that the control functions aren't available from the keyboard either – for example the cursor movement keys won't work. You can restore the status quo by POKE 766 0, so it's easy to switch the command functions on and off at different points in your program

● *Next month we'll look at simple character animation and create the illusion of movement on screen*

```
[illegible] PRESS
[illegible] ENLEFT OF SCREEN DATA
[illegible] PRINT STATEMENTS
[illegible] LTN A$(0 5),B$(0),C$(12),BLANKS
36)
32584 BLANKS
                REM 40 SPACES
32586 OPEN #1,4,0,K
32588 GRAPHICS 0 POKE 752,1
32590 REM FIRST PUT ALL YOUR CHARACTER
S ON SCREEN
32592 GRAPHICS 0
32594 GET #1,A
32596 IF A 255 THEN POKE 752,1 ? CHR$(
 GOTO 32528 REM TRITIATE CONVERSI
N IF CONTROL 2 PRESSED
[illegible] TF PEEK(84)=39 THEN GOSUB 32604
REM SHORT BEEP NEAR END OF EACH LINE
[illegible] E A 255 THEN TC PEEK(84)-23 THE
N POSITION 0,0 ? CHR$(253 GOTO 32534
REM RETURN ON LAST LINE-CURSOR HOME
[illegible] PEEK(84)-23 THEN TF PEEK(85)-
[illegible] THEN ? CHR$(58),CHR$(253), GOTO 525
[illegible] REM END OF SCREEN
[illegible] ? CHR$(A), GOTO 325 4
[illegible] ER NEXT COPY SCREEN INTO AS
[illegible] N SOUND 0,10,10,6
[illegible] "0 ROW=0 TO 23 FOR COL=2 TO 39
[illegible] POSITION COL,ROW GET #1,A
[illegible] ASCH,N) CHR$(A) N=N+1
[illegible] NEXT COL NEXT ROW
32630 SOUND 0,0,0,0
32640 REM GET DESIRED LINE NUMBER AND
INCREMENT
32642 TRAP 32642 GRAPHICS 0 ? ? INPU
 STARTING LINE NUMBER ,
32644 INPUT LSTART
[illegible] ? ? INPUT INCREMENT ,
32648 INPUT INC ?
[illegible]0 REM COPY EACH LINE IN TURN FROM
```

```
A$ INTO B$, FOR CHECKING AND ENCODING
32652 LASTLINE=23 POKE 752,1
32654 FOR LINE=23 TO 0 STEP -1 SOUND 0
,20,0,8
32656 TNUM=LSTART+LINE*INC
32658 B$="LINE=38 ? CHR$(125) ? SOUND 0
,0,0,0
32660 FOR N 1 TO 58
32662 X=PEEK(88(N,N)=A$(X,X)
32664 NEXT N
32666 TF B$<>BLANKS THEN FLAG=1 GOTO 3
2672
32668 TE FLAG=0 THEN LASTLINE=LASTLINE
-1 GOTO 32686
32670 ? LNUM, ? GOTO 32688
32672 IF LINE=25 THEN B$(38,38)=CHR$(2
7) B$(39,39)=CHR$(28) GOTO 32678
32674 IE B$(38,38)<>  THEN B$(39,39)
CHR$(27) B$(40,40)=CHR$(28)
32678 ? LNUM; ? ,CHR$(34),B$ B$=
32680 REM USE FORCED READ MODE TO CO
NVERT LINES INTO PRINT STATEMENTS
32682 ? ? ? CONT
32684 POSITION 0,0 POKE 842,13 STOP
32686 POKE 842,12
32688 NEXT LINE
32690 REM PREPARE TO SAVE STATEMENTS
32692 ? CHR$(125) ? Would you like to
 save the temporary ? nstruction fi
le co
32694 ? ? C) CASSETTE ? ? D= DISK
32696 GET #1,A IE A=67 OR A=68 THEN 32
698
32700 GOTO 32688
32702 GOSUB 32000 GRAPHICS 0 POSITION
2,4
32000 IF A=68 THEN 32010
```

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```
32802 REM SAVE TO CASSET
32804 IF A=67 THEN ? "Set up Data
n Hold tape/data ? "  le pre
RECORD and PLAY ,
32808 ? " " " then press START bu
UB 32866 TRAP 32808 LPRINT
32818 ? CHR$(125) POSITION 2,4 ? LIST
 CHR$(34),C  CHR$(34),, LSTART,,
,LASTLINE+INC+LSTART
32838 POKE 764,12 ? " " " CONT
" 32842 POSITION 2,2 POKE 842,13 STOP P
ke 842,12
32854 GOTO 32836
32856 REM SAVE TO ATSC
" 4 REM CHR$(125) ? Enter file name
"
32428 INPUT C$  F C$= THEN 32618
32622 " " " Insert disc to hold tape
ectory ? file, then press START ta
32624 ? create , $
32626 GOSUB 32846
32628 ? CHR$(125) POSITION 2,4
32630 ? LIST,CHR$(34), B ,C$,CHR$(3
4) , LSTART, , LASTLINE+INC+LSTART
32636 " " " " CONT POSITION 2,2 P
KE 842, 3 STOP
```

```
32634 POKE 842,12
32836 ? CHR$(125) POSITION 2,3 ? File
s created in this way may be ? merge
d WITH your existing program
32838 ? using the command
32840 F A=67 THEN ? " ENTER ,CHR$(
34) C ,CHR$ 34)
32842 IF A=68 THEN ? " ENTER ,CHR$(
34) B ,C$,CHR$(34)
32844 POSITION 2,12 ? Press START t
o erase the current " page of text,
and start another
32846 GOSUB 32644
32848 ? CHR$(125) FOR LN=LSTART TO LAS
TLINE+INC+LSTART STEP INC
32650 POSITION 2,4 ? LN " " CONT
32652 POSITION 2,2 POKE 842,13 STOP
32654 POKE 842, 2 NEXT LN
32656  CHR$(125) " " press START
 to write and list screen
32658 END
32660 REM SUBROUTINES
32662  HR$(125) POSITION 6,2 GOTO 32
32664 SOUND 0,80,8 ~ TOP We  TO 10 A
EXT W SOUND 0,0,0 RETURN
32666 F PEEK(75  6 THEN 32668
32668 SOUND 0,60 10, FOR W=0 TO 30 NE
XT W SOUND 0,0,0 RETURN
```

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WHILE STOCKS LAST

DIY worked with a dicky disc drive

£10 LETTER

I WAS in the middle of a massive backing up session when suddenly my trusty 810 disc drive emitted a bang and a clatter and packed up completely.

With fear and trepidation I removed the cover and discovered what had gone wrong. There is a metal band which translates the rotary motion of a capstan to the linear movement of the head carriage – this had broken.

All that was needed was a piece of stainless steel shim one thousandth of an inch thick, but the best that several Atari repair shops could offer was a replacement head and capstan unit costing at least £50.

Having ventured both I explained so I decided to make it myself. I was able to obtain enough shim to last me a lifetime from a local engineer.

I removed the old broken band and taped it into my exercise book. Then I wrapped it up and drew its exact shape on to the new one using the sharp point of a pair of scissors to score the line.

I drilled the three fixing holes in the bares using a model drill as and used the scissors to cut round the outline of the band which I then put back in the disc drive.

The drive appeared to work fine, the head needed aligning with track 1.

I connected an oscilloscope to the output from the read head, having undone the capstan setscrew I moved the head carriage by hand to the point of maximum signal from track 1 using a spare formatted disc.

I then tightened the screw and adjusted the setting using a number of other discs and a few commercial

some con

fidence while I had the drive exposed I checked several other adjustments which may be made to ensure that I could get the maximum signal from the disc.

*So far I have had no further problems with this drive. I can access all my discs as the head is reasonably well aligned and I have learnt a lot about how a disc drive works. Furthermore if it happens again I know what to do – **M R Holland, Lower Penn, South Staffordshire***

Sorry, tape only

A FEW weeks ago I bought Boulderdash Construction Kit on tape because the shop didn't have it on disc. I designed a level and when I tried to save it to disc it reported 'Check your drive'.

*It has done this ever since. Can you tell me why this happens and how can I fix it? – **Jamie Beszelzen, Hockley, Essex***

● Although the program comes up with the option to save to disc or tape it will only work with a tape deck. This is unfortunate but sadly a fact.

In Never Never Land

I HAVE an 800XL and have just finished entering in Snowball from the December 1987 edition of Atari User.

I typed it in correctly as there were no error messages but when I ran it to my grief three hours typing went down the drain. All that appeared was a black screen with two green shapes on it.

I tried Get it Right! but I could not understand what the letters and numbers meant.

Then I realised that I had run it before I saved it, although the article said if you run the game and there are any typing errors it may cause the computer to crash as the DLI is used.

*Could you tell me what the letters and numbers mean on Get it Right! and what it means by the computer crashing! Also are there any errors in the listing? – **Kara Ball, Keynsham, Nr Bristol***

● When a computer program is typed in each individual line is assigned a unique set of numbers – or checksum. The Get it right! program prints this.

By referencing these numbers against the list in the magazine you will instantly know whether you have entered the line correctly.

The fact that no errors were reported doesn't mean that you haven't made a mistake. For example if you enter A=8 when you should have entered A=B the program won't work but no error will be reported.

Crashing the computer – or locking the system up – are just terms given to an acute ailment computers are heir to. If you tell it to do something that it doesn't like or isn't supposed to do it will wander off into Never Never Land. And no matter what you do you can't get it back.

This is always a possibility when typing in data statements that form part of a machine code routine.

WIN A TENNER!

EACH month we will award £10 prizes for the most interesting letters sent to us.

So now there's more reason than ever to contribute to our lively mailbag pages.

Get your pens out, start writing and you could be one of the winners. The address:

Mailbag Editor
Atari User
Europe House
Adlington Park
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Tape troubles

I BOUGHT an Atari 800XL and a 1010 recorder. At first it worked OK but after a short time it damaged the tapes so I could not play them again. I took the recorder back to Dixons who sent it away.

They then returned it saying their was nothing wrong with it and it must be the tapes. What can you advise me to do?

*I also own a 1050 disc drive which works well, but I would like to still be able to play budget tapes. – **Damien Gipson, Bideford, North Devon***

● We get a lot of letters about this sort of thing hap

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penring to 1010 tape decks. The 1010 is usually a reliable recorder if used and looked after correctly but if cheap tapes are used problems often arise.

Your best solution is to get someone who knows what they're doing to check the head alignment and clean it and the pinchwheel.

If the recorder still gives problems after this take it to a reliable service engineer in your area.

ATARI USER Mailbag

WE welcome letters from readers – about your experiences using the Atari micros, about tips you would like to pass on to other users – and about what you would like to see in future issues.

The address to write to is:

Mailbag Editor
Atari User
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The pro approach

I HAVE just bought an Atari 65XE and I would like to know how you would go about programming a professional game. Is there such a thing as a games designer, or will I have to go back to loops, pokes and graphics?

All I ever get is errors, errors and more errors. So please can you help before I overheat with confusion and errors? – **Darren Clewley, Milton Keynes, Bucks**

● A program called the Arcade Machine was written and released in America by a company called Broderbund. The utility was written in 1982 so it may be difficult to obtain. US Gold deals with a lot of Broderbund software and may be able to help you. The address is Broderbund/US Gold, Units 2/3 Holbard Way, Holbard, Birmingham B6 7AX. Tel 021 356 3388.

Submarine sunk

A FORTNIGHT ago I bought an Atari 65XE and a copy of Atari User. I have had an Atari 800XL before, so I am familiar with the keyboard, but sad to say not with programming.

I typed in Submarine Hunter and checked it carefully – especially the data – but when I entered RUN it came up with error 6 which applies to the date in line 8920. Could you help me out of this problem?

Also do programs for the old 48k work on the 65XE? – **J G Gibson, Penzance, Cornwall**

● There are no errors in the program as it is printed. Line 8920 contains a READ command that reads the data statements. You will need to check them all very carefully.

Not all programs written for the 400/800 machines work on the 65XE. Some differences in the operating systems has cause a slight incompatibility. However most programs published in *Atari User* work on all Atari 8 bit computers.

Finding the vertical bar

I HAVE had an Atari 800XL for some months now and enjoyed typing in the programs that you have published.

I would be grateful if you could tell me how you type in the vertical bar character that appeared in line 370 of Dicer in the January 1988 issue of Atari User? – **C P Allen, Peterborough**

● This is one of those elusive control characters the Atari computer possesses. To obtain it press Control+V.

If you look in the February issue of *Atari User* you will find a table showing all the characters and the key strokes required to get them.

Programs appreciated

THE Picture Processor and the Post Printer in the January issue of Atari User were two very good programs. They will come in very useful to a lot of 1029 owners who, like myself, do not find a lot of programs for dumping pictures to their printer.

The ease with which you can convert different file formats is very useful. It shows other 1029 users just what can be done with a little bit of patience and practice. – **J E Rice, Ipswich, Suffolk**

Sharp for stereo, but not programs

RECENTLY I acquired an Atari 400. My knowledge of Basic programming is minimal but enough to write programs of sufficient length to warrent the need for some peripheral storage device.

Several people have advised me that my Sharp stereo cassette player should be compatible but I do not have the required multiport five pin DIN connector.

Could you let me know whether my stereo cassette is compatible and if so where could I purchase the connector or where I can find the necessary information needed to build such a device?

In future, when my knowledge of Basic and financial circumstances have improved I plan to purchase a disc drive. However until such time I hope you will be able to help me find an economical solution to my storage problem. – **Trefor W Roberts, Menai Bridge, Gwynedd**

● Unfortunately your tape recorder will not plug directly into an Atari. An interface used to be available for converting the signal from a normal tape deck to one that your POKEY sound chip could understand.

However we don't know if the company is still trading and so your only option is to buy an Atari deck. The XC12 is available for around £30 from various advertisers in this issue.

You could also take a look at the classified section of the magazine.

Groans, no grunts

I OWN an Atari 800XL and was wondering when someone is going to release a wrestling game for my computer. I think a company like US Gold could write one, as it has produced them for other computers.

I feel that the Atari has

great candidates for games, but a wrestling game seems to be just what it hasn't got – it would be a great success. Do you know if any are going to be made in the future? – **John Alan Robinson Whitley Bay**

● We don't know if US Gold is going to release such a game for the Atari. An American software company did bring out a game called Bop 'n Wrestle but it was only ever released in America.

Gauntlet blues

RECENTLY I had a major disappointment while playing US Gold's Gauntlet. After nearly three hours I reached level 110 and I was horrified to see the same sheet repeated over and over again after that.

At level 130 boredom finally overcame me and I was forced to turn the computer off. Was my copy of the game at fault, was it my computer or is it a fault with the actual game?

Also is US Gold planning to bring out International Karate II on the Atari? – **G J Hagon, Dagenham Essex**

● There is nothing wrong with your copy of the game. This is how it has been programmed. At the moment there appear to be no plans for International Karate II but if it turns up a review will appear in *Atari User*.

WP on the 800XL

I HAVE just bought an Atari 800XL and would like to know if the Atari Writer Plus word processor is available on tape for it. Also can Atari SMM804 printers be connected to my computer without a Graphics AT Interface? – **Cheriton Ferrao Canning Town London E16**

● The AtariWriter Plus program is a disc based word processor. However the old AtariWriter cartridge will work with a tape deck.

The SMM804 printer is a dot matrix model designed for the ST. Personal computers or the IBM PC and compatibles – it won't work on an 800XL.

Happy impulse

IN December I went to Currys to buy a Walkman for our nine year old son's Christmas present. You guessed – I returned with an Atari 65XE computer pack.

I had a great sense of guilt at my impulse buying, and didn't have a clue about computers at all.

As time has gone by my guilt feelings have gradually receded because of help from friends and reading Atari User. Gradually I have learnt that computers are not boring, they're really quite interesting. They have opened a whole new world of interest for me – which is quite amazing to a mere female! – **Rosemary Campbell Kirkby Stephen, Cumbria**

Get it Right!

I OWN an Atari 800XL and am new to computing and very willing to learn. I typed in Bounder from the June 1987 issue of Atari User but try as I may it won't run.

Could it be the program uses machine code and do I need an assembler language? – **J Chapman Peterlee Co Durham**

● The program is written entirely in Basic and works fine on an 800XL if you key it in correctly.

You will find that you have made some typing error. Check the program very carefully using Get it Right!

DIP in for those elusive £ signs

£10 LETTER

I FIND that when I use Mini Office II with my Panasonic KX-P1081 printer it will print the elusive £ by simply keying #. Yet no one seems to have bothered to mention this in reviews or the handbook.

In fact the manual advises using print code strings to define it. There seems to be no reason why this should not work with other printers – have you any idea why it is not recommended?

I would go on to say that with Epson compatibles Mini Office II seems superior to Atari Writer Plus and the only complaints I can level are that there seems to be no built-in underline command so it consumes two of the 10 code strings allowed and double spaced print cannot be defined for part of a document.

Does anyone know how to overcome these problems? – **J E Robinson, Millom, Cumbria**

● Whether the # sign outputs a £ sign depends on the DIP switch settings inside the printer.

Most printers can be set to do this but it's not always automatic.

Starwars on hold

IN THE April 1987 issue of Atari User you said that a conversion of the Starwars coin op series is promised for the Atari 8 bit by the end of the year.

Where is it? I was eagerly awaiting the release of this game and as the end of the year rolled around I noticed it was being released for other computers but not for Atari.

I am rather disappointed that 8 bit users seem to have been left out. Maybe we will be seeing it later in the year. – **J Elliott, West Sussex**

● Domark Software unfortunately changed its mind about releasing an 8 bit version of this superb game. It has no plans to bring out a version so we will just have to hope that another software company takes up the challenge.

Replacement switch

My children have an 800XL with 1010 tape machine with a broken switch. Do you know where I can get a replacement? – **Mrs K B Shipp, Horsham W Sussex**

● Replacement keys for the 1010 tape deck can be obtained from Silica Shop. The price is £1.12 – which includes VAT and postage and packing – for two keys. Silica Shop can be contacted on 01 309 1111.

Racing round the Atari

I HAVE an Atari 800XL and I would like to know if any car games have been released for it. Could you please give me a list of them? – **Derek Broad, Christchurch, Dorset**

● A lot of car games have been written for Atari 8 bit computers over the years. They include Pole Position, Pitstop, Pitstop II, Baja Buggies, Rally Speedway, Racing Destruction Kit and many more.

Enter the magical world of Kerovnia!

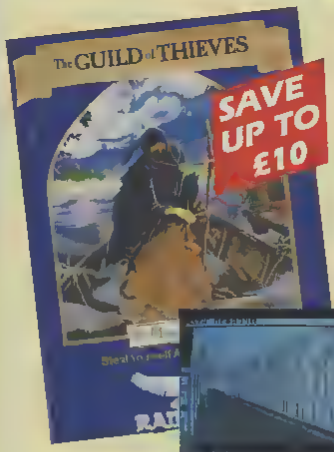


This fascinating adventure features the most sophisticated parser around. You can type complex sentences and interact with the many characters, including some very intelligent animals.

This superb package includes a 44-page novel and a cryptic help section.

> The program took three man years of programming time to produce – and it shows. The Pawn is the stuff from which cults are made
>
> *– Anthony Ginn, Atari User, May 1986*





Guild of Thieves – it's a steal!

Game of the Year 1987

Guild of Thieves is the long-awaited follow-up to the award-winning adventure, The Pawn.

You're back in the fantasy world of Kerovnia, in the role of a novice thief who has applied to become a member of the illustrious Guild. To prove your worthiness you must ransack an island of all its treasures.

There are 29 beautiful illustrations, a massive vocabulary, and a text parser which is claimed to be more sophisticated than the parser in the Infocom adventures.

> This is an absorbing, funny and tantalising adventure and guaranteed to be another sure-fire winner for Rainbird
>
> *– Bob Chappell, Atari User, October 1987*

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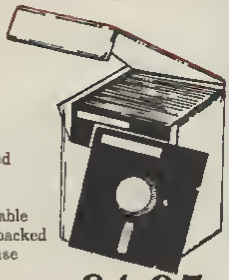
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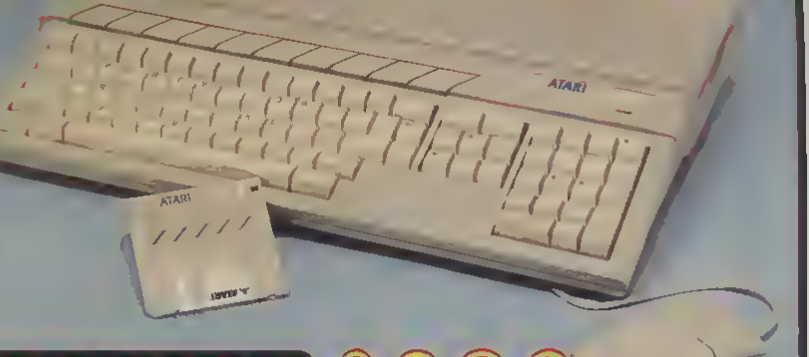
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