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SupraDrive AT ready to plug in and use £749.95

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Rambo XL with fitting instructions £29.95

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Programmers' Challenge
A new series to test your skill at creating computer algorithms.

Basic Revealed
An in-depth look at how your Atari's built-in language works.

Software Solutions
Our resident expert helps to solve your programming problems.

Disc Database
A handy utility to keep track of all your discs' contents.

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SEE PAGE 22
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---

A271

A3103
Escape death row

A BUDGET price multi-level shoot-'em-up – ZybeX – has been announced by Zeppelin Games (091 281 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 to another level even more difficult than the last. Your goal 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 effects. Company policy is quality software at a budget price – hence the tag of just £2.99 on cassette from Zeppelin Games.

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 foray 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 they will be retrieved", 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 Micro Prose at £19.99 and Chess Master 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 61.
PAGE 6 has been supporting Atari computers for 5 years – coverage now includes both 8-bit and ST. Get the latest copy from your local newsagent or by subscribing.

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DEBBIE DESIRE’S PROBLEM PAGE
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 in 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 re-enable it you simply press System Reset.

A help file explaining the Toolkit can be found on the disk 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 each name in memory altogether 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, £6.95 cassette.

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.

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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It's a challenge!

If you've just learned to program and don't know what to do next, keep reading. This is the first of a series of articles in which we challenge you to exercise your newfound skill in Basic programming.

It starts on this page with The Challenge itself. You can take up the challenge at various different levels of skill, depending on how good you are.

We present you with a problem to solve using your Atari computer. It contains all the information you need to write the program, and if you are a reasonably competent programmer you'll need no further help.

However, if you are just beginning you might not be able to sort all of it out. But just thinking about the problem and trying out a few ideas will help you develop your programming skills.

What you're going to need follows next month: Hints.

In this I'll set out an algorithm you can use to code the problem. This is simply the method you are going to use to implement the solution. It should be relatively straightforward to convert it into a Basic program providing you are familiar with the language.

Then, in the May issue, we'll present The Solution. I will give you a simple no-frills program that will do the job, along with suggestions for further improvement. You can check this against your own answer and perhaps sort out any points you had difficulty with.

Remember, as far as a program is concerned, there are as many right answers as there are wrong ones, but the solutions I favour are simple and readable.

I will avoid, as much as possible, using fancy tricks or so-called clever programming techniques, as most of the time they are not necessary.

So on to Challenge 1, which is set in a casino...

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 penny, Guy, 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.
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 slumber 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:

```
1888 POSITION XISTANCE,10DISTANCE
```

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 completely rubbish – as is often the case at 3 o’clock in the morning – and you won’t find out until you run the program.

**Variables**

As an example, consider this simple program:

```
5 LET NUMBER=120
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, 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.
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 preceding 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 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:

```
D0=PEEK($5A)+PEEK($5B)+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 Basic, 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 55 minus 64 – a grand total of 1. 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

<table>
<thead>
<tr>
<th>Location</th>
<th>Label</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>126/129</td>
<td>LOMEM</td>
<td>Lowest user-accessible memory address</td>
</tr>
<tr>
<td>130/131</td>
<td>VTPT</td>
<td>Variable Name Table pointer (start address)</td>
</tr>
<tr>
<td>131/132</td>
<td>VTND</td>
<td>Variable Name Table dummy (end address)</td>
</tr>
<tr>
<td>134/135</td>
<td>VTNP</td>
<td>Variable Value Table pointer (variable contents)</td>
</tr>
<tr>
<td>136/137</td>
<td>STMTAB</td>
<td>Statement Table (first address of tokenised program)</td>
</tr>
<tr>
<td>138/139</td>
<td>STMCUR</td>
<td>Current statement (last direct command line)</td>
</tr>
<tr>
<td>140/141</td>
<td>STAR</td>
<td>String/Array pointer (string/array contents address)</td>
</tr>
<tr>
<td>142/143</td>
<td>RUNSTK</td>
<td>Runtime stack (internal COSUB/FOR...NEXT addresses)</td>
</tr>
<tr>
<td>144/145</td>
<td>MEMTOP</td>
<td>End of current Basic program space</td>
</tr>
</tbody>
</table>

*Figure 1: Basic’s Zero Page Pointer Table*
Feature

From Page 11 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 129/129 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 $1CF 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 LO Mem. 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.

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

**Figure II: Types of entry in the Variable Value Table**

<table>
<thead>
<tr>
<th>Label</th>
<th>Name</th>
<th>Bytes</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>VNTP</td>
<td>Variable Name Table</td>
<td>78 85 77 66 69 210</td>
<td>Ascii for NUMBER</td>
</tr>
<tr>
<td>VNTD</td>
<td>Variable Name Table dummy</td>
<td>0</td>
<td>Zero byte at end of Variable Name Table</td>
</tr>
<tr>
<td>VVTM</td>
<td>Variable Value Table</td>
<td>0 0 65 18 0 0 0 0</td>
<td>BCD contents of variable 0 (NUMBER) = 120</td>
</tr>
<tr>
<td>STMAB</td>
<td>Tokenised program</td>
<td>5 0 15 15 6 128 45 14 65 18 0 0 0 0 22</td>
<td>5 LET NUMBER=120</td>
</tr>
<tr>
<td>STMCUR</td>
<td>Immediate Mode statement</td>
<td>10 0 7 7 32 128 22</td>
<td>10 PRINT NUMBER</td>
</tr>
<tr>
<td>STARP</td>
<td>String/Array contents</td>
<td>0 128 21 21 25 15 13 68 51 58 78</td>
<td>Last direct command used</td>
</tr>
<tr>
<td>RUNSTK</td>
<td>Runtime stack</td>
<td>85 77 66 69 82 46 66 65 83 22</td>
<td>Try working it out!</td>
</tr>
<tr>
<td>MEMTOP</td>
<td>End of reserved program area</td>
<td>(None)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(None – no program running)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(One byte beyond end of STMCUR)</td>
<td></td>
</tr>
</tbody>
</table>

**Figure III: Areas of memory after a program has been tokenised**
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 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 I. 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 into 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 re-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 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$(27);CHR$(16);NAME$;"L PRINT:"LPRINT
```

it will work on any Epson compatible printer.

Table I: File categories and filenames

<table>
<thead>
<tr>
<th>Categories</th>
<th>Filenames</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilities</td>
<td>UT,</td>
</tr>
<tr>
<td>Adventures</td>
<td>AD,</td>
</tr>
<tr>
<td>Arcades</td>
<td>AR,</td>
</tr>
<tr>
<td>Strategy</td>
<td>ST,</td>
</tr>
<tr>
<td>Simulations</td>
<td>SI,</td>
</tr>
<tr>
<td>Music &amp; Demos</td>
<td>MD,</td>
</tr>
</tbody>
</table>

Turn to Page 14 ➤
From Page 13
10 REM \------------------------------\*
10 REM * ALPHABET.ABC
20 REM * BY
30 REM * ALAN MCLEMON
40 REM * C) ATARI USER
50 REM * \------------------------------\*
60 REM 180 GRAPHICS:0:CLR
70 REM X=125:Y=35:POKE 755,224:POKE 7
80 REM 52:OUT 5:6
90 REM 120 DIM ALL(X,5),GAME(40),WORDS(50),COUNTS(2),YMX(5),MERGES(5),NAMES(20):\*
100 REM DISKS(10),COUNTS(3),DSK(40),SAV(50),\*
110 REM SPACES(10),TOTALS(54),PAGES(35):\*
120 REM SETCOLOR 2,4:POKE 256,1
130 REM SETCOLOR 2,4:POKE 752,1
140 REM INITIALIZE ALL THE VARIABLES OUT OF ALL
150 REM WORDS:"\"W:WORDS(250):\""WORDS(2):\"
160 REM ALL(XX):\"ALL(XX):\":\"ALL(XX):\":\"
170 REM \------------------------------\*
180 REM SETTING SCREEN AND PRINTING DATA IN SCREEN:
190 REM TOTALS:"\"YOU HAVE A TOTAL OF \"REM:"\"
200 REM PAGE: \"PAGES \"POKE \"NAME \"DISK \"FILE:"\"
210 REM \------------------------------\*
220 REM \------------------------------\*
230 REM \------------------------------\*
240 REM \------------------------------\*
250 REM \------------------------------\*
260 REM \------------------------------\*
270 REM \------------------------------\*
280 REM \------------------------------\*
290 REM \------------------------------\*
300 REM \------------------------------\*
310 REM \------------------------------\*
320 REM \------------------------------\*
330 REM \------------------------------\*
340 REM \------------------------------\*
350 REM \------------------------------\*
360 REM \------------------------------\*
370 REM \------------------------------\*
380 REM \------------------------------\*
390 IF CHS(X)="":THEN DISKS="0:51:0:0:51:""NAME=""SIMILATORS:""SPACES=""\"GOTO 410:REM IS SPACES\n400 REM \------------------------------\*
410 REM \------------------------------\*
420 REM \------------------------------\*
430 REM \------------------------------\*
440 REM \------------------------------\*
450 REM \------------------------------\*
460 REM \------------------------------\*
470 REM \------------------------------\*
480 REM \------------------------------\*
490 REM \------------------------------\*
500 REM \------------------------------\*
510 REM \------------------------------\*
520 REM \------------------------------\*
530 REM \------------------------------\*
540 REM \------------------------------\*
550 REM \------------------------------\*
560 REM \------------------------------\*
570 REM \------------------------------\*
580 REM \------------------------------\*
590 REM \------------------------------\*
600 REM \------------------------------\*
610 REM \------------------------------\*
620 REM \------------------------------\*
630 REM \------------------------------\*
640 REM \------------------------------\*
650 REM \------------------------------\*
660 REM \------------------------------\*
670 REM \------------------------------\*
680 REM \------------------------------\*
690 REM \------------------------------\*
700 REM \------------------------------\*
710 REM \------------------------------\*
720 REM \------------------------------\*
730 REM \------------------------------\*
740 REM \------------------------------\*
750 REM \------------------------------\*
760 REM \------------------------------\*
770 REM \------------------------------\*
780 REM \------------------------------\*
790 REM \------------------------------\*
800 REM \------------------------------\*
810 REM \------------------------------\*
820 REM \------------------------------\*
830 REM \------------------------------\*
840 REM \------------------------------\*
850 REM \------------------------------\*
860 REM \------------------------------\*
870 REM \------------------------------\*
880 REM \------------------------------\*
890 REM \------------------------------\*
900 REM \------------------------------\*
910 REM \------------------------------\*
920 REM \------------------------------\*
930 REM \------------------------------\*
940 REM \------------------------------\*
950 REM \------------------------------\*
960 REM \------------------------------\*
970 REM \------------------------------\*
980 REM \------------------------------\*
990 REM \------------------------------\*
100 REM \------------------------------\*
101 REM \------------------------------\*
102 REM \------------------------------\*
103 REM \------------------------------\*
104 REM \------------------------------\*
105 REM \------------------------------\*
106 REM \------------------------------\*
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:

\[ \text{x} = \text{USR}(1535, n) \]

where \( n \) is any decimal number from 0 to 255. The computer will then instantly print the binary number on the line above the line at the top of a 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 misspelling the data statements it could cause a crash, so remember to use Get it Right to check it.

R1 FOR :1536 TO 1605:READ A:POKE R,A:N
1 Ext R:5,DATA 104,185,89,137,0,165,65,132
2 0,160,0,164,144,144,0,160,37,169
3 2 DATA 105,145,9,126,192,255,200,249,1
4 66,2,163,162,145,8,200,169,233,145,8,2
5 0,169,216,145,8,200,169,233,145,8,2
6 169
7 DATA 242,145,8,200,169,249,145,8,200
8 200,169,141,145,8,100,0,165,128,141,1
9 65,6,169,64,141,166,8,169,32,141,167,6
10 169
11 DATA 16,141,168,8,169,8,141,169,8,16
12 5,4,141,178,5,169,2,141,171,6,169,1,14
13 1,176,6,162,1,169,11,173,164,5,221,164
14 6,48
15 B DATA 5,252,164,6,12,137,6,76,110,6,3
16 2,145,6,200,232,224,3,200,232,90,141,1
17 64,6,265,145,8,96,165,144,145,8,96
18 0,0

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 strings.
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.

12 H:POKE 752,1:TRAP 1:100H RS(16),8
25,0,0S(16),6S(16):INPUT 36,36,36:RES
3 FOR R=1 TO 12:READ D6,0,BIP D6:
4 0S THEN X=0B
5 IF CE-B THEN Z=B:IF B-1 THEN RUN
3 NEXT R:RES:INH(19,2):?"Resistance
4 is "RES:INH(18,1):?"Any key to c
5 continue":OPEN IN,4,0,"W":GET 1,1:K
6E 1,1:RUN
7 DATA BLACK,1,1,2000W,1,10,RED,2,100.
8 ORANGE,5,12,YELLOW,4,14,RED,5,12,
9 BLUE,6,16,VIOLET,7,17
10 D DATA GREY,8,-1,WHITE,9,-1,GOLD,-1
"SILVER,-2,-1

16 Atari User: March 1986
COLOUR CONTRAST
from David Manlove

IT can be very annoying when trying
to find colours that are 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 ver-
tical blank interrupt and the WVLKD
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
8.
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 state-
ments.

BARPOUND SIGN
from P.D. and J. Badrick

I RECENTLY started writing a program
for home accounting, and this was
when my programs arose — my Atari
800XL doesn't have a pound sign on
the keyboard. So I decided to write a
routine that would redefine a charac-
ter 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
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.

Get it right!
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 toothbrush, 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 £16 million helicopter gunship. Using this you may be able to destroy the missiles that are heading towards the Floodsville dam and prevent the impending 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

<table>
<thead>
<tr>
<th>Line Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 12</td>
<td>Initialise variables and strings</td>
</tr>
<tr>
<td>20 - 25</td>
<td>Set wave parameters and clear all collision detection registers</td>
</tr>
<tr>
<td>50 - 70</td>
<td>Main program loop controlling collision detection and movement of missiles</td>
</tr>
<tr>
<td>100 - 110</td>
<td>Move helicopter missile</td>
</tr>
<tr>
<td>150 - 157</td>
<td>Randomly select a new shape and position for the next enemy missile</td>
</tr>
<tr>
<td>200 - 250</td>
<td>Successful end of wave and bonus routine</td>
</tr>
<tr>
<td>300 - 330</td>
<td>Collapsing dam sequence and sound.</td>
</tr>
<tr>
<td>400 - 480</td>
<td>Helicopter explosion, decrement lives and check for end of game</td>
</tr>
</tbody>
</table>

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
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March 1988 Atari User 21
This Toolkit is a MUST!

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- **LVAR**
  Gives the name of all used variables and a list of all their occurences.

- **STRIP**
  Removes all REMs and reduces the size of the program.

**£5.95 tape**  **£7.95 disc**

TO ORDER PLEASE USE THE FORM ON PAGE 61
This drawing program was first published in the July 1985 issue of *Atari User*. It was written for the Atari 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 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.

```plaintext
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
6 REM
7 REM 3D DRAWER
8 REM
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89 REM
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91 REM
92 REM
93 REM
94 REM
95 REM
96 REM
97 REM
98 REM
99 REM
100 GOSUB 550
110 IF STR(S)=- THEN GOSUB 300
120 IF Peek(53279)=6 THEN GOTO 160
130 DX=DPX: DY=DPY
140 IF POINt>0 THEN GOSUB 740
150 GOTO 100
160 X=NUMBER OF FACES*; INPUT F
170 IF X=0 THEN H=0 : GOTO 100
180 X=NUMBER OF FACES* ; INPUT F
190 IF X=0 THEN H=0 : GOTO 100
200 X=NUMBER OF FACES* ; INPUT F
210 IF X=0 THEN H=0 : GOTO 100
220 IF L+F/2 THEN "WELL I'M HALF WAY" IF L+F/2 THEN "WELL I'M HALF WAY"
230 FOR K=1 TO POINT

Test out this neat drawing routine by ROBIN EDWARDS

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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 can 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 Pitsstop II game. After playing it for a while I was intrigued to find out why a full price product of this calibre is priced 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 came about while he was working for Tynesoft - Winter Olympics, Phantom, Who Dares Wins II and Mousetrap.

I summarise that it was the success of these - especially Winter Olympics which sold over 4,000 copies in its first month - that allowed him to buy his 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, 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, Martin O'Donnell and Brian Jobling.

They have their own in-house programmers and various freelance writers and, as well as supporting the 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...
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 the 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 132 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 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

Zybez 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 gamers with its quality and addictiveness.

The game involves two rebels - Rinzer 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 Czokan 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 Zybez 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.
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 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.

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Grateful for small mercies

by Rouloc

As I was saying to my great-great-grandfather just the other day – we small folk are noted for our longevity you know, despite the fact that we die with danger and dragons virtually every day of our lives – not a lot now 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 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 Moreton’s Quest”. Tarzan has simplified 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 who 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

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Adventuring

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. F. LONG. 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, Awaken, Negate, Sleep and Protection.

Ron would like to know where Buc
caner's Den, Magminda, 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 second button then, at the redface, 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 torso 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 tunnel then N to the room.

Tear paper wall with trowel and tie 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 hall 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 £1,064 (the Whisper), the dearest £2,892 (the Grendhal). You will also need a separate telephone line, costing £101 to install, plus £4.90 a year rental. That's a total outlay over the first year of a minimum of £2,109. (All prices include VAT.)

Or you could do what more and more Atom users are doing - use your micro to double as a Telex machine. And just use your ordinary telephone?

How do I turn my Atari into a Telex machine?

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Telex is just one of a growing number of services available to Atari users on MicroLink. With MicroLink you can read the news as it happens, go shopping, create your own closed user group, send telemessages and electronic mail and round the world, download free telesoftware programs directly into your micro... and much more.

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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?
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Batty but beautiful

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Supplier: Microvalue/tyne-soft, Addison Industrial Estate, Blaydon, Tyne and Wear NE21 4TE
Price: £3.99 (cassette) £5.99 (disc)
Tel: 091-414 4611

ONE of the main problems the software market suffers from is lack of originality. At times it appears that programmers simply change the design of the aliens and sell 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 its 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 feet 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 strongest 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

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<td>Value for money</td>
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<tr>
<td>Overall</td>
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Flight of fancy

Product: Swift Spreadsheet
Supplier: Audiogenic, Winchester House, Canning Road, Woodstone, Harrow HA3 7JS
Price: £24.95 (disc)
Tel: 01 861 1186

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 664, but there is 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 - 64 columns and 254 rows - and the XE version has 64 columns and 254 rows - 16,256 cells.

To take advantage of the package 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 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 saves 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
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March 1988 Atari User. 37
Dodgy diagonal trouble...

**Product:** Panther  
**Supplier:** Mastertronic, 8-10 Paul Street, London EC2A LUH  
**Price:** £1.99 (cassette)  
**Telephone:** 01-377 8411

**Description:**

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, 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, as 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 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-implemented 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 look 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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Cheque enclosed for £______
**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 superb 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: 1.5, 2.5, 0, 1.5, 2.5, 0 and 1.5. — 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 mechanoid.
- 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:

<table>
<thead>
<tr>
<th>Grenade</th>
<th>These make up the skeleton key.</th>
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<td>Prestinium</td>
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<td>Photon emitter</td>
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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 88013.

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 Fin del 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 Fin del 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 Marganna's tiara from level one to the war horse on level two. The tiara is found in the room with three wreaths 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 Sting 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.
MIKE MOULTON invites you to enter
the mystical world of adventure

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.

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 Saxophone
24 Teleport key
25 Red herring
26 Glowing bottle
CHARACTERS AND WHAT THEY DO

<table>
<thead>
<tr>
<th>Character</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gimbal the Wizard</td>
<td>Will help you with the Release spell.</td>
</tr>
<tr>
<td>Thor</td>
<td>Give him the miolnir and he will help you get into the lift and in the tower.</td>
</tr>
<tr>
<td>Florin the Dwarf</td>
<td>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.</td>
</tr>
<tr>
<td>Orik the Cleric</td>
<td>Give him the crystal ball and he will help you get into the Most Magic room with the Crystallium Spectralis spell.</td>
</tr>
<tr>
<td>Samsun the Strong</td>
<td>Give him the javelin and he will help you at the pit.</td>
</tr>
<tr>
<td>Elrand the Halfelven</td>
<td>Give him the trumpet and he will help you at the wall after Thor has helped you at the tower.</td>
</tr>
<tr>
<td>Lady Rosmar</td>
<td>Give her the pocket laser and she will help you in the secret tunnel entrance.</td>
</tr>
<tr>
<td>The Banshee</td>
<td>Will tell you some clues if you command her to help.</td>
</tr>
</tbody>
</table>

SPELLS AND THEIR USES

<table>
<thead>
<tr>
<th>Spell</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fumistics Protectium</td>
<td>You will need the red herring and the power pong plant to cast this spell. It will protect you from the Gas room.</td>
</tr>
<tr>
<td>Armouris Photonicus</td>
<td>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.</td>
</tr>
<tr>
<td>Candelium Illuminatus</td>
<td>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.</td>
</tr>
<tr>
<td>Project Physical Body</td>
<td>You will need the crystal ball and the magic talisman to cast this spell which will allow you to teleport to any character.</td>
</tr>
<tr>
<td>Crystallium Spectralis</td>
<td>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.</td>
</tr>
<tr>
<td>Release Spell</td>
<td>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.</td>
</tr>
</tbody>
</table>

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: Miolnir, loaf of elfbread
- Rosmar: Willow Rod, fast blow fuse
NEW!

RAMBIT PPP PARALLEL PRINTER PORT
A neat self-contained interface module that allows your printer to communicate with the Atari 800X, 800XL, 1200X, and 130XE. Connects to the Parallel Bus Port to print on your choice of printer. Price: £29.95

TASKMASTER TAPE TO DISK UTILITY
Auto-conversion of your tape or disk to a cassette format. Price: £22.95

RAMBIT II HI-SPEED CASSETTE!
A cassette interface that allows you to Re-record your tape or disk to a cassette format. Price: £15.95

Utilities have full instructions, handle Single, Multi-staged, Long-block etc., up to 40k and are suitable for 64 600XL, 800XL, 65XE and 130XE, send SAE for specific product information. We help, answer queries and update software. Quoted prices are inclusive.

RAMBIT
16 The Green, Thurby, Bourne, Lincs. PE10 0HB

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You've got a lot of questions about your computer but don't know who to ask! We do! You're not sure which software is best for your application! We do! You'd like to keep the limits of your applications in mind! We do! We know all about the best software for your Atari computer. We've got what you need!

We are the largest (and oldest) Atari Computer Owners Club in the U.K. For just £5.00 per year you get help, assistance, hints, tips, friends, pen pals, access to PD software, up to date information on games, utilities, hardware projects, software reviews, programming tutorials, and a glossy club magazine each quarter.

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The U.K. Atari Computer Owners Club
P.O. Box 3, Rayleigh, Essex, SS6 8LR
Independent User Group

TURN YOUR 1029 PRINTER INTO 4 PRINTERS IN ONE with FONT IV

Replacement character ROM!

Yes 4 character sets at the flick of a switch — 8 new sets — all with true descenders.

Simply replace the old character ROM in your 1029 with FONT IV. No soldering or cutting necessary.

Fitted in minutes.

100% compatible with all existing software.

Adds new dimensions to your letters & documents. Contains existing Atari character set plus 3 new sets:

<table>
<thead>
<tr>
<th>TITLE</th>
<th>DISC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arial</td>
<td>12.25</td>
</tr>
<tr>
<td>Arial Italic</td>
<td>12.25</td>
</tr>
<tr>
<td>Arial Narrow</td>
<td>12.25</td>
</tr>
<tr>
<td>Arial Wide</td>
<td>12.25</td>
</tr>
</tbody>
</table>

Fonts are 12.25 characters wide with 12.25 characters high. Fonts are available in Arial, Arial Italic, Arial Narrow, and Arial Wide.

**ONLY £24.99 POST FREE** for all sets at the flick of a switch.

If you prefer we can supply just the descender character on a chip at a lower price.

**3D-LUM BUDGET TITLES:**

<table>
<thead>
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<th>TITLE</th>
<th>DISC</th>
</tr>
</thead>
<tbody>
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<td>12.25</td>
</tr>
<tr>
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Fonts are 12.25 characters wide with 12.25 characters high. Fonts are available in 3D-LUM, 3D-LUM Narrow, and 3D-LUM Wide.
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, given 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 SFF bytes - will be returned there. A timeout value of $3F would seem to be adequate. Mapping the Atari or De Re Atari will give you 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 amount 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 504 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 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 line in the display list. 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 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 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 in addition 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 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.

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A binary value of 00 selects the background colour (SETCOLOR register

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

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 quickie 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 your 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 - $300 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."
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 greenhorn's. 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 minimum 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 Soon who wins the pot.

Table I 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.

**STEVE KNIGHT goes for his cards in this addictive simulation game**

<table>
<thead>
<tr>
<th>Title of hand</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prile three</td>
<td>Each of the three cards has a face value of three. This hand beats any other in Brag.</td>
</tr>
<tr>
<td>Prile</td>
<td>Any hand consisting of three cards of the same face value. The highest below threes is three Aces.</td>
</tr>
<tr>
<td>Run on the bounce</td>
<td>A run - see below - where all the cards are the same suit. Also known as a running flush.</td>
</tr>
<tr>
<td>Run</td>
<td>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.</td>
</tr>
<tr>
<td>Flush</td>
<td>Three cards of the same suit. Priority is decided as for High Card below.</td>
</tr>
<tr>
<td>Pair</td>
<td>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.</td>
</tr>
<tr>
<td>High Card</td>
<td>All three cards are assessed on their individual face values. The best is Ace, King, Jack with the worst five, three, two.</td>
</tr>
</tbody>
</table>

Table 1: Scoring three-card brag hands
**PROGRAM BREAKDOWN**

110-500 Game loop
160-320 Hand loop
1000-1990 Cards dealt to remaining players
2000-2130 Card dealing routine
2200-2260 Arrays are sorted
2270-2350 Each hand is scored according to its
2360-2490 tents
2500-2740 Player out of game routine
2800-2900 Format and display new screen
3000-3990 Computer opponent options
4000-4400 Routine for human player
4500-4700 One player left in hand routine
4800-4960 Who won the game routine
5200-5980 Winner routine
6000-6200 Music
7000-7600 Music

---

**VARIABLES**

- **CARDS IDENT$:** Holds card suits and values
- **MESS$, M2$:** Player's names
- **OBJ$, NAMES$:** Messages and comments storage areas
- **CHECK$:** Holds names in comments and messages
- **SUM$:** Checks to see what cards have been dealt
- **PLAYERS$:** Number of players in the hand
- **DEAL$:** Number of players in the game
- **ARRAY$:** Next player to be dealt
- **PAUSE$:** Common holding area for cards in
- **NUM$:** Play factor calculated every game for
counter player to determine how
- **SU$:** Play factor
- **STK$, WINS$, LOSES$, SKINT$:** Comments made at various points of
- **MIN$:** Minimum bet
- **PF$:** Play factor difference between the
- **DIFF$:** Minimum bet and human player's bet

---

```basic
10 REM "ATARI KADROK" REM titl" REM
20 REM "I MARK DAVY" REM titl" REM
30 REM "STEVE REYNOLDS" REM titl" REM
40 REM "" REM titl" REM
50 REM "" REM titl" REM
60 REM "" REM titl" REM
70 REM "" REM titl" REM
80 REM "" REM titl" REM
90 REM "" REM titl" REM
100 REM "" REM titl" REM
110 REM "" REM titl" REM
120 REM "" REM titl" REM
130 REM "" REM titl" REM
140 REM "" REM titl" REM
150 REM "" REM titl" REM
160 REM "" REM titl" REM
170 REM "" REM titl" REM
180 REM "" REM titl" REM
190 REM "" REM titl" REM
200 REM "" REM titl" REM
210 REM "" REM titl" REM
220 REM "" REM titl" REM
230 REM "" REM titl" REM
240 REM "" REM titl" REM
250 REM "" REM titl" REM
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270 REM "" REM titl" REM
280 REM "" REM titl" REM
290 REM "" REM titl" REM
300 REM "" REM titl" REM
310 REM "" REM titl" REM
320 REM "" REM titl" REM
330 REM "" REM titl" REM
```

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GAME

1520 REM**SHOW**
1530 REM**WIN**
1540 REM**LOSE**
1550 REM**WIN**
1560 REM**LOSE**
1570 REM**WIN**
1580 REM**LOSE**
1590 REM**WIN**
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March 1986 Atari User 51
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:

```
HELLO THERE
```

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 "PLEASSED TO MEET YOU";A$
```

or:

```
10 PRINT "FUEL AVAILABLE = ",
20 F=300
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 them-
selves - that's why there's a space
before LITRES in line 30. Try exper-
imenting 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 ques-
tion 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 AS(40); INPUT AS: ?'HELLO': AS

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 ver-
tical 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 'GIVE ME A NUMBER:
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 semi-
colons, because the POSITION state-
ment 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 pic-
tures on screen. You may have
noticed that if you hold down the Con-
trol key, pressing most other keys will
produce a graphics symbol which is
different from the letter, number or
symbol printed on the keyboard. 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 conjunction
with a function called CHR$ as an
alternative way of selecting characters
to print on screen. For example:

10 PRINT CHR$(2)

will give you the heart character, while:

10 PRINT CHR$(2)

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will produce a little ball. Try this:

10 PRINT CHR$(77);CHR$(65);CHR$(71);
CHR$(73);CHR$(27)

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's 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 PRINT CHR$(27);CHR$(28);CHR$(27);CHR$(29);CHR$(29);CHR$(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 CLEARED']

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-Clear 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 SCREEN NOT CLEARED']

Using control characters you can
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 programs 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" V2Print"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.
DIY worked with a dicky disc drive

I WAS in the middle of a massive backing-up session when, suddenly, my trusty 80 square 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 drive the 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.

Nothing ventured, nothing gained, so I decided to repair it myself. I was able to get enough shim to last me a lifetime from a local supplier.

I removed the old broken band and taped it into my Atari notebook. Then I measured it up and drew its exact shape on to the new shim using the sharp point of a pair of scissors to score the outline.

I cut the three fixing holes as squares using a modelling knife and used the scissors to cut round the outline of the band which I then put in the disc drive.

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

I used an oscilloscope to monitor the output from the head and, having undone the capstan setscrew, I moved the head carriage by hand to the point of maximum signal from track one on a spare formatted disc.

I tightened the screw and checked the setting using a number of other discs including a few commercial ones.

Having gained some confidence, 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 Beszeljen, 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 Snowball from the December 1987 edition of Atari User.

I typed it all out 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 OU 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 aliment 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.

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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 there 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 Gipsom, Bideford, North Devon.

- We get a lot of letters about this sort of thing happen.
From Page 57

pening 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.

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 data 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 caused 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 keystrokes 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 warrant 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 live 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 capabilities 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? — Charlton Ferraro, Canning Town, London. E16.

- The Atari Writer 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 Curry's 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**

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 compatible 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.

**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 £12 - which includes VAT and postage and packing - for two keys. Silica Shop can be contacted on 01-369 1111.

**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 wait until another software company takes up the challenge.

**Racing round the Atari**

I HAVE an Ateri 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.

March 1988 Atari User 59
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!

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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ATARI USER March 1988
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