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Don't miss this launchpad for all that's new in Atari computing

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Experts are convinced 1987 will be the Year of Atari - thanks to exciting developments in the ST range, coupled with a renewed commitment by Atari to support and encourage the ever-popular Atari 8-bit range.

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NEW ATARI MODELS

ROCK MICRO WORLD

ATARI has shaken the computer industry to its foundations with the dramatic announcement of new products in three major areas of the micro marketplace.

They include an IBM PC compatible of radically new design, a revolutionary desktop publishing system with low-cost laser printer, and three powerful add-ons to the ST series.

The ATARI PC, which will sell in the US for under $600, is a fully-loaded, state of the art machine at a price low enough to send shudders through the ranks of competitors.

An observer at its unveiling in Las Vegas described it as "a compact and elegant system loaded with features not found on systems costing thousands of dollars more."

The unit includes a built-in 525in disc drive, integral power supply, and detachable IBM XT-style keyboard.

A second 525in drive or ST-style 35in drive, capable of reading discs in either ST or IBM format, can be attached externally.

The machine comes with 512k of ram, expandable to 640k via sockets on the motherboard. Standard serial, parallel and combination video ports - and an ST-style disc port - are included.

But more important than the Microsoft Import chip is the ST-type mouse included with the system, thereby enabling the ATARI PC to run PC Gem, Microsoft Windows and mouse-based programs like Microsoft Word with no faithful adaptation.

On the graphics front, ATARI has somehow managed to squeezing IBM monochrome, CGA, EGA and Hercules graphics capabilities into the new PC.

It is the only PC compatible to include EGA graphics - completely downward compatible with CGA - as standard.

ATARI is also bringing out a unique $200 monochrome green screen monitor for the PC that can display all its graphics modes - including the high resolution EGA colour mode - using grey scales to represent colours.

The monitor is intelligent and can recognize the frequency of signals coming from the combination video port, adjusting itself appropriately to display whatever kind of text or graphics the machine produces.

An ATARI spokesman said the machine, a sleek and slimline 22 x 22 x 2 in, is "virtually 100 per cent compatible with existing software for the IBM PC and XT."

An observer who attended the Las Vegas launch told ATARI USER: "It's as if ATARI, in one fell swoop, has stepped into the leading edge in three markets - high performance workstations, desktop publishing systems and the lucrative PC-compatible game."

"It's going to be the company to watch in 1987."

For details of the Mega-ST range and ATARI desktop publishing system turn to Page 3 of ATARI ST User.

TURNOVER HAS DOUBLED

ATARI has successfully silenced its critics in the USA by bouncing back into profit in a big way. In the two years since Jack Tramiel took over the helm, he has dragged the corporation back from the brink of disaster.

Now the first report to shareholders since going public last month reveals sales of $60 million worldwide in the last quarter.

And this is more than double the turnover for the same period last year.

More important for the American money men was the news that net income for the first nine months of 1986 was $21.5 million compared to a loss of $29.2 million to September 30, 1985.

Paul Freiberger of the influential San Francisco Examiner described the results as "the biggest surprise of the year in personal computer industry."

Nor was he stinting in his praise of chairman Jack Tramiel. "He has already accomplished more than the pundits expected", he wrote.

Now ATARI is well and truly back in the black, American analysts are predicted that the sky will be the limit for the company during 1987.
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**AT2**
**New 8 bit micro will boost market**

**ATARI** has unveiled the prototype of a revolutionary 8 bit machine which will revitalise this sector of the UK market.

With a built-in cassette and priced at under £100, the micro is expected to go on sale in May.

It will replace the previously announced cartridge-based 7800 machine which was also scheduled for its British launch that month.

The reason for this move is that Atari officials in the States have been convinced that the UK 8 bit market is still "tape driven".

One of the arguments they accepted was that in Britain there are difficulties in producing cartridges in that they require high volume production and long lead times.

So while the 7800 console may well be sold in the States, it will not now be shipped here.

This is good news for the 350,000 Atari 8 bit users as it will precipitate a flood of new software titles. "This will prove a real injection for the 8 bit scene", says Bob Gleadow, Atari UK's general manager.

It was he who brought the prototype of the new 8 bit machine from the States to show it to the British software houses.

And according to early reports they have given it an enthusiastic welcome.

Not that the Atari 8 bit user has in fact been ignored of late. For new titles have been appearing for the machines at the rate of up to 10 a month.

And the demand for development kits from software houses wanting to supply the market has never diminished.

"The fact of the matter is that the 8 bit scene had been ticking over quite nicely", says Bob Katz, Atari UK's software development manager. "But some users have felt a little ignored simply because most of the publicity has surrounded the ST range of late."

"The point is, with so many end users out there, it almost becomes self perpetuating. It would be very bad business for a company to ignore the Atari 8 bit scene."

"Nor is this just a company view."

John Arundel, marketing manager of Slicia Shop, insists there has been no sign of support slipping for either the XL or XE.

"The 8 bit market is far from finished", he told *Atari User*, "in fact it isn't even slowing down."

And he points to his own company's current list of software titles for the machines - covering 800 and nearly 200 in all - to demonstrate the extent of existing support.

**Want to be a millionaire?**

A search has been launched nationwide to find Atari software writers with the ability to become "millionaires almost overnight".

Man behind the hunt for star programmers is Simon Barnard, the recently appointed development manager of MicroProse UK.

He is able to offer the potential of far greater rewards than can be normally expected in the UK because he is backed by the third largest entertainment software house in the US. "We believe that the UK has the best software writers", he told *Atari User*.

"And my job is to find them and offer them not only money but international recognition."

Simon Barnard points to the fact that MicroProse in the States is known to spend in excess of $1 million developing each of its simulation blockbusters. Each of these is eventually marketed not only in America but also Europe and Australasia.

**Royalties**

"Our titles literally remain at the top of the US charts for years, not just weeks like products over here", he says.

"And that can translate into rather a lot of royalties, never mind substantial advances."

"So I don't think it would be unfair to claim that if we can find someone who can write a simulation like our Silent Service for the Atari 8 bit, they could become a millionaire almost overnight."

**Arcade**

Although MicroProse is best known for its award-winning entertainment simulation software, Simon Barnard is not looking for writers exclusively in this area.

"We would be just as happy to find writers of top quality arcade games for the Atari", he said.

MicroProse recently set up its British headquarters in the picturesque Cotswolds market town of Tetbury, Gloucestershire, the home of Prince Charles.

Now it is hoping to move more than emulate its success in the Atari 8 bit market in America where its titles account for more than 25 per cent of all sales.
Interface to total control

Part 8 of LEN GOLDING'S series on using your Atari to control devices

Figure 1: Theory of switch operation

plants, feed the goldfish or whatever.

Figures II and III show the printed circuit board foil pattern and component layout. It could hardly be simpler to put together. The terminal blocks account for about one quarter of the total cost and may be omitted if you don't mind soldering the various leads directly to the PCB tracks.

The 4067 chip is a CMOS device, so needs careful handling. Leave it in its packaging until you're ready to insert it and touch an earthed metal appliance before handling the chip to get rid of any static charge that may have built up on your hands.

Make sure you insert the chip the right way round and check that every one of its pins is correctly fitted into the socket. Remember the interface has to plug into joystick port 2 if you're using the software shown here.

Software is fairly straightforward and, like Program I, can be written in Basic. Line 10 initiates an array to hold the 16 sensor values, turns the cursor off and clears the screen.

Line 20 sets up both joystick ports for output—if you prefer to keep port 1 set for input, change the POKE 54016,255 to POKE 54016,240.

Line 30 starts a loop which steps through the numbers 0 to 15, multiplies them by 16 (because we're using port 2) and sends out the corresponding binary codes at each step.

The short delay at line 40 gives the analog reading time to settle down once a particular input has been selected.

Line 50 stores the chosen sensor's value in the array, and line 60 completes the loop. Lines 70 to 90 print out all 16 values, then start the process again.

Unfortunately this method is very slow. It can take a couple of seconds for a new reading to register and if you want to add any extra lines of code—to trigger a siren for example—you will have to fit them into the main loop.

This will slow things down even further and makes the program needlessly complex. It's much more elegant to use the machine code routine in Program II—which is also listed in source form as Program III.

This is inherently faster. And because it's executed during the vertical blanking interval, it will run alongside your Basic program without interfering with it in any way.

The biggest advantage, though, is that it synchronizes precisely with the TV frame counter, which also drives
the computer's analog-to-digital converter.

With very little effort we can ensure that the chosen analog value is stable and valid by the time it is read, so there's no need for any delay loop. This routine updates each sensor's value about three times every second.

Now let's look at a practical burglar alarm system. Figure IV shows the simplest DIY layout using normally closed switches on windows and doors. They are wired in series, so if any is opened the circuit is broken and some kind of sensing device sounds an alarm.

This approach has three drawbacks: it cannot tell you which switch is open, an entering burglar can easily bridge the switch terminals using a jump lead, and if a fault occurs it can be very tedious to trace.

Figure V shows how our gadget can overcome these problems. When a switch is closed, it shorts out the resistor across its terminals, leaving only 150k in circuit, which returns a number around 75 at address 626.

**Program I**

```plaintext
5 REM Len Golding: Gadgets VIII
6 REM Program I
10 DIM SENSOR(15):POKE 752,1:PRINT CHR$ (125)
20 POKE 5400,56:POKE 5401,255:POKE 5 4016,0:POKE 54016,9
30 FOR X=0 TO 15:POKE 5400,X:REM I:REM X
40 NEXT X
50 NEXT 1
60 NEXT 2,2
70 FOR X=0 TO 15:PRINT 5,SENSOR(15):""""""""":NEXT 5
80 GOTO 30
90 END
```

**Program II**

Opening the switch puts an extra 10k in series and the number goes to around 150. Cutting the wire will return 228 and bridging the switch with a jump lead will give 0.

This ability to distinguish four separate states is a clear advantage and the system can easily be adapted to work with normally open switches, such as pressure mats.

Figure VI shows how to wire four

---

**Figure II:** PCB Foll pattern

**Figure III:** Component layout on PCB

---

February 1987 ATARI USER 11
Gadgets

switches within a single room – only one 5V line needs to go all the way back to the computer, which saves cost and complexity.

Since the switches are effectively in parallel rather than series, it’s easy to see which one has been activated. You can tell instantly where the intruder attempted to gain entry and trace faults very quickly.

If you want to really impress the neighbours, why not draw a house plan on screen, with all sensors marked in colour to indicate whether they are open or closed?

The other main application for this gadget is energy management. You could use sensors to monitor individual room temperatures or keep track of lights that were (or needed to be) switched on.

To measure temperature, use a thermistor whose resistance at room temperature is between 100k and 400k – type VA1067 is suitable.

Individual devices may vary by up to 20 per cent, so if you want accurate readings you will need to calibrate each one, using a conventional room thermometer.

Light levels can be measured using our friendly cadmium sulphide cell – type ORP12 works quite well. Figure VII shows how you can wire these sensors into the system, using terminal blocks.

As for other uses, well, you could connect 16 keyboard switches to make a complex signalling system (for a disabled person perhaps) and unlike the simple keypad described in part 5, this gadget will respond to more than one key at a time.

How about fitting moisture sensors in the soil beside your favourite conservatory plants? A couple of stiff copper wires will do, though they will tend to corrode before long. Carbon rods reclaimed from old dry batteries are better and you can solder leads directly to the brass caps.

If you encase the rods in epoxy resin, leaving just the ends showing, they will make a rain or flood detector which returns 228 when it’s dry and between 0 and 100 when it gets wet.

If you’re content to use simple on/off devices, you could connect the PCB common line to pin 6 at port 2, in which case the sensor’s status – 1 or 0 – will be returned at address 645.

There’s no need to allow settling down time in this case, so a Basic program will work quite well.

With suitable software and three interface boards you could use joystick pins 5, 6 and 9 simultaneously, giving 48 inputs per port!

The gadget can even be used in reverse, as an output device. Try connecting the common line through a 220 ohm resistor to 5V (joystick pin 7) and take each output through a light-emitting diode to 5V (pin 8).

Numbers at the control pins will switch on one LED at a time, and there you have the basis for a wheel of fortune, roulette game or bargraph display.

That should keep you busy until next time, when we’ll be looking at sound-activated switches.

**Parts Required**

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<td>1</td>
<td>24-pin IC socket</td>
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<tr>
<td>3</td>
<td>8-way PC terminal blocks</td>
</tr>
<tr>
<td>3</td>
<td>4-way PC terminal block</td>
</tr>
<tr>
<td>1</td>
<td>3-way PC terminal block</td>
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<tr>
<td>1</td>
<td>Cable “F” clip 3/16”</td>
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Approximate cost £5.86 with terminal blocks, £3.18 without.

A joystick extension lead is available from Tandy stores (code 276-1978) or from large computer shops, priced around £3.30.

All components, including the sensor devices mentioned in the text are available from:

Maplin Electronic Supplies
P.O. Box 3
Rayleigh
Essex
SS6 8LR
Tel: 0702 552911

Printed circuit board (order code DBP6) available from:

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14 ATARI USER February 1987
HELP is at hand for David Purvis of Cardiff who has been ensnared by Infocom’s Sorcerer. In fact, things are so bad that after diving down the coal chute to meet up face to face with his younger self, David soon ceases to exist!

The key to the problem is given below for David and for many others like him who are baffled by what is actually a beautifully logical puzzle. It concerns the interaction of the past, present and future, and the consequences of influencing history.

As the whole answer is impossible to give in coded form below, let me just say this:

When you (as the older self) meet your younger self, you’ve got to ensure that your younger self will grow up so that one day he will be the older self standing just where you are and similarly meeting his younger self!

If you don’t assist the younger self he will not eventually become the older self. And that’s why you, as the older self, will suddenly cease to exist. Get it? You will if you go on to decode the clues below.

Can anyone help J C Bradbury of Sheffield (Glitch Master for the second month running) who wants to know how to find the correct combination to the jewel case chained to the cellar wall in Lapis Philosopherorum? The number found under the desk appears to be a red herring.

He also wonders if it is possible to get past the boulder which blocks the passage near the Troll’s cave.

Eric Nolan from Dublin has multiple troubles. He cannot find the grate from below ground in Zork I and although he has listened to the poem he is unable to get the plotter in Hitch-Hiker’s Guide to the Galaxy. Look below for a clue to Zork.

The problem in HHGG is probably one of finding the right syntax. You simply need to TYPE “BRILLIG” ON KEYBOARD (replacing Brillig by the discovered word which is random from game to game). Don’t forget the quotation marks though.

Eric has contributed this month’s “For fun” tips below. Many thanks, Eric. I hope other readers will follow suit and send in their tips so that we can all get the most out of our adventures.

Scott Adam’s Mystery Fun House has caused some head-scratching. Ken White suggests that adventurers might welcome advice on how to get the coin from the grate since the solution is rather devious.

Mark Powell from Lewes would like to know how to ride the merry-go-round and reach the catwalk in the same adventure. Answers below. He would also like help with Morden’s Quest. Has anyone got a complete solution to this one?

Both Ken and Mark have sent in some comprehensive tips for other games. Thanks to both of you.

Finally, a mention of an unusual service. Mrs Pat Winstanley of 13 Hollinghons Way, Wigan WN3 6LS publishes Adventure Contact, a magazine that is aimed at adventure players but at adventure writers.

The service caters for all authors whether novice or experienced. If you’re interested, why not write to Pat at the above address?

---

**CLUES CORNER**

**SORCERER**

Ceasing to exist in the coal bin room?

NOT ANIBM QCEH TMIH EVIG MORD DETN ALSH HTOT TEGR EVEN LUW EHES WRE HTO FLES REDL CEBD NACA MLOD TEGR O

**ZORK I**

Can’t unlock the grate?

WOLE BMOR FTIK COLN U EZAM EHTN IHT WMOF FENS IEA RGEH T For fun:

TNES EPS TONE HHF ENEI KATN TTYRT TNES RPE RASE VINK HTOB NEHW EZAM EHTN IERI NKEK ATOT YRT EFIN KYTS UREH TESU OTYR T

**ENCHANTER**

For fun:

PLEH SIHR OFMI HKNA HT YAWR IATS GNID NIWE HTOT UOYV OLOO FRER UTNE VDAE HTEK AM LLEP SDAC LUKE HTTS ACNE HT

**MYSTERY FUN HOUSE**

Want the coin from the grateing?

HCNA RBNO MUGK CTS NEHT MUGW EHC HCNA RBHT IWNI OCTE G Stumped by the merry-go-round?

PMUJ NEHT PUKO OLEL OPOG ESPO HOGY RREM OG

---

**GLITCH OF THE MONTH**

Sheffield man Jon Bradbury has found a beauty in Ariolasoft’s Lapis Philosopherorum. The aim of this adventure is to cure the king with a potion made up of water and the philosopher’s stone.

He says that if you go straight to the king with GO CASTLE and WEST, the game responds with “The King drinks the potion and is cured” and the game is over. The strange thing is that you can do this without ever having found the water or the stone!
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February 1987
LAST month we took a general look at the way that the Atari operating system handles data transfer operations via the Central Input/Output system. This time we'll take a closer look at how CIO works, and see a simple example of its use from machine code.

First though, how did you get on with the puzzle I left you with last time? If you remember, I gave you the following line to type in:

OPEN #7,0,"P":POKE 838,PEEK(950):POKE 839,PEEK(951)

You probably noticed that everything the computer normally displays on the screen was sent to the printer instead... but why?

Well from last issue you know that IOC2 zero — assigned to the screen editor — resides at location $340 (832 decimal), which means that the POKEs to 838 and 839 changed the values of IOCB plus 6 and IOCO plus 7.

If you look at Figure 1 you will see that these locations define the screen editor's Put-Byte routine through which text is sent to the screen.

Since you also know that IOC2 seven — which we OPENed to the printer — exists at $380 (944), the PEEks to 950 and 951 return the equivalent two locations for the printer handler routines. Thus all we have done is to POKE the address of the printer's Put-Byte routine into the place where CIO expects to find the screen display Put-Byte address.

We'll look in the future at how to use CIO from Basic, but let's start off by seeing how to access it from machine code. Don't be put off if you don't know anything about machine code — we'll keep it as simple as possible. All you will need to know are a couple of 6502 operations.

We will be using the three main 6502 registers, known as A, X and Y, which are really just the machine code equivalent of Basic variables.

These may be given values by using the commands LDA, LDX and LDY - short for Load A, Load X and Load Y, rather like the LET command in Basic. They may be POKE'd back into memory with the store commands STA, STX and STY.

The other main command we shall use is the machine code version of GOSUB, known as JSR — which simply means Jump to Subroutine.

In order to make use of CIO for yourself you must follow a set of simple steps:

First decide on the IOC2 you wish to use. We'll use number one in these examples.

Then set up the various bytes within that IOC2, dependent on which function you wish to use.

Next store the IOC2 number times 16 in the X register and jump to the subroutine called CIOV to execute.

Finally, check the status of the operation before proceeding.

Program 1 is a pretty simple piece of machine code which opens channel one to the printer, sends a small message and then closes it again.

Lines 160 to 360 are used to tell the computer what names we are going to use for the various locations involved. This is known as an equates table, because it equates the names we want to use with the real addresses in memory.

If you wanted to use a different channel number, simply change the address in line 160 according to Figure II. Don't forget to adjust line 500 accordingly also.

Lines 400 to 490 set up IOC2 one ready to open the channel to the printer. This is the direct equivalent of the Basic command:

OPEN #1,8,0,"P:"

In fact you can easily see the similarity between the two versions of the same command. The OPEN in Basic translates to the LDA, LDX and LDY - short for Load A, Load X and Load Y, rather like the LET command in Basic. They may be POKE'd back into memory with the store commands STA, STX and STY.

The #1 in Basic is the channel number, which we have already defined in our equates table.

The second and third Basic parameters are always placed into ICAx1 and ICAx2, thus the values of 8 and 0 are stored there.

The final parameter in Basic is the filename - "P:" - which is actually on line 770 in the machine code program. Since a single byte can only store a number between 0 and 255, and the address of the "P:" filename is much greater than this, we have to use a special notation called low/high address storage.

This is actually very simple, and all it means is that we split the large number into two smaller byte-size numbers, in much the same way as we use tens and units to represent larger numbers as two smaller digits when counting with ordinary numbers.

For example, an address of $1234

<table>
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<tr>
<td>Zero</td>
<td>$340</td>
</tr>
<tr>
<td>One</td>
<td>$350</td>
</tr>
<tr>
<td>Two</td>
<td>$360</td>
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<tr>
<td>Three</td>
<td>$370</td>
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<td>$380</td>
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<td>Five</td>
<td>$390</td>
</tr>
<tr>
<td>Six</td>
<td>$3A0</td>
</tr>
<tr>
<td>Seven</td>
<td>$3B0</td>
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Figure II: IOC2 start addresses

![IOC2 structure](Figure I: IOC2 structure)
would be stored as $12 in the high-byte address and $34 in the low-byte address. These are often called the Most Significant Byte and the Least Significant Byte - MSB and LSB - but we'll stick to high and low for now.

All that needs to be done now is to load the X register with the channel number times 16, which is done on line 500. This may seem a little odd, but if you think in hexadecimal for a moment all this means is that channel one would be $10, two would be $20, and so on up to $70 for channel seven. Sometimes looking at a problem in the computer's terms makes it very much clearer.

Once the I0CB is thus prepared, you may jump to CIOV with the JSR command. Before returning to your code, CIO will set a special switch inside the 8520 chip itself.

If the function was completed correctly this will be positive, but if there was any error it will be set to negative. Thus to test if there has been an error during the I/O operation all you need to do in perform a BMI instruction straight after your JSR. This means "Branch if Minus", and acts like an IF... THEN GOTO command. In Basic, jumping somewhere only if CIO has set up a minus code.

Should you be interested in the type of error, CIO also stores the error number in the Y register. In fact you could always check to see that the Y register contains a one - the code for no error - instead of testing for a minus.

Once the OPEN command has set up the system you may then send anything you like to it. We've chosen the simple "HELLO THERE" message on line 790. Note the carriage return at the end of the text because the output command we'll be using keeps sending characters until it comes to an end-of-line character. ASCII code 155 - otherwise known as the carriage return.

As before, we use the low-high format to store the address of the message, and set the ICCOM command byte to tell CIO what we want it to do with that text.

This time we want to output a line, which is command number 8. As the X register will not have been altered since the last time we set it, we can just call CIOV again, and follow it with the same error test we used earlier.

Finally, store the Close command (12) in ICCOM and call CIOV again.

Now all this may seem to be an awful lot of work to go through to do what Basic does in the simple command LPRINT "HELLO THERE", but don't forget that there are many things that CIO is capable of that Basic does not fully support. Next time you type LPRINT just think of all the work Basic has to go through to perform that one simple task for you!

* Next month we'll be providing a full list of these other commands, and how each works. In the meantime, consider the results of the following:

```
OPEN #6,12+16,7:"S:"

(Hint: if ICAX1 is set to 4 for read data, and 8 for write data, what might 12 mean? And what do you think the +16 does? See what happens without it.)
```

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**MACHINE CODE TO STRINGS**
from HORWARD MORGAN

This takes machine code routines from memory and turns them into those long strings without you having to press the control key once. The normal way for executing machine code is to use:

\[ \text{X=USR(1536)} \]

With machine code stored in a string such as FS, you use:

\[ \text{X=USR(ADR(FS))} \]

Using machine code strings means that you don’t have to wait for the data to be poked in and the Atari will automatically store the machine code in free memory.

The machine code can be up to 113 bytes long. You can convert longer strings by breaking them up into sections and later recombining them using:

\[ \text{PSL(LEN(P)+1)} = QS \]

where QS is the second part of the routine.

Once the string is created the program will list it to disc under the chosen filename. To use cassette instead of disc, you should change line 4 to:

\[ 4 \text{;"POKE842,12:L:CHR$(34):"C \\
    ;"CHR$(34):";1,3,G:POKE(0,0) \\
    ;POKE 842,13;END} \]

**BIG TEXT from MARK GODFREY**

DISPLAYING large characters on a graphics 8 screen is normally impossible, but this routine shows you how to do it. The program reads the character's definition from the character table and then POKEs this directly to the screen, blowing it up as necessary.

**Line Breakdown**

10 Gets the desired string from the user.
20 Gets the desired size and begins to read the character from the table.
30 Checks to see if the right-hand side of the screen has been reached.
40 Finds the location of the screen.
50 Puts the characters, one to the screen one line at a time.

**Address and length of string.**

2 Inputs the file name and reads the machine code into the string.
3 Creates the small program containing the string.
4 Saves the string to disk or tape.
5 Deletes the converter.
Trailing behind

Program: Trailblazer
Price: £3.95 (cassette), £14.95 (disc)
Supplier: Gremlin Graphics, 10 Carver Street, Sheffield S1 4SF
Tel: 0742 763423

If you want an action packed game which doesn’t involve killing little green men or Russians, this may be for you.

The object is to keep a ball on a path of coloured squares. There are holes in the path which you must steer clear of by using the ball’s ability to jump and accelerate.

Different coloured squares have a variety of effects. Yellow squares, for instance, will cause you to bounce, and purple squares reverse the left and right control.

The squares are strategically placed to be a help in some places and a hindrance in others.

There are 21 courses in all. In the standard game you must complete each course in the fastest time possible. Bonuses are awarded depending on the time remaining at the end of each round.

There is a ‘trail’ option available in which you can select any three courses to race on, with a 99 second time limit to complete each course.

A two player option is also included. Here the screen is split into two, with player one taking the top half and player two or the computer taking the bottom.

You can bump your opponent off the course as both balls are shown on each half if they are close enough.

At the end of a game the bottom half of the screen is given over to a high score display.

The game has been converted from the Commodore 64 and frankly it shows. The Reset key isn’t trapped and the Select, Option and Start facilities are done with the joystick or keyboard.

There is a keyboard option and you can have either two joysticks, or one player on joystick and one player on keys. There is no pause game facility.

What music there is, is played only between games and is bland, repetitive and tuneless.

The price will prevent Trailblazer becoming a big hit. If it were budget priced it would be worth it, but at just under £10 it pales in comparison with Rescue on Fractalus or Star Raiders II.

Rob Anthony

Sound......................... 5
Graphics...................... 6
Playability................... 6
Value for money............. 5
Overall....................... 6

Hot pursuit

Program: Trivial Pursuit
Price: £14.95 (cassette), £19.95 (disc)
Supplier: Domark, 204 Worpole Road, London SW20 8PN.
Tel: 01-847 5524

Quiz games come and go but Trivial Pursuit looks like being here for a long time. Like Monopoly and Scrabble, it’s going to be one of those games that is played time after time.

This is not just a straight transposition. While remaining faithful to the original, Domark has used the computer to bring in new features such as sound, making Trivial Pursuit even more fun to play.

The board resembles a spoked wheel around which are spread differently coloured squares, each representing a particular subject or a “throw again” option. The subjects are art

& literature, science, geography, history, entertainment and sport.

Spread around the circumference are six wedges, each of which represents one of the subjects.

The aim is to move around the board in any direction, gathering points by answering a question every time you land on a square.

Your turn ends when you answer incorrectly. But the main objective is to collect all of the six wedges, first by landing on them and then correctly answering a question in that particular category.

When all the wedges have been garnered, the player heads for the wheel’s hub and once there must correctly answer a final question on a category chosen jointly by the other players to win the game.

The screen displays the board, player’s tokens and status, list of categories and a message area, plus a funny looking character called TP who will hurl a dart at the board to determine the number of squares the player may move.

Selection of the square is by joystick. When the square has been chosen, the screen changes to show TP’s living room and the question appears in a speech bubble.

Some questions involve music or pictures in which case TP will switch on his radio or dim the lights and pull down a projection screen.

A burning candle counts down the time allowed for your answer. All you have to do is to speak it aloud – there’s no typing or selection from multiple answers.

More than 3,000 questions are supplied with the program.

Bob Chappell

Sound......................... 8
Graphics...................... 9
Playability................... 10
Value for money............. 10
Overall....................... 10

22 ATARI USER February 1987
Moon eclipsed

Program: Moonmist
Price: £24.99 (Atari 8 bit or ST disc)
Supplier: Infocom, c/o Activision, 23 Pond Street, Hempstead, London NN3 2PN.
Tel: 01-431 1101

WOE is me! Dress me in mourning! Something has happened that I would not have dreamed possible. I have discovered an Infocom adventure that fails to satisfy.

The cause of my despondency is the ease with which I completed Moonmist. I started the adventure one afternoon and - shock, horror - completed it by teatime.

The plot is very English and concerns funny goings-on at Tresyllian castle.

Apparently a ghost, the White Lady, has started some nightly pranks and worse, someone has attempted to kill one of the guests.

You play a detective invited there by your female friend, Tamara Lynd. The game commences as you pull up outside the castle gates in your sports car.

Once inside and having met all the guests, you can explore the castle or change for dinner.

The program has a number of nice touches. For example, it lets you choose your own name, including a title. I couldn't resist a unique opportunity to solve the case as Lord Dimwit Flathead.

If you try to arrest somebody too early in the game, you'll be told, "Bad form. Wait until after dinner."

Moonmist is quite enjoyable judged on its own merits, but suffers when compared to practically every other Infocom adventure. Because of their depth and originality these normally take most players weeks, sometimes months, to unravel and complete. Moonmist, I'm sorry to say, is the glaring exception.

To be scrupulously fair, Moonmist is specifically aimed at adult gamers new to adventures and has deliberately been made simpler than the usual run of Infocom products. As an Infocom veteran it was only natural that I should find Moonmist easy meat.

Then again, Washbringer (an earlier release) was also a beginner's adventure but for my money offered more variety, entertainment, humour and challenge. It also had very little padding, symptoms of which are sadly evident in Moonmist.

Hearing said that, Moonmist is still a better adventure than many from other companies. It is also as handsomely packaged, playable and as bug-free as all Infocom adventures.

If you're new to adventures then by all means give it a try. If you're an old hand, then don't get your expectations too high. Perhaps I did.

Brillig

Presentation: 10
Atmosphere: 8
Frustration factor: 6
Value for money: 7
Overall: 7

Worth an airing

Program: Up Up & Away
Price: £2.99
Supplier: Bug-Byte, Victory House, Leicester Place, London WC2H 7NS.
Tel: 01-439 0666

THIS game first saw the light of day more than two years ago. It was quite popular then, and although it looks dated compared with current products, it is still worth playing.

If you don't recognise the title as being from an old Frank Ifflid song you may not have realised that it's all about hot air ballooning.

No, this isn't a flight simulation, but more of an arcade game.

The idea is to pilot a pink balloon over and past a number of hazards. You may have thought that ballooning was a safe and peaceful pastime - not so in this game.

The wind is always westerly so you get blown from left to right across the screen, the background scrolling smoothly away behind the balloon.

As well as being able to move the balloon from left to right you can also go up by igniting the gas or hurling out sandbags or down (by releasing hot air).

There are refuelling points along the way where you can take on more gas and sand.

The first hazard you'll encounter is a boy throwing stones. If one hits the balloon it will pop and you'll plummet to earth.

More perils lie ahead. White clouds turn black and lightning fills the sky, tearing your balloon to ribbons if a flash strikes it.

Kites need to be dodged and a passing seagull tries to drop something unpleasant on your balloon.

A whirling windmill will suck your craft down if you're not careful and a lunatic aerobatic display flier may cause some discomfort.

There are four skill levels and a practice mode. The graphics are fairly simple by today's standards and, although there's no music, there are a few sound effects.

Not bad at all, but I would have thought that it could have been priced a fraction lower given its age.

Bob Chappell

Sound: 6
Graphics: 5
Playability: 7
Value for money: 7
Overall: 7
**Mono moments**

Program: Molecule Man  
Price: £1.99  
Supplier: Mastertronic, 8 Paul Street, London EC2A 4JH.  
Tel: 01-377 8880

HERE you, the Molecule Man, looking not unlike a Corona bubble having failed its fizzical, are lost in the middle of a 3D maze.

Your goal is to escape via the teleporter, which can be found somewhere within the 256 rooms. However in order to use the teleporter you must collect 16 circuits from around the maze.

At the off, the clock ticks the seconds by and radiation starts gnawing away at you.

Protective pills must be found quickly, or you’ll be an ex-bubble inside a minute. They can be bought from dispensers found along the way, using money conveniently lying around on the floor, though often hidden by the blocks of the maze.

Taking the money, you must then locate a dispenser and buy protection. Your protective units increase by 20 for each coin used, up to a maximum of 99.

After you have attained 99 units the dispenser will still take your money, but no further protection is bought.

Bombs can also be bought from similar dispensers and used to blast through some parts of the maze that block your way, but not all.

If you are low on cash you will have to decide whether to spend on explosives or an extra lease of life. Holdings of pills, bombs, coins, circuits and time remaining are shown at the bottom of the screen.

The graphics are nicely drawn, but the game does lose out for not using colour, being drawn in white on a black background. There is a large blank border, meaning that a considerable proportion of the screen remains unused, which was again, a slight annoyance.

The numbers and positions of any or all of the graphic characters within the game are redefinable, including your starting position. Although editing the maze is easy enough, if a little long winded, it is a worthwhile extra.

---

**Logic unclear**

Program: Crystal Raider  
Price: £1.99  
Supplier: Mastertronic, 8 Paul Street, London EC2A 4JH.  
Tel: 01-377 8880

THE card insert says this is not an arcade adventure, but a set of logic problems. Well they could have fooled me.

To my mind Crystal Raider is basically a platform game in which you need to collect crystals which give you extra lives.

I think anyone who buys this expecting a set of logic problems may well feel disappointed, although the six screen shots on the card do faithfully portray the game story.

I really can’t see why Mastertronic feels the need to imply Crystal Raider is something it isn’t for the game is quite able to stand on its own merits.

As platform games go this is a tricky one and you will have to plan your route through the screens carefully, and time your jumps well.

Movements are left, right and jump, the latter being maintained as long as the fire button is held down or until you hit a ceiling.

Throughout the jump your Raider (who more closely resembles a portly navvy than the macho Indiana Jones character on the cassette cover) can be moved left or right, whether moving upwards or downwards, and indeed this extra coordination is necessary to get through many of the screens.

You can select day or night play and opt for solo or duo roles.

The night game is very tricky, as apart from the crystals and nasties, only a small adjacent area is visible, the rest of the screen being jet black.

Selecting dual play, one player controls left and right movement, the other times the jumps, offering an opportunity for ending many a long standing friendship.

The graphics are adequate, though repetitive, with little variation in the rooms apart from layout.

Perhaps recognising this, Mastertronic changes the rooms’ background colour each time the Raider expires (through lack of oxygen or contact with a nasty) and for each new room.

On the whole this is a fair variation on the platform theme. If I had paid £10 for Crystal Raider I may have been disappointed, but at £1.99 this is good value for the platform fans.

---

*Niels Reynolds*

**Sound**........... 6  
**Graphics**......... 7  
**Playability**...... 7  
**Value for money**.. 9  
**Overall**........... 8  

**Sound**........... 7  
**Graphics**......... 7  
**Playability**...... 5  
**Value for money**.. 8  
**Overall**........... 7
Quality adventure

Program: Rick Hanson
Price: £14.95 (disc)
Supplier: Robico Software, 3 Fairland Close, Llantrisant, Mid Glamorgan CF7 8TD
Tel: 0443 227354

GENERAL Garantz is threatening to undo the world if we don't give in to his demands. And that's why I'm standing at this deserted railway station, awaiting further instructions.

Rick Hanson's the name, and I guess you could call me a specialist agent.

I'm a tough, no-nonsense detective with a gritty determination and nerves of steel (but I just hate spiders!)

I've sniffed around a few text adventures in my time, including the disc-only type which is what this is, so you could say I know what I'm talking about.

And what I'm talking about is quality, with the capital Q which is what this one has in spades.

Sure, there's plenty of locations, the parser's ace, the response time is fast and the puzzles are neat - but that don't necessarily make it the bee's knees in my book.

Where it brings home the bacon is in the quantity, detail and atmosphere of the descriptions. No threadbare one-liners from Robico - what they give is nothing less than fulsome and relevant prose coupled with a slick smatter of humour.

So there I was at the station. Being Rick Hanson, my first thought was to sneak around outside the entrance to see if I'd been followed. I had.

A suspicious character dodged behind a parked car, and then somewhere above, a window broke.

In the time it took to look up, there was the crack of gunfire and a bullet ripped through my chest, hurling me to the floor.

Some you win, some you lose. I restarted and this time began exploring the station. I found a tape recorder which told me to get my tail over to the inn in the next village where I would be contacted further about my mission, which was to assassinate Garantz.

The recorder self-destructed - the Chief thinks of everything. Pity I was holding it at the time. This was not turning out to be my lucky day.

Once more into the breach, I just had to find some way out of this station. A goods train passing under the bridge offered distinct possibilities and apart from a fracas with the guard, I had no more trouble until I reached the village outskirts.

There was plenty to explore here and it seemed my task had barely begun.

One final interesting point, I've never before been sent on an assignment where one of the ways you can get yourself killed is by sneezing yourself to death!

Robico promises two more Rick Hanson adventures in the future. They'd better hurry up or I might just have to visit them with a small helping of knuckle-pie.

This is one wozzer of an adventure, so good that Level 9 had better hold tight to its laurels. Here's looking at you, kid.

Bob Chappell

Kamikaze caverns

Program: Caverns of Erinian
Price: £2.99
Publisher: Firebird, Wellington House, Upper St Martin's Lane, London WC2H 9DL
Tel: 01-379 6755

THE object of this game is to refuel a whole series of underground mining installations using supplies obtained from surface supply stations.

However this task is not as easy as it first appears, since each mine is protected by vicious defences which include falling water droplets, kamikaze spaceships and fireballs.

Further difficulties are placed in your path in that your ship has limited fuel which must be replenished on the surface.

Your manouevring has to be very precise since being a mere one pixel out can cause the destruction of your ship.

You can carry up to five supply loads and each surface supply station holds only this number. Each mine needs a load, indicating this by a flashing beacon. To either leave or collect supplies, you must land on the yellow landing strip that forms part of every mine and supply station.

A strange sort of pseudo-gravity affects your steering, causing numerous crashes against the sides of the caverns. On later levels reverse gravity appears, making manouevring even more difficult.

Fortunately you are given seven ships to play with, as it is very easy to lose them.

The graphics are well drawn, but when moving at speed through the caverns the scrolling is slow and jerky.

An interesting budget game let down by overly difficult play.

Stephen Foster

February 1987  ATARI USER  25
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For sale

PEOPLE at the Ford Motor Company have discovered a new "showroom" for selling their cars - MicroLink.

Bob Hancock, a process engineer at Ford's Dagenham plant, used MicroLink to advertise his own vehicle registration Fiesta when he recently moved to a job which qualified him for a company car.

He knows all about the system's speed and efficiency through his regular telex and telefax messages with other engineers in the US and Europe.

And Bob is also familiar with MicroLink's ability to reach a wide audience, having previously used the bulletin board to successfully advertise a music centre and a camera.

After swiftly disposing of the £3,700 diamond white Fiesta XR2, Bob said: "MicroLink is the best system of its kind without a doubt!".

CHURCH of Scotland minister Martin McKeen's days are spent in the quiet old market town of Cumnock in the farming county of Ayrshire, an area which hasn't seen much excitement since the days of the Covenanters.

But in the evenings the world is his playground thanks to MicroLink.

"Computing has been my hobby and relaxation since school days", he said.

"MicroLink lets me see what's going on elsewhere in the field of computer communications".

Computers, comms and the clergy

Martin has already had a good browse around the giant American database Mathematics which was coupled to the MicroLink system recently.

"I was disappointed at not finding a section on religion - it seemed to cover just about everything else", he said.

"I'd like to see a section on MicroLink for clergy like myself to share news, views and ideas for sermons - and to discuss our shared interests in computers and communications."

"I am already communicating regularly with a Roman Catholic priest in Manchester via MicroLink and I'd be delighted to hear from other clergy on MAG 33019".

FOR five years the Shetland Smokehouse on the island of Skeld has been supplying salmon, Shetland lamb, silver eel - and of course kippers - to a mainly local market.

But a recent major expansion has boosted production, which means there's a quantity as well as quality now to meet demand from the mainland.

Managing director David Hammond said: "As an expanding business entering new markets we have to be competitive."

"In business you have to get things down in black and white or risk making mistakes - the telephone just won't do."

"Letters take about five days and it's extremely difficult to get a dedicated telex line installed in an isolated place like Skeld."

"But with MicroLink we have immediate access to telex links with our clients and, as a bonus, an entry to all kinds of fascinating databases which could be useful for marketing purposes."

Shop electronic

MICROLINK has started yet another great consumer service for home computer owners.

Shop Window is Britain's latest, and could become the biggest, computerised shopping service - a convenient 24 hours a day, seven days a week electronic emporium.

It provides the opportunity to do your shopping without leaving the comfort of your fireside.

And while other teleshopping services restrict themselves to a limited range of products like groceries or household goods, there are no such constraints on Shop Window.

Although its initial catalogue of companies is mainly concerned with computer products it will grow to eventually include all manner of goods and services on a nationwide basis.

There are even classified "exchange and mart" type sections for bargain hunters.

And its motto from day one has been: "Top brands at lowest-ever prices".

On the road

AS RAC services manager for Yorkshire, Danny Finney covers the organisation's biggest geographical area - Northumberland, South and West and North Yorks and Cleveland.

His department is responsible for road patrols, sectional and warning signs, motorway service centres, the RAC base garage and emergency control room.

Naturally he can use all the help he can get, which is where MicroLink comes in. Danny is using the system's electronic mail facility to tell Yorkshire folk all about the RAC's famous road sign service for special events.

These are the familiar blue-and-white pointers to the best routes for getting to and from everything, from the local church fête to the Lombard RAC Rally. Danny wants everyone to know that signposting an event only costs on average £72 - even though it involves expert input from the RAC professionals, police and relevant local authority.

YOUR chance to join MicroLink - turn to Page 8
DESTROYER
By K.P. Middleton
DUST off your admiral’s cap and uniform for a sea battle against your Atari. Destroyer puts you in command of a fleet of war ships which must be protected while you try to destroy the computer’s craft.

The game starts by asking you how many ships should be in each fleet and then battle commences on two grids set side by side on the screen.

The squares where you have fired shots are clearly shown on the computer’s grid while the positions of your ships are shown on your own. You cannot see where the computer’s ships are – and it cannot see yours. At least that’s what it claims. You should check the listing carefully to make sure that your computer isn’t cheating!

The Atari gives itself one more ship than you, but to make up for this you have a special salvo of missiles which destroys everything on the target square and the eight squares surrounding it.

The battle continues until one side has destroyed all the ships in the opposing fleet.

Each section of the program is well documented with REM statements so you can follow the flow with ease. See the accompanying chart for the program breakdown.

Once you have typed in the game, don’t forget to save a copy on disc or tape before you run it.

And if you have any problems typing it in, don’t forget to use our Get It Right! checksum program (which can be found in the August 1986 issue of Atari User).

Alternatively you can download Destroyers from MicroLink, where all our monthly games and programs can be found.

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### Line breakdown

<table>
<thead>
<tr>
<th>Line</th>
<th>Description</th>
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<tbody>
<tr>
<td>1-30</td>
<td>Initialises the program and sets up the variables.</td>
</tr>
<tr>
<td>35-50</td>
<td>The main loop which calls the computer shots and player shots routines.</td>
</tr>
<tr>
<td>99-265</td>
<td>The computer’s shot routine.</td>
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<tr>
<td>299-540</td>
<td>The player’s shot routine.</td>
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<tr>
<td>599-670</td>
<td>Fire the special salvo of missiles.</td>
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<tr>
<td>699-735</td>
<td>Calculate random positions for the computer’s ships.</td>
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<tr>
<td>799-875</td>
<td>Get the player’s ships’ positions.</td>
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<tr>
<td>899-950</td>
<td>Sets up the main screen.</td>
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<td>999-1050</td>
<td>Shows the computer’s ships when it wins.</td>
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<tr>
<td>1099-1130</td>
<td>Plays the computer’s winning tune.</td>
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<tr>
<td>1199-1225</td>
<td>Offers you another game when you win.</td>
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<tr>
<td>1249-1310</td>
<td>Plays the player’s winning tune.</td>
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<tr>
<td>2000-2090</td>
<td>Displays the instructions.</td>
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<tr>
<td>2100-2150</td>
<td>Redefines the character set.</td>
</tr>
</tbody>
</table>
This could be your last chance to build up a library of fun and knowledge from our back issues!

SEVEN complete issues: May-November 1985
CONTENTS INCLUDE – A profile of Atari's boss Jack Tramiel; an introduction to the 6502 microprocessor; Basic for beginners; 12 page feature on communicating with your Atari; display list tutorial. Plus lots of games – Flipper Squash, Frog Jump, Bomb Run, Fruit Gambler, Maze Munch, Pontoon, Guy Fawkes.

Also – Getting to grips with sound and graphics; assembler and dissembler; 68000 addressing modes and operating environment; list processing with Logo; 130XE RAM-Dis enabling; Adventure hints and tips; Hex/ASCII dump utility and much much more.

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TO ORDER TURN TO THE FORM ON PAGE 49
A
Asciil: Stands for American Standard Code for Information Interchange. It is a way of representing letters and digits inside the computer. Atari's own brand of Asciil for the 8 bit range is called Atari Ascii or ATAscci.

ANTIC: The name of the 8 bit Atari graphics chip which generates display list interrupts.

Assembler: A program which translates assembly language instructions into machine code.

B
Bank switching: The method used on the 800XL and 130XE to switch in and out various banks of memory so that the CPU can have access to more memory than it would normally be able to handle.

Basic: Beginners All Purpose Symbolic Instruction Code is the computer language which comes with your Atari. It is one of the easiest to learn.

Bit: Another name for a binary digit. One digit in binary can hold either a one or a zero.

Bug: A small error in a program which causes it to crash or work incorrectly.

Byte: Made up of eight bits.

C
Cassette: Stores programs and data from your Atari. It is far slower than a disc.

Chip: An integrated circuit which can hold information or control some of the operation of your computer.

Compiler: Turns a program written in a language such as Basic into machine code.

CPU: The Central Processing Unit is the main chip inside of a computer which is responsible for its computing capabilities such as mathematics and decision making.

Crash: Your Atari may crash when it encounters a bug in a program. A crash might fill the screen with gibberish or freeze the keyboard. Crashes can always be cured by turning the computer off and then on again.

Cursor: The small square on the screen which you move using the arrow keys.

D
Data: Information that the computer operates on.

Debug: To remove the bugs from a program.

DLI: Display List Interrupts enable you to design the way that your Atari builds its display screen. Using DLI's it is possible to have up to 256 colours on the screen at once and to mix screen resolutions.

DOS: The computer's Disc Operating System which allows the use of commands to manipulate data stored on the disc.

Download: When you download a program you receive that program via a cable or telephone line from another computer.

E
Eight bit: When we refer to the older Ataris, such as the 800XL, as 8 bit computers we mean that the largest amount of memory that they can move in one operation is eight bits, or one byte.

Floppy disc: A flat piece of magnetic media on which programs and data can be stored using a disc drive. Discs are far faster than cassettes and can hold more information.

F
Get It Right!: When you type in a listing from the pages of Atari User, you will find a strange looking table of numbers next to the listing. This table is produced by our checksum program Get It Right!. A checksum is the sum of all the characters in a line of program. When you have finished typing in a listing you pass it through Get It Right! and it produces a checksum table. You then check each entry in the table against the one in the magazine, and if it matches, you have typed that line in correctly.

Any difference in the sums and the line is incorrect and must be retyped. Get It Right! was last published in the August 1986 issue of Atari User.

Graphics mode: A method of describing how a screen is displayed. A change in graphics mode might affect character size, the resolution or the number of colours available.

G
GTIA: The Graphics Television Interface Adapter is a chip which controls graphic modes 9, 10 and 11 and Player Missile Graphics.

H
Hard disc: A sealed disc drive which is free from dust and is far faster and can hold much more information than a floppy disc.

Hex: Short for hexadecimal which refers to numbers in base 16.

I
I/O: An abbreviation for Input/Output which refers to the exchange of information between the computer and its peripherals.

K
Kilobyte: Often written as k, a kilobyte is 1024 bytes of memory.

L
Language: Computers can be programmed in a variety of languages including Basic, Pascal, Forth and machine code.

M
Machine code: The computer's natural language and the one that it runs fastest.

Megabyte: A megabyte is made up of 1024k or 1,048,576 bytes of memory.

Modem: Short for MODulate/DEModulate. A modem is a small box which allows you to attach your Atari to the phone lines to communicate with distant information services such as MicroLink and bulletin boards.

Monitor: A monitor is a high quality display screen for your Atari.

N
Nybble: A nybble is made up of four bits or half a byte.

P
Parallel: A method of transferring
**Glossary**

Data between a computer and a peripheral in which data is sent along several wires so that entire bytes can be transmitted together rather than one bit at a time.

**Peripheral:** An external device which plugs into the computer. Peripherals include disc drives, printers and modems.

**PIA:** The chip responsible for control of joysticks and bank switching on XLSs and XEs.

**Pixel:** One dot on the screen.

**Player/Missile Graphics:** Atari's own version of sprites — special graphics shapes which can be moved around the screen quickly and smoothly.

**POKEY:** This chip handles input and output and the sound channels.

**Port:** A name for the socket into which you plug peripherals.

**Printer:** A peripheral which prints out program listings and documents on to paper.

**Program:** A set of instructions for the Atari to perform.

**R**

**Return-Key mode:** Automates the Atari's program editor so that you don't have to press Return at the end of every line.

**ROM:** Read Only Memory is the type of memory which stores the programs which allow your Atari to function. When you enter a Basic line or press a cursor key, programs interpret what you are doing and control the Atari.

These are the programs which are stored in ROM. Although you can look at the contents of ROM you cannot alter it — hence its name. The information stored in ROM is permanent and is not lost when the computer's power is turned off.

**RAM:** Random Access Memory is the part of your Atari's memory which stores your programs and their data. You can not only look at the contents of this memory, but alter them as well.

Ram is called random access because you can look anywhere in ram and don't have to start at the beginning. The contents of ram are lost when you turn off your Atari.

**Resolution:** A method of describing the number of pixels on the screen. A resolution of 320 by 200 means a screen made up of 320 pixels horizontally and 200 pixels vertically.

**68000:** The 16 bit CPU inside the ST model.

**6502:** The 8 bit CPU which controls the older Atari models such as the 800XL and 130XE.

**16 bit:** We often refer to the STs as being 16 bit computers. This means that the largest amount of memory that they can move in one operation is 16 bits, or two bytes.

**S**

**Serial:** A method of communication between the computer and a peripheral in which bits are sent one at a time down a wire.

**Statement:** A single computer instruction.

**T**

**Touchpad:** Also called a graphics tablet, this is a device which allows you to input information, such as sketches, into drawing programs.

**U**

**Upload:** When you upload text or a program, you send that text or program via a cable or telephone line to another computer.

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It can automatically load three different types of files — saved Basic, listed Basic and machine code — thus making it one of the most versatile menu programs available.

The program detects which type of file is being loaded by reading in the first two bytes of the file before loading it.

If these two numbers are both 255, then File Menu II opens the file and calls Dos vector 5576 using the USR function, and then disables Basic.

If the two numbers are anything but 255 or zero, then File Menu II assumes that the file has been stored in listed form. To get around problems this may cause, the program uses Return Key mode to erase itself before entering and running the file.

Type in Program I and save it. If you have any problems with the characters in lines 2220, 3010, 3020 and 3090, leave those lines out and save Program I to disc. Type NEW and type Program I, save and then RUN it. It will create a file called LINES.LST.

Type NEW and load Program I. Now type:

**ENTER "D:LINES.LST"**

and save the complete program to disc as MENU.BAS.

Now type in Program III which creates an AUTORUN.SYS file which will automatically run MENU.BAS when the disc is booted.

If you have any problems when typing in File Menu II, don't forget that all our listings can be checked using Get It Right!, or downloaded from MicroLink.
This is one of hundreds of programs now available FREE for downloading on 

[Image of MicroLink logo]

Program II

1 REM NAME LINE MAKER FOR LINES
2 REM NAME FOR FILE MENU IT
3 REM NAME by Mark Cockar
4 REM GRAPHICS (1O)POKE 559,0DBM 0(30),8(5)
5 FOR ACIA TO 1B READ INPUT BU, NEXT 6

Program III: AUTORUN/SYS File creator.

1 REM NAME AUTORUN/SYS MAKER
2 REM NAME (put any FILENAME.EXT)
3 REM NAME in EMS - LINE 30
4 REM
5 REM GRAPHICS 0:TOP 0:OPEN M,8,0:""""UTORM.SYS"
6 REM FM:MODUO,DS:REM:REM:REM:REM:REM
7 REM IS Spaces
9 REM FOR A1 TO 12 READ INPUT BU, NEXT 6

3.295,104,133,286,184,133,285,1778
160 DATA 104,133,286,104,133,287,168,9
1,186,206,284,14,177,201,145,285,116,20
0,235,220,286,238,286,282,288,4289
170 DATA 242,164,207,248,121,177,28
3,145,295,126,285,249,177,282,145,286,28
96,43,44,65,44,94,52,42,138
100 DATA 45,48,48,41,58,68,61,95,82
40,45,56,57,51,41,155,52,58,46,32,77
61,69,68,82,84,34,216,286,104,2124
170 DATA 184,177,217,184,24,105,2,132
266,104,133,379,104,133,286,104,133,111,20
3,184,104,133,286,104,133,2327
280 DATA 285,104,144,284,181,293,282,28
7,186,213,248,16,185,295,24,185,126,13
3,205,165,206,185,8,133,296,290
210 DATA 292,208,248,168,8,160,2,196,2
89,14,29,296,276,176,15,132,218,131,296,277,216,248,222,4122
270 DATA 165,240,4,169,9,145,285,286,192,128,286,274,166,213,165,260,157,9,
289,96,34,41,155,337

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At PAGE 6 Magazine we recently had a readers survey. Here’s what some of our existing readers said.

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"The best in Great Britain!"
"Page 6 has done nothing but become better each issue!"
"Very good magazine – it has helped me a lot!"
"A great magazine that I look forward to receiving!"
"Excellent!"
"Well balanced magazine with interests for everyone from beginner to advanced!"
"Excellent mag, improves with each issue. Good balance of content!"
"The best Atari mag on the market!"
"A life-line down in Australia!"
"Excellent magazine – very good value. Always good articles, reviews, programs etc."
"Best thing since sliced bread!"
"More appealing this any Page 1!"
"Well set out – programs I have tried have been of good quality!"
"A very well published magazine - easy reading!"
"Very informative and interesting. Every Atari user should be without it!"
"Please continue to the same quality standard!"
"Page 6 is a well put together magazine which has been of great use to me as an Atari user!"
"Very interesting and useful!"
"The reviews are very interesting and informative!"
"I think Page 6 is the best magazine on the market today!"
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"A very fast magazine, keep it up!"
"Still I look forward to it!"
"Page 6 is a very interesting and enlightening magazine!"
"Super mag!"
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"Just keep up the good work and long live Page 6 and Atari!"
"A first class magazine dedicated to Atari owners!"
"A good magazine and getting better!"
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"Without doubt, the only Atari magazine worth its salt!"
"Worth every penny!"
"Wouldn’t do without it - very informative!"
"Probably the best value for money magazine I buy. Please keep up the good work!"
"Excellent magazine - keep up the good work!"
"How can you improve on perfection?"
"Every one a collectors item, since issue one!"

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PAGE 6 - COMPLIMENTING AND EXPANDING THE WORLD OF ATARI

February 1987 ATARI USER 37
Typing tutorial

A guide to correctly typing in the special graphics characters in Atari User listings

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Common Atari basic abbreviations

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Common Atari basic abbreviations (continued)

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Some important LDW BASIC advantages:

**Compile time**
- Compiler can be invoked as a menu driven GEM application.
- Can be run from a batch file.
- Can be invoked as TOS command, or from any UNIX-like shell.
- Easy to tailor to your system configuration.
- Compatible with all RAM and hard disks.
- Produces binary or assembly source output.
- Many very useful options.

**Run-Time**
- Application can customize the RAM memory layout.
- Both single and double precision floating point.
- Very fast integer arithmetic.
- LDW BASIC creates the fastest ST programs on the market (in some cases the best "C" compilers produces marginally faster programs).
- Fully dynamic arrays, i.e. application can re-use RAM memory.
- No other Basic or "C" compiler allows array indices to take any integer value, even a negative! Program may define base of an array.

The first professional Basic compiler for Atari ST has arrived!
The LDW BASIC Compiler is very easy to use, but as powerful as the best professional developer's packages for the "C" language.

**Reviews**
"LDW BASIC will compile ST BASIC programs into blazing fast, PRG files..."
Dave Plotkin
Antic Magazine

"The LDW BASIC Compiler is clearly superior to its competitors in virtually all respects..."
Stephen Etelman
Current Notes

"The DAC Easy accounting line for the Atari ST was developed using LDW BASIC, the best ST BASIC compiler on the market!"
Israel Aguilar
Vice-President
DAC Software

"I'm very impressed with the performance, and easy of use of the LDW BASIC Compiler. It works beautifully, and there are no nasty surprises!"
Joe Hayden
Micro-Tech Consultants, Inc.

To get your copy of the LDW BASIC Compiler, just visit your local dealer, or order directly from the Geneva address below.

*Only £59 inc. VAT*  
For Atari 520/1040 ST  
**LDW BASIC COMPILER**  
The best selling, most professional BASIC in the U.S.A.!

**Speed (all times seconds)**
- 100'000 empty FOR/NEXT loops
- Integer calculations
- Float benchmark
- Gekic benchmark
- standard BYTE magazine benchmark (May 1985)
- Sieve benchmark
determining first 1651 primes
- Create 1000 bytes
sequential file and read it by bytes (flopyp disk environment)
- Optimization demo
- Screen output
1000 strings of 70 characters
GETTING DLIs TO DISGORE COLOURS

I AM writing in utter desperation. I bought a copy of Graphics Art Department about two months ago and I cannot get to grips with the DLI option for the extra 128 colours.

The problem is that I start by using one colour register and one DLI, but if I then use a second DLI from the same colour register and then overlap the colour of the first DLI, it changes to the colour of the second DLI!

This causes problems when you are trying to create a number of different shades around the same area of the screen using one colour register.

Am I doing something wrong, or is it that you cannot use two or more DLIs from the same colour register on the same horizontal line? — Philip Tackaberry, Clondalkin, Dublin.

• The colour registers may only contain one value at a time, and a DLI allows you to change that value on consecutive lines of the display.

This means that each time you use a DLI, the contents of that colour register will be changed until either the bottom of the screen is reached or another DLI changes it to yet another value.

So you can have four new colours on each new line, but you will lose the old ones.

If you write in machine code it is theoretically possible to "count" along the line after a DLI has taken place and change colours part way along, but the timing required is so critical that you would have to turn everything else (including the keyboard) off.

The more advanced assembler programmers might like to tackle this one.

Peculiar printing

I HAVE an Atari 800XL, Atarifont printer and a Xetec Graphics interface. I cannot get the printer to print in the normal 10 cpi mode irrespective of the G setting in the word processor.

The printer either prints in the expanded or emphasized mode, depending on the printer choice made at the printer option stage.

This strange behaviour is only experienced when the graphics mode setting on the Xetec interface is set off.

With the graphics mode set to on, the printer works in the normal 10 cpi mode, but prints all the control characters embedded in the text.

It is frustrating having dished out a lot of money for something which doesn’t do the job for which it was bought. Can you help? — J.T. Abebrese, London.

• This is an odd one. We have heard a couple of cases of the Xetec Interface giving slightly unusual results, but we’re not sure of the cause for this particular one. Perhaps a reader can help?

String along with 800XL

I OWN an Atari 800XL and recently have been learning about string handling at school.

None of the small programs that we use at school work correctly on my Atari. It doesn’t seem to like direct input into a string.

Could you tell me what I’m doing wrong and if there are any books which will explain how to use strings properly? — Daren Teather, Bradford, W. Yorks.

• Atari string handling is a little different to that on most machines.

The biggest difference is the lack of string arrays, as A$$(5) does not mean the fifth string called AS, but rather the portion of AS from character five onwards.

Also DIM AS(100) means reserve 100 characters for AS, not 100 full strings called AS.

You can input directly to a string with INPUT AS or INPUT #1,AS.

If you want to input to a portion of a string — a substring — then you must input to a temporary work string first. For example:

INPUT #1,TEMP$ : AS(5,10)=TEMP$

Help for adventurers

I WOULD like to thank you for a really brilliant magazine which I have bought since October 1985.

The only criticism I have is the lack of an adventure help page where readers could help each other with adventuring problems. — Christopher Walker, Oldham, Lancs.

• Brillig, our adventure columnist, has recently started his Lifeline, which should meet your needs. We have passed your Zork II problem to him.

Looking into Logo

I OWN an Atari 800XL and have recently obtained an Atari Logo cartridge. With it came a booklet called Quick Reference Guide, but unfortunately it wasn’t much help for a beginner like myself.

Can you tell me if the Atari Logo package should have included another manual or if other books are sold...
separately? — Zaiffar Aavon, Israel.

Two fairly thick books that go with the Logo package used to be packed in a separate, smaller, box to the cartridge. They should have been included in the purchase price, so contact your dealer and find out where the books vanished to.

1029 printer facts

DO any of your readers who own the Atari 1029 printer have any useful programs or information for this machine? — R.J. Sandercok, Haverfordwest, Dyfed.

Can anyone help Mr. Sandercok?

Bug in the Data Editor

REGARDING your Data Editor in the October issue of Atari User, I was very impressed by this useful program, but I have found a bug in the Load/Save routine which gives a memory full error when writing to disc.

The correct version of line 880 should be:

880 IF X1=LN THEN 940

— Andrew Yates, Oswestry, Shropshire.

You are quite correct, but perhaps a better version still of line 880 would be:

880 IF NOT (X1=LN AND I0=4) THEN 940

Game maker required

I AM stationed in Germany and therefore don’t hear much about new releases until I receive Atari User every month. I have designed what I think is an original platform arcade game. However I do not have much knowledge of programming.

I have looked around Germany for a game maker style of program which would enable me to write the game myself, but to no avail. Is there such a program around? — D. Gratton, W. Germany.

There are some game makers around, but they are not really suitable for the platform-type variety.

Your best bet would be to contact one of the games companies and work with some of their programmers.

Do make sure that you first get a deal which gives you some form of machine royalty agreement on your idea.

Purpose of the port

WHAT is the expansion port at the rear of my Atari 130XE used for? If it is for plug-in cartridges or peripherals could you tell me what is available and where they can be bought? — Daniel Page, Enfield, Middlesex.

There are two connectors on the back of a 130XE, the cartridge socket and the expansion port.

On the old XL range the expansion port was larger, but when designing the XE Atari decided that since most of the lines on the expansion port were duplicates of those on the cartridge socket (the address and data lines were present on both) they would make a dual socket instead.

So far there has been little around to use this new expansion port — which is really an extension of the machine’s parallel data bus — but there must be some companies working on such products.

If anyone out there knows of any, why not write in and let us know?

Checksum revealed

AS a new reader of your magazine I am mystified by the checksum listing printed at the end of each program.

I should be most grateful if you could tell me where I can get the checksum program and its instructions. — John Gwesney, Kinross, Tayside.

* * *

I BROUGHT Atari User for the first time last November and I find it a very interesting magazine particularly the five-liners, listings and the Mailbag.

I have seen your Get It Right! checksum program mentioned in various parts of the magazine. What is Get It Right! and how can I get a copy? — Rghm Toebes, Lichtenvoorde, Gelderland, Netherlands.

The instructions and listing for our Get It Right! checksum program last appeared in the August 1986 Atari User.

You can order a copy using the form at the back of this issue. If you don’t fancy typing in the listing, you can order a copy of the August monthly disc which carries a copy of Get It Right!

Special offer Ninja

IN your November 1986 issue you mentioned a special offer whereby I could order a game called Ninja for only 99p., but when I looked at the order form I found that the price was £12.99.

Could you tell me how I
Using the XEP-80

I WOULD like to know more about the XEP-80 column chip mentioned in the November issue of Atari User.

Can it be used with AtariWriter to get 80 columns in create and edit modes? – Ian Goodwin, Wrexham, Clwyd.

The XEP-80 is not a chip but a separate module which plugs into your computer's second joystick port. It can't be used with AtariWriter at present, but by the time the product is released there will also be an updated version of AtariWriter called AtariWriter 80 which will support full 80 column use. See last month's issue for an in-depth review.

Protection problem

I OWN an American 130XE and an Indus disc drive. I have found your magazine extremely informative and have recently subscribed, taking advantage of your Mercenary 2nd City offer.

The package arrived promptly, but to my dismay I am unable to load Mercenary.

Upon booting I get four beeps from the Indus and the track counter stays at 00. The drive then spins until the computer is switched off. I have numerous other games and have never had any other problems. Can you give a solution? – M. Thompson, Overton, Hants.

The problem almost certainly involves the NTSC computer which won't read the protection tracks on the disc correctly so the program reacts as it would to a pirated version.

Try contacting Novagen, publishers of the product, and see if they have any suggestions as to a way round your problems.

Missing manuals

EXACTLY 12 months ago, while I was on leave from the forces in Germany, I bought an Atari 800XL and disc drive from Dinxons in Slough.

On return to Germany I unpacked the various boxes to find that the disc drive users guide, Basic manual and DOS disc were all missing. I wrote to Dinxons and never received a reply to my letters.

I tried contacting Atari UK and Dinxons again, but with absolutely no luck. Could you help in this matter as my enthusiasm for ever receiving the missing vital items is diminishing fast.

Also, could you tell me whether Adventure International has gone into liquidation? – S. Day, Preston, Lancs.

Try contacting Atari Germany: Atari (Germany), Frankfurter Street 89-91, 6096 Raumheim, Germany. Tel: (010) 496 142 41081.

Adventure International has indeed folded. The firm was caught up in the shock end to the computer boom a couple of years ago and never really recovered.

Rumour has it that Scott Adams has formed another company so that he can continue to produce adventure games for Marvel comics in conjunction with the Questprobe series.

Looking for Asteroids

DO you know of any Basic compilers which will enable me to write machine code speed programs without the brainache?

Also could you review some of the games which were available before Atari User started, so that new owners can find out which titles are worth buying? – David Hicklin, Derby.

To find out about the best of the old games look no further than our Games Old and New article in the December issue.

You should be able to find an old copy of Asteroids if you try some of the larger
mail order companies, but if they want more than £1.99 for it, forget it! It's not exactly the best game ever to be released.

Books on machine code

I OWN an Atari 800XL and would very much like to learn how to program in machine code.

Do you know of any good books which are for beginners and are tailored for the Atari? – Nick Miller, Rugby, Warwickshire.
● A number of good machine code books are available for the Atari, the best of which is probably from Compute! – Machine Code for Beginners at £17.95.
   There is also a good book called the A, B and C of Machine Code, and numerous others.
   If you plan to start writing in machine code you will also need an assembler, the best of which is Mac65 from OSS, but this is rather expensive.
   You may prefer to start out with the rather slower and less powerful Atari Assembler/Editor cartridge.
   Also try to get hold of a copy of an excellent book called Mapping the Atari (from Compute! again) which you'll quickly find will be worth its weight in gold.

Brighter headlines

I RECENTLY bought an Atari 800XL, 1050 disc drive and 1029 printer. I was wondering if there is a desktop publishing program, along the lines of Newsdesk on the Commodore 64, which would allow the use of different fonts, headlines and even illustrations on my 1029?
   I am also a bit confused over the different versions of Dos available.
   The paint program which came with my computer will not save pictures on discs formatted with Dos 3, yet has no facility for formatting a disc itself.
   I did try formatting a disc with Home Filing Manager, but saving a picture on to this produced a “No Room On Disc” error.
   I also tried converting it to Dos 3 with the utility on the master disc but this too was unsuccessful.
   I have seen advertisements for a Dos 4, but your reply to Mr R Powell recommends Dos 2.5!
   All very confusing, you must agree. Which Dos should I use and where can I obtain it? A rough idea of price would also be appreciated.
   Ronald McAvoy, Maryport, Cumbria.
● Firstly, Software Express should be able to help you out with some packages from X.Lent Software which might ease your typesetting problems.
   As far as Dos goes, Dos 2.5 is the current standard.
   Dos 3 was brought out by Atari but proved rather inefficient and never took off.
   Dos 4 is not an official Atari system, though it might have been commissioned for such use some time ago.
   Stick with Dos 2.5, and use Dos 3 only if you have to.

YOUR HINTS AND TIPS

KICKSTART
WHILE messing around on Kickstart by Mastertronic I found an amazing little trick.

When you hear the starting tone, waggle the joystick (as in Decathlon) as fast as you can. Then you will start at the top speed and you will knock off at least two seconds from your time. – Owen Stride, Dereham, Norfolk.

BOUNTY BOB STRIKES BACK
Level 1: Take the flower pot and press 1 and Start.
Level 2: Take the paint roller (after killing the aliens) and press 1 and Start.
Level 5: Take the coffee pot and press 8 and Start.
Level 10: Take a pitch fork and press 5 and Start.
Level 16: Set the suction tube number 1 to left, take pie and press 9 and Start.
   – M. Jones, Wirral, Merseyside.

AIRWOLF
FOR some extra points, when the game starts, keep firing. – Mr M. Jones, Wirral, Merseyside.

ORIGINAL TIPS
MAY I congratulate you on a brilliant magazine. After the first few issues I thought it was just another “five minute” magazine, but over the months you have got a lot better – Player missile graphics, gadgets, enhanced reviews, I love it!
   I hate pirates, and I have a lot of software which cost me a lot of money and I am proud of it, so the games tips I am going to give are from my originals, not copies.
   Here are the first eight passwords for One Man and his Droid . . .
   Level Password
   1 Press START!
   2 BUBBLE
   3 ATARI
   4 FINDERS
   5 GENETIC
   6 ZAPPED
   7 MEGASONIC
   8 TIME WARP
   And here are the codes for Offles Follies (American). To start at level 5, type FANDA while playing. For level 10, type FRANK, for level 15, type NORBI and for level 20, type ZOOM (3 roughts).
   Why don't you devote a page to hints and tips on games? I could send in tips, and how about a high score table? I have completed Mercenary in three months, and got 1,110,999 credits!
   Colin Raynor, Cadbury, Devon.

STARQUAKE
THE names of the transports are Traid, Kernx, Whole, Minim, Salco, Coser, Artec, Quark, Argon, Delta, Crash, Z.A.P, Penta, Atari and Secon.

To get 100 lives hold down the pause keys (Shift+P) after you have lost your last life. Keep them down and move the joystick down.

You will be moving very slowly and the creatures will move fast. Get yourself killed, but still keep pressing the pause keys. The reading will say 00, but you will have 100 lives. – Mike Moulton, Castle Hedingham, Halstead, Essex.

Using page zero

I AM becoming increasingly interested in machine code programming for my Atari 800XL and have bought two books on 6502 programming. My problem is that both
books state that page zero will always be available on any computer for zero page instructions and variable storage. However I also have a memory map of the Atari and it shows clearly that page zero is used by the operating system and Basic. Could you please tell me if it is possible to use page zero, and if so which locations are available.

If not, is there any other way around this problem? — S. Townsend, Goole, North Humberside.

- Page zero is indeed available on any computer, assuming you have full control of the 6502.
- However the Operating System and Basic are both very complex machine code programs themselves, and as such need their fair share of zero page locations.
- In the case of the Atari, $000-$1F are used by the OS: $20-$3F by I/O but are otherwise free; $40-$7F by the display handler and should not be touched; $80-$C8 by Basic, but are free if you are not calling your machine code from Basic.
- $C8-$D1 are free for you to use; $D2 and $D3 are reserved for cartridge use; $D4-$FF are used by the floating point routines, and are completely free if you don’t plan on calling the FP package from your machine code.
- On the whole, unless you KNOW an area to be free, don’t use it, the best idea being to stick to using $CB-$D1 which you should never have any trouble with.

Elusive stripper

PLEASE can you tell me where I can get the following games for my computer (800XL): Ghosts ‘n’ Goblins by Elite, Cluedo and Sam Fox Strip Poker.

I have been looking for ages. I have seen the games but not for the Atari. — Jason Sweby, Plymouth, Devon.

XIO commands

WOULD it be possible for you to do a series on the undocumented XIO commands? — S.K. Stupples, Mansfield, Notts.

- I WAS interested to read in the November issue of Atari User that it is possible to emulate certain DOS functions using the XIO command.
- I have several books on Atari Basic, but they only deal with the XIO function to fill in blocks of colour. Would it be possible to do an article on this subject? — Peter Sendonarts, South Tottenham, London.

- In last month’s issue we started a series on using the I/O facilities of the 8 bit Atari, and XIO is one of the areas which will be fully covered over the next few months.
- The command is very powerful indeed, but would take up too much space to describe it in full in the space we have here. Stay tuned, as they say.

Phantom bee blower

I OWN an Atari 800XL with dual operating system, a 1050 disc drive with a Hyperdrive, a 1010 tape recorder and a 1028 printer.

This computer set is just perfect for me and I like it. I’d like to explain a few things about this before going on about my problem.

I got Mr G. Paul’s Dual Operating System in December 1985 and with a flick of a switch I have a built in translator. I found this very useful as it saves a lot of loading time.

My Hyperdrive also saves me a lot of time because it is twice as fast as normal 1050 disc drives.

I had a problem in fitting these chips in, but my electronics teacher at school did it very well and everything works better than before — congratulations to Mr J.L. Bird at Aldenham School, Elstree.

Anyway, my problem is that I think, is something to do with my Dos system. When I turn my computer on it beeps, although I’m not pressing start. It only happens a few times but I want to know how I can get rid of it. Have any readers with Mr. G. Paul’s Dos got the same problem? If so, then please contact me. — Takeshi Ishikawa, Stanmore, Middlesex.

- The most likely reason that your computer beeps when you switch on is that the contacts on the Start button are sticking. Drop it into your local dealer to have it checked.
- It is unlikely that the new chip has caused this to happen, but taking the computer apart may have caused the contacts to move.

Centronics interface

THERE is a gismo on the market which costs £24.95 and allows you to connect Centronics printers to your Atari 8 bit.

How about doing a review of it so that we can see if it’s as good as it sounds? — D.W. May, Chester.

- Look out for an upcoming part of our Gadget series which will show you how to build such an interface for yourself.

Pen pals round the world

THESE foreign Atari User readers would like English pen pals:

Horacio Daniel Stolofitzky
Culpina 146 3A (1406)
Buenos Aires Argentina.

Bart Trommelen
Hakvoortseweg 8 5801HA Hivarenbeek Holland.

The Atari Users Club
20-473 Lublin 49 PO Box 21
Poland.

J.F. Gelfshyck, Pemmel/

Royal Commmision PO Box
30078 Jauub Al-Sinauyah
Saud Arabia.

Max Terveen Textiel Botermar-9 Leiden Magerhorst
8 Alphen a/D Rij Gelden,
Netherlands.

(He can supply help to anyone having problems with a General Electric TXP 1000 printer and is especially interested in Forth and Pascal.)

HELP!

MORDEN’S QUEST

HOW do I get past the pigmy and the carnivorous plant? — Daniel Nye, Bury St. Edmunds, Suffolk.

HOW do I use the transporter? — Owen Stride, Dereham, Norfolk.

SPELLBOUND

HOW do I get past the gas room? How do I move the lift? How do I get over the wall? — Hughes, St Ives, Cornwall.

MicroLink

ALL program listings in Atari User are now available for free downloading on MicroLink, the UK’s fastest growing electronic mail service. They join hundreds of programs already available on Britain’s national on-line database.
More EXCLUSIVE special offers  
- plus even BIGGER savings 
for Atari User subscribers!

Starglider is “simply the best arcade game seen on any 68000 based machine” (Popular Computing Weekly).
It’s the first ever game to feature stunning, fully animated vector graphics – and the first to include high-quality digitised sound … even messages from the ship’s computer throughout your hair-raising flight are in digitised speech! Thrill to low-level flying, exhilarating defence and attack manoeuvres – it’s all here, and much, much more!
The package includes a 64-page novel that sets the scene – and gives you vital information to help you succeed in your quest!

Save £9!

Now – the COMPLETE Mercenary Compendium

Here’s all you need to get the last ounce of fun and excitement out of one of the most talked-about games of 1986. This is what this package contains:

**Escape from Targ.** A unique combination of flight simulation, adventure and arcade action. PLUS high speed 3D vector graphics! You crash-land on planet Targ’s Central City and you have but one aim – to escape!

**Targ Survival Kit.** For help when you need it most. Includes maps of Central City and its subterranean complexes. And a novelette, “Interlude on Targ”, with more hints and tips.

**The Second City.** Thought you’d got away? Then load in this extra data set and think again! No hints or clues this time – you’re on your own!

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TO ORDER TURN TO THE FORM ON PAGE 49
This is the game you’ll want to play . . .
and play . . .
and play . . .

(And with 3,000+ questions, it’ll keep you happy for months!)

Trivial Pursuit

Only for the Atari 400/800XL, 130XE

At last – the world’s most fashionable board game comes alive on your Atari. And it makes the most of the Atari’s sound and graphics to take on an entirely new dimension. Now it can ask you to Name that Tune. Easy? Not when it’s played backwards!

Order through this special offer and you’ll save £2 off the recommended retail price. Take out a subscription at the same time and save £5.

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TO ORDER TURN TO THE FORM ON PAGE 49
Exploit the POWER of your Atari ST to the full, with...  

Fast ST Basic is a totally new implementation of Basic for the Atari ST range. Running faster than almost all other languages, it supports true structured programming. And it has an easy-to-use word processor-like editor that makes full use of Gem. Up to 10 separate programs can be held in memory at once - each with its own editing window. There's even a built-in 68000 assembler to let you harness the power of your ST at machine level. And if you order through Atari User you'll save £10!

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<td>SPECTRUM</td>
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Fast ST Basic is compatible with all versions of the 820 and 1040 ST.

WHAT YOU GET: A rom cartridge that simply plugs into the side of your ST, a fully detailed 380 page manual, a quick reference card listing all keywords and parameters, and a disc containing many example programs that demonstrate all aspects of Fast Basic from simple loops to full blown Gem programs.

RRP £89.90  
ATARI USER READER OFFER  
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