In this delightful game you control BLOB, the Biologically-Operated Being, navigating him through 500 action-packed screens to rebuild the unstable planet's core.

Bubble Bus' Starquake is one of the biggest-selling games for home micros, due to its incredibly-addictive gameplay and cleverly-animated graphics. It has received such accolades as Game of the Month in Computer and Video Games, and was awarded a Crash Smash.

- What reviewer Bob Chappell said about the Atari version:
  'Starquake is top-notch fare ... quality dripping from every byte'

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This is your chance to get your news, views and name in print.

Get it right! II
All major listings in this issue are accompanied by checksums to help overcome typing mistakes. For full details of how they work, see the article on page 23 of the November 1987 issue of Atari User.

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exclusive!

Add TEN new commands to Atari Basic with this latest package from Atari User.

SEE PAGE 42

April 1988 Atari User 3
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‘More to the Atari than just games’

THE capabilities of the Atari 8 bit micro are not being fully utilised, according to Keith Mason, general manager of Software Express.

“Serious programs such as word processors, spreadsheets, databases and programming languages are being overlooked in favour of cheap cartridge and cassette-based games”, he said.

“We have no problems selling budget titles, but when it comes to anything over £10 it would appear that there is no go area for 8 bit users.

“It’s a great pity because the machine is more than capable of handling serious applications”.

Software Express (021 328 3585) produces a number of packages for the Atari such as the Xlent word processor for £29.95, the FynCalc spreadsheet at £49.95 and the FynFile database also at £49.95.

“Even though the prices are relatively cheap compared to other full function programs, sales are very low indeed”, said Keith.

“The problem may be that many newcomers to the Atari just don’t know that it is more than a games machine.

“If they could only look beyond the joystick they would get a lot more out of their micro”.

ON THE SERIOUS SIDE...

ATARI users who went more than entertainment from their machines have a new source of serious software.

Valar Software has just completed development of a desktop publishing and circuit board CAD program for Atari 8 bit machines, and wants to hear from prospective users.

Richard Frangnell of Valar (0273 417370) told Atari User: “We believe the aspirations of the average 8 bit user extend further than games.

“I am sure a lot of Atari owners are interested in getting more from their machine and we would like to hear from them.

“If the response is good enough then we will set up a creative user group”.

Fresh from the USA

THE range of acclaimed Atari 8 bit programming aids from American company OSS is to be made available in the UK.

Frontier Software (0423 67140) is importing them in its role as distributor for ICD Inc of Illinois, which recently took over OSS’s product line.

An alternative to Basic, the fast programming language Action! blends the best elements of Pascal and C. It is available on cartridge for £49.95, and toolkit disc for £19.95.

Macro assembler and editor Mac/65, for serious assembly language programmers, includes the powerful DDT screen-oriented debugging program. The cartridge costs £49.95 and the toolkit disc £19.95.

Downward compatible with standard Atari Basic but with an additional 45 commands, Basic XE supports all Atari 8 bit micros. The cartridge is £39.95 and the toolkit disc £19.95.

Basic XE has all the commands and is designed for the Atari 130XE to make better use of the memory but still retain compatibility with Atari Basic. The cartridge costs £49.95.

ATARI Corporation's computer activities continue to prosper. The company has just reported net sales of $147.5 million for the last quarter - up 59 per cent from the previous year's $92.6 million.

Income was 53 per cent up at $31.3 million. This means net sales for the year stand at a record $363.8 million - a rise of 41 per cent over the previous year. Income was up 49 per cent at $72 million.

ATARI President Sam Tramel said: "The computer segment of our business continued to grow at a record pace, contributing over 51 per cent of our net sales for the year".

Pirates are under fire

ATARI has been showing Far East software pirates that it means business. The company has obtained court injunctions against six Singapore firms alleged to have infringed its copyright and design patents.

The move follows the recent inclusion of computer software under Singapore copyright laws.

ATARI has also seized a large consignment of games cartridges originating in Taiwan and destined for European markets.

New games group formed

A MAJOR international publisher has joined forces with a new software house to launch an exclusive entertainments label for the Atari.

Mandarin combines the marketing muscle of the Europress Group, parent company of Database Publications, in a series of joint ventures with some of the UK's top programming teams.

The first title to be released by Mandarin is an adventure trilogy, Time And Magik, from Level 9.

"We believe that Level 9's programming skills, together with Mandarin's knowledge of the marketplace, abilities in printing and packaging, and its understanding of the need to get products out on time, will be an unbeatable com-
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**Telesoftware** – Download directly into your Atari any program from the ever-growing library now available on MicroLink – both games and utilities.

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Show's the place for big savings

EXHIBITORS are forecasting record savings on hardware and software at this month's Atari User Show.

It takes place April 22 to 24 at Alexandra Palace, London, and a survey conducted by Atari User reveals that potential savings to visitors should total well in excess of £100,000.

The event will also be the launching pad for a number of exciting new Atari 8 bit products.

Red Rat Software will be unveiling its latest bargain price compilation games packs, which include the popular titles Mad Max, Dreadnought, and Space Wars.

Seen at the show for the first time will be the new quality games publisher Mandarin Software. The company has produced an excellent adventure for the Atari 8 bit - Time and Magik.

The move to the larger exhibition space provided by Alexandra Palace further emphasises the increasing popularity of products on the Atari.

Previous venues have proved too small for the ever increasing numbers of exhibitors and visitors.

One of the many special attractions to be seen in the West Hall will be the games arcade. A large bank of machines will be available for playing the very latest titles from leading software houses.

Centre stage at the show will be being Atari dealer Silica Distribution with a massive 66 square metre stand.

It will be displaying the UK's largest ever range of software and hardware at the show. The company is also offering free registration to its Atari user groups.

No Star Wars

ATARI User has received many letters pleading for a version of the top-selling game Star Wars.

Despite interest shown by Atari User readers, Domark says it will not be releasing an Atari 8 bit version.

From Page 5

bination", says Pete Austin of Level 9.

Mandarin's involvement with the innovative games software house is the first of a series of joint ventures.

"We find ourselves in the position that, unlike many other publishers, we don't have to rush out titles to maintain cash flow", says Chris Payne, spokesman for the new venture.

"Mandarin couldn't be more sound financially - we have £1 million in the kitty - so we are in a superb position to be able to pick and choose not only our partners, but also just what products we decide to release. It is our aim that our label will become synonymous with quality, providing the Rolls Royce of software games for the Atari. And what better way to start than with Level 9?"

The first game to be released, Time And Magik, has up to 60,000 words of text, 700 locations and a 10,000 word book containing detailed play guide and short story.

To help players who get bogged down with the intricacies of the game, Level 9 is providing comprehensive clue sheets free of charge. The game costs £14.95 on tape or disc.

Compiled by Gallup/Microscope

New from Atlantis is League Challenge which goes straight to the number one spot. You can read the review in this issue.

The only full-priced title in the Top Ten this month is Pole Position from Atari, yet there are seven new entries and re-entries, including a new title from US Gold - Platform Perfection.
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GRAFFITI CORNER Whatever you want to say, here's where to say it!
HAVE you by now managed to digest last month's somewhat technical delve into the inner secrets of Atari Basic? It's not really as complex as it first seems, is it? This time we'll be continuing from where we left off and taking a look at the way program lines are encoded — or tokenised.

Looking back for a moment you will remember the example program we were using last time:

5 LET NUMBER = 120
10 PRINT NUMBER

Line 5 tokenised to give us the codes 5, 0, 15, 6, 128, 45, 14, 65, 18, 0, 0, 0, 0, 22 and line 10 gave us the somewhat shorter sequence 10, 0, 7, 7, 32, 128, 22.

As a quick reminder, the first two digits of each line represent the line number in standard 6502 low high format and the next two give us the total number of bytes contained in the tokenised line. The final 22 is a marker to tell Basic it has reached the end of the current line.

All the bytes in between represent the program lines themselves, with numbers of 128 and over referring to variables — as stored by Basic in the variable name table. These tokenised lines will be used whenever you run the program, and are only ever converted back into text form when you decide to use LIST.

This time we'll be considering a slightly more complex program — shown as Listing 1 with the tokenised version in Figure 1. It contains a number of features we haven't looked at yet, the most important being strings and multi-statement lines.

The first thing to note is that there are four variables in the program — TEXTS, A, B and C. These are given the first four variable name tokens, so TEXTS is referred to by the number 128, A by 129, B by 130 and finally C by 131.

This is, of course, the order in which the variables were first referred to when the program was typed into memory.

Line 10 is easy to work out and differs little from the lines we have seen before. The token 20 refers to the word DIM, and 59 and 44 are the open and close bracket symbols. As we have already seen, TEXTS is given the token 128, and the number 20 is coded somewhat lengthily as a numeric constant in binary coded decimal. See last month's article for more information on BCD coding.

Line 20 contains something completely new — the string assignment TEXTS$="HELLO". Once tokenised, it looks like this:

20 0 15 15 54 128 46 15 5 72 69 76 76 79 22

You should know by now that the first four numbers — 20, 0, 15 and 15 — mean that the line number is 20 and it is 15 bytes long. But the rest of the codes are new.

Firstly, the token 54 means LET — because what we meant to type was LET TEXTS$="HELLO", even if we omitted the word itself.

This use of token 54 is referred to as an implied LET — if we typed in the full version of the line all that would change would be that the 54 would be replaced by a 6, the normal token for LET.

The digit 128 tells Basic we want to use the first variable (TEXTS$), and 46 represents the equals sign. The number 15 signifies the start of a string constant in much the same way as the number 14 always precedes a BCD numeric constant.

The string is coded very simply as a single byte to indicate the length of the string — in this case five characters — and then the text in standard ASCII form. Finally the line is terminated with the normal 22.

Line 30 gets a little more complex since it contains three different statements, each separated by a colon. This line tokenises to:

30 0 15 7 32 129 20 11 32 130 20 15 32 131 22

which in turn breaks down into these four segments:

| 30 | 0 | 15 |
| 7 | 32 | 129 | 20 |
| 11 | 32 | 130 | 20 |
| 15 | 32 | 131 | 22 |

The first part is simple enough to decipher, since we've seen its form a number of times before. The 30 and the 0 give the line number (30) and the 15 gives us the total number of bytes in the tokenised line — count them and see. We also already know that 32 is the standard token for PRINT and that the numbers 129, 130 and 131 are simple variable references.

The token 22 signifies the end of the

ANDRÉ WILLEY continues his in-depth examination of the way Atari Basic is structured
Finally the last statement on a line will always contain the same offset value as the total line length byte—the offset to the next statement being the same as the offset to the next line. This is why the special cases we have looked at so far—in which there is only one statement on a line—always have the same number for the line offset as they do for the statement offset.

The last line of our sample program is probably the simplest of them all. After the line number and the two identical length bytes comes the single token zero meaning REM. This is followed by the rest of the Ascii text—terminated in this case with a carriage return byte (15) instead of the normal code 22. This is done so that you are able to use a Control-X—Ascii code of 22—in your text.

A DATA statement would be coded in exactly the same way, but with a token value of 1 followed by the Ascii text.

It would obviously take far too long to give examples of all the individual tokens used by Atari Basic, but you should by now understand the general format of a line.

For further information Figures II, III and IV give a complete breakdown of all the available tokens and their meanings. The first token of any statement will always come from Figure II, and it may be followed by either some Ascii text—such as in the case of REM, DATA or ERROR lines—or more normally by a mixture of the tokens listed in Figures III and IV plus various numeric or string constants.

You will notice from the list of arithmetic and string operations given in Figure III that some characters seem to have more than one possible token. This is especially notable in the case of the open bracket and the equals signs, and is due to the fact that they can be used in a variety of functionally quite different situations.

For example, the equals symbol may be used to assign a value to a numeric variable as in LET A=10, or to a string— with LET TEXTS="HELLO". It can also be used for comparison of either strings or numbers—such as IF TEXTS="N" THEN END or IF A=MAX THEN 100.

Similarly the open brackets character can be used within a mathematical formula to access a substring, inside a DIM statement or as part of a function call such as PRINT CHR$(A).

Each usage of the character has its own unique token, and these various special cases are listed alongside each token.

One other point of interest concerns the useful trick of abbreviating commands when you are typing in a program. I’ve no doubt that many of you prefer to use GR. instead of the much longer GRAPHICS, or L. instead of LIST. But how does Basic know that typing S. means SAVE rather than SOUND or even SETCOLOR?

The answer lies in the structure of Figure II. When Basic discovers a dot within a command, it scans through the table starting at the top, until it finds a match for the few characters it has been given. Thus, since SAVE comes before any other word starting with S, this becomes the first match and the command is read as SAVE.

If you just type the dot without any other characters the match will be made on the very first token in the table—giving you a very quick way to enter REMs.

This technique works with any command, but not with functions. Thus there is no way to shorten PADDLE, for example, because it is a function call, as listed in Figure IV. Also some abbreviations have dubious advantages—such as POK, instead of POKE. It can’t be shortened any further because using P. or even PO. would result in the command POINT being generated.

Unfortunately we are stuck with the command table order as defined by Atari in the Basic rom.

*Next month I’ll conclude this tour of Basic’s inner workings with a program which will enable you to see these tokens in action for yourself.*
<table>
<thead>
<tr>
<th>Token</th>
<th>Meaning</th>
<th>Token</th>
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<tr>
<td>0-13</td>
<td>Unused</td>
<td>36 ($2A)</td>
<td>$</td>
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<tr>
<td>14 ($OE)</td>
<td>Nicegic constant (next six bytes hold</td>
<td>37 ($2B)</td>
<td>+</td>
</tr>
<tr>
<td>15 ($OF)</td>
<td>String constant (next byte is length, then string contents)</td>
<td>38 ($2C)</td>
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<td>16 ($10)</td>
<td></td>
<td>39 ($2B)</td>
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</tr>
<tr>
<td>17 ($11)</td>
<td>(dummy for Start of Expression)</td>
<td>40 ($2B)</td>
<td>NOT</td>
</tr>
<tr>
<td>18 ($12)</td>
<td>(parameter separator)</td>
<td>41 ($2D)</td>
<td>OR</td>
</tr>
<tr>
<td>19 ($13)</td>
<td></td>
<td>42 ($2D)</td>
<td>AND</td>
</tr>
<tr>
<td>20 ($14)</td>
<td>(end of statement)</td>
<td>43 ($2D)</td>
<td>(within arithmetic expression)</td>
</tr>
<tr>
<td>21 ($15)</td>
<td></td>
<td>44 ($2E)</td>
<td>= (Arithmetic assignment)</td>
</tr>
<tr>
<td>22 ($16)</td>
<td>(Carriage Return)</td>
<td>45 ($2F)</td>
<td>= (String assignment)</td>
</tr>
<tr>
<td>23 ($17)</td>
<td>GOTO</td>
<td>46 ($30)</td>
<td>&lt;</td>
</tr>
<tr>
<td>24 ($18)</td>
<td>GOSUB</td>
<td>47 ($31)</td>
<td>&lt;=</td>
</tr>
<tr>
<td>25 ($19)</td>
<td>TO</td>
<td>48 ($32)</td>
<td>=&gt;</td>
</tr>
<tr>
<td>26 ($1A)</td>
<td>STEP</td>
<td>49 ($33)</td>
<td>=&gt;</td>
</tr>
<tr>
<td>27 ($1B)</td>
<td>THEN</td>
<td>50 ($34)</td>
<td>+ (unary plus)</td>
</tr>
<tr>
<td>28 ($1C)</td>
<td></td>
<td>51 ($35)</td>
<td>- (unary minus)</td>
</tr>
<tr>
<td>29 ($1D)</td>
<td>&lt;=</td>
<td>52 ($36)</td>
<td>(for substrings)</td>
</tr>
<tr>
<td>30 ($1E)</td>
<td>&lt;&gt;</td>
<td>53 ($37)</td>
<td>(for Ays)</td>
</tr>
<tr>
<td>31 ($1F)</td>
<td>=&gt;</td>
<td>54 ($38)</td>
<td>(in DM statement)</td>
</tr>
<tr>
<td>32 ($20)</td>
<td></td>
<td>55 ($39)</td>
<td>(for function call, eg. in &quot;CHR$...&quot;)</td>
</tr>
<tr>
<td>33 ($21)</td>
<td></td>
<td>56 ($3A)</td>
<td></td>
</tr>
<tr>
<td>34 ($22)</td>
<td></td>
<td>57 ($3B)</td>
<td>(array/substring element separator)</td>
</tr>
<tr>
<td>35 ($23)</td>
<td></td>
<td>58 ($3C)</td>
<td></td>
</tr>
</tbody>
</table>

***Figure III: Operator tokens used by Atari Basic***

<table>
<thead>
<tr>
<th>Token</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>61 ($3D)</td>
<td>STRS</td>
</tr>
<tr>
<td>62 ($3E)</td>
<td>CHR$</td>
</tr>
<tr>
<td>63 ($3F)</td>
<td>USR</td>
</tr>
<tr>
<td>64 ($40)</td>
<td>ASC</td>
</tr>
<tr>
<td>65 ($41)</td>
<td>VAL</td>
</tr>
<tr>
<td>66 ($42)</td>
<td>LEN</td>
</tr>
<tr>
<td>67 ($43)</td>
<td>ADR</td>
</tr>
<tr>
<td>68 ($44)</td>
<td>ATN</td>
</tr>
<tr>
<td>69 ($45)</td>
<td>COS</td>
</tr>
<tr>
<td>70 ($46)</td>
<td>PEEK</td>
</tr>
<tr>
<td>71 ($47)</td>
<td>SIN</td>
</tr>
<tr>
<td>72 ($48)</td>
<td>RND</td>
</tr>
<tr>
<td>73 ($49)</td>
<td>FRE</td>
</tr>
<tr>
<td>74 ($4A)</td>
<td>EXP</td>
</tr>
<tr>
<td>75 ($4B)</td>
<td>LOG</td>
</tr>
<tr>
<td>76 ($4C)</td>
<td>CLOG</td>
</tr>
<tr>
<td>77 ($4D)</td>
<td>SQR</td>
</tr>
<tr>
<td>78 ($4E)</td>
<td>SGN</td>
</tr>
<tr>
<td>79 ($4F)</td>
<td>ABS</td>
</tr>
<tr>
<td>80 ($50)</td>
<td>INT</td>
</tr>
<tr>
<td>81 ($51)</td>
<td>PADDLE</td>
</tr>
<tr>
<td>82 ($52)</td>
<td>STICK</td>
</tr>
<tr>
<td>83 ($53)</td>
<td>PTRIG</td>
</tr>
<tr>
<td>84 ($54)</td>
<td>STRIG</td>
</tr>
<tr>
<td>85-127</td>
<td>Reserved for variables</td>
</tr>
<tr>
<td>128-255</td>
<td>Unused</td>
</tr>
</tbody>
</table>

***Figure IV: Function tokens used by Atari Basic***

---

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Atari XE computers are arguably the best 8 bit home micros available and are certainly the best value for money. Even the ST range is inferior to the XE in some ways - just ask a machine code programmer.

It is amazing that the internal design of the XE has remained virtually unchanged since 1979, when the first Atari 400 was introduced. Unfortunately, some areas of its performance do tend to betray its ancient origins. For example, Atari Basic is notably lacking when compared to other versions of the language used by other computers.

Being an inventive lot, Atari enthusiasts frequently write utility programs to make up for Basic's deficiencies, and lots have been published in Atari User. The snag is that although each admirably fulfills a requirement, it normally has to be loaded into memory as it is required. This means that it can take programmers a relatively long time to perform straightforward tasks.

The problem is not that Atari Basic is a bad language - it is more a case of it being incomplete. Even essential program development commands like line numbering and deletion are conspicuous by their absence. True, you can go out and buy alternative versions of Basic but they cost nearly as much as the computer itself, and you run the risk of your programs being incompatible with standard machines.

What we need is an extended Atari Basic which is compatible with the standard one, but with additional program development functions. We want the functions to execute quickly, with the minimum of typing and without having to remember complicated commands. We also have to retain as much memory as possible because a large Basic language is not much use if there is not enough memory left for a program.

MICK RANDLE gives full details of the Atari User Programmer's Toolkit

THE Atari User Toolkit offers 10 additional Basic commands and is totally compatible with standard Atari Basic. It consumes only 128 bytes of user memory and it even leaves Page 6 - memory addresses 1536 to 1791 - free.

All the Toolkit commands are useful and are easy to remember and use and several, like line renumbering, can be found in other computers as built-in utilities. But some of the new commands are exclusive to the Atari community.

Toolkit loads into memory via an autoboot file on tape or disk. When it has loaded you can begin your programming session and forget about it until you need it. As previously mentioned, the total cost in terms of user memory is only 128 bytes. This is achieved by placing the main code in the unused ram beneath the Basic rom chip, and switching between the two banks as required.

The code which handles this switching is 128 bytes long and resides in low memory. Figure 1 explains the computer's memory allocation. Notice that we have effectively squeezed 16k of code into the 8k area from $A000 to $BFFF.

The Toolkit commands are called from Basic's direct command mode - they execute when you type them rather than during program execution.

Deletions

The line deletion command is an important and long overdue addition to Atari Basic. Just type the DEL command followed by two line numbers separated by commas, and all lines within the specified range will be removed from your program.

The first line number should obviously be lower than the second one, but again if you make a typing error Toolkit will tell you rather than ruin your program. Make sure that the

Renumbering

You may reenumerate your program lines from base line 10, in line incresments of 10, by typing REN. All line references, such as GOTO 100, are automatically altered to reference the new line number. You can vary the base line and the line increment by entering them after the command, separated by a comma.

Toolkit checks to see if your new line numbers are acceptable before altering your program, so there is no chance of ruining your work. Variable line references, such as GOTO LINE, cannot be renumbered because Toolkit cannot determine how a variable may change.

Similarly, references to non-existent lines cannot be renumbered because they are programming errors. Toolkit continues to reenumerate the program, displaying alert messages where appropriate.

As an aid to legibility, all non-existent line references are set to 99999 so that you can easily identify the offending statement.
remainder of your program makes no reference to the missing lines, as no checking is performed by Toolkit.

A good way to find such references is to renumber the program with the REN command, which will expose any references to the now non-existent lines.

**Strip utility**

The STRIP command is a sort of selective line deletion utility. It deletes all REM statements from the program whether they are short REMs at the end of multiple-statement lines, or full-line REMs.

Their removal makes a routine more difficult to understand, but on the other hand it reduces the size of the program and increases its speed of execution. It has always been good programming practice never to GOTO a REM line, although many programmers do it. Test for such references by using the REN command as above.

**Changing variables**

Sooner or later every programmer reaches the stage where a variable name is no longer appropriate to its function.

Suppose you are using X to represent the number of remaining lives in a game program. As the program grows you decide that LIVES would have been a more descriptive name, but you leave it as X because you don’t feel like altering 36 occurrences of the variable.

The CHANGE command allows you to change the X to LIVES simply and quickly, and all occurrences of the variable will be altered automatically. Full checking is performed by Toolkit to prevent you from making a mess of your program by duplicating an existing name, or changing the variable to a different type such as converting a string variable to an array.

**Listing variables**

You may find that you receive a duplicate name error when using the CHANGE command, and you are not sure exactly what variables you are using. Find out by using LVAR, which not only lists each variable in memory, but also displays every line number it appears in.

Unused variables are indicated and are wasteful of memory, so rather than invent a new one you could change the name of a redundant variable with the CHANGE command.

**Removing click**

Every time you press a key you will hear the familiar click through the monitor loudspeaker, which can drive many programmers to distraction. A poke can switch it off, but I don’t know anyone who can remember either the memory address or the number to POKE in it.

The CLICK command saves you the trouble. The funny thing is that many people actually miss the sound when it has gone, so if you find you want it back just type CLICK again.

**Perfect Listing**

A major bugbear for Atari users is the fact that the computer is capable of displaying more characters than a printer is capable of printing. The printer interprets many characters as print control codes in a similar way that the computer interprets the Control-Clear combination as a screen control code.

It is no coincidence that the Control Shift key is so-called. That is why you sometimes find that when listing a program with the command LIST “P:”, a machine code string may make your printer perform a dozen line feeds and print the rest of your listing in Greek.

Toolkit’s LISTING command gives you a full printed listing without any of the above problems on any Epson or Epson-compatible printer with bitmap graphics capability.

**Changing bases**

Intermediate to advanced programmers often need to convert a decimal number to its hexadecimal or binary equivalent. This usually means a frenzied search for the calculator or a book containing conversion tables. Not any more. Just type VAL and the decimal number for an immediate

**Change**

<table>
<thead>
<tr>
<th>Command</th>
<th>Example</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANGE old,new</td>
<td>CHANGE X,LIVES</td>
<td>Change variable name</td>
</tr>
<tr>
<td>CLICK</td>
<td>CLICK</td>
<td>Toggle key-click</td>
</tr>
<tr>
<td>DEL line1,line2</td>
<td>DEL 100,266</td>
<td>Delete line range</td>
</tr>
<tr>
<td>DIR drive</td>
<td>DIR 2 or DIR 8</td>
<td>Disc directory Find</td>
</tr>
<tr>
<td>GIR!</td>
<td>GIR!</td>
<td>View GIR! listing</td>
</tr>
<tr>
<td>LISTING start,end</td>
<td>LISTING or LISTING 10,300</td>
<td>Full Ascii listing</td>
</tr>
<tr>
<td>LVAR</td>
<td>LVAR</td>
<td>Variable X-reference</td>
</tr>
<tr>
<td>REN start, step</td>
<td>REN or REN 1,1</td>
<td>Renumber program</td>
</tr>
<tr>
<td>STRIP</td>
<td>STRIP</td>
<td>Remove REM statements</td>
</tr>
<tr>
<td>VAL number</td>
<td>VAL 2 or VAL $3F</td>
<td>Number conversion</td>
</tr>
</tbody>
</table>
from Page 13

translation into hexadecimal and binary notation. Hexadecimal or binary numbers may be converted to the other bases using VAL and entered by prefixing the number with the $ or % signs respectively.

Directory enquiries

The DIR command is aimed, not surprisingly, at disc drive owners. Type the command followed by the drive number for a directory listing. Using DOS 2.5, the only restriction imposed by Toolkit is that the system must be configured for a maximum of two disc drives (plus the ramdisk if used) and three file buffers.

Realistically speaking, being limited to two drives is no great hardship since most people only need one and two drives are a luxury most of us cannot afford.

However, if he uses SpartaDos he can still use Toolkit and access all of them. This is due to the fact that SpartaDos uses the ram beneath the computer’s operating system in a similar way to how Toolkit uses the ram beneath Basic.

Checksums

Most Atari User readers adopt the good habit of using GRI to check their typing and the latest version of the November 1987 issue of Atari User, is much quicker and easier to use than the original.

Toolkit incorporates GRI to make its operation even easier – just type GRI! for the checksum listing. The only other difference is that you can no longer send it to your printer but think of how much you will save!

Finally, not only disc Toolkit offer 10 great utilities as extensions to Atari Basic, but it also provides English error messages to complement the computer’s error code number.

With Atari User Toolkit you need no longer feel embarrassed when your BBC Micro chums start talking about their Basic. At a fraction of the cost, you have better program development commands.

AUTHOR’S NOTE

I enjoyed writing Toolkit for Atari User. Nowadays it is fashionable to knock Basic as a programming language, and Atari Basic in particular because it does not conform to the Microsoft standard. I have a great affection for our version of Basic: it is easy to use, quite powerful for its size and it only costs 8k of memory. The enhancements provided by Toolkit enable you to spend more time programming and less waiting for utilities to load.

I use Toolkit myself – and what better recommendation can you have than that? The special offer on page 42 is totally in keeping with Atari’s philosophy of power without the price!
If you have a lot of discs full of programs you've written yourself or typed in from *Atari User* you may have noticed one of the less endearing features of the disc directory — it's very messy.

If you've got a packed disc, finding out if a particular file is on it would involve looking carefully through the entire directory. But, wouldn't it be a lot easier if the directory was in alphabetical order?

This would mean that if you had a number of files concerned with one program, all of which had the same filename but a different extension, they would now appear together on the disc directory. It's not really a vital facility, but it makes it a lot easier to keep track of where files are. And DirSort is just the program to do it.

It will work on Dos 2.0 or Dos 2.5 discs in single or enhanced density. Although it ignores deleted and unclosed files, it may under unusual circumstances crash if a file has become corrupted. This has never happened to me yet, but if you suspect a file to be faulty, use the Verify Disk option in the DISKFIX.COM utility supplied with Dos 2.5 to make sure the disc is safe.

If you don't have access to Dos 2.5 and are still using Dos 2.0, make a backup of your disc just in case a bad file causes DirSort to corrupt the disc further. Corruption is very unlikely but it's better to be safe than sorry.

Also once a disc has been sorted, deleted files cannot be unerased using DISKFIX.COM, even if the disc has not been written to since the file was deleted. So make sure you won't be wanting to recover any deleted files before you sort the disc.

Don't try to sort commercial discs, even if they seem to have normal directories. Some discs store program data in the directory sectors and sorting this would be fatal.

If you've got an assembler type in Program II and then type:

```
ASM#D:DIRSORT.BIN
```

to produce a binary file on your disc. I used MAC/65 to assemble the code but it should be easy to modify it so that it will assemble on the Atari Assembler Editor cartridge.

Those who don't have an assembler should type in Program I. Remember to get CopyRight to check it and save a copy to disc before running it. When you are sure everything is OK. Run it and it will produce a binary file which can be executed from Dos.

If you think the principals of disc storage interesting and want to find out more about it, Atari's Technical Reference Notes and Compute's Mapping The Atari both contain a lot of useful information. Compute also publish a book by Bill Wilkinson called Inside Atari Dos.

**DirSort it!**

*ALAN CRAWFORD* can bring order to that cluttered up disc directory

---

### How Dos stores files on disc

To understand how you go about sorting the directory it's useful to understand just how Dos 2.0 and Dos 2.5 store files on disc.

When you save a file, the file management system — FMS — stores information about it in the directory. This is stored in sectors 361-368 on your disc and each of these direct sectors holds the directory information for eight files, giving a maximum of 64 files.

Each record is 16 bytes long and consists of a flag byte which indicates the file status — locked, deleted or unused. Two bytes each are used for the number of sectors in the file and where on the disc the file begins, with another 11 bytes for the filename and extension.

So sorting the directory involves reading the directory sectors into memory, sorting them into order and writing them on to the disc again. I've used a simple insertion sort algorithm which involves searching through the directory and finding the record which should be last in the directory.

This record is then swapped with the last record and the process is repeated, only this time we decrease the number of records to sort by one, ignoring the last record.

Eventually we reach the situation where the number of records to sort is one, which means we have finished. This isn't a particularly fast or clever algorithm but it is easy to implement and since we're working in machine code it's still pretty fast.

While that may seem on the face of it to be all there is to sorting the directory, in reality things are a little more complex. This is because of the way in which Dos stores the files themselves.

Each sector of a file consists of 125 data bytes, a pointer to the next sector of the file, a count of the number of bytes used in the sector and a note of the file number. The file number is used to verify file integrity.

So all the sectors of the first file in the directory have zero as their file number and so on — remember that machine code programmers count from zero, not one. If the file number in the sector and its place in the directory are different, the FMS reports an error.

However, since we have reordered the directory, the file numbers no longer match those in the directory, which makes it necessary to alter all the file numbers in each file.

We do this by first of all finding where the file starts from the information in the directory record. Using the pointers to the next sector in each sector of the file, we have to thread our way through each file on the disc, changing the numbers to their new values as we go. This takes rather a long time as we have to read every sector on the disc that contains program data and then write it out again.

That's a rough outline of the program. We read the directory in, sort it, write it out again and then thread our way through each file, changing its number. The first three stages only take a few seconds but the last can take upwards of 10 minutes on a really full disc.

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16 Atari User April 1988
Program I: Basic program to create a Binary load file. This can then be loaded using option L on the Dos menu.

630 DATA 66,32,216,64,32,8,65,232,236,68,66,208,28,56,32,38
640 DATA 65,168,125,185,66,66,41,13,13,62,66,153,66,32,47
650 DATA 185,66,66,41,13,141,65,66,1,85,67,56,141,64,13
660 DATA 65,266,264,247,65,208,218,9,6,169,194,153,65,66,133
670 DATA 204,96,165,203,24,185,16,133,8,144,2,233,281,9,169,82
680 DATA 141,2,3,32,36,65,96,19,87,14,1,3,32,56,95,69
690 DATA 168,82,141,2,3,32,106,65,91,69,87,141,2,3,32,106,62
700 DATA 65,66,125,72,264,57,4,19,14,6,149,65,4,144,11,41
710 DATA 168,82,141,2,3,32,106,65,91,69,87,141,2,3,32,106,62
720 DATA 65,66,125,72,264,57,4,19,14,6,149,65,4,144,11,41
730 DATA 168,82,141,2,3,32,106,65,91,69,87,141,2,3,32,106,62
740 DATA 65,66,125,72,264,57,4,19,14,6,149,65,4,144,11,41
750 DATA 168,82,141,2,3,32,106,65,91,69,87,141,2,3,32,106,62
760 DATA 65,66,125,72,264,57,4,19,14,6,149,65,4,144,11,41
770 DATA 168,82,141,2,3,32,106,65,91,69,87,141,2,3,32,106,62
780 DATA 65,66,125,72,264,57,4,19,14,6,149,65,4,144,11,41
790 DATA 168,82,141,2,3,32,106,65,91,69,87,141,2,3,32,106,62
800 DATA 65,66,125,72,264,57,4,19,14,6,149,65,4,144,11,41
810 DATA 168,82,141,2,3,32,106,65,91,69,87,141,2,3,32,106,62
820 DATA 73,83,248,65,66,45,32,44,45,32,8,65,232,236,68,66,208,28,56,32,38
830 DATA 84,72,69,78,32,88,62,89,83,83,28,82,89,83,28,82,89,83
840 DATA 79,155,89,82,69,83,83,28,82,89,83,28,82,89,83,28,82,89,83
850 DATA 85,76,44,12,78,32,84,79,32,82,65,92,84,79,32,82,65,92
860 DATA 85,75,32,69,82,82,79,82,33,15,8,8,8,8,8,8,8,8,8,8,8,8,8,8,8,8
870 DATA 224,2,225,2,0,64

Program II: MAC65 assembly listing of Program I

1000 .TITLE 'DirSort Directory Sorter'
1010 ** = 54800
1020 .OPT OBJ,LIST
1030 .SET 3,0
1040 .ENTRY .DIRSORT = $0169 ;Directory start sector.
1060 .CURRENT = $CB ;Pointer to current record.
1070 .GREATEST = $C0 ;Pointer to greatest record so far.
1080 ;
1090 ;System Equates.
1100 ;
1110 .UNIT = $0301
1120 .UNIT = $0302
1130 .BUFF = $0304
1140 .BUFF = $0305
1150 .BUFF = $0306
1160 .BUFF = $0307
1170 .BUFF = $0308
1180 .BUFF = $0309
1190 .BUFF = $0310
1200 .BUFF = $0311
1210 .BUFF = $0312
1220 .BUFF = $0313
1230 .BUFF = $0314
1240 .BUFF = $0315
1250 .BUFF = $0316
1260 .BUFF = $0317
1270 .BUFF = $0318
1280 .BUFF = $0319
1290 ;
1300 .MAIN Program Loop.
1310 ;
1320 .DIRSORT
1330 .TSX ;Save initial sta ck position.
1340 .STA LDA STACK ;Use drive #1.
1350 .STA DUNIT
1360 .LDA # 'INITMESS' ;Point to starting message.
1370 .LDA STA ICAM ;LDA 'INITMESS'
1380 .LDA LDA ICAM ;LDA 'INITMESS'
1390 .LDA LDA ICAM ;LDA 'INITMESS'
1400 .LDA LDA ICAM ;LDA 'INITMESS'
1410 .LDA LDA ICAM ;LDA 'INITMESS'
1420 .LDA LDA ICAM ;LDA 'INITMESS'
1430 .LDA LDA ICAM ;LDA 'INITMESS'
1440 .LDA LDA ICAM ;LDA 'INITMESS'
1450 .LDA LDA ICAM ;LDA 'INITMESS'
1460 .LDA LDA ICAM ;LDA 'INITMESS'
1470 .LDA LDA ICAM ;LDA 'INITMESS'
1480 .LDA LDA ICAM ;LDA 'INITMESS'
1490 .LDA LDA ICAM ;LDA 'INITMESS'
1500 .LDA LDA ICAM ;LDA 'INITMESS'
1510 .LDA LDA ICAM ;LDA 'INITMESS'
1520 .LDA LDA ICAM ;LDA 'INITMESS'
1530 .LDA LDA ICAM ;LDA 'INITMESS'
1540 .LDA LDA ICAM ;LDA 'INITMESS'
1550 ;Directory Sorting Module.
1560 ;
1570 ;Routines to perform an insertion sort on the memory image of the direct ory.
1580 ;
1590 ;
1600 .JSR FINDMAX ;Find number of files on disk.
1610 .LDA MAX ;Is the disk empty?
1620 .BEQ EXTSET ;If not, preserve value of MAX.
1630 .JSR SHUFFLE ;Then sort it.
1640 .LDA STA ICAM ;Restore MAX.
1650 .LDA MAX ;
1660 .JSR EXTSET ;
1670 .RTS ;
1680 ;
1690 ;
1700 .FINDMAX ;
1710 .JSR FRSTREC ;Set pointer to first record.
1720 .LDY #$80 ;No records found yet.
1730 .STY MAX ;
1740 .FINDLOOP ;
1750 .LDA (CURRENT) ;Check if we've reached the end.
1760 .BEQ EXTEND ;If it's zero, then we've reached the end.
1770 .JSR NEXTREC ;Move to next record.
1780 .INC MAX ;Increment file count.

Turn to Page 18 ->
Utility

From Page 17

1.790  LDA MAX ;Have we read 64
1.800  files?
1.800  CMP #64
1.810  BCC FINDLOOP; If not then loop
1.820  P BACK.
1.820  EXTEND
1.830  RTS ;Return.
1.840  ;
1.850  SUB SHUFFLE
1.860  JSR FRSTREC ;Point to the first d
1.870  irctory record.
1.880  2550  LDX #00 ;File #0.
1.890  2570  TRLOCP2
1.900  2380  LDX #00 ;Check flag byte.
1.910  2390  LDA (CURRENT),Y
1.920  2410  BNE SKIPFILE
1.930  2410  LDX #03 ;Point to start s
1.940  ector.
1.950  2420  TRLOCP2
1.960  2430  LDA (CURRENT),Y ;Move start i
1.970  nfo from record to SELT.
1.980  2440  STA SECT,3,Y
1.990  2450  INY
2.000  2460  CNY #50s
2.010  2470  BNE TRLOCP2
2.020  2470  TXA ;Multiply file #
2.030  by 4 to generate mask.
2.040  2490  ASL A
2.050  2500  ASL Y
2.060  2510  STA MASK
2.070  2520  JSR SETL ;Thread through t
2.080  he links.
2.090  2550  SKIPFILE
2.100  2560  JSR NEXTREC ;Next record?
2.110  2570  INX
2.120  2580  CNY MAX ;Finished?
2.130  2590  BNE TRLOCP2; If not, then lo
2.140  op.
2.150  2590 ;
2.160  2590  RTS ;Return.
2.170  2590 ;
2.180  2590  RTS ;Return.
2.190  2590  RTS ;Return.
2.200  2590  RTS ;Return.
2.210  2590  RTS ;Return.
2.220  2590  RTS ;Return.
2.230  2590  RTS ;Return.
2.240  2590  RTS ;Return.
2.250  2590  RTS ;Return.
2.260  2590  RTS ;Return.
2.270  2590  RTS ;Return.
2.280  2590  RTS ;Return.
2.290  2590  RTS ;Return.
2.300  2590  RTS ;Return.
2.310  2590  RTS ;Return.
2.320  2590  RTS ;Return.
2.330  ;
2.334  TRACEn
2.335  JSR FRSTREC ;Point to first d
2.336  irctory record.
2.337  2350  LDX #00 ;File #0.
2.338  2370  TRLOCP2
2.339  2380  LDX #00 ;Check flag byte.
2.340  2390  LDA (CURRENT),Y
2.341  2410  BNE SKIPFILE
2.342  2410  LDX #03 ;Point to start s
2.343  ector.
2.344  2420  TRLOCP2
2.345  2430  LDA (CURRENT),Y ;Move start i
2.346  nfo from record to SELT.
2.347  2440  STA SECT,3,Y
2.348  2450  INY
2.349  2460  CNY #50s
2.350  2470  BNE TRLOCP2
2.351  2470  TXA ;Multiply file #
2.352  by 4 to generate mask.
2.353  2490  ASL A
2.354  2500  ASL Y
2.355  2510  STA MASK
2.356  2520  JSR LINK ;Thread through t
2.357  he links.
2.358  2550  SKIPFILE
2.359  2560  JSR NEXTREC ;Next record?
2.360  2570  INX
2.361  2580  CNY MAX ;Finished?
2.362  2590  BNE TRLOCP2; If not, then lo
2.363  op.
2.364  2590 ;
2.365  2590  RTS ;Return.
2.366  2590 ;
2.367  2590  RTS ;Return.
2.368  2590  RTS ;Return.
2.369  2590  RTS ;Return.
2.370  2590  RTS ;Return.
2.371  2590  RTS ;Return.
2.372  2590  RTS ;Return.
2.373  2590  RTS ;Return.
2.374  2590  RTS ;Return.
2.375  2590  RTS ;Return.
2.376  2590  RTS ;Return.
2.377  2590  RTS ;Return.
2.378  2590  RTS ;Return.
2.379  2590  RTS ;Return.
2.380  2590  RTS ;Return.
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SOFTWARE ACCESSORIES SUPPLIED IF REQUIRED SPECIALISTS
HINTS AND ALGORITHMS

IN our March issue we set out a programming challenge to test a roulette gambling method. The strategy was always to bet on the red numbers and if you lost, to double the bet until you won.

This month we present you with a plain English description of how to translate the betting strategy into a program. You can refer to the March issue to compare the techniques here with the original problem.

In the next edition of Atari User we will give you a no-frills program that will do the job, along with suggestions for further improvement. You can check this against your own efforts and perhaps sort out any points you had difficulty with.

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

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

So, without further ado, I present the hints for the casino problem...

THERE are many ways of writing a program. One method is called top down programming, where you plan the outermost level of your code first and work down, sub-dividing the problem until you reach the nitty-gritty.

I prefer to write the crux routine first and build the rest of the program around it. This is usually known as bottom up programming although I call it middle out, as the first routine you write ends up in the middle of the code and you put all the fancy extras around it. Let's see how we can program this problem using the bottom up method.

There are 37 positions on the roulette wheel, ranging from 0 to 36, so the first thing we have to do is to produce a number in that range. In general, the random number function INT(RND(0)*N+1) will generate a number between 0 and N. So to get our roulette value we use the expression INT(RND(0)*37).

Having spun the wheel we need to see if the number generated is a red number, in other words have we won? The red numbers are:

15, 4, 2, 17, 6, 13
11, 8, 10, 24, 33, 28
31, 22, 29, 28, 35, 26

We could test these against our random value from each spin with a separate IF statement but this would take 18 lines.

```
IF roll=15 THEN
IF roll=14 THEN
IF roll=2 THEN
```

There is a rule in computing that when you find yourself writing nearly identical lines of code, there is an easier way to do it.

In this case the answer is to use an array to hold the red number data, so that we need only have one IF statement inside a loop.

Before we enter the loop we must set a variable - WIN would be a good name. Then if one of our array values matches the spin we change its value to something else.

However, we need to initialise the array at the start of the program by reading the red numbers from a data statement.

Having found out whether we have won, appropriate action can be taken: either add twice the bet money to our pot if we have won, or double the bet if we have not. At this point we need to test if we have the amount to cover the bet in our pot—if not we are broke and the run ends. Otherwise we subtract our bet from the pot and try again.

We should also keep track of how many bets we have placed. That should be easy, simply increment a counter every time—and look for some criteria for when to stop, other than losing all our money.

For example, we could stop when we have doubled our initial pot, or when a certain number of bets have been laid. It would also be useful to keep track of the largest bet we have had to place.

Finally to stop the program looking boring when it's running, after each bet let's print its value and what's in the pot as well as the bet number every spin of the wheel.

● Well, what are you waiting for? Get tapping away at that micro and I'll see you next month with a solution.

April 1988 Atari User 21
Atari have always had the greatest arcade games in the galaxy, now they're adding even more winners to the collection. From the high speed skills of handling a WW1 biplane, to the brain-aching Archon battle of wits. Whether you're landing the punches with Fight Night or using the awesome power of Thunderfox to blast the enemy, Atari give you the best combination of graphics speed and skill this side of Alpha Centauri.

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More power, speed for MicroLink

MAJOR improvements to MicroLink have been announced, following the successful outcome of prolonged negotiations with Telecom Gold.

The enhancements are based on speeding up connect time on the system, with the aim of bringing down the cost to subscribers.

"With the vast increase in telex traffic in particular over the last few months, one of our top priorities has been to simplify the sending of messages", said the head of MicroLink, Derek Meakin.

"Our programmers have achieved a significant breakthrough which we are now implementing. We are also completing the switch to our new Prime 9955 computer which provides more than four times more power than has been available to MicroLink subscribers so far.

"The other big development is the opening of 2400 baud access to the MicroLink computer - doubling the speed at which users can transmit and receive data".

Costs will be cut

Now disabled study at home

PHYSICALLY disabled people in London are being helped toward employment with the aid of MicroLink.

Over the next three years 60 housebound residents of Greenwich will be given the chance to study computing and information technology in their own homes.

Aim of the scheme, funded by the Urban Aid Programme and Greenwich Council, is to enable trainees to eventually either gain employment as outworkers for businesses or to become self-employed in computer-related activities such as programming, word processing or desktop publishing.

Each trainee is being provided with a computer, modem and printer. A tutor will regularly visit each trainee to sort out any problems and to check on their progress.

"But there will also be a constant 24 hours a day computer link to the base at Greenwich ITEC through MicroLink", said tutor Marion Robeson.

"The first 20 students start this year and should be fully trained after twelve months. “During the year we hope employers will be found who are willing to provide work experience for the trainees”.

Wanted - a disaster

IF anyone out there has recently found disaster turning into a crisis, there could be a silver lining to their troubles.

A company on MicroLink specialising in providing locations for films and still photography is asking other users to help.

"We’ve got a stinker of a job", says spokesman Keil Gatherer.

"Our brief is to find a location for a photo to illustrate an advert for a smoke detector.

"We need a recently burnt-out detached house whose roof timbers are charred and standing out against the sky - we’re so desperate, any part of the country would do.

"We’re offering a small reward to any MicroLink user who finds the building we eventually use”.

DIAL FOR A DEMO

COMPUTER users who haven’t yet seen the massive range of facilities MicroLink has to offer can now logon directly for a free interactive demonstration — and all from the comfort of their own home or office.

All they need is a 1200/75 baud modem and telephone connection to 01-583 1275.

Once online, at the >PAD prompt simply key CALL 72 then Return. When asked to sign on, key ID MAG111 then Return. The password DATABASE, followed by Return, will bring up the menu.

There are four sections to browse through — communication, information, services and leisure — each describing a different aspect of the system.

"This free demo vividly illustrates that MicroLink has lots to offer everybody from hobbyists to business executives", said head of MicroLink, Derek Meakin.

Laying it on the line

WHISPER it if Mary Whitehouse is about, but MicroLink subscriber Keith Channing is looking for people who like to take their clothes off.

Not that there’s anything naughtily going on. Keith is membership secretary of CORAL — standing for Clothes Optional Recreation and Leisure — which is a beach, camping, and general outdoor naturist group.

At present he is trying to bring together all those MicroLink subscribers who are naturists so that they can chat about their pastime via electronic mail.
IT is immensely pleasing, though as we adventurers would stoutly maintain, unsurprising and only natural, to see that adventures are still very much up there with the other types of entertainment software when it comes to the inevitable round of software award ceremonies.

One of the accolades recently dished out at such a prestigious software industry awards binge was for the adventure of the year.

If you take a quick peep back at the January issue of Atari User, you'll see that my vote for the best adventure went to Infocom's Stationfall, which marked the welcome return of Floyd the mischievous, scatterbrained, but ultimately lovable chatterbox of a robot. To my mind, Stationfall has one of the most engaging and teasing plots, with superb writing, imaginative puzzles and, without a shadow of a doubt, the most dramatic ending ever written for a computer adventure game. And, the piece de resistance, Stationfall has Floyd.

Now I don't like to boast about my undoubtedly fine judgement, but the aforementioned prize for best adventure of the year was awarded - you've guessed, of course - to none other than Stationfall.

Runner-up was Rainbird's Guild of Thieves which, if you look once more at my list in the January issue, was also my second-placed favourite.

So there you are. Any unbiased observer simply has to be forced to the conclusion that either the judges' first read Rouloc's column and decided that his impeccable assessment was good enough for them and just followed his lead, or that they all have the same unquestionably excellent taste as myself. Well, that's my opinion and I'm sticking to it!

Looking back just once more - promise - to my list of best adventures you'll notice that in third place is the very funny and innovative Hitch-Hiker's Guide to the Galaxy. This leads me neatly, and quite coincidentally, to my next piece of news.

Although it's not just about adventures, I simply must tell you about a smashing paperback that my good friend Brillo - of ST User fame - has just kindly loaned me. Do you know, once I picked up this book with my hot little hands, I just couldn't put it down until I had read every one of its 182 highly entertaining pages.

The paperback has the words Don't Panic written in large friendly letters on the front cover and is called The Official Hitch-Hiker's Guide to the Galaxy Companion. It has been written by Neil Gaiman, is published by Titan Books of 58 St Giles High Street, London WC2H 8LH and costs a measly £3.95.

The OHHHGTG - I can't type that title out again in full or I'll be here all day and there are still plenty of trolls to be trounced before nightfall - charts the complete history of the famous series and includes many extracts not previously published, mainly because they were cut from final versions.

Everything you ever wanted to know about The Guide, the making of the different series - radio, book, TV, and so on - the characters and the life and times of the original author, Douglas Adams, is here. And there's a whole chapter on the famous computer game, hence it's relevance to this column.

Neil Gaiman has written the whole thing in a witty and light-hearted style that blends perfectly with the material itself. There are bags of quotes, interviews, anecdotes and insights. It really makes you want to go back to

**Turn to Page 26**

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**WENDY'S RAVES**

Here's a list of Wendy Albiston's favourite adventures. Although it doesn't quite match mine - but who's could - it does reflect the point that everyone has different tastes. Thanks Wendy.

1. Stationfall (Infocom)
2. Hitch Hiker's Guide to the Galaxy (Infocom)
3. The Pawn (Rainbird)
4. Jewels of Darkness (Rainbird/Level 9)
5. The Dark Crystal (Sierra On-Line)
6. The Guild of Thieves (Rainbird)
7. Spellbreaker (Infocom)
8. Ballyhoo (Infocom)
9. Gnome Ranger (Rainbird)
10. Morden's Quest (Melbourne House)
11. Suspect (Infocom)
12. The Hulk (Scott Adams)
Adventuring

From Page 25

the original books and read them again, immediately.

As Douglas Adams is reputedly to have said about Gaiman’s book: “Certainly the most outstandingly brilliant book to have been written about the HHGGS since this morning.” Go buy it, settle down with a Pan Galactic Gargle Blaster and enjoy.

Finally, there’s just room to mention two of your letters. Sam Ingram of Yeverton in Quest for Eternity has found the cartridge and the manual but can not open the crate or get the computers to work. Can anyone out there help him?

The second letter is a real mystery. It takes the form of a diary recording the encounters on different levels in Alternate Reality. Accompanying it were some enormous hand-written maps covering the first four levels of that adventure. I don’t know who you are, Alien, but your documents sure as heck impressed me.

Until next month, keep out of swamps and slime pits.

THE PAWN: Solution - Part three

In the chamber with the dragon shine white at the shadows. Point at the shadows then go North. Throw the potion bottle at Kronos and press the nozzle. Look inside the top hat, examine the rabbit and the rack.

Get the pointy hat, wand and cloak. Wear the cloak and hat and go to hell where the devil waits. Give the aerosol to the devil. Go to the entrance by the small cave near the laboratory and open the doors. Go South and knock on the door. Say “no”, then go South and examine the listing. Type in the word DEBUG and press Return.

Go to the cavern near the lava river and move the pedestal to get at the key. Go to the snowman and melt him with white. Go to the store and get the spiky boots and wear them. Get the prism and unlock the door on the landing. That’s all I’m told.

Once you have examined the listing and typed DEBUG, you can keep on experimenting and exploring without getting killed. You haven’t got all the points, but at least this partial solution should have helped you through most of the problems.

Why not start again now and tackle it more comprehensively? But before you do, try typing DEBUG and going past the southern edge of the adventure.

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More for your dollar

ANDRÉ WILLEY takes a look at some US products to supercharge your Atari

COMANIES in the USA have been producing 8 bit Atari products for many years, but their products always had the disadvantage of being rather expensive in this country. UK dealers had to order their stock directly from US wholesalers, giving rise to some pretty hefty shipping and customs charges.

Recently, however, one or two UK Atari distributors have struck deals to supply US products at very reasonable prices. There are still only a few available and in future issues of Atari User we'll take a look at some of them, but for the moment let's consider the SpartaDos range of products by ICD, now released by Frontier Software.

SpartaDos is probably the most sophisticated disc operating system for the 8 bit, and knocks the top off DOS 2.5 and the happily now extinct DOS 3.

It supports multiple sub-directories (known as folders on the ST), full time/date stamping of files, full random access to any byte within a file, batch command files, hard disc access, and a whole host of more specialist features.

It also keeps most of its code locked away under the operating system so you get more free memory for your programs. Even with the most powerful configuration (version 3.2) you will still have 32,501 free bytes available to Basic, and the smaller versions can leave as much as 36,176 available. These figures should be set against 32,274 with DOS 2.5 and 37,902 with no DOS at all.

If you also use ICD's R-Time 8 battery backed-up clock cartridge the correct time and date will always be available, and they will be stamped on each new file created. The clock module plugs into the standard cartridge port and has a replacement socket on the top for another cartridge.

I have tried it with every cartridge I've got - Action!, Mac/65, Basic/XE, AtariWriter and so on - and it seems completely transparent to everything. There is even a Z: driver which allows you to access the clock directly from Basic.

However, where SpartaDos really

<table>
<thead>
<tr>
<th>Operation</th>
<th>DOS 2.5</th>
<th>SpartaDos</th>
<th>SpartaDos + US Doubler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format only (Single)</td>
<td>24.0</td>
<td>22.9</td>
<td>23.9</td>
</tr>
<tr>
<td>Format only (Double)</td>
<td>26.6</td>
<td>-</td>
<td>23.9</td>
</tr>
<tr>
<td>Format + write Dos (Single)</td>
<td>39.0</td>
<td>37.5</td>
<td>33.9</td>
</tr>
<tr>
<td>Format + write Dos (Double)</td>
<td>48.0</td>
<td>-</td>
<td>32.9</td>
</tr>
<tr>
<td>OPEN, write 10,000 bytes, CLOSE (Single)</td>
<td>12.6</td>
<td>11.6</td>
<td>9.3</td>
</tr>
<tr>
<td>OPEN, write 10,000 bytes, CLOSE (Double)</td>
<td>15.3</td>
<td>-</td>
<td>7.9</td>
</tr>
<tr>
<td>OPEN, read 10,000 bytes, CLOSE (Single)</td>
<td>10.7</td>
<td>10.4</td>
<td>4.4</td>
</tr>
<tr>
<td>OPEN, read 10,000 bytes, CLOSE (Double)</td>
<td>10.2</td>
<td>-</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Dos 2.5 Double density figures refer to enhanced density mode. True double density is only available with a US Doubler.

Figure 1: 1050 Speed comparison table (in seconds)
comes into its own in conjunction with another ICD product—the US Doubler. This comes in the form of two new plug-in ICs for your 1050 drive which not only give it the ability to work in true double density but also speeds up the data transfer rate considerably.

The installation instructions are clear and concise, but you will need to take your 1050 apart to get at the motherboard. Although there is no reason why a complete novice shouldn’t be able to fit the chips—it’s not a difficult task—some caution should be exercised since opening up the casing invalidates your guarantee.

Once you’ve got into the drive—and some are so well constructed you’ll virtually need a can opener—you must remove the two existing ICs from their sockets and install the ICD replacements.

Some older 1050 drives were fitted with slightly different chips—and if you have the wrong type you have the option of chipping out and sending off for the matching US Doubler ICs, or of making a very simple adjustment to two jumper leads on the board. This second option does require the use of a soldering iron, so think carefully if you do happen to find yourself in this situation.

Once installed, and it is only the work of half an hour once you’ve read the instructions, your drive is supercharged. Upon booting your SpartaDos master disc the old bleep, bleep, bleep sound is replaced by a staccato burst of machine-gun fire.

Reading data from the disc is roughly four times faster than with a standard 1050, but after allowing for seek time—the time taken to move the head around the disc—the average speed increase is nearer three times. The increase in speed of writing is slightly less at roughly twice as fast—see Figure 1 for full benchmark timings.

The other major feature of the US Doubler is to give access to true double density, giving 180k per disc as opposed to 90k in single or 130k in enhanced density.

Double density actually uses 720 sectors per disc, as with single density, but each sector contains 256 bytes of data rather than 128. This does mean that you’ll have to remember to format and write in standard mode if you want to give a disc to someone without a US Doubler, but this is very simple since SpartaDos is intelligent enough to detect what type of disc it is using.

SpartaDos has so many features that it’s impossible to describe them all in full, but Figure II will give you some idea of its amazing power and flexibility when compared with Dos 2.5.

I particularly liked the time/date stamping of files and the excellent sub-directory facilities—and also their ease of use from Basic and other languages. I prefer to use command processors rather than menu systems for ease of use, but that said, a very comprehensive menu system is available for beginners.

Whichever of the many configurations

<table>
<thead>
<tr>
<th>Dos 2.5</th>
<th>SpartaDos</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Dirs</td>
<td>Disc directory, any drive (Dos 2.x format)</td>
</tr>
<tr>
<td>B</td>
<td>Car</td>
<td>Go to cartridge (if present)</td>
</tr>
<tr>
<td>C</td>
<td>Copy/Copy</td>
<td>Copy file(s) (multiple drives)</td>
</tr>
<tr>
<td>D</td>
<td>Erase</td>
<td>Delete file(s) from disc</td>
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<tr>
<td>E</td>
<td>Rename</td>
<td>Rename file(s) on disc</td>
</tr>
<tr>
<td>F</td>
<td>Protect</td>
<td>Protect file(s) from accidental erase</td>
</tr>
<tr>
<td>G</td>
<td>Unprotect</td>
<td>Remove erase protection from file(s)</td>
</tr>
<tr>
<td>H</td>
<td>N/A</td>
<td>Write Dos files (handled during format by N/A)</td>
</tr>
<tr>
<td>I</td>
<td>Xinit</td>
<td>Format disc (see also N/A)</td>
</tr>
<tr>
<td>J</td>
<td>Dupdisk</td>
<td>Duplicate whole disc</td>
</tr>
<tr>
<td>K</td>
<td>Save</td>
<td>Save binary file (see also Append)</td>
</tr>
<tr>
<td>L</td>
<td>Load</td>
<td>Load binary file (see also Off_Load)</td>
</tr>
<tr>
<td>M</td>
<td>Run</td>
<td>Run machine code at given address</td>
</tr>
<tr>
<td>N</td>
<td>Na</td>
<td>Create MEM.SAV (SpartaDos is always in memory)</td>
</tr>
<tr>
<td>O</td>
<td>Xcopy</td>
<td>Copy file(s) (single drive) (see also Spycop)</td>
</tr>
<tr>
<td>P</td>
<td>Ainit</td>
<td>Format (Single density Dos 2.0 mode)</td>
</tr>
<tr>
<td>Q</td>
<td>Append</td>
<td>Save binary file at end of exiting file</td>
</tr>
<tr>
<td>R</td>
<td>Autobat</td>
<td>Select batch file to run when reset is pressed</td>
</tr>
<tr>
<td>S</td>
<td>Basic</td>
<td>Turn internal basic on or off</td>
</tr>
<tr>
<td>T</td>
<td>On/Off</td>
<td>Set filename to load when no Dos present on disc</td>
</tr>
<tr>
<td>U</td>
<td>Boot</td>
<td>Modify hard disc drive access number</td>
</tr>
<tr>
<td>V</td>
<td>Bypass</td>
<td>Give current disc statistics</td>
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<tr>
<td>W</td>
<td>Chkdsk</td>
<td>Change time/date stamp on file(s)</td>
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<tr>
<td>X</td>
<td>Chtd</td>
<td>Change volume name of disc</td>
</tr>
<tr>
<td>Y</td>
<td>Chvol</td>
<td>Make new sub-directory (single drive)</td>
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<td>Z</td>
<td>Chdir</td>
<td>Change default path details for current drive</td>
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<tr>
<td>A</td>
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<td>Set system date</td>
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<td>B</td>
<td>Date</td>
<td>Delete sub-directory (must be empty)</td>
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<tr>
<td>C</td>
<td>Deldir</td>
<td>Show path to specified sub-directory</td>
</tr>
<tr>
<td>D</td>
<td>Dirm</td>
<td>Disc directory (Extended format: time/date/bytes)</td>
</tr>
<tr>
<td>E</td>
<td>Dump</td>
<td>Print file as Asci + hex digits to screen</td>
</tr>
<tr>
<td>F</td>
<td>Key On/Off</td>
<td>Type-ahead buffer on or off</td>
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<tr>
<td>G</td>
<td>Lock/Unlock</td>
<td>Protect whole disc from write operations</td>
</tr>
<tr>
<td>H</td>
<td>Mdir</td>
<td>As for DUMP, but to print memory contents</td>
</tr>
<tr>
<td>I</td>
<td>Mem</td>
<td>Show current Dos memory/himem values</td>
</tr>
<tr>
<td>J</td>
<td>Menu</td>
<td>Load menu system (may be set as default)</td>
</tr>
<tr>
<td>K</td>
<td>Off_Load</td>
<td>Binary load file, with offset</td>
</tr>
<tr>
<td>L</td>
<td>Pause</td>
<td>Wait for a key to be pressed (in batch files)</td>
</tr>
<tr>
<td>M</td>
<td>Port</td>
<td>Change the RS-232 configuration</td>
</tr>
<tr>
<td>N</td>
<td>Print</td>
<td>Echo screen output to another device like P: or C:</td>
</tr>
<tr>
<td>O</td>
<td>Putrun</td>
<td>Add run address to binary file</td>
</tr>
<tr>
<td>P</td>
<td>Rd</td>
<td>Set up ramdisk (many configurations available)</td>
</tr>
<tr>
<td>Q</td>
<td>Rpm</td>
<td>Test disc drive rotation speed</td>
</tr>
<tr>
<td>R</td>
<td>Rs232</td>
<td>Load RS-232 driver for 850 module/P:R: connection</td>
</tr>
<tr>
<td>S</td>
<td>Time</td>
<td>Set system time</td>
</tr>
<tr>
<td>T</td>
<td>Tdline</td>
<td>Load time/date header line routine</td>
</tr>
<tr>
<td>U</td>
<td>Td On/Off</td>
<td>Turn time/date line on or off (requires Tdline)</td>
</tr>
<tr>
<td>V</td>
<td>Tree</td>
<td>Show all sub-directories/files (alphabetical)</td>
</tr>
<tr>
<td>W</td>
<td>Type</td>
<td>Show Ascii file contents on screen</td>
</tr>
<tr>
<td>X</td>
<td>Verify</td>
<td>Turn disc write verify on or off</td>
</tr>
<tr>
<td>Y</td>
<td>On/Off</td>
<td>Turn off I/O redirection (disable PRINT/patch mode)</td>
</tr>
<tr>
<td>Z</td>
<td>Zhand</td>
<td>Activate Z: for time/date handling from Basic</td>
</tr>
<tr>
<td>A</td>
<td>Filename</td>
<td>Execute batch command file (extender = BAT)</td>
</tr>
<tr>
<td>B</td>
<td>Dn</td>
<td>Execute machine code file (extender = COM)</td>
</tr>
<tr>
<td>C</td>
<td>Select</td>
<td>Select new default drive number, n</td>
</tr>
</tbody>
</table>

Figure II: Dos 2.5 and SpartaDos features comparison

Turn to Page 30 ▶
tions you decide to use, the manual provides clear instructions for every feature, even down to such things as file formats and fully documented machine code access. SpartaDos can also read, write and format Dos 2 discs automatically, so you need never worry about which type you currently have in the drive. It can even handle a hard disc if you happen to have one.

I've come across a couple of minor quirks, but nothing too serious. One thing I did find was that files opened for access in update mode will be extended in size if you try to read a byte beyond the current end-of-file marker.

This is acceptable when writing additional data, but when reading I feel you should receive an error message. For example, if you have a disc file containing a single line of text and you try to read in two lines while in update mode, the file will quickly be extended to fill all available space on the disc.

The moral is never read beyond the end of a file in update mode.

I would thoroughly recommend both SpartaDos and the US Doubler, and at £49.95 they're a give-away compared to the import prices – you'd have paid £79.95 for the US Doubler alone.

The R-Time 8 is also quite useful, but by no means essential unless you are using a mass storage device such as a hard disc – after all you can always use the TIME and DATE commands at the start of a session. Otherwise it's still a little pricey at £49.95.

However, if you are still using an unmodified 1050 with Dos 2.5, now is the time to move up to the power and flexibility of SpartaDos.

Products: SpartaDos £29.95
            US Doubler   £29.95
            SpartaDos + US Doubler £49.95
            R-Time 8 cartridge £49.95
Supplier: Frontier Software, PO Box 113, Harrogate, North Yorkshire, HG2 0BE.
Telephone: 0423 67140

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The DB2100R Data Bank stores 150 sets of data, each with seven alpha numeric characters and 12 numbers. There's a fast search facility, a secret mode protected by a user-defined password and an eight-digit calculator. Battery included.

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<th>Product</th>
<th>RRP</th>
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<th>YOU SAVE</th>
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<tr>
<td>Atari ExecuCard</td>
<td>£5.99</td>
<td>£4.99</td>
<td>£1</td>
<td>FREE</td>
</tr>
</tbody>
</table>

Turn to page 61 to take advantage of this superb offer.
On-the-ball management simulation

Product: League Challenge
Price: £19.99
Supplier: Atlantis, 28 Station Road, London SE26 5AG.
Tel: 01-771 8642

This is a game of management that allows you as a football critic to take the hot seat and prove your worth by taking charge of a league team.

You have the chance of aiming for Division One, and maybe even completing the double by being voted Manager of the Year.

League Challenge is loaded in two parts - the main program followed by a short amount of data. Once loaded you are asked to sign on the dotill line and select your team. There are 64 names available to choose from or you can use your own 14 character name.

The screen displays are mainly text but there are some graphics during matches.

You start the actual game with the mid-week options - looking over your playing staff as well as your club's statistics. You can load and save data here to allow you that mid-season break to relax.

The save option only saves the necessary data, so the main program has to be loaded first.

Mid-week decisions lead you into the preparation for your first league match. Your earlier training choice may well determine your fate on Saturday. Do you choose an easy session or do you put your players through their paces?

It's up to you, but the cost of training increases with your level of choice.

Now it's on to team selection time. The ratings for defence, midfield and attack are shown along with both teams' fitness ratings allowing comparisons to be made.

Individual players have both a skill and a fitness level which vary from one to nine. The former remains the same throughout the season but, fitness will fluctuate depending on whether a player is resting or playing.

You can change your team's formation by selecting and removing players to field a combination which best matches your opponents. League Challenge then switches to a very basic graphics mode which is, however, sufficient for playability. So sit back and watch the action as the goalmouth highlights are shown.

Once it is all over, the match result is displayed along with any injuries incurred. The results of the other matches in your division are also shown with a full league table.

Your weekly turnover is shown at the end of each match - you can go into debt, but only to the amount of £250,000. Pass this and the club is declared bankrupt and the game starts afresh.

So be careful when you buy players. But make sure you have the money in the bank before writing that cheque because if it won't bounce - you will - right back to the start.

Players available for transfer are shown from time to time and as a maximum of 15 players is allowed in a squad at any one time remember to leave a space for that star signing.

There are 15 league matches to be played in a season together with knockout cup matches.

An important consideration for cup matches is fitness. If a replay is necessary the option for team re-selection is not available, so it may be advisable to use players with a high fitness rating.

When the season is over you receive a bonus payment which depends on your league position. The top three teams are promoted while the bottom three are relegated.

You keep the same players for the start of the following season, but their skill and fitness levels may change.

All in all it is a good game - not an original theme, but it does have variations on other similar ones. It's very easy to use and offers entertainment for both novice and expert.

The screens change quickly and only the match highlights are shown, so there's no time for tedium to set in. Sound could have been used to add atmosphere to the match highlights: It would have been nice to hear the roar of the crowd when a goal was scored.

The graphics are a little on the weak side and the game deserved more time and effort being devoted to this area. But overall playability is the most important factor. Everyone likes glossy graphics and sound but if - as in this case - the game is addictive and enjoyable then that's what counts the most.

Keith Pattison

Sound..........................N/A
Graphics.....................4
Playability...................8
Value for money.............8
Overall.........................7

April 1988 Atari User 31
Nerve-tingling combat

Product: Computer Ambush
Price: £19.99
Supplier: SSI/US Gold, Units 23 Halford Way, Halford, Birmingham BS 7AX
Tel: 021-356 3388

"THUS those unable to understand the dangers inherent in employing troops are equally unable to understand the advantageous ways of doing so."

This is a quote taken from The Art of War by Sun Tzu around 500 BC which makes reference to the tactical deployment of troops in a battle.

Computer Ambush from Strategic Simulations – SSI is a wargame based on this theme and one that superbly captures the nerve-tingling excitement and fear of war.

The game puts you in command of a troop of American GIs in France during World War II pitted against a squad of German soldiers in a small village.

You can choose whether you want a computer or human opponent, and depending on your choice you are offered a list of different scenarios.

You can select from various options such as sound on or off, whether you can see the enemy or not, and how long each play turn lasts. These will affect the game, so choose wisely.

As with all SSI simulations, the game is split into different sequences of play, or phases as they are known – entering commands for the deployment of troops, allowing the computer to resolve the battle situations, receiving reports on the results and save a game.

A map of the village can be displayed at any time but the full map is too large to be shown in its entirety. When this option is chosen you are asked which row of the map you want to appear on the bottom of the screen and only segments are shown.

Because the game is based on the individual actions of all soldiers, each has his own characteristics which affect his actions within a given scenario – very similar to characters created in fantasy role-playing games.

The players' characteristics include rank, name, body weight, physical strength, dexterity and so on.

Each soldier can be given many different orders, entered in an abbreviated form. For example PB means prepare bayonet and HH is the order to engage in hand-to-hand combat. At any time during the game any soldier's status report can be called giving, for instance, his position or any wounds he has received.

The move command is brought into play by using M followed by parameters that control who goes where, and the distance and manner in which progress is made, for example, crawling or running.

The rules here are quite involved, but are explained in great detail in the manual.

Three types of weapons are available – fire types (bolt action and automatic rifles), explosives (hand grenades) and hand-to-hand weapons (knives and bayonets). Here again, the rules are involved, but they are well covered in the literature.

One section contains dossiers on the individual soldiers on both sides. I particularly liked this as it made for interesting and amusing reading.

The American soldiers have what can only be called Yankee names such as Sergeant J.C. "Buck" Padocks, Corporal Rodney "Rich-Boy" Richfield and P.F.C. Aloysius "Gunner" Garrity.

The same applies for the Germans, with names like Obergefreiter Erick Braun and Obergefreiter Ludwig "Lover" Schneider. I was left in no doubt who I was fighting.

The packaging is superb. The box contains a rule book, game disc, two mapboards, grease pencils and two squad cards.

This is quite a complicated game to get to grips with but once you have achieved a good working knowledge of the rules the simulation will flow quite smoothly – and you do have the help of quick reference sheets.

The computer interpretation of the mapboard is well done and very easy to follow. And the map you can draw on is an invaluable aid and a very good idea.

I found it very easy to totally immerse myself in this challenge and there was more than one occasion when I was panicking when the Germans had me cornered. Even though it carries quite a hefty price tag – £19.99 – it's well worth every penny.

Neil Fawcett

| Documentation | 10 |
| Graphic | 7 |
| Playability | 10 |
| Value for money | 10 |
| Overall | 10 |
Flight of fantasy

Program: Space Shuttle
Price: £1.99
Supplier: Firebird, 64-76 New Oxford Street, London WC1A 1PS.
Tel: 01-379 6992

If the title sounds familiar it’s because this is a budget re-release of a 1983/4 game from Activision. Firebird has snapped up all Activision’s old titles, so we can look forward to seeing some old favourites again.

You are in control of the shuttle Discovery on its 101st mission and your target is an orbiting satellite 210 nautical miles above the Earth.

Your mission is to launch, rendezvous with the satellite and return safely to Earth as many times as you can without using any fuel.

There is one snag – every time you dock with the satellite its orbital path becomes more and more erratic. Your success in coping with this aberration is evaluated at the end of your mission.

There are three levels to pursue: The first is Automatizer, where the shuttle flies practically by itself, and all you have to do is dock with the satellite.

The second is Simulator, which is a simulation of the flight controlled by you and the computer. Here you have to use most of the available keyboard commands and life turns out not to be quite the bed of roses you thought.

Finally STS 101 is a fully fledged shuttle flight where every key command is available to you, and you have the ability to abort all functions when and where you like.

This level is for fast thinkers with 12 pairs of hands, qualified NASA astronauts, Atari User reviewers or lunatics.

Your flight begins with the launch. You have to activate the engines and ignite them at the right time or the mission will be aborted.

After a successful lift off you must keep the engines at the right power – the computer displays the exact amount of thrust to use – and follow the digital course readout.

Once in space you have to stabilise orbit by opening the cargo bay doors and adjust your position so you have visual contact with Earth. This is achieved by setting your nose down.

Once a stable orbit is achieved you have to match your speed, relative position – X, Y and Z axes – and successfully rendezvous with the satellite.

All this involves major keyboard use, major joystick use and constant reading of the instructions so that you know what you are doing.

Once all this insanity is complete you must turn the shuttle around, fire the engines and decelerate to leave orbit. Don’t forget to close the cargo bay doors and set the correct pitch and course for re-entry.

At last, the landing! The pitch must still be at the correct setting and tight turns must be made to keep the shuttle on course.

Once sonic booms have been made by your shuttle and the chase planes, the shuttle becomes a glider. Before you reach the runway you must deploy the landing gear. Once the wheels touch, keep the nose down and slow to a stop. That wasn’t too difficult was it?

When landing is complete, the computer displays a numeric value showing what mistakes you made or, if you didn’t make any – which seems extremely unlikely – the number of dockings you successfully accomplished. For a title that was released four years ago, I’d say this has done very well indeed.

On the negative side there are too many commands to handle at once. I know it’s supposed to be a shuttle, but this is going a bit too far.

Also the evaluation messages at the end of your mission could have been written on screen rather than you having to resort to the instructions for enlightenment.

Talking of the instructions, the acronyms are a nuisance, as you have to keep looking up what TAEM means while burning up in re-entry!

Apart from some bad points Space Shuttle performs well. The graphics aren’t mind-shattering, and the sound limited to rumbles and bangs, but it is enjoyable and at a very good price.

Robert Swan

<table>
<thead>
<tr>
<th>Graphics</th>
<th>Sound</th>
<th>Playability</th>
<th>Value for Money</th>
<th>Overall</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>7</td>
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</tbody>
</table>
Strictly for aces

CHOC'S away Ginger, and it's out into the wide blue yonder blasting the odd German ME109 fighter as we play Ace of Aces, the new World War II flight simulator from Accolade - an American company which trades in Britain through US Gold.

After the initial loading sequence you are presented with a very attractive title screen and the strains of Land of Hope and Glory with machine-gun fire accompaniment.

In the nicely animated briefing room you are faced with the choice of a real mission or a practice flight. This is indicated by the Group Captain pointing at a board with a stick. Using the joystick you move the stick to your selection and press fire to make your choice.

The practice option offers you dogfight, train or U-boat - and I strongly recommend it to enable you to become accustomed to the controls.

Mission offers you the choice of train, U-boat, V-1 bombs or bombers. After you have chosen you will receive your intelligence report which will give you details of your target, the weather, recommended weapons you will need and your orders.

Once these have been taken in you go on to take a look at a map of England and France which shows your location - mid-Channel - the position of the your target and all major cities.

After this you must load up your Mosquito maverick fighter with bombs, rockets, fuel and cannon shells and prepare to take off.

This is indicated by a series of black and white freeze-frame photos of a klaxon, running feet (presumably yours), the propeller whirring away, the chocs being pulled away and then you waving goodbye from the cockpit. This very original idea adds considerably to the atmosphere.

Next comes another boring loading sequence, which when you have a tape version is exceptionally tedious.

Finally, after nearly 25 minutes, you get airborne. The game uses a split screen with the view from the cockpit showing white clouds rolling in the wind at the top.

Your instrument panel is shown at the bottom and indicates airspeed, radar, compass, altitude and artificial horizon. A nice feature is that as you move your joystick, the stick displayed on the screen moves too.

If at any point during the game you double click the fire button the screen will switch between the pilot's, engineers or bombardier's view of the aircraft. Using the same technique you can also view the map you saw early on.

Unfortunately, this way of selecting views can pose some problems. When in a dogfight with a German plane it is very easy to double click the fire button at the wrong time.

As you look bewildered, at these unwanted views or at the status screen - brought up by pressing the spacebar - the Germans can still fire at you and you can do nothing about it.

Also some joysticks have difficulty responding to the double click, so it would have been better if Accolade had the keyboard controlling this function.

I found this a very hard, if not impossible game to play as no indication of your status is available to you without viewing the appropriate screen.

Accolade could have at least displayed a short message when your plane catches fire or your navigator gets killed.

Having said this the graphics are excellent. There is a wide variety of styles, from cartoon figures in the briefing room to the still-frame photographs as you prepare to take off.

It's a shame that such a potentially good game has been spoiled by a poor choice of controls.

There is a nice use of sound throughout ranging from Land of Hope and Glory to the Last Post when you die, and the sound of klaxons when you take off is nicely implemented.

Overall I found it very frustrating. The loading time from tape is ridiculous - far too long to sustain interest.

And when you finally start flying you can't really last very long against an enemy who can fire at you while you can't fire at him.

However, the game shows potential and it is always nice to see American software in Britain. It would be good to have more transatlantic games made available.

As simulators go, Ace of Aces is one of the best I have seen and definately up there with the leaders.

If you have the patience of a saint and a very low blood pressure this is the game for you. All said and done it is well worth the price.

Ruth James

<table>
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<th>Sound</th>
<th>7</th>
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<td>Graphics</td>
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<td>Playability</td>
<td>6</td>
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<tr>
<td>Value for money</td>
<td>8</td>
</tr>
<tr>
<td>Overall</td>
<td>8</td>
</tr>
</tbody>
</table>
Has upgrading your computer given you hardware you no longer need? Or have changing interests left you with unwanted software? Then THIS is the place to advertise your surplus items. Atari User readers are always on the lookout for a bargain and this is the first place they look!

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**5 LINERS**

**FONT LOADER**

from Gary Hudson

This short program contains two machine code routines. One loads a font into memory and the other reinstall the character set if you accidentally press system reset.

To use it all you have to do is change FONT.SET in line 20 to the name of the new set you wish to load. The routines contained within this program can easily be removed and used in your own programs.

**PROGRAM BREAKDOWN**

10 Lowers the top of memory and pokes in the machine code
20 Opens a channel to the disc file containing the font
30 Reads in data from the disc and re-installs reset protection
40 Machine code load routine
50 Machine code jumped to when reset is pressed

**VARIABLES**

<table>
<thead>
<tr>
<th>MEM</th>
<th>Holds the current top of Basic memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>X, Y</td>
<td>Used to poke in the data</td>
</tr>
</tbody>
</table>

**LEGGET**

from Eric Liddell

There you are, out walking and having a lovely time when suddenly you hear a tremendous bang. When you look up you see a nearby volcano starting to erupt.

Huge pieces of rock and ash are flung into the air and you must dodge them in an attempt to get to the safety of a nearby cave represented by a green square at the bottom-right corner of the screen.

This is a simple but very addictive joystick controlled game. The positions of the falling rocks are totally random, and if one lands on you it will give you quite a headache. If you don’t make it to the cave, simply press a key for another game.

**VARIABLES**

| X, Y   | Horizontal and vertical position of the player |
| DX, DY | Horizontal and vertical direction of player |
| A, B   | Random positions of the falling rocks |

**Get it right!**

10 W7G (L)
20 YH (E)
30 CAT (E)
40 ELP (C)
50 J26 (S)
JARGON from Eric Liddell

ONE of the most amusing programs you can write for your computer is what is known as a buzz-word generator, and that's precisely what Jargon is. It will randomly string together two words to give you some computer speak. Any words can be placed in the data statements to produce your own jargon.

Some examples of computer jargon using the default data.

<table>
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<th>Micro registers</th>
<th>Software display</th>
<th>Program oriented</th>
<th>Micro friendly</th>
<th>User registers</th>
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</thead>
</table>

VARIABLES

A$ Reserves space to read the words from the data into this string.

A A random number to tell the computer how many words to read before printing the word.

GET IT RIGHT!

GTIA TEXT from Andrei Ellman

ONE of the problems with Graphics Mode 11 is that it has no text window, which can be frustrating at times. This program starts with a Mode 8 screen, pokes location 623 with 192 and then pokes location 87 with 11 to make the computer think that it is in Mode 11.

A Display List Interrupt is also set up in the text window. Once all this is done the program draws a picture using 16 colours to show you that you are in a GTIA mode.

GET IT RIGHT!
Tyrannts of Torment

GAVIN DAVIDSON puts you in control of a hi-tech buggy to try and save the world from total destruction by evil.

IT is the year 2521 and mankind is in dire straits. After the Great Destruction control of the world was seized by evil dictators. This catastrophe was detailed many years after in the Book of Wisdom.

Apparently Arthur Endit, a high ranking Pentagon officer, phoned the President to say he was coming over for some coffee and buns. Due to interference on the telephone line the President misinterpreted and thought he said: "The commies have begun to bomb", which is when the Great Destruction began.

All but a handful of resistance fighters have survived death at the hands of the tyrants. Now the time has come for someone to undertake an almost suicidal mission to overpower them. A super hi-tech buggy equipped with all the latest weapon systems has been put at the disposal of some brave soul. Right - you are elected.

The approach to the tyrants' stronghold has been streen with mines, so your buggy has been equipped with a suspension system that allows you to jump over them. Kamikaze defence fighters constantly buzz the area, so you have missiles to try to deal with them effectively.

Remember to use Get It Right! when typing the program in and save a copy before running it. Be especially careful with the data statements.

The Start key begins the game and Select will change the level of play. There are 21 levels, but you can only select up to level nine to start. To advance to the next level you must complete six miles in your buggy.

Distance completed and your score are displayed at the bottom of the screen. Twenty points are awarded for destroying a defence fighter and 10 for completing a mile. You only have one buggy, so be very careful.

The panel opposite shows all the controls, so on with the salvation of the world - it's up to you now.
320 POS 21, 7: "W5: "MILES: 8" SOUN D
0,0,0,0,0: FOR Y=0 TO 23: POKE 30208+V,5+
RND(0100): NEXT V
330 POS 27: "W5: "ATARI USER: APRIL
IL 88": POKE 77,0
340 FOR Y=1664 TO 1684: POKE Y,8: NEXT Y
350 POKE 1664,6: POKE 1665,6: POKE 1670,0,
02: POKE 1672,0: POKE 53260,170: POKE 53268,8
254: POKE 53259,0
360 SPEED=S:DISTANCE=24.5: R=8: T=8
370 SPEED=S: DISTANCE=0.25: DISTANCE=DISTANCE
-0.5: R=R: T=T+1
380 IF R=4 OR R=1 THEN R=11: SPEED=SPEED
-0.25: POKE 53260,170
390 IF R=1 THEN POKE 1684,1
400 IF R=2 OR DISTANCE=14 THEN POKE 1664,8
410 IF R=3 OR DISTANCE=14 THEN POKE 53260,170
420 IF Y<1 INT(SKILL) THEN GOTO 370
430 IF SPEED=C1 THEN SPEED=1
440 IF DISTANCE=14 THEN DISTANCE=14
450 IF Y<1 INT(SKILL) THEN GOTO 370
460 POKE 1682,160: SPEED=C1: DISTANCE=14
470 POKE 54277,64: POKE 53277,2: POKE 62
3,49: POKE 559,46: POKE 704,122: POKE 705,
4
480 POKE 53256,1: POKE 53257,1
490 IF Y<>80(1210)
500 IF Y<80(181)
510 FOR R=240 TO 0 STEP -10: SOUND 0, R
520 IF R=240 OR R=0 THEN GOTO 510
530 IF DISTANCE=14 THEN GOTO 550
540 IF (Y<1) INT(SKILL) THEN GOTO 370
550 IF DISTANCE=14 THEN GOTO 550
560 IF (Y<1) INT(SKILL) THEN GOTO 370
570 IF DISTANCE=14 THEN GOTO 550
580 IF (Y<1) INT(SKILL) THEN GOTO 370
590 IF DISTANCE=14 THEN GOTO 550
600 IF (Y<1) INT(SKILL) THEN GOTO 370
610 IF DISTANCE=14 THEN GOTO 550
620 IF (Y<1) INT(SKILL) THEN GOTO 370
630 IF (Y<1) INT(SKILL) THEN GOTO 370
640 IF (Y<1) INT(SKILL) THEN GOTO 370
650 IF (Y<1) INT(SKILL) THEN GOTO 370
660 IF (Y<1) INT(SKILL) THEN GOTO 370
670 IF (Y<1) INT(SKILL) THEN GOTO 370

VARIABLES

Distance: Decides the speed of the game.
Level: Decides the least amount of space that can be between mines.

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April 1988 Atari User 39
**How much does it cost to go on Telex?**

"You could go the conventional way and buy a dedicated Telex machine. The cheapest will cost you £1,604 (the Whisper), and the cheapest is £2,892 (the Cheeta). You will also need a separate telephone line, costing £101 to install, plus £604 a year rental. That's a total outlay over the first year of a minimum of £2,109. (All prices include VAT.)

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

**How do I turn my Atari into a Telex machine?**

All you need is a modem and appropriate communications software (see the advertisements in this issue), a telephone, and a subscription to MicroLink. Telex is just one of a growing number of services available to Atari users on MicroLink. With MicroLink you can also read the news as it happens, go teleshopping, download free telesoftware programs directly into your micro... and much more.

**But why use Telex?**

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

But there's a big bonus you get when you use MicroLink for Telex that the conventional way doesn't offer.

With MicroLink you don't HAVE to be in your office to send or receive Telex messages. You can just as easily use your computer at home (or even a portable). So now you can check whether there are any Telex messages waiting for you - anywhere, anytime. How's that for your business efficiency?"
MANY of you have written in praising our new Get It Right! II checksum program, and one reader from Berkshire added a comment which set us thinking.

If each line can generate its own unique checksum, why is it not possible to reverse the process and regenerate the original line from the special checksum value? After all, the four checksum bytes exactly represent the original line, don't they?

After some thought we can now bring you a program which at least goes part way to solving this problem. Since Atari Basic uses a small number of fixed tokens to make up all its lines, it is quite possible to re-generate a program except for the contents of strings, DATA statements and REM statements. These could obviously contain any text and since they are processed separately by G!R! in any case (see my source code listing and flowchart in the November 1987 issue of Atari User 1987 for information) there just isn't enough information to recreate them reliably.

However, everything else can be generated from just the four byte checksum, so once you have created the final program file you should load it into memory and correct the string and data contents from the full listing - REMs may safely be ignored. You should make sure that the normal G!R! tape or disc was loaded when you turned on the computer because this new program will access some of its internal machine code routines to save time and space.

To use it, simply type in the program and run it. Be careful with the DATA statements because they contain machine code to access the Basic rom which might crash the computer if mis-typed. When you run the program you will be asked to enter checksum values one by one, and you should hit Return on its own to finish. To start with try entering just the first 10 or 20 checksums to see how the system works before going on to attempting a full program.

You should then enter a filename to save the newly generated program - C: for cassette or D:FILENAME.BAS for disc. Once the program has finished writing you should rewind and CLOAD it from tape or use:

LOAD 'D:FILENAME.BAS' for disc.

The original program will now be almost complete in memory. All that is then left to do is to LIST it and use the screen editor to complete any lines containing strings or DATA from the original listing. These will be flagged on screen with asterisks to remind you of the correct number of characters.

Next month, I'll show you how this program works, and other applications of the same principle. In the meantime, reading the article on tokenisation on page 8 will give you some clues.

```
10 REM G!R! II EXPANDER PROGRAM
20 REM WRITTEN BY ANDRE WILLEY
30 REM (C) ATARI USER, APRIL 1988
40 REM
50 MAXFREE=0-1000
60 D!M M!ODES(500),G!IRS(500),FILES(20)
70 INPs(10)
80 CURR=1
90 POSIT!ON 2,5: I ' Enter each G!R! II code on a new line.' using the
   ' format ABC.A:'
100 ' ? ' THEN RETURN twice to s
   ' ave: DATA'
110 ' ENTER CODE:'
120 INPUT #15;INPs
130 IF INPs=THEN 250
140 IF LEN(INPs)<4 OR LEN(INPs)>5 THEN 220
150 FOR I=1 TO LEN(INPs)
160 IF I=4 AND INPs(I)="A" THEN LEN(I)=
170 IF INPs(I)="B" OR INPs(I)="C" OR
   ' INPs(I)="D" AND INPs(I)="E" THEN POP
   GOTO 220
180 NEXT I
190 G!IRS(C!URR),CURR+4,INPs,CURR,CURR+5
200 IF LEN(INPs)=-10 THEN 230
210 GOTO 110
230 REM FINISHED ENTERING DATA
240 GOSUB 410:11 LEN(G!IRS)=MAX(100)
   T
400 POSIT!ON 2,5: " *** MEMORY FULL:-" TIME TO SAVE \\
   " ***"
250 POSIT!ON 2,10: " Give full filespec to save programe:"
   (Eg: '2:PR
   06.BAS' or 'C':)
260 ? " Enter filename: " DATA INPUT #16,FI
   L
270 CH=1:CLOSE CH:TRAP 268:OPEN 
   CH,6,12,FILES: TRAP 48000:GOTO 250
290 ? " ? " : ? " OK. Saving program to 'FILE
   E'
300 CURR=1
310 READ A1:IF A1="-1 THEN 350
320 M!ODES(C!URR),CURR)=CHR(A1):CURR=CURR
   +1:GOTO 310
330 ADDR=ADDR(C!URR)
340 TEMPH=INT(ADDR+43)/256:POKE ADDR
   +1,TEM
350 TEMPH=ADDR+43-(TEMPH*256):POKE ADDR
   +1,TEM
360 ERR=7:POKE ADDR(C!URR),CHR(CURR)
   'G!IRS')
370 CLOSE CHAR:-
380 IF ERR=1 THEN 'File completed OK
   THEN RETURN
390 IF ERR=1 THEN 'ERROR: File may be 
   corrupt:
400 ? " ?: ? " 'DONE!'
410 GRAPHICS 1:SETCOLOR 0,9,2 : " 
   G!R! II EXPANDER
420 ? " " 'Written by Andre Wille
   y
430 ? " ? " (c) Atari User, April 1
```

April 1988 Atari User 41
Programming becomes so much easier when you’ve got the right tools for the job. With this Atari User package, you can add TEN new commands to Atari Basic to dramatically improve your performance. PLUS your Atari will generate meaningful error messages instead of cryptic numbers.

Toolkit automatically boots in from cassette or disc and makes use of a normally unused area of memory.

This package of stunning utilities – specially commissioned by Atari User – is an absolute must. It comes complete with comprehensive on-screen instructions telling you how to get the most from each of the programs.

**TOOLKIT COMMANDS**

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  Removes a single or block of unwanted Basic lines quickly.

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- **VAL**
  Converts numbers between decimal, hexadecimal and binary.

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  Gives the name of all used variables and a list of all their occurrences.

- **LISTING**
  Prints and includes the Atari special characters on an Epson printer.

- **CHANGE**
  Alters the name of a variable at every occurrence in a program.

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

£5.95 tape
£7.95 disc

To order please use the form on page 61.
REVERSI

By OLIVER CHAPPELL

This is an adaptation of the traditional game played on a board with 64 squares. The objective is to obtain the most counters at the end of the game - when all 64 squares are coloured in. The players, in this case you and the computer, take alternate turns to place a counter on the board. You have green counters and the computer red.

They can only be placed on the board sandwiching one or more of the computer's counters in between two of your own. They must be in a straight line - horizontally, vertically or diagonally. No counters can be ever be taken off the board, and no player can have consecutive turns unless his opponent cannot move.

The game starts with four counters in the centre of the board - two for each player - and the game expands from there. It is worth noting that counters in the centre of the board are not much of an asset as they can be easily surrounded and recaptured.

It is therefore advisable to have edge pieces, and an even more distinct advantage to secure the corners, as these can't be altered. Having said that there is only one way to perfect your play - practice.

To place your counter all you do when the YOUR MOVE prompt appears is press the keys 1 to 8 twice: First for the vertical coordinate and then for the horizontal one. The computer will record the move on the screen and turn over all the necessary counters.

There are, at your disposal, several functions which can either help, pass your move over to the computer or even cheat.

Firstly there is Help, which after a few seconds will give you the coordinate which will allow you to take the most counters on the board. Secondly comes Swap which changes all the computer's counters into yours and vice versa by reversing the colours.

This is a useful feature if you are in a sticky position.

Pass allows you to pass your move over to the computer. This must be used if you can't go, but at times it can be to your advantage. You can also quit at any stage or use the Judge function which will assess the state of play at any time by giving a percentage result as to who is in the stronger position.

The game ends when all the positions on the board are occupied or either player has no counters left and is therefore unable to win.

Remember to use Get it Right! when you type the program in and be extra careful with the data statements: They are part of a short machine code routine and could crash the computer if entered incorrectly.

Turn to Page 45 ▶
ATTENTION
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20 - 100
Define all the necessary variables

110 - 180
Set up the screen in graphics Mode 31

190 - 350
Set up the screen of play by drawing the board, score board and function box

360 - 640
Main routine for handling all player inputs

650 - 840
Machine code subroutine to calculate the computer's moves

850 - 1110
Routine to change the colours of the counters

1115 - 1670
Routine to poke machine code data into memory

1680 - 1710
Print the numbers 1 to 8 vertically and horizontally along the board

1720 - 1910
Print the board on the screen and make the sound for a red or green counter

2260 - 2270
Routine to work out an illegal move

2280 - 2380
End of game routine

---

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Yorkshire (full address on request)
Your programming problems
solved by ANDRÉ WILLEY

LETS get cracking straight away
with a letter from Philip Carter from
Frome in Somerset who is having a
few problems with his 800XL.

While I was playing around with
my micro I decided to write a
Basic trigonometry program. When I
got round to the tangents, sines,
cosines and inverse tangents I came
across the problem that my machine
did not seem to accept the trig state-
ments correctly. Instead it gave
ERROR 9 AT LINE 127, which was
simply:

127 LET A=TAN(B)

This also happened for the sines
and cosines and the inverse tangent.
Since Error 9 means an array or string
error, and I'm using neither, is there
something wrong with my micro?

Firstly I don't think that there's
anything much wrong with your com-
puter - your problems stem from a
little misunderstanding of how Basic
handles trig operations. To be strictly
accurate, Atari Basic only supports
three fundamental trigonometry oper-
atives - sin, cosine and inverse
tangent (or arc-tangent as it is more
commonly known).

The commands to use are SIN(number), COS(number) and ATN(number),
so your use of the command TAN was
not recognised. However, Basic still
tried to make sense of the statement
by assuming you were talking about
an array variable called TAN. Since
you had obviously not DIMmed such
an array, it finally gave up and resorted
to giving out an Error 9 - for an
undimensioned array reference.

I suspect that the other errors might
have been caused by your using
SINE(number) or COSINE(number)
 instead of the shortened SIN and COS
which are required. These too would
have been interpreted as undimensioned
arrays.

So how do you work out such things
as tangents when Basic doesn't seem
to provide a command for them?

Luckily trigonometry is entirely log-
ical, and just about any function can
be calculated from the main three
we've seen so far. You will also need
to use some other mathematical oper-
ations - most notably natural log-
arithms and square roots, both of
which are readily available.

You don't require the base 10 log-
arithms given by CLOG(number), but
those based on powers of the mathe-
natical value of e, or 2.71828. These
are given using the LOG function, and
antilog are given by using EXP, which
returns a result given by raising the
number to the power of e.

For example, if you think back to
your school days and good old Pyth-
agoras, the tangent of an angle is
calculated using the very simple
formula of sine divided by cosine. In
computer terms, the tangent of the
variable X would be given by:

LET ANSWER=SIN(X)/COS(X)

Don't forget that some values for
various trigonometric formulae are
illegal - there is no tangent of the
angle 90° for example because cos 90°
equals zero, and you can't divide by
zero.

You should also decide whether you
want to work in degrees or radians -
selected by using the DEG or RAD
commands. There is obviously no
point testing for an angle of 90° when
you're working in radians - you
should instead check for a value of pi/2.

The panel on the following page
lists some of the more common trig
functions, and how to derive them, but
make sure you test for any illegal
values or you'll have another error on
your hands. Don't forget there are lots
more formulae if you need them -
check out Appendix C of Your Atari
Computer manual, or consult your
local library for books on
trigonometry.

Slow clock?

Next we have an international enquiry
from Mr A.Grünbaier from Holland.
It's nice to see so many letters coming
in from abroad, and the standard of
the English rather puts us Brits to
shame when it comes to learning for-
eign languages - the nearest thing I
come to a second language is Action!
Anyway, Mr Grünbaier writes:

I must first tell you that you are
selling the best English Atari
magazine I have ever read. Keep up
the good work. As I was reading my
manual I discovered the following
line:

Processor 6502C
(ClockSpeed 1.79 Mhz)

Isn't that a little slow for a great
computer like this? For instance, the
MSX 280 processor has a clock speed
of 8.0 Mhz. As I know nothing about
this I would like to know just what the
clock speed is used for and if it has
anything to do with the calculation
speed of my 130XE.

In order to function, a CPU chip like
the 6502 must be able to work in close
association with all the other chips
inside the computer. This means that

Turn to Page 50
Email uploading

THE final letter this month comes in by electronic mail from a Dave on MicroLink's Atari section:

I use my Atari and a modem to talk to the MicroLink system, and I want to prepare electronic mail and other text while off-line so that I can transmit my messages in a block and log off again.

I am unable to get Mini Office II to upload text to the bulletin board, or to use the WPMAIL feature. When I'm trying to upload, the text appears about two inches in from the left of my TV screen, and this means that the MAIL command is not detected by MicroLink. I don't know why I cannot upload to the BB, but maybe it's a related problem?

In both cases I save my word processor files in Ascii text format, but the commands do not seem to register when I try to upload the file. Any help would be much appreciated.

As this was an electronic mail question I have obviously also sent an online answer to Dave, but the solution may well interest other Email users.

When you edit a document using the Mini Office II word processor you have the option of saving the text in internal format - which stores all the embedded control codes and formatting commands - or of storing a straight Ascii text version.

MicroLink - like most other Email services - requires its messages to be in standard Ascii text form, with any commands at the start of the line. You can, for example, use the command .SEND to post your letter on to the system, or .EDIT if you decide you wish to do some online editing or .QUIT to abort the current mail item.

What has happened in this case is that you have saved the Ascii text with the margin still set for printing normal letters - at 10 characters. This means that each line of text in the disc file starts with 10 blank spaces, and so the mail commands are not recognised. MicroLink does not strip spaces off the start of each line in the same way that Basic does because you might wish to use spaces to offset some portion of your letter.

All you need to do is to re-set your Mini Office II left margin to zero, which can be done with embedded commands or via the menu system. Then save the document as an Ascii file and go to the communications program.

Log on to the remote system (such as MicroLink) and go to the mail section. You should then type Control-Shift+T - or use the menu - in order to select the filename to transmit. The filter mode should be set to Standard Ascii.

When you're ready to send, press the Start button and off it will go. This method should allow you to prepare text off line and then transmit it with the minimum of fuss to almost any electronic mail system - all from your humble 8 bit Atari.

Well, that just about wraps it up for this time. Keep those letters coming in - especially if you're still struggling with your first few programs on your new Atari 8 bit computer.
Mercenary: The Second City

LAST month we published a map to this superb science-fiction adventure game. To complement it here is a useful checklist to the keys and objects you will find: Just tick them off when you get them.

Object checklist
- Antenna
- Antigrav (AG)
- Anti-time bomb (ATB)
- Bed
- Catering provisions (CP)
- Chair
- Chart
- Cheese
- Coffin
- Databank
- Energy crystal (EC)
- Essential 12939 supply
- Fire
- Gold
- Grenade
- Kitchen sink
- Lamp
- Large box (LB)
- Mechanoid (M)
- Medical supplies (MS)
- Metal detector (MD)
- Music stand
- Neutron fuel
- Novadrive (ND)
- Oven

Key checklist

- Pass
- Photon emitter (PE)
- Poweramp (PA)
- Prestinium
- Sights
- Table
- Transmitter
- Useful armament (UA)
- Winchester
- Web

*You may photocopy this page to save cutting your magazine if you wish.

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

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

Remember, that not only will you save money on upgrades to disk (if they are available) but many games are only available on cassette anyway so Transdisk IV has to be a worthwhile investment!

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April 1988 Atari User 51
It's a moving experience

Continuing his Basic programming series LEN GOLDING introduces simple animation techniques

So far we've seen how to produce text displays and static pictures anywhere on screen. The next step is to make the images move around - computer animation in fact.

All arcade games use movement in one form or another, and the Atari computers have some very sophisticated built-in animation facilities - notably Player-Missile - PM - graphics. We'll get on to these in due course, but they are quite difficult to understand and usually require machine code to make them work, so we'll steer clear for the present.

It's relatively easy though, to produce fast animation using ordinary keyboard characters, and this month we show you how to do it. We'll encounter the IF...THEN command, together with the joystick functions STICK and STRIG. We'll also take our first look at subroutines, using the commands GOSUB and RETURN.

Armed with these new techniques you will be able to write your first joystick-controlled games, and we've listed one to demonstrate the basic principles behind arcade action.

In order to create the illusion of movement you must first print your character, then quickly erase it and print it again in an adjacent position. So long as there is no background to disturb, this is very easy. Try this:

```
10 PRINT CHRS(0):REM Clear the screen
20 FOR H=10 TO 38
30 POSITION H,10:PRINT CHRS(20):REM Print the ball
40 FOR W=1 TO 50:NEXT W:REM Short delay
50 POSITION H,10:CHRS(32):REM Blank space erases ball
60 NEXT H
```

This prints a small ball which apparently moves across the screen from left to right. The cursor is also printed, which is rather distracting, but you can turn it off by POKE 752,1 followed by a PRINT statement, as we'll see shortly.

We can make the program more interesting by using a joystick to control the movement.

A joystick is just a simple switching device which can generate numbers between 5 and 15, depending on the stick position - see Figure 1. If you plug a stick into port 1, the number which shows its current position - 5 to 15 - is automatically stored in a function called STICK(I).

This behaves like an ordinary variable, except that the computer's operating system sets it up for you and updates it automatically every fifth of a second. All you have to do is check the current value stored in it, for example by:

```
PRINT STICK(I)
```

and this will reveal the joystick's current position. There's also a function -

---

Figure 1: Numbers produced by a joystick
STICK(1) – which reads a joystick plugged into port 2.
Two other functions – STRIG(0) and STRIG(1) – read the state of the trigger buttons. When no button is pressed both contain the value 1. If you press the button on a stick plugged into port 1, STRIG(0) will go to the value 0. STRIG(1) behaves in exactly the same way for a fire button operating through port 2. You can check the action of all four functions using this little program:

```
10 PRINT CHR$(125)
20 POSITION 2,10:PRINT STICK(0);"",ST 
RIG(0),STICK 1;"",STRI 
1(1)
30 GOTO 20
```

Plug your joystick into port 1 or port 2, move it around, press the trigger and watch what happens.

Program 1 shows one technique for joystick control using the IF...THEN command. This is extremely useful, and you’ll come across it in almost every game you encounter, so it’s worth taking the time to understand it thoroughly.

Basic starts by looking at the IF part to see whether that condition is true or false. Everything else on that program line – including any other statements separated by colons – and skips to the next line in sequence.

To see the IF...THEN statement in action let’s examine Program 1 in detail. Two main variables are involved – H1 and H2. The former holds the character’s current horizontal position and the latter is the position it has to move into.

H2 will have the value H1+1 if the character has to move one space right, or H1-1 if movement left is required.

The vertical position remains constant at 11, which means that the ball will not move up or down, just side to side on the 12th line down – the top line is line 0, remember.

Now look at line 60. If the value of STICK(0) is equal to 15 – stick centralised – the program stays there. If STICK(0) is not equal to 15, Basic moves on to line 70 where it checks to see whether the stick value is 7 – pointing right. If it does, it adds 1 to the current value held in H1, stores the new value in H2 and jumps to line 100.

If the stick value is not 7 the program skips to line 80. This line sets H2 to H1-1 if STICK(0) is equal to 11 – pointing left. Any value other than 15, 7 or 11 will take it to line 90 which loops back to the checking process without affecting H1 or H2. The net result is that all joystick positions other than left and right are ignored.

Line 100 prints a blank space at the position which the ball currently occupies (H1,11) – thereby erasing it from the screen – then line 110 reprints the ball at its new co-ordinates (H2,11). This happens so quickly that the ball appears to jump from one position to the other.

H2 now holds the cursor’s current horizontal position, and line 120 transfers this value into H1 ready for the next cycle. Line 130 introduces a short delay which makes the movement slow enough to handle easily – you can omit this line if you want to move at full speed. Finally, line 140 loops back to start the process all over again.

There is nothing in this program to stop the ball moving off screen, so if you allow the ball to reach a screen border you’ll get an error message. You can avoid this by using a second IF...THEN statement to prevent further...
From Page 53

movement if the ball hits either boundary.
The least complex of doing this is to nest the second IF...THEN state-
ment inside the first. Change lines 70 and 80 to read:

```
70 IF STCK(0)=7 THEN IF H1<30 THEN H1+1:GOTO 100
80 IF STCK(0)=11 THEN IF H1>0 THEN H2-1:GOTO 100
```

The symbol < means is less than
and >= means is greater than. So line
70 will now update H1 only if the stick is
pointing right AND if the character has
not yet reached the right-hand
border. Similarly line 80 will update
H2 only if the stick is pointing left and
the character has not reached the left
border.

Once you understand how this pro-
gram works you’re ready for Program
II – our first game. It’s called Spider
Attack and uses most of the techni-
ques you’ve learned so far. If, when
you type it in, there’s anything you
don’t understand, go back and re-read
the earlier parts of this series – all the
information is there for you.

The scenario involves a young lady
who is frightened of spiders and must
hurl mothballs at them to deter their
inexorable advance. The heroine is
represented by a heart – CHR$(9) – at
the top of the screen – yes, I know it’s
sexist, but I couldn’t find a macho
symbol in the character set. The moth-
ball missiles are represented by the
ball character – CHR$(96). The spiders
are asterisks – a mutant variety with
six legs.

As the game starts our heroine is at
the top centre of the screen and the
line of spiders is near the bottom. Use
the joystick to move from side to side
and the fire button to hurl a mothball.
If the missile hits a spider it will
obliterate it, but after every shot the
abominable arachnids will advance
one line up the screen. Your task is to
eliminate as many as possible before
they reach the top line.

Right, how does it work? Line 20
turns off the cursor so that it doesn’t
interfere with the action. Unless you
do this the little white square will be
zipping around all over the screen
with every POSITION command. It’s
still there of course, but the POKE
command makes it invisible.

Line 30 sets up the variables which
will be used to control horizontal
movement and to keep track of the
number of shots. Line 40 prints a row
of nineteen asterisks near the bottom
of the screen, and line 50 prints the
heroine’s heart character at top centre.

Lines 60 to 130 read the joystick and
move the heroine one space left or
right using the technique we
explained in Program I. Line 60 checks
to see if the fire button is pressed and,
if it is, control passes straight to line
150 which handles the mothball
movement.

Since the mothballs have to move
vertically down the screen, the hori-
zontal co-ordinate remains constant
and the vertical co-ordinate increases
according to the FOR..NEXT loop
which starts at line 150.

As before, each move prints a blank
space at the character’s current loca-
tion, then re-prints the character at
its new position.

Line 200 keeps track of the number
of mothballs thrown and ends the
game when it reaches 22. The
command END does precisely what
you’d expect it to – it terminates pro-

Program II: Spider attack game

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gram execution and returns control to you with a READY message.

The clever bit is at line 210: This controls the spider's movement up screen using a command to PRINT nothing. It works because the invisible cursor must inevitably be on the bottom line after clicking a mothball all the way down screen. So any PRINT statement will make the whole screenful of characters scroll upwards by one line.

This means that the heroine ascends into oblivion, of course, but the final jump to line 50 immediately restores her to her rightful position.

You might like to improve the game by adding sound to it. Try linking the pitch of a SOUND statement or one or more of the existing variables — for example:

```
155 SOUND 0, ROW, 10, 8
```

or, for greater variety, make the pitch 10 times the value of ROW as in:

```
155 SOUND 0, ROW*10, 10, 8
```

And don't forget to switch the sound off when you've finished with it:

```
195 SOUND 0, 0, 0, 0
```

So much for two-directional joystick movement. Now take a look at Program III, but don't bother typing it in. This one uses familiar techniques but allows you to move a character in any direction under joystick control.

It has to be a lot more complex, since instead of just two directions there are now eight to worry about — up, down, right, left and four diagonals. And there must be a boundary check for each direction.

This leads to an annoying amount of repetition in the program, and each diagonal direction needs two separate lines of IF...THEN statements — one for the horizontal and the other for the vertical component. You'd be right in thinking that there must be a better way, and in fact there are several, but the one we'll look at just now is the subroutine.

This is a sort of mini program-within-a-program. It usually handles a clearly defined and self-contained task, especially if that task has to be executed more than once during the main program. It can be called at any point using the command GOSUB followed by the line number at which

```
10 REM PROGRAM 3: Cumbersome method for 8-directional joystick control
20 H1=9; V1=11: REM Current Horizontal and Vertical co-ordinates
30 H2=H1; V2=V1: REM New Horizontal and Vertical co-ordinates
40 POKE 752,1: REM CHR$(125): REM Turn cursor off and clear screen
50 POSITION H1,V1: REM CHR$(28); REM Print ball at its starting position
60 S=STICK(0): REM Read position of joystick in port 1
70 IF S=15 THEN GOTO 58: REM Do nothing if joystick centralised
80 REM Find next position for the ball to be printed:
90 IF S=14 THEN IF V1=1 THEN V2=V1-1: GO1 210: REM Up only
100 IF S=14 THEN IF V1=1 THEN V2=V1+1: GO1 210: REM Down only
110 IF S=6 THEN IF H1=38 THEN H2=H1+1: GOTO 210: REM Right only
120 IF S=6 THEN IF H1=38 THEN H2=H1-1: GOTO 210: REM Left only
130 IF S=5 THEN IF H1<22 THEN H2=V1-1: GOTO 210: REM Up only
140 IF S=5 THEN IF H1<22 THEN H2=V1+1: GOTO 210: REM Down only
150 IF S=3 THEN IF V1>2 THEN V2=V1+1: GOTO 210: REM Right only
160 IF S=3 THEN IF V1>2 THEN V2=V1-1: GOTO 210: REM Left only
170 IF S=9 THEN IF H1>1 THEN H2=H1-1: GOTO 210: REM Up only
180 IF S=9 THEN IF H1>1 THEN H2=H1+1: GOTO 210: REM Down only
190 IF S=10 THEN IF V1>1 THEN V2=V2+1: GOTO 210: REM Right only
200 IF S=10 THEN IF V1>1 THEN V2=V2-1: GOTO 210: REM Left only
210 REM H1,V1: REM CHR$(32): REM Erase old ball by printing a space over it
220 REM H2,V2: REM CHR$(28); REM Print ball at new co-ordinates
230 IF S=STICK(0) THEN V1=V2: REM Update H1 and V1 ready for next cycle
240 GOTO 58: REM Next cycle
```

Program III: Cumbersome method for joystick control

Your subroutine starts, for example:

```
GOSUB 100
```

And as long as the subroutine ends with a RETURN command, Basic will automatically jump back to the next statement after its point of departure.

In the example below we have used a subroutine to produce a short bleep when you enter a value for either X or Y from the keyboard.

```
10 INPUT X:GOSUB 40
20 INPUT Y:GOSUB 40
30 GOTO 10
40 SOUN= 0, 100, 10, 5
50 FOR W=1 TO 48: NEXT W
60 SOUN= 0, 0, 0, 0: RETURN
```

Turn to Page 56 ▶
After the first call (line 10), BASIC will automatically go to line 20. After the second call (line 20) it will return to line 30. GOSUB is obviously a lot more versatile than GOTO, which can only ever jump to a single, fixed point in your program.

If there are any further statements on the line containing your GOSUB command, BASIC will return to the next statement after GOSUB — unlike IF...THEN, it doesn’t need to skip to the next line.

Note the GOTO 10 at line 30. Without this BASIC would crash through into the subroutine section and, when it encountered the RETURN command, it wouldn’t know where to go. You’d then get ERROR 16 indicating RETURN without a corresponding GOSUB.

Program IV shows how you can use subroutines to avoid much of the repetitive typing in Program III. There are four subroutines controlling movement up, down, right and left respectively, and each contains its own boundary check. If vertical upward movement is required we instruct the computer to GOSUB 220. To go left it’s GOSUB 280, and to move diagonally up-left we simply call both routines one after the other — GOSUB 220:GOSUB 280. Using this technique it’s easy to move a character in any of the eight possible directions.

The code for our joystick control routine is now shorter and much easier to understand — compare lines 90 to 160 in Program IV with lines 90 to 200 in Program III.

Because the subroutines can be called more than once — from different places in the program — there’s very little repetitive typing to do. You can write subroutines to handle any repetitive chores of this kind, and they make the program structure more elegant.

Next month we’ll demonstrate how you can move characters in eight directions without disturbing a background picture, and start to look at the use of colour in Graphics Modes 2 and 3.

Until then try these routines and write some of your own. Remember, practice makes perfect.

---

Program IV: Elegant joystick movement
JUST before Christmas I bought a 65XE system. My first attempts with the micro have been quite frustrating to say the least, and I have several questions.

Firstly, I have been experiencing great difficulty loading some of the games I got with the computer. It appears that it is not sufficient to just simply type LOAD. What else do I have to do?

Is it possible to expand the micro's memory, and what is the best disc drive to use with it? Finally, will old games like Drol and Conan the Barbarian run on my computer? — A. White, Barnsley, South Yorkshire.

Most of the tapes you got with your computer contain machine code programs. You can't load these direct from Basic — so you must BOOT them. You do this by holding the Start and Option keys down as you switch the micro on.

You will hear a beep, and at this point insert the tape and press Return. Then just wait a while and the program will load.

It is possible to upgrade the memory of your 65XE, but the 64k of memory it has is enough to run any software currently available.

Any of the Atari disc drives will work with it although, at the moment, there is a slight problem obtaining one. Atari plans to release a new disc drive which should be available soon.

Most games written for the old style micros — Atari 400 and 800 — will work on your XE system. However, some differences in operating systems between the new and old machines mean certain software will not work — but this is only a minority.

Drol and Conan the Barbarian will work perfectly.

**Display width poke**

I HAVE just bought a book for my Atari called Software for the XL. There's a program in it called Omnipoppy, and every time I try to type in the listing I get an error at line 805.

When I list this line the end is always missing, and try as I may I can't get it to go in. Can you please tell me how to enter this line? — Derek Goring, Leeds.

Before you attempt to enter the listing type POKE 82,0 followed by Return. This will increase the width of the display and allow you to enter more characters per program line.

Also use all possible abbreviations for commands — for example: G. for GOTO — and enter the line without any spaces, as Basic will automatically insert them for you.

**Boost for Atari comms**

I FOUND the article on modems in the January issue very interesting. It doesn't seem that long ago that it was almost impossible to buy a modem for an Atari.

However, despite this improvement, we Atari owners for a long time were still lacking in communications software that would allow the use of teletext mode and support split baud rates.

Part of the trouble was the Atari 850 interface box that was for a long time the only way of connecting anything to an Atari.

Then Miracle Technology brought out its interface and cable and Multiviewterm software which allows the use of split baud rates and the teletext mode.

Now Atari users are not restricted to 300/300 bulletin boards and MicroLink/Telecom Gold and can now access Prestel and 1200/75 bulletin boards to their heart's content. — Peter Boulter via MicroLink.

**Recipe for success**

IN the October 1987 issue of Atari User there was a letter from John Upton asking for information about astrology

**WIN A TENNER!**

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I OWN an Atari 130XE and 1050 disc drive and I am very happy with it except for one small problem concerning the cartridge socket.

The way the system is located on my desk makes it very difficult to plug and unplug cartridges without having to move the computer.

Apart from the annoyance at moving it I'm also worried about the wear and tear on the socket. Would it be possible for your gadgets expert Len Golding to design something to overcome my problems? — Robbie James, Warrington.

Although it would be possible for Len to design a gadget it could work out to be rather expensive, and if any mistakes were made in its construction it could damage your computer quite badly. So regretfully it's a non-starter.

**Cartridge gadget**

COULD you please tell me if it is possible to save or print pictures from the Paint artist package? I have an Atari 130XE, 1050 disc drive and 1029 printer.

I have drawn some quite good pictures and it is most annoying to just switch off the system and lose them. — Michael Simons, Crawborough, East Sussex.

You can save pictures created using Paint by entering the disc menu from the main menu and selecting Save File. Enter the filename when prompted, but make sure you have a Dos disc in the drive.

In the January 1988 issue of Atari User there was a program to convert Paint picture files to a 62 sector uncompressed file, and in the same issue there was also a utility to print the newly converted picture on an Atari 1029 printer.
The Melody lingers on
What a marvellous program "Melody Maker" by Bruce Woodland is (February 1988). I typed it in and have thoroughly enjoyed playing tunes on it ever since.

However, as it stands it is not suitable for playing guitar music, which needs a greater range of notes and a larger memory store — the third movement of Barrios' La Catalana needs 4125 bytes to store including its repeats.

Also tunes are stored in files whose size is set by the variable CAP, so a little jingle occupies the same size as a symphony.

The following changes to the program will remedy these slight discrepancies:

- 110 CAP=5000:REM MAX TUNE LENGTH
- 140 DIM KS(183),MREFS(27),CSG(27)
- 150 DIM PICS(280),SCALEN(27)
- 150 DIM TUNES(CAP),TEMP(255)
- 520 KS(0)=DEFGABDEFGABDEFGABDEF

To avoid problems with the highest notes on the top staff being poked into important memory, you will find that they will not be shown but the correct note will be played.

Well then is any part done. Does anyone know how we can introduce polyphony? Any ideas? — M. Hollands, Lower Penn, South Staffordshire.

Customised screen
I HAVE just typed in the program to customise the default screen from the February issue of Atari User and checked it with Get It Right! The checksum for line 260 didn't match the one published.

After creating an autoboot cassette I attempted to load it by holding down Start and switching the computer on, followed by Return. When the tape stopped the screen had not changed and the computer had locked up.

Can you please tell me what is wrong with the program? — D. Bill, Rednal, Birmingham.

I unfortunately, several bits of data were lost from the end of line 260. The line should read:

260 DATA 250,0,201,135,124,0,201,134,208,31,173,43,2,201,22,176,24,205,16,7

In the February 1988 issue we published a letter from Martin Osborne of Wimbledon who criticised the lack of software available for Atari users. Here is a selection from the responses we have received over the last few weeks.

£10 LETTER

Software shortage
WHY is it that 8 bit Atari owners always get left out when games like Out Run are released? I have written to many of the major software companies, but to no avail. If games like Out Run and so forth were released for the Atari, I'd be the first to give it a try.

I AM also annoyed about the lack of software available for the 8 bit Atari. In my home town of Barrow in Furness there are three computer shops. One doesn't stock any games for the Atari and the other two keep very few and most of them are only £1.99 budget titles.

I am certain plenty of Atari users would buy more games if they were readily available and of a higher quality than a lot of the present ones.

It is quite frustrating that owners of computers like the Commodore and Spectrum have vast numbers of games when those of us with the better machine have to sit out in the cold — S. White, Barrow in Furness, Cumbria.

I AM in total agreement with Martin Osborne. It seems that all of a sudden software houses have forsaken the 8 bit Atari computers for the new 16 bit ST.

I visit Atari World in Manchester at least once a week and since early December I have only been three or four 8 bit releases. — L. Griffiths, Boaroeshaw, Middleton.

***

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AFTER reading the February issue of Atari User I was left
with a question: Every month Gallup provides you with information of games sales which enables you to compile a chart of the top 20 selling Atari games. Could you please tell me which shops are polled by Gallup?

I live in London and yet in such a vast expanse of commercial retailing I still have problems finding Atari software.

I have been informed by its advert that Sillup Shop is the UK's No. 1 Atari specialist, but although it may have been, since its Tottenham Court Road branch started to sell other formats of computer games its supply of 8 bit Atari software and hardware has dwindled dramatically.

It does appear that even though software houses are producing games for the Atari there are no shops willing to retail them.

With this poor attitude from shops and certain software houses Atari computers are fighting an uphill battle. It would be a crying shame if the popularity of the machine was marred because of ignorance. — Pierre Chienier, London

The Gallup chart is compiled from tables figures taken from various shops around the country. It may be that when the charts are compiled the shop that you mentioned was not polled.

A FRIEND told me that there are a lot of good Atari software titles in America that have not been released in England. Is this true, and why aren't they available to people in the UK? — Glenn Wilkinson, North Preston, Lancashire.

There are a lot of games and business programs available in America that haven't been released in the UK. Unfortunately, a lot of UK software distributors believe that the market for 8 bit Atari software is dead, which is a mistake on their part.

We receive an incredible number of letters about this subject and we can see a long life for Atari 8 bit computers in the UK.

IN November I went to the Atari User Show at the Novotel in London. It was the best show that I have been to and I was pleased to see the amount of interest in Atari products.

Unfortunately there was a lack of new software for the 8 bit Atari and this was a great shame. There were a lot of people there looking for new games for their trusty 8 bit and it was a shame that they had to go away unhappy.

On a lighter theme, I was very pleased to see that Atari is supporting the new XE systems and was able to go to a trade show. I was able to see the latest models and hardware, and it was a great experience. — Jackie O'Malley, Harrogate, North Yorkshire

The new light gun will work on your 130XE, but the only software currently available is Bug Hunt on rom cartridge.

In the February 1988 issue of The User we published a game written to work with the gun, and this listing should show you the techniques needed to incorporate the gun into your own programs.

These are just a few of the letters rolling in highlighting the lack of software for 8 bit users. Perhaps we can mean once and for all.

ARE YOU BORED TO PLAY THE SAME GAME?...

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