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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.



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

SEE PAGE 42

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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 Massie, 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 a 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 3886) produces a number of packages for the Atari such as the Xtext word

processor for £29.95, the PynCalc spreadsheet at £49.95 and the PynFile 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 money".

ON THE SERIOUS SIDE . . .

AT&T users who want more than entertainment from their machines have a new source of serious software.

Valeo 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 Pragnell of

Valeo (0203 212270) said 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".

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 asked a large consortium of games cartridge 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 entertainment label for the Atari. Mandarin combines the marketing muscle of the European 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 Magic, from Level 8.

"We believe that Level 8'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 combination."

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 (0422-87148) 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 Acorn blends the best elements of Pascal and C. It is available on cartridge for £49.95, and toolkit disc for £79.95.

Macro assembler and editor Macro80, for serious assembly language pro-

grammers, includes the powerful 001 screen-oriented debugging program. The cartridge costs £69.95 and the toolkit disc £79.95.

Download compatible with standard Atari Basic but with an additional 45 commands, Basic XL supports all Atari 8 bit micros. The cartridge is £29.95 and the toolkit disc £19.95.

Basic RE has all the commands and is designed for the Atari 5200 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 \$147.6 million for the last quarter - up 59 per cent from the previous year's \$92.8 million.

Income was 53 per cent up at \$21.3 million. This means net sales for the year stand at a record \$383.8 million - a rise of 41 per cent over the previous year. Income was up 48 per cent at \$72 million.

Atari President Sam Trammel 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".

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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 Hat Software will be unveiling its latest bargain price compilation games packs, which include the popular titles *Mad Max*, *Overnight*, 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 800 - *Time and Magic*.

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 leading Atari dealer Siles Distribution with a massive 68 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, Demarc says it will not be releasing an Atari 800 version.

release. It is our aim that our label will become synonymous with quality, providing the Robin Payco of software games for the Atari. And what better way to start than with *Level 9*?

The first game to be released, *Time and Magic*, 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.



TOP 20

VIDEO SOFTWARE

RANK	THIS MONTH	LAST MONTH	TITLE (Software House)	PRICE
1	●	●	LEAGUE CHALLENGE Atlantic	1.99
2	▲	▲	PANTHER Mastertronic	1.99
3	▲	▲	POLE POSITION Atari	12.99
4	●	●	FEUD Mastertronic	1.99
5	▲	▲	DECATHLON Firebird	1.99
6	▼	▼	HENRY'S HOUSE Mastertronic	1.99
7	▼	▼	TRANSMUTER Code Masters	1.99
8	▲	▲	SPACE SHUTTLE Firebird	1.99
9	●	●	SPEED ACE Zappella	2.99
10	▲	▲	ON CLUE Mastertronic	2.99
11	▼	▼	180 Mastertronic	2.99
12	▲	▲	BMX SIMULATOR Code Masters	1.99
13	●	●	PLATFORM PERFECTION US Gold	9.95
14	●	●	GHOSTBUSTERS Microbet	1.99
15	●	●	SOCCER Alternative	1.99
16	●	●	MILK RACE Mastertronic	2.99
17	▼	▼	STORM Mastertronic	1.99
18	●	●	COLONY Mastertronic	1.99
19	▼	▼	DIZZY DICE Players	1.99
20	▼	▼	RIVER RAID Firebird	1.99

Compiled by Gallup/Microscope

New from Atlantic's *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-releases, including a new title from US Gold - *Platform Perfection*.

► From Page 8

situation", says Peter 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 pleased 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

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HAVE you by now managed to digest last month's somewhat technical data 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 tokenized.

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

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

Line 5 tokenized to give us the codes 5 0 15 15 0 128 45 14 65 18 0 0 0 0 32 and line 10 gave us the somewhat shorter sequence 10 0 7 3 32 128 32.

As a quick reminder, the first two digits of each line represent the line number in standard 6502 line high format and the next two give us the total number of bytes contained in the tokenized line. The final 32 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 tokenized 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 tokenized 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

```
10 DIM TEXTS(20)
20 TEXTS="HELLO"
30 PRINT A: PRINT B: PRINT C
40 REM THE END
```

Listing 1: Simple example program

```
10 0 15 16 32 128 58 14 64 32 0 0 0 0 64 32      10 DIM TEXTS(20)
20 0 15 16 64 128 46 14 5 32 68 76 76 32      20 TEXTS="HELLO"
30 0 16 7 32 129 20 11 32 130 20 15 32 131 32  30 PRINT A: PRINT B: PRINT C
40 0 13 13 0 64 72 68 32 68 76 68 155        40 REM THE END
```

Figure 1: The tokenized structure of Listing 1

LET'S TRY TACKLING TOKENISING

ANDRÉ WILLEY continues his in-depth examination of the way Atari Basic is structured

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 60 and 64 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 tokenized, it looks like this:

```
20 0 15 16 64 128 46 14 5 32 68 76 76 32
```

You should know by now that the first four numbers — 20, 0, 16 and 15 — mean that the line number is 20 and it is 16 bytes long. But the rest of the codes are new.

Firstly, the token 64 means LET — because what we meant to type was LET TEXTS="HELLO", even if we omitted the word itself.

This use of token 64 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 64 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 32.

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

```
30 0 16 7 32 129 20 11 32 130 20 15 32 131 32
```

which in turn breaks down into these four segments:

```
30 0 16
7 32 129 20
11 32 130 20
15 32 131 32
```

The first part is simple enough to decipher, since we've seen its form a number of times before. The 30 and the 16 give the line number (30) and the 16 gives us the total number of bytes in the tokenized 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 32 signifies the end of the

■ From Page 10

line, so it's not too difficult to see that 22 must indicate the end of a statement within a multi-statement line — rather like the colon in the original text version. This just leaves us with the numbers 7, 11 and 15 at the start of each successive statement to explain. In the same way that Basic stores the total length of the line, so it must also keep track of the length of each statement within that line.

So far we have seen only a single statement on a given line, so we see two identical length values — the distance to the end of the line being the same as that to the end of the first (and only) statement.

However, in this case we see that the second length byte in fact refers to the length of just the first statement. To be more accurate, it provides an offset to the beginning of the next statement.

The value of 7 in the tokenized version of **PRINT A** gives the total number of bytes that must be counted to take you from the start of the line to the last byte of that first segment — the very next byte will be the start of the following statement.

Similarly the number 11 at the start of the second statement tells us that the third statement will begin 12 bytes in from the start of the line — since the second one finishes at byte 11.

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 **END** meaning REM. This is followed by the rest of the Basic text — terminated in this case with a carriage return byte (10) 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 8, 9 and 10 give a complete breakdown of all the available tokens and their meanings. The first token of any statement will always come from Figure 8, and it may be followed by other same 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 9 and 10 plus various numeric or string constants.

You will notice from the list of arithmetic and string operators given in Figure 9 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 sign, 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 TEXT="HELLO"**. It can also be used for comparison of other strings or numbers — such as **IF TEXT="NO" THEN END** or **IF A=MAX THEN 100**.

Similarly the open brackets character can be used within a mathematical formula to access a subscript, inside a DIM statement or as part of a function call such as **PRINT COS(PI)**.

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 8. 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 **PAGE#**, for example, because it is a function call, as listed in Figure 9. Also some abbreviations have dubious advantages — such as **FOR** instead of **FORN**. It can't be shortened any further because using **FO**, or even **FD**, 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 options in action for yourself.

Token	Basic keyword	Token	Basic keyword
0 (000)	REM (followed by text terminated with a Carriage Return)	28 (21C)	POINT
1 (001)	DATA (as for REM)	29 (21D)	XIO
2 (002)	INPUT	30 (21E)	ON
3 (003)	COLOR	31 (21F)	POKE
4 (004)	LIST	32 (220)	PRINT
5 (005)	ENTER	33 (221)	RAD
6 (006)	LET	34 (222)	READ
7 (007)	IF	35 (223)	RESTORE
8 (008)	FOR	36 (224)	RETURN
9 (009)	FOR	37 (225)	RUN
10 (00A)	NEXT	38 (226)	STOP
11 (00B)	GO TO (same as GOTO)	39 (227)	POP
12 (00C)	OSCAR	40 (228)	? (same as PRINT)
13 (00D)	TRAP	41 (229)	GET
14 (00E)	BYE	42 (22A)	PUT
15 (00F)	CONT	43 (22B)	GRAPHICS
16 (010)	COM (same as DIM)	44 (22C)	PLOT
17 (011)	CLOSE	45 (22D)	POSITION
18 (012)	CLR	46 (22E)	ODS
19 (013)	DEG	47 (22F)	DRAWTO
20 (014)	DIM	48 (230)	SETCOLOR
21 (015)	END	49 (231)	LOCATE
22 (016)	NEW	50 (232)	SOUND
23 (017)	OPEN	51 (233)	UPRINT
24 (018)	LOAD	52 (234)	SAVE
25 (019)	SAVE	53 (235)	CLOSE
26 (01A)	STATUS	54 (236)	(implied LET)
27 (01B)	NOTE	55 (237)	"ERROR (followed by the Ascii text and a Carriage Return)

Figure 8: Keyword tokens used by Atari Basic (always the first token of a statement)

Token	Meaning	Token	Meaning
9-12	Unused	36 (E24)	*
14 (E2E)	Numeric constant	37 (E29)	+
	Invert six bytes field	38 (E26)	-
	It's BCD value	39 (E27)	/
15 (E0F)	String constant (invert bytes in length, then string constant)	40 (E28)	NOT
		41 (E29)	OR
		42 (E2A)	AND
16 (E16)		43 (E2B)	! (unlike arithmetic expressions)
17 (E11)	(during for Start of Expression)	44 (E2C)	! (unlike arithmetic expressions)
18 (E12)	(parameter separated)	45 (E2D)	= (Arithmetic assignment)
19 (E13)	\$	46 (E2E)	= (String assignment)
20 (E14)	;	47 (E2F)	<
21 (E15)	;	48 (E30)	<>
22 (E16)	;	49 (E31)	>
23 (E17)	(Carriage Return)	50 (E32)	<
24 (E18)	GOTO	51 (E33)	>
25 (E19)	GOSUB	52 (E34)	>
26 (E1A)	TO	53 (E35)	+
28 (E1C)	STEP	54 (E36)	- (unary minus)
27 (E1B)	THEN	55 (E37)	! (for substrings)
28 (E1C)	#	56 (E38)	! (for arrays)
29 (E1D)	<=	57 (E39)	! (in GOTO statement)
30 (E1E)	<>	58 (E3A)	! (for function call, eg. in CHR\$(...))
31 (E1F)	>=	59 (E3B)	! (for/substring element separator)
32 (E20)	<	60 (E3C)	!
33 (E21)	>	61 (E3D)	!
34 (E22)	<		
35 (E23)	T		

Figure 38: Operator tokens used by Alan Basic

Token	Function
61 (E2D)	STR\$
62 (E2E)	CHR\$
63 (E2F)	USR
64 (E30)	ASC
65 (E31)	VAL
66 (E32)	LEN
67 (E33)	ADR
68 (E34)	ATN
69 (E35)	COS
70 (E36)	PEEK
71 (E37)	SIN
72 (E38)	RND
73 (E39)	PIE
74 (E3A)	EXP
75 (E3B)	LOG
76 (E3C)	CLOG
77 (E3D)	ISPR
78 (E3E)	SGN
79 (E3F)	ABS
80 (E40)	INT
81 (E41)	PADDLE
82 (E42)	STRIG
83 (E43)	PTRIG
84 (E44)	STRIG
85-127	Unused
128-255	Reserved for variables

Figure 39: Function tokens used by Alan Basic

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It is amusing that the internal design of the XE has remained virtually unchanged since 1975, when the first Atari 400 was introduced. Unfortunately, some areas of its performance do tend to let it down in its earliest origins. For example, Atari Basic is notably lacking when compared to other systems 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 such admirably useful 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 renumbering and deletion are conspicuous by their absence. Thus, 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 renumber 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 1636 to 1781 - 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 octocore file on tape or disc. 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 ram 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 18k of code into the 8k area from \$A000 to \$DFFF.

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

Renumbering

You may renumber your program lines from base line 10, in line incre-

ments 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 LINK, 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 renumber 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.

Deleting lines

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 quit your program. Make sure that the

remainder of your program makes no reference to the missing lines, so 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 much 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 all 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 "0", 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 bit-image 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

Form to Page 54 in

Operating system rom (\$C000 to \$FFFF)
BI Basic rom and BI Toolkit rom (\$A000 to \$BFFF)
Screen memory (Size varies with graphics mode)
Free memory for programs (Size varies)
128-byte Toolkit transfer (Address varies with system)
Operating system and Basic ram (Size varies)

Figure 4: How the Atari allocates memory

Command	Example	Purpose
CHANGE string	CHANGE X,LIVES	Change variable name
CLICK	CLICK	Toggle key-click
DEL line,line	DEL 100,200	Delete line range
DIR drive	DIR C or DIR D	Dir. directory F:
DIR!	DIR!	View DIR listing
LISTING start,end	LISTING or LISTING 0,1000	Full Atari listing
LVAR	LVAR	Variable X-reference
REN start,end	REN or REN 1,1	Renumber program
STRIP	STRIP	Remove REM statements
VAL number	VAL 3 or VAL 0F	Number conversion

Figure 5: The Toolkit's to new Basic commands

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Utility

► From Page 10

1680	110 00000	perform disk I/O	1910	100 0000	clear buffer.	2180	070 0000	
			1920	070 00		2190	070 0000	clear max. record
			1930	070	clear.			length to 0000 clear why next?
			1940					
1670	040 00000	display any error	1950	0000		2200	070 0000	clear I/O.
			1960	000 0000	print message.	2210	070 0000	clear I/O.
1680	010	advance register	1970	000 0000	clear keyboard &	2220	070	clear.
			1980	0000		2230		
1690	010		1990	0000		2240	Program Message.	
1700	010		2000	0000		2250		
1710	000		2010	000 00		2260	00000000 0710 00000 0100 00 50	
1720	070	clear.	2020	000 00	check buffer.	2270	00000000 0710 00000 00 00 00	
1730	00000		2030	000 0000	branch if T to	2280	00000000 0710 00000 00 00 00	
1740	000 000000	display error	2040	000 00	branch if T to	2290	00000000 0710 00000 0000 0000	
		message.	2050	000 00		2300	Program Message.	
1750	070 0000		2060	000 00		2310		
1760	000 000000		2070	000 00		2320	000 000 0710 000	do. all files on
1770	070 00000	advance stack to	2080	000 00	loop entrance.	2330	000 000 0710 000	current record &
		its original value.	2090	000 00		2340	000 000 0710 000	used for stack &
1800	000		2100	000 00		2350	000 000 0710 000	used for stack &
1810	000 000000		2110	000 00	advance stack &	2360	000 000 0710 000	used to save int
			2120	000 00	initial value.	2370	000 000 0710 000	Printer to read
1820	000 0000	print message.	2130	000 00		2380	000 000 0710 000	Printer to read
1830	000 0000	clear keyboard &	2140	000 0000000	clear.	2390	000 00000	Sector buffer I/O
			2150			2400		
1840	000 00		2160			2410	000 00000 + 00000000	directory to
1850	000 00000		2170	000 00		2420	** 0000	printing this on
1860	000 0000	check buffer.	2180	000 0000	do sector I/O	2430	** 0000	reading binary file to disk.
1870	000 0000	do it again	2190	000 0000	do sector I/O	2440	** 0000	000000
1880	000 000000	do it over once	2200	000 0000	do record once			
			2210	000 0000				

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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 *Atal 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 subnormal level of your code first and work down, subdividing the problem until you reach the nitty-gritty.

I prefer to write the core 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(37)*N+1)` will generate a number between 0 and N. So to get our roulette value we use the expression `INT(RND(37)*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:

```
0,4,11,14,15,16,18,19,22,25,26,29,32,35,36
```



It's a challenge!

Mike Cook helps you pick up the gauntlet to solve quite a devious programming problem

We could test these against our random value from each spin with a separate IF statement but this would take 10 lines.

```
IF RND(37) THEN
  IF RND(37) THEN
  IF RND(37) 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 initialize 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 lost. 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 capping away at that micro and I'll see you next month with a solution.

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ATARI



NEWS...NI

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 times on the system, with the aim of bringing down the cost to subscribers.

"With the vast increase in telex traffic in particular over

Costs will be cut

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 9906 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 2000 telex access to the MicroLink computer - doubling the speed at which users can transmit and receive data".

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 homebased residents of the Borough 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 subworkers 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 Robinson.

"The first 20 students start this year and should be fully trained after twelve months.

"During the year we hope employees 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 solutions for film and still photography is asking other users to help.

"We've got a strike of a job", says spokesman Neil Gathers.

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

Laying it on the line

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

Not that there's anything naughty going on. Keith is membership secretary of COBAL - 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.

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 1200/70 baud modem and telephone connection to 01-583 1375.

Once online, at the >PAD prompt simply key CALL 73 then Return. When asked to sign on, key ID MAAQ111 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.

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 *Ami User*, you'll see that my vote for the best adventure went to Infocom's *Swordfall*, which marked the welcome return of Flood the mischievous, scatterbrained, but ultimately lovable chatterbox of a robot.

To my mind, *Swordfall* 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, *Swordfall* has *PlayIt*.

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 *Swordfall*.

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 judge's first read Rouloc's column and decided that his impeccable assessment was good enough for them and

In the best possible taste

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 Billig - of *ST User* fame - has just kindly loaned me. Oh you know, once I picked up this book with my hot little hands, I just couldn't put it down and I had read every one of its 162 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 66 St Giles High Street, London WC2E 8LH and costs a merely £3.95.

The DRINKING - I can't hope that title put again in full or I'll be here all day and there are still plenty of trolls to be munched before bedtime - 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 20 >

WENDY'S RAVES

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

- 1 *Swordfall* (Infocom)
- 2 *Hitch Hiker's Guide to the Galaxy* (Infocom)
- 3 *The Pawn* (Rainbird)
- 4 *Jewels of Darkness* (Rainbird/Lovel)
- 5 *The Dark Crystal* (Sierra On-Line)
- 6 *The Guild of Thieves* (Rainbird)
- 7 *Spellbreaker* (Infocom)
- 8 *Ballyhoo* (Infocom)
- 9 *Drone Ranger* (Rainbird)
- 10 *Mordor's Guest* (Melbourne House)
- 11 *Suspect* (Infocom)
- 12 *The Hulk* (Scott Adams)

by
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More for your dollar

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



The SpartaDOS range

COMPANIES 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. These 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 spots off Dos 2.5 and the happily now extinct Dos 2.

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 (extension 3.2) you will still have 32,801 free bytes available to Basic, and the smaller versions can leave as much as 38,176 available. These figures should be set against 32,574 with Dos 2.5 and 32,800 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/85, Beak/88, AtariWriter and so on - and it seems completely transparent to everything. There is even a 2: driver which allows you to access the disk directly from Basic.

However, where SpartaDOS really

Operation	Dos 2.5	SpartaDOS	SpartaDOS + US Doubler
Format only (Single)	24.0	22.8	22.0
Format only (Double)	28.0	-	23.0
Format + write Dos (Single)	38.0	32.5	33.8
Format + write Dos (Double)	48.0	-	37.8
OPEN, write 10,000 bytes, CLOS (Single)	12.8	11.8	6.3
OPEN, write 10,000 bytes, CLOS (Double)	15.3	-	7.9
OPEN, read 10,000 bytes, CLOS (Single)	10.7	10.4	4.4
OPEN, read 10,000 bytes, CLOS (Double)	18.2	-	3.8

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

Figure 1: 1988 Speed comparison table (in seconds)

comes into its own is 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 readable, 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 cautions 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 chiselling 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 since you've read the instructions, your drive is supercharged. Upon booting your SpartaDos master disc the old beep, beep, beep 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 benchmarks 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 135k 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 who uses 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 2 will give you some idea of its amazing power and

Dos 3.3	SpartaDos	Function
A	DIRS	Disc directory, any drive (Dos 2.0 format)
B	DIR	Go to cartridge (if present)
C	CDPROMCOPY	Copy files (multiple drives)
D	FRAGE	Delete files from disc
E	RENAME	Rename files from disc
F	PROTECT	Protect files on disc
G	UNPROTECT	Remove protection from accidental erasure
H	no	Remove erasure protection from files
I	XINIT	Write Dos files (formatted during format by XINIT)
J	DUFDISK	Format disc (see also AMVT)
K	SAVE	Duplicate whole disc
L	LOAD	Save binary file (see also APPEND)
M	RUN	Load binary file (see also OFF_LOAD)
N	no	Run machine code at given address
O	BCOPY	Create MEM.DAT (SpartaDos is always in memory)
P	AMVT	Copy files (single drive) (see also SFLCOPY)
	APPEND	Format (single density Dos 2.0 mode)
	AUTOBATCH	Save binary file at end of writing file
	BASIC	Select batch file to run when Reset is pressed
	ON/OFF	Turn Internal Basic on or off
	BOOT	Set filename to load when no Dos present on disc
	BYPASS	Modify hard disc drive access number
	CHDIR	Give current disc status
	CHDISK	Change immediate status on file(s)
	CHVOL	Change volume name of disc
	CREDIR	Main new sub-directory
	CWD	Change default path details for current drive
	DATE	Set system date
	DELDIR	Delete sub-directory (must be empty)
	DIR	Show path to specified sub-directory
	DIRS	Disc directory (Extended format: timeslots/bytes)
	DIRP	Print file as Ascii + hex digits to screen
	KEY ON/OFF	Turn-ahead buffer on or off
	LOCK/UNLOCK	Protect whole disc from write operations
	MDLUMP	As for DIRP, but to print memory contents
	MEM	Show current Dos parameters/values
	OFF_LOAD	Load menu system (may be set as default)
	PAUSE	Binary load file, with offset
	PORT	Wait for a key to be pressed (in batch files)
	PRINT	Change the RS-232 configuration
	PUTRIN	Flush screen output to another device like P or C
	RD	Add run address to binary file
	RPM	Set up remotes (many configurations available)
	RS232	Test disc drive rotation speed
	TIME	Load RS-232 driver for IBM module/P-R connection
	TDLINK	Set system time
	TD ON/OFF	Load time/date loader line routine
	TRF	Turn time/date line on or off (requires TDLINK)
	TYPE	Show all sub-directories (alphabetical)
	VERIFY	Show Ascii file contents on screen
	ON/OFF	Turn disc write verify on or off
	RDV	Turn off MD selection (for basic PRINTbatch mode)
	ZHAND	Activate Z: for time/date handling from Basic
	no	Execute batch command file (separator — BAT)
	no	Execute machine code file (separator — COM)
	no	Select new default drive number, n

Figure 2: Dos 2.0 and SpartaDos features comparison

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 configura-

4 From Page 29

time 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 market prices - you'd have paid £79.95 for the US Doubler alone.

The R-Time II 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 1060 with Dos 2.5, now is the time to move up to the power and flexibility of SpartaDOS.



1060P with R-Time II and cartridge fitted

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

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Turn to page 61 to take advantage of this superb offer

Software

SCENE

On-the-ball management simulation

Product: League Challenge
Price: £7.99
Supplier: Activision, 200 Avenue
Road, London SE20 9AG
Tel: 01-771 8802

This is a game of management that allows you as a footballer to take the hot seat and grow 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 dotted line and select your team. There are 66 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 view 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 final 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 rating 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 goal-mouth 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 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 18 league matches to be played in a season together with knock-out cup matches.

An important consideration for cup matches is fitness. If a replay is necessary the option for team 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 tedious 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	8/10
Graphics	4
Playability	8
Value for money	8
Overall	7

Software

SCENE

Nerve-tingling combat

Product: Computer Ambush
Price: £19.99
Supplier: ES&L Data Links
32 Mutton Way, Mofert,
Birmingham B3 7AX.
Tel: 021-358 2088

"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 - 581 - 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.

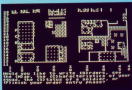
As with all 581 simulations, the game is split into different sequences of play, or phases as they are known - entering commands for the deployment of troops, allowing the computer to resolve the battle situations, receiving reports on the results and save a game.

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, PS means prepare to shoot and HH is the order to engage in



Your view of the combat

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 doctors 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 Reddy "Rich-Boy" Richfield and P.F.C. Aloysius "Gunner" Garity.

The same applies for the Germans, with names like

Obergefreiter Erik Braun and Obergefreiter Ludwig "Lover" Schaalder. 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 squid 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 pondering what the Germans had me cornered. Even though it carries quite a hefty price tag - £19.99 - it's well worth every penny.

Neil Fawcett



The opening screen

Documentation	10
Graphics	7
Playability	10
Value for money	10
Overall	10

Software

Flight of fantasy

Program: Space Shuttle
Price: \$7.99
Supplier: Firebird, 88-78
New Oxford Street, London WC1A 1PD
Tel: 01-279 8882

If the title sounds familiar it's because this is a budget re-release of a 1982M game from Activision. Firebird has snagg'd 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 370 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 using minimum 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 Auto-simulator, 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 far less pleasant with 12 pairs of hands, qualified NASA astronauts, Alan's User reviewers or function.

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 right turns must be made to keep the shuttle on course.

Once sonic booms have

been made by your shuttle and the chese plates, 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 TASM 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



Graphics	8
Sound	4
Playability	4
Value for money	7
Overall	6

Software

SCENE

Strictly for aces

Feature: Ace of Aces
Price: £29.99
Supplier: SSI/US Gold (dist)
23, Halford Way, Halford,
Birmingham B26 9AZ
Tel: 021-358 3388

CHOCOs 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 makes its mark 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 Messerschmitt 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 Messerschmitt, running fuel (presumably yours), the propeller whirling away, the chocks being pulled away and then you waving good-bye 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, radio, compass, altitude and artificial horizon. A nice feature is that as you move your joystick, the stick displayed on-screen moves too.

If at any point during the game you decide click the fire button the screen will switch between the pilot's, engineer's 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. What in a dog fight 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 speaker – 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 Messerschmitt 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 see 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 definitely 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

Sound	5
Graphics	5
Playability	3
Value for money	3
Overall	4



ATARI USER Classifieds

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- The cost is 30p per word, with a minimum of 10 words.
- We **GUARANTEE** your ad will appear in the next available issue of *Atari User*.

● For sale 80081 with free software £30 a.s.p. SC11 program recorder £10. Separately on disc £5. Alternates Reality, Dropzone, Beach Head, Mercenary cassette £3.50. Starflight, Mr Go, Blue Moon, Mission, Frostbite, Kingagle, Smash Hit 4, Board Bob, Gnomes. Tel: 0775 60306 (daytime).

● 80001, 1050 drive (with) with US-Douglas SC11 recorder, 390 interface, touch tablet, controller, printer head, Atariworks, Superquiz, Mini Office II, Flight Simulator II, Runes II, Tronizer, Filing Manager and more £300. Tel: 02582 02045.

● Atari 80081, 1950 disc drive, 1027 printer, 1970 recorder Answerwriter II, 75 disc matrix games and programs + joystick £295 a.s.p. Tel: 04959 2004.

● Wanted urgently 1950 disc drive and 1029 printer

plus Mini Office II, Buyer collects. Tel: 0882 717288.

● Atari 80081, 1044 upgrade, CTS + P&P mouse 18000, perform exactly like 80030, 4.5Mb, 14. Atanix Avenue, Stranraer, Wigornietown, DOB Wanted.

● Wanted Atari games between 1795 and 1195 and 1021 and 80081 and 1050. Do, if interested contact Lawrence Maguire, Oliver Plunket Street, Oldwicks, Co Meath, Ireland.

● 80081, 1050 drive, 502 cassette, 1029 printer, joystick, user magz lots of software including latest games. (original) Second value £800 + £200 software. Tel: 0298 754043 (evenings).

● 80081, 1950 drive, four joysticks, two disc boxes, 148 discs, software, controllers £200 - \$7 exchange. Tel: 0706 732850.

● Atari 800 and 800X, 800

and 1050 drives, 1029 printer, 1030 cassette, 18" or 19" programs, plus Commodore 1705 monitor and leads, no reasonable offer refused. Tel: Haverly 047 1305.

● Atari 1050 drive 056 plus disc and cassette from 50p to £5 and a.s.p. for price list to Wayne Barn, 10 Seymour Terrace, London SE20. Tel: 01 779 8003.

● Atari Hyperdrive ver 2 disc drive enhancement for 1050 handles software package, includes true double-density, laser-read/write, backup-up protected software similar to Super Happy Christmas computer. 804 198. Tel: 01 588 2617.

● Atari 1300E, SC13 recorder and joystick £85. 1050 disc drive 090 1029 printer £28. All as new and boxed. Tel: 01 362 9589 after 6.30pm.

● Flatley CM14 colour

monitor for Atari 8100E £90. Tel: 01 735 1638.

● 80081, 1950 drive, cassette, over 50 discs including original software boxed as new £195. Tel: 0284 81226.

● 1300E requires two keys repaired £80. 1850 plus software £20. Touch Tablet £28, cartridges £8 each, 28 budget games £25. Full price games £5 each. Tel: 0882 288482 (evenings).

● 1008 printer + Apple IV character set + software, nine months old, excellent £90. Tel: 0147 875408.

● 80081, 1950 drive, 1009 printer RMC-95, 78 classic games on cartridge and 20 latest games on disc. Also books and cart, joystick £150. Tel: Mr Lucian Yarbort, 882282 (week).

● Graphics-A7 Commodore printer interface, voice-mover complete, Microsoft Basic II cartridge, APX-PASCAL, Mini Office

II, Atari wordprocessor, board foot cartidge. Tel: 50 words £280, with Tel: 0750, will split. Tel: 01 481 4883 (week).

● Wanted: Touch tablet with software + a good tape-to-disc copier. I will give up to £20. Tel: Walsford 08241 488249 ask for David.

● Atari 800, 410 recorder plus Space Shuttle Simulator, Double Egg £50. Tel: 0295 775985 (evenings).

● Wanted 1950 disc drive about £70. Tel: Mark on Darlington 718380.

● 80081, disc drive + US double, tape deck, games, magazines etc. £200. Tel: Buxton 308796.

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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 re-installs the character set if you accidentally press System Reset.

To see 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

- MEM Holds the current top of Basic memory
- X, Y Used to poke in the data

```

10 MEM=PEEK(1000)-1:POKE 100, MEM-PAGE 1
20 MEM=ADDRESS(1000) FOR Y=10 TO 24:POKE 1
  Y, MEM-ADDRESS(Y)
30 OPEN #1,4,0,"FONTS.FONT" OF PEEKED
  Y:END FROM PAGE 241,255:GOTO PAGE 255,
  PEEKED
40 GOTO 255:GOTO 1:GOTO 10:PAGE 1,PEEKED
  Y:POKE 1, PEEKED:PAGE 11, 10:PAGE 10
  Y:POKE 1, PEEKED:PAGE 11, 10:PAGE 10
  Y:PAGE 10, 10, 10, 10, 10, 10:PAGE 1, 10, 1
  0, 10, 10, 1, 10, 10, 10, 10, 10, 10, 10, 10,
  10, 1, 10, 1, 10, 1, 10, 1, 10, 1, 10, 1, 10, 1,
  10, 10, 10, 10, 10, 10, 10, 10, 10, 10
  
```



```

10 100 101
20 110 111
30 120 112
40 130 113
50 140 114
  
```

LEGGIT 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

```

10 GARRIES=10000:GLOCK=0:A,GARRIES=
  17,0:GARRIES=17,27:GARRIES=0,25:GARRIES=0
  :GARRIES=17,27:GARRIES=0,25:GARRIES=17,27
  :GLOCK=0:GARRIES=0:GLOCK=0:GARRIES=0
  11 GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0
  12 GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0
  13 GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0
  14 GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0
  15 GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0
  16 GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0
  17 GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0
  18 GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0
  19 GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0
  20 GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0:GLOCK=0
  
```



```

10 100 101
20 110 111
30 120 112
40 130 113
50 140 114
  
```

```

40 IF 100 THEN GARRIES=0:GLOCK=0
  50 GARRIES=17,27:GLOCK=0:GLOCK=0:GLOCK=0
  60 GARRIES=17,27:GLOCK=0:GLOCK=0:GLOCK=0
  70 GARRIES=17,27:GLOCK=0:GLOCK=0:GLOCK=0
  80 GARRIES=17,27:GLOCK=0:GLOCK=0:GLOCK=0
  90 GARRIES=17,27:GLOCK=0:GLOCK=0:GLOCK=0
  
```

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

We pay £25 for each one published.

You should give a full description of the routine and any other details that

Win £25

are relevant. And remember if you want your material returning please enclose a suitably stamped package.

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

Adri User, Storage House, Adlington Park, Adlington, Marlesfield SK10 4BP.

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:

Micro registers
Software display
Micro handy

Program oriented
Micro mails
User registers

VARIABLES

- A1** 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.



```

10 100 100
20 011 111
30 010 010
40 10 100
50 100 111
  
```

```

10 DIM BUZZ(200)
20 FOR I=1 TO 200:BUZZ(I)=CHR$(ASC("A")+INT(RND*26)):NEXT I
30 BUZZ(0)=" "
40 FOR I=1 TO 200:BUZZ(I)=CHR$(ASC("A")+INT(RND*26)):NEXT I
50 DIM WORD(100)
60 FOR I=1 TO 100:WORD(I)=CHR$(ASC("A")+INT(RND*26)):NEXT I
70
80 DATA OVER, ABOUT, MATHS, PROGRAM,
LANGUAGE, SOFTWARE, HARDWARE, LIBRARY,
MEMORY, ACCESS, FILE, USER, &
90 DATA PROGRAM, PROGRAM, SOFTWARE, ACCESS,
FILE, PROGRAM, SOFTWARE, PROGRAM, ACCESS,
SOFTWARE, PROGRAM, SOFTWARE
  
```



QTIA TEXT

from Andrei Filman

ONE of the problems with Graphics Mode 11 is that it has no text window. This can be frustrating at times. This which can start with a Mode 8 screen, program starts with a Mode 8 screen, makes location 628 with 192 and then makes location 67 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 QTIA mode.



```

10 100 100
20 011 111
30 111 111
40 010 100
50 010 111
  
```

```

10 GRAPHICS:MODE:110 TO 10:MODE:0:MODE:0
20 MODE:0:MODE:0:MODE:0:MODE:0:MODE:0:MODE:0
30 MODE:0:MODE:0:MODE:0:MODE:0:MODE:0:MODE:0
40 MODE:0:MODE:0:MODE:0:MODE:0:MODE:0:MODE:0
50 MODE:0:MODE:0:MODE:0:MODE:0:MODE:0:MODE:0
60 MODE:0:MODE:0:MODE:0:MODE:0:MODE:0:MODE:0
70 MODE:0:MODE:0:MODE:0:MODE:0:MODE:0:MODE:0
80 MODE:0:MODE:0:MODE:0:MODE:0:MODE:0:MODE:0
90 MODE:0:MODE:0:MODE:0:MODE:0:MODE:0:MODE:0
100 MODE:0:MODE:0:MODE:0:MODE:0:MODE:0:MODE:0
110 MODE:0:MODE:0:MODE:0:MODE:0:MODE:0:MODE:0
120 MODE:0:MODE:0:MODE:0:MODE:0:MODE:0:MODE:0
  
```

Tyrants of Tormment



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 2027 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 Smit, a high ranking Pentagon officer, phoned the President to say he was coming over

for some coffee and beers. Due to interference on the telephone line the President misinterpreted and thought he said: "The commies have begun to land", 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 overtake them. A super hi-tech buggy equipped with all the latest weapon systems has been put at the disposal of some brave soul, fight - you are elected!

The approach to the tyrants' stronghold has been strewn with mines, so your buggy has been equipped with a suspension system that allows you to jump over them. Kamikaze defence fighters constantly

burn the area, so you have missiles to try to deal with them effectively.

Remember to use Gen & 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.

PROGRAM BREAKDOWN

- 80-120 Configure the Display List for the screen
- 120-180 Draw the mountains using sine and cosine waves
- 170-180 Display List interrupt used to put eight shades of colour on the screen
- 190-230 Redefine custom characters
- 200 Machine code subroutine used for the main game loop
- 270-300 Level select routine - if line 280 is removed you can select any of the 21 levels to play
- 340-400 Routine to change the difficulty level
- 410-520 Buggy destroyed routine
- 530-550 Completed level routine
- 580 Machine code data for the main game loop

```

10 REM *****
20 REM 4 TORMENT OF TORMENT
30 REM 4 BY
40 REM 4 GAVIN DAVIDSON
50 REM 4 SD 0484 0548
60 REM
70 REMDOS 4:PRINT "PG.1 OF 7"
80 REM FOR TO GOONDO?
90 FOR TO TO GOONDO?
10 REMDOS 4:PRINT "PG.2 OF 7"
11:PRINT "PG.2 OF 7"
12:PRINT "PG.2 OF 7"
13:PRINT "PG.2 OF 7"

```

```

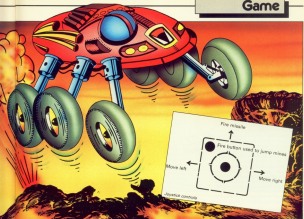
14
15 GO TO (PRINT)GOTO(1)GOTO(1)GOTO(1)
16 GO TO(1)GOTO(1)GOTO(1)
17 GO TO(1)GOTO(1)GOTO(1)GOTO(1)
18 GOTO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
19 GO TO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
20 GO TO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
21 GO TO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
22 GO TO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
23 GO TO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
24 GO TO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
25 GO TO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
26 GO TO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
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28 GO TO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
29 GO TO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
30 GO TO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)

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1:GOTO(1)GOTO(1)
20 REM 4
30 REM 4 GOTO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
40:PRINT "PG.2 OF 7"
50 GOTO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
60 GOTO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
70 GOTO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)
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300 GOTO(1)GOTO(1)GOTO(1)GOTO(1)GOTO(1)

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000 POSITION 01,117 00,1000101010000
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000000,000 1
000 POSITION 7,017 00,1 0000 000,000
0, 00,000 07,0
040 000 10000 10 000,000 0,0,000 1
000 000 1000,0,0000 100,0,0,000, 0070,
01,000 1070, 00,000 1000, 070,000 11
00,0,000 0000,0
000 000000,00700000,0,000,000
000 0000,0000,0,00,000000,00700000
0,0,0000,1070
000 07 000 00 070 1000 070,0000000
10,00,000 0000,070
070 07 070 1000 000,1
000 07 070 00 00700001,0 1000 00
01,0
000 07 070 00 00700001,0 1000 00 01
000,00
000 07 1000000000 1000 000 070
000 07 000000 1000 000000
000 07 00700001,0 1000 00700000,0
000 07 1000000000 1000 000 070
000 000 0000,107000000 0000 1000,000
000 000 00007,10,000 0007,1,0000 01
0,0,0,000 000,00,000 000,100,000 000
0,0
000 0000 0000,1,0,000 0007,1
000 000000000
000 07 000000001,1 1000 000 000
000 000 0000 10 0 000 00,00000 0,00

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000000,0,0,0,0,000 100,0,0,0,000 100
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000 000 000
000 07 00700001,0 1000 000 000
000 0000,0000,1
000 POSITION 7,017 00,1000,1,0001000
000,0,000 000
000 0000 0,0,0,0,0,000 100 10 000 000
00,00000 0,7,0,0,0,000 1 0000 0
000 POSITION 7,017 00,1 0000
000,0,000 000
000 0000 0,0,0,0,1,01,0,00007,0100
00,0007,000000 0,07,01,00,000000
000 0000 0,0,0,0,000,000,000,000,01
0,000,000,0,0,0,0,01,0,000,0,000,7,100
0,000,101,000,000,0,101,070,000
000 0000 0,00,000,000,101,00,0,0,0,0,0
00,00,107,00,00,0,0,0,000,000,0,0,1
00,000,101,100,0,0,0,100,000,100
000 0000 00,100,000,107,0,100,000,100,

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100,100,00,070,0,000,0,001,101
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100,0,000,007,00,100,00,000,0,107,07
0,107,100,070,0,107,107,0,007
000 0070 107,0,100,00,107,000,0,000,0

```

**SPEED
DISTANCE**

VARIABLES

Decides the speed of the game
Decides the least amount of space
there can be between things

4 From Page 22

107,079,031,140,04,00,000,00,105,0,041,
108,0,0,1,107,0,0,1,000,0,007,100
000 0070 147,100,000,0,170,100,0,000,1
1,040,127,0,70,05,00,007,00,140,107,0,
100,0,0,11,10,0,70,000,00,000
000 0070 101,0,107,000,0,000,0,044,11,
000,00,107,1,000,000,0,000,0,000,00
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000 0070 100,100,0,0,170,0,170,0,100,000,0,
70,00,00,100,100,0,70,00,00,100,000,
107,00,10,110,0,70,070,107,0,
000 0070 000,107,070,100,0,100,100,070
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10,000,0,000,7,000,00,70,100
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107,007,00,00,170,10,000,0,1
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10	071	071	100	070	100	000	000	000	000	070	070	000
20	070	071	100	000	100	000	000	100	000	000	000	000
30	070	000	100	000	000	000	000	000	000	000	000	000
40	070	000	110	000	100	000	000	000	000	000	000	000
50	070	071	100	000	000	000	000	000	000	000	000	000
60	070	071	000	000	071	000	000	100	000	000	000	000
70	000	000	000	070	000	000	000	000	000	000	000	000
80	000	000	000	000	000	000	000	000	000	000	000	000
90	000	071	000	000	000	000	000	000	000	000	000	000
100	070	000	070	000	000	000	000	000	000	000	000	000
110	000	071	000	000	071	000	000	000	000	000	000	000
120	000	000	000	070	070	000	000	000	000	000	000	000
130	070	000	000	000	000	000	000	000	000	000	000	000
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170	000	071	000	000	000	000	000	000	000	000	000	000



The truth about TELEX

How much does it cost to go on Telex?

You could go the conventional way and buy a dedicated Telex machine. The cheapest will cost you \$1,800 (the teletype, the device, £2,200 (the Cheats), you will also need a separate telephone line, costing £101 to install, plus \$400 a year rental. That's a total outlay over the first year of a minimum of \$3,100. (All prices include VAT.)
Or you could do what more and more *How* users are doing — use your mind to do what a Telex machine. And just use your ordinary teletype!

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 MicroLine. Telex is just one of a growing number of services available to Atari users on MicroLine. With MicroLine you can also read the news, as it happens, (a teletypewriter, MicroLine, with MicroLine you can also read the news, as it happens, (a teletypewriter, create your own closed user group, send teletypes and electronic mail right round the world, download free microline programs directly into your micro... and much more.

But why use Telex?

Because it's a simplified means of instant communication between businesses. Today there are 150,000 telex machines in use in Britain — and more than 2 million worldwide. It's used to dramatically speed up business communications — just as quick as using the phone but far more efficient, because you have a hard copy of every "communication" for your records.
But there's a big bonus you get when you use MicroLine for Telex that the conventional way doesn't offer.
With MicroLine you don't need 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 — anytime, anytime. Now's that for your business efficiency!

MANY of you have written in probing our new Get It Right! II checksum program, and one reader from Berkeley 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 regenerate a program except for the contents of string, DATA statements and REM statements. These could obviously contain any text and since they are processed separately by GIBI in any case (see my source code listing and footnote 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 connect the string and data contents from the full listing - REMs may safely be ignored. You should make sure that the original GIBI 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.

Checksum Buster

**Tired of long listings?
André Willey has one
solution to the problem**



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 reload and

LOAD it from tape or disc.

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for disc.

The original program will save the 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 initialization on page 2 will give you some clues.

```

10 REM GIBI II CHECKSUM PROGRAM
20 REM WRITTEN BY ANDRÉ WILLEY
30 REM (C) 1987 ATARI, INC., APRIL 1988
40 REM
50 REM *****
60 REM *****
70 INPUT "
80 REM *****
90 REM *****
100 PRINT "Enter program filename to save
110 PRINT "
120 IF " " THEN
130 PRINT "
140 PRINT "
150 PRINT "
160 PRINT "
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DEL

Removes a single or block of unwanted Basic lines quickly.

TOOLKIT COMMANDS

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Instantly renames your Basic programs in any line instrument.

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VAL

Converts numbers between decimal, hexadecimal and binary.

CLR

Calculates and presents the useful Atari Clear checksums instantly.

CHANGE

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

STRIP

Removes all P&Ms and reduces the size of the program.

LISTING

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

LVAR

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

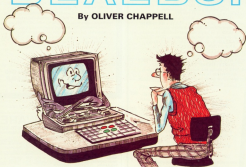
£5.95 tape
£7.95 disc

TO ORDER PLEASE USE THE FORM ON PAGE 61

REVERSI

BEΛEB2I

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 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.

Real 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 88 ▶



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and detailed information regarding software drive control, to allow you to access the full potential of the PLATE.

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1 DIM *****
2 DIM # BOARD #
3 DIM # # #
4 DIM # BOARD SWAPPL #
5 DIM # BOARD SWAP #
6 DIM *****
10 SETBOARD 1,2,3:SETBOARD 4,5,6:SETB
    OARD 7,8,9:MOVE P2,1:MOVE P2,2:
    # MOVE...
15 DIM ***** MOVE VARIABLE *****
16 MOVE #,1,2,3,4,5,6,7,8
17 DIM BOARD,1:DIM BOARD,2:DIM BOARD,3:
    DIM BOARD,4:DIM BOARD,5:
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PROGRAM BREAKDOWN

20 - 100 Define all the necessary variables and clear Page 0 where the data for the counter are stored.

110 - 180
190 - 250 Set up the screen in graphics Mode 21

300 - 440
450 - 540 Main routine for handling all player inputs

550 - 640 Machine code subroutines to calculate the computer's moves

650 - 710 Routine to change the colors of the counters

720 - 870 Routine to poke machine code data into memory

880 - 970 Print the numbers 1 to 9 vertically and horizontally along the board

1000 - 1070 Print the board on the screen and make the sound for a red or green counter

1080 - 1230 Routine to check out an illegal move

1240 - 2180 End of game routine

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If you already have a computer in use, please tick this box:

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SOFTWARE *Solutions*

Your programming problems solved by ANDRE WILLEY

LET'S get cracking straight away with a letter from Philip Carter from Frome in Somerset who is having a few problems with his BASIC.

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 results did not seem to except for trig statements correctly. Instead it gave ERASE 9 AT LINE 127, which was simply:

```
127 LET A=1/0.001
```

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 wrong with your computer — your problems stem from a slight misunderstanding of how Basic handles trig operations. To be strictly accurate, Atari Basic only supports three fundamental trigonometry operations — sin, cosine and inverse tangent for 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 you an Error 9 — for an undimensioned array reference.

I suspect that the other errors might have been caused by your using SIN(number) or COS(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 logical, 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 operators — most notably natural logarithms and square roots, both of which are readily available.

You don't require the base 10 logarithms given by LOG(number), but these based on powers of the mathematical value of e, or 2.71828. These are given using the LOG function, and antilogs 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 Pythagoras, the tangent of an angle is calculated using the very simple formula of side divided by cosine. In computer terms, the tangent of the variable X would be given by:

```
LET TAN(X)=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 as 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. Grünbauer** 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 foreign languages — the nearest thing I come to a second language is Afrikaans! Anyway, Mr Grünbauer 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 your manual I discovered the following line:

```
Processor 4001  
Clock Speed 1.78 MHz
```

Isn't that a little slow for a great computer like this? For instance, the M68000 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 OS/2.

In order to function, a CPU chip like the 6802 must be able to work in close association with all the other chips inside the computer. This means that

Turn to Page 60

SOFTWARE Solutions

4 From Page 48

It must regulate its own tasks to match the speeds of the core chips, the IC devices and, in the Atari's case, the special graphics and sound chips. If they did not all run in perfect synchronization the micro would instantly crash.

In order to keep to this strict timing a tiny crystal inside the casing of the micro sends out a very fast stream of pulses which are then used by all of the major chips to time their various activities. Thus the 6502 knows exactly when to ask the ram for information, and also when POKEY will be ready to accept a byte of sound data.

The crystal inside a European Atari calculates at 3 MHz — three million times a second. The display chip Antic needs nearly half of these cycles for its own use, so the 6552 gets left with, as the message says, 1.59 million clock cycles every second.

The MIX machine you mentioned has a clock speed of 8 MHz, or 8 million cycles per second, but you won't find it runs that much faster than your Atari for two main reasons.

Firstly the 8MHz clock will also have some cycles "stolen" by special display chips similar to, but nowhere near as powerful as, our very own ANTIC.

Secondly, although they are both 8 bit microprocessors, the 286 and the 6502 function quite differently internally. The former has a more powerful set of registers for calculations and many more instructions, but it often uses up a lot more clock cycles to do each job. In general terms, a 286 would take three to four times as many cycles as a 6502 to perform a given task.

So overall there will be little difference in CPU instruction speed between a 6502 running at 3 MHz and a 286 running at 8MHz. Any differences between the speeds of execution of Basic programs are more likely to be due to the skill of the writers of the Basic interpreter used on the machine in question.

Atari Basic is fairly fast in itself, but is easily let down by the rubbish package in the operating system. This means that overall Atari Basic is nowhere near as fast as such machines as the BBC Micro, but if you tried a machine code comparison you'd see little or no difference.

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 offline 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 it straight Ascii text version.

MicroLink — like most other Email services — requires its messages to be

in standard Ascii text form, with any comments 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 via 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 IIx Atari.

■ Well, that's just about wrap 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 II bit computer.

TMS	BASIC
Tangent(X)	SIN(X)/COS(X)
Inverse sine(X)	ATN(X/SQR(1-X^2)+1)
Inverse cosine(X)	-ATN(X/SQR(1-X^2)+1)+90
Cotangent(X)	COS(X)/SIN(X)
Inverse cotangent(X)	-ATN(X)+90
Secant(X)	1/COS(X)
Inverse secant(X)	ATN(COS(X)*1.1)+SQR(X)*1.76
Cosecant(X)	1/SIN(X)
Inverse cosecant(X)	ATN(1/SIN(X)*1.1)+SQR(X)*1.76

Calculated in degrees - change any number 90 to 157 for radians

Derives trigonometric functions

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.



Key checklist



Object checklist

- Antenna
- Antigrav (AG)
- Anti-time bomb (ATB)
- Bed
- Catering provisions (CP)
- Chair
- Chart
- Cheese
- Coffin
- Database
- Energy crystal (EC)
- Essential (E200) supply
- Flag
- Gold
- Grenade
- Kitchen sink
- Lamp
- Large box (LB)
- Mechanical (M)
- Medical supplies (MS)
- Metal detector (MD)
- Music stand
- Neuronic fuel
- Novadevice (ND)
- Oven

Your HINTS & TIPS

- Pew
- Photon emitter (PE)
- Poweramp (PA)
- Precision
- Signs
- Table
- Transmitter
- Useful armament (UA)
- Winchester
- Web

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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 text 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 STRG. 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 point 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 CHR$(21)CHR$(14) (Use the screen
   as 10 x 14)
20 PRINT CHR$(4);CHR$(14);CHR$(21);CHR$(14)
   (Use the ball)
40 FOR I=1 TO 10:PRINT I;GOTO 30:PRINT I;GOTO
   30:PRINT I;GOTO 30:PRINT I;GOTO 30:PRINT I
50 NEXT I
```

This prints a small ball which

apparently moves across the screen from left to right. The cursor is also printed, which is rather obstructing, but you can turn it off by POKE 162,1 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 0 and 15, depending on the stick position — see Figure 1. If you plug a stick into port 1, the number which



Figure 1. Numbers produced by a joystick

shows its current position — 0 to 15 — is automatically stored in a function called STICK(0).

This behaves like an ordinary variable, except that the computer's operating system sets it up for you and updates it automatically every 50-th of a second. All you have to do is check the current value stored in it, for example by:

```
PRINT STICK(0)
```

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

STICK(1) – which reads a joystick plugged into port 2.

Two other functions – STICK(0) and STICK(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, STICK(0) will go to the value 0.

STICK(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 "PRESS"
20 POSITION 3,10:PRINT "STICK(0)";:AT
30:PRINT "STICK 1";:PRINT:GOTO 10
40 GOTO 10
```

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

```
10 DEF PROCEDURE TurnDirectional (var
20:var control)
30:PROC 11,10:PRINT "PRESS:DOWN:LEFT:
40:DOWN:OFF:AND:DIR:DOWN"
50:PRINT:PRINT "Current horizontal coordi-
60:nate"
70:PRINT:PRINT "Will be used as new hori-
80:zontal coordinate"
90:PRINT:PRINT "If:DOWN:LEFT:OR:DOWN:
100:LEFT:AT:CURRENT:POSITION"
110:IF:STICK(0)=0:THEN:GOTO:140:GOTO:10:
120:PRINT "If:DOWN:LEFT:OR:DOWN:LEFT:
130:AND:NEW:COORDINATE:IS:ONE:COORD:RIGHT"
140:IF:STICK(0)=1:GOTO:110:GOTO:10:GOTO:10:
150:PRINT "New:coordinate:is:one:coord:is:
160:LEFT"
170:PRINT:PRINT "Now:we:will:look:for:any"
180:PRINT:PRINT "other:stick:positions"
190:PRINT:PRINT "If:DOWN:LEFT:OR:DOWN:
200:LEFT:AT:CURRENT:POSITION,:BY:PRINTING:
210:A:SPACE"
220:PRINT:PRINT "If:DOWN:LEFT:OR:DOWN:
230:LEFT:AT:NEW:HORIZONTAL:POSITION"
240:PRINT:PRINT "Update:current:cursor:to:"
250:PRINT:PRINT "new:stick"
260:PRINT:PRINT "If:DOWN:LEFT:OR:DOWN:
270:LEFT:AND:NEW:COORD:
280:GOTO:10
```

Program 1. Joystick control

not. If it is the rest of the program line is executed, but if not, Basic ignores

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 – HX and HZ. The former holds the character's current horizontal position and the latter is the position it has to move into.

HZ will have the value HX+1 if the character has to move one space right, or HX-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 11th line down – the top line is line 0, remember.

Now look at line 90. If the value of STICK(0) is equal to 15 – stick controlled – the program stays there. If STICK(0) is not equal to 15, Basic moves on to line 10 where it checks to see whether the stick value is 7 – pointing right. If so, it adds 1 to the current value held in HX, stores the new value in HZ and jumps to line 100.

If the stick value is not 7 the program skips to line 80. This line sets HZ to HX-1 if STICK(0) is equal to 11 – pointing left. Any value other than 15, 7 or 11 will take it to line 80 which loops back to start the checking process without affecting HX or HZ. 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 (HX,11) – thereby erasing it from the screen – then line 110 requires the ball at its new co-ordinates (HZ,11). This happens so quickly that the ball appears to jump from one position to the other.

HZ now holds the cursor's current horizontal position, and line 120 transfers this value into HX 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

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movement if the ball hits either boundary.

The least complex way of doing this is to nest the second IF...THEN statement inside the first. Change lines 70 and 80 to read:

```
70 IF STICKEN < 0 THEN IF ATOR THEN G  
  (P40+L070) 100  
80 IF STICKEN > 11 THEN IF ATOR THEN G  
  (P40+L070) 100
```

The symbol < means is less than and > means is greater than. So line 70 will now update A2 only if the stick is pointing right AND if the character has not yet reached the right-hand border. Similarly line 80 will update A2 only if the stick is pointing left and the character has not reached the left border.

Once you understand how this program works you're ready for Program 8 — our first game. It's called Spider Attack and uses most of the techniques you've learned so far. It, when you type it in, there's anything you

```
10 REM Program 8: Spider Attack game  
20 H90 T50:PRINT CHR(122);CHR(84):Goto  
  cursor location and clear screen  
30 ATOR=0:GOTO 100  
40 FOR STICK=0 TO 30 STEP 1:POSITION 27  
  40,20:PRINT "*****";GOTO 100  
50 IF STICK=0 THEN GOTO 100  
60 POSITION 27,0:PRINT "*****";GOTO 100  
70 IF STICK=1 THEN GOTO 100  
80 IF STICK=2 THEN GOTO 100  
90 POSITION 27,0:PRINT "*****";GOTO 100  
100 GOTO 40  
110 POSITION 27,0:PRINT "*****";GOTO 100  
120 GOTO 40  
130 REM Moving 10 three methballs  
140 FOR B=1 TO 10  
150 POSITION 27,0:PRINT "*****"  
160 GOTO 40  
170 POSITION 27,0:PRINT "*****"  
180 GOTO 40  
190 GOTO 40  
200 GOTO 40  
210 REM 100 methballs  
220 FOR I=1 TO 100  
230 GOTO 40  
240 GOTO 40  
250 GOTO 40  
260 GOTO 40  
270 GOTO 40  
280 GOTO 40  
290 GOTO 40  
300 GOTO 40  
310 GOTO 40  
320 GOTO 40  
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920 GOTO 40  
930 GOTO 40  
940 GOTO 40  
950 GOTO 40  
960 GOTO 40  
970 GOTO 40  
980 GOTO 40  
990 GOTO 40  
1000 GOTO 40
```

Program 8: Spider attack game

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 methballs at them to deter their insupportable advances. The heroine is represented by a least — CHR(84) — at the top of the screen — yes, I know it's weird, but I couldn't find a macho symbol in the character set. The methball missiles are represented by the ball character — CHR(86). 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 methball. 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 ripping around all over the screen with every POSITION command. It's all 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 head character at top centre.

Lines 60 to 100 read the joystick and move the heroine one space left or right using the techniques we explained in Program 1. Line 60 checks to see if the fire button is pressed and, if it is, control passes straight to line 100 which handles the methball movement.

Since the methballs have to move vertically down the screen, the horizontal co-ordinate remains constant and the vertical co-ordinate increases according to the FOR...NEXT loop which starts at line 100.

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

Line 200 keeps track of the number of methballs thrown and ends the game when it reaches 25. The command END does precisely what you'd expect it to — it terminates pro-

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 tracking a vertical all the way down screen. So any PRINT statement will now 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 to one or more of the existing variables — for example:

```
100 SOUND 8,400,10,1
```

or, for greater variation, make the pitch 10 times the value of ROM as in:

```
100 SOUND 8,400+10,10,1
```

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

```
110 SOUND 0,0,0,0
```

So much for two-dimensional joystick movement. Now take a look at Program 81, 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 81: Subroutine written to
11 2-dimensional joystick control.
12 2-DIRECTIONAL JOYSTICK CONTROL,
13 2-DIRECTIONAL JOYSTICK CONTROL,
14 2-DIRECTIONAL JOYSTICK CONTROL
15 2-DIRECTIONAL JOYSTICK CONTROL
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100 2-DIRECTIONAL JOYSTICK CONTROL
```

Program 81: Subroutine method for joystick control

Your subroutine starts, for example:

```
00000 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 beep 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 SOUND 8,100,10,0
50 GOTO 10
60 SOUND 8,100,10,0
```

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After the first call (line 10), Basic will automatically go to line 20. After the second call (line 25) 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 again 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 II. 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 230. To go left it's GOSUB 260, and to move diagonally up/left we simply call both routines one after the other - GOSUB 230 GOSUB 260. 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 50 to 100 in Program IV with lines 80 to 200 in Program II.

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.

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

```
10 REM PROGRAM IV: More elegant joystick control, using subroutines
20 SCREEN=CURRENTSCREEN:CURRENTSCREEN=SCREEN
30 SCREEN=SCREEN+1:GOTO 40
40 GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
50 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
60 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
70 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
80 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
90 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
100 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
110 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
120 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
130 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
140 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
150 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
160 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
170 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
180 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
190 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
200 REM GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
210 GOTO 10
220 RETURN
```

Program IV: Elegant joystick movement

```
100 GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
110 GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
120 GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
130 GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
140 GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
150 GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
160 GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
170 GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
180 GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
190 GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
200 GOTO 210:IF C=0:GOTO 50:GOTO 60:IF C=1:GOTO 70:IF C=2:GOTO 80:IF C=3:GOTO 90
210 GOTO 10
220 RETURN
```


Put in the boot when all else fails

JUST before Christmas I bought a 800X 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 CLOAD. 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 *Conan* and *Barbarian* run on my computer? — **A. White, Bannock, 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 800X, 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.

Conan and *Barbarian* will work perfectly.

Display width poke

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

When I do this line the end it 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? — **David Goring, Leeds.**

Before you attempt to enter the listing type F0XE 805 followed by Return. This will increase the width of the display and allow you

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to enter more characters per program line.

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

Saving with paint

COULD you please tell me if it is possible to save or print pictures from the Paint artist package? I have an Atari 130XE, 1080 disc drive and 100X 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 opening the disc menu from the main menu and selecting Save File. Enter

the filename when prompted, but make sure you have a Dos file in the drive.

In the January 1988 issue of *Atari User* there was a program to convert Paint picture files to a 60 sector uncompressed file, and in the same issue there was also a utility to print the newly-converted picture on an Atari 100X printer.

Cartridge gadget

I OWN an Atari 130XE and 1080 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 gadget's expert Len Golding to design something to overcome my problems? — **Robbie James, Warrington.**

It would be possible for Len to design such 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 regrettably, it's a non-starter.

Recipe for success

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

Turn to Page 68 in

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 users 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 *Micro Technology* brought out its interface and cable and *Multi-Systems* software which allows the use of split baud rates and the teletext modes.

Now Atari users are not restricted to 300/300 bulletin boards and *MicroLink*, *Telecom Gold* and can now access *Protext* and 1000/75 bulletin boards to their Atari's console. — **Peter Boulter via MicroLink.**

From Page 87

and astrology programs for the 8 bit Atari.

Wishes of a couple of programs available on astrology, see *From The Catalog*, Ltd Bessie Street, San Francisco, CA U.S.A. and one from Astrologic, 67 Parsennett Road, Normal, Massachusetts, MA U.S.A.

A good astrology/astrology program is available from Nova Networks, P.O. Box 780253, Austin, TX 78718 U.S.A. It is called *The Computer Cosmos* and is very useful and informative. — B. Lousier, Burnaby, Canada.

Sub hunting for errors

COULD you please tell me if there is anything missing from the listing of *Submarine Hunter* that appeared in the January 1988 issue of Atari User?

I am convinced I have entered it correctly, but when I play it I find that no score appears at the bottom of the screen. — M. Fitzgerald, Darlington, West Midlands.

■ The listing we published was complete and works perfectly. Check the lines of data very carefully, as a mistake there may not crash the game but could cause the wrong information or none at all to be displayed.

CTD LETTER

The Melody lingers on

What a marvellous program *Melody Maker* by Bruce Woodard 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 chief movement of Baroque's *La Catedral* needs 4128 bytes to store including its repeats.

Also tunes are stored in

files whose size is set by the variable *CAP*, so a little fringe overruns the same size as a program.

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

```
150 DIM S(65535) DIM M(128)
160 DIM M(128) DIM S(65535)
170 DIM S(65535) DIM M(128)
180 DIM M(128) DIM S(65535)
190 DIM S(65535) DIM M(128)
200 DIM M(128) DIM S(65535)
210 DIM S(65535) DIM M(128)
220 DIM M(128) DIM S(65535)
230 DIM S(65535) DIM M(128)
240 DIM M(128) DIM S(65535)
250 DIM S(65535) DIM M(128)
260 DIM M(128) DIM S(65535)
270 DIM S(65535) DIM M(128)
280 DIM M(128) DIM S(65535)
290 DIM S(65535) DIM M(128)
300 DIM M(128) DIM S(65535)
310 DIM S(65535) DIM M(128)
320 DIM M(128) DIM S(65535)
330 DIM S(65535) DIM M(128)
340 DIM M(128) DIM S(65535)
350 DIM S(65535) DIM M(128)
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370 DIM S(65535) DIM M(128)
380 DIM M(128) DIM S(65535)
390 DIM S(65535) DIM M(128)
400 DIM M(128) DIM S(65535)
410 DIM S(65535) DIM M(128)
420 DIM M(128) DIM S(65535)
430 DIM S(65535) DIM M(128)
440 DIM M(128) DIM S(65535)
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960 DIM M(128) DIM S(65535)
970 DIM S(65535) DIM M(128)
980 DIM M(128) DIM S(65535)
990 DIM S(65535) DIM M(128)
```

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 that's my part done. Does anyone else have we can introduce an harmony? Any ideas? — M. Holland, Lower Penn, South Staff-shire.

Customised screen

I HATE 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 the 280 didn't match the one published.

After creating an autoboot

casette 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 on.

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

■ Unfortunately, several bits of data were lost from the end of line 280. The line should read:

```
120 DATA 128,201,11,241,
1,1,11,2,280,71,71,11,1,1
11,11,2,280,71
```

Vintage month

MAY I congratulate you and all your staff for the excellent February issue of Atari User. There was a superb variety of programs and articles which made this

edition extraordinarily interesting and informative.

I was intrigued by the technique, exemplified by the *Dragon Equation* program, of revoicing the digitised values of cassette input.

Even a book I have — *Mapping the Atari* — never gave me any hint of what the values of the registers signify. So thanks for a superb and fun-to-use program.

I have also been waiting a long time for a music playing program combining an on-screen editor, and getting *Melody Maker* in the same issue was a real bonus.

May I also congratulate you on your excellent *Get It Right!* program, which has saved me a lifetime's application on what went wrong with my programs.

More of the same, please. — Richard Martin, Aston, London.

Software shortage

HOW is it that 8 bit Atari owners always get left out when games like *Our Hero* are released? I have written to many of the major software companies, but to no avail.

If games like *Our Hero* and

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

I AM also annoyed about the sad fact of software available for the 8 bit Atari in my home town of Barnrow 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 used numbers of games when those of us

with the better machines have to sit out in the cold? — S. White, Barnrow in Furness, Cumbria.

I AM in total agreement with Martin Osborne. It seems that all of a sudden software houses have realised the 8 bit Atari computers for the one 80 bit 57.

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

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 to reach a vast expanse of commercial retailing I still have problems finding Atari software.

I have been informed by its advert that *Simon* (Shop in the UK's No 1 Atari specialist) but although it may have been, since its Tottenham Court Road branch started to sell other brands 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 year's article from shops and certain soft-

ware 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. — **Piero Chesler, London.**

■ The Gallup chart is compiled from sales 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? — **Glen 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 I 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 AE systems and I send my thanks to Bob (Glenwood) who has done a great job since he arrived at Atari.

I do hope that it will now

release its old cartridge games again at a budget price as I think that they will sell very well.

■ At the show I saw the new Atari light gun for the XE games system: Will it connect on my 1300X computer? — **Jackie O'Malley, Harrogate, North Yorkshire.**

■ The new light gun will work on your 1300X, but the only game currently available for it is *Bug Hunt* on rom cartridge.

■ In the February 1988 issue of Atari 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 coming in highlighting the lack of software for 8 bit Atari. Perhaps if we could afford and long enough somebody will do something about it.

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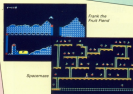
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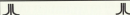
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