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Vol. 3 No. 6

October 1987

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Get it Right!

All major listings in this issue are accompanied by checkmarks to help overcome typing mistakes. For full details of how they work, see the article in the August 1989 issue of Atari User.

Link your Atari to the outside world with...

MicroLink

Electronic mail – The cheapest and fastest form of communication possible. It costs the same to send a message to one million as to 500!

Telex – Link up with 90,000 telex subscribers in the UK and 1.6 million worldwide. You can even send and receive telexes after office hours or while travelling.

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Tele-shopping – Reserve train and theatre tickets, check flight details worldwide, or order from a vast range of products – from flowers to frozen steaks.

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Radiopaging – If you also have a pocket radio pager you'll be alerted each time an urgent message arrives in your mailbox. So you're always in touch.

Gateways – Get through to New York in just five seconds – or key into the BBC computer in Luxembourg, which links you to 800 databases throughout Europe.

When you join MicroLink you've got the world of communications at your fingertips – 24 hours a day. You'll have immediate access to ALL the facilities offered by Telecom Gold ... and a great deal more besides.



Two recommended packages

If you have an 850 interface:
Pack Nightingale manual modem + cable (775.150 PLUS Mini Office II (279.95).
Total price: £105.10.

If you don't have an interface:
Miracle 160/2000 V21, 875 modem + (optional) interface + cable + Teleworks software.
Total price: £148.95.

With either combination you can also log on to other databases and bulletin boards all round the world.

All you need – apart from your Atari – is a modem, which plugs into your telephone wall socket, plus suitable communications software.

We have provided two possible options on the left.

Whichever equipment you use, you will be able to call MicroLink, open your mailbox, save to disc any messages waiting for you, and disconnect in as little as two minutes.



More than 50 per cent of subscribers can connect to the MicroLink computer at local call rates.

TO GET THE MOST FROM the system and fit it to the options below. You will receive full details of services and costs, together with an explanation of how to use the system, and within days you and your staff will be able to use all the services of MicroLink and Telecom Gold.

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ATU 15

PRIZE CRASH

A NATIONAL electronic mail competition offering a mugshot of champagne as the star prize resulted in a giant hangover when the winner unwittingly caused the software in the central computer to crash.

When ex San Francisco police officer Cameron (Carol) Lopez posted the 10,000th message on the MicroLink bulletin board from his office in Grimsby, all that should have happened was that he received a free bottle of Bluet & Charbon to mark the milestone achievement.

Unfortunately when he was informed at that time was that the BBS system was only designed to cope with a date field of four characters – up to and including 1999.

So when just one additional message was received, it was as if a giant fuse had blown.

In fact, the only person left with a grin on his face was Cameron Lopez.

MicroLink boss David Meakin – it should have been a straight one, for it seems that Cam checked a little bit.

"He'd obviously written a program that started sending identical messages just as the number of messages on the board was approaching the 10,000 mark".

All the messages said was: "Is this the one?"

Playing to win

ATARI's \$67 million takeover of American retail chain The Entertainment Group is the start of a new era, says chairman Jack Tramiel.

"Atari is going to be an international electronics company", he said. "We want to expand into book production and distribution and the vertical market in computers".

Speaking of his administration for American WMS have General George

MASSIVE sales of video games and consoles have been predicted by Atari for the Christmas market.

The prediction has been made following a huge increase in sales of video consoles and games in the American market last year.

Figures just released show that the company's turnover was up by 38 per cent with profits of \$11.6 million as sales of \$38 million in just three months. The American success is expected to be mirrored here this Christmas.

new that Atari's video games machines are to be sold in all the High Street multiples.

"For the past three years if parents with children aged 10 and under wanted a video games machine then they had to buy an expensive computer to do the job", said an Atari spokesman.

"With the 2600 video console retailing at £49.99 parents have an inexpensive way of buying a games machine and getting their

children used to the idea of using a computer".

The two other machines which will also be on sale in the multiples are the new 8000 computer games console for £79.99, and the XE computer games system for £149.99, made up of the console and a keyboard.

The list of games for the consoles grows almost daily. Atari's own label software catalogue for the machines is already swelling towards the 100 mark.

Lighter touches

HUMOUR has been injected into the latest Magnetic Scrolls adventure game released for the Atari 8-bit by Rastland.

Written by In Aquarion – a neighbouring country to the setting of top-selling The Puma.

Rastland 800-348-8838 say that the light-hearted game is a quest for magic stolen by witches and hidden down seven mazes.

Database heads for the States

A NEW transatlantic deal will see a British software house reverse recent trends by establishing a major presence in the United States.

Database Software has reached agreement on a joint venture with ShareData, pioneers of budget packages in the States and a public company valued at \$55 million.

The end result is the formation of Database Software Inc. in Phoenix, Arizona.

The new corporation aims to market the best British and European titles through ShareData's 12,000 outlets in North America.

Database Software is part of the Database Group, the UK's leading publisher of computer magazines including Atari User.

As a software house, it has sprung to prominence in Britain in October, 1984, with the release of Mini Office – an Atari 8-bit favourite.

Database Software is today recognised as one of the fastest growing companies in its field in the UK. The last 12

months have seen its turnover increase more than five times.

Similarly, ShareData in the States has a track record second to none.

It has become the presenter for the American industry, recording sales of more than 500,000 units in the last three months.

Michael Meakin, joint managing director of Database, flew to Arizona to complete the British-American deal.

"We have spent a long time looking for a suitable partner in the States to make us a truly international company", he said, "and in ShareData we believe we have found the perfect answer."

"Now the search is on to find the hottest software properties in Europe and Britain to sell in America."

"It is a huge market with an immediate thirst for good software", said Michael Meakin. "We intend to satisfy that demand with the help of the wealth of excellent software authors over here".



The Controller Card Desktop Management System

For the Atari 800XL/1000SE Computers

One of the most powerful features of the ATARI ST and COMMODORE AMIGA is the "DiskTOP". This system allows the user to have a strip of utilities in memory while running commercial software, when purchased the desktop system the Controller Card will be temporarily frozen. The Controller Card is an internal hardware modification that allows us to tell you that Atari 800XL/1000 will give you the most advanced Desktop Management System available today....

DESKTOP MASTER DISK

Snapshot Printer Computers with the SHG

Printout screens from commercial game file pages in graphic application packages. Will handle any graphics mode including mixed graphics modes. Full 4x size printouts. Built-in shade selector included in our unique SHG system which is a true high definition bit image printer compatible to a protocol for Epson and compatible printers.

Superdump II Memory Dumper

The perfect utility for software development, just dump the contents of memory where the error occurs then examine and modify. Can also be used to upgrade your cassette software to disk or main-disk to disk backups.

The O.S. Boot Menu

A Desktop resident multitask menu, by simply pressing the HELP key you exit the main program in the menu.

Disk I/O Analyser

A unique and very powerful disk debugging tool which prints out all the relevant information concerning the interaction between the disk drive and computer as the disk software is loading or reading/writing data.

The Control Panel

Triviality will allow you to enter a wide range of system parameters such as: turn on/off, MCVoice, mouse ball, key lock, fast cursor/keyboard debounce rate, primary system status, the system boot rate and the system character set (14 alternative character sets to choose from).

400/800 Operating System Server

This facility will allow you to save the O.S. from the 1000/800 Atari computer to create true simulations of upgrade customized roms such as (ARMSIM) or disk to server the 800XL/1000SE computers via the Desktop.

Additional Desktop Library Disks

Library Disk #1 - 1000 Snapshot Printer Dumpers
Similar to the SHG Snapshot printer dumpers but not dedicated for the 1000 printer.

Library Disk #2 - SHG Professional Print Package
Combines the SHG Graphics converters and Disk enhancers together on one menu disk. The Graphics converter will give you desktop publishing packages i.e. TYPESET TITEL (point settings) a printer that matches a protocol using Epson 8 pin dot matrix compatible printers with reverse line feed. In fact the only competition we have is a Laser printer!!

Library Disk #3 - The Superdump II Toolkit
The ultimate backup system for standard and U.S. Double-diskers. This disk is essential for all unique features it would tie up the whole of this ad space to describe them.... Please ring for more info.

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- The 5 PLATE can READ/WRITE a whole track in the time it takes a standard 1050 drive to READ/WRITE a single sector (up to FIVE times standard speed).
- Supports double, Dual and Single Densities.
- Better D/A/R is now no longer required to obtain Hi-speed as with US Doubler.
- Other special features are: Slow down, Fast write, Fast read, Drive write lock, Save on/off, Fast formatting.
- Fast write with verify. This system is faster than other systems which write without verify.
- A double sided operating system disk is supplied which offers the following:
 - 5 Doubler, US Doubler, Stretched 1050 and Archiver emulation.
 - Track Tracker, Diagnostic tester, 48k and 128k Disk Backup utilities.
- The PLATE can be made invisible to software detection by either slow down or 1050 emulation.
- Supplied with detailed information regarding software drive control to allow you to access the full potential of the PLATE.
- Will run all available disk operating systems (DOS) including: Spooldisk, Happy warp speed Dos and other high speed systems.
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Gnome on the Range

THE friends at Level 9 Computing have been taken over by a gnome, according to recent correspondence discovered in a hollow oak.

Don't tell the daily-looking folk in the picture that they're posing with a cardboard cutout — they believe it is a hybrid Babbage, their new managing director and founder of the latest Level 9 offering

for Atari 8-bit machines.

Called Gnome Ranger, it is a three-part recreation of an epic journey with multi-player puzzles and a lot of what Level 9 calls "amusing text".

Characters, who all have their own lives, can be organised and ordered about by the player and there's a 48-page Journal to help. Price £3.95 from Level 9 (0344 487572).

It's word perfect

BRITISH computer users can now have access to what is claimed to be the biggest and most up-to-date multi-lingual dictionary in the world.

And it is already being viewed as a major breakthrough for groups as diverse as businessmen faced with foreign correspondence through to schoolchildren struggling with homework.

It is all part of a new service being offered by MicroLink, the UK's fastest growing electronic mail network.

Sitting at their keyboards, all subscribers have to do is type in a word or a complete phrase and the Great European Dictionary does the rest.

Hosted in an EEC sponsored mainframe computer in Luxembourg, the electronic dictionary is the result of a massive collaboration between language experts throughout the community.

The Great European Dictionary consists of more than

300,000 words and phrases in English, German, Danish, Dutch, French, Italian, Portuguese and Spanish.

Such is the sophistication of the computerised language facility that it offers translations from any one of those languages into any other — or into more than one at the same time.

Nor does the service confine itself to straightforward translations. It also provides detailed explanations of the word or phrase, together with relevant notes about how and where it should be used — both in English and foreign languages.

"Such explanations in the foreign language constitute an invaluable source of material for translators", says Derek Martin, head of MicroLink.

"As it is being continuously amended and updated it is far more accurate and up-to-the-minute than any conventionally printed dictionary".

THE GALLUP CHART TOP 20

THIS MONTH	LAST MONTH	TITLE (Software House)	PRICE
1	•	DECATHLON <i>Firebird</i>	1.99
2	▲	MILK RACE <i>Mastertronic</i>	2.99
3	▼	GAUNTLET <i>US Gold</i>	9.95
4	•	LIVING DAYLIGHTS <i>Danmark</i>	9.95
5	▲	AMAUROTE <i>Mastertronic</i>	2.99
6	▲	GUN LAW <i>Mastertronic</i>	1.99
7	▼	HÖNVER BOYWER <i>Mastertronic</i>	1.99
8	▼	MICRO RHYTHM <i>Firebird</i>	1.99
9	•	JACKLE AND WIDE <i>Building</i>	1.99
10	•	FRENESS <i>Mastertronic</i>	1.99
11	•	NINJA <i>Mastertronic</i>	1.99
12	▼	SILENT SERVICE <i>Microgrip/US Gold</i>	9.95
13	•	BOULDERDASH <i>First Star-Prism</i>	2.99
14	▲	LEADERBOARD <i>Access/US Gold</i>	9.95
15	▼	COLONY <i>Building</i>	1.99
16	▼	UNIVERSAL HERO <i>Mastertronic</i>	1.99
17	•	TABLE FOOTBALL <i>Rhino</i>	1.99
18	▼	INVASION <i>Building</i>	1.99
19	•	DEATH RACE <i>Atlanta</i>	2.99
20	▼	LA SWAT <i>Mastertronic</i>	2.99

Compiled by Gallup/Microscope

Decathlon from Firebird enters the chart this month at No. 1, knocking Gauntlet from that position. See the review of Decathlon in this issue of Atari User. There is a great deal of movement with eight titles entering the Top 20 — while the majority are budget titles, the full-priced Living Daylights from Danmark enters at No. 4.

NEWSLETTER

Spreading the word

IN the centenary year of the International Esperanto League, a new branch – in Grupa to be exact – has been formed in London, and MicroLink is its chosen electronic route to the rest of the world.

About 82 million people worldwide – 8 million in Europe – speak the amalgam of Anglo-Saxon and Latinate rompages invented in 1887 by Polish doctor Ludovic Zamenhof.

The Sud-London Esperanto-Grupa has been going for five months.

Secretary Gregory Porlo said: "We believe the time is ripe for a revival of interest in Esperanto. Not just because of its centenary, but also because it has been accepted as a subject for the new GCSE exams and is now the EC's official language for basic translation.

"The South London branch of Esperanto is using MicroLink to further spread the word about the benefits of learning the language".

Typesetting over the line

LOW-COST, professional quality typesetting for everything from business cards to magazines is now available electronically on MicroLink.

Wordstream provides a 24-hours-a-day, seven-days-a-week service for companies and individuals who want to control their own printing and save on costs.

All subscribers need do is key in the text on their minis and send it via MicroLink's electronic mail system. It is switched elec-

tronically to Wordstream in Bournemouth who typeset the material and return the finished product by first class post or special delivery.

Text for typesetting can be prepared on an ordinary word processor by inserting special codes to specify typefaces, sizes and measures. Then it is transmitted to the Wordstream minilink on MicroLink.

Special software automatically checks the text file to ensure that codes

are correct, and initiates processing immediately. Within 30 minutes a bromide repro for photographing or camera is produced for despatch to the customer.

The service offers 105 typefaces from 8.5 to 72 point. The range includes expanded, condensed and italic type, variable letterfit, accents and fractions, and paper-saving multi-column text.

Payment is by the foot length of repro and Wordstream registration is free on MicroLink.

SPEEDING THE FACTS

NEARLY 30 of Scotland's largest local authorities and six local government trades unions are communicating electronically via MicroLink.

The Scottish Local Government Information Unit was set up two years ago as an information research and publicity service for the organisations.

"We feed facts and fig-

ures in easily digestible format to well over 1,000 key elected officials and administrators", said the Unit's director Archie Fairley.

"In addition we are a source of local government information.

"MicroLink telex and electronic mail facilities will help us move all this information a lot faster than before".

Aid to trade

MICROLINK technology is helping improve trade links between Britain and the Third World.

Latest overseas businessmen to take advantage of fast, efficient telex and electronic mail facilities is S.S. Piyasinha.

He is managing director of Bureau-Matic, based in Abidjan, capital of the Ivory Coast, a former French colony in West Africa.

"My company imports computer accessories from various suppliers in the UK, but existing communications are not satisfactory", he said.

"Letters can take up to three weeks to arrive and the telephone service is very erratic.

"I plan to use MicroLink for all my international communications from now on because I know it will depend on its speed and reliability".

New Open University Club

USE many of the Open University's 70,000 plus students, electronics engineer Jim Hatten often feels a sense of isolation.

"I can't get to evening classes every week, I have little or no contact with other OU students, and though the instructors are very helpful they are also very busy and I dislike bombarding them with letters and phone calls", he said. Jim's solution – for

himself and other part-time students in the same situation – has been to form an Open University Club on MicroLink where people can communicate electronically about their studies.

"At a recent summer school I discovered that a lot of people like me can't get to the tutorial", he said. "But lots of us have minis and modems, so the technology for exchan-

ging ideas and opinions is there to be tapped.

"The Open University has a policy of encouraging self help groups where students can discuss problems and gain a greater understanding of their courses.

"I'm hoping that OU instructors will also log on to the Open University Club on MicroLink so that students can benefit from their input too".

Play the game of life

A PROGRAMMING assignment often set for would-be computer scientists is to write a program that simulates the evolution of life at cell level.

The rules are simple: if an empty cell is surrounded by exactly three live cells a birth will occur in it, but if a live cell is surrounded by more than three or fewer than two live ones it dies of overcrowding or loneliness respectively.

The amount of calculation involved to determine the status of a cell makes Basic Life programs very slow, so here is a machine code version which can analyse approximately 1800 cells in less than one second – less time than it takes a Basic version to analyse one cell.

Type in the program as it stands and



Figure 1
The glider

PHILIP MASSAM's program simulates cellular evolution

save it to tape or disc so that you have a backup copy. Then run the program, and if all is well the display will change to two graphics: 8 lines sandwiching an area of graphics 12.

Now the program will allow you to set up the initial pattern of cells using the joystick. Move the cursor – shown by the cross – to the required position and to create or erase a cell press the fire button. When the cursor is on a cell, it will be red, otherwise all cells will be green.

If Option is pressed once you've set up the initial pattern the program will switch to single step mode instead of the default continuous generation mode.

Pressing Start will start the life process. All cells born in one generation will be coloured red and all cells arriving from one generation to another will be green. If the single step mode is used each generation will be created when the fire button is

pressed.

At any time the Life process can be stopped by pressing Help. The number of generations that the life form has survived is shown at the bottom left of the screen.

As you experiment you'll find many interesting patterns of cells, but to start you off the two figures show well known ones. Figure 1 gives a pattern that appears to walk across the screen and is known as the glider. Figure 2 is known as the seed and is best seen in single step mode.



Figure 2
The seed

```

10 REM LIFE by Phil Massam
20 REM last version 2000
40 SCREEN 0
50 GOTO 1000
60
70 GOTO 1000
80 GOTO 1000
90 GOTO 1000
100 GOTO 1000
110 GOTO 1000
120 GOTO 1000
130 GOTO 1000
140 GOTO 1000
150 GOTO 1000
160 GOTO 1000
170 GOTO 1000
180 GOTO 1000
190 GOTO 1000
200 GOTO 1000
210 GOTO 1000
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980 GOTO 1000
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1000 GOTO 1000

```

This is one of hundreds of
programs now available
FREE for downloading on

MicroLink

```

1000 REM LIFE by Phil Massam
1001 REM last version 2000
1002 SCREEN 0
1003 GOTO 1000
1004
1005 GOTO 1000
1006 GOTO 1000
1007 GOTO 1000
1008 GOTO 1000
1009 GOTO 1000
1010 GOTO 1000
1011 GOTO 1000
1012 GOTO 1000
1013 GOTO 1000
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Save to Page 32 9

It's a real steal!

Program: *Guild of Thieves*
Price: £19.95
Supplies: Standard Software,
Rise Above, 24 Aveo Oxford
Street, London WC1A 1PS.
Tel: 01-407 2280

TO risk this or to risk that, that is the question. Well, it is if you want to join the notorious Guild of Thieves because, make no mistake about it, thievery is what this adventure is all about.

In this excellent follow-up to *Rainbird's The Pawn*, you have applied to join the Guild and must qualify for membership by proving you have the necessary knocking-off skills.

Cast away on an island (in Kerorania, naturally), you have been tasked with stealing every bit of treasure you can lay your little fingers on.

The game starts in a boat seat to a jolly, bearded, bald head of the Guild, the Master Thief, beckons you to jump ashore and begin conquering the island.

When you disembark, the Master Thief disappears, but that's not the last you'll see of him. Throughout the game, he reappears briefly at the most unlikely moments, adding an extra bit of spice and fun to your escapades.

Your first step is to get out of the boat and on to the jolly. And because the parser seems a bit sluggish with this opening, leaving the boat isn't as straightforward as it should be.

But it doesn't really matter – failure to leave the boat fairly promptly causes the Master Thief to lose patience and drag you bodily from the boat anyway.

Generally speaking, the parser is very good at handling your commands. What is odd is that it seems better at handling really complex input than some of the simpler commands.

For example, **EXAMINE** ALL (very useful) describes all the objects in a single location but not those which are inside another object, even though this is clearly visible.

Two commands that really make progress much easier are **GO TO** a place and **FIND** an object. Provided you have already visited it, **GO TO** will take you directly to the location specified taking you through any intermediate locations on the way without tiring, unless there is something that physically prevents you from going on.

The **FIND** command similarly takes you straight to the location of a previously discovered object – so handy if you have been littering the island with items and failed to take a note of where each was last left.

There are plenty of locations to explore on the island, not least of which is an imposing mansion. Dotted inside calls for some suppression of your natural thieving tendencies – who said cheapskate was dead?

The mansion is large and there are many unusual objects to discover and locations to search.

You have to be careful when and how you smuggle items out of the mansion – the Gatekeeper is always on the alert.

He is also a gambling man and will offer you the chance to bet on a real rat race. Don't pass up or be late for the opportunity when it arises – you could do with the winnings.

Some of the puzzles you'll find here include a bear guarding a chalice, a rat-infested cellar and a secret laboratory.

Make sure you visit the zoo and stay a while there, if only to see one of the sudden and humorous appearances of the Master Thief.

Outside the mansion,



you'll soon score a cove entrance leading to an underground complex. Again puzzles abound and you'll need to learn, for example, how to cross a room of hot coals, how to get a mouse to repeat and how to deal with a venomous spider.

The Bank of Kerorania is nearby but always seems to be closed. You should eventually discover how to demonstrate that there are still signs of life within it (nice touch, this) but it will take some time to make the bank fully open up to you.

Make sure you visit the cemetery, not only for the picture accompanying the text but also to have a look at the three graves you'll find there. But you didn't know that this is where they ended up!

And speaking of pictures, the 28 scene-setting illustrations built into the game are well up to *Pawn* standard. One or two are a little on the predictable side and add little to the atmosphere, but most are good and some quite outstanding.

Guild of Thieves comes

on two discs with a dip, a Kerorania credit card, a Guild contract of service and a copy of *What Dangler* magazine.

The latter serves as a guide to the game and will give you a few hints and belly-laughs into the bargain. The game needs a minimum of this to run it.

I much preferred *Guild of Thieves* to *The Pawn*. For one thing it is much more logical, for another it hangs together in atmosphere and detail so much better.

The puzzles range in difficulty from easy to mind-bending so there is plenty here for all adventuring skills.

This is an absorbing, funny and stimulating adventure and guaranteed to be another sure-fire winner for Rainbird. Don't delay – buy it. The Master Thief awaits you.

Bob Chappell

Presentation	9
Atmosphere	9
Puzzles	9
Value for money	9
Overall	9

Mash a joystick

Program: Decathlon
Price: £1.99
Distributor: Pinpoint, 24-26
Rye, Gifford Street,
London WC2R 1PL
Tel: 01-377 6667

HOW many times have you wanted to be Daley Thompson when he steps up to receive his gold medal? Here is your chance.

The first screen presents you with two men racing down a track, an unimpressive piece of music and a message scrolling down the screen telling you that it's not the winning that's important but the taking part. I would prefer a little gold medal to make me feel better.

You are offered the option of up to four competitors and in the track events two

people may race against each other.

After choosing the number of players and entering your initials, you can choose from ten events in a scrolling window.

The events - 100, 400, and 1500 metres, long jump, high jump, shot put, discus, javelin, pole vault and 150 metres hurdles - are all in their own way nice to play but I found the 400 and 1500 metre events a little tough on the hand as you try to pull your joystick apart.

Your time and distance are displayed on a digital clock. I made a 58 metre throw and the javelin moved a very short distance and the clock whizzed up far too fast.

If this had been slowed down and the javelin allowed to hang in the air

longer the event would have had more atmosphere.

The graphics are reasonable but with poor sound, though the animation is quite well done. You can choose which event you want to play and not have to follow a set order of events and this is a saving grace.

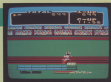
The pole vault is let down by poor animation but as a budget game the good points far exceed the bad.

The major drawback is the fact that it is one of those

games where you have to nudge the joystick from left to right in a mad fashion to get the little man to run his socks off. So if you don't mind the risk of ruining your joystick you're all right to buy this one.

Neil Fawcett

Sound	5
Graphics	6
Playability	6
Value for money	7
Overall	7



Bargain time

Program: Universal Hero
Price: £1.99 (special)
Distributor: Mastertronic, 8-10
Fleet Street, London EC2A
4JF
Tel: 01-377 6667

ALL I found out about Universal Hero in the blurb was that it's an arcade adventure. But there are no clues and instructions are minimal. Still, some people like to go into their adventures blind.

Our hero has a pretty everyday sort of chance to carry out, by Superhero standards anyway - to save the planet from imminent destruction.

The culprit is an out of control space freighter which must be repaired to avert disaster.

No real problems - but for the fact that the nearest intergalactic Harlands is on a neighbouring planet and the interplanetary shuttle is itself in need of a 5,000 mile

service and MDT.

To make things interesting, the freighter is due to crash into terra firma in one hour's time.

So the race is on to find the parts to the shuttle and work out what to do with them. Then to whiz off to find the parts for the freighter and fix it.

In your quest, only nine objects can be held and displayed at any one time. Movement is via a jet pack, hindered by occasional aliens of varying degrees of ferocity, force fields and other obstacles.

Contact with the aliens may eat away at your air supply or kill you outright. Your powers of logic and deduction will get you through otherwise impenetrable barriers.

The game is nicely presented, with good graphics and movement. Use of sound is minimal, which is at least preferable to bad use of sound. I

thought the game was immensely playable and addictive.

On reaching a control computer within the caves under the planet surface, and having in my possession all the items necessary to work it, I logged on and was asked to identify myself.

At this point my keyboard locked up and I could do nothing but reset the machine and restart the game. This happened every time and meant that I could not progress further.

I mentioned this to Mastertronic, who said that they

had not come across the problem before, the suggestion being that perhaps I had a dud copy.

This reservation apart, I really enjoyed Universal Hero - well as far as I got, anyway. Full marks to Mastertronic for putting out a great game at under £2 - it's a lot of entertainment for the price and puts many more expensive games to shame.

Wally Raynolds

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



Triple trouble

Program: *Survivors*
Price: £2.99
Supplier: Atlantic, 28 Station
 Road, London SE20 8AQ
 Tel: 01-571 8802

MAZE games are usually complicated enough when you have to concentrate on moving one person around. Here you have the unfortunate problem of having to manoeuvre three droids, each with its own ability.

Together you must rescue almost 1500 survivors scattered around seven levels in a hibernation dome damaged in a nuclear war. This is achieved by teleporting them to safety once you find them.

Your three droids have their own characteristics: The number one droid looks like two rows of teeth on a pole and is used to eat the earth to reach the survivors.

Number two droid looks like an abnormal catfish and is your teleport droid.

Droid three looks like a cross between Hercules and a Chieftain tank and is used to move some of the many boulders scattered around the dome.

To succeed you must move all of the droids around the maze together (but only one at a time) as only their combined abilities can save the day. But don't keep losing them as I did.

Droids have individual energy levels, if reduced to zero then you lose one of your three lives.

Energy can be lost by contact with one of the M.C.T. Guardian droids that constantly patrol the dome.

Unfortunately their logic circuits have been fried by the radiation and they will attempt to destroy you on

sight. Also beware of boulders.

Another problem is getting one of your droids trapped by falling boulders. If this happens then you simply hit Escape and forfeit a life. Boulders can also be used to trap or crush Guardian droids. Add to this a time limit, and this rescue has plenty of problems.

Be very careful in what moves you choose as a mistake can make you pay very dearly. Try to keep all your droids together and don't

disturb too many boulders if you can help it.

The graphics are quite nice but the sound effects are sadly lacking, the scrolling is quite well done and adequate for the job at hand.

If you are a fan of Boulderdash you will enjoy this.

Neil Fawcett

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

Aztec romp

Program: *Aztec Challenge*
Price: £1.99 (inserted)
Supplier: Top Ten Software,
 Children's Computer Centre,
 Station Road, Thrale,
 Berkshire RG7 4AA
 Tel: 0344 309603

THE Aztec gods have demanded a sacrifice. They inform you that you are among the chosen victims.

There is, however, an opportunity to escape by undergoing a series of physical trials, pushing you to the limits of your agility and stamina.

It appears that the Aztec race has, over the centuries, developed running and jumping abilities that make Daley Thompson look like a seven stone wimp—and you are going to need to coordinate these abilities to survive.

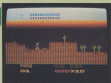
I must say that on starting *Aztec Challenge*, I was

unimpressed. However, the more I played the game the more it grew on me. Although easy to play, it proved rather more difficult to complete successfully.

The concept is simple: you must run and jump your way through 99 levels of obstacles, which become progressively more difficult.

You run continuously with no control over your speed, which is preset. The only control you do have is in choosing which of the three heights you are going to jump. But as you have no time to stop and consider a jump you must live by your reflexes.

There is an option for two players with both runners appearing on the screen simultaneously. In this case I found that the runner behind has a slight advantage, being able to benefit from the mistakes of the first.



Another pleasing option is that, when all your lives have been used, you can choose to restart the game at the beginning or where you finished.

The graphics are not unimpressive for a budget game and as screen shots are printed on the packaging you are able to form a realistic impression of the game. There is very little use of sound.

Aztec Challenge's appeal lies in its uncomplicated nature. The simplicity of controls and the gentle lead

into the game make it particularly suitable for children, while the higher levels should keep more experienced players busy for a good while.

I don't suppose it will go down as an all time classic, but I rather enjoyed it and feel it is well worth the money.

Nick Reynolds

Sound	5
Graphics	6
Playability	8
Value for money	8
Overall	7

Passive piracy

Program: *Pirates of the Barbary Coast*
Price: \$39.95 (retail)
Supplier: Cascade Games,
 1-3 Mayday Drive, Mar-
 inette, MD 21102
 Tel: 0073 320278

IN contrast to the impressive packaging artwork, this game turns out to be very dull indeed. The idea behind it is good, if not entirely original, but sadly the implementation is lacklustre.

What we have here is basically a trading game combined with some elements of arcade action, luck and strategy.

You are captain of the US trading frigate *American Star* which has been raised by the notorious *Bloodthroat* the pirate.

(Rule one of pirate tales is always to give the villain a British name - it would never do to have the wicked pirate called *Raveneye* or *Bloodnose*, for example).

Bloodthroat has your daughter and is demanding a huge ransom, to be paid within 30 days or else. You must sail the *Barbary Coast*, trading and fighting, in order to raise the necessary riches.

The game sets sail with a sweeping, musical tune and switches to the main screen, a map of the *Barbary Coast*. Moving a rather stiff and sluggish pointer, you place

it on one of the several destinations you wish to sail to.

The disc drive then whirrs away for a not inconsiderable period and eventually the next scene appears, a view from behind one of the cannons on your ship at sea.

There are a number of cannons and you can move along the deck - the picture simply slides to the left or right to reveal an identical scene.

A pirate ship may come sailing slowly past and you can engage it in battle or not.

Cannons are your only weapon and must first be loaded before they can be fired.

All or any of the cannons can be loaded in one operation, and while the procedure attempts to be technically realistic, I suppose, it is also a tedious and frustrating business.

It goes like this: Select load, select the numbers of the cannons to be loaded, move to the waiting cannon, point at powder, point at cannon, point at push rod, point at cannon, point at cannon ball, point at cannon, point at brush and finally (grrrr!) point at cannon again. Get any of this wrong and you must start all over again.

One of the pains of the cannon loading sequence is that having loaded every blooming one while at sea,



someone unloads them again whenever you dock, so you have to go through the whole nightmare every time you sail.

To fire any loaded cannon, you point at the base/whisperer. It will start to burn down. The ball will then be ejected with a feeble explosion ("Gasp me, boys, they be firing at us with cap guns and brass balls").

The elevation of the gun can be altered and is necessary because the pirate ships sail past at different distances.

If you hit an enemy ship hard and long enough, you may board her and either claim the booty or send her ag, but not both. Sailing stuff, eh?

Has on your ship are shown by any number of your cannons going up in flames and thereafter becoming inoperable.

When you reach a destination, the disc again whirs and finally you will be told if there is anything at your chosen spot.

If there's nothing, the message "Captain, there be nothing here. Wish ye to set sail?" appears with the rather pointless single-choice answer "Aye".

In other words, there's no option but to sail to somewhere else, long disc whirr and it's map time again. Dullsville.

If there is something there, you are shown a treasure map and must pick one of several courses. With luck, you may find treasure, otherwise, it's sailing time once more.

By now your attention and grey matter will have decided that you won't be needed on this voyage and have gone down to the pub. You may be tempted to join them, for there's not much more to this game.

Should you land at a port on the coast you are given an opportunity, in a very simplistic way, to buy or sell food and goods, hire men, acquire cannonballs, make repairs and bribe the port officer to return for a hire.

And really there is very little more to it than that. The game plays exceedingly slowly and is unexcited by graphics (they are not bad but there are so few scenes), sound (sneaky or comical).

I don't enjoy having to put down a game by a new company, but I am afraid Cascade Games is going to have to do much better than this if it is to succeed.

Bob Chappell



Sound	3
Graphics	4
Playability	3
Value for money	2
Overall	3

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5

LINERS

PAINT PICTURE LOADER

Thomas E. M. Lichten

MOST Atari disk drives come equipped with a graphics package called Paint. This five-line program allows you to load Paint pictures files from Basic. The program works by loading the first five bytes of the file which hold the information for the colour registers and putting the colour registers into them. It then ignores the next 12 bytes and loads the next 3200 bytes which are the actual screen data.

You must remember that in load your own picture the filename within the program must be changed to the same as your picture filename. The program can easily be converted to create a running slide show of pictures.

PROGRAM VARIABLES

008 Holds the information for the output registers.

• **Medical and Information Age**

SLIPPER: Used to slip the twine being laid out.

PROPOSAL **RECEIVED**

Figure 1: The proposed system architecture.

Line 3: Finds start of second level space channel to give value

Line 3: Get colour data and point colour registers

List of Figures and Tables

Long 8: Loads and displays picture and then closes channel to give video.

[illegible]

1990 Index	1991 Index	1992 Index
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EXTRA COLOURS

from Malcolm Knight

THE8 short routine uses a DLI (Display List Interrupt) to enable you to have eight different screens in Graphics 1 or Graphics 2 modes. This allows the screens and so on to become much more interesting with this new option of more colours which can easily be altered to suit individual tastes.

[illegible]

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	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PROGRAM REFLECTION

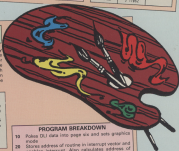
10	Polars DLI data into page six and sets graphical mode
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78 Stores address of routine in interrupt vector and enables interrupt. Also calculates address of O&I display list. The addition of 8 to PC&I ADD+8, PEEK(ADD+8)+178 determines which screen line the interrupt is called on. The addition of 178 to PEEK(PC&I+8) calls the routine.

100. Holds the data. Each number after the 100 is a column value.

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1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26



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

We pay £25 for each one published.

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

Win £25

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

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

Alan User, Banaga House, 68 Chester Road, Hurd Grove, Shropshire, SY7 6NY.

CURSOR OPTIONS

from Darren Broome

THIS program sets up a V80 Virtual Blank Interrupt to scan both the joystick port 1 and the function keys to give you nine options for the cursor. If Start is pressed the cursor will be turned off. If both the Select and Start keys are pressed together then the cursor click is turned off.

If Option is pressed both the cursor and the cursor click will be turned on. Also the cursor can be moved around the screen with the joystick plugged into port 1 to allow you fast and comfortable movement of the cursor.

The program stores machine code data in page 6 of memory, so once you have typed the program in save it before you run it as it may crash if you make a typing error.

To execute the program you call it by typing the command `X=16981636`.

```
10 FOR P=1024 TO 1048000 STEP 160
20 NEXT P
30 FOR P=1024 TO 1048000 STEP 160
40 NEXT P
50 FOR P=1024 TO 1048000 STEP 160
60 NEXT P
70 FOR P=1024 TO 1048000 STEP 160
80 NEXT P
90 FOR P=1024 TO 1048000 STEP 160
100 NEXT P
110 FOR P=1024 TO 1048000 STEP 160
120 NEXT P
130 FOR P=1024 TO 1048000 STEP 160
140 NEXT P
150 FOR P=1024 TO 1048000 STEP 160
160 NEXT P
170 FOR P=1024 TO 1048000 STEP 160
180 NEXT P
190 FOR P=1024 TO 1048000 STEP 160
200 NEXT P
210 FOR P=1024 TO 1048000 STEP 160
220 NEXT P
230 FOR P=1024 TO 1048000 STEP 160
240 NEXT P
250 FOR P=1024 TO 1048000 STEP 160
260 NEXT P
270 FOR P=1024 TO 1048000 STEP 160
280 NEXT P
290 FOR P=1024 TO 1048000 STEP 160
300 NEXT P
310 FOR P=1024 TO 1048000 STEP 160
320 NEXT P
330 FOR P=1024 TO 1048000 STEP 160
340 NEXT P
350 FOR P=1024 TO 1048000 STEP 160
360 NEXT P
370 FOR P=1024 TO 1048000 STEP 160
380 NEXT P
390 FOR P=1024 TO 1048000 STEP 160
400 NEXT P
410 FOR P=1024 TO 1048000 STEP 160
420 NEXT P
430 FOR P=1024 TO 1048000 STEP 160
440 NEXT P
450 FOR P=1024 TO 1048000 STEP 160
460 NEXT P
470 FOR P=1024 TO 1048000 STEP 160
480 NEXT P
490 FOR P=1024 TO 1048000 STEP 160
500 NEXT P
510 FOR P=1024 TO 1048000 STEP 160
520 NEXT P
530 FOR P=1024 TO 1048000 STEP 160
540 NEXT P
550 FOR P=1024 TO 1048000 STEP 160
560 NEXT P
570 FOR P=1024 TO 1048000 STEP 160
580 NEXT P
590 FOR P=1024 TO 1048000 STEP 160
600 NEXT P
610 FOR P=1024 TO 1048000 STEP 160
620 NEXT P
630 FOR P=1024 TO 1048000 STEP 160
640 NEXT P
650 FOR P=1024 TO 1048000 STEP 160
660 NEXT P
670 FOR P=1024 TO 1048000 STEP 160
680 NEXT P
690 FOR P=1024 TO 1048000 STEP 160
700 NEXT P
710 FOR P=1024 TO 1048000 STEP 160
720 NEXT P
730 FOR P=1024 TO 1048000 STEP 160
740 NEXT P
750 FOR P=1024 TO 1048000 STEP 160
760 NEXT P
770 FOR P=1024 TO 1048000 STEP 160
780 NEXT P
790 FOR P=1024 TO 1048000 STEP 160
800 NEXT P
810 FOR P=1024 TO 1048000 STEP 160
820 NEXT P
830 FOR P=1024 TO 1048000 STEP 160
840 NEXT P
850 FOR P=1024 TO 1048000 STEP 160
860 NEXT P
870 FOR P=1024 TO 1048000 STEP 160
880 NEXT P
890 FOR P=1024 TO 1048000 STEP 160
900 NEXT P
910 FOR P=1024 TO 1048000 STEP 160
920 NEXT P
930 FOR P=1024 TO 1048000 STEP 160
940 NEXT P
950 FOR P=1024 TO 1048000 STEP 160
960 NEXT P
970 FOR P=1024 TO 1048000 STEP 160
980 NEXT P
990 FOR P=1024 TO 1048000 STEP 160
1000 NEXT P
```



LINE 5000	LINE 5000	LINE 5000
10 10000	20 10000	30 10000
40 10000	50 10000	60 10000

QUASI

from Robin Edwards

THIS game shows what you can get into five lines if you really try. Here we have Quasimodo standing on the battlements with the royal guards climbing up to get him. What is poor old Quasi going to do? Simple, he thinks, throw some rocks down to knock them off.

You move Quasi left and right via the joystick plugged into port 1 and by moving it down you tell those a right at a guard. The game ends when one of two things happens - a guard reaches the top or poor old Quasi loses his footing and falls off the battlement.

As your score goes up the guards get faster and the challenge is to see how many of them you can get before

they get you. When typing in line 30 you must abbreviate all POSITION statements as POS, and miss out all spaces. Due to the length of certain lines it is not possible to supply a Get it Right for this program.

TYPING IN NOTES

- 10 Type in as it appears.
- 20 Type in as it appears.
- 30 Abbreviate all POSITIONS to POS, and miss out all spaces.
- 40 Type in as it appears.
- 50 Type in as it appears.

PROGRAM BREAKDOWN

- 10 Draw battlements, set variables
- 20 Routine to set up guards
- 30 Draw and move player and guard
- 40 Drop rock
- 50 Game over routine

```
10 SCREEN 1: HOME: POS, LINE 100 TO 10
20 SCREEN 1: HOME: POS, LINE 100 TO 10
30 SCREEN 1: HOME: POS, LINE 100 TO 10
40 SCREEN 1: HOME: POS, LINE 100 TO 10
50 SCREEN 1: HOME: POS, LINE 100 TO 10
60 SCREEN 1: HOME: POS, LINE 100 TO 10
70 SCREEN 1: HOME: POS, LINE 100 TO 10
80 SCREEN 1: HOME: POS, LINE 100 TO 10
90 SCREEN 1: HOME: POS, LINE 100 TO 10
100 SCREEN 1: HOME: POS, LINE 100 TO 10
110 SCREEN 1: HOME: POS, LINE 100 TO 10
120 SCREEN 1: HOME: POS, LINE 100 TO 10
130 SCREEN 1: HOME: POS, LINE 100 TO 10
140 SCREEN 1: HOME: POS, LINE 100 TO 10
150 SCREEN 1: HOME: POS, LINE 100 TO 10
160 SCREEN 1: HOME: POS, LINE 100 TO 10
170 SCREEN 1: HOME: POS, LINE 100 TO 10
180 SCREEN 1: HOME: POS, LINE 100 TO 10
190 SCREEN 1: HOME: POS, LINE 100 TO 10
200 SCREEN 1: HOME: POS, LINE 100 TO 10
210 SCREEN 1: HOME: POS, LINE 100 TO 10
220 SCREEN 1: HOME: POS, LINE 100 TO 10
230 SCREEN 1: HOME: POS, LINE 100 TO 10
240 SCREEN 1: HOME: POS, LINE 100 TO 10
250 SCREEN 1: HOME: POS, LINE 100 TO 10
260 SCREEN 1: HOME: POS, LINE 100 TO 10
270 SCREEN 1: HOME: POS, LINE 100 TO 10
280 SCREEN 1: HOME: POS, LINE 100 TO 10
290 SCREEN 1: HOME: POS, LINE 100 TO 10
300 SCREEN 1: HOME: POS, LINE 100 TO 10
310 SCREEN 1: HOME: POS, LINE 100 TO 10
320 SCREEN 1: HOME: POS, LINE 100 TO 10
330 SCREEN 1: HOME: POS, LINE 100 TO 10
340 SCREEN 1: HOME: POS, LINE 100 TO 10
350 SCREEN 1: HOME: POS, LINE 100 TO 10
360 SCREEN 1: HOME: POS, LINE 100 TO 10
370 SCREEN 1: HOME: POS, LINE 100 TO 10
380 SCREEN 1: HOME: POS, LINE 100 TO 10
390 SCREEN 1: HOME: POS, LINE 100 TO 10
400 SCREEN 1: HOME: POS, LINE 100 TO 10
410 SCREEN 1: HOME: POS, LINE 100 TO 10
420 SCREEN 1: HOME: POS, LINE 100 TO 10
430 SCREEN 1: HOME: POS, LINE 100 TO 10
440 SCREEN 1: HOME: POS, LINE 100 TO 10
450 SCREEN 1: HOME: POS, LINE 100 TO 10
460 SCREEN 1: HOME: POS, LINE 100 TO 10
470 SCREEN 1: HOME: POS, LINE 100 TO 10
480 SCREEN 1: HOME: POS, LINE 100 TO 10
490 SCREEN 1: HOME: POS, LINE 100 TO 10
500 SCREEN 1: HOME: POS, LINE 100 TO 10
510 SCREEN 1: HOME: POS, LINE 100 TO 10
520 SCREEN 1: HOME: POS, LINE 100 TO 10
530 SCREEN 1: HOME: POS, LINE 100 TO 10
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550 SCREEN 1: HOME: POS, LINE 100 TO 10
560 SCREEN 1: HOME: POS, LINE 100 TO 10
570 SCREEN 1: HOME: POS, LINE 100 TO 10
580 SCREEN 1: HOME: POS, LINE 100 TO 10
590 SCREEN 1: HOME: POS, LINE 100 TO 10
600 SCREEN 1: HOME: POS, LINE 100 TO 10
610 SCREEN 1: HOME: POS, LINE 100 TO 10
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630 SCREEN 1: HOME: POS, LINE 100 TO 10
640 SCREEN 1: HOME: POS, LINE 100 TO 10
650 SCREEN 1: HOME: POS, LINE 100 TO 10
660 SCREEN 1: HOME: POS, LINE 100 TO 10
670 SCREEN 1: HOME: POS, LINE 100 TO 10
680 SCREEN 1: HOME: POS, LINE 100 TO 10
690 SCREEN 1: HOME: POS, LINE 100 TO 10
700 SCREEN 1: HOME: POS, LINE 100 TO 10
710 SCREEN 1: HOME: POS, LINE 100 TO 10
720 SCREEN 1: HOME: POS, LINE 100 TO 10
730 SCREEN 1: HOME: POS, LINE 100 TO 10
740 SCREEN 1: HOME: POS, LINE 100 TO 10
750 SCREEN 1: HOME: POS, LINE 100 TO 10
760 SCREEN 1: HOME: POS, LINE 100 TO 10
770 SCREEN 1: HOME: POS, LINE 100 TO 10
780 SCREEN 1: HOME: POS, LINE 100 TO 10
790 SCREEN 1: HOME: POS, LINE 100 TO 10
800 SCREEN 1: HOME: POS, LINE 100 TO 10
810 SCREEN 1: HOME: POS, LINE 100 TO 10
820 SCREEN 1: HOME: POS, LINE 100 TO 10
830 SCREEN 1: HOME: POS, LINE 100 TO 10
840 SCREEN 1: HOME: POS, LINE 100 TO 10
850 SCREEN 1: HOME: POS, LINE 100 TO 10
860 SCREEN 1: HOME: POS, LINE 100 TO 10
870 SCREEN 1: HOME: POS, LINE 100 TO 10
880 SCREEN 1: HOME: POS, LINE 100 TO 10
890 SCREEN 1: HOME: POS, LINE 100 TO 10
900 SCREEN 1: HOME: POS, LINE 100 TO 10
910 SCREEN 1: HOME: POS, LINE 100 TO 10
920 SCREEN 1: HOME: POS, LINE 100 TO 10
930 SCREEN 1: HOME: POS, LINE 100 TO 10
940 SCREEN 1: HOME: POS, LINE 100 TO 10
950 SCREEN 1: HOME: POS, LINE 100 TO 10
960 SCREEN 1: HOME: POS, LINE 100 TO 10
970 SCREEN 1: HOME: POS, LINE 100 TO 10
980 SCREEN 1: HOME: POS, LINE 100 TO 10
990 SCREEN 1: HOME: POS, LINE 100 TO 10
1000 SCREEN 1: HOME: POS, LINE 100 TO 10
```

An ideal companion

PETER DAVIDSON puts Panasonic's KX-P1081 printer through its paces

THE Panasonic KX-P1081 is a bi-directional dot matrix printer that is friction or tractor feed and has a switch to choose between standard, NLD (near letter quality) or condensed print.

The printer reviewed here was supplied by Watford Electronics and came complete with a free printer cable. It's important to let Watford Electronics know you require an Atari cable when you order the printer.

The printer connects to an Atari 858 interface box or you'll need a Centronics to Atari interface cable in place of the standard one supplied.

There are three buttons on the right-hand side of the printer controlling the online status, form feed and line feed. The feed buttons work while the printer is online so it was not necessary to use the button controlling this, unlike many other printers.

Above these switches are three small lights - power, paperout and online. Power and online remain lit while the printer is being used and the centre one indicates things like paper-out or jammed.

The main lead is permanently connected to the rear of the printer but needs a plug fitting. As it can't be removed, it gets in the way slightly if you move the printer, but at least you can't lose it.

The DIP switches are easily accessible under a piece of plastic near the print head. Flick it out of the way and the switches can be moved without searching for a screwdriver.

Epson compatibility is a feature advertised by many printer manufacturers. But just how compatible is compatible? Figure 1 shows the control codes and a P or E in the left-hand column shows ones applicable to Panasonic or Epson printers only. The Epson codes shown are those for an EPSON together with the extra ones from the LX85.

A feature I occasionally use that was not available on the Panasonic was reverse paper feed, but this was more than compensated for by all the extra ones offered over my Epson EP800. This printer has been so well accepted in the office that someone asked if another printer is Panasonic compatible.

The KX-P1081 is rated at 128 characters per second. I compared the speed with an Epson EP800 rated at 180cps and found very little difference. In NLD mode the speed drops to 24cps so it's a good idea to check the document is draft before moving to NLD.

In some circumstances the Pan-

Product: KX-P1081 Panasonic Printer
Price: £179.95
Supplier: Watford Electronics, Jemel House, 250 Lower High Street, Watford WD1 3AA
Tel: 0832 37718

asonic is faster than the Epson. A point to bear in mind when you choose a printer is that speed is affected by things like head turn around time so the cps, while being an indication, does not give the whole story.

There is a built-in 1k buffer so a small document can be sent to the printer whole and you can continue working as it prints. Unfortunately there is no flush buffer button so if you make a mistake you have to wait while it erases it or switch off.

The print head has nine pins and these are used to give a 6x8 matrix. In NLD the matrix is 18x18. You can see from Figure 1 that a wide variety of typefaces and styles are available. The figure itself was printed after sending the codes 27,35,4,27,65,1,27,6,4 and is shown full size.

Figure 2 shows some of the many typefaces available and Figure 3 shows some NLD text. As with all



printers not all combinations of styles are available, but all the important ones such as NLD halves etc.

If the character you want is not available you can easily define your own. If you've ever defined a character on a micro you should have no problems. The horizontal and vertical lines in tables can easily be created using underline to draw across and by redefining 1 character (33) using the codes 27,121,33,0,0,0,0,256,0,0,0,0 to give upper bars.

The NLD feature can be implemented using the switch on the left hand side of the printer or by sending control codes. It is slower than draft because the printer outputs part of the letters, moves the paper slightly and then goes over them again to give four times the dot density. The last line of Figure 3 shows a line of text interrupted during the second pass of the print head.

Printing is rather noisy compared to more expensive printers, but it is acceptable. It can be quietened using the half-speed and/or single-direction printing modes, but I'd rather put up with the noise and benefit from the speed.

Partial paper feeds in easily but

CHARACTER CODES Control characters ESCAPE (ESC) (hex 1B) SPACE (hex 20) ! (hex 21) " (hex 22) # (hex 23) \$ (hex 24) % (hex 25) & (hex 26) ' (hex 27) ((hex 28) * (hex 2A) + (hex 2B) , (hex 2C) - (hex 2D) . (hex 2E) / (hex 2F) 0 (hex 30) 1 (hex 31) 2 (hex 32) 3 (hex 33) 4 (hex 34) 5 (hex 35) 6 (hex 36) 7 (hex 37) 8 (hex 38) 9 (hex 39) : (hex 3A) ; (hex 3B) < (hex 3C) = (hex 3D) > (hex 3E) ? (hex 3F) @ (hex 40) A (hex 41) B (hex 42) C (hex 43) D (hex 44) E (hex 45) F (hex 46) G (hex 47) H (hex 48) I (hex 49) J (hex 4A) K (hex 4B) L (hex 4C) M (hex 4D) N (hex 4E) O (hex 4F) P (hex 50) Q (hex 51) R (hex 52) S (hex 53) T (hex 54) U (hex 55) V (hex 56) W (hex 57) X (hex 58) Y (hex 59) Z (hex 5A) [(hex 5B) \ (hex 5C)] (hex 5D) ^ (hex 5E) _ (hex 5F) ` (hex 60) a (hex 61) b (hex 62) c (hex 63) d (hex 64) e (hex 65) f (hex 66) g (hex 67) h (hex 68) i (hex 69) j (hex 6A) k (hex 6B) l (hex 6C) m (hex 6D) n (hex 6E) o (hex 6F) p (hex 70) q (hex 71) r (hex 72) s (hex 73) t (hex 74) u (hex 75) v (hex 76) w (hex 77) x (hex 78) y (hex 79) z (hex 7A) { (hex 7B) (hex 7C) } (hex 7D) ~ (hex 7E) DEL (hex 7F)	1B 20 21 22 23 24 25 26 27 28 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F
BIT IMAGE (GRAPHICS) CODES ESCAPE (ESC) (hex 1B) SPACE (hex 20) ! (hex 21) " (hex 22) # (hex 23) \$ (hex 24) % (hex 25) & (hex 26) ' (hex 27) ((hex 28) * (hex 2A) + (hex 2B) , (hex 2C) - (hex 2D) . (hex 2E) / (hex 2F) 0 (hex 30) 1 (hex 31) 2 (hex 32) 3 (hex 33) 4 (hex 34) 5 (hex 35) 6 (hex 36) 7 (hex 37) 8 (hex 38) 9 (hex 39) : (hex 3A) ; (hex 3B) < (hex 3C) = (hex 3D) > (hex 3E) ? (hex 3F) @ (hex 40) A (hex 41) B (hex 42) C (hex 43) D (hex 44) E (hex 45) F (hex 46) G (hex 47) H (hex 48) I (hex 49) J (hex 4A) K (hex 4B) L (hex 4C) M (hex 4D) N (hex 4E) O (hex 4F) P (hex 50) Q (hex 51) R (hex 52) S (hex 53) T (hex 54) U (hex 55) V (hex 56) W (hex 57) X (hex 58) Y (hex 59) Z (hex 5A) [(hex 5B) \ (hex 5C)] (hex 5D) ^ (hex 5E) _ (hex 5F) ` (hex 60) a (hex 61) b (hex 62) c (hex 63) d (hex 64) e (hex 65) f (hex 66) g (hex 67) h (hex 68) i (hex 69) j (hex 6A) k (hex 6B) l (hex 6C) m (hex 6D) n (hex 6E) o (hex 6F) p (hex 70) q (hex 71) r (hex 72) s (hex 73) t (hex 74) u (hex 75) v (hex 76) w (hex 77) x (hex 78) y (hex 79) z (hex 7A) { (hex 7B) (hex 7C) } (hex 7D) ~ (hex 7E) DEL (hex 7F)	1B 20 21 22 23 24 25 26 27 28 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F
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Figure 1: A wide variety of styles is available.

you must ensure you feed it straight in at the back otherwise it soon starts up.

There is no tear bar so you have to move forward to the next perforation to tear the paper easily.

The ribbon is a cartridge type and drops in with no problems at all. It's claimed to last for two million characters and there's a small button at the back of the cartridge you depress once printing becomes faint. This resets the ribbon and allows a further one

million characters to be printed.

The manual is well written and far easier to understand than many I have seen. One of the appendices gives a summary of the features available, the code required to get them on the form, for example, ESC+S+01 and a page reference. That page translates this to 21.82n where n=0.46,178,178. A little confusing and all the options for a don't help, but far more helpful than the more visual form that the Escape codes are given in.

Each feature has a simple example to go with it. Unfortunately, they're not written for an Atari computer and they're not even all for the same micro. But in all of them it only needs a small change to allow the demonstration to be used on an Atari.

Overall this printer is excellent value for money. It does all the tests you would expect of a low-cost dot matrix machine and works well with all the software I tried. It's an ideal companion to your Atari computer.

Here's Picas:	Here's Condensed:
<i>Italic</i>	<i>Italic</i>
Emphasized	Emphasized
Bold	Bold
Large	Large
Proportional	Proportional
Here's Elite:	Here's NLQ:
<i>Italic</i>	<i>Italic</i>
Emphasized	Emphasized
Bold	Bold
Large	Large
Proportional	Proportional

Figure 2: Sample styles

This is a Demonstration of NLQ printing in the Elite Typeface.

NLQ is obtained by the printer outputting part characters, moving the paper slightly and then printing the rest.

When the printer is stopped during NLQ output it looks like this.

Figure 3: NLQ output

Your HINTS & TIPS

Kikstart

YOU will get maximum performance from your motorbike and start at top speed if you pull the joystick to the left as soon as you hear the starting tone. — Edward Harwood, East Grinstead, West Sussex.

Star Raiders II

If you are having problems shooting the small Cylix fighters because they won't dive into your target sights when you are over a planet, simply change speed and they'll dive down into your sights. They are more willing to be shot when you vary your speed.

I have also noticed that you seem to be controlling the direction of the flagship. If you push your joystick down the flagship will respond in the same way. So if you move your joystick around quickly the ship will be more difficult to hit, so use very smooth joystick movements to line it up in your target sights — and then let it have it. — Stephen Jernsey, Middlesbrough, North Yorkshire.

Drelbs

If and when you see a blue diamond go around the flip grid and collect it. You will then enter the Deathly corridor automatically. — Edward Harwood, East Grinstead, West Sussex.

Gauntlet

THE best character for a solo game is the Wizard, with his excellent magic abilities. In a two-player game the wizard teamed with either the elf or the warrior works best. The Valkyrie, who seems to have the basics in all skills, loses out in that she is good at none of them.

All potions should go to the character with the best magic ability. If this seems unfair then the other characters should take care of the keys and be given the magic amulets.

Special potions that increase character abilities should be distributed very carefully. The armour potion should be given to the warrior or elf. Valkyrie doesn't need it and the wizard is given only minimal protection. The magic potion should be given to the elf or Valkyrie first. The wizard's power is not increased by it.

The short speed potion is useful to anyone. The short power can also be used by anyone as it increases damage done, but the light power potion is best used by the elf, Valkyrie or the wizard — Then the warrior is marginally enough. The pick up power potion is best given to whoever is carrying the keys.

The maximum number of health points you can get is 8000. Some of the monsters can be shot, so take care.

To destroy bases in the later sections you have to shoot through the diagonals when this is possible. Death can be killed by transporting an to him, and when you see the transporters meet at the time you move to the nearest transporter in the direction you are facing and you appear on the opposite side of the one you want in. — Paul Collins, Lanes, Sussex.

Timeslip

If you are short of time after having collected all the crystals then have to play through each section to get the clocks to zero, then go for a timeslip and this will usually drop the totals a little.

If you miss an orb, crash and take it again, to save you from having to go through the whole section again. — Paul Collins, Lanes, Sussex.

The Great American Road Race

On the straight section of the race, if you move your car to the far left of the road, getting as close to the grass as you can without actually going on it, you will find you can easily drive along at 140mph no matter how many cars are on the road. You can only do this on a straight and when you encounter a bend you must drive normally. — Stephen Davis, Upminster, Essex.

Mercenary — The Escape

HERE are some tips for Mercenary to help novice players.

The first stage of your escape is to steal the Dominion Dart on the pad. Fly backwards at -40% to pick off the attacking Palpat. This will work for any attacking enemy.

Use the Anti-Gas to pick up the Newton Pad. It will also pick up the interstellar craft so you can relocate it outside the defence complex.

Carrying the Metal Detector changes the colour of Bowson's communications panel when you enter Palpat or any Moslem-held locations. — Harry Roberts, Portsmouth, Hampshire.

Star Raiders

If you find that one of your starbases has been surrounded by enemies into the outer ring to the threatened one and with all the positions of the alien craft changed. You then have 300 seconds to save the starbase from destruction. — Jonathan Evans, Juddville, West Midlands.

Processor for all hands

ALAN GOLDSBRO
tries it out

WHETHER you are a two-finger typist struggling to reach 10 words per minute (wpm) or a fully fledged 80 wpm professional, a word processor can make all the difference to the production of your letters and documents.

The First XLent Word Processor is a major shift from the "printer" programs XLent Software has previously offered. Many of you may be familiar with MegaFont II, Typesetter and Rubber Stamp and if you were favourably impressed by those offerings I'm sure this latest one will find a place in your collection.

Disk-based and requiring 48k, it can work on both 486/800 and 386 versions. The host of features include insert and overwrite text modes, advanced screen editing, print preview in 80 columns, cut and paste block moves, search and replace or delete, chaining of files, dual text windows, mail merge, joystick cursor scrolling and icon-driven commands.

There are also special facilities for inserting pictures into your documents, and you can also define double column printing.

Typing is the same as using a typewriter (but, apart from the obvious differences between word processing and typing, the major difference is in the speed you can move around your text). Both the standard cursor keys and the joystick will move you round the screen in seconds and by using the speed editor you can select a rate from one to nine, one being the fastest; three is the default speed.

You can easily set tabs to any pre-determined place, while word wrap

functions automatically and can be toggled off and on. A handy position marker will jump you directly to any of the five user-defined points in your document.

Background and text colours can be altered to suit individual tastes and even the cursor can be changed.

The cut and paste buffer will hold up to 800 characters, which is one screen (80 columns x 20 lines). Cut, copy and move functions are all operated from the icons seen at the bottom of the screen. The limitations of the text buffer can be offset by the ability to modify text within the buffer itself without harming the text in the document.

Dual windows can make a large document easier to edit plus two separate documents can be displayed in this fashion. The text buffer luckily supports both windows thus enabling the transfer of text.

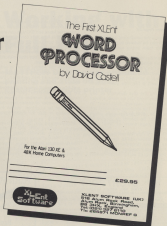
Searching through your document is quite easy but this function will only

read text downwards, so cursor position has to be at the top of the text you need to search. Working through the icon menu again, the search facility will not only work in replace mode but also in delete - you can replace a word with one of your choice or alternately delete the word.

Wildcards are allowed throughout and both uppercase and lowercase can be selected without defining. Global replace/delete or manual confirmation are as standard.

Your margins can be altered at any time, both inside and outside are allowed along with justification of lines. Line spacing and page size follow the same easy structure, in fact most of the commands are embedded directly into the text document.

Headers and footers can be blocked left, right or centred. There's also automatic page numbering as part of the header/footer set up. A valuable



■ From Page 23

feature is the conditional page breaks, which can be defined to protect paragraphs from being split over two pages.

When it comes to saving your work, you can either save the entire document or only selective parts. Files can be added to any document in memory and there is an insert command to let you insert a file into your current document.

Viewing the disc directory or any other document can be done without losing the current document in memory. The directory command will show you up to 40 hierarchies, which can either be loaded or deleted at random regardless of what's in memory.

There are very few word processors that will allow you to insert picture files in text documents. The First XLIII Word Processor has the ability to insert any 80 sector (Micro-Pointer)

picture file in between your text.

Other picture formats such as Typewriter images and BitGraph can also be used. This feature is configured for Eikon and compatibles only, but a printer driver construction set is included on the disc which may help 1026 owners print out their pictures within the document.

Because the editing screen is only 40 columns wide a printer preview screen is brought into operation, this feature doubles as the print formatter and lets you select how the page will be printed, whether you require double columns, number of pages to print and number of copies required. Output can be to printer, screen for previewing or disc for media trans-fer.

Mail merging can be undertaken with comparative ease, and the program readily accepts data from Spillfill. All the usual text enhancements such as bold, italic, super-subscript are controlled from the printer drivers. These can be customised

for the majority of printers available.

The XLIII has a facility to insert international characters into a document and custom fonts can easily be loaded as the default text, although the standard Asat text is usually easiest to read.

I'm only scratched the surface of what the First XLIII Word Processor can do. As an avid user of Batteries Included's Paperclip, I'm impressed with the huge range of facilities available. Standards like these are hard to come by in 8 bit word processing.

Whether you're writing a short note to your granny or a full length review for Atari User, First XLIII Word Processor will accommodate itself around your nimble fingers.

Product: First XLIII Word Processor
Price: £29.95 (also only)
Supplier: Atari Software, 210 Atari
Road North, Atari Rock, Birmingham
B8 3PS
Tel: 021-337 8110

START SOFT

STARDI, MAIL, ORDER, SPEECHES, LETTERS, PRESENTS... THE START SOFT DISK, FREE BONUS SOFTWARE
NOW WITH EXTRA TO PAY, POST, POST & PACKING CHARGES

STARDI (1st 1000)

STARDI (1st 1000) is a simple, easy-to-use, powerful, and complete word processor. It can write letters, reports, memos, and more. It has a built-in spell checker and a thesaurus. It also has a built-in printer driver and a built-in font manager.

Version	10	20	30	40
STARDI 10	10.00	10.00	10.00	10.00
STARDI 20	10.00	10.00	10.00	10.00
STARDI 30	10.00	10.00	10.00	10.00
STARDI 40	10.00	10.00	10.00	10.00
STARDI 50	10.00	10.00	10.00	10.00
STARDI 60	10.00	10.00	10.00	10.00
STARDI 70	10.00	10.00	10.00	10.00
STARDI 80	10.00	10.00	10.00	10.00
STARDI 90	10.00	10.00	10.00	10.00
STARDI 100	10.00	10.00	10.00	10.00

STARDI 100 is a simple, easy-to-use, powerful, and complete word processor. It can write letters, reports, memos, and more. It has a built-in spell checker and a thesaurus. It also has a built-in printer driver and a built-in font manager.

STARDI 100 (1st 1000)

STARDI 100 (1st 1000) is a simple, easy-to-use, powerful, and complete word processor. It can write letters, reports, memos, and more. It has a built-in spell checker and a thesaurus. It also has a built-in printer driver and a built-in font manager.

STARDI 100 (1st 1000) is a simple, easy-to-use, powerful, and complete word processor. It can write letters, reports, memos, and more. It has a built-in spell checker and a thesaurus. It also has a built-in printer driver and a built-in font manager.

STARDI 100 (1st 1000) is a simple, easy-to-use, powerful, and complete word processor. It can write letters, reports, memos, and more. It has a built-in spell checker and a thesaurus. It also has a built-in printer driver and a built-in font manager.

STARDI 100 (1st 1000) is a simple, easy-to-use, powerful, and complete word processor. It can write letters, reports, memos, and more. It has a built-in spell checker and a thesaurus. It also has a built-in printer driver and a built-in font manager.

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- ☐ 100% compatible with all existing software.

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☐ If you prefer we can supply just the download character set on a 5 1/4" disk price.

- ☐ Images to fit - no soldering etc.
- ☐ 100% compatible with existing software.



HAVE you ever wished that you could print out all those funny little characters that you used in your program or text on your Epson-compatible printer? Well here's a utility which will print out your listings or Ascii files using the full Ascii character set - or any other set you have loaded in your micro.

First enter the listing. The lines of data have their own checksum on each line to help make sure that all the numbers are entered correctly. If there is anything wrong the program will tell you which lines are in error. You can also use the Get It Right! checksums as usual.

Next you will need to save your program by listing it to disc or tape using LIST:DISKPROG.LIS* or LIST:C*. Check that your printer is on and ready, then run the program - Full Print.

If it has been entered correctly it will ask for the name of the program to be listed. Put in the disc or tape with the listed program on it and then enter DISKPROG.LIS or C* as appropriate. The printer will now start printing the program using the current Ascii character set.

If you have other character sets they too could be used. To do this load one and set location 798 (CHRS255) to point to it as for any alternative character set. Now when you load and run Full Print it will use the character set you have just loaded.

If you wish to use this routine to present Mini Office II files in a new typeface, first save the file Ascii formatted to disc. Load in your special character set and run the full Print program. When it prompts for the filename put the disc with the Mini Office II Ascii formatted file on it into the drive and enter the file's name.

The printer will then output your Mini Office II document using the special character set. Note the printer used must be Epson compatible and capable of printing graphics.

The program uses the ESC R (2716) sequence to enable the graphics printing. These codes are held in the data statement on line 1630. If your printer uses different codes to enable the graphics change these two numbers (and the checksum to the required values for your printer.

Working with Full Print

MATTHEW DUNN gives enhanced printing and style on your Epson-compatible printer

```

0100 RUN FULL PRINT FOR EPSON P
0200 RUN BY MATTHEW DUNN
0300 SCRAMBL INDEX
0400 RUN Sample Printout using
0500 RUN enhanced using 128 char
0600 RUN and Fast Print
0700 RUN Initialiser Machine Code
0800 RUN
0900 PTH=255:CHRS=0:J2=0:J3=0:J4=0
1000 Y CHRS=CHRS+1:LENG=LENG+1
1100 FOR J=LENG TO 128:STEP
1200 PRINT:GOTO 1000:Y CHRS=J
1300 CHRS=CHRS+1:J=0:GOTO
1400 NEXT CHRS:PRINT:PTH=PTH+1
1500 PTH=PTH+1:CHRS=CHRS+255
1600 NEXT J
1700 NEXT J:J2=0:J3=0:J4=0:J5=0
1800 NEXT J:J2=CHRS+1:J3=CHRS
1900 NEXT J:J4=CHRS+1:J5=CHRS
2000 NEXT J:J5=CHRS+1:J6=CHRS
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Fast access

ANDRE WILLEY takes the Supra hard disc drive for a spin

DO you remember the day when you finally scraped together enough cash to buy your first disc drive? Tapes suddenly became a thing of the past as you marvelled at the speed of your new acquisition.

Operations which used to take 10 minutes were now finished in as many seconds. But time passes and you start noticing that discs aren't perhaps all they were cracked up to be.

Have you ever tried to re-save a long file with Dos 3.3? Or copy such a file in append mode? Okay, so it's faster than tape but it still takes a while, doesn't it?

The answer, as all business computer users will know, is to use a hard disc unit – but until now such a thing has been difficult to get for an 8 bit Atari.

Enter the Supra Corporation in America who saw the need for a high speed interface which would allow the use of a hard disc, and so designed one. Marketed for the first time in the UK by Frontier Software, the Supra 20 Mb drive is now available from your local Atari dealer.

So what is a hard disc, and how does it work? Well, it's not really all that different from an ordinary floppy disc, but it spins very much faster and is sealed inside an airtight container. This, single, non-removable, unit can push up 20 megabytes of data on to its surface.

The access speed is also very much greater than an ordinary floppy, with data being read and written many times faster than the serial drives are able. Because a hard disc requires a far greater track reading accuracy than a floppy, the disc itself is sealed inside an airtight box to avoid contamination from the dust and moisture in the air.

The Supra contains a 3.5in mechanism, which means that it is considerably smaller than a 7080 drive (about a little larger) measuring just 14 cm by 7 cm by 38 cm. In addition to the drive itself you will need to find desk space for this SCSI interface module which plugs into the parallel port at the back of an 80881.

This module takes its power from the drive unit and so only one mains cable is required – and no more extra back boards since the transformer is built into the casing. As a bonus, the interface also provides a high speed parallel Centronics printer port running at some 8 to 16 thousand characters a second.

100KE users need not worry because a special converter board is also supplied for your machine which also extends the cartridge port making it much more accessible.

Once you've connected the unit to your computer you're ready to initialise the system. Rather like floppy discs, the hard disc must be formatted before you can use it.

Firstly you should load the Dos floppy disc which is provided with the drive. My review sample was supplied with MyDOS – a slightly modified version of Atari Dos 3.3 – which is frankly a bit of a muddle, and the whole Dos 2.0 file system is not really geared up to using 20Mb of space effectively.

Frontier Software had obviously

already come to this conclusion and the drive is now being packed with SpartaDos – probably the most powerful available for the 8 bit Atari.

The interface is capable of deciding if the hard disc is ready for use, and if not it will boot from floppy disc too (so don't forget to enter the drive select switch at the back of your 1050).

Once SpartaDos has loaded you should run the format program provided. This will format, partition and zero the drive ready for use. Formatting will probably already be familiar to you, but partitioning may be a new concept.

Since the hard disc can contain such a large amount of information it is split up into smaller, more manageable, units which the computer can treat as different drives. Thus a small partition of 180k is set up as drive one (and will be booted from each time you power up the system), while the rest of the space is allocated equally between two 160kplus drives numbered 3 and 4.

Files may be accessed by using D1:, D3: and D4:, respectively. D2: refers to the real floppy disc drive you first booted from. After each of these partitions has been accessed you may write your Dos files to the file drive one and you're ready to go.

At this point it's best to reboot the system from scratch to check you've done everything correctly. The computer will automatically load SpartaDos from the tape drive one unless you hold down the Help key to indicate a floppy boot is required for test game discs and so on.

I tested the load time using SpartaDos with a standard 1050 and then using the Supra Drive – the 1050

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Test	7080	Supra
Load 10070 byte file	18.28	3.38
Save 10070 byte file	37.81	3.68
Open/close outputfile (20 times)	34.12	6.62
Open/close input file (20 times)	4.94	1.68
Write 50,000 bytes	48.00	5.68
Read 50,000 bytes	48.75	4.68

Figure 1: Speed comparison table

Review

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loaded in about 18 seconds and the Supra took just 4.5. Both of these times include a 2.5 second poll to check for available drives, so the actual Disk loading times are more like 15.5 seconds and 2 seconds.

When you start loading and saving files the speed differences are even more pronounced, with most operations running about 10 times faster on the Supra—see Figure 1. According to the manual, data transfer runs at around 10,000 bytes a second, and operations which used to take some considerable time now occur almost instantaneously.

SpartaDOS is ideally suited for using with a hard disc for two reasons. Firstly it allows just about any length of file you want—if you want a couple of megabytes of data, so be it. Secondly, it supports sub-directories which are vital when using such a high capacity drive.

While the main directory for each drive you may assign new directories which can be called at will. Thus (D:) may contain amongst its normal files the directory DATA which in turn might contain some more files and

another sub-directory called HELP, and so on. If the file W0000000.JNF was contained inside the directory HELP then it would be called up by using:

1) DATA-HELP-W0000000.JNF

Other features include a menu system that is almost entirely color and function key controlled, plus a whole host of other special files. A real-time clock/calendar is available on-screen, and all files are timestamps stamped when written or modified. SpartaDOS has its own special disc format, but it is also quite capable of reading and writing to standard Atari Dos 2.0 discs—in any density.

Many machine code monitor and display routines are available, plus batch execution files, disc management programs, various Ramdisk options and numerous other features. It is also capable of running a V800 at about three times normal speed if you've fitted a US Doubler chip (at £29.95).

Using a hard disc does have its drawbacks, though. Copy protected programs can't be transferred onto the system, or non-standard format discs but so long as a program may be loaded from SpartaDOS and uses the

correct channels for its data storage there is no reason why it shouldn't work. Also, operations which are inherently slow because of the operating system (such as PUT and GET) will not show such dramatic speed improvements.

The other crushing blow for dedicated Atarians is that the drive will only work with XL or SE computers, due to the fact that it requires access to the parallel port at the rear of the main system machines.

I've been using my Supra for a month now, and I can't envisage life without it any more. That said, unless you use your machine mainly for programming or you run a bulletin board, the £750 price tag might seem rather difficult to justify.

But if you can afford it and you would like to see your Atari disc access times improved, there would seem to be no better choice than a Supra drive.

Product: Supra 20MB Hard Disc

Price: £749.95

Supplier: Frontier Software, PO Box

172, Monaghan, North Yorkshire, YO8

GB

Tel. 0623 671462

SUNARD

Product Name	Price	Size	Product Name	Price	Size
1. A-DOS (Diskette)	£19.95	1.2MB	10. A-DOS (Diskette)	£19.95	1.2MB
2. A-DOS (Diskette)	£19.95	1.2MB	11. A-DOS (Diskette)	£19.95	1.2MB
3. A-DOS (Diskette)	£19.95	1.2MB	12. A-DOS (Diskette)	£19.95	1.2MB
4. A-DOS (Diskette)	£19.95	1.2MB	13. A-DOS (Diskette)	£19.95	1.2MB
5. A-DOS (Diskette)	£19.95	1.2MB	14. A-DOS (Diskette)	£19.95	1.2MB
6. A-DOS (Diskette)	£19.95	1.2MB	15. A-DOS (Diskette)	£19.95	1.2MB
7. A-DOS (Diskette)	£19.95	1.2MB	16. A-DOS (Diskette)	£19.95	1.2MB
8. A-DOS (Diskette)	£19.95	1.2MB	17. A-DOS (Diskette)	£19.95	1.2MB
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SUNARD SOFTWARE (AU)

PO BOX 76, MADRID, NSW, 2008 (Australia)



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2. A-DOS (Diskette) <td>French<td>£19.95</td><td>11. A-DOS (Diskette)<td>French<td>£19.95</td></td></td></td>	French <td>£19.95</td> <td>11. A-DOS (Diskette)<td>French<td>£19.95</td></td></td>	£19.95	11. A-DOS (Diskette) <td>French<td>£19.95</td></td>	French <td>£19.95</td>	£19.95
3. A-DOS (Diskette) <td>German<td>£19.95</td><td>12. A-DOS (Diskette)<td>German<td>£19.95</td></td></td></td>	German <td>£19.95</td> <td>12. A-DOS (Diskette)<td>German<td>£19.95</td></td></td>	£19.95	12. A-DOS (Diskette) <td>German<td>£19.95</td></td>	German <td>£19.95</td>	£19.95
4. A-DOS (Diskette) <td>Italian<td>£19.95</td><td>13. A-DOS (Diskette)<td>Italian<td>£19.95</td></td></td></td>	Italian <td>£19.95</td> <td>13. A-DOS (Diskette)<td>Italian<td>£19.95</td></td></td>	£19.95	13. A-DOS (Diskette) <td>Italian<td>£19.95</td></td>	Italian <td>£19.95</td>	£19.95
5. A-DOS (Diskette) <td>Japanese<td>£19.95</td><td>14. A-DOS (Diskette)<td>Japanese<td>£19.95</td></td></td></td>	Japanese <td>£19.95</td> <td>14. A-DOS (Diskette)<td>Japanese<td>£19.95</td></td></td>	£19.95	14. A-DOS (Diskette) <td>Japanese<td>£19.95</td></td>	Japanese <td>£19.95</td>	£19.95
6. A-DOS (Diskette) <td>Spanish<td>£19.95</td><td>15. A-DOS (Diskette)<td>Spanish<td>£19.95</td></td></td></td>	Spanish <td>£19.95</td> <td>15. A-DOS (Diskette)<td>Spanish<td>£19.95</td></td></td>	£19.95	15. A-DOS (Diskette) <td>Spanish<td>£19.95</td></td>	Spanish <td>£19.95</td>	£19.95
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8. A-DOS (Diskette) <td>Dutch<td>£19.95</td><td>17. A-DOS (Diskette)<td>Dutch<td>£19.95</td></td></td></td>	Dutch <td>£19.95</td> <td>17. A-DOS (Diskette)<td>Dutch<td>£19.95</td></td></td>	£19.95	17. A-DOS (Diskette) <td>Dutch<td>£19.95</td></td>	Dutch <td>£19.95</td>	£19.95
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14. A-DOS (Diskette) <td>Croatian<td>£19.95</td><td>23. A-DOS (Diskette)<td>Croatian<td>£19.95</td></td></td></td>	Croatian <td>£19.95</td> <td>23. A-DOS (Diskette)<td>Croatian<td>£19.95</td></td></td>	£19.95	23. A-DOS (Diskette) <td>Croatian<td>£19.95</td></td>	Croatian <td>£19.95</td>	£19.95
15. A-DOS (Diskette) <td>Serbian<td>£19.95</td><td>24. A-DOS (Diskette)<td>Serbian<td>£19.95</td></td></td></td>	Serbian <td>£19.95</td> <td>24. A-DOS (Diskette)<td>Serbian<td>£19.95</td></td></td>	£19.95	24. A-DOS (Diskette) <td>Serbian<td>£19.95</td></td>	Serbian <td>£19.95</td>	£19.95
16. A-DOS (Diskette) <td>Bosnian<td>£19.95</td><td>25. A-DOS (Diskette)<td>Bosnian<td>£19.95</td></td></td></td>	Bosnian <td>£19.95</td> <td>25. A-DOS (Diskette)<td>Bosnian<td>£19.95</td></td></td>	£19.95	25. A-DOS (Diskette) <td>Bosnian<td>£19.95</td></td>	Bosnian <td>£19.95</td>	£19.95
17. A-DOS (Diskette) <td>Montenegrin<td>£19.95</td><td>26. A-DOS (Diskette)<td>Montenegrin<td>£19.95</td></td></td></td>	Montenegrin <td>£19.95</td> <td>26. A-DOS (Diskette)<td>Montenegrin<td>£19.95</td></td></td>	£19.95	26. A-DOS (Diskette) <td>Montenegrin<td>£19.95</td></td>	Montenegrin <td>£19.95</td>	£19.95
18. A-DOS (Diskette) <td>Albanian<td>£19.95</td><td>27. A-DOS (Diskette)<td>Albanian<td>£19.95</td></td></td></td>	Albanian <td>£19.95</td> <td>27. A-DOS (Diskette)<td>Albanian<td>£19.95</td></td></td>	£19.95	27. A-DOS (Diskette) <td>Albanian<td>£19.95</td></td>	Albanian <td>£19.95</td>	£19.95
19. A-DOS (Diskette) <td>Macedonian<td>£19.95</td><td>28. A-DOS (Diskette)<td>Macedonian<td>£19.95</td></td></td></td>	Macedonian <td>£19.95</td> <td>28. A-DOS (Diskette)<td>Macedonian<td>£19.95</td></td></td>	£19.95	28. A-DOS (Diskette) <td>Macedonian<td>£19.95</td></td>	Macedonian <td>£19.95</td>	£19.95
20. A-DOS (Diskette) <td>Romanian<td>£19.95</td><td>29. A-DOS (Diskette)<td>Romanian<td>£19.95</td></td></td></td>	Romanian <td>£19.95</td> <td>29. A-DOS (Diskette)<td>Romanian<td>£19.95</td></td></td>	£19.95	29. A-DOS (Diskette) <td>Romanian<td>£19.95</td></td>	Romanian <td>£19.95</td>	£19.95
21. A-DOS (Diskette) <td>Bulgarian<td>£19.95</td><td>30. A-DOS (Diskette)<td>Bulgarian<td>£19.95</td></td></td></td>	Bulgarian <td>£19.95</td> <td>30. A-DOS (Diskette)<td>Bulgarian<td>£19.95</td></td></td>	£19.95	30. A-DOS (Diskette) <td>Bulgarian<td>£19.95</td></td>	Bulgarian <td>£19.95</td>	£19.95
22. A-DOS (Diskette) <td>Greek<td>£19.95</td><td>31. A-DOS (Diskette)<td>Greek<td>£19.95</td></td></td></td>	Greek <td>£19.95</td> <td>31. A-DOS (Diskette)<td>Greek<td>£19.95</td></td></td>	£19.95	31. A-DOS (Diskette) <td>Greek<td>£19.95</td></td>	Greek <td>£19.95</td>	£19.95
23. A-DOS (Diskette) <td>Turkish<td>£19.95</td><td>32. A-DOS (Diskette)<td>Turkish<td>£19.95</td></td></td></td>	Turkish <td>£19.95</td> <td>32. A-DOS (Diskette)<td>Turkish<td>£19.95</td></td></td>	£19.95	32. A-DOS (Diskette) <td>Turkish<td>£19.95</td></td>	Turkish <td>£19.95</td>	£19.95
24. A-DOS (Diskette) <td>Arabic<td>£19.95</td><td>33. A-DOS (Diskette)<td>Arabic<td>£19.95</td></td></td></td>	Arabic <td>£19.95</td> <td>33. A-DOS (Diskette)<td>Arabic<td>£19.95</td></td></td>	£19.95	33. A-DOS (Diskette) <td>Arabic<td>£19.95</td></td>	Arabic <td>£19.95</td>	£19.95
25. A-DOS (Diskette) <td>Hebrew<td>£19.95</td><td>34. A-DOS (Diskette)<td>Hebrew<td>£19.95</td></td></td></td>	Hebrew <td>£19.95</td> <td>34. A-DOS (Diskette)<td>Hebrew<td>£19.95</td></td></td>	£19.95	34. A-DOS (Diskette) <td>Hebrew<td>£19.95</td></td>	Hebrew <td>£19.95</td>	£19.95
26. A-DOS (Diskette) <td>Russian<td>£19.95</td><td>35. A-DOS (Diskette)<td>Russian<td>£19.95</td></td></td></td>	Russian <td>£19.95</td> <td>35. A-DOS (Diskette)<td>Russian<td>£19.95</td></td></td>	£19.95	35. A-DOS (Diskette) <td>Russian<td>£19.95</td></td>	Russian <td>£19.95</td>	£19.95
27. A-DOS (Diskette) <td>Ukrainian<td>£19.95</td><td>36. A-DOS (Diskette)<td>Ukrainian<td>£19.95</td></td></td></td>	Ukrainian <td>£19.95</td> <td>36. A-DOS (Diskette)<td>Ukrainian<td>£19.95</td></td></td>	£19.95	36. A-DOS (Diskette) <td>Ukrainian<td>£19.95</td></td>	Ukrainian <td>£19.95</td>	£19.95
28. A-DOS (Diskette) <td>Belarusian<td>£19.95</td><td>37. A-DOS (Diskette)<td>Belarusian<td>£19.95</td></td></td></td>	Belarusian <td>£19.95</td> <td>37. A-DOS (Diskette)<td>Belarusian<td>£19.95</td></td></td>	£19.95	37. A-DOS (Diskette) <td>Belarusian<td>£19.95</td></td>	Belarusian <td>£19.95</td>	£19.95
29. A-DOS (Diskette) <td>Georgian<td>£19.95</td><td>38. A-DOS (Diskette)<td>Georgian<td>£19.95</td></td></td></td>	Georgian <td>£19.95</td> <td>38. A-DOS (Diskette)<td>Georgian<td>£19.95</td></td></td>	£19.95	38. A-DOS (Diskette) <td>Georgian<td>£19.95</td></td>	Georgian <td>£19.95</td>	£19.95
30. A-DOS (Diskette) <td>Abkhazian<td>£19.95</td><td>39. A-DOS (Diskette)<td>Abkhazian<td>£19.95</td></td></td></td>	Abkhazian <td>£19.95</td> <td>39. A-DOS (Diskette)<td>Abkhazian<td>£19.95</td></td></td>	£19.95	39. A-DOS (Diskette) <td>Abkhazian<td>£19.95</td></td>	Abkhazian <td>£19.95</td>	£19.95
31. A-DOS (Diskette) <td>Ossetian<td>£19.95</td><td>40. A-DOS (Diskette)<td>Ossetian<td>£19.95</td></td></td></td>	Ossetian <td>£19.95</td> <td>40. A-DOS (Diskette)<td>Ossetian<td>£19.95</td></td></td>	£19.95	40. A-DOS (Diskette) <td>Ossetian<td>£19.95</td></td>	Ossetian <td>£19.95</td>	£19.95
32. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>41. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>41. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	41. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
33. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>42. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>42. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	42. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
34. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>43. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>43. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	43. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
35. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>44. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>44. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	44. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
36. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>45. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>45. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	45. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
37. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>46. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>46. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	46. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
38. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>47. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>47. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	47. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
39. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>48. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>48. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	48. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
40. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>49. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>49. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	49. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
41. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>50. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>50. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	50. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
42. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>51. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>51. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	51. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
43. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>52. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>52. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	52. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
44. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>53. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>53. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	53. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
45. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>54. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>54. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	54. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
46. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>55. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>55. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	55. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
47. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>56. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>56. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	56. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
48. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>57. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>57. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	57. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
49. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>58. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>58. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	58. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
50. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>59. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>59. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	59. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
51. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>60. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>60. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	60. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
52. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>61. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>61. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	61. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
53. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>62. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>62. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	62. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
54. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>63. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>63. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	63. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
55. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>64. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>64. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	64. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
56. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>65. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>65. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	65. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
57. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>66. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>66. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	66. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
58. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>67. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>67. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	67. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
59. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>68. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>68. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	68. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
60. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>69. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>69. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	69. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
61. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>70. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>70. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	70. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
62. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>71. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>71. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	71. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
63. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>72. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>72. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	72. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
64. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>73. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>73. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	73. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
65. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>74. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>74. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	74. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
66. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>75. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>75. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	75. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
67. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>76. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>76. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	76. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
68. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>77. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>77. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	77. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
69. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>78. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>78. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	78. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
70. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>79. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>79. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	79. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
71. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>80. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>80. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	80. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
72. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>81. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>81. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	81. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
73. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>82. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>82. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	82. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
74. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>83. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>83. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	83. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
75. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>84. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>84. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	84. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
76. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>85. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>85. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	85. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
77. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>86. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>86. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	86. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
78. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>87. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>87. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	87. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
79. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>88. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>88. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	88. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
80. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>89. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>89. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	89. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
81. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>90. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>90. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	90. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
82. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>91. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>91. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	91. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
83. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>92. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>92. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	92. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
84. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>93. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>93. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	93. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
85. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>94. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>94. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	94. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
86. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>95. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>95. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	95. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
87. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>96. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>96. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	96. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
88. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>97. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>97. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	97. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
89. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>98. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>98. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	98. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
90. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>99. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>99. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	99. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
91. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>100. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>100. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	100. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
92. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>101. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>101. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	101. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
93. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>102. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>102. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	102. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
94. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>103. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>103. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	103. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
95. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>104. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>104. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	104. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
96. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>105. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>105. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	105. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
97. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>106. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>106. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	106. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
98. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>107. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>107. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	107. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
99. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>108. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>108. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	108. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
100. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>109. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>109. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	109. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
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103. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>112. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>112. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	112. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
104. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>113. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>113. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	113. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
105. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>114. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>114. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	114. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
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107. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>116. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>116. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	116. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
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109. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>118. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>118. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	118. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
110. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>119. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>119. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	119. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
111. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>120. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>120. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	120. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
112. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>121. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>121. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	121. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
113. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>122. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>122. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	122. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
114. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>123. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>123. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	123. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
115. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>124. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>124. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	124. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
116. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>125. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>125. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	125. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
117. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>126. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>126. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	126. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
118. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>127. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>127. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	127. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
119. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>128. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>128. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	128. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
120. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>129. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>129. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	129. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
121. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>130. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>130. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	130. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
122. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>131. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>131. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	131. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
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125. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>134. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>134. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	134. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
126. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>135. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>135. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	135. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
127. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>136. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>136. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	136. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
128. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>137. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>137. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	137. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
129. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>138. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>138. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	138. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
130. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>139. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>139. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	139. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
131. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>140. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>140. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	140. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
132. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>141. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>141. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	141. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
133. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>142. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>142. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	142. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
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135. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>144. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>144. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	144. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
136. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>145. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>145. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	145. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
137. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>146. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>146. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	146. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
138. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>147. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>147. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	147. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
139. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>148. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>148. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	148. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
140. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>149. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>149. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	149. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
141. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>150. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>150. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	150. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
142. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>151. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>151. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	151. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
143. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>152. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>152. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	152. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
144. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>153. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>153. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	153. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
145. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>154. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>154. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	154. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
146. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>155. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>155. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	155. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
147. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>156. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>156. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	156. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
148. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>157. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>157. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	157. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
149. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>158. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>158. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	158. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
150. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>159. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>159. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	159. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
151. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>160. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>160. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	160. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
152. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>161. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>161. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	161. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
153. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>162. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>162. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	162. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
154. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>163. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>163. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	163. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
155. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>164. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>164. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	164. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
156. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>165. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>165. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	165. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
157. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>166. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>166. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	166. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
158. A-DOS (Diskette) <td>Ingush<td>£19.95</td><td>167. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td></td>	Ingush <td>£19.95</td> <td>167. A-DOS (Diskette)<td>Ingush<td>£19.95</td></td></td>	£19.95	167. A-DOS (Diskette) <td>Ingush<td>£19.95</td></td>	Ingush <td>£19.95</td>	£19.95
159. A-DOS (Diskette) <td>Dagestani<td>£19.95</td><td>168. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td></td>	Dagestani <td>£19.95</td> <td>168. A-DOS (Diskette)<td>Dagestani<td>£19.95</td></td></td>	£19.95	168. A-DOS (Diskette) <td>Dagestani<td>£19.95</td></td>	Dagestani <td>£19.95</td>	£19.95
160. A-DOS (Diskette) <td>Chechen<td>£19.95</td><td>169. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td></td>	Chechen <td>£19.95</td> <td>169. A-DOS (Diskette)<td>Chechen<td>£19.95</td></td></td>	£19.95	169. A-DOS (Diskette) <td>Chechen<td>£19.95</td></td>	Chechen <td>£19.95</td>	£19.95
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More from Zork and the Ballyhoo man

WELL, here I am again after yet another adventure into the great unknowns, and this time I have brought back some great news for Infocom fans.

Out at any time now is another new release from those masters of the text adventure. Don't know about you, but I simply can't get enough of Infocom — they just seem to go from strength to strength.

The most exciting part of this news is that the new adventure is called *Reynard Zork*. Now in my book the Zork trilogy is an all-time classic, so the fact that there will now be an addition to the series fills me with glee.

Another release is one that I have mentioned before, but here is some more gossip on it. It is a real weird one and you couldn't really forget the title — *Reid and Ben Cauldron's Make Head Or Tail Off It*.

Jeff O'Neill, author of that splendid circus mystery, *Ballyhoo*, is the perpetrator of this highly unusual product.

The program consists of eight vignettes, all set in a town called Funster. As you might possibly guess from that, the tales are all concerned with English Language pyrotechnics. The idea is for the player to solve the various plays on words that abound in each story.

Reid and Ben is a long way from the usual Infocom adventure. For a start, each tale can be completed individually. There is no mapping to be done and you may be pleased to know that there are built-in hints for you to assist yourself should the going get too hard.

The individual titles of this cast, with a hint of what they contain in brackets, are Shopping Blazes (similar sounding words), Shake A Yawer (Spoonersisms), Bay The Farm (idioms), Azr The Part (Fifties-style situation comedy), Plee Japts (words beginning with "ja"), Buz Your Words (idioms), Visit The Manor of Speaking (literal meanings?) and finally, Most

by
Rouloc

The Mayor, which can only be played when you've solved all the others.

If you like word games, an intellectual challenge spiced with plenty of

Flow to Page 32 >

Hints & tips

SUPERSTICRACY

Did I say bleeding you?

Ring the bell that spins round the back and grab the portrait before she returns.

Mayor won't play up the mail?

Show it the portrait — that should make it see red!

Puzzled by the letters?

Open the mailbox, open the bag of flame treats, put the bag in the box then look in the trough.

Baffled by the poster stickers?

Get down the order in which you found them and watch out — those items get shuffled about each time you start a new game. The stickers are no use to themselves but you'll need to remember the order in

which they were collected when you get further into the game.

HOLLYWOOD IS-JIVE

Appare circumstances a problem?

Hit the buttons in this order: Green thrice, black twice, white twice, green thrice, black once, blue once, green five times and lastly red three times. Phew!

Safe won't open?

Look at the names on the safe plaques: Lenny, Regan, Labbing. Take the initial letter for direction and the number of letters as the number for the combination. Yep, left to 4, right to 5 and right again to 1. Click! Easy when you know how!

Can't grab the seed in the window?

Hold the sack, open the window then spin the sack. Easy peasy.



4 From Page 28

the traditional Infocom wit and humour, then Rand and Bert looks like a program you'll enjoy. Watch out for a full review in *Atari User* soon.

Turning to the cries for help that

continue to pour in, I thought that I'd stick with Infocom this month and help you along the way with a few tips for Hollywood Hitlers and Rumpelstiltsch.

We look in a month — keep that brass lamp well lit until then!

See you next month

Review

Something nasty lurks ...

"By the pricking of my thumbs, something wicked this way comes". Perhaps you recognise that as a quotation from *Macbeth* or as a part title of a Ray Bradbury book (he borrowed it from our Will).

Whether you do or not (and even if you were forced to look it up in my *Willard's Book of Knowledge for Dots and Total Ignoramus* — (Buck! may be pretty but he's not awfully bright, I'm sure you'll agree that these words beautifully convey the sense of something unpleasantly nasty waiting just round the corner).

That quotation would be equally appropriate for Infocom's latest text adventure, *The Lurking Horror*. Now, if, like me, you enjoy a good vicious

score (between providing you're really safe at the time), then Infocom have got just the bag of creepy-crawlers for you.

You are a student attending the George Underwood Edwards Institute of Technology, about which many unwholesome rumours have been circulating, such as legends of ghostly goings-on in the basement, young master.

One snowy night, you return to the college to finish off a long overdue Classics paper.

After a swift fainting fit while seated at your computer terminal it was something you read, not what you had for tea back at the digs, you begin to wish you had stayed at home. Too late, old chum. There's now a blizzard blowing outside and you're well and truly stuck here for the night.

Feeling the need for a little exercise, you might care to try your hand at clearing away a huge pile of books lying down in the basement (I thought I told you there were rumours about something nasty in the basement — never learn, do you?).

When the rubbish is shifted (with some mechanical aid), another room is revealed. And therein sits a bloodied manhole cover. Now just like those poor innocent rats who, when lost and soaked in a rainstorm, go knocking on the canteen door at midnight, failing to notice the 20 foot high neon sign that says "Close Drains!", so could you well wish to open the cover and descend. Don't say you weren't warned. In a cave down below is what looks suspiciously like an altar. No cuddly

toy for guessing what those red stains are (unless you're right for climbing down manholes, nosey!). There's a knife lying nearby, its purpose obvious, wouldn't you say? But worst of all is the sliding iron plate embedded in the floor. Pull that to one side and the bars on the back of your neck are likely to do handstands.

Greyfriars was never like this, master. As the fat owl himself might have said if he were in your current shoes, "Oh, lord! Oh, pity!". Given the nightmarish experiences you are about to undergo, you could be forgiven for using stronger language than *Buster's*.

Elsewhere, down on one of the campus floors, a maintenance man is polishing desks on his mobile machine, a strange gleam in his eyes (it rest on the floor). He will not let you pass. Taking an axe to him may seem like a pretty over-reaction on your part to his unfriendliness but prepare to be shocked if you do decide to attack him. And, perhaps I should add in all fairness, prepare also to be throttled for your impertinence in assaulting what now appears to be one of the undead. Yes, a zombie.

And there's far more horrible things lurking around the campus. What is going on? Among the treats in store are vicious rats, a loudspeaker siren heralding things, a winged vocabulary-wizard, something dead and unpleasant in a plant tub and a mob of cheating rombles for starters. Can you get out alive? Will you ever sleep soundly again?

The Lurking Horror was written by Dave Laffing, famed writer of the *Zork* trilogy and four other Infocom adventures. He has come up with a tale that brings together many of the elements found in the best horror stories like those by such notables as Stephen King, H.P. Lovecraft and James Herbert.

This is another original triumph for Infocom who just can't seem to put a foot wrong, thank goodness. So turn down the lamp, shut the door and get down to playing *The Lurking Horror*. But be not to keep looking over your shoulder.

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Doctor Boris

Play ALEX DEWDNEY's
game of the month

YOUR name is Doctor Boris. You have just graduated from medical school and have gone to work in a new hospital somewhere in the North of England. But the building work isn't complete and due to cutbacks in the NHS you have to go out there and do the work yourself!

Unfortunately the building site is littered with unexploded bombs, so as you rush about constructing the hospital you have to stop to defuse them before the entire area goes up in smoke.

To make things even worse, the dastardly Mad Norman is constantly bouncing about making sure you're not slacking. One touch from his deadly skin and you drop dead.

The final problem you face - and things are getting pretty desperate by now - is that the site is also full of half buried skulls which glow with this radioactive light. Like Norman, these are fatal to the touch.

After the title page you find yourself in the middle of the screen surrounded by bushes, skulls and bombs. One of the bombs is slowly counting down from 10 to 0, and you must defuse it by walking over it.

As soon as one bomb has been defused, another starts to count down and it's up to you to carry on until the site has been made safe. At this point you proceed on to the next level. If you let a bomb reach zero it explodes and you lose a life but an extra life is awarded when you reach level eight.

As you move you build the new hospital wall behind you, and this sometimes blocks your path. If this happens you must use some of your limited supply of explosives by pressing the fire button and pushing the joystick in the direction required. Keep a careful watch on your dynamite gauge at the bottom of the screen, as your supply is used very quickly.

Play the game as fast as you can, as by doing this you gain more points. It is written entirely in Basic and is fairly short, so typing it in should pose no problems. Use the Get It Right checklist to make sure you're correct. You'll find full details in the August 1988 issue of *Amiga User*.



Turn to Page 38 ▶

Game

[illegible][illegible][illegible][illegible]

In the last few months we have been looking at some features of the GU II/Display List Interrupt, and you should now have an insight about how this part of the computer works.

This month let's consider another function of the display list, the LMS (Load Memory Scan). This is a complicated routine but if used correctly it can create some very useful effects quickly and without a lot of programming. Its main job is to tell the Antic chip where to get data from when displaying the screen information for any mode.

Any line on the screen can have this option set, and so allow screen data to be accessed from any place in memory and in any order.

The importance and use of such a feature may not be apparent at first but it is in fact a very powerful command.

An example display list is shown in Figure 1. It is only a very small display list, but from it you can see the way in which the LMS works.

To start with, the first three bytes are blank lines to bring the start of the screen down to ensure that the first line of screen data is displayed on all TVs and monitors. The next byte describes the type of mode to use for the next line—in this case Antic Mode 2 (Graphics 0). It also has the LMS bit set, and this is essential for the first line in a display list so Antic knows where screen data starts from.

Following this byte is a word address which Antic uses as a pointer from where screen data must be received. This could, for example, be an area in page six where a life is stored. Setting a mode line with LMS followed by the low and high bytes of \$6000 would result in data being displayed.

The final command, 65, tells Antic that the display list has ended and it must wait for vertical blanking before restarting a display list.

The address following 65 is the start

SPECIAL FX

In the fourth part
of his series on
amazing effects
RICHARD VANNER
takes a look at
the use of load
memory scan.

address of the display list. This is ignored during normal operation of the Atari but is read when a pointer is being used. Don't worry too much about this but always make sure you finish a display list with these bytes.

Before we go any further, type in Program I and run it. You will find that the top line of your screen has been re-displayed many times. This is achieved by making a new display list that loops repeating the LMS on every line, with the same address for the screen data.

What use is it, I hear you ask. Well imagine a game with split screens—player one at the top part and player two at the bottom. These screens could scroll around memory independent of each other giving a wider scope for game design. Many programmers have used this technique in games, and an excellent example can

be seen in Synapse's *Shadow World*.

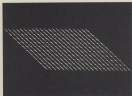
Let's now move on to another example of the LMS with Program II. This listing inverts a Graphics 0 screen, so when you run it everything goes upside down. Try LISTing the program to test the effects.

Again this is all due to the LMS function. The new display list this time creates LMS addresses that start from the base of the screen and work backwards, creating a reversed memory format. The program also changes the character mode register to display upside down characters.

A useless program you might say, but this idea can be used to invert a Mode 0 screen, and this brings us on to Program III. Again the display list is re-designed for a backward memory format, but in this mode the picture on screen becomes flipped over. Notice how the program switches between

Command	Description
113	Blank line
113	Blank line
113	Blank line
66	Graphics mode 0 (Antic Mode 2) with LMS (2+66)
LOW	Low byte of screen memory
HIGH	High byte of screen memory
65	Wait for VBLANK
LOW	Low byte of display list address
HIGH	High byte of display list

Figure 1: An example display list



A normal GBI screen

PROGRAM BREAKDOWNS

100-115 Sets up screen and marks pointer
120-140 Finds the display list address
145-155 Pokes the new display list into page six
160-220 Pokes in the mandatory word bytes of the display list
230 Tells Arlec the address of the newly created display list
240 Prints a small message

Program I

160-165 Sets up screen, set pointer and find display list
170-180 Pokes new display list with backward spacing
200-230 Pokes in and bytes and tells Arlec the address of the new backward display list down characters
240 Sets character mode register for visible
250 Prints a backward message.

Program II

95 Lowers memory so that new display list can be stored in a safe place and so that it won't cross a 16 boundary
100-110 Sets up hi-res mode and draws a pattern
120-140 Sets up display list pointers
145-155 Creates new display list for inverted screen
160-220 Pokes and bytes in
230-240 Switches to new display list and pauses
250-260 Switches back to original display list and pauses
270 Loops back to keep switching

Program III

95 Reserves memory
100-105 Sets up Graphics II
110-115 Draws diagonal lines
120-140 Sets display list pointers
145-155 Creates display list with varying levels of depth
160-220 Sets and bytes
230 Switches to new display list

Program IV

the two display lists at such a quick rate — much faster than moving the actual screen data. You may also find that when the screen changes there is a small flicker. This cannot be helped in Basic but a vertical blank interrupt would solve the problem.

Now on to the final listing, Program IV, which unlocks the hidden secrets of Colourspace. If you have ever seen this program you may have wondered how the curve modes are generated. Well it's all down to the LMS, which this time causes screen data to be displayed in varying steps.

played in varying steps.

The program sets up a display list that produces the same lines at increasing lengths giving them a curved effect.

The LMS is very important in the display list design and is quite a difficult subject, but even if you don't understand the theory you can use the useful routines from these programs in your own.

One final warning. Make sure that your display list never crosses a 16 boundary and that screen data never

crosses a 4k boundary or else rubbish will be displayed.

Program I

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10 DIM *****
20 POKE 100,1
30 POKE 101,10
40 POKE 102,10
50 POKE 103,10
60 POKE 104,10
70 POKE 105,10
80 POKE 106,10
90 POKE 107,10
100 POKE 108,10
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Series

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[illegible]

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[illegible]

1000

[illegible]

```

110 P003 00000-0000_001
120 P004 00000-0000_001_0002
130 P003 00000-0000_001
140 P004 00000-0000_001_0002
150 P003 00000-0000_001_0002
160 P004 00000-0000_001_0002
170 P003 00000-0000_001_0002
180 P004 00000-0000_001_0002
190 P003 00000-0000_001_0002
200 P004 00000-0000_001_0002

```



Year	Age	Age	Age	Age	Age
1980	1980	1980	1980	1980	1980
1981	1981	1981	1981	1981	1981
1982	1982	1982	1982	1982	1982
1983	1983	1983	1983	1983	1983
1984	1984	1984	1984	1984	1984
1985	1985	1985	1985	1985	1985
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1987	1987	1987	1987	1987	1987
1988	1988	1988	1988	1988	1988
1989	1989	1989	1989	1989	1989
1990	1990	1990	1990	1990	1990
1991	1991	1991	1991	1991	1991
1992	1992	1992	1992	1992	1992
1993	1993	1993	1993	1993	1993
1994	1994	1994	1994	1994	1994
1995	1995	1995	1995	1995	1995
1996	1996	1996	1996	1996	1996
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1998	1998	1998	1998	1998	1998
1999	1999	1999	1999	1999	1999
2000	2000	2000	2000	2000	2000
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2004	2004	2004	2004	2004	2004
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2006	2006	2006	2006	2006	2006
2007	2007	2007	2007	2007	2007
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2009	2009	2009	2009	2009	2009
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2022	2022	2022	2022	2022	2022
2023	2023	2023	2023	2023	2023
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2025	2025	2025	2025	2025	2025
2026	2026	2026	2026	2026	2026
2027	2027	2027	2027	2027	2027
2028	2028	2028	2028	2028	2028
2029	2029	2029	2029	2029	2029
2030	2030	2030	2030	2030	2030
2031	2031	2031	2031	2031	2031
2032	2032	2032	2032	2032	2032
2033	2033	2033	2033	2033	2033
2034	2034	2034	2034	2034	2034
2035	2035	2035	2035	2035	2035
2036	2036	2036	2036	2036	2036
2037	2037	2037	2037	2037	2037
2038	2038	2038	2038	2038	2038
2039	2039	2039	2039	2039	2039
2040	2040	2040	2040	2040	2040

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406</
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1.00	1.0000	1.00	1.0000	1.00	1.0000
1.00	2.0000	1.00	2.0000	1.00	2.0000
4.00	2.0001	5.00	2.0000	4.00	2.0000
7.00	2.0002	8.00	2.0000	7.00	2.0000
10.00	2.0003	11.00	2.0000	10.00	2.0000
13.00	2.0004	14.00	2.0000	13.00	2.0000
16.00	2.0005	17.00	2.0000	16.00	2.0000
19.00	2.0006	20.00	2.0000	19.00	2.0000
22.00	2.0007	23.00	2.0000	22.00	2.0000
25.00	2.0008	26.00	2.0000	25.00	2.0000



1992	1993	1994	1995	1996	1997
10	1031	10	1034	10	1035
11	1036	11	1039	11	1040
12	1040	12	1043	12	1044
13	1045	13	1048	13	1049
14	1050	14	1053	14	1054
15	1055	15	1058	15	1059
16	1060	16	1063	16	1064
17	1065	17	1068	17	1069
18	1070	18	1073	18	1074
19	1075	19	1078	19	1079
20	1080	20	1083	20	1084
21	1085	21	1088	21	1089
22	1090	22	1093	22	1094
23	1095	23	1098	23	1099
24	1100	24	1103	24	1104
25	1105	25	1108	25	1109
26	1110	26	1113	26	1114
27	1115	27	1118	27	1119
28	1120	28	1123	28	1124
29	1125	29	1128	29	1129
30	1130	30	1133	30	1134
31	1135	31	1138	31	1139

SOFTWARE *Solutions*

Your programming problems
solved by **ANDRÉ WILLEY**

Trapped by a loop

WE'VE got a really mixed batch of questions this month — one of which had me a little puzzled for a time. Don't forget that this is your forum — so keep those questions coming in on any aspect of Atari programming.

Let's start the ball rolling with a letter from Jim Cullen from Whitlow in Sheffield. He writes:

I would appreciate your advice on a problem I am having with my Atari. In fact, what I really want to know is whether or not I have a fault in my machine.

I am using a 130XE, G.S.S.'s Super 88 cartridge, two 1050 disc drives and two printers — a 1020 and a 1020, neither of which are turned on at the same time.

My problem concerns the TRAP statement. I find that when I use it from inside a loop to direct the program back within the loop I get Error 13 — NEXT without FOR. However I have only found it to happen when using GOSUB — for example:

```
10 FOR P = 1 TO 10
20 TRAP 30: GOSUB 1000
30 PRINT P
40 NEXT P
```

I would have expected that when the program attempts to branch to the non-existent line 1000 that the TRAP would bring it back to the loop and execution would continue. But it gives the error 13 when plainly there is a FOR statement. None of the manuals comment upon this so I am wondering whether there is a bug in my copy. I hope that you might be able to set my mind at rest.



The problem you have encountered is not a bug as such, merely a slight misunderstanding of the way Atari Basic Functions.

When a FOR statement is encountered the program stores the details of the loop by pushing them onto a special run-time stack. This is simply a place in memory where numbers can be placed one at a time and then retrieved afterwards. Think of it like a pile of letters on a desk: whenever you add a new letter to the stack you always place it on the top of the pile, and whenever you take any off again you always start with the one on the top.

This is known as a first-in-last-out (or FILO) stack because the first item you put on the stack will be on the bottom of the pile and hence be the last to come out again. Incidentally, some computer operations will use first-in-first-out stacks which work the other way — rather like pulling the letters from the bottom of the pile and dealing with the oldest first and the most recent ones last.

Anyway, to get back to the point, Basic uses its run-time stack to keep track of where to go back to for FOR ... NEXT loops and GOSUB ... RETURN branches. Therefore, for your problem, let's look at what Basic does during your program:

Line 10 is a FOR statement, so it pushes all the information it requires onto the stack and goes on to the next line.

Ignoring line 20 for a moment, line 30 prints out the value of P and then line 40 puts the FOR details back off the stack and thus returns to line 10.

Now, when you add line 20 the following sequence of events takes place:

The TRAP line is set to 30, but no

action is taken as it is at this point. Then the program comes across a GOSUB statement, so it pushes the calling line number details (line 20 in this case) onto the stack and goes off to find line 1000.

At this point the error handler cuts in because there is no line 1000 to go to. It detects this error (Error 13) and also notices that a TRAP has been set to line 30 — so instead of printing an error message it branches and continues execution at line 30 (PRINT P).

Line 40 is a NEXT statement, so it tries to pull the information about the associated FOR command from the stack — and what does it find but the unused reference to the RETURN address for the non-existent GOSUB. Of course, it can't know that the next item on the stack is the one it wants, so it gives up and produces an error.

Now for the solution: All you need to do is remove the RETURN address entry from the stack before you get to the NEXT statement. The POP command will do this, so if you change line 30 to:

30 POP: PRINT P

your program will run as required. Don't forget to remove the POP statement if you decide to use the GOSUB to line 1000 because if the stack is already in order when you POP it then you'll remove the perfectly valid FOR reference and you'll get the same error!

Oh, and by the way — you CAN attach two printers at the same time, but be careful if you are trying to use a word processor or other similar program. The normal printer reference used by most software is "P:" or "Pr:", either of which will drive any

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SOFTWARE Solutions

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printer on the serial bus. However, most Atari printers also have a unique device ID number built into their rom chips. An 850 interface, for example, will also respond to "PC", and each new Atari printer has its own code ("P4", "P5", and so on). I don't know the code for a 1020 off hand, but the 1020 responds to "P6".

This is obviously only useful with programs which allow the use of printer ID numbers (as Atariwriter is not, for example), and it also only works with the XLSD operating system.

Disc's density

A.W. Crawford of St. James's Gardens, Penzance has two questions:

Is there any way of checking, in machine language, the density in which a 1080 disc is operating? At the moment the technique I am using involves trying to read a sector outside the single density range, say 1080, and assuming that an error indicates single density, which isn't a particularly elegant technique. Is there a better way, perhaps one that involves interrogating the drive controller?

Also, to settle an argument, what is the clock speed of a PAL Atari? Mapping the Atari says that PAL Ataris run at 2.117 MHz, as against the 1.79 MHz of NTSC machines. Since the 1.79 MHz rate was chosen to give two colour clocks on the display per cycle, and PAL has a greater number of scan lines, I can see the reasoning behind this statement. However, the Hardware Manual, while documenting many of the differences between PAL and NTSC machines, does not mention a change in the clock speed. Which is the correct figure?

Well, the standard 1080 drive doesn't seem to have any register available from the Status call to indicate the density of the disc. It's density sensing mechanism would seem to be totally internal and transparent to the user. It doesn't even

support the \$4E and \$4F SID commands used to configure the access mode on true double density drives.

However, all is not lost. The US Doubler chip, designed to give you faster disc access and true double density on a 1080 DD88 have the capability you require. These cost about £25.00, and are available from Frontier Software or your local dealer.

The US Doubler returns far more information via the Status request command (\$53) than a normal 1080. This data is placed into the four bytes starting at \$2EA, and is mapped as shown in Figure 1. In addition the US Doubler also provides the full \$4E and \$4F modes, plus some additional fast formatting commands.

As far as the clock speed of a PAL Atari computer goes, you are quite correct in your assumption that our machines run at 2.117 MHz. In fact, the crystal which governs the speed of both British and American machines runs at exactly 3 MHz, but the amount of cycles stolen by AMTC and GTIA during their DMA access to the screen

varies depending on the television system in use at the time.

A PAL picture is made up of 60 frames per second, each being some 312 lines deep. An NTSC picture, on the other hand, is made up of 60 frames of 262 lines each second. This accounts for the difference in stolen clock cycles, and hence the variation of the two CPU speeds.

That's all we've got room for this issue, but there'll be more of your technical and programming questions next month.

Are you having problems getting your programs to work? Write to Software Solutions, Atari User Group House, 66 Chester Road, Harlow Essex, SSG2 8BY. We will answer as many as we can within the pages of Atari User, but unfortunately we cannot give personal replies.

\$2EA	\$0	BUSY (Normally 1)
\$2E	\$1	DSQ (Normally 0)
\$2E	\$2	LAST DATA (Normally 1)
\$2E	\$3	CRC ERROR (1=Clear, 0=Read error on last sector)
\$2E	\$4	SECTOR NOT FOUND (0=Last sector read was not found)
\$2E	\$5	RECORD TYPE (Special write command used on last sector)
\$2E	\$6	WRITE PROTECT (0=Disc was write protected)
\$2E	\$7	NOT READY (0=Drive clear will accept command frame)
\$2E	\$8	COMMAND FRAME (1=Error in last command frame)
\$2E	\$9	CHECKSUM (1=Error in last checksum data)
\$2E	\$A	OPERATION (1=Operation error, for example bad sector)
\$2E	\$B	WRITE PROTECT (1=Disc is currently write protected)
\$2E	\$C	MOTOR ON (1=Disc spinning)
\$2E	\$D	SIZE (1=256 byte sectors, 0=128 byte sectors)
\$2E	\$E	Unused
\$2E	\$F	1080 DD MODE (1=Dual Density (1080) mode)
\$2E0		DRIVE TIMEOUT VALUE (100ths of a second)
\$2E1		Unused (Always 0)
* Not used with the US Doubler.		

Figure 1 - Status bytes returned by a US Doubler drive

A sort of iso-bar chart

ANDY DORAN uses Mini Office II to chart our wonderful weather

LAST month we set up a spreadsheet containing lots of data about the weather. It would be nice to see the fruits of our labour periodically, and this is the task for which the graphics program was written.

Let's take the data you've already entered into the Spreadsheet and display it graphically in preparation for a report or holiday brochure.

Before doing this it's a good idea to obtain a printout of the spreadsheet. This will make the collation of the graphics data much more simple, and is shown in Figure 1.

A number of sets of data could be used to create the graphics. For instance, it would be interesting to see the average, best and worst results in each category compared.

Looking at the printout, we can see that the columns that contain these items of data are I, J and K. The titles for each value appear in column A. This is all the information we need to save data ready to load into the graphics program.

After selecting the option to save graphics data, the first question that is

asked is Select from Row/Columns. As we have seen, the data is in columns, so enter C. You are then asked for the column in which the headings appear, so type A in answer to this question. Finally, you are asked to give the column in which the data is stored—column I.

Once you have answered these questions you will be presented with the values in individual cells, the cell number (H) and the contents of that cell.

You have to state whether or not this cell is required by answering Y or N. Answer N for cell H and Y for cells I to K and then press Return. Finally you are asked for the filename in the same way as when you saved the spreadsheet. Enter the filename as AVERAGE.GRA.

Repeat the process for the two columns BEST and WORST. Again for easy reference, save these as BEST.GRA (column J) and WORST.GRA (column K).

You can now leave the spreadsheet and move on to the graphics module. Note: save you have the Mini Office II

disk in the drive, select the Mini Office II menu and from the next screen choose graphics.

The three sets of data you saved—AVERAGE.GRA, BEST.GRA and WORST.GRA—should be loaded into data sets 1, 2 and 3 respectively. This is achieved by selecting Load Data and then indicating the data set number and giving the filename (make sure that your data disk is in the drive).

Note that when you load data sets 2 and 3 the old filename must first be deleted or edited before the new one is entered.

With the data sets loaded, you can now draw some graphs so let's obtain a bar chart comparing all three sets of data.

Selecting Bar Chart gives a white screen with a set of icons down the right hand side. You need to tell the computer that you wish to use all the data, because if you don't only one set will be used. To do this, select the icon that reads Option (using the cursor keys and Return as we do to select a menu option).

Next, select the Data icon. This will prompt the computer to ask how many sets are to be used (the question appears near the bottom of the screen). Answer 3, to this question, and then define the primary, second-

	Average	Best	Worst	Average	Best	Worst	Average	Best	Worst
1 Jan (1988)	1	1	1	1	1	1	1	1	1
2 Jan (1988)	1	1	1	1	1	1	1	1	1
3 Jan (1988)	24	24	24	19	19	19	25	25	25
4 Jan (1988)	19	19	19	25	25	25	27	27	27

Figure 1: A typical week's weather



Figure 2: Bar chart

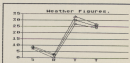


Figure 3: Line graph

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A pie chart titled 'NEITHER FIGURES.' showing the distribution of responses. The chart is divided into four segments with different patterns. A legend to the right identifies the patterns: solid black for 'SUN', diagonal lines for 'H2O', horizontal lines for 'TEMP', and vertical lines for 'TEMP'.

Category	Pattern
SUN	Solid Black
H2O	Diagonal Lines
TEMP	Horizontal Lines
TEMP	Vertical Lines

Extra memory and faster access

I RECENTLY bought a 1200E to add to my collection of Atari files and bobs. This was mainly due to the idea that the extra 64k memory over my 800XL would be really useful for programming purposes.

When it came to using this extra memory the whole process seemed mind bogglingly difficult and the manual seemed almost apologetic about how to use it.

I find that the only use of the memory is the random facility you get with Dos 2.5. Strangely I have seen very little about this extra memory in magazines, and was wondering if you or your readers could reassure me about it.

Also could you please tell me if you know of any software that will print musical notation onto a 1029 printer as I have searched for such a program and have up to now found none. — Richard Martin, London.

■ The 128k memory of a 1200E can only be used in sections and not all at the same time from Basic. This means that it can be used for storage space and you can then retrieve the information when you require it.

This allows very fast access to data, and we'll show you how in a future issue of Atari User.

You could buy Basic XL which allows you a full 64k block of memory to use for

programming and gives you a 19k block for variable workspace.

This comes on a cartridge and can be obtained from several suppliers including OSS (Optimized Systems Software) for around £70.

We have not seen any software that will print musical notation to an Atari 1029 printer, but if any of our readers can help please write in to Mailbag.

Groaning disc drive

I HAVE read the advertisement in Atari User for Fast Jr from Data Flashbacks, and am wondering if I need a heavy 1029 printer or if I can allow me to use Printshop with it?

I also have a problem with the amount of noise that my 1050 disc drive makes when in use. I have tried using sewing machine oil, but it only helps for a short while.

How can I stop this, as it is very annoying when loading or saving programs? — Manuel Lammers, Land-

enverweg, The Netherlands.

■ The Fast Jr chip fitted to Atari 1029 printers is a 15k item that allows the inclusion of three new character sets as well as retaining the original Atari character set. But it will not make your Atari 1029 work with Printshop.

The idea of using sewing machine oil on your drive to reduce the noise is all right, but you have to be very careful when applying it.

If it comes in contact with areas of the drive other than the arm that carries the drive head you can cause damage — especially if oil gets on the head.

The groaning noise that your drive makes is not actually a fault and if you can put up with it it's best not to go poking around inside your disc drive.

Revision update

MY Atari 800XL computer has a Revision B Basic and I have a cartridge with the Revision C Basic in it.

Is it possible to remove the Revision C chip from the cartridge and replace the chip in my computer with it, and if not could you please explain why? — M G Angel, Hargrave, North Yorkshire.

■ Providing that your cartridge has a 24 pin 8k chip you should have no problem swapping it with your old Revision B chip.

Atari also issued this cartridge with two 4k cores and if this is the case you will not be able to replace the Basic core.

But if the cartridge is left

plugged in the computer it will disable your old Revision B Basic and replace it with the Revision C on the cartridge.

Basically it replaces the need to download your Basic rom from the computer and take your cartridge to pieces.

Squashed up pictures

I TYPED in Kevin Millard's Dump 75 program from the July 1987 issue of Atari User and find that pictures from the Paint Artist program are compressed into the top half of the screen as they load and are then printed in this way. Is this correct? — D J Downing, Gillingham, Kent.

■ The Dump 75 utility is designed to be used with files created by the Atari TouchPaint and MicroPaint programs. Unfortunately Paint files are in a format that the program doesn't interpret correctly, and so can't be printed with this program.

Mission X blues

I TYPED in the Mission X listing from the August 1987 issue of Atari User and found that when I ran the program it came up with error level 7-35.

I typed in level 1, pressed Return and the screen went blue in the top right corner and then simply did nothing else.

What is the problem? Is

Turn to Page 68 for

Protection pleases

I HAVE now obtained a copy of the August 1987 issue of Atari User and I am glad that I did, as it is the most interesting issue to date.

The article about protecting programs by Leo Gotsling is very useful, and also of great interest to me are the articles about Mini Office II and the Plus User played device.

The article on the Dos map confirms my opinion

that the people who wrote the Atari OS were just to separate rooms and not allowed to talk to each other. How else can all the different handwriting systems within the OS be explained?

Keep up the good work supporting the Atari and thanks for giving us non-games players as much to read this time. — P Bouker, Tyneside.

4 From Page 48

there a fault with the listing in the magazine? — **Karel Madane, Upton, Wirral.**

■ The listing in the magazine is correct and you will find that you made an error as you typed it in. Check your program very carefully, especially any DATA statements, and you should find your error.

It appears to be happening while the computer is setting up the playfield, and this takes place between line 4000 and line 4950, so check these lines especially.

You can use the *Did It Right?* checklist to help you and full details of how to use it are in the August 1988 issue of *Atari User*.

Recipe for success

Is it possible to run a word processor system on an Atari with only a disc drive, as I have not got a printer?

I am a chef and have a large selection of recipes and menu sets that I would like to keep a record of. I have a varied selection of databases but none seem adequate for the job.

Eventually I would also like to add a costing system to work out multiple recipe ingredients and was wondering what I would need to do this last.

Also could you or any of your readers please tell me if there is an astrology/data program suitable for the 800XL and disc drive system? — **John Upton, Brighton, East Sussex.**

■ It is possible for you to enter your recipes into a word processor and store them. The printer is only required when you decide to make a hard copy of a file.

As to adding a costing system, you will find that a spreadsheet package is ideal for this purpose. An

**ATARI
USER**

Mailbag

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

The address to write to is:

**Mailbag Editor
Atari User
Europe House
68 Chester Road
Hazel Grove
Stockport SK7 5NY**

ideal package for you to use for both your word processing and for a spreadsheet is *Mini Office II*, which includes other programs such as a database that make use of you.

Unfortunately we do not know of an astrology program for the 8-bit Atari, but if any of our readers know of one please then just drop us a line.

Speeding Fast Mover

AFTER typing in the *Five Lines* program *Fast Mover* from the September 1987 issue of *Atari User* I was very disappointed to find it did not work properly. Are there any errors in the listing? — **Ruth Jones, Heston Chapel, Stockport.**

■ Sorry, there is an error in line 20. The seventh number — 105 — should be 205.

Doubler difficulty

I OWN an Atari 1050 disc drive with a US Doubler chip installed and it was working perfectly.

Then I attempted to load

Graphic Art Department from Database and it simply wouldn't load and no error messages appeared. All my other software loads all right, so could you please help me. — **Sarah Keston, Rhoda Saint Gennet, Belgium.**

■ The error may be caused by the protection on the disc. Some forms of protection on disc time the disc access and if this time is not the usual one the program will not load.

Because your doubler chip increases the speed of your drive it will return the wrong time and prevent the load.

Short of a £ or two

AFTER buying *Mini Office II* I wrote a document and within 2 I used the pound sign.

When it came to printing the article the pound sign came out on printer mode but when I printed it out on my 1025 printer it came up with a # where my pound sign should have been.

Atari have this I filed *Mini Office II* a superb piece of software, so can you please help me? — **Neil Eshenry, Barnsley, South Yorkshire.**

■ To be able to print the pound sign on your Atari

1025 printer you must go to the printer setup section of *Mini Office* and set printer code 7 to the following codes: 21, 23, 6, 27, 24. Then whenever you require the pound sign in your text simply type Control + 7.

Dumping pictures

I OWN an Atari 800XL disc system with 1025 printer and touch tablet with AtariArt software. Is there any software that will allow me to dump my touch tablet pictures to my 1025 printer?

Could you also tell me if it is possible to attach the Maplin DLY modem kit to my Atari using an Atari 850 Interface and *Mini Office II*. — **Peter Knight, Ashburton-Lyme, Lancashire.**

■ In the July 1987 issue of *Atari User* you will find a listing called *Dump 16* that takes your AtariArt pictures and dumps them to either an Epson-compatible or Atari 1025 printer.

The Maplin DLY modem kit will work on your computer using an Atari 850 Interface box and the *Mini Office II* communications software.

Unfortunately this modem is only 300 baud, so you could run up quite a sizeable telephone bill when you use it. Also it is not BT approved, so its connection to public telecommunication systems is prohibited.

Missing level

I RECENTLY bought *Donkey's The Living Daylights* after reading your review in the August issue of *Atari User*.

When I loaded the game I was disappointed to find 14 500-page, and that there were only seven levels to

the game.

This intrigued me very much as you mentioned a title page and eight levels. Could you please explain why my game is different to your review copy? — Stephen Buxton, Harnsley, Cleveland.

■ We reviewed an advance copy sent by Demark and it contained a title screen and level 8. Unfortunately in the release copy of the game the title screen and level six were removed due to memory problems.

Spectrum software

*I WAS wondering if there is any device produced that will allow me to use Spectrum software like Barry McGuigan's *Boxing*, *Match of the Day* or *Manicly* on my Atari 8000, and 1970 tape recorder. — Scott Gallacher, Arley, Leicester.*

■ There are no devices available to allow you to use Spectrum software on the Atari, but with the superb software available for the Atari why would you need one?

Keeping in touch

SOME time ago, you were offering Dos 2.5 to your readers. Can you still supply it?

Also could you please tell me if it is possible to print out touch tablet picture files on to the Atari 1020 printer plotter and if so how?

Can the 1020 also be used to imitate a normal printer such as the Atari 1027 letter quality printer? — B Swenden, Forest Gate, London.

■ Unfortunately we have no more supplies of Dos 2.5 disks, but this does not mean you can no longer obtain one. Various advertisements in Atari User still

ALWAYS read the mailbag section of Atari User and wonder if you can help me with a problem I have with the Atari tape system.

Why do the games take so long to load when other computer systems load so fast? And is it possible to speed the loading time of my games up? — Andrew Blair, Bakersrock, Glasgow.

■ The Atari tape system works via the serial port located at the rear of your HOME computer or on the side of the old 4008SD computers.

Unfortunately, the system that Atari have used for loading/unloading files on the

tape uses a slow baud rate (9600). It is possible to alter this, and theoretically the input baud can range from 318 to 1407 baud.

To be able to load a program at a higher baud rate it must first be saved using the new baud rate, so you could save your own programs or listings from Atari User at a higher speed, but to release commercial software that is already at the slow rate yourself at a higher speed would infringe copyright.

Although it is not easy to alter the baud rate it is possible because this rate is controlled by a routine

called the SIO and this can be altered via software.

The OS uses it to account for different drive motor speeds or stretched tapes, and once a true baud rate is calculated then the hardware is adjusted to suit the load status.

Once the workings of this routine are known it is possible to alter the OS parameters that control the input of the serial port and increase the loading speed.

However it is not possible to explain how this is done within the confines of the letters, page due to the complexity of the software required.

offer Dos 2.5 for £3.

Your 1020 plotter will dump your touch tablet picture files, and in the January 1988 issue of Atari User we published a dump program for this printer.

It was a little slow, but did the job. The 1020 can plot your listings and work from within your programs, but don't expect it to be able to imitate letter quality as it just isn't capable of it.

stating clearly which utility you used to draw them, your full name and address and a note saying it is your own work and you don't mind us printing them. We will assess them and consider them for publication.

T shirt ribbon

I UNDERSTAND from a friend that it is possible to obtain a printer ribbon which enables designs to be printed on T-shirts. My printer is an Epson FX-80, so will the ribbon fit it?

I have spent some time looking through various magazines but can find no reference to it anywhere. Can you please tell me the phone number of the company which sells the ribbon? — Andrew Goddard, Manchester.

■ The ribbon is designed to work on Epson printers so

you will have no problems with it. You can obtain one from MQA Microsystems 0800 4278.

Smudged paper

I HAVE a problem with my printer. Ever since I acquired a new ribbon it has been leaving marks on the paper where the head has been moving.

If I leave the printer for a day or so a large spot of ink appears on the paper underneath the printer head.

I have checked with the manual and the position of the head is correct. Any help would be gratefully received. — Andrew Smith, Chorleywood, Herts.

■ On most printer heads there is a shield to prevent the ribbon touching the paper. Make sure your ribbon is behind the shield.

Pictures for Palette

I HAVE just created a picture using the Technicolour Dream art program and was wondering how I get it printed in the Palette page of Atari User. Do I send it in on a disc or as a photograph? — Kevin Campbell, Livingston.

■ Send your picture in to us on a data disc or tape,



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"The program took three man years of programming time to produce - and it shows. The Pawn is the stuff from which cults are made."

- Anthony Ginn, writing about the Atari ST version in the May 1988 issue of the Atari User



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7 TO ORDER PLEASE USE THE FORM ON PAGE 51

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

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

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

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Independent User Groups

These results suggest that the use of a single, standardized, and validated instrument to assess the impact of a program is a more reliable and valid method than the use of multiple, non-standardized, and non-validated instruments.



HAVE you ever thought of using computer games to raise funds for your favourite charity? Here's a little device which will prove invaluable if you do. It's a joystick extension cable, game timer and computer-log/donations all in one.

Our photograph shows the deluxe version, with flashing lights and a blower, but it can be made in much simpler form if you need to keep costs down.

Figure 1 shows the circuit, which is built around a single IC chip containing four NAND gates. This chip must be one of the new AC series, since only that type has the necessary input and output characteristics.

The time delay is provided by gates A and B, which form a monostable, whose output (pin 5) is connected to the joystick's common pin. Pressing 52 starts the timing period, and sends pin 8 low (off).

The joystick then behaves normally for the preset period when pin 9 goes high (5V) and the joystick stops moving. VPI can adjust the on time from a few seconds up to about five minutes, depending how generous you feel.

Options C and D are not mandated by

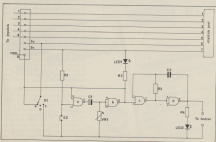
Time gentlemen please!

LEN GOLDING shows how your Atari can help fund-raising

the basic timer, but they don't cost any extra, so we might as well use them. Figure 1 shows the two gates wired as an oscillator, which runs at about 0.5 Hz and can pulse an LED as buzzer on and off. Choose a lower value for R3 if you want to speed up the pulse rate.

For Polygraph test results, see reference 18, p. 200.

51 is optional and allows you to select one of three states: On without time limit, off or on with preset time limit. If you don't want this feature, use

[illegible]

1. *Journal of the American Medical Association*, 1997; 277: 1001-1005.

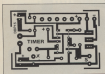


Figure 8: The PCB drill sheet

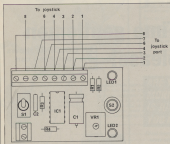


Figure 9: Component layout for the deluxe version

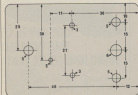


Figure 10: The position of the holes in the case

■ From Page 53

time points b and c on the PCB. Because the joystick stops working when time is up, you don't strictly need the LEDs or buzzer, but they make the gadget friendlier to use.

Buy a ready-drilled PCB from Ite Design, or etch your own using the pattern given in Figure 8. Holes for S2 should be 2mm diameter, while those for VR1 and the terminal blocks are 1.5mm.

S1 requires rectangular slots for its pins, so drill three 1.1mm holes at the positions marked in pads a, b and c, then remove the material between them using a craft knife.

A 3mm hole is needed at the point marked X so that you can adjust VR1 from the back of the PCB when it is fixed into its case. All other holes should be 0.8mm.

Component layout for the deluxe version is shown in Figure 9. If you don't require a pulsing light or buzzer, leave out PZ, LED2, C2 and the two-pin terminal block. PZ and LED1 are also optional, but it's best to retain them unless cost is of paramount importance. And you can dispense with the terminal blocks if you don't mind soldering wires directly to the PCB tracks.

The board is designed to fit into a Verobus type S21, which is about the cheapest case you can buy. Figure 10 shows how to drill the case top, and you will also need holes in the long sides for entry and exit of the extension lead. These can be made by pressing a hot 4mm knitting needle downwards on to the case edge, until the melted slot is just deep enough to take the joystick cable.

Assembly is easiest if you do things in the following order: First solder the resistors, capacitors and IC socket, taking care that C1 goes the right way round. Next solder S1 in position, ensuring that it is vertical in both dimensions, then slot the LEDs and S2 into place but don't solder them yet. The LEDs must be fitted with their cathodes (flat section on the case) towards the bottom of the PCB, as shown in Figure 11.

Now offer the entire assembly into the case, making sure S1 and S2 locate properly in their fixing holes. Don't worry about the LEDs at this stage. Fix S1 and S2 firmly to the case, using the nuts provided, then turn the whole assembly over and solder S2.

Feed the LEDs into their turn holes, pushing them through from the back until they project about 2mm, and solder them in place. Then remove the

assembled PCB and fix the button in position, routing its leads through the 2-pin hole.

Finally insert IC1 into its socket - making sure it's the right way round -

connect the button and joystick wires and assemble everything into the case.

Plug the gadget into either joystick port and experiment with VR1 until

you get a time delay that suits you, then screw on the case lid.

Your timer will operate consistently and accurately every time you push the button.

PARTS REQUIRED

		Maplin Code
R1	100k brown/black/yellow	MT1004
R2	330 ohm red/violet/brown	MT1004
R3	1 megohm brown/black/green	MT1004
R4	330 ohm red/violet/brown	MT1004
VR1	4.7 meg horizontal preset	UHT104
C1	100 nfd 10v axial	FR48C
C2	0.22 mfd polyester layer	WV457
IC1	144C008 quad NAND gate	UHE7X
	14-pin DIL socket	BL18U
LED1,2	5mm red LED	WL27E
S1	SPDT centre-off switch	FR14B
S2	Push-to-make switch	FR45P
	8v 16mA buzzer	FL29M
	8-way terminal block	FR300
	2-way terminal block	FR300
	Variable type 381	LL12M

* These components are optional - see text.

All components available from:
Maplin Electronic Supplies, PO Box 3,
Ryeleigh, Essex, SS8 2BN.

Ready-drilled PCB and joystick extension lead available from BH Design, 137 Stonewall Avenue, Harrogate, North Yorks. Tel 0423 886532. Prices including VAT and postage.

PCB (order code DDPH4) £1.48
Joystick extension lead £2.99

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- There is no maximum to the number of words you include in your ad. If there is insufficient room on the form, continue on a separate sheet of paper.
- The cost is 20p per word, with a minimum of 10 words.
- We **GUARANTEE** your ad will appear in the November issue (on sale October 30) providing it is received by September 28.

• **Wanted:** Atari 8 bit hard disc. Any reasonable price paid. Will collect. Tel: 021 353 6662.

• **Exchange:** SOK300 Tektronic portable programmable electronic keyboard (cost new £450 ex. c/d) for 1000E and 1029 printer or cash to offers. Tel: 0532 559756.

• **For Sale:** 8008L set up including 1050 disc drive, 1027 printer joystick, several Atari User magazines, plus monthly discs, various D.O.S. and games £250. Tel: 0373 410303.

• **Wanted:** Touch tablet light pen and Atari Artist

cartridge. Tel: 031 333 1641.

• **3 4125k Drama** brand new ordered in error from Magline £5.95 each. For sale £36. Send to 1421 Stratford Road, Hall Green, Birmingham, B28 9HS.

• **Original disk software** for sale + hardware (except Star Raiders). Mask of the Barn £25. Wabbling £15. Blade of Blackpool £11. Zork II £10. Datasoft: Compiler £10 Wizard & Princess £9. Star Raiders £7.50. Sands of Egypt £10. Adventure Writer £11. 48k Spectrum Computer and extras £75.

Speech Synthesiser £37. Tel: 0683 66325.

• **Bargains, disks and cassettes** s.a.v. Lists. 38 Hammerskott Avenue, Cullington, DL3 8LG.

• **Wanted:** Atari pen pots to swap tips, hint ideas etc. All replies will be answered disk or cassette owners 8008L 1304E. D J Cartel, 44 Llamore Close, Rubery, Rednal, Birmingham, B46 6JE.

• **Wanted:** 1300E and/or original games and utility software. Tel: 091 336 0605 (evenings).

• **Alphacom 42, 48** column, dot matrix (including thermal paper,

interface, manuals etc), £39.55 only. Write: Lee Fuller, 53 Kipling Towers, Heaton Avenue, Rensford, Essex, RM3 7HT.

• **1029 Printer + Mini Office II** 4 months old £110 a.v.n.s. Atari Assembler Editor Rom, new unopened £12. Tel: 0595 32667.

• **Atari 8008L** almost new 1010 cassette recorder plus two games £80. Tel: 01 778 6833.

• **Hardly used** 800 and tape recorder. Tel: Mansfield 893540 with offers.

• **Wanted:** the elusive 1029 printer anyone, even the trade state your price. Tel: 0632 736775.

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PAC⁸⁺ MATHS

$$\begin{array}{r} 8 \times 5 = \\ 12 \\ \times 4 \\ \hline \end{array}$$


GARY TINSLEY presents a
 maths tables game that's
 both educational and fun

RECENTLY someone asked me if I would write a program for them that would test children on their multiplication tables, but at the same time be fun to play.

After a few hours of brain ache I presented there with Pac-man-itis, which as you may have guessed, is based on the very popular arcade game of Pac-man, complete with the famous Pac-man and the chasing

Quesad. When the program is run there is a short pause while a new character set is defined. You are then asked for the number of the multiplication table that you are to be tested on (answer from 1 to 32).

You are then asked for the speed level and you reply between 1 for the fastest level and 5 for the slowest. The speed is how fast the Ghost will chase

Don't forget to fill out the coupon if you delay in answering the questions.

The child is then presented with the first of 12 random questions. He must select the correct answer from a choice of three possible answers given on the screen by choosing A, B or C. If the correct answer is chosen the Powerball will advance one place towards the Powergill and if he reaches it the Wheel will turn him up with Hints and the Powerman will ask him

If the child chooses the wrong answer the Ghost moves one place towards the Pac-man and if he reaches the Pac-man he will get his own back and eat him instead.

DL	Start address of display list
L1	Loops
CH	Location of new character set POSE TMOUCH
CHG	NUMTOP where the new character set will be placed
SPEED	How fast the Ghost will chase the Pacman
PACMANX	X position across the screen of the Pac man
GHOSTX	X position across the screen of the Ghost
MULT	The multiplication table to be tested on
MULTNUM	The number to multiply MULT by
R	Random event position 1=4 2=5 and 3=C
R1,R2	Random answers for the other two pos- itions
GL	Actual game input loop
SWW	Contains the Mascal value of the answer entered by the child
D	Data variable
CHSETE	Contains the machine code to move ran- dom character sets in to ram
ANSWERD	Array containing 1 if a question is answered correctly or 0 if it is answered incorrectly or has not been asked yet

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