

VOLUME 7 • ISSUE NO. 1 • 2021

# Z88 EPROM

THE Z88 USERS' CLUB MAGAZINE

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From 1987 to its final issue in 1993. And now in 2021 the revival! - Welcome to the EPROM Users' Club Magazine. It's more than nostalgia.

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This week the spotlight falls on Gunther Strube, as he recounts the highs and lows of over 30 years developing for the Z88, both professionally and for fun!

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### *LET'S HACK THIS THING! 512 INTERNAL RAM? YES PLEASE!*

A step by step photo essay showing you how, with minimal basic tools (and nerves of steel) this powerful modification can be done by you too!

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### *GAME REVIEWS!*

A look at the excellent Spectrum port of Lemmings by Dominic Morris, and three new games for 2021!

# EDITORIAL



It all started in 1987. Roy Woodward published the first edition of Z88 EPROM - the magazine of the Z88 Users' Club. The Club produced 41 issues of Z88 EPROM in 6 volumes ending with Volume 6 No. 6 in 1993 before it went defunct. The Club was several thousand members strong from all over the world.

Nearly 30 years later I feel privileged to be writing the first in a new series of user-group magazines, and as you will see there is lots to update you on. It's frankly quite staggering to see how much development and love there has been for this remarkable lightweight distraction free computer since the end of the last edition of this magazine.

*Editorial*

# NOW IS THE TIME

By Jamie  
Bradbury

*Story*

***The Z88 was Sir Clive Sinclair's brain child and final computer. As with the ZX81, when it came to this machine Sir Clive was a visionary who got it right!***

In the 70s and 80s computers sold adults and children alike a compelling vision of a world where we, empowered by microchips and logic, would take quantum leaps in to a bright new electronic future that was fun, exciting and helped us to learn and stretch our imagination. Computers of the 80's promised so much, and yet, modern computers have consistently failed to deliver on that promise.

Today computers are more powerful and connected than ever. And yet so much of that power is employed in monitoring our daily activities with the aim of encouraging us to mindlessly scroll through various forms of advertisements. Increasingly then, we are not in control of our own devices. Furthermore computers have become experts in distracting, rather than empowering us!

The danger of the internet enabled device is that it saps at our productivity, distracts us with endless unfulfilling novelty and nudges us towards passive consumption of goods and services.

This is why NOW is the time for a computer that empowers its owner, and helps them to unlock their true potential.

I can think of no better computer for the 2020s than the Z88. Small, cheap, light weight and powerful. A well featured computer the size of an A4 note pad and running on 4 AA batteries. Codenamed 'Pandora' during development, the Z88 is Sir Clive Sinclair's brain child and final computer. As with the ZX81, when it came to this machine Sir Clive was a visionary who got it right!

Copies of all legacy magazines (scanned by Keith Rickard) are available online. All links to software and hardware information are contained within the link below, including the Z88EPROM YouTube channel and Instagram. We have a public Telegram group of all things Z88 on @cambridgeZ88. So get involved in the projects and this magazine - we'd love to hear from you!

# GUNTHER STRUBE

## *In the spotlight*

Gunther has been active in the Z88 since it was sold commercially. He has followed his passion and worked to open up the Z88 to developers, in the hope that in turn they will open up this computer to a wider audience. He has created development tools, software and games for the Z88, and worked with a team of other retro enthusiasts to develop and maintain the OZ operating system. Here is part one of a memoir covering how he got into this crazy hobby in the first place...

### **Introduction**

When Jamie asked me about writing my story with the Z88, it became a daunting task - there are so many small stories and its hard to know what is relevant to tell?

Looking back over the last 30 years with this machine, I realise that I should have played more with my young child, rather than losing sleep debugging apps on the Z88 and erasing EPROM cards. What can I say? I got trapped by a fascination for tiny computers early on.

There are several others out there with that identical lack of reality, family men! Some still keep working on Z80-based projects that seem to have no end in sight, always improving and expanding. The ZX Spectrum Next is also a good example of a hobby for people who want to keep the flame of nostalgia alive. Garry Lancaster - one of the few who also developed software for the Z88 - is all in to that new universe. He ported his Unzip tool from the Z88 to the Spectrum Next and, while doing so, improved it greatly.

### **The early years**

The joy of programming began when my maths teacher introduced us to Clive's ZX80 in boarding school when I was 14 in Denmark. He wanted to open our minds to possibilities of programming math problems. This little thing was magical!



Being able to type in BASIC instructions and run a program to see the result felt incredible. One program I remember well, found all primes between any numbers. My teacher got the funding from school management to buy the newer model too, the ZX81, for the school lab. It was not enough for me in school hours, so after some pleading he allowed me to borrow it in weekends. I guess the reader understands the rest...

Once boarding school finished and I came back home, the ZX Spectrum came along and I was completely spell bound. I began working very hard, delivering newspapers every weekend, to save up the money for one of my own. A year later I was able to buy it with some additional funding from my old school (the headmaster sent me a cheque!).

Playing games with some friends late in to the night and being fascinated by the idea of how games were made is the key to where I am today. My best buddy and I worked relentlessly for two months in making a card game for a competition issued in a Danish computer magazine about the Spectrum.

We won the 3rd place! It was madness; we were desperately running out of time, and were putting in the finishing touches of the software minutes before and we had to ride like hell on our bikes to deliver it for the deadline.

These kind of things kept my interest going into the depths of CPU programming, and what you can achieve with 64K RAM and 3.5Mhz.



How to write a machine code routine that could shuffle a card deck 100 times faster than a BASIC routine... That challenge has never left me; to be able to use available resources to the limit.

A few years later, I met the guy who won the first prize in that competition; surprise, surprise – he wrote a word processor for the Speccy in assembler (based on the ideas of Quill for the QL)! He was also a great fan of the Z88... we spent many hours together and wrote utilities for the Z88.

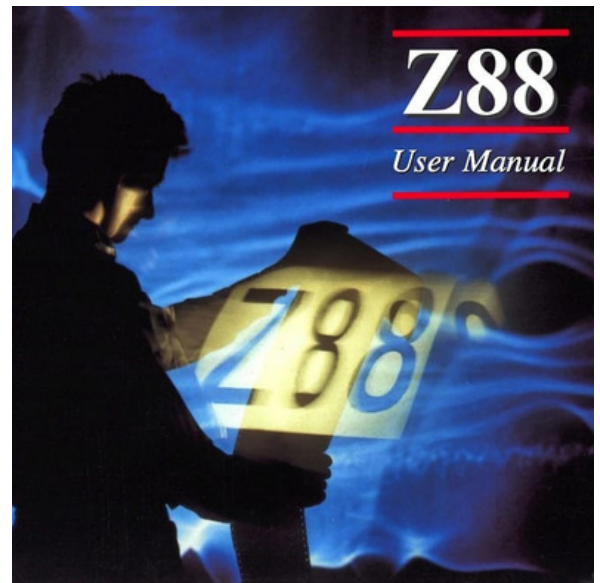
## FROM EARLY ON, I WANTED TO IMPROVE THE Z88

It was us who wrote that very large article in Z88EPROM about feature improvement suggestions for the Z88.

## THE FIRST FEW YEARS WITH A Z88

Fate guided me to the PCW computer show in 1987 in London as part of the company I was working for. At the show, it was Clive and his spin-off company Cambridge Computer that was the focus for us and his presentation of the Z88. Our company DanSoft wanted to become a distributor of the portable in Denmark.

It became my task to write the Danish user guide, sell it and support it (a huge undertaking, as it was all written in PipeDream!). I designed the Danish command guide beneath the screen, tested the Danish ROM and wrote many error reports to Cambridge Computer (sent via snail mail – no internet back then!).



In those early years, I met with professionals and hobbyists in all aspects of the business, at Danish computer shows and in their homes; journalists, politicians, newspapers and the TV media. I even had a visit from Iceland: Adam David, the single person company behind the Icelandic version of the Z88. Adam showed me the fruits of his collaboration with Cambridge Computer. A fascinating rubber keyboard layout with the special letters of the Icelandic alphabet. Many years later I tried to get in contact with him to get his ROM for the OZvm emulator, sadly without success.

Since early on, I wanted the Z88 to be improved, based on my own daily usage and the feedback I got from customers through the DanSoft company I was working for.

After a few years I decided to write all my suggestions in an article to the Z88 EPROM magazine. One of my Z88 friends and I met one afternoon and started writing all the way into the night to flesh out all those details.

Roy Woodward announced that any article would be evaluated by Cambridge Computer, so we saw it as a chance to voice our opinion. The article was published in 1990, in the Vol 4 No 3 issue (pictured). No feedback was received from CC, nor any letters from members about it in future editions of the magazine. I guess we overshot it.

A year or so after this article, Cambridge Computer folded as a company; the Z88 was officially no longer supported by the people that created it. All that was left were a few distributors such as Rakewell and this magazine. I kept working on my ideas for Z88 development tools. The good news is that many of those article suggestions ended up in the OZ open source project, particularly the latest OZ v5.0 which is currently in beta testing.

## THE FIRST IDEA FOR Z88 TOOLS

I took matters into my own hands, and it became my mission to create my own development tools for the Z88, so it would cost nothing to make software applications. Back then, CC allowed you to develop Z88 applications if you bought the very expensive Developer's Notes and that was on top of spending £250 on a Z80 assembler running on MSDOS! To this day I'm convinced that if CC had provided the documentation and tools for free, we would have had another flourishing community and 3rd party software available. Even CC might have survived, who knows?

## END OF PART ONE

Part two of this article continues in the next issue, where Gunther talks about the development tools he created for the Z88, which he started writing on a Sinclair QL, and a QL clone called Thor, and his role, working with a small group to reverse engineer the OZ operating system.

We'll also take a look at the game he is currently working on for the Z88. It has to be said, the Z88 community owes a lot to a small bunch of talented and dedicated people that have made great leaps with both the hardware and software for the Z88 in the last 30 years. I hope to capture more of this story, including from other perspectives, in future editions of this magazine.



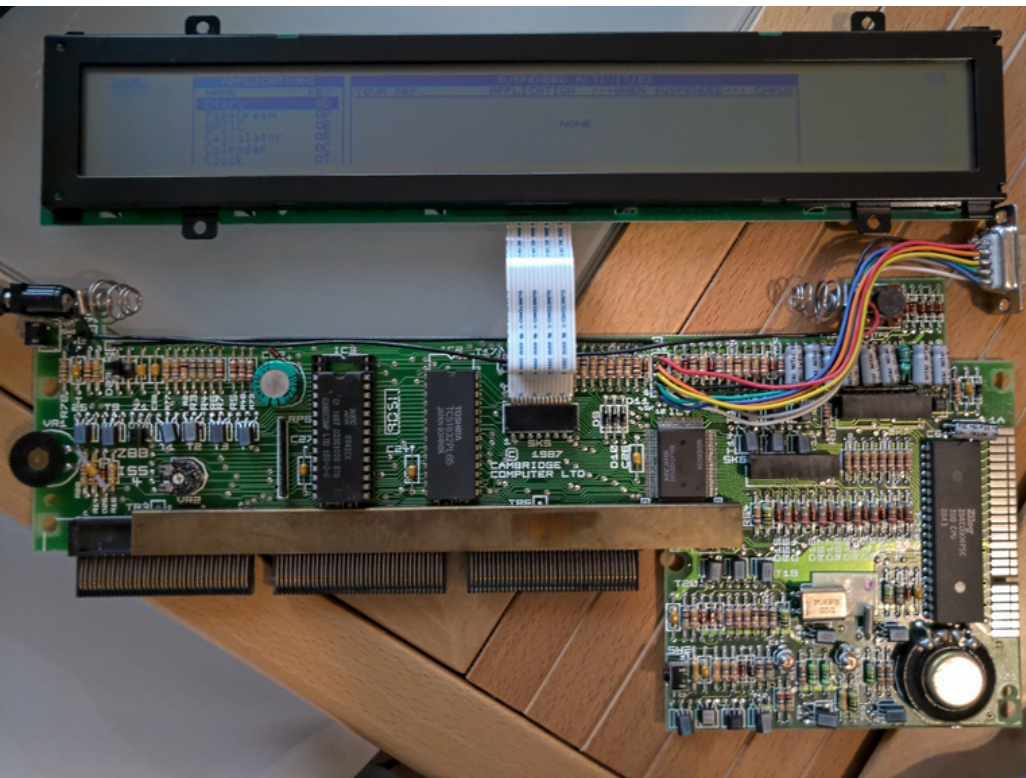
# READ GUNTHER'S ORIGINAL ARTICLE HERE

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The Z88 Users' Club Magazine

# Upgrading your Z88

*...to an internal 512k RAM*



## You will need:

- A 512k RAM chip- Alliance Memory, AS6C4008-55PCN SRAM Memory, 4Mbit, 55ns 32-Pin PDIP (purchased for a princely sum of £10)
- A de-solder pump (mine was £2 from eBay)
- Solder
- A small amount of Kynar wire
- A cheap soldering iron
- One Philips screwdriver
- A flat head screwdriver may be handy too
- Rubbing alcohol
- An old toothbrush
- Nerves of steel

**ONE OF THE MOST POWERFUL  
UPGRADES YOU CAN MAKE TO  
YOUR Z88 - NERVES OF STEEL  
REQUIRED!**



This article includes step by step instructions to upgrade the internal RAM in your Z88. Warning, this is not for the faint hearted!

The Z88 comes with a 128k ROM that contains the OZ operating system and only 32k of RAM. The circuit board does however have the circuitry for the installation on a 128k RAM chip, although the RAM is not socketed, and therefore the existing RAM will need to be de-soldered before a bigger chip can replace it.

Let's not worry about a 128k RAM upgrade however, when we can dream much bigger! The Z88 is actually capable of taking 512k of RAM and 512k of internal Flash memory. That's a whopping 1 Meg of internal storage turning your Z88 is to a BEAST of a machine!

# "LET'S NOT WORRY ABOUT A 128K RAM UPGRADE, WHEN WE CAN DREAM MUCH BIGGER!"

Now why would you want to do it? In my opinion 512k of RAM is one of the best possible upgrades you can make to your computer, you will have bags of free space for RAM installable applications, and all those games, including the new text adventures from Davide Bucci such as the award winning The Queens Foot Steps.

Before we start there are a number of important things to note. Firstly you must have OZ4.X.X or higher in order for your computer to be able to make use of the extra RAM. If you do this hardware upgrade and only have OZ3.x then your machine will still work (this has been tested and verified) but you will not be able to make use of the new space until you upgrade your version of OZ.

The other thing to note is that our focus has been on a non-destructive mod to the Z88 - Therefore no damage to the original circuit board, or case was made.

## ***Step one: Open the machine.***

Firstly – back up your files, and then remove the batteries. Next, remove all the screws, some of these are hidden behind the rubber feet. Turn the computer face down and remove the screws. The bezel and keyboard will now be completely loose, so care must be taken when turning the computer to face you again. Now gently remove the bezel, leaving the screen in place. The keyboard which is a membrane type has two Molex connectors on the right hand side. Remove the keyboard and then carefully remove the screen's ribbon cable from the motherboard.

At the point you should be able to easily lift the PCB from the plastic case.

## ***Now the real work begins!***

Carefully de-solder the RAM chip. There are various guides on YouTube that we found useful. This is a high risk job, and it will help if you have had plenty of experience of de-soldering on a less risky project. I practiced on the lower RAM of a very broken Spectrum 48k. Care must be taken not to damage the delicate traces and connections.

I found it helps to carefully wiggle each de-soldered pin with a flat headed screwdriver to ensure it is completely free before attempting to remove the chip from the board. It took me about an hour or carefully work to get the chip free, but in the end the care I had taken paid off, as the chip came out cleanly.

One tip that I found helpful: use the soldering iron in your dominant hand, and the de-solder pump in the other. This gave me the dexterity I needed to get the job done.

Once the chip is removed, the next stages are relatively easy.

# CLEAN UP & INSTALLATION



## Clean and inspect your work.

With the chip out, carefully inspect the board for any damage, and importantly for any stray solder dust from the de-soldering pump. You can use an old toothbrush and rubbing alcohol for this task.

Ensuring the board is free from debris is essential before moving on the next step, which is soldering the new RAM chip.

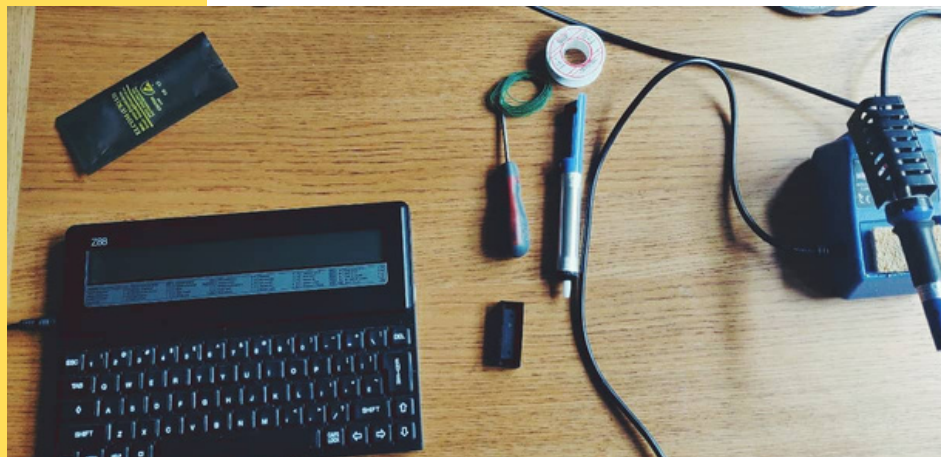
As stated before, this is a non destructive modification, so we did not socket the RAM as this would have meant removing some material from the plastic keyboard mount. Even with a low profile socket, the height of the new RAM would stop the keyboard from seating correctly, unless material is removed from the its underside, corresponding to the location of the newly installed chip.

The important thing to note here is that 2 pins of the new chip must be carefully bent outwards (pins 1 and 30), and not soldered to the board. See the above image.

The bent pin must now be soldered to the two points on the underside of the Z88, as pictured on the next page. Use the thin wire and pass this through the two existing holes, and then solder the wires to the underside of the board.

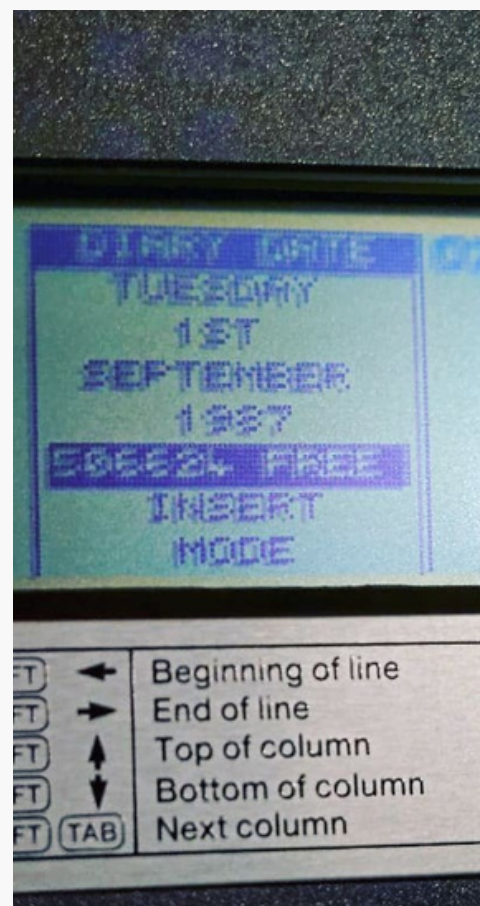
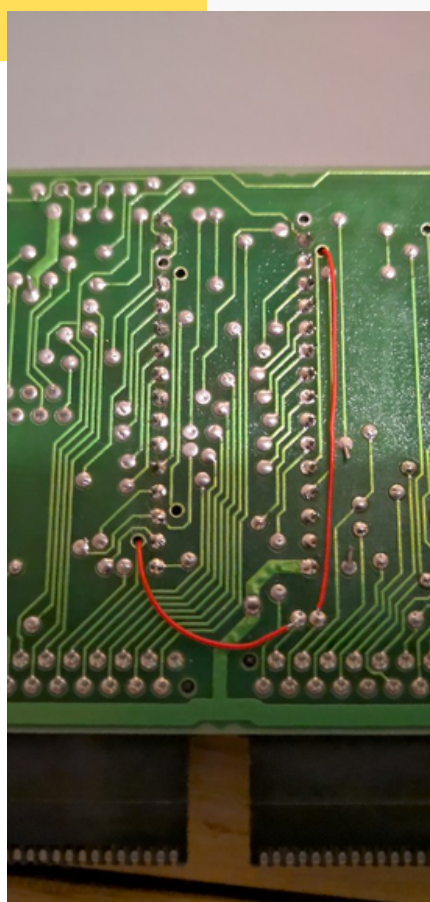
Now it is simply a case of reassembly. We found the trickiest part was the reinsertion of the keyboard membrane. Here, we found it helps to gently push the tabs in on a slight angle.

If you find you are having trouble, try this method and let us know how you got on.



Once assembled, switch on your Z88 and if you did everything correctly....

Behold a wonderful sight: All your new RAM memory ready for your files, games and other RAM installable applications.



# 506624 FREE RAM IS A WONDERFUL SIGHT!

# GAME REVIEW

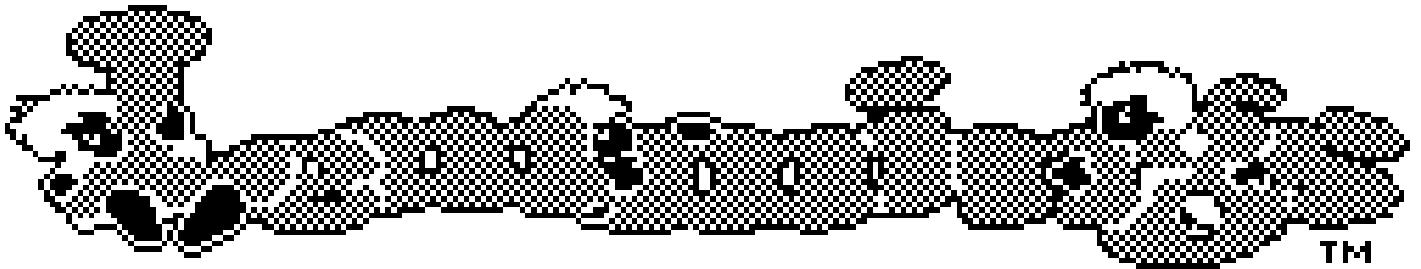
## Lemmings Z88, Dominic Morris (2000)

First a look back to the past. The original EPROM magazine ceased production in 1993. Some 8 years later, Dom Morris would port the ZX Spectrum version of the classic Psygnosis game Lemmings to the Z88. But what sacrifices must Dominic have had to of made in order to port this 'save 'em up' classic to the long thin 'supertwist' LCD screen of the Z88



There are 60 levels to play through, which can be loaded individually to save space. No sooner has the first level started then we are treated to digitized speech. "Lets go!" - and indeed we do.

After playing the first 10 levels I can report that the game and the display work wonderfully. The thoughtful key choices allow intuitive and fluid gameplay and the screen never feels too small.



Is the game even playable at all, or is it compromised beyond belief? Fortunately, Dominic has shown what can be done with the Z88 in the hands of a true master. It has to be said the game is an absolute triumph. Upon loading the game we are met with the lovely, and huge graphic above. And then - wait for it - the music starts. The tune is taken from the 16 bit Amiga version of the game. It sounds glorious here on the small speaker situated on the underside of the computer.

In fact the smooth scrolling will leave you with the impression that the screen is much bigger than it actually is!

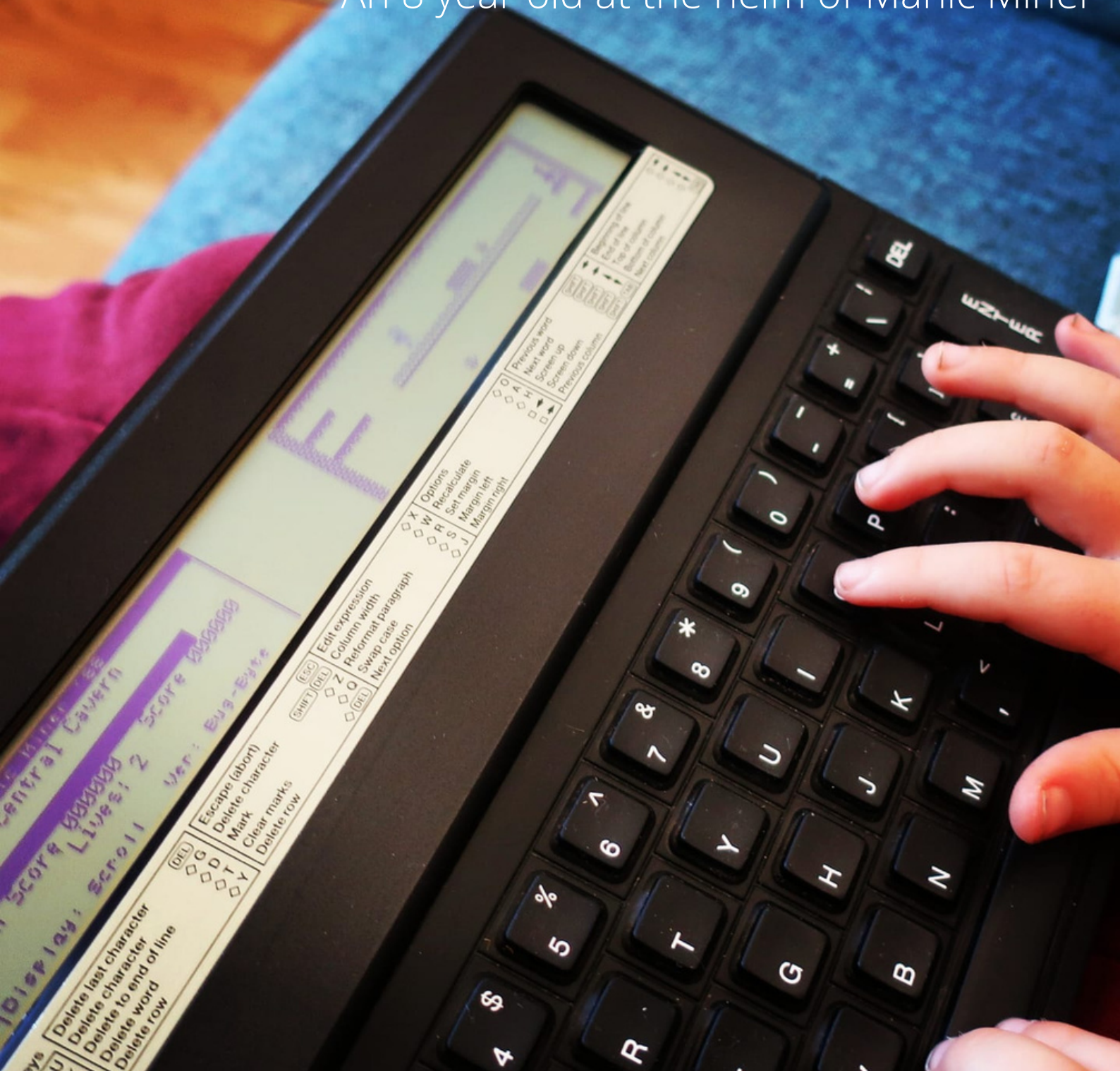
In summary, the game is an astonishing coding achievement. A brilliant game that shows off what the Z88 is capable of in the hands of someone who knows how to develop for it. (Owners of the Amstrad NC100 can only look on and weep).

**GRAPHICS:** ★★★★★  
**SOUND:** ★★★★★  
**PLAYABILITY:** ★★★★★

# MUST PLAY

CAPS

An 8 year old at the helm of Manic Miner



**THE CAMBRIDGE Z88 IS  
MORE SPECTRUM  
COMPATIBLE THAN YOU  
MIGHT THINK**

# NEW GAMES IN 2021



***Set in Genoa, the Queen's Footsteps is as evocative of place as it is a sense of danger and mystery!***

I recently read an interview with Davide Bucci in Crash Magazine about his development approach to his award winning text adventure The Queen's Footsteps and its follow up Silk Dust.

Spotting an opportunity, I wrote to him and requested he might port the Queen's Footsteps games to the Z88. After all, they were written with Z88DK, a development environment originally designed for developing on the Z88 computer.

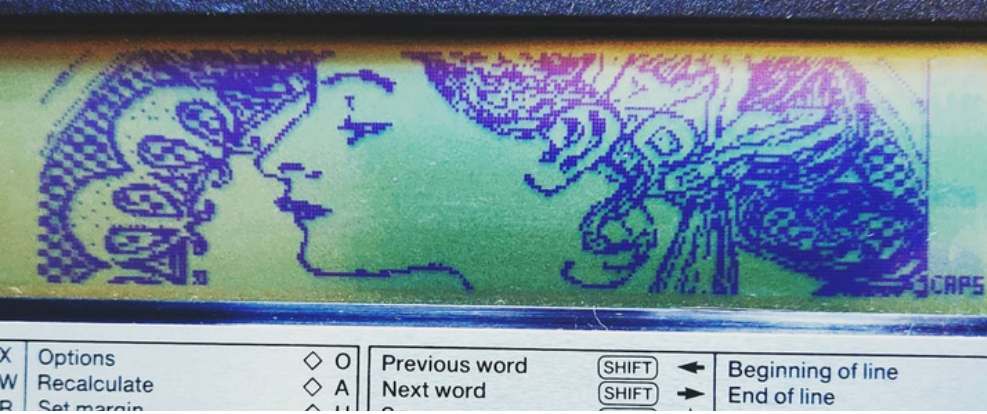
It hasn't all been plain sailing for Davide, who is new to the computer, and, not owning a machine himself, had to resort to emulation. Luckily, none other than Dominic Morris popped up on Twitter offering support. This exchange led to the sudden prospect of three rather good games getting quality ports to the Z88.

The Z88 releases of all three games are available from Davide's site:  
<https://allmylinks.com/z88eprom>.

***YOU KNOW HOW IT IS, YOU WAIT  
TWENTY YEARS FOR A NEW Z88 GAME,  
AND THREE COME ALONG AT ONCE!***

To my amazement and immense joy, Davide replied to my email and said he would love to give it ago. Not only that, but he would attempt to release all three of his latest text adventures for the Z88, including Two Days to the Race.

Development has included new graphics and music exclusive to the Z88! The games are available in a variety of formats including RAM installable applications!



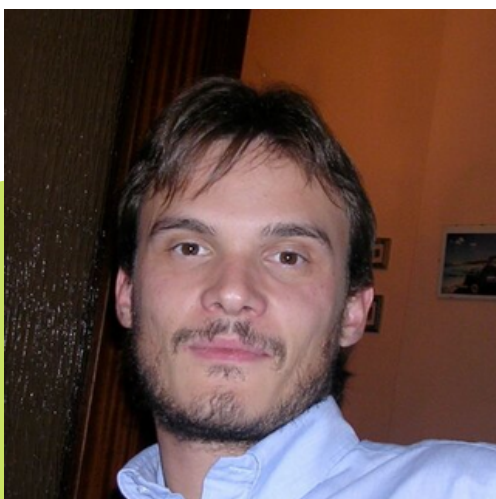
I have been playing The Queen's Footsteps extensively, and I can tell you it's a great game and an intuitive text adventure for those new to the form. Davide is a world builder and immersive storyteller and the games will soon draw you in to the exotic world of Emilia Vittorini, while you help her solve mysteries in a setting that is as elegant as it is dangerous.

Please pay Davide's [site](#) a visit, to learn more about his wonderful award winning games, and a chance to play the early Z88 releases, which are available to download for FREE.

# DAVIDE BUCCI'S TRILOGY: QUEEN'S FOOTSTEPS, SILK DUST & TWO DAYS TO THE RACE



## Two Days to the Race



**DAVIDE MESSAGED ME TO SAY HE THOUGHT THE Z88 WAS AN INTERESTING LITTLE MACHINE. YES INDEED!**

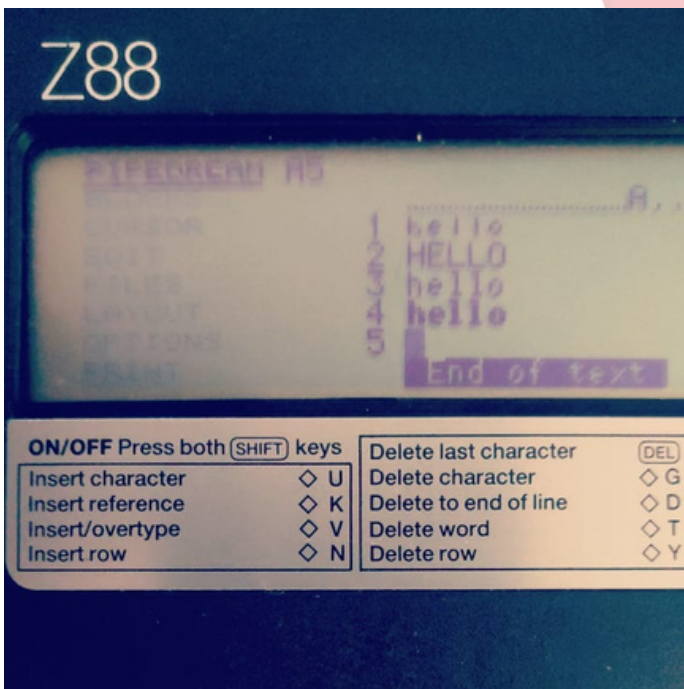
# PIPEDREAM

## TIPS AND TRICKS

### OPEN DOCUMENTS FROM A PC

Pipedream can store files as plain text, which is a useful feature allowing you to move files to your PC. But you know how it is, you've made a fancy birthday party invitation on your Z88 and applied all sorts of lovely formatting. All that would be lost if we were now to convert the document to text. There has got to be a better way to get your files to PC without losing your formatting!

Fortunately there is, well actually 2 ways. Firstly, Dennis Gröning has made a Pipedream viewer for Windows which allows you to export files as rich text.



But my recommendation must be Fireworkz written by Mark Colton (the author of Pipedream) which is a full featured word processor software that is able to open, edit and save Pipedream documents.

Mark also made View Professional for the BBC Micro, if you have a Raspberry Pi you can enjoy it for yourself as the software is part of the standard distribution of RiscOS.

### HANDY KEYBOARD SHORTCUTS

<>ESL Splits a line of text into two probably the most obscure yet important command!

<>PU Underlined

<>PI Italic

<>PB Bold

<>N Insert row

#### Navigating directories

SHIFT + UP

This will move up the file structure from the current folder you are in.

SHIFT + DOWN

Move the cursor over the folder you wish to enter and use this command to open it."

**"I CAN LIVE WITH HAVING TO USE CTRL-N TO INSERT A NEW LINE ABOVE EXISTING TEXT (ALTHOUGH I'D RATHER JUST HIT ENTER), BUT HAVING TO TYPE CTRL-E-S-L TO SPLIT LINES SEEMS A BIT OVER THE TOP."**

**- PRACTICAL COMPUTING, 1988**

**IT WOULDN'T BE Z88PROM MAGAZINE WITHOUT A COMPLAINT!**



## Type ins: Z88 Boggle

Here we have a simple 2 player version of the popular dice game Boggle. The game does work as verified by Jim in his a recent review on CSCGC2021. If you wish to read the full review, a [link](#) is provided here for your convenience.

Thanks to the power of modern internet methods, the Boggle.txt version of this listing can be downloaded from our website and then loaded to your Z88 computer as a text file which can then be tokenised in BASIC using the CLI command to the right:



```
*CLI,*BOGGLE.TXT
SAVE"BOGGLE.BAS"
RUN
```

```
J
NEW
10 *NAME BOGGLE
20 CLS : REM BOGGLE BY JAMIE BRADBURY 2021
30 PRINT : PRINT "BOGGLE - 2021 Z88 FOREVER!" :
PRINT "BY JBIZZEL"
40 P1% = 0 : P2% = 0
50 PRINT : PRINT "PRESS A KEY" : X=GET
60 DIM DICE$(96) : REM POPULATE ARRAY WITH DATA
70 FOR I%=1 TO 96
80 READ DICE$(I%)
90 NEXT I%
110 DIM HAND$(16) : REM THIS IS THE SET LETTERS WE
WILL USE FOR THE GAME
120 DI%= 0
130 FOR I%=1 TO 16 : REM PICKS 16 OF THE 96 DICE
FACES
140 HAND$(I%) = DICE$(RND(6)+DI%)
150 DI%=DI%+6 : PRINT TAB(I%,1); HAND$(I%)
160 NEXT I%
170 REM NOW RANDOMLY ORDER THE HAND
180 FOR I%=1 TO 30
190 SEED%=RND(16)
200 IF SEED%=0 THEN SEED%=1
210 STORE$=HAND$(16)
220 STORE2$=HAND$(SEED%)
230 HAND$(16) = STORE2$
240 HAND$(SEED%) = STORE$
250 NEXT I%
260 CLS
270 PRINT " Z88 BOGGLE..." : VDU 1,52,33,40,33,33
280 FOR I%=1 TO 4
290 PRINT TAB(I%*2,2); HAND$(I%)
300 NEXT I%
310 REM
320 FOR I%=5 TO 8
330 PRINT TAB((I%-4)*2,3); HAND$(I%)
.340 NEXT I%
350 FOR I%=9 TO 12
360 PRINT TAB((I%-8)*2,4); HAND$(I%)
370 NEXT I%
380 FOR I%=13 TO 16
390 PRINT TAB((I%-12)*2,5); HAND$(I%)
400 NEXT I%
410 TIME=0
420 REM Set TIMER to zero and start the count
430 PRINT TAB(0,6 ); "3 MINUTES STARTS NOW!" : VDU
1,52,33,40,33,33
431 PRINT TAB(17,1) "P1:" : PRINT TAB(17,2) "P2:" : REM
update score
432 PRINT TAB(20,1) P1% : PRINT TAB(20,2) P2%
440 REPEAT
470 REM
480 UNTIL TIME >= 18000
490 TIME = 0
500 PRINT TAB(0,6 ); "TIMES UP! - Each player work out
your score" : VDU 1,52,33,40,33,33
510 X=GET
520 INPUT "What is your score Player 1?" A% : INPUT
"What is your score Player 2?" B%
530 P1% = P1%+ A% : P2% = P2% + B%
540 PRINT TAB(10,0) P1% : PRINT TAB(15,0)P2%
550 IF P1% > P2% AND P1% >= 100 THEN CLS : PRINT
"Player 1 WINS!" : P1% = 0 : P2% = 0 : X=GET
560 IF P2% > P1% AND P2% >= 100 THEN CLS : PRINT
"Player 2 WINS!" : P1% = 0 : P2% = 0 : X=GET
570 GOTO 120
630 REM DATA OF BOGGLE DICE
640 DATA
T,T,R,E,L,Y,N,H,N,L,Z,R,L*,R,E,I,X,D,M,U,O,C,T,I,O*,W,T,O,A,
T,T,O,E,S,I,S,B*,B,A,O,O,J,E,E,G*,N,A,A,E,E,U,S,N,I
650 DATA
C,S,O,A,P,H,S,P,F,A,F,K,Y,R,D,V,L,E,U,N,H,I,M,Qu,T,S,T,I,Y,D,
E*,R,W,T,H,V,G*,E,W,N,H,E
```

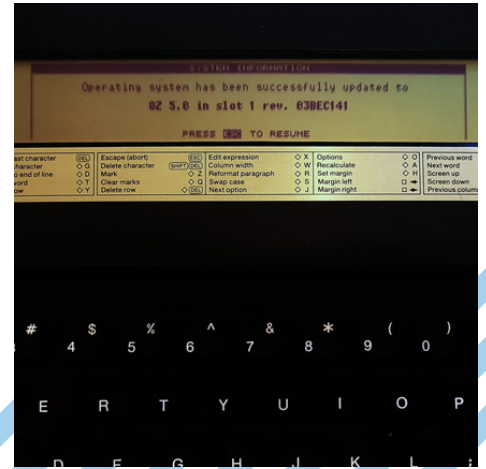
# IN THE NEXT ISSUE...

The plan at this stage is for a biannual magazine. Here's what is planned for the next issue:

In the Spotlight: Another look back from a key member of the Z88 community.

## OZV5 - A NEW OPERATING SYSTEM FOR THE Z88

OZv5 is nearing beta release. The new operating system has many new features that make it feel quite different from its predecessor. The next issue will cover what is new, and what to look out for if you decide to upgrade.



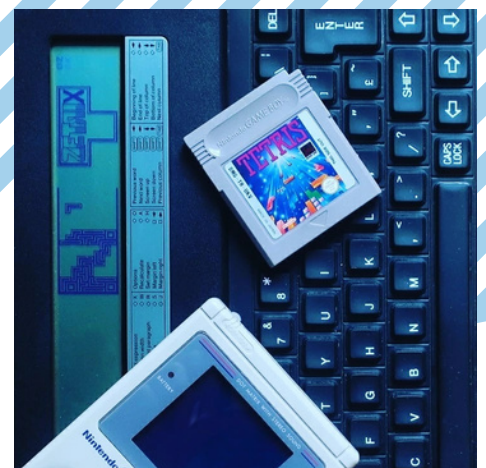
## HARDWARE MODDING: MAKE A SERIAL ADAPTOR

Serial Cables: Everything you need to know to make a cable to connect your Z88 to a desktop or laptop computer.



## NEW GAME - ZETRIX

Games: More updates and reviews about old games and new developments



## AND LOTS MORE!

Please write (via [Telegram](#)) to me with thoughts, ideas, articles, questions and pictures of your Z88 in action. We would love to feature your news and stories. As always with Z88EPROM newsletter: This is your magazine!

Check out <https://allmylinks.com/z88eprom> for links to files and software mentioned in this issue.

# Thank you - from the Z88EPROM Team!

Description	Price	VAT	Total
Cable - Printer (Parallel)	£34.00	£6.80	£40.80
Cable - Printer (Serial)	£5.00	£1.00	£6.00
<b>NEW</b> Card Case	£6.66	£1.33	£8.00
<b>NEW</b> Card Case (machine screws and nuts only (4 or 2))	£4.00	£1.00	£5.00
Carrying case	£6.95	£1.39	£8.34
Flash EPROM (1M)	£45.83	£9.17	£55.00
<b>NEW</b> Flash EPROM (1M) LED Upgrade	£15.00	£3.00	£18.00
Flash EPROM (512K) / 512K RAM	£49.17	£9.83	£59.00
EPROM Card (32K)	£16.67	£3.33	£20.00
EPROM Eraser	<b>NONE LEFT</b>		
EPROM Card (128K)	£25.00	£5.00	£30.00
EPROM Card (256K)	£49.17	£9.83	£59.00
Keyboard	£20.00	£4.00	£24.00
Keyboard Membrane	£20.83	£4.16	£25.00
Mains Adapter (220v)	£8.95	£1.79	£10.74
Modem 300/1200- software & cable	£25.00	£5.00	£30.00
Modem	£10.00	£2.00	£12.00
Power Supply (90-264v) <b>Note: LOW STOCK - will be discontinued</b>	£30.00	£6.00	£36.00
RAM pack (1M) (low power)	£49.16	£9.84	£59.00
RAM pack (1M) (CC)	£40.83	£8.17	£49.00
RAM pack (512K)	£37.50	£7.50	£45.00
RAM pack (128K)	£20.83	£4.17	£25.00



OZ Flash Card  
Software Information



# SEE YOU NEXT TIME