

MONOCHROME CHROME

MADE WITH PC AND ZX-81 32KB (ZXPAND)
ZX-81 / TIMEX 1000 / TIMEX 1500 MAGAZINE
ISSUE 2, ADDRESS: YERZHYEY@INTERIA.PL, 04.2012

THE SECOND APPROACH ;)

OK, WE HAD SOME SIGNIFICANT BREAK HERE, HEHE. BUT AS I ANNOUNCED ON 2012 ZX81 PARTY IN GERMANY, THE IDEA OF "MONOCHROME ISSUE 2" IS ONGOING. I STOPPED IT BEFORE, BECAUSE OF A WRONG COMPREHENSION OF ALL OF THIS. I EXPECTED PEOPLE TO WRITE ARTICLES AND IT WAS A MISTAKE BECAUSE PEOPLE ARE MOSTLY BUSY WITH THEIR REAL LIFE - STILL, NOT TOO BUSY TO READ THE MAG. WHICH IS UNDERSTANDABLE. FOR A WHILE NOW, I WAS CONSIDERING A RESURRECTION OF THE MAGAZINE, WITH RETURNING TO THE ORIGINAL RULE: I WRITE EVERYTHING BY MYSELF (EVEN IF IT'S SOMETHING VERY STUPID :)) - AND IF ANYBODY SENDS ANY MORE TEXTS - THEN IT'S EVEN BETTER. AND SEEMS LIKE THAT'S EXACTLY WHAT I DO. ;)

YERZHYEY

ANDRE***



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"ZBLAST 81" REVIEW

"ZBLAST 81" IS A SPACE-SHOOTER ARCADE GAME MADE IN 2003 BY RUSSELL MARKS. IT'S PROBABLY THE BEST 'SHOOT-EM-UP' GAME I HAVE EVER SEEN FOR ZX81 16K. IT'S REALLY FAST, NOT TOO HARD (ENERGY IS RUNNING-OUT SLOWLY ENOUGH TO HAVE SOME GOOD FUN) AND ITS GRAPHIC IS REALLY NICE. ALSO THE GAME HAS SOUND EFFECTS FOR ZONX STANDARD AY-INTERFACES (SO FOR MR-X AND ZXPAND-AY TOO). ADDITIONALLY THE KEYBOARD HAS BEEN PROGRAMMED TO WORK IN SELF-REPEATING



MODE, SO IT'S ENOUGH TO PRESS 'FIRE' ONCE (CONTINUOUSLY) AND KILL ALL DA BASTARDS PRETTY EASILY. AH. CONTROLS. YES. GAOP/M. IF YOU HAVE 16K OF RAM AND ZONX OR ITS CLONE - AND IF YOU HATE ALIENS VERY MUCH - THE GAME IS 'A MUST' FOR YOU. ;) ALSO RUSSELL WRITES: "GETTING HIT LOSES YOU ENERGY. BUT WHEN YOUR SHIP APPEARS ENTIRELY GREY (AFTER BEING HIT), IT CANNOT BE HARMED. IF YOU GET HIT WHEN YOUR ENERGY IS AT ZERO, IT'S GAME OVER. IF YOU DON'T GET

HIT AT ALL DURING A WAVE, YOU GET 10 EXTRA ENERGY POINTS. YOU'LL PROBABLY WANT TO STOCK UP ON THESE IN THE EARLIER WAVES. THE TWO LARGEST BADDIE TYPES GENERATE SMALLER BADDIES, SO TRY TO KILL OFF THE BIG BADDIES FIRST. IF YOU DON'T, YOU'LL SOON BE FACING A WALL OF BULLETS. :-) THERE ARE 20 DIFFERENT WAVES, ONLY 3 OF WHICH ARE RANDOM (AND EVEN THOSE REMAIN BASICALLY THE SAME). IF YOU FINISH ALL 20, YOU REPEAT THEM". DOWNLOAD LINK: [HTTP://TINY.PL/HP5X7](http://tiny.pl/hp5x7)
ENJOY. © BY YERZ

ZXPAINTYONE: DRAWING LOWRES GRAPHIC ON ZX81

WHENEVER I CREATE THINGS FOR 8-BIT PLATFORMS, PART OF THE APPEAL FOR ME IS KNOWING THAT THE END RESULT IS SOMETHING THAT COULD - THEORETICALLY - HAVE EXISTED IN 1982. IT'S JUST A NEW ARRANGEMENT OF ONES AND ZEROS - YOU COULD WRITE IT TO A TAPE AND HAND IT TO SOMEONE AT THAT FIRST ZX MICROFAIR TO LOAD ON THEIR DEMO MACHINES, IF ONLY YOU HAD A TIME MACHINE.

OF COURSE, THAT'S A LOAD OF CRAP REALLY. I WOULDN'T BE ABLE TO CODE ANYTHING A TENTH AS ADVENTUROUS AS I DO, IF IT WASN'T FOR HAVING MODERN DEVELOPMENT TOOLS TO HAND. THAT'S WHY I'M FOREVER IN AWE OF PEOPLE LIKE SANDY WHITE WHO PROGRAMMED THEIR MASTERPIECES ARMED ONLY WITH PEN AND PAPER, AND A HEX LOADER. BUT THIS IS 2008, AND WE'RE FREE TO PICK AND CHOOSE OUR LIMITATIONS - AND THAT'S THE ATTITUDE I TOOK WHEN I WROTE **ZXPAINTYONE**.

I'M NOT A GRAPHIC ARTIST, BUT THE 2007 ZX81 GRAPHICS COMPO WAS ONE OF THOSE CHALLENGES THAT REALLY APPEALED TO ME. WHAT DIDN'T APPEAL QUITE SO MUCH WAS THE IDEA OF GETTING TO GRIPS WITH THE ZX81 EDITOR, STEPPING BACK AND FORTH THROUGH BASIC LINES OR PLOTTING EVERYTHING ON PAPER. SO, CLEARLY THIS CALLED FOR A TOOL TO MAKE LIFE EASIER - TO PLAY AROUND WITH ZX81 GRAPHICS JUST BY **POINTING AND CLICKING** WITHOUT THOSE OTHER FRUSTRATIONS.

SO I WROTE ONE... IN JAVASCRIPT. THIS ISN'T AS SILLY AS IT SOUNDS. MOST OF THE TRADITIONAL LANGUAGES, LIKE C OR JAVA, WOULD HAVE TAKEN TOO MUCH WORK TO PUT THE INTERFACE TOGETHER. THIS STILL LEFT THE NEW WAVE OF SEXY LANGUAGES AS AN OPTION - INCLUDING MY PERSONAL FAVOURITE, RUBY - BUT FOR WINDOWS USERS IN PARTICULAR, THAT WOULD HAVE MEANT A NIGHTMARE OF INSTALLING RUNTIMES AND LIBRARIES TO GET IT UP AND RUNNING. IT WAS IMPORTANT THAT OTHER PEOPLE WERE ABLE TO USE IT - AFTER ALL, IT WAS A GRAPHICS COMPETITION, NOT A TOOL-WRITING COMPETITION, SO GIVING EVERYONE ACCESS TO IT WAS ONLY FAIR - AND THAT WAY IT WOULD CONTINUE TO BE USEFUL AFTER THE COMPETITION HAD ENDED.

LUCKILY, THERE'S A REALLY GOOD PROGRAMMING PLATFORM READILY AVAILABLE ON EVERYONE'S COMPUTER... THE BROWSER. IF YOU CAN WRITE A WEBPAGE, YOU CAN DESIGN A USER INTERFACE - AND THE PROGRAMMING ISN'T MUCH HARDER. IT'S JUST A 64X48 TABLE, FLIPPING BACKGROUND IMAGES WHEN YOU CLICK ON A CELL. ADD ONE EXTRA RULE TO DEAL WITH GREY PIXELS (WHENEVER YOU HAVE A GREY PIXEL IN A CHARACTER SQUARE, THE PIXELS BECOME DOUBLE-WIDTH) AND A LOOK-UP TABLE TO TRANSLATE 2X2 CLUSTERS OF PIXELS INTO CHARACTER CODES, AND THAT'S THE ZX81 BLOCK GRAPHIC SYSTEM IMPLEMENTED. OF COURSE, WORKING IN A BROWSER DOES BRING SOME LIMITATIONS, SUCH AS THE LACK OF PROPER LOAD/SAVE FACILITIES... BUT THAT CAN BE WORKED AROUND AS LONG AS THERE'S SOME WAY TO GET DATA IN AND OUT, AND COPYING AND PASTING HEX CODES IN A TEXT BOX DOES THE JOB THERE.

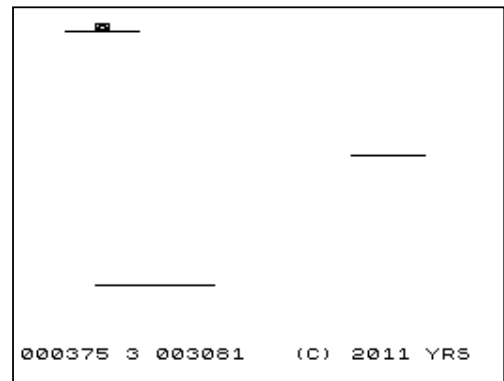
ONE POSSIBLY CONTROVERSIAL FEATURE IS THE ABILITY TO LOAD AN IMAGE INTO A SEMI-TRANSPARENT OVERLAY TO PAINT OVER. I WASN'T SURE IF IT WAS QUITE IN THE SPIRIT OF THE COMPETITION, BUT I FIGURED I WAS GOING TO BE WORKING FROM A REFERENCE IMAGE NO MATTER WHAT - AND THAT WAY I COULD HAVE IT ALL IN FRONT OF ME IN ONE PLACE RATHER THAN HAVING TO FLIP BETWEEN MY PICTURE AND THE REFERENCE. HAPPILY IT DIDN'T ELIMINATE THE NEED FOR ARTISTIC JUDGMENT, AND IF IT DOES FIND A USE AMONGST A NEW GENERATION OF ZX81 ARTISTS

OUTSIDE OF THIS COMPETITION - WELL, ANYTHING THAT HELPS THEM GET BETTER END RESULTS HAS TO BE A GOOD THING, RIGHT? ANYWAY, ALL OF THIS WOULD HAVE BEEN A BIT POINTLESS WITHOUT SOME WAY TO TRANSFER THE FINISHED GRAPHICS INTO A ZX81 PROGRAM. INITIALLY I THOUGHT I'D HAVE TO DO THIS WITH A EXTERNAL PROGRAM (POSSIBLY SOMETHING RUNNING ON A REMOTE WEB SERVER), BUT WITH A BIT OF TRICKERY I FOUND A WAY TO SERVE BINARY FILES DIRECTLY FROM JAVASCRIPT. RUSSELL MARKS PROVIDED A VERY HELPFUL BASIC TEMPLATE FOR DISPLAYING **FULL-SCREEN IMAGES** (INCLUDING THE BOTTOM TWO LINES, NORMALLY OUT OF REACH OF BASIC PROGRAMMERS) SO THAT ALL I HAD TO DO WAS FILL IN THE BLANKS WITH THE IMAGE DATA. AND SO, WITH THE RIGHT MIX OF COMPETITION AND CO-OPERATION, HOPEFULLY WE'VE PUSHED THE BOUNDS OF ZX81 GRAPHICS A LITTLE BIT FURTHER. THE EDITOR IS HERE: [HTTP://TINY.PL/HP5XD](http://tiny.pl/hp5xd)

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1-KILOBYTE CORNER

"**BLOCKY**" IS A REALLY GREAT ARCADE GAME FOR UNEXPANDED ZX81. MADE IN 2011 BY DR BEEP. IT'S A VERY PLAYABLE PROG INDEED. ALSO IT LOOKS REALLY FINE, AS IT'S MADE IN HI-RES. CONTROLS ARE CURSORS (LEFT/RIGHT). YOU HAVE TO FALL FROM PLATFORM TO PLATFORM (THEY'RE MOVING UP). THEY SHOULDN'T "PRESS" YOU INTO THE UPPER SIDE OF THE SCREEN. ALSO YOU SHOULD NOT FALL DOWN - OUT OF THE SCREEN. SPACE = RESTART GAME AFTER THE LAST LIFE. A FINE 1K PRODUCTION.



"**1K MAZEM**" IS A LOGIC/LABYRINTH GAME BY MALCOLM TYRELL, MADE IN 2010. CONTROLS: CURSORS AND Q/AOP. R="RETRY", "S"=SKIP LEVEL (IF IT'S TOO HARD :)). AGAIN - A BRILLIANT PRODUCTION FOR PURE ZX81.

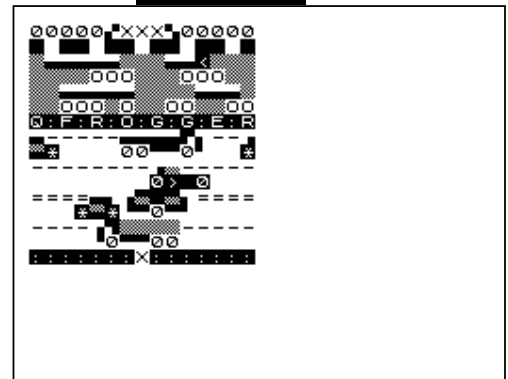
"**FERENGI 1K**". IN 2009 FACTOR6 MADE A "FERENGI" GAME'S VERSION WORKING ON 1K OF RAM. THE GAME ITSELF IS AN ARCADE PROG MADE BY HOOP-PROGRAM. YOU CONTROL A SPACESHIP IN ASTEROIDS' FIELD, AVOIDING THE ASTEROIDS AND COLLECTING GOLD-PRESSED LATINUM.

ANOTHER FANTASTIC GAME FOR UNEXPANDED ZX81 IS "**FROGGER**" MADE IN 2009 BY THEWIZ. CONTROLS ARE Q/AOP. IT'S SIMPLY A FROGGER FOR 1K OF RAM!! ;) ALSO IT HAS BEAUTIFUL GRAPHIC.

"**COSMIC RAIDER**" IS A VERY GOOD SPACE-



SHOOTER WITH REALLY GOOD GRAPHIC, BUT I ADMIT IT'S PRETTY HARD TO ME. CONTROLS MIGHT BE 7/B (UP/DOWN). Q= FIRE. ENTER=



RESTART (WHEN YOU DIED). IF YOU LIKE DIFFICULT GAMES, YOU COULD ACTUALLY FORGET WHILE PLAYING THAT IT'S A GAME FOR 1K OF RAM ONLY. IMPRESSIVE AND CLASSIC.

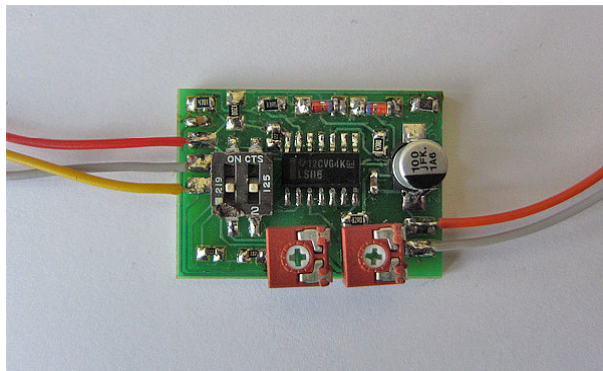
"**TETRIS 1K**" IS A GAME MADE BY RUSSELL MARKS IN 2002. THE CONTROLS ARE: S=ROTATE, D=DROP, K=LEFT, L=RIGHT. IT'S AN INCREDIBLY GOOD (AND GOOD-LOOKING!) TETRIS FOR PURE ZX81, BUT REMEMBER - IT HAS NO SELF-REPEATING KEYBOARD! ;) YOU WILL HAVE TO GET USED TO IT.

ALL THE MENTIONED GAMES ARE DOWNLOADABLE FROM HERE: [HTTP://TINY.PL/HP5MT](http://tiny.pl/hp5mt)

WELL, WHAT CAN I SAY. THE ORIGINAL ZX81 NEVER STOPS TO AMAZE ME.

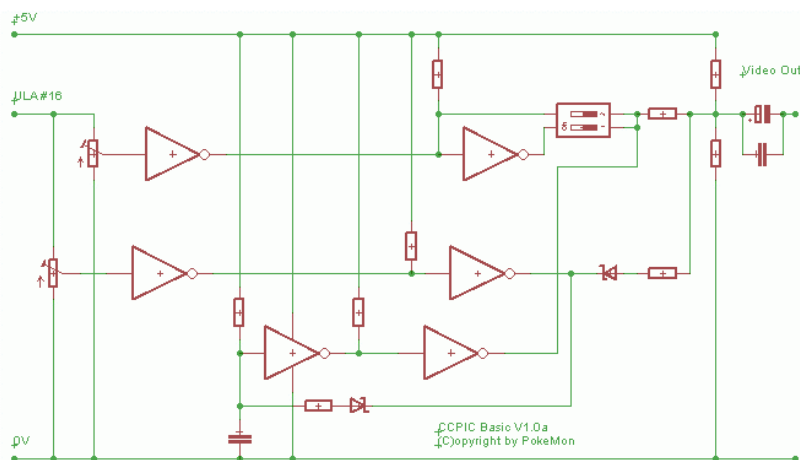
ZX81CCP - VIDEO OUTPUT FOR ZX81

OVER THE YEARS THERE HAVE BEEN MANY SOLUTIONS FOR A **COMPOSITE VIDEO** OUTPUT FOR ZX81 BECAUSE THE PICTURE OVER THE RF MODULATOR VIA ANTENNA INPUT OF TV IS NOT BRILLIANT AT ALL. MOSTLY VERY DARK, DEPENDING ON ULA 184 OR 210 (ZX81 WITH ISSUE ONE BOARD OR ISS3 BOARD) DUE TO MISSING BACK PORCH. BUT MOST OF THE STANDARD SOLUTIONS (THE SIMPLE TRANSISTOR DECOUPLING OF ULA) IS NOT PERFECT BECAUSE THE ULA OUTPUT IS VERY NOISY WHICH CAUSES A RESTLESS WHITE BACKGROUND ON THE TV OR MONITOR.



THE FOLLOWING CIRCUIT WAS DEVELOPED FROM A PROPOSAL OF **BODO** (MEMBER OF GERMAN ZX TEAM) WHICH WAS BASED ON AN ARTICLE FROM MAGAZINE CHIP 6/84. THE CIRCUIT WAS MODIFIED FROM ME TO OFFER SEVERAL FEATURES. FIRST I WANTED TO ELIMINATE THE BACKGROUND NOISE IN THE WHITE COLOUR WHICH IS "OFFERED" FROM THE ULA. FOR UNDERSTANDING, THE ULA IS A DIGITAL CIRCUIT EVEN WITH 3-STATE OUTPUT OF VIDEO. WHEN RUNNING IT CONSUMPTS A LOT OF POWER WHICH WILL LET THE INTERNAL VOLTAGE DROP DOWN AND GIVE SOME NOISE. THIS DOESN'T MATTER IN DIGITAL PROCESSING BUT THE VIDEO SIGNAL IS INTERPRETED ANALOG. IT'S DEFINED WITH 1 VOLT PEAK VALUE (MIN-MAX) AND EVEN PEAKS WITH ONLY 30 MV WILL BE RECOGNIZED ON A WHITE BACKGROUND ON TV WHICH IS ABOUT 5% FLUCTUATING WHITE LEVEL.

THE NEXT POINT IS THAT OLDER ULA'S (184) DO NOT CREATE A BACK PORCH WHICH GIVES A BLACK LEVEL AFTER SYNC IN VIDEO SIGNAL. THE NEWER ULA DOES. A VALID BACK PORCH IS NEEDED FOR A PICTURE WITH A GOOD CONTRAST BETWEEN WHITE AND BLACK AND SOME NEWER LCD OR PLASMA TUS EVEN CAN NOT DISPLAY SIGNALS WITH MISSING BACK PORCH. SO WITH THE SCHEMATIC THE VIDEO SIGNAL IS COMPLETELY REBUILD / RECONSTRUCTED DIGITALLY WHICH ELIMINATES ALL NOISE LEVEL IN ULA SIGNAL. IT USES LOGIC GATES (INVERTERS) WITH OPEN COLLECTORS AND VIA A DIP SWITCH THE SIGNAL CAN BE ORIGINAL (BLACK CHARACTERS ON WHITE BACKGROUND) OR INVERTED (WHITE CHARACTERS ON BLACK BACKGROUND). THIS GIVE A VERY CRISP (SHARP) PICTURE.



THE FIRST TWO INVERTERS ARE FOR THE PIXEL DATA. WITH THE TRIMMER THE SWITCH POINT CAN BE ADAPTED TO THE ULA VERSION, SWITCHING LEVEL IS ABOUT 1.4 VOLT. THE OUTPUT SIGNAL IS GENERATED WITH A RESISTOR DIVIDER NETWORK AND WITH ONE OF THE DIP

SWITCHES CAN BE SELECTED THE INVERTED OR NON-INVERTED VIDEO. THE NEXT TWO INVERTERS ARE FOR THE SYNC LEVEL AND CAN BE ADJUSTED WITH TRIMMER TO ULA VERSION. THE LAST TWO INVERTERS ARE USED FOR CREATING THE BACK PORCH. WHEN SYNC LEVEL GO DOWN, THE CAPACITOR IS DISCHARGED, THIS REMAINS FOR THE DURATION OF SYNC LEVEL (4.7 US). AFTER SYNC RELEASE THE CAPACITOR IS CHARGED SLOWLY WITH THE RESISTOR OF +5V AND FORCES THE OUTPUT OF THE SECOND INVERTER TO LOW FOR APPROX. 5.6 US (BACK PORCH) WHICH HOLDS VIDEO SIGNAL

ON THE BLACK LEVEL REGARDLESS IF THE ORIGINAL VIDEO SIGNAL PROVIDE A BACK PORCH OR NOT. THE TWO CAPACITORS AT THE OUTPUT DISCOUPLES THE DC VOLTAGE FROM THE VIDEO SIGNAL (COMPOSITE VIDEO). THE BOARD IS MANUFACTURED SINGLE SIDED IN SMD, HAS A SIZE OF 30 X 22 MM UND CAN BE INTEGRATED IN THE VIDEO MODULATOR CASE (WHEN VIDEO MODULATOR IS REMOVED) OR ANYWHERE ELSE IN THE ZX81 CASE INTERNALLY. IT TAKES ONLY +5 VOLT, GND AND ULA (VIDEO IN) AND PROVIDES A VIDEO OUT. IT IS **AVAILABLE** ON WWW.SELLMYRETRO.COM COMPLETELY SOLDERED, ADJUSTED AND TESTED FOR ABOUT GBP 9,90 PLUS SHIPMENT.

DEVELOPED BY POKEMON

A FEW WORDS ABOUT ZX80 :))

I WAS ALWAYS CURIOUS ABOUT THE ZX80 COMPUTER ALTHOUGH IT WAS RATHER BLACK MAGIC TO ME. ;) THAT'S WHY I FINALLY DECIDED TO ASK A PROPER PERSON. ;) THAT IS WELL-KNOWN GERMAN ZX80 USER - **PAUL**. BELOW YOU CAN FIND AN INTERVIEW WITH HIM.

YERZ: IS IT ZX80 AS POPULAR NOWADAYS AS ZX81 IS? OR RATHER LESS?

PAUL: I AM AFRAID THE ZX81 WAS AND WILL ALWAYS BE MUCH MORE POPULAR THAN THE ZX80. THIS IS MAINLY BECAUSE OF THE NUMBER OF DEVICES SOLD AND BECAUSE THE ZX81, WITH ITS CONSTANT PICTURE, IS EASIER TO USE.

Y: HOW MANY ZX80 FANS ARE OUT THERE? SEEMS LIKE THEY'RE LESS "NOTICEABLE" ON ZX81/ZX80 FORUMS?

P: THEY ARE NOT ONLY LESS "NOTICEABLE", THERE ARE ONLY VERY FEW. I AM NOT SPEAKING ABOUT OWNERS BUT USERS. MANY OWNERS OF ZX80 HAVE THEM BECAUSE ITS PART OF THEIR COLLECTION. THEY DON'T EVEN CONSIDER USING THEM. THERE ARE ONLY A FEW ACTIVE PERSONS USING THE ZX80. WE SHOULD GIVE **GRANT SEARLE** AND **PAUL FARROW** A LOT OF CREDITS HERE. ALSO **MARTIN LUKASEK** WHO BUILDS NEW ZX80s AND SELLS NEW PCBs FOR THOSE WHO WOULD LIKE TO HAVE ONE. I ALSO HAVE ONE OF MARTIN'S ZX80 (BASED ON GRANT SEARLE'S WORK) AS MY WORKING COPY, I WOULDN'T LIKE TO RISK A DAMAGE TO MY ORIGINAL. GRANT SEARLE'S GOAL IS TO HAVE A WORKING COPY OF THE ZX80 THAT IS AS CLOSE TO THE ORIGINAL AS POSSIBLE.

Y: IS IT EVEN POSSIBLE TO BUY NOW ZX80 IS WORKING CONDITION? ARE THEY VERY RARE OR EXPENSIVE?

P: THERE ARE WORKING ZX80 IN EBAY EVERY NOW AND THEN, THEY START FROM APPROX. 150 EURO TO 600 EURO DEPENDING ON CONDITION AND ACCESSORIES. IN PERCENT THERE WILL BE MUCH MORE WORKING ZX80 THAN ZX81. THIS IS BECAUSE THE ZX81 HAS TWO MAIN FAULTS: THE OVERHEATED ULA AND THE BROKEN RIBBONS. AS THE ULA IS SPREAD INTO MANY SINGLE CHIPS IN THE ZX80 THE HEAT IS ALSO NOT CONCENTRATED RESULTING IN A MUCH LONGER LIFETIME. THE MEMBRANES RIBBONS ALSO DON'T EXIST ON THE ZX80, ITS MEMBRANE IS STUCK DIRECTLY ON TO THE PCB. AS A RESULT THE MEMBRANE LASTS LONGER (AND IT IS PROBABLY ALSO LESS USED). AND THERE IS ALSO MARTIN SELLING PCBs BASED ON A FORMER VERSION OF GRANT SEARLE'S PDFs.

WHAT MANY WHO ARE INTERESTED IN THE ZX80 DO NOT KNOW IS THAT IT IS POSSIBLE TO **DOWNGRADE** ANY ZX81 TO A ZX80 BY IMPLEMENTING A ZX80 ROM INSIDE. IT WON'T WORK FROM THE START BECAUSE THE ONLY DIFFERENCE BETWEEN A ZX80 AND ZX81 IS THE NMI GENERATOR THAT STARTS IN A ZX81 ON POWER-UP. AS THERE ARE NO NMI ROUTINES IN THE ZX80 ROM THIS WILL CRASH IMMEDIATELY. IN THE ZX81 ROM THE VERY FIRST INSTRUCTION IS SWITCHING THIS NMI GENERATOR OFF. THERE IS A HARDWARE FEATURE DESCRIBED IN [HTTP://TINY.PL/HP1BX](http://TINY.PL/HP1BX). THERE ARE JUST FOUR RESISTORS SOLDERED ON TOP (OR IF YOU PREFER UNDERNEATH) THE CPU. WHEN THE ZX81 IS STILL IN THE RESET CYCLE ON START-UP THESE RESISTORS GIVE THE EQUIVALENT TO THE "STOP NMI" TO THE ULA AND YOU HAVE THE ZX80 MODE IN A ZX81.

AS THE ZX81 ROM DOES THE SAME THIS IS MADE TWICE, BUT AS THE NMI CAN ONLY BE **ON** OR **OFF** THIS DOES NOT DISTURB IN ANY WAY. SO ANY-

BODY WHO WOULD LIKE TO TEST ZX80 SOFTWARE OR WRITE SOME **CAN DO SO** ON A MODIFIED ZX81.

OF COURSE THERE IS ALSO THE EIGHTYONE EMULATOR THAT HAS A VERY GOOD EMULATION OF THE ZX80 TOO. THIS EMULATOR (IN THE LATEST REVISION) ALSO SUPPORTS **ZXPAND** SO YOU CAN TEST THIS FEATURE WITHOUT OWNING A ZX80 OR A ZXPAND.

Y: IS THERE ANY WWW SITE WITH GOOD COLLECTION OF ZX80 PROGRAMS TO DOWNLOAD?

P: GOOGLE WILL SHOW SEVERAL PLACES FOR ZX80 SOFTWARE. MAINLY THE ONE OF PAUL FARROW WITH HIS **FLICKER-FREE GAMES**. IF ANYBODY WANTS TO TRY TO MAKE A FLICKER-FREE GAME HIMSELF THERE IS A LOT OF INFORMATION ON HIS PAGES: [HTTP://TINY.PL/HP1ZS](http://tiny.pl/hp1zs)

Y: REGARDING THE FLICKER-FREE GAMES. HOW DOES IT LOOK EXACTLY: IS THERE ANY **ENGINE OF DISPLAYING** PICTURE, READY TO USE (THEN PROGRAMMERS COULD JUST USE IT AND FOCUS ON MAKING THE GAME ITSELF), OR DOES THE METHOD CONSTANTLY REQUIRE ADJUSTING TO NEW POSSIBLE PROGRAMS?

P: YES AND NO. THERE IS NOT ANY ENGINE YOU COULD USE. BUT IF YOU TAKE ANY FLICKER-FREE GAME AND **DISASSEMBLE** IT YOU CAN EASILY UNDERSTAND WHAT HAPPENS. **ONE MAIN LOOP DOES EVERYTHING**. IT DISPLAYS THE SCREEN (FIXED TIMING) AND THEN HAS SOME SORT OF CASE STRUCTURE. THE CASE ITSELF NEEDS TO USE ALWAYS THE SAME TIME WHATEVER SUBROUTINE WILL BE EXECUTED. DEPENDING ON THE COMPLEXITY OF THIS CASE STRUCTURE AND THE TIME IS USES, ALL THE OTHER SUBROUTINES NEED TO CONSUME THE SAME TIME IT TAKES UNTIL IT RETURNS TO THIS LOOP DISPLAYING THE NEXT SCREEN. SOME PROGRAMS USE JUMP FOR EXECUTION OF THE SUBROUTINE AND ANOTHER JUMP TO RETURN TO THE LOOP, OTHERS USE CALL AND RETURN. IMPORTANT IS THAT EVERY SUBROUTINE IN EVERY CASE USES EXACTLY THE SAME TIME. FOR EXAMPLE IF SPACE IS PRESSED THEN LET THE MONKEY JUMP. BUT IF IT IS NOT PRESSED THE SAME TIME IS NEEDED TO BE "BURNT" DOING NOTHING IN ORDER TO HAVE THE SAME TIME CONSUMPTION IN ANY CASE OF THE GAME. THAT MAKES THE LIMITATIONS AND ALSO SHOWS WHY YOU HAVE TO SUM UP THE T-STATES OF EVERY COMMAND TO GET THE TIME THE SUBROUTINE NEEDS. THE OTHER POSSIBILITY IS TO USE A GOOD DEBUGGER (AS SUPPLIED WITH **EIGHTYONE** EMULATOR) AND LET THE DEBUGGER COUNT FOR YOU. THAT WILL BE TRY AND ERROR AND IS ALSO VERY BORING. :(THE IDEAL THING TO HAVE WOULD BE SOME (PC) SOFTWARE THAT ANALYZES YOUR Z80 CODE AND AUTOMATICALLY SLICES IT INTO THE SMALL PARTS THAT ARE REQUIRED AND THEN CREATES YOUR LOOP WITH CASE STRUCTURE. BUT THIS WILL STAY A DREAM.

Y: ARE THERE ANY MODERN CLONES OF ZX80?

P: YES, GRANT SEARLE AND MARTIN LUKASEK MADE SOME. I ALSO HAVE A PROTOTYPE FROM LEE HART'S ZX80, BUT UP TO NOW THERE WAS NO PRODUCTION RUN. HIS ZX80 CLONE IS QUITE INTERESTING BECAUSE IT TRIES TO IMPLEMENT A ZX80 WITH **COMMONLY AVAILABLE PARTS** INSTEAD OF TRYING TO USE THE VERY RARE STUFF AS 1K RAMS AND THE ORIGINAL EPROM STYLE.

Y: IS THAT TRUE SOME PEOPLE PRODUCE NEW CASES/BOXES FOR ZX80 (IN STYLE OF THE ORIGINAL ONES)? WOULD THE MODERN ZX80 CLONE FIT INTO SUCH A CASE?

P: WE ARE TRYING TO GET SOME NEW CASES MADE, BUT ITS RATHER EXPENSIVE. NEW BOARD WILL FIT IN THERE WITHOUT PROBLEMS. THE MAIN QUESTION AGAIN IS: WOULD YOU LIKE TO CREATE A CLONE WITH HARDLY ANY DIFFERENCE OR WOULD YOU LIKE TO BE ABLE TO USE THE ZX80?

AT THE MOMENT WE WOULD BE ABLE TO HAVE A REASONABLE CLOSE COPY OF THE CASE FOR ABOUT 80 EURO IF AND ONLY IF WE ARE ABLE TO SELL **50** CASES. AND IF SOMEONE WOULD LIKE TO PREPAY THE TOTAL AMOUNT. GIVEN A REGULAR USER BASE OF **5** ZX80 USERS WORLDWIDE THIS IS QUITE OPTIMISTIC. I DOUBT THAT THE ONLY THING KEEPING USERS FROM USING THE ZX80 CLONE IS A MISSING CASE.

Y: HMM, MAYBE SO, ALTHOUGH I KNOW AT LEAST SEVERAL PERSONS WHO

LOVE ORIGINAL SINCLAIR'S DESIGNS SO MUCH THAT IT'S LIKE 50% OF PLEASURE FROM USING THE MACHINES, FOR THOSE GUYS. ;) ;) ANYWAYZ. HOW MANY PROGRAMMERS ARE NOWADAYS ACTIVE ON ZX80 PLATFORM? I NOTICED SOME WWW SITE WHERE WERE - MENTIONED ABOVE - GAMES WITH MOVEMENT ON THE SCREEN (WHICH IS QUITE AN ACHIEVEMENT ON ZX80)?

P: MAYBE I AM PESSIMISTIC. THERE MAY BE A HANDFUL OF PROGRAMMERS. UNFORTUNATELY MOST PROGRAMMERS MAKE ONE PROGRAM AS A PROOF ON CONCEPT AND THAT'S IT. THERE ARE GREAT ZX81 CODERS LIKE ANDY REA WHO ALSO WROTE A ZX80 PROGRAM. SHOULD I COUNT THOSE? IT'S QUITE A LOT OF WORK TO GET A STABLE PICTURE ON THE ZX80. THE WORK MAINLY INVOLVES COUNTING T_STATES BECAUSE EVERY PART OF THE PROGRAM HAS TO BE USING THE SAME TIME. MAYBE KARL WILL ADD THE T_STATE COUNTING TO HIS IDE SO THIS COULD BECOME EASIER IN THE FUTURE. AND VERY VERY MAYBE THERE MAY ALSO BE A FUNCTION TO EXTEND A SUBFUNCTION SO IT TAKES THE CORRECT NUMBER OF T_STATES. THAT WOULD BE A BIG HELP.

Y: CAN WE EXPECT MORE SUCH PROGRAMS (WITH MOVING STUFF) FOR ZX80 IN FUTURE?

P: I AM AFRAID WE DO NOT HAVE TO EXPECT MUCH IN THE FUTURE. WE CAN JUST HOPE. AS THE DIFFERENCE BETWEEN A ZX80 AND A ZX81 IS SO LITTLE, MOST (PC) PROJECTS WOULD ONLY REQUIRE A FEW MOMENTS MORE TIME TO BE ZX80 COMPATIBLE. BUT HARDLY ANYBODY EVEN THINKS ABOUT THIS. IF I REQUEST AN ADAPTATION SOMETIMES ADD-ONS FOR ZX80 ARE MADE. MOST PROGRAMMERS ALLOW ME TO ADD ANY ZX80 RELATED FUNCTIONS TO THEIR SOFTWARE. THIS RESULTS IN A SINGLE VERSION OF THIS PROGRAM (MINE) THAT IS CAPABLE OF SUPPORTING ZX80. IF I ASK THE ORIGINAL PROGRAMMERS TO ADD THESE ADD-ONS TO THEIR SOURCE THEY HAVE MEANWHILE ADDED A LOT OF FUNCTIONS NOT ZX80-COMPATIBLE SO NO USER WOULD CONSIDER USING MY VERSION. MY HOPE IS ALWAYS THAT, IF A ZEDDY USER SEES THAT THE (PC) PROGRAM WOULD ALSO WORK IN COMBINATION WITH A ZX80, MAYBE HE GETS CURIOUS AND WANTS TO TRY IT. THERE ARE SO MANY THINGS TO ADD TO EXISTING PROGRAMS FOR ADDING ZX80-COMPATIBILITY THAT I DO NOT FIND ANY TIME TO WRITE A ZX80 PROGRAM. THEREFORE MAYBE I RETIRE FROM ADDING ANY FEATURES AND FROM TRYING TO CONVERT THE WORLD OUT THERE TO ZX80 FANS AND START WRITING A ZX80 PROGRAM INSTEAD. WE WILL SEE.

Y: DID YOU TRY ZXPAND WITH ZX80 ALREADY? DOES IT WORK OK? WOULD IT MEAN THAT ZX80 COULD PLAY **AY MUSIC** WITH ZXPAND-AY?

P: YES. I HAVE CREATED AN EXTENDED VERSION OF THE ZX80 ROM THAT SUPPORTS **ZXPAND**. MY ZX80_ZXPAND_ROM WORKS PRETTY GOOD WITH ZXPAND GIVING NEARLY THE SAME FEATURES AS WITH THE ZX81 (IF USABLE). I AM STILL WORKING ON THE AUTOSTART OPTION, I DON'T FIND THE TIME TO GET OUT THE LAST FEW GLITCHES AT THE MOMENT. ALSO THERE IS NOTHING KEEPING US FROM USING ANY **AY** DEVICE ON THE ZX80, EXCEPT FROM THE MISSING SOFTWARE.

Y: IF YOU HAVE IN MIND ANYTHING INTERESTING ABOUT ZX80, WE'D LIKE TO READ IT. :)

P: I OWN A LITTLE BIT OF **LITERATURE** LIKE THE "ZX80 ROM LISTING" FROM IAN LOGAN OR THE "ZX80 COMPANION". IF ANY REAL ZX80 USER WOULD BE INTERESTED IN THEM I WOULD GIVE THEM AWAY AS I NOW HAVE COPIES. AND I AM ONLY INTERESTED IN THE CONTENT, NOT THE COLLECTION ITEM.

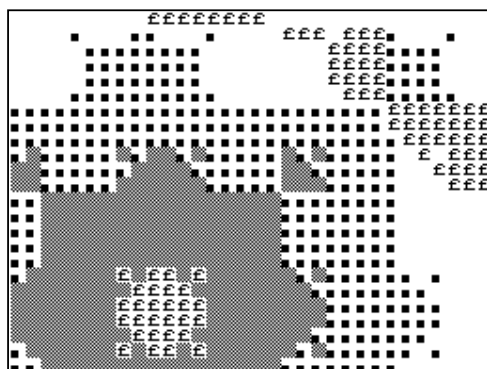
Y: OK, THANK A LOT FOR ALL DA INFOS AND LET US HOPE THAT **FLICKER-FREE** PROCEDURE WILL BE WIDELY USED AND THE ZX80-SOFTWARE BASE WILL GROW. :) © BY PAUL AND YERZ

NEW DEMOS FOR ZX81

AS ZX81 USERS, WE COULD ACTUALLY CONSIDER OURSELVES LUCKY 'CAUSE WE HAVE MORE AND MORE NEW HARDWARE APPEARING (AND BEING SOLD BY **RWAP**). WE HAVE ZXPAND, ZXPAND-AY WITH ZONX AND JOYSTICK/MOUSE PORT ON-BOARD, WE HAVE ALSO MR-X WHICH IS STAND-ALONE AY-INTERFACE IN ZONX STANDARD. THANKS TO ALL THE HARDWARE NEW

DEMOS APPEAR - AND THIS IS **GOOD!** ;) BUT THE FIRST NEW PROG THAT WILL BE MENTIONED TODAY HAS BEEN ACTUALLY MADE FOR TOTALLY UNEXPANDED ZX81. IT IS A DEMO ENTITLED "**SURVIVAL**" CODED FOR 1K MACHINES BY **FSORT**. HE MADE IT IN MARCH 2012 AND - AS HE INFORMS - IT IS HIS FIRST ATTEMPT TO Z80 CODING, WHICH HE ENJOYED. :) YOU CAN DOWNLOAD THE PROGRAM FROM HERE: [HTTP://TINY.PL/HPJR2](http://tiny.pl/hpjr2)

ANOTHER NEW DEMO IS A MUSIC-COLLECTION OF AY SONGS COMPOSED BY **GASMAN/HOOY-PROGRAM**. THE COLLECTION WORKS ON ZX81 WITH ZXPAND AND AY-MODULE. ALSO, **SIGBY** WAS KIND ENOUGH TO ADJUST THE PROG FOR ZX81 16K WITH ZONX/MR-X AND **MEFISDOS**. THE DEMO WAS ACTUALLY CODED IN 2012 BY ME ;) ANDY REA CODED THE AY-MUSIC PLAYER AND GRAPHIC HAS BEEN MADE BY GASMAN AS WELL AS THE MUSIC. INFO: PUT ALL FILES INTO ONE CATALOGUE/FOLDER AND LOAD GASMAN.P FILE. THE SONGS ARE LOCATED IN 1-6 KEYS. THE DEMO IS DOWNLOADABLE FROM HERE: [HTTP://TINY.PL/HPJRZ](http://tiny.pl/hpjrz)



SO - ANOTHER PROG. AND ANDY REA AGAIN. ;) THIS TIME HE APPEARS AS THE ONLY CODER OF HIS NEW PRODUCTION: "**MULTI SCROLLER DEMO**". FLUENT MOVEMENT AND HIGH TXT-RESOLUTION ARE WHAT YOU CAN SPOT HERE. THE DEMO CAN RUN ON ANY ZX81 16K BUT IF YOU HAVE A ZONX-STANDARD AY-MODULE (MR-X OR ZXPAND-AY), YOU COULD ALSO LISTEN TO THE MUSIC MADE BY HUMBLE ME. ;) HERE IS A SHORT FRAGMENT OF THE INFO FILE: "A '**TEXT ONLY**' DEMO FOR 16K ZX-81. SO WHY ONLY A TEXT MODE? WELL NOT ALL ZX81'S HAVE BEEN CONVERTED TO DO HI-

RES GRAPHICS SO I WANTED TO TRY TO DEMONSTRATE THAT *SOME* PIXEL POSITION MANIPULATION CAN BE POSSIBLE IN TEXT MODE ONLY. THE MAIN PROBLEM BEEN, THAT GENERATING TEXT ON THE ZX81 IS A FINELY TUNED BALLET BETWEEN HARDWARE AND SOFTWARE". DOWNLOAD:

[HTTP://TINY.PL/HPJU9G](http://tiny.pl/hpju9g)
 MAYBE FOR A CHANGE - A '**BEEPER**' DEMO THIS TIME? ;) WHAT I MEAN IS A PROGRAM GENERATING MUSIC WITH Z80 AND ULA ONLY, WHERE SOUND COMES FROM '**MIC**' PORT OF ZX81. THE "**UTZ TAPE 81**" HAS BEEN ENTIRELY MADE BY A GERMAN CODER AND MUSICIAN - **IRRLICHT PROJECT**. THE DEMO WORKS ON ZX81 16K AND IT CONTAINS A REALLY BRILLIANT 1-CHANNEL SONG. OF COURSE TO HEAR IT YOU HAVE TO TURN YOUR LOUDSPEAKERS INDEED VERY **LOUD**. :) DOWNLOAD: [HTTP://TINY.PL/HPJU9L](http://tiny.pl/hpju9l)



THE LAST PROG FOR TODAY IS "**THE SOUND DEMO**" BY **HOOY-PROGRAM BASIC LABORATORY**, WHICH SIMPLY MEANS IT'S MOSTLY DONE BY ME. ;) THIS PROGRAM HAS BEEN MADE FOR ZX81 WITH ZXPAND AND THE AY-MODULE. MUSIC HERE IS OBVIOUSLY IN A **ZONX** STANDARD. THIS CODE WAS MADE ONLY IN BASIC, IN A JOKE CONVENTION RATHER, BUT STILL - ACTUALLY IT SHOWS FOR REAL CODERS WHAT COULD BE POSSIBLE TO DO WITH MENTIONED FULL HARDWARE COMBO, IF EVEN SUCH

A **BONE-HEAD** LIKE ME COULD DO ANYTHING BEARABLE. THE DEMO - IF ADJUSTED/CONVERTED - COULD ALSO WORK ON A ZX81 WITH OTHER DISK-SYSTEMS BUT OF COURSE THE COMPUTER WOULD MUST HAVE A ZONX/MR-X INTERFACE AND 32K OF RAM (FOR MUSIC). AND IF WE'RE TALKIN' BOUT MUSIC, THE AY-PLAYER HERE HAS BEEN MADE BY ANDY REA AGAIN. SO ANYWAY, MY DEER... ERM... MY DEAR ZXPAND USERS - PUT ALL FILES INTO ONE CATALOGUE/FOLDER AND LOAD SDEMO.P FILE. PICTURES IN THE PROG HAVE BEEN MADE BY FACTOR6 AND BY ME. THE 1K BASIC TWISTER EFFECT WAS CODED BY GASMAN. IF YOU LIKE BASIC STUFF (AND NOT TOO BAD MUSIC ;)), THEN YOU CAN DOWNLOAD THE PROGRAM FROM HERE: [HTTP://TINY.PL/HPJ92](http://tiny.pl/hpJ92) WELL, THAT WOULD BE ALL FOR TODAY, I SUSPECT. ENJOY THE DEMOS AND LET US HOPE THERE WILL BE MORE AND MORE SUCH PROGRAMS ON THE ZX81 SCENE!!!!



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A ZX81 PARTY IN GERMANY (2012)

ZX-TEAM HAS ORGANIZED ANOTHER ZX81 PARTY IN MAHLERTS, IN 23-25 MARCH 2012. WE'VE BEEN THERE FOR THE FIRST TIME AND IT WAS MOST INTERESTING MEETING, VERY WELL-PREPARED AND ORGANIZED. THE EVENT WAS INTERNATIONAL, AS THERE WERE PEOPLE NOT ONLY FROM GERMANY, BUT ALSO FROM GREAT BRITAIN, NETHERLANDS AND SO ON. AND WE - OBVIOUSLY. ;) AS FAR AS I KNOW, THE MAIN ORGANIZERS WERE: ZSCHOPPER AND PAUL. I MUST ADMIT THEY DID A REALLY GREAT JOB. OUR TRAVEL WASN'T VERY NICE, AS WE HAD SOMETHING LIKE A DISTANCE OF 900KM TO COVER AND *OF COURSE* I GOT A TICKET FOR SPEEDING, HAHHAHA. WE CAME VERY LATE TO THE PARTY-PLACE; AROUND 2:00 AM OR SO. BUT - NOBODY WAS ASLEEP ;) AND WE ENCOUNTERED A REAL TURMOIL THERE. A LOT OF PEOPLE, LOADS OF COMPUTERS, CHATTING - AND SO ON. :) AT FIRST, VISITORS WERE CHECKING OUT IF MY EYE IS REALLY BIGGER THAN ANOTHER, HAHHAHA. ;)



WE HAVE SEEN MANY INCREDIBLE MACHINES (NOT THE ONES FROM A PC GAME ;)), DEVELOPED ZX81 COMPUTERS AND ZX80 COMPUTERS MOSTLY. THERE WERE ALSO PRESENT ZX SPECTRUMS AND EVEN SINCLAIR QL. AS FOR ME - I TOOK MY ZX81 WITH ZXPAND+AY AND **ZX SPECTRUM EVOLUTION** BEING PRODUCED SINCE 2010 OR SO. I ALSO MADE SOME PRESENTATION OF THE EVO, FOR PEOPLE WHO WAS INTERESTED IN THIS NEW ZX SPECTRUM MODEL (NEW GRAPHIC POSSIBILITIES,

PLAYING MOD FILES AND PLAYING MP3 FILES). ALSO MANY PERSONS PREPARED THEIR PRESENTATIONS (IN THE OFFICIAL MODE ;)), RELATED WITH ZX81 MACHINES - ZEDDY WITH INTERNET ACCESS, AN ARCADE MACHINE MADE OF ZX81 - AND OTHERS. ALL OF THIS WAS REALLY INTERESTING, EVEN IF I DIDN'T UNDERSTAND THE PRESENTATIONS ENTIRELY, AS THEY WERE MOSTLY IN GERMAN LANGUAGE. ;) IT WAS A REALLY GREAT MEETING WITH MANY INTERESTING PEOPLE, ASTONISHING PIECES OF HARDWARE AND FANTASTIC ATMOSPHERE (NOT ONLY THANKS TO BEER, HAHA :)). I KNEW THAT



ZX81 SCENE IS THE

STRONGEST IN GERMANY

BUT THIS TIME I HAD AN OPPORTUNITY TO SEE IT ALL WITH MY OWN EYES. ALSO I HAD A CHANCE TO FINALLY MEET IN PERSON NUMEROUS COOL ZX81-FANS (WHOM PREVIOUSLY I KNEW ONLY FROM INTERNET OR MAGAZINES) AND NOT JUST FROM GERMANY BUT ALSO FROM UK BECAUSE ANDY REA AND SIR MORRIS CAME TO THE PARTY TOO.



ANYWAYZ. ALL PEOPLE WERE MOST HOSPITABLE AND THE ONLY THING I REGRET IS, THAT IT WAS TOO SHORT TIME TO TALK WITH EVERYBODY ABOUT THEIR HARDWARE AND SOFT. IT IS WORTH TO MENTION THAT WE ALREADY KNOW A DATE OF NEXT ZX81 PARTY IN GERMANY - IT WILL BE IN 19-21 APRIL 2013. SO IF YOU ARE STILL WONDERING IF YOU SHOULD COME - THEN THE ANSWER IS: **YES!!** :)

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SO - THIS WAS THE SECOND ISSUE ;)

WELL, THAT WOULD BE ALL, MORE-LESS. FOR TODAY AT LEAST. ;) THIS ISSUE IS A LITTLE BIT LONGER THAN THE PREVIOUS ONE (2 PAGES MORE) BUT DELAY WAS PRETTY HUGE, I ADMIT. I HOPE NEXT TIME THE MAG WILL BE READY FASTER. ;) OF COURSE IT DEPENDS MOSTLY ON **YOU BUYZ** ;) BECAUSE - AS I SAID - I WILL BE MAKING THIS MAG BY MYSELF IF REQUIRED BUT: MORE HELP FROM OTHER PEOPLE = FASTER EDITION AND PUBLISHING OF NEXT ISSUES. ;)

I WANTED TO ADD MORE ARTICLES THIS TIME, FOR INSTANCE ABOUT ZXPAND OR ZXPAND-AY WITH A JOYSTICK PORT - OR MR-X AY-INTERFACE - BUT IF I DID THAT, THIS ISSUE WOULDN'T BE READY EVEN FOR CHRISTMAS OR SOMMIT. ;) THERE IS A LOT OF NEW INTERESTING THINGS IN ZX81'S SOFTWARE AND HARDWARE LATELY, BUT I SHOULD HAVE SOME SUBJECTS ALSO FOR THE NEXT ISSUES, HEHE.

THIS MAGAZINE AS USUAL IS FREE AND ITS POSTAGE IS FREE TOO. AT LEAST FOR NOW, HEHEHE. BUT AFTER I SEND ALL COPIES TO THE SUBSCRIBERS, THE MAG WILL BE CUSTOMARILY PUBLISHED ALSO IN A *.PDF FORMAT, FOR PC USERS, DOWNLOADABLE FROM INTERNET - PROBABLY AGAIN FROM THE **RWAP** SITE (THX FOR DA HOSTIN'!!!!).

OK, THAT'S ALL FOLKS, THANK YOU FOR READING AND DON'T FORGET TO SPEND AT LEAST ONE HOUR A DAY WITH YOUR ZX81!! ;) SEE YA NEXT TIME (HOPEFULLY)!!!!

© BY YERZ

ZX-81 IS LIKE THE TARDIS: MAYBE IT IS SMALL ON THE OUTSIDE, BUT ON THE INSIDE - IT'S GREAT!!!!