ISSUE 17 WINTER 2022 - WWW.RETROMAGAZINE.NET - FREE PUBLISHING

RetroMagazine World

future days are back

Alwa's Awakening

NINTENDO NES

MARGARET HAMILTON

BALLY PROFESSIONAL ARCADE

RETRO FIGHTER ENGINE for COMMODORE 64 - Part 2
Software: Graphical mouse pointer in DOS text mode
PROGRAMMING: Rearranging the contents of an array - The Appointment (for C64 and beginners)
RETROSPECTIVE: BURGER TIME, we discover the arcade classic
NINTENDO 64: The (UN)protections - STEAM DECK and emulation
... columns, interviews, reviews and much more!

Striking while the soldering iron is hot

In the retrocomputing and retrogaming enthusiast community, there's often a special passion for hardware. Casual gamers of old and new titles sometimes make do with software emulators or hardware players like the Mini/Maxi/Next or Mist/Mistica/Mister series. But, let's face it, the full 'nostalgia' effect is only achieved with the original hardware that carries the inimitable look & feel of every home computer or console from the 1980s.

As witnessed in the last issue of RMW that celebrated the first 40 years of two of the machines that made personal computing history in Europe and America, time inexorably marches on. Many of these beloved computers of ours are beginning to show the signs of age, and although we can often rely on the good design that made them robust and resistant to failure, all owners of original hardware sooner or later have been confronted with screens that turn suddenly black or become a jumbled mess of incomprehensible characters. These and other unmistakable signs of electronic problems suffered by the various components distributed on the motherboards of our systems are a common sight as the years roll on.

And when a fault occurs,let's be honest!, 95% of us, users of original hardware (just as we did 40 years ago), often panicking completely, fearing that they have lost forever the possibility to play or program with the computer/console that they cherish like a child... After the first few minutes of despair, what to do but turn to the 'friend-who-knows' or, with more hope than expectation, write a post begging for help on the forum or Facebook group that specialises in that brand or model? The writer knows well he is in good company when he claims to be able to carry out only elementary repairs, well aware that he represents nothing more than a public hazard when a lit soldering iron happens to fall into his hands. Fortunately, over the years, I have met some really good electronic technicians who are endowed with the most important virtue a repairman must possess: patience. When something apparently irreparable happens to one of my many machines, I know who to turn to. Shipping costs and resolution times aside, I am usually reasonably sure that after a machine breakdown, I can get it working again within a certain time frame and within an equally certain outlay of money.

And so, let's dedicate this issue of RMW and this September editorial - a time when, after the holidays, everything gets going again and we anticipate a new year of hard work - to all those who know where to put their hands in the event of a hardware failure. Fortunately, there are still plenty of people who can help repair faults on the more or less famous machines of the 80s and 90s market. They are often capable, hard-working and helpful people and are scattered among us poor mortals in the several forums and groups dedicated to retro-computing. We know how important their know-how is and how it should be preserved by all means with documentation, manuals, video tutorials and online courses.

Time is the main enemy of hardware, and if you want to keep it alive, there is and will always be a need for these gurus, sorcerers, venerable bearers of the Supreme Knowledge of resurrecting computers, monitors, consoles and peripherals. So keep supporting your trusted repairers, make them understand how great your esteem is and how important it is that they spread their art to the new generations, if possible. We at RMW invite them to write to us and send us their articles based on their most complex or most curious repair experiences. Support your local repairman!

David La Monaca

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Bally Professional Arcade

by Leonardo Miliani

Dear retro-nostralgic friends, here we are punctual also in this new issue of RMW at the analysis of another of the first, historical, gaming systems. In this article we're going to analyze another game console born, like several others, at the end of the 1970s and which had, like others, several points of interest. We are talking about the Bally Professional Arcade (fig. 1), the third console of the second generation of gaming machines to appear on the market and also the first to be transformed into a real computer.

Origins

We are in the 1920's and Raymond Moloney, from Cleveland, works for a company that produces "punchboards", a typical betting game common in the United States of America in the first part of the 20th century where the player has to "punch" a sealed hole in a wooden or cardboard board from which a roll of paper comes out containing a possible number or code combined with a prize. In 1931 was launched what can be considered as the first coin operated pinball machine in history, the "Baffle Ball". The success was immediate: 400 units per day were produced. Moloney decided to ride the wave of these new games and, with the funding of some companies in the sector, in 1932 he founded the Bally Manufacturing Company to produce pinball machines. The first product, the Ballyooh (from which the company takes its name) sells well and within 7 months Bally sells 50,000 units. Business continued to go well in the following years, so much so that within a short time Bally became the first producer of coin-operated games on the market with slot machines and pinball machines being the main players. The history of Bally is intertwined with that of Midway Manufacturing Company, a company founded in 1958 that produced arcade gaming systems, even if at that time of mechanical type, that was bought by Bally in 1969. In the early 1970s, Midway began marketing electronic arcade games (shooting galleries, horse racing and the like). Midway then makes a commercial agreement with the Japanese producer Taito, also dedicated to the production of arcade games, for the reciprocal import of each other's games (it will be thanks to Midway that Taito's Space Invaders will arrive in America).

Fig. 1: Bally Professional Arcade, later also known as Astrocade (photo: Evan-Amos - source: Wikimedia)

Meanwhile, in 1977, the Fairchild Channel F, the first second-generation console, was introduced. This system meant that "serious" video games with sounds, colours and gameplay more refined than the "Pong"-style consoles of the previous generation were also available to home users. Bally, attracted by the potential of the sector, commissioned Midway, which, as already mentioned, was already involved in the electronic arcade market, to design a home game system. Midway in turn engaged Dave Nutting Associates (DNA), an electronic game system development company acquired in the mid-1970s. DNA gained experience in the industry by making what is considered the first microprocessor-driven pinball machine, integrating an Intel 4040 into a Bally's pinball machine, and having since released a pair of electronic arcade machines (Gun Fight and SeaWolf). DNA develops a new hardware platform that will then be integrated not only into the new console but also into new arcades produced by the company.

Bally's and more

The system that is built is a true team effort. At Midway Games, the company that produces Midway's arcade games, they design a circuit board with the Z80 microprocessor as the CPU while DNA designs a new graphics chip. The team that develops this chip includes

Fig. 2 - Bally Computer System, now distributed by Astrovision (photo: Artistosteles - source: Wikimedia)

among its ranks 2 former students of the University of Wisconson-Milwaukee, Tom McHugh and Jay Fenton: the latter, who has already worked on some pinball machines, is put in charge of the team. Fenton will then carry on the development of the system in arcade version and will use this hardware for a couple of Bally/Midway games, Gorf and Wizard of Wor.

The console is produced by E.F. Johnson Corporation and presents squared lines with black plastic and wood finishing, the style in vogue among the consoles of that time. The port for the cartridges is frontal and next to it there is an alpha-numeric keypad with 24 buttons. Behind the console are the joystick ports and, hidden by a flap, an expansion port. Bally presents the console at the end of 1977 as "Bally Home Library Computer": the name is motivated by the fact that Bally intends to offer a hardware expansion that turns the console into a real computer with a dedicated keyboard, 16 KB of memory and a unit for interfacing with a magnetic cassette player. The console is marketed by the company JS&A and can be ordered only by mail for 299.95 dollars, a price not really affordable and much higher than the direct competitor Atari VCS, which costs 100 dollars less. For some problems in the production, the shipment of the first units was delayed until the beginning of 1978. In this period of time the name is changed in "Bally Professional Arcade", the exclusivity to JS&A is removed and the console is also sold through computer shops. The expansion to turn the console into a computer disappears from the ads, and instead a cartridge with a version of the Palo Alto Tiny BASIC adapted to the features of the machine and that allows programming with the integrated keypad is put on the market at 50 dollars. To load and save BASIC programs is offered, always at the price of 50 dollars, a specific interface to connect a common cassette recorder. The console offers 4 integrated programs: the games "Gunfight" (a gunfight set in the Far West) and "Checkmate" (despite the name, it's a Snake-like game), "Scribbling" (a drawing program) and a calculator.

Commercial failure

The console doesn't meet the favour of the public. In spite of being technically superior to the direct rival VCS (a more powerful CPU and a more performing graphic processor) the higher price and the scarcity of famous titles made the needle of the scales to lean towards the Atari's console: this last one, in fact, in order to push its system commercially, was awarded the exclusive of the conversions of all the most famous arcade bar games, while Bally could offer the porting only of the booths of its subsidiary Midway and few other original titles. Towards the end of the 1970s, Bally lost interest in the console, which, in early 1980, was sold to Astrovision, a company founded a few years earlier that produced home computers. The agreement includes the use of the Bally name and the possibility to continue selling Midway licensed games as well as the technical support of Bally and DNA. Astrovision puts the console back on the market as the "Bally Computer System" (fig. 2) and, in an attempt to push it as a computer as well, it is distributed with a free copy of the BASIC cartridge, but sales remain poor since the console's small memory allows very simple BASIC programs to be written. It's presented also a project that had been started by Midway, that is the "ZGRASS-32 Computer Keyboard" (fig. 3), an expansion with integrated keyboard, 32 KB of RAM,

Fig. 3 - ZGRASS-32 Computer Keyboard (source: redd.it)

Fig. 4 - Cosmic Raiders, clone of Defender (source: uvlist.net)

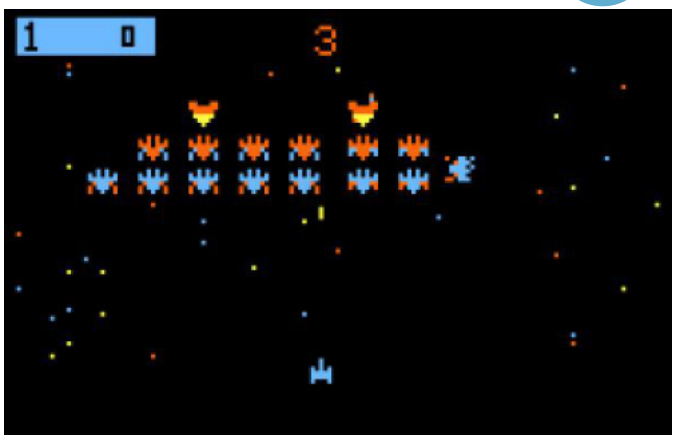


Fig. 5 - Galactic Invasion, doesn't it remind you of Galaxian? (source: videogameconsolelibrary.com)

16 KB of ROM and the support to the GRASS programming language: for those who don't know it, it's the language used to create the animations of the attack plans to the Death Star in wireframe graphics that appear in the movie "Star Wars". This expansion draws its reason for being from the fact that Midway, through its subsidiary DNA, had contacted Tom DeFanti, the author of the GRASS language, to study the creation of a system for the generation of graphics to be used not only for Bally's console but also in Midway's arcades. The sale of the console to Astrovision stopped the development of the hardware, which was resumed for a while by Astrovision but, like the previous expansion to transform the console into a computer, also the ZGRASS-32 never saw the light even if it had been shown at the 1981 Summer CES in Chicago: inside the modules on display, however, there was the hardware of the Datamax UV-1, the only system made by Midway and DeFanti's group that natively supported the GRASS language. After that exhibition, the ZGRASS-32 disappeared from the radar and never appeared again in advertisements, let alone in the price lists.

At the beginning of 1982 the agreements with Bally ended and so did the rights on the use of the name: Astrovision became Astrocade and the console assumed the new name of "Astrocade Professional Arcade", known to most people simply as "Astrocade". Other game cartridges are put on the market, reaching about 45 titles, including the porting of the last Midway arcade. Despite the huge expenses for the advertising promotion made by Astrocade the sales of the console remain low, mainly due to the limited number of popular games available because of the Atari exclusives. Astrocade had to resort to more or less obvious clones of famous titles, such as "Cosmic Raiders" that copies "Defender" (fig. 4), or "Galactic Invasion" that replicates "Galaxian" (fig. 5), and "Muncher" that winks at Pac-Man. At the end of 1983 Astrocade declares bankruptcy and goes under the protective wing of Chapter 11 American legislation, a kind of our receivership. During 1984 Astrocade managed to stay afloat by selling the console for $59.95 with a free game cartridge but the 1983 crisis that hit the video game market will soon present the bill and Astrocade will be permanently closed between the end of 1984 and the beginning of 1985 making the unlucky console disappear at the same time.

Technical features

The console is based on a high performance 8-bit CPU, the Zilog Z80 operating at 1.789 MHz, and is equipped with 4 KB of DRAM (fig. 6). Since at the time the RAM is very expensive, to reduce the costs of the system are adopted some tricks: it is used a single bus for addresses and data, and are used memory chips slower, then cheaper, compared to models normally mounted on computers. The memory can still be expanded by the interfaces mounted in the rear port up to a maximum of 64 KB in total (the maximum addressable by the Z80). The ROM of the system is 8 KB and contains, besides the operating system of the machine, also the integrated games. The RAM is also shared by the graphics chip for the video buffer: a system of wait signals allows to avoid the CPU to access it at the same time. Speaking of the video processor, this is made by DNA and is unofficially known as "Magic System": it is able to operate both in low resolution, at 160x102 pixels, and in high resolution, at 320x204 pixels. This last mode, however, is not selectable on the console due to the lack of memory and is only used

Fig. 6 - View of the interior of the console (photo: Evan-Amos - source: Wikimedia)

in later Midway arcades based on the same hardware. The colors on screen are 4, selectable from a palette of 256. The chip doesn't support sprites but it accelerates in hardware some operations on the graphics, such as displacement, rotation, OR and XOR operations in order to manipulate in a very fast way the bitmap images acting in practice as a sort of "blitter". It is also equipped with the ability to hook a video interrupt to change color palette when the electronic brush has arrived at a certain horizontal coordinate. This function has been thought to allow programmers to realize games where the screen is divided in 2 vertical areas with different palettes, where one represents the game area and the other one a panel to keep scores, lives and other game data but at the end it has been exploited also to simulate an 8 colors mode.

The console has 4 controller ports allowing, for titles that support it, simultaneous play by as many players. The controllers have a pistol-style grip with a trigger and a small top-mounted 8-way joystick, which also acts as a paddle being a potentiometer that can be rotated (fig. 7). Audio is handled by the Music Processor, a chip capable of handling 4 channels: 3 square wave outputs and a fourth source for noise, which can be output either independently or mixed with one of the other channels. The chip supports single channel volume and also hardware vibrato.

The game cartridges have the same size and shape of the normal cassettes and are inserted in the appropriate port even if some, like the BASIC one, have been realized to be "read" also through an audio plug to be connected to the interface for the management of the cassette recorder (fig. 8). The capacity is a maximum of 8 KB of ROM memory. A curiosity: the console has an openable door on the upper part where you can put the cartridges of your favorite games, so you can always have them at hand.

BASIC

The BASIC cartridge allows you to write small programs. But where are they allocated, since the console already has very little RAM memory available for game data?

Fig. 7 - The gun handle-style joystick. Above is the actual controller that serves as a joystick and paddle (photo: Evan-Amos - source: Wikimedia)

Doing the math, each video pixel requires 2 bits to indicate its color, so each byte of memory contains the data for 4 pixels, for a total of 40 bytes per line (160 pixels x 2 bits = 320 bits / 8 bits=40 bytes). This results in a video buffer of 4,080 bytes (102 rows x 40 bytes = 4,080 bytes) so out of the 4 KB of RAM only 16 bytes (4 KB => 4,096 bytes) remain free for game data! How is it possible for the user to write a BASIC program in such a small space? The developers have taken some measures. First, the resolution is reduced from 160x102 to 160x88 pixels, thus recovering some bytes. Other bytes are recovered by resorting to another trick, even more ingenious, which "drowns" the data in the video buffer. The number of colors is reduced from 4 to 2 so that of the 2 bits normally used to select the color now only 1 bit is needed to indicate whether the pixel should be rendered with the primary color (pixel "on", 1) or with the background color (pixel "off", 0), and the remaining free bit is used to store a bit of the program in BASIC. In this way, every 2 bytes 1 byte for the video image (the 8 odd bits of the 2 bytes) and 1 byte of the program (the 8 even bits of the 2 bytes) are stored, recovering another 1760 bytes. When the graphics chip accesses the video buffer it reads 1 byte as usual but ignores the even bits while when the BASIC interpreter executes a program it reads 2 bytes at a time to "reassemble" 1 byte of the code. Amazing, isn't it? To enter programs is used a system that relies on the integrated keypad and

Fig. 8 - Console cartridges, also known as "videocades" Note the audio socket on the BASIC one (source: oldcomputers.net)

that assigns to each key one or more functions, the same system adopted later on the ZX Spectrum (Fig. 9). BASIC is derived from Tiny BASIC and is bare but still contains commands to read joystick inputs and to drive graphics and sound, allowing you to create small games.

Game over

The Bally Astrocade, as it's known to the most, was a lady console, with technical characteristics superior to those of its rival Atari VCS but the strength of this last one was the immense games park, many of which in exclusive, that it was able to offer to its users, relegating the Astrocade to the role of follower: less than 50 games of the first one against the over 550 of the second one are pitiless numbers. Moreover, Bally itself didn't know how to promote the console as it should have: initially put on sale only by mail, it still managed to collect 8,000 orders, but Bally accumulated production delays due to the inability to satisfy the high demand that the Astrocade met. This thing is curious and it almost shows the inability to make long term plans, to be able to foresee the success of the product and to be able to plan correctly the initial phases of the commercialization which, for a colossus as Bally was at that time, sounds really strange. Moreover, the main activity in Bally's business was pinball and slot machines and, when in the same year of the console's debut in Atlantic City gambling was legalized, it immediately decided to invest in the construction of a hotel with a casino (and therefore in its slot machines) in that city. The large sums needed for the operation and the losses accumulated by Astrocade, due not only to poor sales but also to the development of projects such as the module to turn it into a computer never arrived on the market, make Bally lose interest in the console very quickly, which decides to get rid of it after less than 2 years of sales. It's a pity because if it had been supported in a more convinced way maybe it would have had better luck.

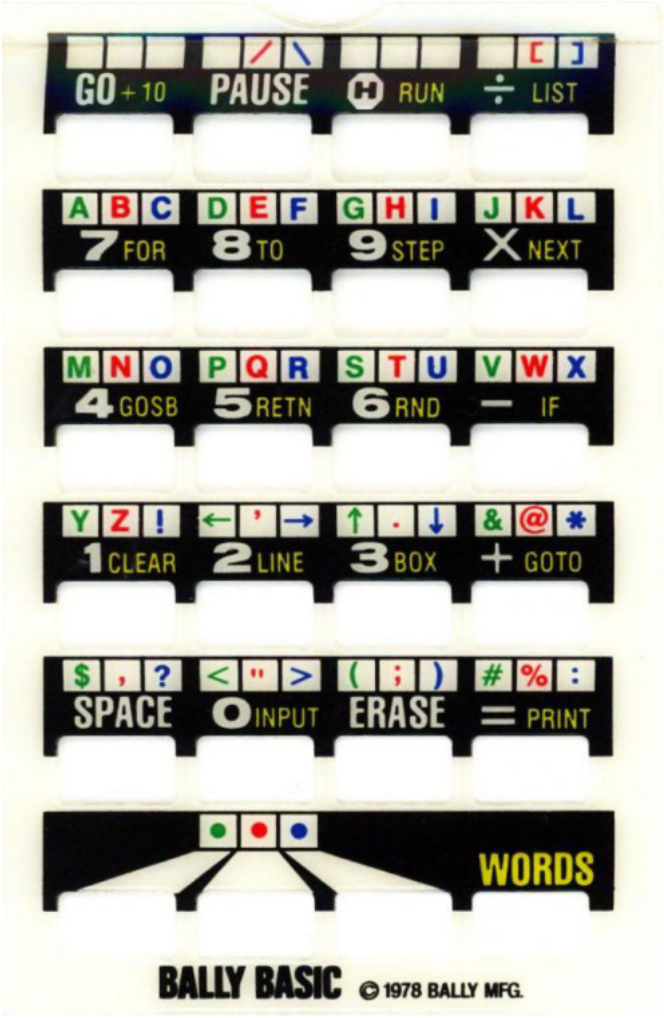


Fig. 9 - The template to be attached to the console keypad in order to enter programs in BASIC (source: thedoteaters.com)

Nintendo 64 - the (un)protections

by Dr. Andrea Q. - www.retrofixer.it

Youtube channel: https://www.youtube.com/channel/UCEw0CQ8LKyA9jVvWXkEwp4Q

Still no Game Cube. In fact, it's the turn of Nintendo's latest cartridge-based living room console (the Switch doesn't count, it's a hybrid).

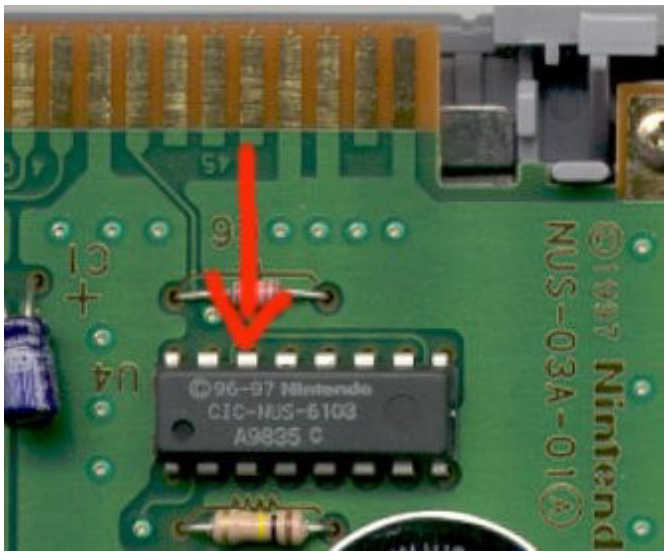
The Nintendo 64 was commercially released between 1996 and 1997 and was developed under the code name "Project Reality Ultra 64" (the planned name for the release was supposed to be Ultra 64); its product code is NUS-CPU and this system also carries the protection systems of its predecessors.

CIC / PIF

This lock-key protection system provides, as we have already seen with the SNES, the presence of a chip both in the console and in each cartridge but it seems that in the N64 console board there isn't the corresponding CIC but another integrated one called PIF:

The chips used have the following labels:

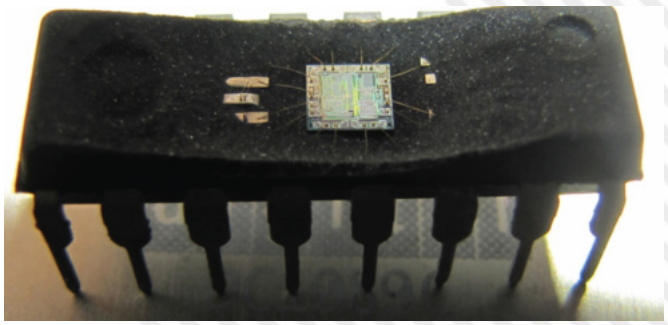
- CIC-NUS-6101 (in NTSC cartridges)
- CIC-NUS-6102 (in NTSC cartridges)
- CIC-NUS-6103 (in NTSC cartridges)
- CIC-NUS-6105 (in NTSC cartridges)
- CIC-NUS-6106 (in NTSC cartridges)
- CIC-NUS-7101 (in PAL cartridges)
- CIC-NUS-7102 (in PAL cartridges)
- CIC-NUS-7103 (in PAL cartridges)
- CIC-NUS-7105 (in PAL cartridges)
- CIC-NUS-7106 (in PAL cartridges)
- PIF-NUS (in the console)



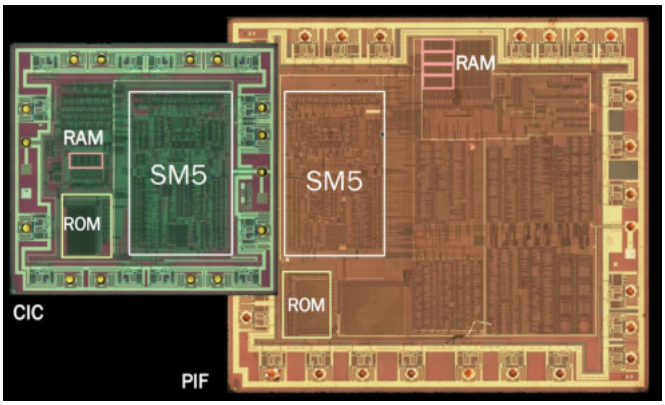
The most common bypass is called Ultra-CIC, a programmable PIC that emulates the behavior of the original CIC:

This system has managed to survive attacks for a good 20 years! Some managed to reverse engineer the algorithm of the NTSC system partially back in 2011 but the final solution came only in 2015 when a team of 2 reverse engineers was able to carp all the mysteries.

Also in this case the system used was that of "decapping":

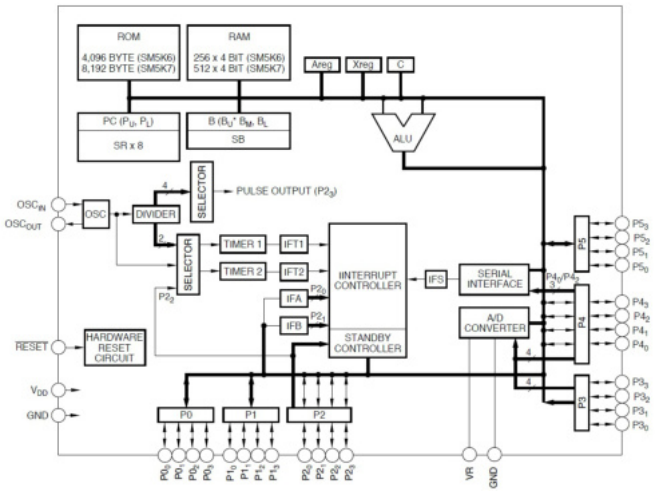


The package of the CIC chip was then "abraded" until showing the DIE containing the entire system; at this point, thanks to the use of a microscope, they went to observe the micro-components of the devices:



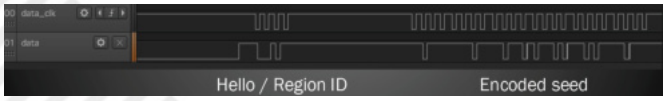
The core is therefore a Sharp SM5, already used by Nintendo in the old portable games or in some calculators of the pre-console era.

After a long series of trials and errors they managed to dump the ROM and came up with this pattern:

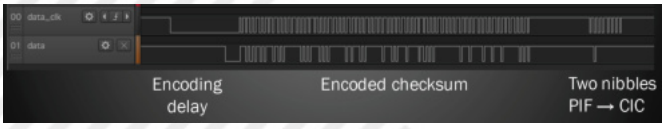


"You may be wondering 'how do I trace patterns from a photo'? Watch this video [https://www.youtube.com/watch?v=aHx-XUA6f9g] to get an idea."

Finding that the CIC sends a "Hello" + Region ID, then the encoded seed and finally a checksum:



the PIF, receiving the correct data, continues the execution of the software:



Obviously thanks to the ROM dump and its reversing the data has been decoded to allow emulation.

There are also adapters that can overcome the problem but, as they were produced before the reverse engineering of the CIC/PIF system, they are not fully compatible:

Physical Protection

NTSC cartridges are physically different from JAP cartridges:

In order to get them in, a modification has to be made to the case by removing the tabs in the cartridge slot:

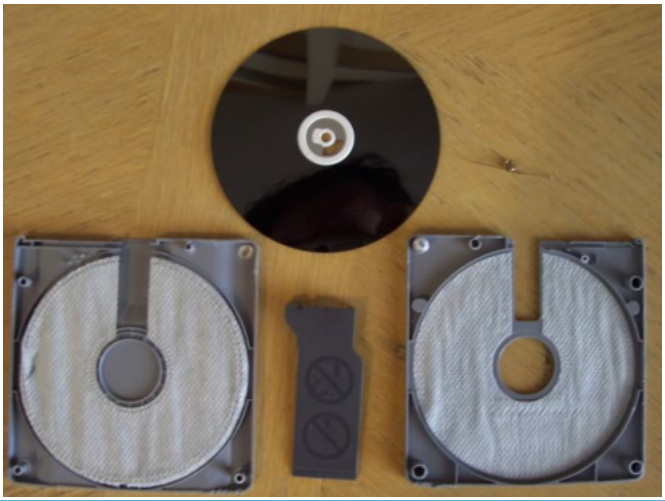
This system ONLY works between US and JAP and is not good for PAL games due to CIC.

64DD

Between 1999 and 2000 an add-on for the N64 called 64DD was released in Japan:

This terrible Nintendo commercial failure was intended to overcome the initial size limitations of cartridges (more expensive though faster than discs) and included a proprietary floppy disk-like magnetic media:

Grey the retail disks, blue the development disks. Opened they look like this:



Why am I introducing this peripheral?

1 - because it is yet another example of support for proprietary software

2 - because it introduces for the first time the BIOS concept

Concerning the first point the dumps of the (few) titles released for this "contraption" have been possible only at the end of 2014 thanks to the French LuigiBlood who has programmed some code to execute on the N64 useful to dump such supports. Being disks similar to floppies even if of greater capacity (64Mb) the probability that they deteriorate in the time was high so this developer decided that it was the case to preserve them studying a system to do it

The disks were dumped to microsd using a 64drive reprogrammable cartridge.

Regarding the second point this system represents the first of Nintendo's peripherals to have a real little operating system, a BIOS, complete with simple programmable settings (see towards the end of this video https://youtu.be/WUsCK9mUUMU).

The bios was dumped using an Action Replay/GameShark, but currently the same French developer has created a more reliable bios dumper

The BIOS of the 64DD, even if it doesn't present any form of integrated protection, represents therefore the forerunner of everything that would be released later on the market by Nintendo.

WARNING: Disclaimer

The information contained in this article is for informational purposes only. This documentation is not guaranteed to be error-free. If this information is used to modify your hardware, it is your responsibility to take all necessary emergency, backup, redundancy, and other measures to ensure its safe use. RetroMagazine World disclaims all liability for any damages caused by the use of the information in this article.

Emudeck - Emulation on Steam Deck

by Franco Bressan

Steam Deck is a full-fledged PC, or rather it is a notebook based on AMD APU, a chip that includes both the classic CPU part and the graphics card part based on RDNA2 architecture of the latest Radeon graphics cards.
It's a Valve product that has had quite a few problems in its distribution and that at its release presented some flaws regarding overheating, durability and resistance.

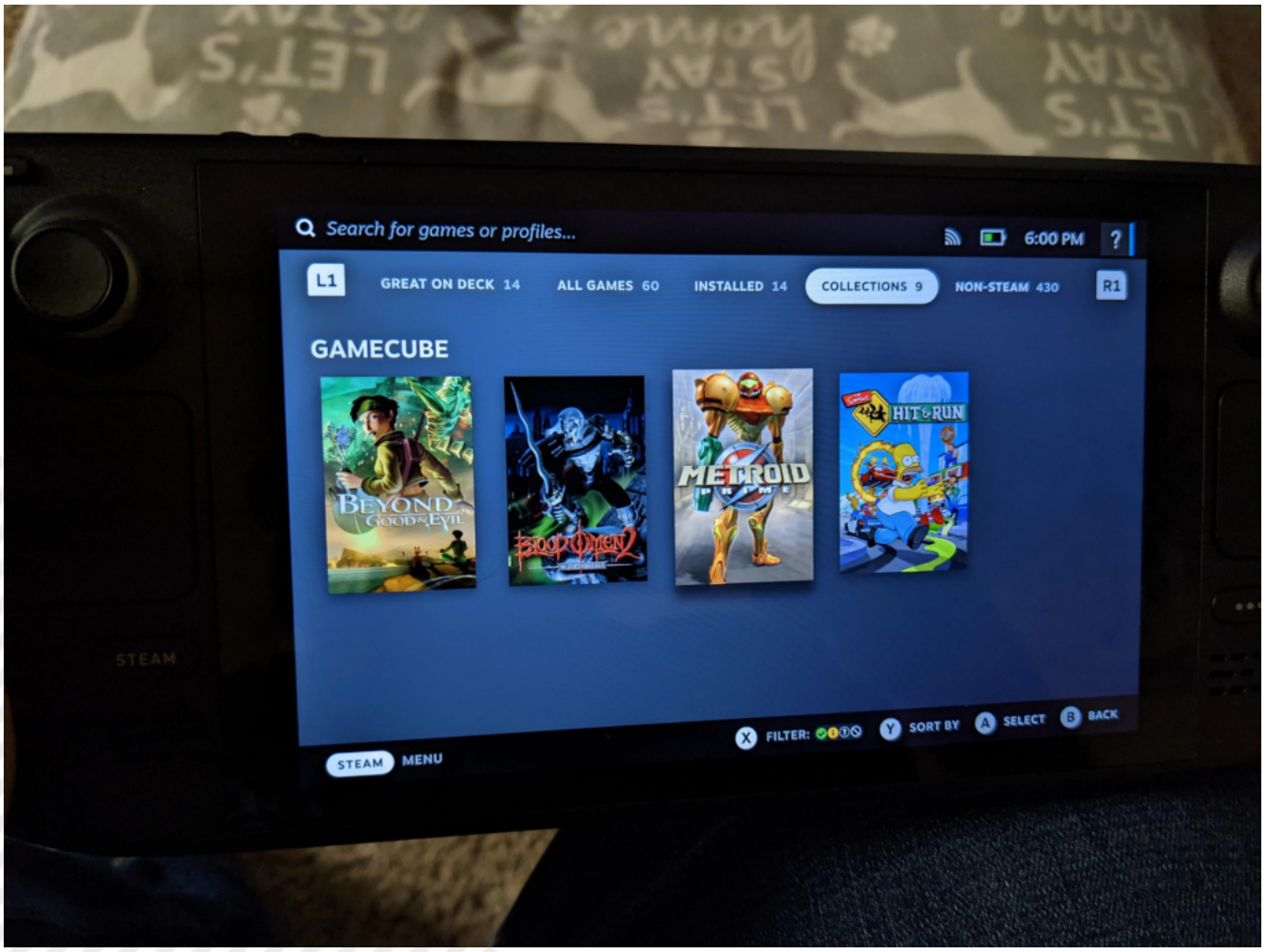
Either way, its arrival on the market has stunned. A bit for its hardware power and certainly for the software certainly more customizable than that present on Nintendo Switch (which for Valve is the direct competitor on the market). These capabilities allow the machine to be modded to perfection without risk of banning and allowing the console to be a perfect emulation machine.
To do all this you need to install Emudeck, an application created specifically for Steam Deck that allows you to create our own Retro library on the console.

Emudeck is totally free (it allows you to support developers through Patreon) and is very easy to install and very complete.

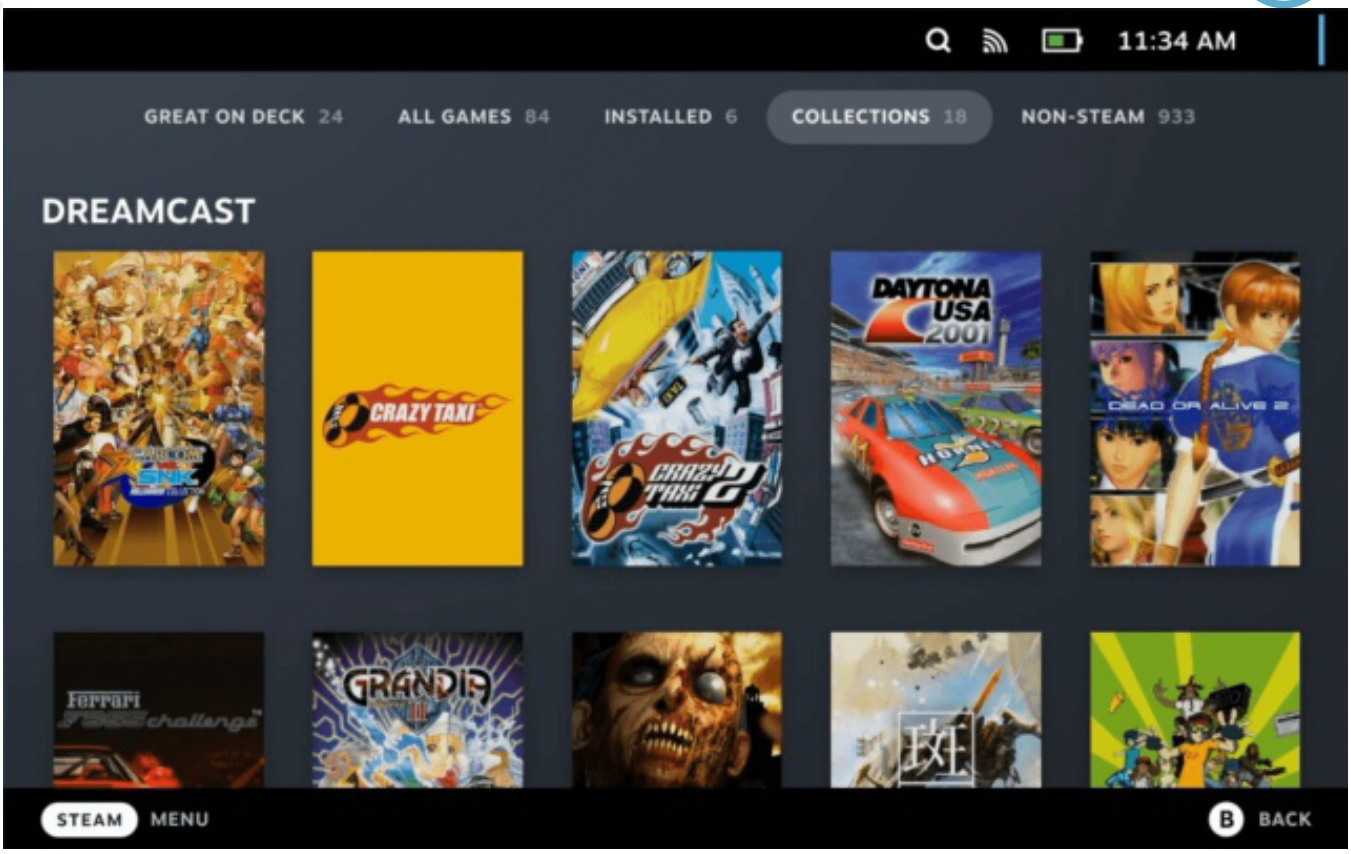
It does it all. He sets up RetroArch, I Bazel, Gamepads based on the console (this thing is perfect), he adjusts the video aspect based on the game system.

The following formats are supported and are constantly being updated: Megadrive, MegaCD, 32X, Pc Engine, Wonderswan, Snes, Mame, FBNeo, NES, Master System, Dreamcast, Neo Geo, all Nintendo and Sega handhelds, Neo Geo Pocket and PSP.

Great emulations of Nintendo 64, Wii, Game Cube,



Emudeck menu with a bunch of Nintendo Game Cube titles



The list of DREAMCAST Titles with their box art

Playstation 1 and 2, Nintendo DS and 3DS (the latter is amazing).

Wii U, Switch and PS3 emulation are also supported almost flawlessly. Cores for Sega Saturn and PS Vita will be implemented soon.
Full support also for external emulators Cemu (which emulates Wii U) and Citra.
At startup of each game system, Emudeck customizes the aspect ratio by recognizing the system it belongs to but also allows you to play with smaller or larger video aspects according to your taste.

The tests we performed on the 8-bit and 16-bit machine emulations presented no problems.
They are broken-in systems and run with no latency or configuration issues. Perfect.

But the real surprise is the emulation of "newer" systems. Game Cube and Dreamcast pretty much perfect except for some animated intros.

While we were amazed at the PS3 and WII U emulation. In this second case we tested The Legend of Zelda: Breath of Wild. Perfect! Full FPS and incredible fluidity.
Emudeck has completely convinced us and we think it looks great on Steam Deck.

The developers should soon be making two versions for Anbernic Win600 and for Palm PCs running HoloISO.

For more information and to install the product follow this web page: https://www.emudeck.com/

A500 MINI - My time machine in miniature

by Beppe Rinella

Welcome back brothers and sisters who, like me, are overwhelmed with emotion at the mere sight of the Workbench. The A500 Mini, made and distributed by Retro Games, has been with us for a few months now, since April 1st to be exact. Until now it has not been mentioned on these pages which, you will agree, is rather strange. So, where else but here? I don't want to bore you with the thousands of reasons why it wasn't possible to write about it before, but even if it's scandalously late, here we are.

Actually a review of the Amiga puppy had been prepared but never published, but I asked myself: does it make sense to publish now a review of the A500 Mini, five months after its release, after hundreds of reviews have been done, written and video, italian and not. Not to mention all the unboxing videos (a practice to which, I confess, I still cannot find a sense)? My answer is no, so I decided to write about my experience together with this little concentrate of pure joy, an experience that is more than four months long as I write. Months of delay that are a geological era in gaming and not only, but they make the experience is definitely more interesting! We have lost the moment to be able to say our opinion one minute after the release of the A500, but we can tell about it after hours spent with this little machine and think about how much the criticisms read here and there were justified.

A small confession, before starting with my story, I think it is necessary, also only to motivate an enthusiasm from the undersigned which sometimes could appear excessive: I own other mini consoles, what makes the others totally different from the A500 is that I never had them in my youth, with Amiga instead I grew up with it and very happily. What I will say from here on is the result of my personal past and present experience, as always I invite you to write your own!

The A500 MINI, gamepad and mouse 'Tank'

Let me start from the end: I was very happy once I heard the news about the release of the A500 Mini, I was very happy the day I received it at day one, I was very happy after having been able to handle and try it. After these first few months such contentment has not gone away one bit, quite the contrary.

First of all the aesthetics which, talking about mini consoles, plays a fundamental role. I mean, if the look was not perfectly reproduced, even in a "mini" version, nobody would even consider buying them. The A500 Mini is aesthetically perfect. The keyboard isn't functional, we know, but reproduced to perfection in every tiny detail. The same can be said for the mouse, slightly reduced in size with respect to the original and with an optical sensor instead of the "ball". The only drawback, the absence of original logos for copyright issues, so no "Commodore" or "Amiga" in bas-relief, not being an official Commodore product it could not be otherwise.

Personally, the aesthetics of the A500 are even more important than the other small form factor consoles. One glance at that machine and I'm transported back to one of those sweaty summer afternoons with friends playing Lotus 2. Or in the middle of endless fights against my brother in Speedball 2 where I regularly got my ass kicked, almost as much as in real life. In a moment I still relive that great satisfaction mixed with pride felt after bringing Palermo from Serie B to winning the Champions League at SWOS. I feel the real joy I felt, not without a touch of emotion, after the first game of Shadow Fighter, finally a beat'em up as it should be!

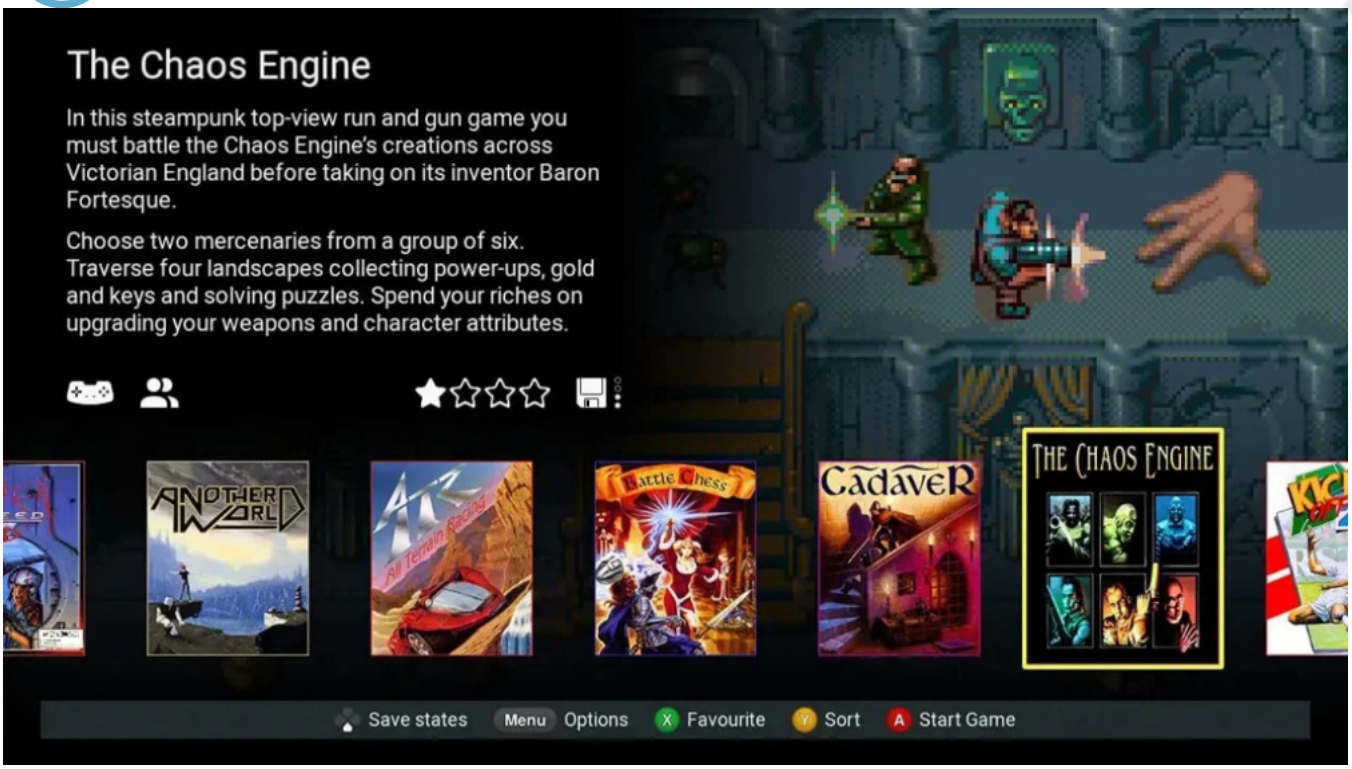
This is all made possible by the absolute care taken in the construction of the A500. And we come to what is considered by many to be almost blasphemous, namely

The A500 Mini on a desk

the small size of the console and, consequently, the non-functioning keyboard.

I'm a lover of video games, retro and not only, but also of other things (action figures, comics, photography, books...) and as every fan/collector knows, the biggest problem to face, right after the economic one, is space. Unfortunately I don't have the ability to have a "playroom" and of the limited space I have I am already using every square millimetre. If the A500 wasn't "mini" I might have bought it but it would have been put back in the box a moment after I tried it, probably never or very rarely coming out. If you know the keyboard dimensions of an Amiga 500 Plus (i.e. the one reproduced by A500), you know that finding a space that can accommodate it is not at all trivial. With a faithful reproduction, or even with an original Amiga 500+ (like the one I had and who knows where it is now), I would have had to plug everything in, play, take it apart and put it away every time. All that, in my case, would have meant the total uselessness of my new purchase, considering the scarcity of the third fundamental factor that fans often lack, that is time.
The minimum dimensions of the A500 Mini instead allow me, and who like me has little space and time, to keep it there next to the TV, always connected and ready for a game "on the fly", which happens, unlike other consoles in my possession for which I really can't find even a hole. To conclude the discussion about dimensions, the reduced dimensions of the A500 Mini are for me absolutely a point in favour.

We said before about aesthetics and how important it is, especially for the mini consoles that are so fashionable from a few years now. It does not concern only the console itself but also (perhaps especially) the controllers and the feeling they give back. Unlike the cases, the joypads are always reproduced in their authentic size, so that playing you can relive the same feelings of the past even at a tactile and ergonomic level. If I had to evaluate with a score this aspect of the A500, it would be a "no vote" due to my personal experience. Starting from the mouse, even if the dimensions are not in 1:1 scale (if I'm not wrong the dimensions are about the 75% of the original) and even if it has the optical sensor, handling the reproduction of the historical "tank" the sensation is absolutely positive and quite faithful to the original. As for the joypad instead, before now I had never had in my hands the pad of that floppy CD32. In my youth I had dozens of joysticks, not joypads, and you know very well that there wasn't an official Commodore one. The only official joypad for Amiga was the one of the CD32 and it is the pad that you find included in the A500 package. In the evaluation of this aspect, therefore, all that part of feeling mixed with memories is missing for me, but it remains an excellent controller, well made and comfortable, but nothing that brings my mind back to the days of the



The menu with some of the games provided by default

past. This is neither a criticism nor a fault, it's simply inevitable given my experience.

Staying on the subject of controls, on the A500 they are configurable for each game. Now, we know well that the games on Amiga provided the single button, at least 99% of the cases, but there are some exceptions. So at a glance, Turrican 2 comes to mind, which also included the use of the spacebar. In my personal experience, not really a great convenience, considering my gaming position at the time (to call it post is a great understatement) that did not make it very comfortable access to the keyboard, especially in the most excited phases of the game. It's possible to assign a key to pause and more, such as assigning a jump key for platformers and the like, which for me turned out to be crucial, in fact I found that I'm no longer used to jumping by moving the pad up and that being able to pause more comfortably is essential with a small child running around.

But let's come to the games, the key aspect for those who, like me, used their magnificent Amiga for this sole purpose. The selection of games included by the guys from Retro Games is not bad but not even the best possible, it's average I'd say. We go from some authentic masterpieces, like Speedball 2, Kick Off 2, Another World and Stunt Car Racer. Passing then to titles negligible or mediocre as Titus the Fox, Qwak, Zool (this will make someone angry!). On this aspect, however, we must make some clarifications. The first is that the choice of games included is the result of compromise, in some cases to obtain the licenses was not possible, in others would have been prohibitively expensive, which would have affected even more on the price already quite high.

But all the considerations about the choice of titles included inside the A500 Mini are directly swept away by the guys from Retro Games, who as well as with C64 Mini and not, left the users free to be able to load any title they own through a simple USB stick. Just enough time to download everything needed and my A500 Mini could host any title that ever appeared on the Amiga, including homebrew and recent titles. The first time I switched on my A500 Mini I already had the entire Amiga soft library available on the stick, not bad at all, no?

The choice of the manufacturers to leave the console "open" is, in my opinion, the greatest merit of this wonderful little machine. The community of modders, developers and geeks of every kind, has started to have a lot of fun since the beginning with the A500 Mini, it is enough to have a quick tour on the net to find really everything. Besides being fantastic and decidedly comfortable, it highlights once again how much the community of Amiga enthusiasts is bursting with health, something that really warms the heart.

I think you can easily deduce from what I have written so far, my experience with the A500 Mini is absolutely positive and there has not been a second when I have regretted the purchase. I can already hear the screaming crowd...I have read every criticism possible and imaginable about the little reproduction of our beloved Amiga. From the non-functioning keyboard to the selection of games, from the excessive cost to "with a Raspberry I spend less and it does the same things" to "it's a money grubber for the nostalgic".
And it's all true. The point is that you just need to know what you have in front of you and if the product meets our needs. It's true for everything if you think about it, it's a bit like a person saying that "The Godfather" is a bad movie because it's not funny. Well if you wanted to laugh you made the wrong choice, it's not the movie that's wrong.

A500 Mini is a mini console, not a computer, a machine conceived to make us relive the wonder experienced with Amiga titles when we were young. It's ready to be used, no fiddling around with emulators or anything else, connect the power supply and the HDMI cable to the TV and it's done, the space it requires is minimal and it's a delight to see.

A small jewel that gives me a few shivers, in memory of my long-gone youth (at least in terms of age), and I'm sorry if that's not enough.
That small beige case next to the TV is not only a machine to play games, it's a small time portal, it's enough to look at it just for a moment to relive the intense emotions that Amiga gave me. In a fraction of a second I'm still in my little room, joystick in hand and a smile on my face, a smile that I realize to have also once back "here" and that I immediately turn to my little girl and to the other daughter who's not a little girl anymore, wishing that they too can keep moments of pure happiness as I could do together with my Amiga.

Now excuse me but I have to go, there's a super frog with a cape waiting for me.

Cheers and all of you, be good and AMIGA FOREVER!

The dimensions compared with the original

WII: the 'revolution' of Nintendo

by Hakim Rezki and Carlo Nithaiah Del Mar Pirazzini

The Game Cube was a beautiful console, but it wasn't understood. We talked about it in the April 22 issue of 2020. The market was asking for more, from Kyoto HQ they were asking "What?".
In the midst of the war between Sony and Microsoft, when everyone was no longer thinking about a competitive Nintendo in the market, the answer was... Revolution!
This was the code name of the new Nintendo console that changed its name to Nintendo WII, changing (yet another time) the video game entertainment industry.
A revolutionary machine that drew on the past to win over future gamers. They created a remote that acted as a pointer to "touch the screen", but with which you could also rely on motion controls thanks to an accelerometer. It was the Wii Remote Controller or Wiimote.
Simple and effective on all fronts: it was usable as a common remote control but referred to one of the first controllers made by the house of Kyoto or the NES controller. But innovation and intuitiveness would not have been enough to sell a simple console. The checkmate was the selling price. Wii was sold in Japan for the equivalent of $200 without games and about $250 bundled with Wii Sports.

The raison d'être of the new console was pure gaming: in other words, no DVD or CD reading, no support for other resolution, and very limited use of connectivity. Nintendo's marketing also put a lot of emphasis on the target audience for the console. It was the first gaming machine truly for the ENTIRE FAMILY. It was something that could be kept on the shelves of the house and that did not resemble a "crude" console, but an elegant design object.
Wii's overwhelming victory from day one sold on unprecedented and was declared the most successful hardware of the seventh generation of gaming consoles. Up until 2008 (two years after the machine's release) Wii was a continuous sell-out at every retailer on the planet simply because everyone, but really everyone could and wanted to play it.

The success was such as to induce both Sony and Microsoft to make their own version of motion control (the famous PS Move and Kinect) that video game critics rejected

The Wii with Wii Sport and all the contents of the sales box

Image taken from Google: Demonstration of intergenerational gaming on WII

without too many problems.

And to think the machine was little more than "two Game Cubes held together".

The snub towards the more powerful competitors was greater. In fact, inside the console there were components similar to those of the previous Nintendo console (a very good hardware) but definitely less performing than the direct competitors.

With the Wii, Nintendo also debuted in the online world with its Nintendo Difference.

Not everyone loved the time mechanics and code system, but the online store, the Wii Shop channel, the indie developer world with WiiWare and the Virtual Console were a hit.

Third-party developers, attracted by the innovative control system, also threw themselves back into production for Nintendo.

**A graphic adventure on consoles?
Zack & Wiki is a real gem.**

So many titles with the Wiimote became "totally immersive" such as Resident Evil 4, or Dead Rising, the funny and crazy WarioWare: Smooth Moves, not to mention the Super Mario Galaxy saga, pure poetry and programming genius.

Among the best-selling titles ever we can not fail to mention Mario Kart Wii and Super Smash Bros. Brawl. Two iconic titles and still appreciated for the quality and playability.

We could mention the Metroid Prime saga that reaches with Metroid Prime 3 Corruption an impressive technical level or the beautiful graphic adventure Zack & Wiki.

Before concluding we can not fail to mention the many accessories released for this console: Shotgun, driving wheel, sports accessories and the incredible Balance Board, a peripheral that allowed you to play some sports titles but also to work on your body.

The Wii has been (and still is) the subject of numerous modifications by hackers and programmers.

Among the most famous installable apps is the famous Homebrew Channel that allows you to add emulators,

channels of various kinds (youtube) and much more.
Indeed, the Wii, properly configured, turns into a perfect emulation machine capable of running without any problem almost all 8-bit, 16-bit and even some newer machines. Unauthorized reproduction of DVDs was also made possible through the work of hackers.
The last few years of the console's life have seen it exit the scene with elegance and dignity, and with no less than two revisions: 2011's Family Edition and 2012's Wii Mini. The last title developed was Just Dance 2020.
Long live the Wii.

Balance Board and Wii Fit

Technical specifications

Processor:

CPU: IBM Broadway, based on PowerPC architecture with 90 nm SOI process with CMOS technology, with 729† MHz frequency
GPU: ATI Hollywood with 90nm CMOS processor, running at 243† MHz
Overall CPU performance: 2.9 GigaFLOPS.

Memory:

88 mebibytes main memory (24 MiB "internal" 1T-SRAM integrated in the graphics chip, 64 MiB external GDDR3 SDRAM)
3 MiB GPU for textures.
IBM Broadway CPU
ATI Hollywood GPU

Ports and peripherals:

One to four Wii Remote Controllers (or Wiimote Plus for newer versions) connected via Bluetooth
Four Nintendo GameCube Controller ports (one of which can be used in conjunction with four Wii Remote Controllers for five-person multiplayer in native Wii games)
Two Nintendo GameCube Memory Card Ports
One Secure Digital HC card slot
2 USB 2.0 ports
Door for the Sensor Bar
Accessory port on the bottom of the WiiMote (or Wiimote Plus for newer versions)
Mitsumi DWM-W004 WiFi 802.11b/g wireless module
Compatible with USB2.0 to Ethernet adapter for connecting to a local network
Multi output ports composite video, component (YPbPr) and S-Video
Recognizes the management of prohibited content from the following entities:
BBFC, CERO, ESRB, OFLC, OFLC (NZ), PEGI, USK

On the one hand the IBM Broadway CPU at its side the ATI Hollywood GPU.

Super Mario Galaxy 2 one of the most beautiful games for Wii

Non-volatile memory:
512 MiB built-in NAND flash memory
Expandable via SD slot for SD and SDHC cards up to 32 GB Nintendo GameCube Memory Cards (for GameCube game saves)
Optical slot-loading player compatible with 8 cm Nintendo GameCube Game Disc and 12 cm Wii Optical Disc
Mask ROM by Macronix

Video:
50/60 Hz 480p (PAL/NTSC) or 576i (PAL/SÉCAM), standard 4:3 and 16:9
RGB SCART (PAL only), S-Video (NTSC only), composite output, or D-Terminal component video output
Officially supported video and photo formats:
AVI (MJPG)
MOV (MJPG).
JPEG
MP3 with Photo Channel 1.0 (playable music during photo slideshow)
AAC with Photo Channel 1.1 (playable music during photo slideshow)

Audio:
Main: Stereo - Dolby Pro Logic II
Controller: integrated speaker
Consumption:
Minimum - 15 W
Medium - 17 W
Maximum - 20 W

Sources:
Wikipedia
Nintendo Japan
https://www.nintendo.co.jp/ir/en/finance/software/wii.html
Wii.com
Official Wii website on Nintendo.com
Touch! Generations on touchgenerations.com of 27 November 2008

Sources:

Wikipedia

Nintendo Japan
https://www.nintendo.co.jp/ir/en/finance/software/wii.html

Wii.com

Official Wii website at Nintendo.com

Touch! Generations at touchgenerations.com on November 27, 2008

Graphical mouse pointer in DOS text mode

by The Orbital Crew - Alessandro Mazzola aka "Mr.H"

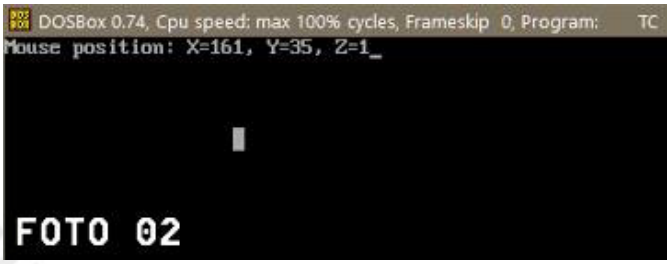
In an undefined moment I remembered a peculiarity of the Norton (DOS) utilities that had the mouse pointer with the shape of the arrow, instead of the classic rectangular shape, even in text mode under DOS... Do you remember?

Today I started these utilities to review, understand, and find a solution to recreate this cute "software modding". To do this, I armed myself with assembly.

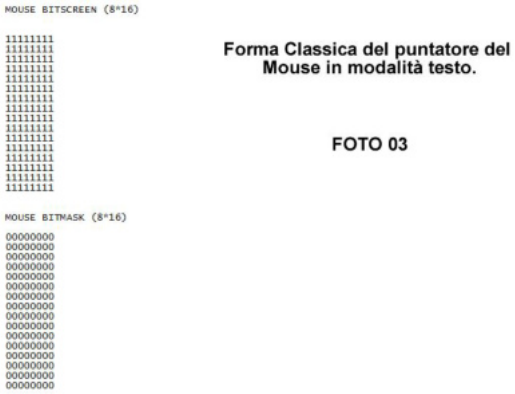
A LITTLE THEORY

By definition, in DOS, when in graphics mode the mouse pointer automatically assumes the classic arrow shape:

while adopting a rectangular shape in text mode:



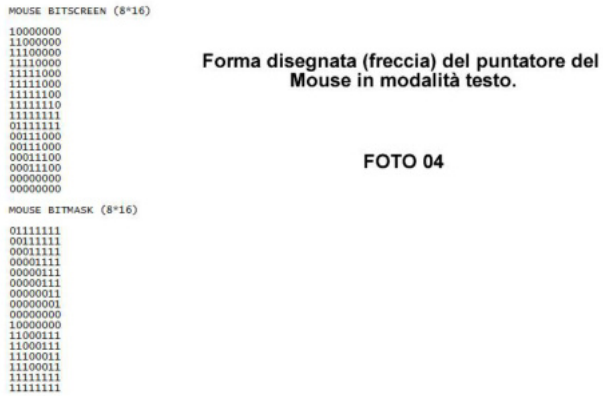
In text mode in practice the pointer occupies exactly the space that a normal ASCII table character would occupy and this space, in the classic 80x25 mode, occupies exactly 8x16 bits; where if one or more BITs of this space are set to 1 a pixel will be automatically drawn in correspondence inside the cell. The pointer in text mode uses two areas of this size, called bitscreen and bitmask. In the BitScreen cell the bits marked at 1 represent the foreground pixels, while those in the BitMask are the remaining fill-in bits around that represent the background. In fact the colors (text attributes) are always 2 one for the text color the other is the color of the background fill of the 8x16 cell. The pointer in text mode has all bits set to 1 ($FFFF*16) both in the BitScreen and in the BitMask assuming a full rectangular shape but when it overlaps



any character on the screen internally is highlighted the character underneath with a different background color to keep the mouse always in evidence, this is done automatically through special registers of the Interrupt 33h of the mouse.

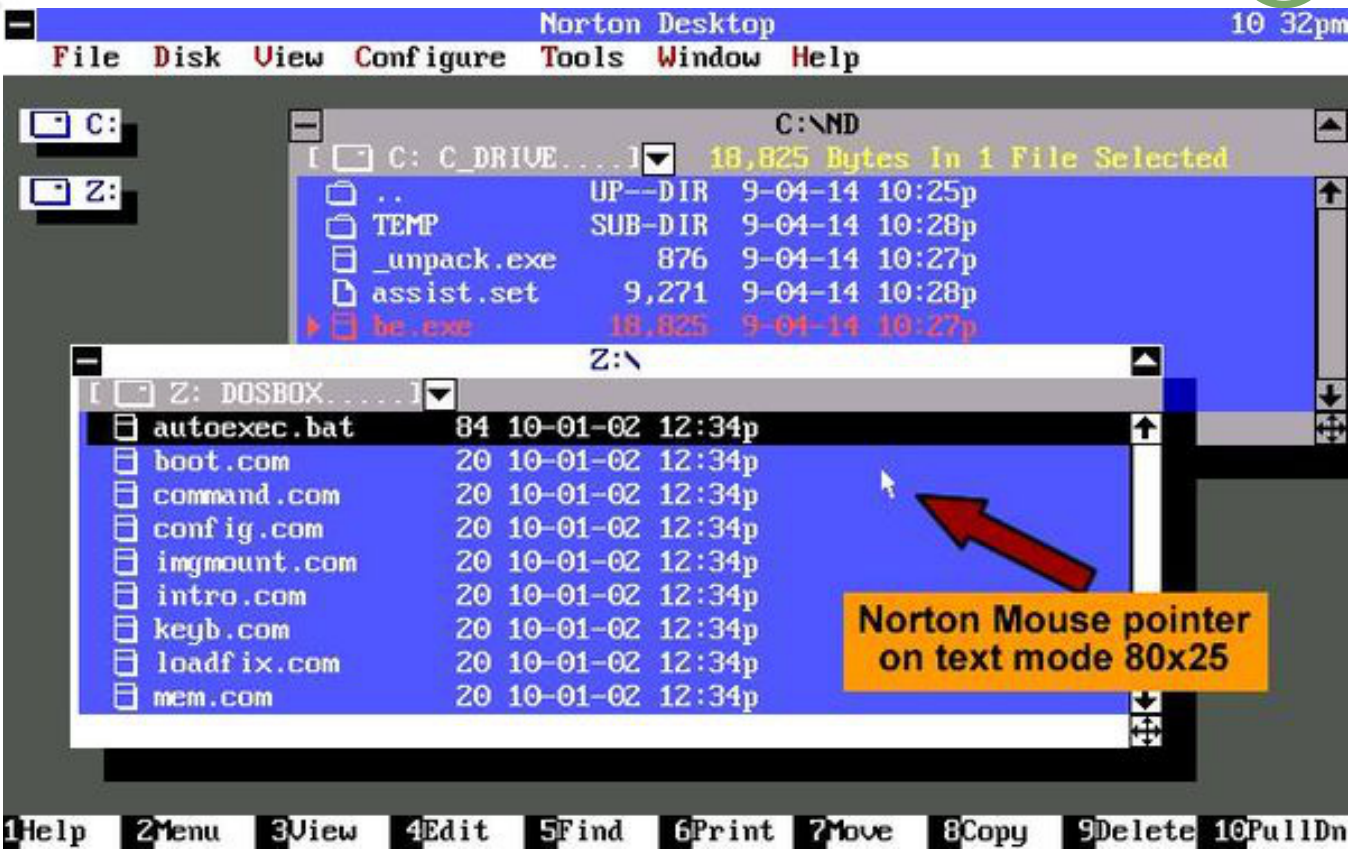
Now you will say: "Well! Just draw the shape of the arrow by setting the appropriate bits in BitScreen and BitMask to have the arrow also in text mode...".

The answer is: NO! Or at least part of it...



Actually redrawing the related parts (BitScreen and BitMask) we'll have our little arrow instead of the rectangle, but we'll encounter some problems.

In text mode, each character occupies a space of 8x16 pixels and the mouse has these dimensions, so any movement of the mouse is subject to these measurements: 1 step to the right/left equals 8 pixels of displacement.



1 step up/down equals 16 pixels.

In practice the displacement is always one cell (8x16) at a time and not one pixel (1x1) as it happens in graphical modes.
When the pointer overlaps a character, the character will not be visible because it is completely overlapped by the mouse cell.
How to solve it then? How to make the pointer move smoothly, one pixel at a time, and how to keep the characters below from disappearing?
To these questions there is a solution; artifact, contrivance, witchcraft or voodoo magic.... Call it what you will, but it exists!

TO KNOW

As already described, the pointer in text mode 80x25 has size 8x16 and each right/left shift is 8 px at a time, while it is 16 pixels up/down.
Actually the 33h service register of the mouse always reads one pixel at a time, but waits until 8 or 16 pixels are reached before actually moving the pointer to the required position when using the mouse.
So, using this service, we can find the exact coordinates in pixels of the pointer even if we are in text mode.
Now to move (or give the illusion) that the pointer moves one pixel at a time, we need to create a function that redraws the contents of the mouse cell at each pixel move in the following way.
Draw in the bitscreen the classic little arrow.
Draw part of the background at the pointer in the BitMask but always around the bits of the dart shape.
This must happen with every px shift during mouse movement on the screen.

Taking in consideration these 3 points, we can realize using good assembly code, this peculiarity adopted by Norton products that so much surprised us giving the sensation to be in graphic environment, when in reality we were in the 80x25 text mode.

After several tests and lines of code, I made another library that I obviously included in the TPx-Dev framework before releasing the full package ver. 8.0.7.

You can find the video that shows this feature in the post on RetroComputer Planet Italia: https://www.facebook.com/groups/retrocomputerplanet/posts/3279311238951300
I remain available for any questions, curiosity or explanation.

The Appointment *(for C64 and beginners)*

by Eugenio Rapella

Paola and Francesco have made an appointment: the first to arrive at the agreed place will wait for the other for no more than 10 minutes after which they will go about their business. If both arrive between 12 and 13, independently of each other, what is the probability that they will meet?

Why not send a WhatsApp message when you are at the agreed meeting location?

Because this is a problem proposed well before the appearance of Internet and cell phones (I have under eye the text of the problem in Gnedenko's classic "**The Theory of Probability**" published in **1969**; it may well be that the problem is even older...).

With a quick search on the net, we can find the solution, but, if we want to do our own thing, we have two ways: use some notion of Calculus of Probability (and we'll see later how) or... rely on our beloved C64.

It's only seven instructions:

```
10 input" how many simulations ";ns
20 for k=1 to ns
30 x=rnd(1)*60
40 y=rnd(1)*60
50 if (abs(x-y)< =10)then a=a+1
60 next
70 print:print" frequency obtained ";100*a/
ns;" %"
```

The idea is to simulate the situation many times and see how often Paola and Francesco manage to meet: the frequency with which this blessed meeting will happen will tell us, roughly, what is this probability (it is a micro-example of "stochastic simulation").

Instruction 10 requests the number of simulations to be performed (variable 'ns'). The cycle from 20 to 60 is repeated precisely ns times: in each simulation the function rnd(1) generates a random number (pseudo-random, to tell the truth) between 0 and 1 that, multiplied by 60, gives a number between 0 and 60 that represents the time of arrival (number of minutes after 12) of Paola (variable x) and Francesco (variable y), or vice versa.

If the absolute value (function 'abs' in the Basic of the C64) of the difference of the arrival minutes of the two lovers does not exceed ten minutes, the meeting takes place and the variable 'a' (initially equal to zero) is incremented by one unit.

At the end 'a' contains the number of times the date hit in the 'ns' number of simulations run. The frequency with which the thing occurred is a/ns and 100*a/ns is the value in percentage form.
Before you put your C64 to work, try choosing the answer from these alternatives:

(a) The required probability is about 30%.
(b) The required probability is about 33%.
(c) The required probability is about 36%.
(d) The required probability is about 39%.
(e) The required probability is about 42%.

For the results to have any reliability, the number of simulations must not be too small. Although the Commodore's Basic interpreter is not exactly a splinter, we can run several experiments with 300, 500, 1000, 1500 simulations and discover the correct alternative.

And now... some math.
The proposed problem can be tackled using "geometric probability" (not "geometric distribution", which is something else). Let us consider, for example, a segment AB and let us denote by M its midpoint. Let's now imagine to choose "at random" a point of the segment: it makes sense to think that the probability that it belongs to AM is ½, even if the famous "favourable cases" and "possible cases" of the classical definition are ... infinite.

Thus, referring to the square in the figure, the instant of Paola's arrival can be associated with a point of the segment OA (point O if she arrives at 12 o'clock, point A if she arrives at 13 o'clock), while the moment of Francesco's

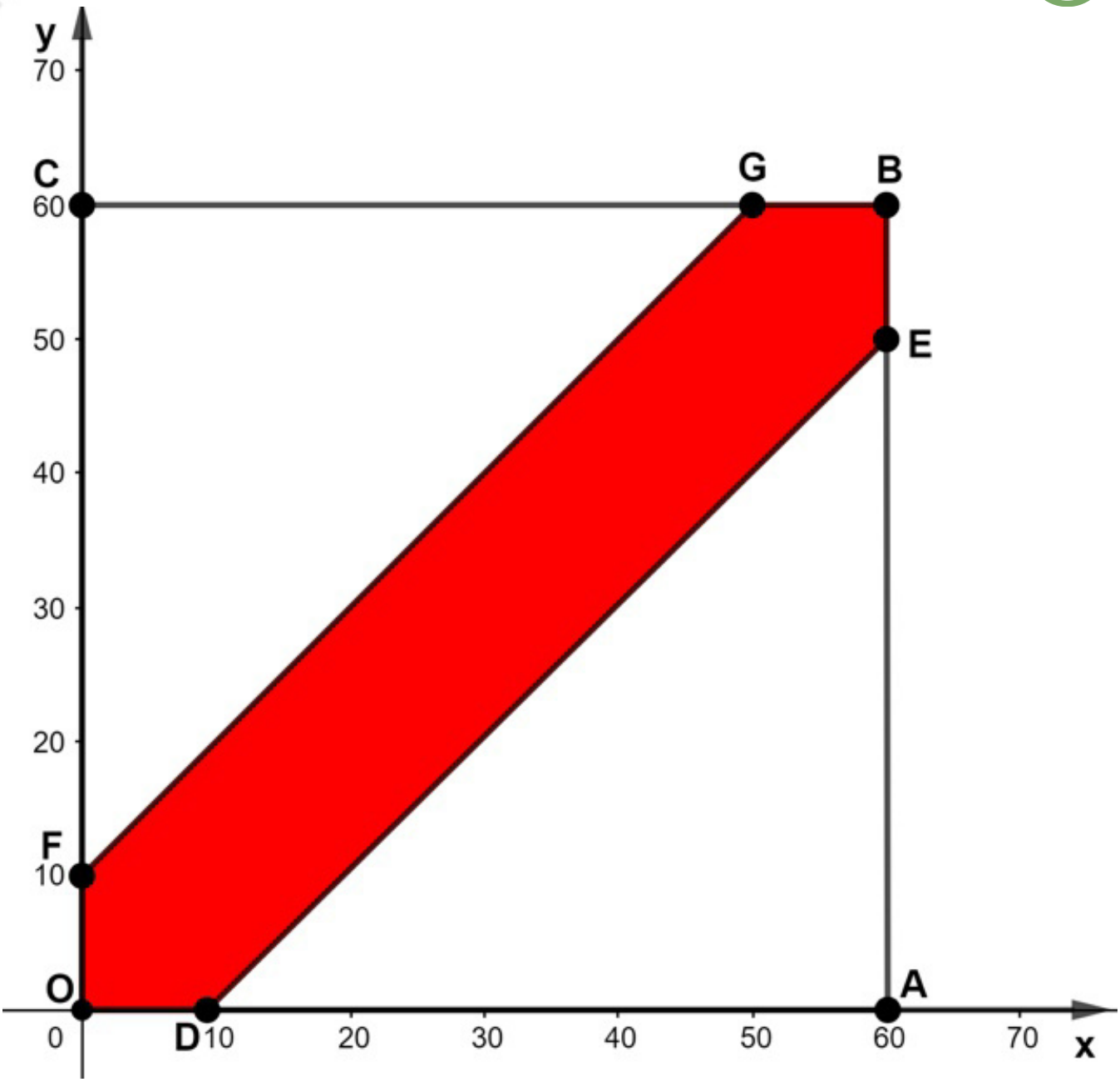


Fig. 1 - Geometrical probability

arrival is represented by a point of the segment OC.

Each point P of the OABC square is identified by a pair of coordinates (X,Y), between 0 and 60, and each P represents a possible pair of arrival times.
What are the points of the square that are "favorable" for the match? They are those for which | Y - X | ≤ 10. This means that Y - X must be between - 10 and + 10 so Y - X ≤ 10, i.e. Y ≤X + 10 and also Y - X ≥ - 10, i.e. Y ≥X - 10. It would take a bit of analytic geometry here, but it shouldn't be too difficult to realize that the points of the square that satisfy these requirements are those of the ODEBGF hexagon.
At this point, the problem becomes: if you choose at random a point of the square OABC, what is the probability that it ends up in the hexagon? Applying the "geometric probability", we must calculate the ratio between the area of the hexagon and that of the square.
The area of OABC is 60 × 60 = 3600.

The fastest way to calculate the area of ODEBGF is to subtract from the area of the square that of the two (equal) triangles DAE and CFG each of which is worth (50 × 50)/ 2 = 1250.
So, the area of the hexagon is 3600 - 1250 - 1250 = 1100 and the required probability is 1100/3600 = 11/36 = 0.305555... = about 30.55 %.

Isn't that the value our trusty C64 was intended to suggest?

RetroFighter engine for Commodore 64 - pt. 2

by Gianluca Alberico

Welcome back to a new article about my retro fighting engine called RetroFighter. In this article I will explain some technical aspects of my engine and talk about future developments around this project.

Project status

The engine is almost 100% complete. Lately I've been reviewing some technical aspects of the general gameplay of the combat between two players and, consequently, I decided to improve it introducing some very interesting features. For those who listened only now, the engine is conceived as a cross-platform library written in C and ASM and, when it will be completed, it will be possible to integrate it in any retro computer project, mainly C64 and in the future also Amstrad and ZX Spectrum.

The library is divided into two parts: a hardware-dependent part that implements in ASM the critical routines that need the highest speed of execution such as sprite management, mathematical calculations related to collisions, multiplexing and so on, and a hardware-independent part that simply implements the update of the state of the combatants in a virtual battlefield. I wanted to structure the library in this way to allow a high degree of flexibility in choosing the method of rendering entities on screen. In fact, being the management of the sprites and the management of the session of combat separate, it is possible to implement the first one in whichever way the programmer wants, without being bound to use for strength a specific technical solution. However, the library provides its own implementation of sprite rendering during the game session to fully exploit the graphical features of the engine itself.

Character File Structure

Developing a fighting game that has the features like SNK vs CAPCOM certainly isn't an easy feat. The heart of a fighting game is the descriptive structure of each character and the meaning of each of its internal fields represent its potential. In a fighting game, each character is described by a collection of movement sequences, can receive joystick/joypad movement commands from the player, can move on their own thanks to AI, can draw from a set of predetermined frames, can throw objects or energy projectiles towards their opponent, and so on. For each of these aspects, I had to define a separate file in order to make the engine flexible and open to the implementation of very different fighting game characters. Until some time ago, these files were text files and so it was possible to edit them with any editor like Notepad++. Obviously, during testing, the same files are compiled, through command-line tools created by me, in binary and in a format usable by the engine code.

Imagine then having to define each character with a collection of text files (5 to be exact, now there are 7) and, for some of them, you have to imagine how the sequence of movements will come out before compiling and testing it in VICE. Since there are 13 characters in the game, I found myself creating and editing 65 text files, each with its own syntax. I admit, it's not exactly a light task: let's say that at the end you feel a bit like Pasquale Baudaffi in the final scene of the movie "Vieni avanti cretino" inside the IT factory. :D

Joking aside, this method of development is certainly fast, at least in a first phase, but later, when you start to insert other elements in the engine and then increases the complexity of the text files, it begins to become tiring and confusing and you realize how it is necessary to develop a tool with a graphical interface that allows you to edit data more easily and maybe even (why not) to preview the result of the changes made to various files, especially those related to animations.
And that's why I started creating a new UI tool called RetroFighter IDE.

RetroFighter IDE

The application is currently written in .NET Framework and it is therefore possible to run it only under Windows

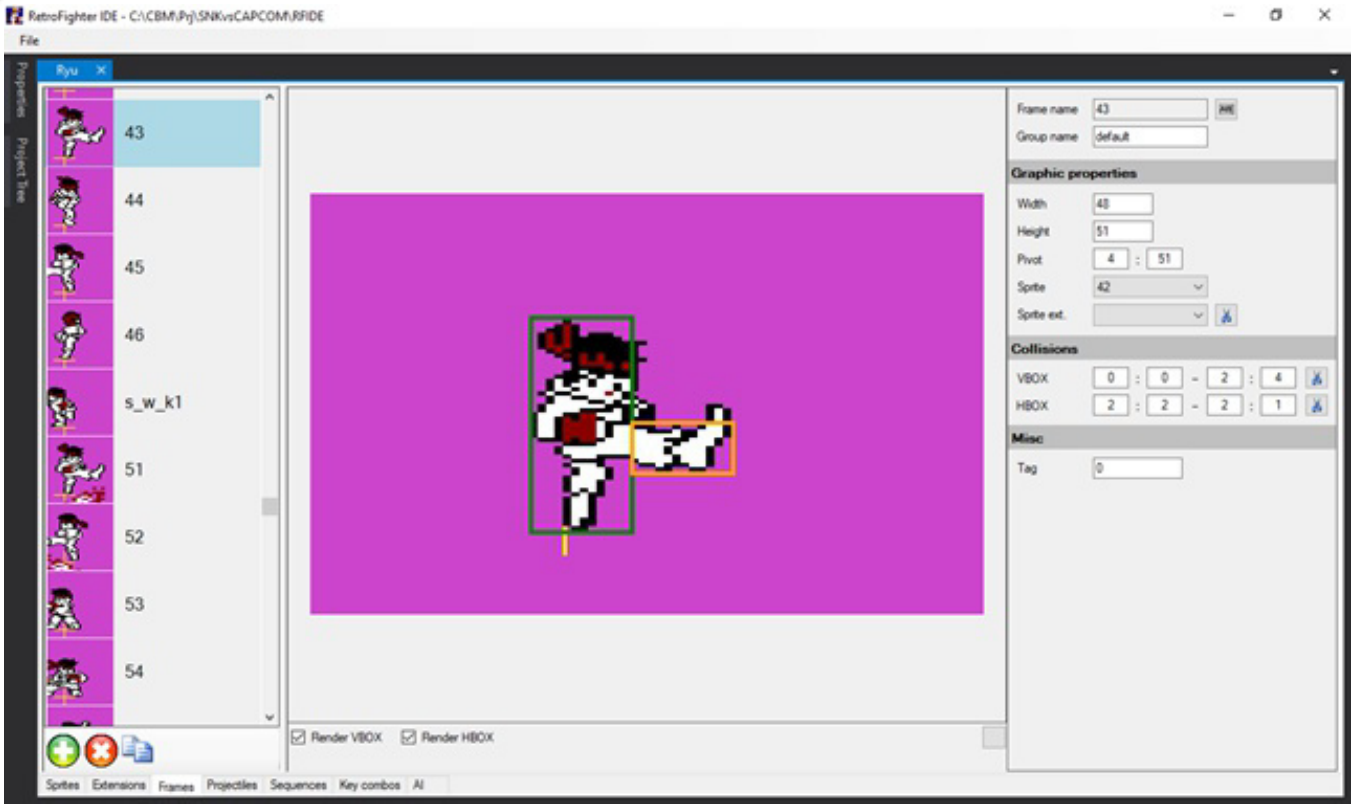


Fig. 1 - Graphical user interface of the IDE: Ryu frame editor

environment. The application would allow to create and manage complete game projects based on N characters for a specific target platform (currently only C64 but in the future the tool will be used to create the same characters also for Amstrad).

For each fighter, 7 different file types can be created and edited:

- Files with the **SPR** extension: these are files that contain the main character sprites.
- Files with **EXT** extension: they are files that contain additional sprites that you can "hook" to the player's main ones to produce particular graphic effects on the character.
- **FRM** extension files: these are files that contain the actual frames of the character, and are a combination of the main and additional sprites. Frames are also the only objects that are actually used during the execution of motion sequences.
- Files with the **PRJ** extension: these are files that contain the graphical form and behavior of any projectiles that the character can launch.
- Files with the **SEQ** extension: these are files that contain all the character's movement sequences, such as the standing sequence, jumping, weak kick, special moves, etc.
- Files with **KEY** extension: these are files that contain the associations between player input (intended as sequence of joystick movements) and character movement sequences.
- Files with **AI** extension: these are files that contain the character's behavior when the character is guided by the CPU.

Each fighter, at the moment, can be individually exported into binary files that you can try within the engine. Of course, it is also possible to export all characters in bulk.

The purpose of this application, however, is not only to create and edit the various characters. In the future it will be expanded and turned into a "hybrid" tool, similar to SEUCK, to create complete fighting games, so let's say a BEUCK (Beat'Em Up Construction Kit, sounds good). :-)

Obviously it will be possible to exploit the application both to create projects with custom features using directly the engine functions and to create projects with generalized features in SEUCK style without having programming knowledge.

Sprites and frames

In RetroFighter the handling of character graphics has

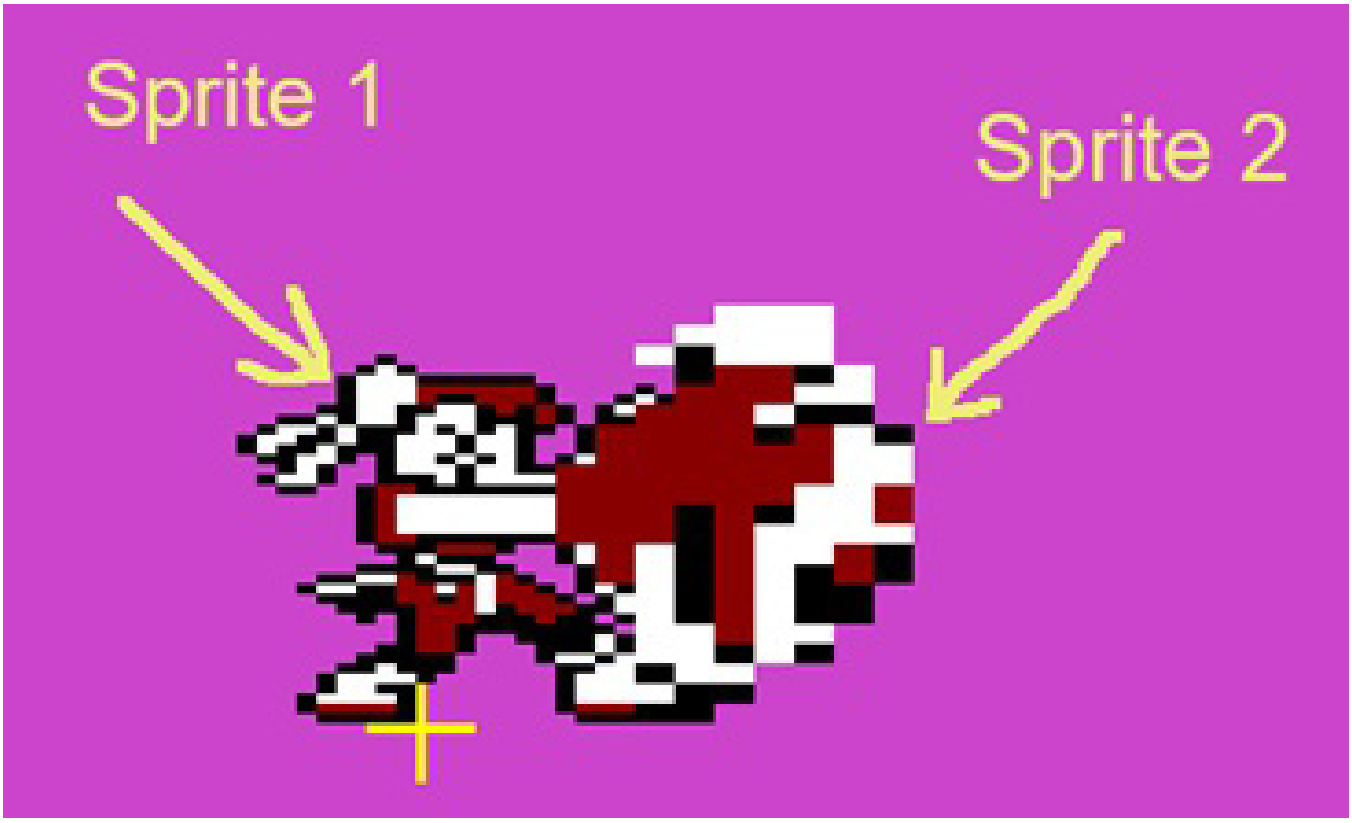


Fig. 2 - Structure of a frame

been generalized. First of all, in my engine a distinction must be made between sprites and frames. A sprite is a two-dimensional figure of variable size that can be used to render any part of a frame of a character. A frame is a "collage" of up to 2 sprites and represents the actual frame of the character.
This structure allows to define very flashy frames reusing more sprites at the same time without occupying other memory and to define particular animations like the one in fig. 2.

The sprites that you can compose are divided into two distinct groups: main sprites, which represent those related to the body of the character (sprite 1 in the figure), and extension sprites, which represent secondary sprites (sprite 2 in the figure) that you can "stick" to the main one. For the C64 platform, the engine currently allows to define, for each character, 128 main sprites and 15 extension sprites. A main sprite can have a maximum size of 48x63 pixels, while an extension sprite has a fixed size of 24x21 pixels, which can be expanded horizontally and / or vertically via hardware (in Figure 2, the extension sprite is created by setting the flags "double width" and "double height" that allow the VIC2 to double the size of the pixels at runtime).

SNK vs CAPCOM

I'm currently using this IDE to improve the quality of the character animations and to complete the missing sequences such as the special moves/supermoves of each fighter. As I said before, the sound part will be the last to be developed and, unfortunately, it will still take some time, so I think that the final version of the game will see the light not before September.

Until next time

In the next article I will talk about how to create characters within the IDE and other technical details about the RetroFighter engine.

Reorganizing the contents of an array in random order

by Gianluca Girelli

INTRODUCTION TO THE CODE

During the development of 'Chars' Attack!', an educational game that will soon appear on PPA, I found myself in the situation of scrambling the order of the elements contained in an array that acts as a database. This operation, apparently trivial, put me in front of programming problems that I hadn't faced for years and that required some imagination and creativity to be solved.

After spending some time in amusement, I remembered how I had faced a similar problem many years ago, during the Industrial Computer Science course at ITIS. Once I found the answer, I thought that illustrating the procedure could have a good "didactic" value for our readers. For this reason, I propose here my solution that, as always, may not be the most elegant or efficient one, but it is a solution that works; I hope therefore that it can serve at least to stimulate your curiosity and desire to do.

The following code has been developed and tested on the C128 in 80 column mode (both real and simulated hardware) but can be quite easily converted to C64 BASIC 2.0 for those who might need it.

A FIRST LOOK AT THE PROBLEM

Let's now get into the meat of the code, and the reasoning behind it, by providing a little bit of preliminary context.

For those who don't know, some months ago I decided to develop a game that could help to learn the Japanese alphabet 'katakana' using a mechanic similar to a software for VIC-20 of the early 80s. In this product, designed to teach the neophyte the rudiments of typing, characters and words moved on the screen and were removed only if typed correctly in a special input/output bar. Borrowing this mechanic, I designed a data structure composed by a series of matrices and vectors, basically hosting the sounds of the katakana alphabet and a series of meaningful words to compare with once learned the basic characters. The matrix of words, containing their versions in Japanese and Latin characters, is virtually divided into "lessons" designed to memorize homogeneous blocks of sounds, for example: a, e, i, o, u; ka, ke, ki, ko, ku and so on.

The game foresees that it is necessary to pass a lesson before going on to the next one, but it is evident that if the syllables should always occur in the same order, a lesson could be passed even without any effort: in other words, by continuously following the sequence a, e, i, o, u, varying only the initial consonant (e.g.: sequence "ka", sequence "ta", sequence "ra" etc ...).

At the suggestion of the editorial betatesters I have therefore implemented a mechanism to ensure that, at least in the learning phase, the characters (in fact the syllables) that represent the sounds, occur randomly.

To better understand the following code, keep in mind that:

- I've created an ad-hoc database ("wm$(x)"), composed for simplicity by only one monodimensional array (only latin words, rows from 1330 to 1410);
- in the game, the variables "c1%" and "c2%" point respectively to the beginning and to the end of the current lesson (lines 1420-1430). In our case I assumed that the lesson was composed of a maximum of six words, which obviously always start from index "1" (the complete game contains instead 107 words, making a total of 24 lessons!).
- the array of strings "s$(x)" has the task of preserving the initial data, so that you can restore the original sequence of "words" when you exit the routine;
- the numeric array "s%(x)" simulates the BASIC implementation of the "set type" typical of the Pascal language, and is used to support the process of random "extraction" of elements and their reassignment to the database;
- the instruction "dim x(y)" (with "y" integer number) creates an array of "y+1" elements starting from index "0". For simplicity's sake, even if it is inefficient and makes us "waste" a little bit of memory, the first element will be linked to index "1", the second to index "2" and so on.

A LITTLE THEORY

Suppose you want to play a game of cards and you need to divide the deck among several people. Obviously you take the deck, shuffle its contents, and pass the cards among the players. This operation is made trivial by the fact that every time you draw a card it is physically removed from the deck, and therefore there is no problem to draw it again.

Now suppose you have 6 different objects, numbered from 1 to 6, and you want to put them in a causal sequence by rolling a die. Each number on the faces of the dice has the same probability of coming up and, in the long run, all numbers will be drawn equally. However, in the short term, the same number may come up an indefinite amount of times. In itself this is just a nuisance that slows down the sorting operations but, since the objects are physically removed from the initial sequence and repositioned in the random one, if we realize that the number has already come out we will just throw the dice again, certainly not to move the object again. But how to simulate such a behavior when all the elements, both objects and numbers to be extracted, are virtual?

In Pascal the operation is very simple and works like this:

- you define a data type "set" with a syntax of type:

```
var
  Set : set of 1..6;
```

- we simulate the dice throw with a special instruction (in BASIC "rnd(x)");
- we check if the extracted number is a "new" number (in the sense of never extracted before) with a syntax like:

```
if i in [1,2,3,4,5,6] then ...
```

and run the appropriate code accordingly;

- a special operator is used to remove the number from the set. At this point we have physically removed a certain element (e.g. "3") and therefore, if it were to be extracted again, the negative result of the instruction "if i in [1,2,4,5,6] then ..." would give us the certainty of no longer operating on the number object "3".

CODING

To simulate such behavior, I then created the support array "s%", sized with seven elements (as mentioned, the one corresponding to index "0", is ignored), which is initialized to "0" and subsequently filled with "n" elements, depending on the result of the instruction at line 1430. Note that the "rnd(1)" instruction generates a real number between "0" and "1"; the result of c2%=int(rnd(1)*5+2) is to obtain an integer between "2" and "6" (maximum number of words per lesson). Therefore we will always have at least two elements, otherwise the whole "scramble" operation would make no sense.

Once we have decided how many elements we have to reorder in a causal way (line 1050), the first operation to do is to back up the data; then, starting from the first element of our database and as long as there are elements in our "set", we extract a causal number and, if it has not already been extracted, we copy the n-th element of the holder inside the original database.

An example will help us understand better. Suppose we have drawn the number 3:

- the code takes s$(3) and copies it to wm$(1), then overwrites s%(3) with the value "0";
- a new number is now extracted: if it is "3" again the program immediately exits the "for ... next" ;
- if the extracted number is different (say "5"), the code takes s$(5) and copies it to wm$(2). s%(5) is, in the same way, overwritten with "0".

At this point the question, someone said, arises: how do we know if we still have elements to extract or not, since BASIC doesn't have a "set" data type?

It's very simple: just sum, for each iteration, the elements of "s%": since, as we said, every time we extract a word from the support array (the string array) we worry about zeroing the element with the same index in the integer array, if the sum of all the elements is "0" (lines 1210 and 1220) then there are no more objects to assign (counter statement on line 1110).

OPERATION OF THE CODE

In summary, then, our code deals with:

- sizing and initializing support arrays;
- initialize the word array (Note: this part was added to test how the code works, but in the game, it is included in the building data structures section);
- determine the actual number of elements and copy the data into the supporting array;
- shuffle the elements in random order then copy them

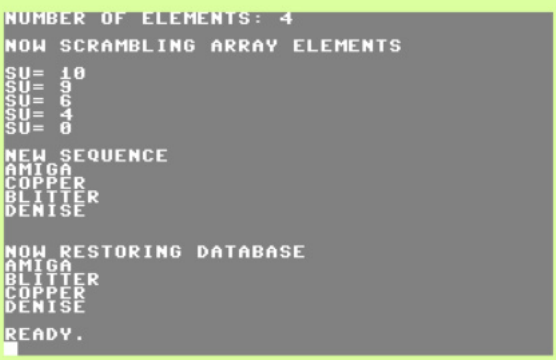
into the class array;
- when finished, print the result, restore the original situation and print it for confirmation.

Restoring the initial condition is essential to allow for ever-new sequences in the learning phase.
In Figure 1 you can see the result of the code, when reordering an array of 4 elements.
Note the "su" (sum) counter which, iteration by iteration, checks whether there are still elements in the set (our "s%" support array) or not.

CONCLUSIONS

In today's article we learned the basics of Pascal's "set" data type theory and studied a possible implementation of them in the BASIC v7.0 language of C128. We used this implementation for "game" applications, but obviously the fields of use can be the most varied.
As mentioned, this is not the best implementation but just one of many possible ways to get there. As always, we remain available to readers through the editorial mail box or our social platforms for any further explanations.

```
1000 dim s%(6):rem support array for scrambling operations (counter)
1010 dim s$(6):rem support array for scrambling operations (words)
1020 for i=0 to 6:s%(i)=0:s$(i)="":next:rem init to 0
1030 color 6,6:color 5,2
1040 scnclr:gosub 1340
1050 c%=c2%-c1%+1:rem determines number of elements to be scrambled
1060 for i=1 to c%:rem copies data in support array
1070 : s$(i)=wm$(c1%+i-1)
1080 : s%(i)=i
1090 next:su=0:y=0:print:print "now scrambling array elements":print
1100 for i=1 to 6:su=su+s%(i):next:print "su="+str$(su)
1110 do until su=0:rem empty list
1120 : x=int(rnd(1)*c%+1):rem 1<=x<=c%
1130 : for i=1 to c%
1140 : if x=s%(i) then begin
1150 : wm$(c1%+y)=s$(i)
1160 : s%(i)=0
1170 : i=c%+1
1180 : y=y+1
1190 : bend
1200 : next
1210 : su=0
1220 : for i=0 to 6:su=su+s%(i):next
1230 : print "su="+str$(su)
1240 loops
1250 rem verify array
1260 print:print "new sequence"
1270 for i=1 to c%:print wm$(i):next:print
1280 print "now restoring database"
1290 for i=1 to c%
1300 : wm$(i)=s$(i):print wm$(i)
1310 next
1320 end
1330 rem initialize world (for test purposes)
1340 dim wm$(6)
1350 wm$(0)=""
1360 wm$(1)="amiga"
1370 wm$(2)="blitter"
1380 wm$(3)="copper"
1390 wm$(4)="denise"
1400 wm$(5)="ecs"
1410 wm$(6)="forever"
1420 c1%=1
1430 c2%=int(rnd(1)*5+2):rem 2<=c2%<=6
1440 print "number of elements: "+str$(c2%)
1450 return
```



Running the program

Interview with Illiterate Code Games

by Carlo Nithaiah Del Mar Pirazzini

About the release of Power in Basement (you'll find our review in this issue) we contacted Paolo Pustorino and asked him a few questions about the fantastic Italian collective.

Hi, guys. Let's start with some introductions. Who are Illiterate Code Games?

This is the typical question our lawyers generally answer. Unfortunately, we're three bills behind and it's not appropriate to call them on the phone, so we'll see about doing it ourselves.

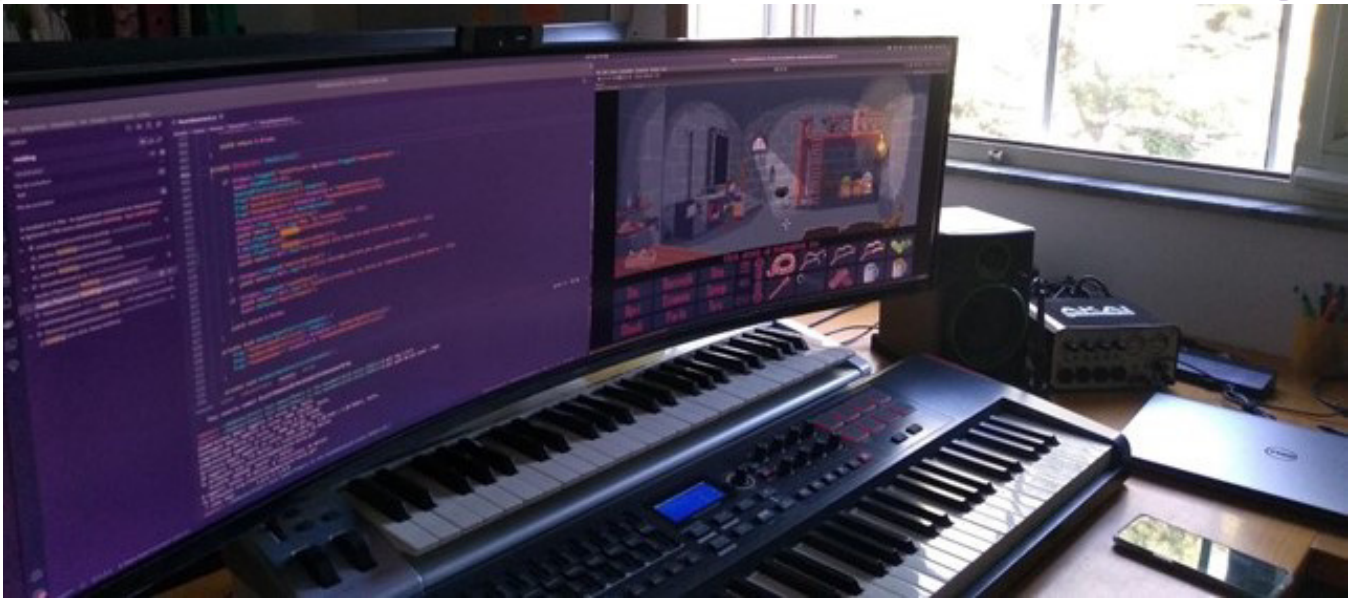
ICG is the name behind which they hide, like bin bags in the night, Dario, Marcello and Paolo: three forty-year-olds who grew up in that era when being a nerd was not yet cool.

We are long-time friends (Dario and Paolo have been friends for a very long time, having practically grown up together) who have decided that realizing the dreams of a lifetime is not so impossible. After having discarded for objective difficulties "Retire prematurely", "Get a date with Winona Ryder" and "Win the casting for the new edition of Horror Night with Uncle Tibia", on the list was "Become authors of point-and-click adventures". And here we are.

Tell us a little bit about your education and how and what you use for the realization of your projects.

We all have or have to varying degrees been familiar with programming (which is mostly what feeds us in real life), but we had never approached creating a video game before 2018.
Paradoxically, the educational component that we think has been most essential is the one related to the design of a work as complex as a videogame. We read a lot about the nature of puzzles in games, we analyzed as rationally as possible the great classics, we lost sight on the Thimbleweed Park dev-blog (or maybe it was another site we lost sight on? Mmmh...). Ultimately we tried to

Paolo in un momento artistico completamente "distrutto" dal lavoro



Momento di Debug di Power of Basement

figure out first how to structure a game that would stand up. At the same time we got used to the tools of the trade. We tried AGS, the timeless old glory that still allows Wadjet Eye to bring on the market its adventures, but we found it too old and (unfortunately) a bit on the way to sunset. So we approached Visionaire Studio, which has big titles like Deponia in its portfolio, getting a tremendous frustration, since it's too much oriented to creatives rather than developers. Eventually, almost by pure chance, we stumbled upon PowerQuest, a Unity-based framework distributed for free by Dave Lloyd of PowerHoof, and we felt very comfortable with it. While Unity isn't the easiest or most consistent of game engines available today, PQ in itself gave us a tremendous boost. So after almost a year of unsuccessful and frustrating experiences with other tools, we were able to start and finish PitB's development without any major hiccups, in the space of fourteen months, with the work of just two people (one of us had a bit too much dose of "real life" during the production period).

One thing we had to learn from scratch was pixel art. After trying unsuccessfully to hire professionals to help us on that front, Paolo rolled up his sleeves during his 2021 vacation and learned how to draw and animate on his own. However, he relied on the work of Marcello, who is capable of drawing for real, on the concept art of most of the environments of the game, as well as on some basic animations that were essential in the production of the first test-release. Talking about tools, from this point of view Aseprite is unbeatable and works very well with PowerQuest which, from a properly organized Aseprite file, can directly import backdrops and animations. A super efficient workflow.

On the audio side, we found that producing proper sound effects isn't as easy as finding a sample and sticking it in the game. Our first attempts made us discover how a "lo-fi" game with realistic sound effects sounded completely incoherent. So we did a lot of chisel work, starting with effects banks found on MIDI keyboards from the 90s, and filling in the gaps with heavily edited recordings resampled to 22Khz (consistent with the capabilities of a SoundBlaster 2 at the time). One thing we learned is to use our imagination to find "source" sounds that can sound completely different when associated with the animations. An example: in the game you hear a string creaking: the source sound is a "close up" recording of a thick piece of rubber being bent and twisted.

Music is an area where we have more robust skills, although more related to the production of songs than soundtracks. The result is certainly improvable but at least we weren't starting from scratch in terms of instrument use and theoretical foundations, and it didn't take long to produce the soundtrack.

In terms of tools, Audacity and LMMS came in handy on

Una schermata di PiB in tutto il suo splendere

this front. Paolo has a more professional musical arsenal, but we preferred to use only freely available software, so as not to create dependencies that would make the work inaccessible to part of the team. Our games are made on Linux platform and for the next ones we plan to use a toolchain entirely Free/Open Source.

Ultimately, we have had to learn a lot of things, but the more we learn, the more we feel we have to learn. You have to give yourself time and find continuity: there are not too many shortcuts.

Power in the Basement is a beautiful adventure that "tastes like home and nostalgia". How was this project born?

First of all, thank you for the "beautiful!" That's a really nice acknowledgement.

Curiously, it started out as a technical exercise. In 2016 Marcello threw it out to Paolo in a coffee break, "Of course it would be really cool to make a graphic adventure". You have to know that Paolo is the closest thing to a steamroller you can find in the order of primates, and he'd had this fixation ever since he discovered the genre at age eleven with "Indiana Jones and the Last Crusade". The rest of the coffee break was enough for him to convince Marcello to embark on the venture.

Paolo already had in mind a seed for an ironic and pseudo-fantasy adventure, with light and playful tones, and together we started working on that subject, occasionally and without a real continuity. Thus "The Lost Prophecy" was born, Will Phail's first real adventure.

The target was very precise: the nostalgic of the "Golden Age". It had to be bread for the teeth of those who were waiting for a "Monkey Island 3a" that (at the time it seemed) would never arrive and that would allow an audience of forty year olds like us to relive a bit the emotions of when he was a child and spent hours in front of a monitor, next to the friend of the heart, to rack his brains to progress that much and find out how the story would end.

In 2018, with the entry of Dario on the project, we started to get serious. Three of us devoted ourselves with a great continuity to design TLP and after a year of work the skeleton of the game (and puzzles) was almost completely defined.

We looked at it and it was clear to us that this was a huge game, probably longer and more challenging than classics of a certain size like "Simon The Sorcerer" or "Monkey Island 2".

We had the project and a great enthusiasm for our ideas. Now we had to put it into practice and we knew the risk of creating yet another "Adventure Game That Would Never See the Light™" was too high. We couldn't even estimate how much effort it would take to make it happen, as we had no real experience.

So we decided to reduce the scope, so that we could experience all the processes of the production chain on our skin. Only later did it occur to us to release the result of this experimentation, to get feedback and make ourselves known.
However, we didn't like the idea of making a "demo": they are often incomplete games, which leave you a bit dry-mouthed. And above all that risk turning into broken promises, if the game itself does not see the light.

The best option seemed to us to be to debut Will (a slightly younger Will than the one we hope you'll get to know in The Lost Prophecy) in an entirely different game designed from scratch: PitB.

What platforms are you working on and in the future do you plan to make games on retro platforms as well?

At the moment we've focused on modern PC desktops (Windows, Mac and Linux), so much so that to make the most of its features, the game is designed in 16:9 aspect ratio. PitB is not really a retrogame, but a game that winks at the nostalgic and ... well, wants to look a lot like the memories we have of those old games, but taking advantage of the good of modern technology. Probably to the readers of this magazine this seems a bit of an affront! :D

However, we haven't yet addressed the idea of porting to mobile devices, which P&C get along quite well with. That's a channel that would give a lot of exposure to our games and it would be a shame not to get there.

Regarding retro platforms, if you're referring for example to what Cosmic Void guys are doing with Blood Nova (releasing a native DOS version), that's not in the plans at the moment.

True, it's clear from the feedback we've received for PitB that we've struck a chord with many retrocomputing enthusiasts and it would undoubtedly be fun and interesting to target a platform like DOS or Amiga, but it would take a lot of time and as long as we're a small handful of enthusiasts making games as a "second job", we'll have to pick our battles.

Plans for the future?

Several. Surely the medium/long term goal will be to make The Lost Prophecy. If you think PitB is funny, we can assure you that TLP will raise the bar on all fronts! During the planning process we found ourselves laughing several times at the ideas we were exchanging, which we think is a good sign.

Getting there though will be a step-by-step process. Before we tackle TLP we want to release other games, if for no other reason than to prove repeatedly that we can make things happen. TLP will require resources we might want to crowdfund, and we need a reputation that speaks to reliability and ability to deliver to enjoy trust from the public and not blow a fundraising campaign.

Back to the games we'd like to release: last June we took part in Adventure Jam 2022 with Fabio Guggeri from Gugames and the result (Where Wolf?) was really good. The merit is mainly due to Fabio who is a real volcano, our contribution was more practical than in terms of content. We could repeat the experience though, just to keep us trained.

Apart from the divertissements, we're planning at least two other projects that won't have Will as protagonist

and that will be completely unrelated to PitB's world: Paolo has a subject in the pipeline for a pulp-style adventure (Indy style, to be clear) in which a soldier, in the middle of the Cold War, at first involved in a scandal, finds himself entangled in an international intrigue with a big mystery to solve. Dario, on the other hand, has in mind an adventure with an irreverent humor in which a programmer, a bit of a bear and an intellectual, has to deal with old, annoying classmates who have come back - as adults - to torment his soul.

We don't know yet if these ideas will see the light of day and in what form, but we still intend to release more games before we bite TLP, for which we'll definitely need production power beyond the three of us and our spare time.

In the pot also boils the transition to another game engine (perhaps even proprietary), which allows us to eliminate Unity and its quirks from our already quite miserable existence. The thing is being studied and as above ... we'll see if time will prove us right.

Finally, since so many have asked, we are working on bringing PitB on Steam and, who knows, maybe even on GOG. We will do our best.

There are other ideas and some possible surprises in the cauldron, especially for those who liked PitB, but we'll have to keep some surprises in the pocket, right? ;)

You have space to be able to give all the information for our readers to follow you.

Wow, thanks!
For now we have a presence on Itch (https://illiteratecodegames.itch.io) and Twitter (https://twitter.com/illiteratecode), but the best way to keep in touch is to join our Discord (https://discord.gg/kKHXY9sVfj). For now our website (https://illiteratecode.games) points to our Itch page but it will soon have its own personality and you may want to visit it from time to time.

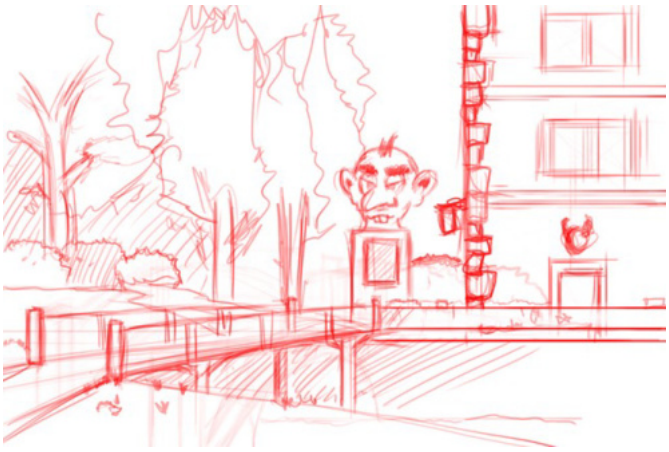
As mentioned in the opening, for any other communication we will provide the contact details of our solicitors, including the IBAN for any donations to cover our defaults.

Thank you for the space you have dedicated to us!

We'd like to thank Paolo and the guys from Illiterate CodeGames for the interview and the pictures they sent us. We publish here a preview of some sketches of the realization of the game in super super super exclusive for RMW and a preview of the Sketch of The Lost Prophecy by Marcello

Sketch of the Chalet

Sketch of PIB's castle



Sketch of Troll's bridge

Margaret Hamilton, the first software engineer

by Alberto Apostolo

In the early days of computer science, women were often assigned jobs related to software creation because software development was considered less important than hardware development. In an article about early women programmers written by Rose Eveleth ("Computer Programming Used To Be Women's Work", published by Smithsonian magazine), it is reported that managers considered computer programming an easy job (like typing or filing paperwork in a drawer). So women wrote software, programmed, and even told their male colleagues how to improve the hardware.

Fig. 1

Margaret Heafield (later Hamilton) was born in Paoli (Orange County, Indiana, USA) on August 17, 1936 from parents Kenneth and Ruth Ester. With his parents and his sister Kathryn moved to the city of Hancock (Michigan, USA) and in 1954 (fig. 1) graduated from Hancock High School. She then studied Mathematics at the University of Michigan and, from 1955, Mathematics and Philosophy at Earlham College (where she graduated in 1958). The inclusion of Philosophy in the curriculum was inspired by his poet father and grandfather a school principal.
While studying at Earlham College, she met James Cox Hamilton and married him on June 15, 1958, after graduating from Earlham College. For a time she taught high school mathematics and French to support her husband in his studies at Harvard. Then she moved to Boston where on November 10, 1959 her daughter Lauren was born (she later became an actress and married billionaire James Cox Chambers). In 1967 she divorced her husband and remarried Dan Lickly in 1969.
In 1960 Margaret Hamilton obtained a temporary position at the Massachusetts Institute of Technology (MIT) to develop weather forecasting software on the LGP-30 and PDP-1 calculators in a project of Professor Edward Norton Lorenz of the Department of Meteorology. At that time, computer science and software engineering were not yet academic disciplines; instead, programmers were trained by gaining experience in the field. His work contributed to Lorenz's publications on chaos theory. In 1961, before he left office, he trained as his replacement Ellen Fetter (1940-), another prominent scientist in Computer Science (fig. 2).
From 1961 to 1963, Maragaret Hamilton worked on the Semi-Automatic Ground Environment (SAGE) project at

Fig. 2: Ellen Fetter

MIT's Lincoln Lab where she was one of the programmers who wrote the software for the prototype AN/FSQ-7 computer (the XD-1), used by the U.S. Air Force to search for possible hostile aircraft for anti-aircraft defense. The SAGE project was an extension of the Whirlwind project, initiated by MIT to create a computer system capable of predicting weather systems and tracking their movements using simulators.

As a new recruit, she was immediately assigned to correct a very complicated syllabus. The previous author had written the comments in Greek and Latin and was delighted with its complexity. Margaret Hamilton was the first person to make it work (printing the answers in Greek and Latin as well). Her commitment to the project led to her being nominated by NASA as lead developer of the Apollo flight software.

Margaret Hamilton joined the Charles Stark Draper Laboratory at MIT, which was working on the Apollo space mission at the time (fig.3,4). Since there were no standardized development methodologies yet, the programming resembled the Wild West. But as the Apollo project progressed, the centrality of software to mission accomplishment began to become clear. At the time, programming meant punching holes in stacks of punch cards, which would be batch-processed overnight on a giant Honeywell mainframe computer that had to simulate all the systems' pre-flight operation.

Margaret Hamilton as a working mother in the 1960s was unusual but had no career problems at NASA. As a spacecraft programmer, she was decidedly radical. She would bring her daughter Lauren to the lab on weekends and evenings (doodle in Fig. 5). While 4-year-old Lauren slept on the office floor overlooking the Charles River, her mother programmed, creating routines that would eventually be added to the Apollo command module computer. People would say:-"How can you leave your daughter? How can you do this?" But she loved the arcane novelty of her work. She loved the camaraderie: the after-work drinks at the MIT faculty club, the geeky banter. At the lab "she was one of the guys."

In 1965, Margaret Hamilton became responsible for developing the on-board software, which included algorithms designed by various senior scientists for the Apollo command module, the lunar lander, and the later Skylab. Another part of her team had designed and developed the system software, which included error detection and recovery software, such as restarts, and Display Interface Routines (aka Priority Displays), based on what Margaret Hamilton had thought of and developed. It was an exciting time and the United States depended on the work she was doing. But sometimes the pressure

Fig.3: Margaret Hamilton next to a printout of the source code written for the Apollo guidance computer.

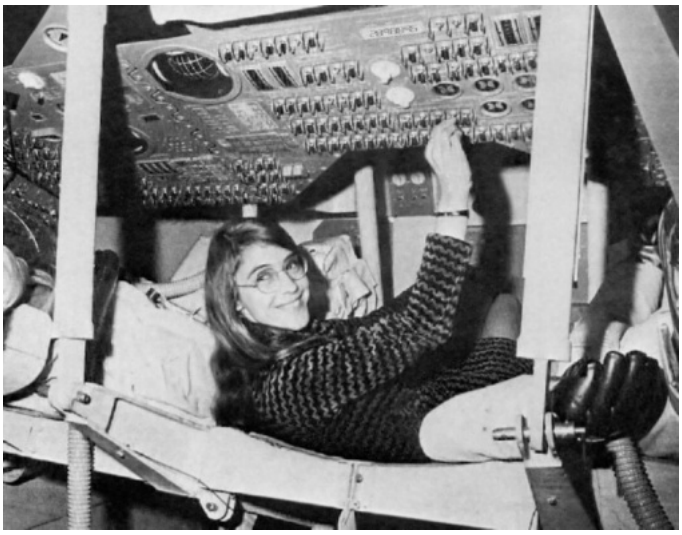


Fig.4: Margaret Hamilton inside a mock-up of the Apollo command module.

kept Margaret Hamilton awake at night. Once, after a late-night party, she rushed into the computer lab to correct a piece of code she had suddenly realized was faulty. She always imagined the headlines, the report of an accident, and her named as the culprit.

The Apollo command module and the L.E.M. Eagle each had the same model of computer (very primitive compared to today's systems). The permanent memory (12,000 words) was made up of ferrite rings (threaded through electrical wires like a tailor's work). Another 1024 words made up the erasable memory. The computer weighed about 70 pounds (about 35 kg) and the first integrated

circuits were making their timid appearance.

The design skills of Margaret Hamilton and her team proved to be the saving grace on July 20, 1969, just minutes before the Apollo 11 mission landed on the Sea of Tranquility. Because of what Apollo software engineer Don Eyles called a "documentation error," the L.E.M. computer began spitting out troubling error messages during that critical phase of the mission. The error messages appeared because the computer was being overloaded by performing a series of unnecessary calculations. In Houston, the engineers knew that, thanks to its unique asynchronous processing, when the software realized it didn't have enough space to perform all of its intended functions, it would run through the error-detection process and then concentrate on the highest-priority task: landing Eagle on the Sea of Tranquility.

After her experience at NASA, Margaret Hamilton founded a company called Higher Order Software (HOS) with Saydean Zeldin in 1976 to further develop the fault avoidance and fault tolerance ideas that had emerged from their experience at MIT working on the Apollo program. Together they created a product called USE.IT, based on the HOS methodology developed at MIT that has been used successfully in numerous government programs, including a project to formalize and implement C-IDEF, an automated version of IDEF, a modeling language developed by the United States Air Force as part of the Integrated Computer Force. The HOS methodology was then used to formalize the semantics of linguistic quantifiers and to formalize the design of reliable real-time embedded systems. In 1980 David Harel proposed a structured programming language derived from this methodology. In 1986 she became founder and CEO of Hamilton Technologies, Inc. in Cambridge, Massachusetts. The company grew around the Universal Systems Language, based on its "development before facts" (DBTF) paradigm for systems and software design.

Together with Anthony Oettinger and Barry Boehm, Margaret Hamilton is credited with inventing the term "software engineering" and defining the discipline in detail. During her career Margaret Hamilton published over 130 articles, proceedings and reports on the 60 projects and six major programs where she was involved, receiving

Fig.5

Fig.6

numerous awards and honors. Certainly, the most important honor she received is the Presidential Medal of Freedom awarded by the President of the United States, Barack Obama, in 2016 (Fig. 6).

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It wouldn't have happened anyway

One day, Lauren (Margaret Hamilton's daughter) was playing with the display and keyboard unit of the MIT command module simulator, nicknamed DSKY (dis-key). As she fiddled with the keyboard, an error message appeared. Little Lauren had crashed the simulator by somehow activating a pre-launch program called P01 while the simulator was in flight mode.

There was no reason for an astronaut to do this, but Margaret Hamilton still wanted to add code to prevent the accident. The idea was rejected by NASA because it was assumed that astronauts (due to their painstaking training) would be perfect and never make mistakes.

So Margaret Hamilton added a note to the program documentation. This note would have been available to NASA engineers and astronauts and it said peremptorily:- "Do not select P01 during flight".

In addition, he would have liked to add a piece of error-checking code to the Apollo system that would prevent systems from going haywire. This all seemed excessive to his superiors. They said it would never happen.

But right around Christmas 1968, on the fifth day of the Apollo 8 flight, astronaut Jim Lovell (who also flew on Apollo 13) inadvertently selected P01.

Margaret Hamilton was in the conference room on the second floor of the Instrumentation Laboratory when the call came in from Houston. The launch of the P01 program had erased all the navigation data Lovell had collected.

It was a serious problem because, without that data, the Apollo 8 computer wouldn't have been able to figure out how to get the astronauts home. Margaret Hamilton and the MIT programmers had to find a solution, and it had to be perfect. After spending nine hours scanning the 8-inch (20 cm) thick program listing on the table in front of them, they had a plan. Houston would upload new navigation data. All would go well and Apollo 8 would return to Earth.

Japan 19th episode: Japan, quo vadis?

by Michele Ugolini

Dear readers, the mutation that has taken place within each one of us, during these last few years shrouded in the preoccupation of the nebulous Covid, is undeniable. A transformation that makes us live through today's profound world mutation in strategic and socio-economic arrangements. A world that is transforming itself, completely. Will we be able to seize the challenges to mutate them into valuable possibilities for improvement? Or will these challenges remain like a woodworm inside our fragile experience, ready to corrode and crumble what our past has made us today in relation to society? The challenge is open. An even more interesting challenge when it bumps violently against super organized systems. Japan is one of them. A multifaceted, tireless, changeable and well adaptable society, a profound elasticity projected towards farsightedness, with the eternal unchanging common denominator of inescapable millenary traditions.

I haven't touched Japanese soil for too many months now, I sincerely hope to land as soon as possible without being forced to join their organized tours. Tours that they created a few months ago for us foreigners. Obligatory tours for any tourist who wants to visit their land.

Only chance to see Japan again. I don't have anything against these tours, but I already experienced this kind of organized visit in my very first trip many years ago and now only by moving through personally planned itineraries I could enjoy a deeper vision of the places I haven't visited yet. However, as I said before, organized tours are nowadays the only way to enter Japan, in addition to the requests of visas for work, study, sport events, political events, collaborations between embassies, military and religious organizations, etc...

In this period of Japanese semi-openness I'm sure that their land has been deeply transformed. Surely the endless shops full of gadgets and souvenirs made in China have closed, for obvious lack of tourists, given the doubtful usefulness of these objects for the natives.

So what news is reaching us from Japan? Japan quo vadis? (from Latin: Japan where are you going)? We begin the article with some unwelcome news. (Figure 1).

https://prtimes.jp/main/html/rd/p/000000410.000034930.html

It's mid-August 2022 news.

Even Genda GIGO Entertainment couldn't save Akihabara arcade #4. From Japan, in fact, comes confirmation that the famous arcade, formerly owned by SEGA, will be closed on September 25th. The name, a few months ago, had been changed and suggested that perhaps there would be a future for this arcade. Unfortunately, the increasingly poor turnout of fans and, above all, the lack of tourism, has

led the Japanese company to close this gaming icon for good. Were revenues perhaps low in relation to the onerousness of management?

The first hints had appeared well before the virus, then when COVID-19 arrived, well, it dealt a deleterious blow to this industry, already relatively struggling due to the ability to play so many, often

pirated, titles on mobile.
The allure of arcades had remained, however, and fans loved visiting the arcades. In August 2020, SEGA closed Tokyo's SEGA Akihabara Building 2, last year's arcade in Ikebukuro. However, the arcade had been moved to the building across the street. Then, as of January, this became the property of Genda, who acquired all of the shares of Genda SEGA Entertainment, renaming the company as
Genda GiGO Entertainment.
The renaming process then extended to all 196 of SEGA's arcade centers, including the Akihabara complex.
As of today only 3 of these rooms will remain.
The fourth hall will close in about a month.
Another piece of news will leave us a little contradicted.

https://www.nintendolife.com/news/2022/04/former-nintendo-hq-hotel-marufukuro-is-now-open

https://marufukuro.com/en/

Remember a few issues ago when I talked about the birth of Nintendo? Nintendo was born producing Hanafuda playing cards. I'll leave you with a link to the in-depth article.

https://www.nintendo.it/Notizie/2021/agosto/Riscopri-le-origini-di-Nintendo-con-l-Hanafuda-2019412.html

Well, who would have thought that one day Nintendo's first headquarters in Kyoto would become a hotel where you could stay? Well yes, that's exactly what it is, and guess what: you can already make reservations for a night. The name of the place is Marufukuro, it's located inside the former headquarters of the video game and console company; hallowed ground for gamers, as it's the exact spot where Fusajiro Yamauchi created the first Nintendo in 1889: the Nintendo Koppai. The Japanese building dates back almost a hundred years (1933), and the company, after Yamauchi's creation, took the name "Yamauchi Nintendo". During its early days, the company began specializing in playing cards famous in western regions known as "karuta" and "toranpu" words clearly visible on a plaque in front of the building's entrance. As Yamauchi Nintendo grew, a new distribution company was born.
called Marufuku to help sell playing cards on a large scale. Hence the name of the new hotel, Marufukuro, with the "ro" at the end suggesting an imposing structure or large castle. In 1959, when the company's name became Nintendo Playing Card Company, its offices moved to larger quarters. The historic headquarters was then remodeled by Plan Do See, a Tokyo-based company specializing in the industry. That's why the hotel at this location was born.
The firm planned to retain many of the original features from the building's heyday, such as the facade. (Figure 2).
Marufuku brand insignia can also be found on the exterior where you can see characters symbolizing "luck" enclosed in a "maru" (circle) to signify "infinity".
Although the building retains many of its original features, it also has modern amenities. Guests can choose to stay in restored rooms in the old or new wing. It will be possible for the curious to learn about Japan's gaming heritage at the hotel. The venue also offers a restaurant, bar, gym and spa. All-inclusive options with dinner, breakfast, minibar, cocktails and light meals in the lounge cost about 100,000 yen (US$875.12) per night for two people.
In addition to this relatively happy news, there's plenty of other news regarding the study of future products in a Japan that is experiencing an era of change and a search for a new identity given the incredible Chinese expansion. For example it is news this August that Ubisoft, Nintendo, Imagineer, SEGA Corporation are collaborating on major developments in motion sensing games. The global market for
motion tracking is a valuable source of in-depth data for business strategists. It provides industry overview with growth analysis and historical and future cost, revenue, demand and supply data (as applicable). The research analysts provide an elaborate description of the value chain and its distributor analysis. Forecast market information, SWOT analysis, Motion Sensing Games market scenario, and feasibility study are the vital aspects analyzed in this report. If you would like to explore more on this topic, I will leave you an interesting link.

https://www.marketinsightsreports.com/reports/06097899905/global-motion-sensing-games-market-research-report-2022?Mode=P68

Another piece of good Japanese news is that PlayStation has sold 581 million consoles to date - that's the sum total of all platforms produced from PS1 to PS5. That's 27 years of history!
This was the era of the Nintendo / SEGA duopoly: manufacturers who had made history with their 8-bit and 16-bit consoles, and who were expected to continue to dominate the scene without being overawed by a company that was making its gaming debut and therefore had no experience. The announcement of 21.7 million PS5s sold brought the tally up to date, based on official figures released by Sony to date, which also include numbers for the PSP and PlayStation Vita handhelds. As it stands,

PlayStation 5 occupies sixth place on the all-time best-selling PlayStation console list. In fact, the top 5 is made up of this amount of millions of units:
1-PlayStation 2 - 155 million
2-PlayStation 4 - 117.2 million
3-PlayStation - 102.5 million
4-PlayStation 3 - 87.4 million
5-PSP - 82 million

Speaking of today's Sony/Nintendo duopoly, after talking so much about G&W, what is Nintendo planning? How is Big "N" experiencing the post Covid world? Is it inserting itself into any specific market or reinventing itself? In May, the NVIDIA company posted a job ad for the position of Game Console Developer Tools Engineer, apparently tied right into the Switch successor.
NVIDIA seeks a candidate with technical, creative and practical knowledge to explore the development and design of graphics tools for game developers for gaming platforms.
Presumably you're talking, between the lines, about Nintendo Switch 2, since Nintendo's platform is the only one using the NVIDIA SoC.
The job ad posted on LinkedIn has no explicit references to Nintendo and the words Nintendo, Switch, Switch 2 or Switch PRO are never mentioned!
It has to be said that the time seems ripe given that Switch was launched in 2017 and over the years has been joined by Switch Lite and Switch OLED, an additional Switch model doesn't seem to be in Nintendo's plans with the company already starting to look to the future, although as mentioned at the moment nothing has been announced. According to analysts, Nintendo Switch PRO will be released in 2024 with an expected unveiling during 2023.
So will the future be one of a wildly successful console, with 100 million units sold, followed by a resounding commercial flop that ends its lifecycle prematurely? Nintendo has already gone through this unpleasant situation with the glorious Wii and the inglorious successor WiiU. So big "N" fears a steep descent after a steep rise. A new failure would be even more serious given that, compared to the WiiU period, there's no longer a handheld system to flank the fixed one. Indeed, in a Q&A to investors, Nintendo president Shuntaro Furukawa says that "the transition to the next hardware is a major concern for the Kyoto-based company."

In the last article a few months ago I explained that Nintendo plans to avoid the hemorrhaging of users by trying to retain its playerbase, through Nintendo Accounts and by using its IPs in areas other than gaming. A good incentive for Switch users to switch to new hardware could be backward compatibility, a concept that Nintendo has applied to several of its consoles in the past.

I enclose an interesting link on the upcoming developments, as well as concerns, of the big "N" house.
https://nintendon.it/2022/05/16/nintendo-vuole-rendere-il-passaggio-alla-nuova-generazione-il-piu-agevole-possibile-255029

During the Q&A at its latest financial briefing, the Big N spoke out on future generations of hardware.
President Shuntaro Furukawa addressed the talk, stressing the importance of Nintendo accounts. With these, in fact, the Big N is "focusing on building long-term relationships with consumers."
In the near future, the company will be releasing more and more games on Nintendo Swtich and gamers will be able to "experience IPs through other non-gaming channels." The response also mentions, "one of our goals is to make the transition to future generations of hardware as smooth as possible."
Let's also remember that such concerns have not exactly been experienced by the big financiers, for example Saudi Arabia! It's news of a few weeks ago that the Arab country continues its investment campaign related to the video game universe, started last year with the acquisition by Saudi Arabia of shares in EA, Take Two and Activision. The deals, conducted through the country's sovereign wealth fund, are now turning in the direction of the Rising Sun. The public investment fund chaired by Saudi Prince Mohammed bin Salman is notable to date in Japan. Reporting the news is Bloomberg, which reports on Saudi Arabia's purchase of as much as 5% of Nintendo's shares.
Saudi Arabia can now boast the title of fifth investor for big "N". A very important step, which confirms the will of Prince Mohammed bin Salman to accelerate the process of diversification of assets part of the investment fund. Recall also that at the beginning of the year the same sovereign fund had purchased 96% of the shares of SNK.
In the meantime, however, the President of Nintendo expects the semiconductor crisis to persist for some time to come. Let's also remember that the US investment and processor decentralization plan for the "hot" Taiwan issue is in turmoil and developing rapidly.
Other concerns, of a very different kind, have been felt in small Italy and, more precisely, in Bari. The lawsuit against two businessmen from Bari, Nicola and Vito Zuccarini, for "infringement of copyright on intellectual property" has begun with the filing of a civil action by the Japanese company Nintendo Co.Ldt. The two, owners of the company Eureka based in Casamassima, in the province of Bari,

specializing in the activity of online and offline electronic commerce of electronic products, would have marketed through a website devices such as game copiers and flash cards "circumventing - we read in the indictment - the technological measures of protection adopted by the Japanese company.
According to the prosecution, the Bari company would have sold at a cost of 25-30 euros devices that, inserted into the Nintendo device, allowed to "crack" all the games, thus accessing them without purchasing them. The affair contested in the trial stems from a complaint made in July 2017 by Nintendo's special prosecutor. After two technical consultations, the Prosecutor's Office requested as many dismissals of the proceedings but the GIP, accepting the oppositions of the Japanese company, first ordered new investigations and then formulated a forced indictment against the entrepreneurs, defended by the lawyer Antonio Maria La Scala. So the Prosecutor Angela Maria Morea signed the decree of summons and the trial before the monocratic Court of Bari began in recent days. They will be back in court on November 10.

Personally I can't support piracy, but I'm a strong supporter for a free access to dated products without legal constraints, and I'm also a firm supporter about the fruition of these videogame masterpieces for the largest possible part of the population, especially at "reasonable prices". Unfortunately, however, the multi-billionaire leaders, creators and distributors of the gaming world, are frequently guilty of cynical and sterile disclosure with approaches often inciting to addiction. Even more frequently an expensive addiction and little compared to the possibility of spending for those who love gaming!
I conclude this article with a hopeful prediction. According to what was released by Nintendo's parent company on the occasion of the announcement of the latest financial results, it is increasingly common among owners of Nintendo Switch to buy a second model of the portable hybrid console.

The curious revelation came during the Q&A session from president Shuntaro Furukawa, who said that the Switch Lite and Switch Oled models are the most popular, as they are smaller and more portable.
In a present where it is still very difficult to find availability of the new generations of Ps5 and Xbox Series X/S consoles given the known shortage of chips globally, Nintendo is in a slightly advantaged position given the easier availability of Nintendo Switch components. This favorable situation has led many users to even own two models of the console, perhaps the Lite model to take advantage of the portable mode for example when traveling or during the daily commute to work; as for the Switch Oled, many users wanted to enjoy in the advantage of a longer lasting battery and a larger, higher quality display. According to Furukawa, about 25% of total Nintendo Switch purchases in the last period came from existing owners. The repurchase affects 30% of all Nintendo Switch Lite sales and as much as 40% of Switch Oled sales. Regarding the Switch Pro aka Switch 2, let's relax, we're talking 2023-2024 if all goes well! Expect a 4k, 120 fps console while still maintaining the hybrid nature of working on the go and in dock mode connected to TVs.

So, dear Japan, quo vadis? Where are you going? How are you transforming yourself? I've been trying to impartially gather as much news that's coming out of the Land of the Rising Sun, but obviously it's been a while since I've been immersed inside the gossip of that land.

The clearest news, of course, are jealously guarded there. Therefore, I greet you and invite you to stay tuned on the next spicy news about the Japanese world post Covid, see you soon!

Burger Time

by Mic the Biker Novarina

Who doesn't know Burger Time, the famous Arcade Game released in Japan in 1982 by Data East, and then converted in the following years on many domestic platforms? Could a game where you have to create juicy hamburger sandwiches not be a worldwide success? In this legendary game we guide the chef "Peter Pepper", who must make the layers that make up various hamburgers fall on trays, walking on them. Have you understood what the game is about? Burger Time saw the light in 1982 for arcades using the pioneering DECO cassette system.

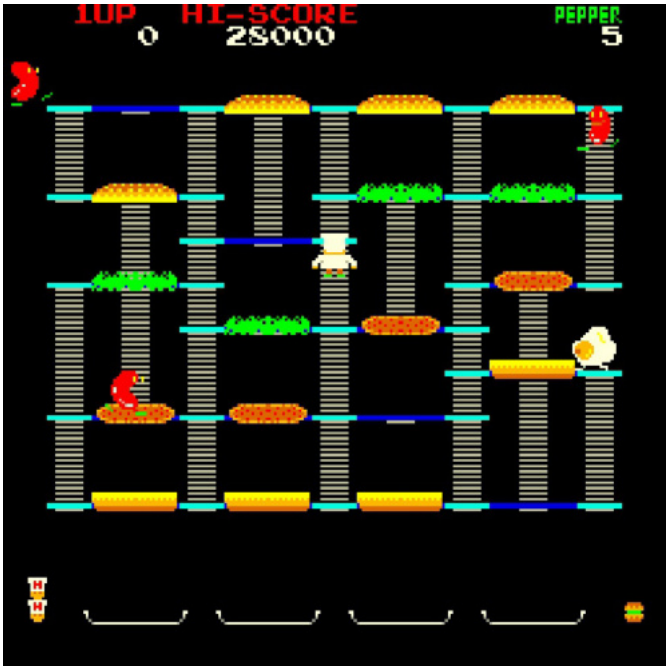
What was it all about? The DECO Cassette System was introduced in 1980 by Data East and was one of the first standardized arcade systems allowing the arcade operator to change the game played inside the arcade booth. The operator would purchase the arcade booth while the games were available on audio cassette tapes. The owner would insert a cassette and a protection code into the machine. When the machine was turned on, the program in the tape was copied to the RAM chip. After a load of about three minutes the game could be played freely until the system was restarted. For those years it was a revolutionary system, but the owners of the system complained about the unreliability of the tapes. These could be easily demagnetized and had average loading times that were considered long.

Let's just say that these conditions would have been heaven for us home computer owners: usually our loading times were close to biblical and practically always the loading error was in the last 7 seconds. Anyway, in Japan the game was first titled Hamburger, but was later renamed Burger Time before being introduced in the USA. In the USA, Data East USA authorized Bally Midway to distribute Burger Time in a non-DECO based version. The two versions of the game can be recognized by the manufacturer's name in the on-screen presentation titles.

Burger Time, the game

The game mechanics was, as typical of the games of the time, as simple as fun: you have to drop on trays, walking on them, the layers that make up various hamburgers. All this while avoiding the characters that hunt them inside the system of platforms connected by stairs. The player's goal is to finish the burgers by controlling the chef, who will have to walk over the ingredients. These are bread, minced meat, tomatoes, lettuce and cheese. The layers are arranged vertically so that they can fall directly on top of each other. When the player has stepped on the entire layer, it falls to the floor below. If the latter is occupied by another layer, it in turn falls to the layer below. When all the layers of burgers have reached the tray below, the burger is complete. When all the burgers are complete, the layer is passed.

While composing the hamburgers, the player must avoid the enemies that roam the screen and follow him relentlessly. These are food items of three types with legs: Mr. Hot Dog (the most common and least dangerous), Mr. Pickle and Mr. Egg. These succulent villains, allow me the oxymoron, can be eliminated or at least stopped in various ways. The most classic system is to temporarily eliminate them by crushing them by dropping the different layers of the



sandwich.

For a while we will be quiet: they will regenerate at the edges of the screen in a few seconds. A more complicated system to block them is to lure enemies on a layer semi-trampled and then finish it off by making it fall. The weight of the enemies will cause the layer to fall a few stories and the enemies will be knocked unconscious for a few seconds. It's a bit risky because you have to trample only half a layer and wait for the enemies arrive behind you. It happens very often, unfortunately, that in the climax comes the classic hot dog break balls in front of and if you have already finished the pepper death is certain.

The player has a limited supply of black pepper, initially three doses, which can be sprayed at short range on enemies to stun them and render them harmless for a few moments. Additional doses of pepper can be obtained by collecting bonus foods such as coffee, ice cream, potato chips. These very useful bonus items appear in the center of the maze whenever a certain number of layers have fallen.

There are six levels of increasing difficulty in the game, with more burgers, ingredients and enemies. Beyond that there are different types of ladder - platform combinations that make it easier to close Peter in dead-end spaces. After the player completes the sixth board, the cycle repeats with difficulty recalibrated upwards. The player loses one life each time Peter touches an unstunned enemy. When all lives are lost, the game is over.

Worldwide success and first conversions

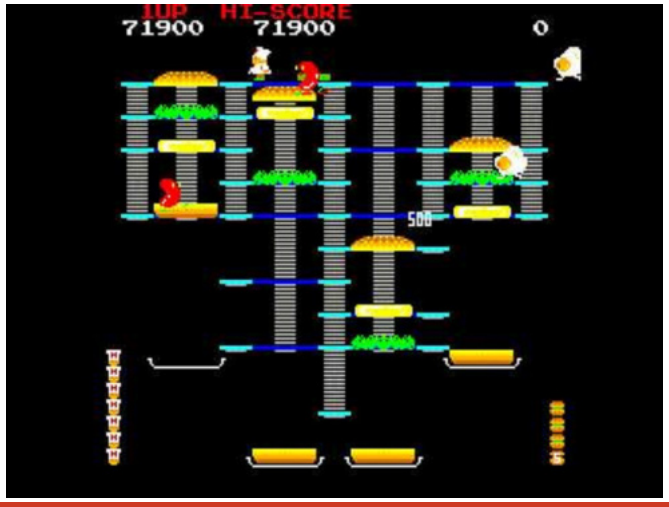
The success of Burger Time made it possible to convert it for several home computers and consoles. Mattel Electronics obtained the rights from Data East and released the Intellivision version in 1983. The game soon became the workhorse of this console. The simplified graphics rendered very well, despite the fact that the greenish hamburger tasted like it had gone bad. Another thing that is immediately noticeable is that the game was redesigned in its entirety. The levels become seven, the number of sandwiches to pack per level changes, and the layout of the platforms definitely changes. Let's say that playing the game even the difficulty is recalibrated towards the easiest. The programmers have preferred to provide a game recalibrated downwards, so at home there is no need to spend coins. The end result is convincing, the game is really beautiful and keeps you attached to the screen. Perfect animations, sound that refers to the original and sound effects reduced but effective.

Atari 2600

Also in 1983, shortly after, came to light the conversion for Atari 2600. The result, already at the time, left a little bitter in the mouth. The graphics were logically simplified but here it seems too risicata. It's a pity because the playability is good and the sound, simplified, does its duty. But the graphics friends here also affect the good playability. In fact, there is often an annoying flickering of the sprites that sometimes makes them squares wandering around the screen. The number of levels here drops to five, probably due to physical limitations of the cartridge. The controls are perfect, identical to the bar version. It's hard to understand what the programmers had in mind when they chose the actions of the buttons on the console: the difficulty button on the right side selects the number of players, the one on the left side acts as a pause.

Mattel Aquarius

It was a foregone conclusion that the company that did



the conversion commissioned one for its ill-fated home computer released in that year. The Aquarius was born already obsolete, to the point that the same programmers called it "The machine of the seventies". A computer that stopped being produced as soon as it landed in the store, becoming famous as the computer with the shortest life of all. The conversion was a real wash. The graphics were quite colorful but very slow, the sound was only a few effects and the game play reduced compared to the original. The only positive thing is that it was produced in so few copies to become a rarity for collectors.

Colecovision

Quite different is the conversion made in 1984 for the Colecovision. The power of the machine allowed to create a graphic compartment practically identical to the original. Only the hot dog enemy had some transparencies used as shades, the rest is an impeccable replica. The controls are identical to the arcade version and the sound is incredibly close. This porting doesn't take into account that you don't spend tokens at home, which is exactly why the difficulty is calibrated on the high end like in the arcade. The levels are six and all designed to corner poor Mr.Pepper. Probably the most faithful porting on the platforms of the time.

Commodore 64

Obviously the Commodore 64 version could not be missing, isn't it? Raise your hand if you haven't had in your hands the fake version called "Paninaro". The conversion was made by Interceptor software, which was criticized for the work done. This incarnation is in fact not one of the best produced. The graphics, considering that we're talking about a C64, is too simple and chromatically flat. The audio compartment is a regret, because the SID could make the sound identical to the original. Unfortunately, the result was ridiculous. But the thing that infuriated all gamers was the fact that every time you died the ingredients all went back to their starting place making the game nerve-wracking. We'd get away with a few games, just because it was in the cauldron of some mixtape we picked up at the newsstand, but it soon ended up in oblivion.

Famicom & Nes

In 1985 it was converted for the famicom and only in 1987 it landed on our market for the good NES. The porting was really good and it was decided even here to make a conservative version of the coin op. The graphics were simplified but very well done and chromatically satisfying. The sound was slightly revised but takes very well the main theme while the sound effects are almost identical. The levels, both in number and layout, are identical to the arcade version, as is the playability.

Burger Time enters the legend

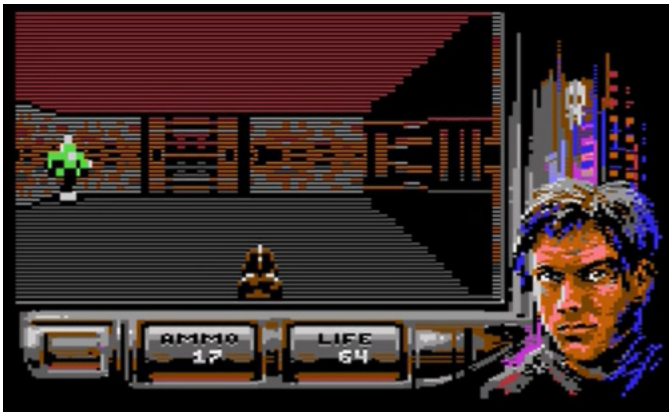
Burger Time was a worldwide success and this still shows, after three decades, how a simple and catchy idea can hold up so well to the passing of the years. Sure, it can be pinned a certain lack of depth and that the levels, after a certain number, are repeated. But it must be remembered that it was born as a game on cassette tape to be loaded in the cabin cruiser. It received, in fact, in 1984, the award of "Best Game of the Year". In the following years many sequels came to light, more or less official but all ready to ride the wave of success of the original game. Just the classic version has been included in almost all the "Greatest Hits" collections for modern consoles, not to mention its appearances on the big screen in masterpieces such as Ralph Spaccatutto and Pixel.

At the Guinness world record level, he's not doing too bad either. On September 5, 2005, Bryan L. Wagner achieved a record score of 8,601,300 and improved it to exactly 9,000,000 on June 2, 2006. According to Twin Galaxies he further improved it to 11,512,500 points on September 19, 2008 at the Challenge Arcade in Wyomissing. The MAME world record was verified by Twin Galaxies on December 2, 2016 as 7,837,750 by Roger Edwin Blair III.

The Red Serpent Invasion (Evoke 2022)

by Marco Pistorio

Greetings to all of you, dear readers of RetroMagazine World. Today we talk about "The Red Serpent Invasion" (Evoke 2022)" a Doom-clone that should be out soon. For the moment it is available in fact only a preview, that is an incomplete version, which promises well, I must add. :)
It's fair to point out some features of this project. It should run on a "smooth" C64, without any expansion, and seems to run at a decent speed as well.



Screen in-game

Previous attempts

It is not the first time that you try to achieve this goal, which is to make a porting of the famous "Doom" for our beloved breadbin. A very difficult task indeed. Why? Because of the small amount of RAM available (64KB) and of the clock speed of the C64 (0.9 MHz), that transform, for example, the implementation of the ray-tracing algorithm, that is the main method used to draw the scene of the game, in a challenge really... well, a "hell" of a challenge. :) A few indomitable people have tried this before. I'll mention a few exits I have memory of, sure to forget some along the way:
- "Mathematica, year 1995 - demo in 2 parts" Very fast especially in the first part, some animated fragments but no player interaction, only precomputed movements.
- "Mood preview v1, 2, year 1996" - looked promising but the 2 previews were never released (at least up to the time of writing) a full, definitive playable version. No music. It was a bit slow and, at times, a bit "jerky", not very fluid.
- "One-Der demo, year 1997 - final part". Beautiful graphics, music, faster than Mood but short, no enemies. Little more than a 3D maze. And so we come to 2022, with the work of the "TRSI" group, which seems the best, at the moment, under several aspects. The preview is playable, the gameplay seems rather fluid and, even if the screen is a bit reduced (probably designed to make it faster filling at run-time) the game is enjoyable.

Intro

Conclusion

I don't feel like now is the time to give scores and/or rate the game. Essentially for two reasons.
The first is that the game has not yet been released in a definitive fashion. Evaluating a preview of it makes little sense.
The second is that I prefer to leave to you the pleasure of trying it and a pinch of "mystery" on my part can only help in this sense :)
Ah, as has been said other times in these circumstances, perhaps it is more similar to another title of ID Software than the very famous "Doom", namely "Wolfenstein 3D". However, it changes a bit in the end. It is more balanced to say that there are elements of both titles.

It only remains for me to say goodbye to you, dear readers, obviously providing the link to download this preview, which is as follows:
https://csdb.dk/release/?id=220409

And hopefully we'll be back soon to talk about this game, in its final version maybe. Greetings everyone!!!

NEW GAME

DOTTIE
DREADS NOUGHT

Year: 2021
Editor: Goldlocke
Genre: Platform
Platform: Super Nintendo
Web: https://goldlocke.itch.io/dottie-dreads-nought

Will we help Dottie and her friend Ernesto in their search for the legendary edelweiss flower?
Yeah, and I'll tell you what, we'll get it done real quick.
Too bad, too bad, too bad ... This Dottie is a game really nice graphically and from all points of view. Easy in the controls, nice sound, nice animations.

In short, there is everything you need to be a true platform game for Super Nintendo, the platform queen of this genre, however ... lasts 20 minutes!
You'll say "but it's a title born for the SNESDEV Game Jam 2021, what do you expect?".
Simply three things: game variety, a real difficulty curve, and at least a few more levels.
It could have been done. Introduce the game to the competition and extend the development maybe adding a couple more worlds and a few different enemies.
Dottie Dreads Nought has everything to be qualitatively very high on the Snes game scale. The graphics are beautifully animated, colorful and fast. The sound is nice and catchy.
That's too bad.

I forgot, the goal of the game is to find the edelweiss flower and to do that you have to explore the levels by overcoming obstacles and using the help of the trusty owl Ernesto (who only moves things).
Too little, too fast, too easy.

by **Roberto Del Mar Pirazzini**

OUR FINAL SCORE

» Gameplay 85%
There is every ingredient for a good platformer. Simple and well-developed.

» Longevity 55%
But it lasts about 20 minutes of gameplay. There is very little variety in monsters and level development. It feels like a great tech-demo.

NEW GAME

EYE OF THE BEHOLDER

Year: 2022
Developer: Andreas Larsson, Oliver Lindau, Ilesj, Mirage e Twofoloer
Genre: Dungeon Crawler
Platform: Commodore 64/128

Unbelievable!
This is the look you'll get the first time you load Eye of the Beholder onto your C64 (or emulator or TheC64). The initial title screen and intro screen are perfect! Everything is perfect. Masterfully recreated by Oliver Lindau (V3to) who is known for doing the best recent graphics on the Commodore (Sonic, Caren and the Tangled Tentacles and many others). But let's start slow.

We all know Eye of the Beholder. One of the most iconic dungeon crawlers ever, developed in 1991 on Amiga and PC Dos by Westwood Associates and published by SSI under the rules license of the beautiful Advanced Dungeons & Dragons, to be precise the Forgotten Realms and the magical city of Waterdeep.
In this ancient and dangerous city, evil has identified itself with the terrible Xanathar, a Beholder, or rather a terrifying intelligent and cruel aberration that often reside in different planes of existence (sooner or later we should pause to analyze the world of D&D, Ad&D and associates). Beholders hate mankind and are extremely xenophobic. Xanathar is not to be outdone and wants to unleash chaos in all the forgotten realms, starting right from the Underdark of Waterdeep.
The player then has the obligation to form a small group of adventurers and launch into the adventure, facing all that is dangerous and devastating in the terrible underground dungeons. And I assure you that in the underdark there is everything. The Drow and their mad magic, the Dwergar, Orcs, Kobolds, and so many other devastating creatures.
In short, if you are fans of the world created by TSR you already know what

we're talking about and this Eye of the Beholder embodied (and embodies) perfectly the spirit and the perilousness. Already from the time of the release on Amiga, there was talk of a possible port. It seemed an absurd and complex hypothesis, but in the years the developers worked in an incredible way also overcoming the limits of the "little" memory of the C64. After a timid attempt in 2006 and 2011, in 2018 the development of what would then be the final version began. Andreas Larson and team opted for a cartridge format to overcome hardware limitations. They started anew and continued on a steady path towards their goal. And here we are in 2022. With a press version to watch, test, admire and play through to the end.

As I said, it's all there. After the beautiful animated introduction you get to the generation of game characters. You can make your own character from scratch or load ready, has been implemented the option to use the mouse 1351, which works perfectly if you use an optical mouse classic PC in emulation or on real hardware. But you can also choose keyboard commands.

These also work well and allow you to immerse yourself in the game completely. Also great is the ability to combine keyboard and mouse, an option that I preferred and that allows you to play quickly by recalling the actions to be done.

The game's graphics are hair-raising. The use of colors is so incredible that you don't think it's on a Commodore 64 and in some places it's even preferable to higher resolution versions on 16-bit machines. The animations of the monsters, the refinement of the details on the walls, the side menus of the characters... perfect!

The C64 version is obviously less fast than the Amiga/Pc counterparts, but is more playable even at a slower speed. C128 support has been added, so you can try the 2Mhz mode which runs nice and smooth.

A feature not present in the original version and that instead has been included here is that of Automapping, something extremely useful for all players. Accessible via the key "M", allows us to view exactly our movements in the dungeon.

Beautiful the option that in emulation C128 of Vice allows us to have two screens. The first for the game and the

OUR FINAL SCORE

» Gameplay 99%

Brutal but it is AD&D. It has everything that was present in the 16-bit versions. A masterpiece on Commodore 64.

» Longevity 95%

It's a role-playing game inside a dungeon. Virtually endless possibilities for combining different elements in the party, and the difficulty will glue you to the screen.

second with the automap. Beautiful. Old gamers like me will remember how brutal Eye of the Beholder was. Well, so is this version. This is not a game for casual gamers, not even a title for the faint of heart. This is a damn Dungeon Crawler and the Cpu is a villainous Power Master who will try to tear you apart from the first fight with Kobolds. The moves, actions, spells and cures will be planned at best and even the generation of characters is essential. A balanced party should have within it a strong warrior, the cleric (I prefer dwarven), a good wizard with a lot of enchanted darts and a thief who allows you to force locks and avoid traps. Indispensable elements. So forget fantasy things ... we are inside the world of Dungeons & Dragons, the nice monsters are not there and death is around every corner.

This kind of difficulty doesn't affect your desire to play through to the final confrontation in the slightest. The team of Larsson and co. have created a great porting. Eye of the Beholder for C64 is stunning.
As of right now the game is almost ready, just a few notes to fix and it will be made public.

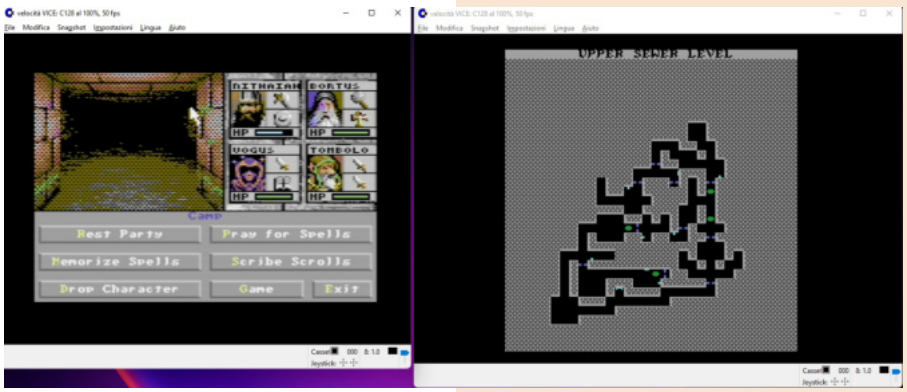
We at RMW can only praise this gem and throw ourselves back into the dreadful Dungeons of Waterdeep, hoping we never encounter a Tarrasque.

by **Carlo Nithaiah Del Mar Pirazzini**

Game requirements

On Original Hardware
Easyflash cartridge or equivalent (e.g., 1541 Ultimate II+)
Mouse 1351 compatible in port II.
On THEC64
Firmware 1.6.1 required for mouse control.
It is necessary that the .CJM file be together with the .CRT file for proper operation.
It is saved using the snapshot function of THEC64.
On VICE 3.X.
Must set the keyboard to "Positional"
Set the control port II to 1351 mouse.
Set the cartridge/IO - Easyflash "Save CRT on disconnection" as active.

The game does not work properly on THEC64 mini and therefore the authors advise against its use.



NEW GAME

LYKIA THE LOST ISLAND

Year: 2022
Editor: Puls4r
Genre: ARPG
Platform: Plus/4
Web: https://puls4r.de/portfolio/lykia

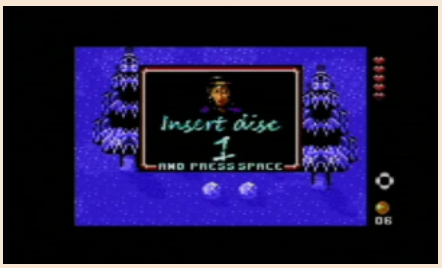
Here we are again talking about Lykia The Lost Island in Plus/4 version.
After having read and known the story of the Commodore 64 version on the Special Issue 38 of RMW (you downloaded it right? - Nith) let's talk about this version for the "264" series computer.

The story is still the same as before, helping Nora on a mysterious adventure that came about by accident.

This version comes with a "smaller" resolution but a large number of colors on screen. You can tell that the team led by Stefan Mader knows the Plus/4 well. There is less "clutter" on the screen compared to the Commodore 64 version and more clarity in some places. Everything also moves with remarkable fluidity.

The audio on TED is less pronounced. The C64 version with the music coming out of the SID chip is far superior.
In terms of gameplay we find the same type of game. It's an action role-playing game inspired by classics like Zelda that on Plus 4 has no competition and effortlessly ranks first in this genre for this computer.

It lets you play it pleasantly and its story engages the player.
If you've got a Plus/4 and want to try out a good title head on over to the site and "download" the game.



Soon will be released the physical version with a manual and gadgets, if I were you I wouldn't miss it.

by **Giampaolo Moraschi**

OUR FINAL SCORE

» Gameplay 90%
Excellent technical compartment that makes it even easier to play the product.

» Longevity 95%
There are no other similar titles on Plus/4, so it deserves a few more points in the rating than the C64 version. It is a title that is a pleasure to play and will keep you glued to the screen.

NEW GAME

ALWA'S AWAKENING

Year: 2022
Editor: Elden Pixels
Genre: Metroidvania
Platform: Switch, X Box One, PS4, Windows, MacOS, Linux, NES
Reviewed version: Nintendo NES
Web: https://eldenpixels.itch.io/alwas-awakening-the-8-bit-edition

It's easy to be captivated by this Alwa's Awakening's aesthetic, music and all, at least if you're adult enough to feel nostalgia for the wonderful time that was the 80s.

Aside from that, AA (we'll abbreviate it for convenience) is an excellent puzzle/platformer centered around three mechanics that require thinking outside the box.

The game is well built around its more cerebral dynamics, making things a bit slower than the typical speed of some new "metroidvania" titles. However, its pacing can sometimes be its downfall. Some of the problems that arise while playing the game are mitigated by the optional settings, but it nonetheless makes the game fall just short of excellence on the NES.

Instead of picking up new weapons and blasting enemies, AA gives you a precarious close-range attack and the ability to improve it by expanding your magical knowledge to gain certain advantages. These magical abilities recover during the early stages of the game or at some specific times. We'll find the green spell that will create very useful blocks to reach points inaccessible by simply jumping, or the bubble spell or more.

Each spell uses the same recharge reserve, so casting a block makes you wait before you can cast a bubble, but the lightning spell, for example, creates a long pause before you can cast anything else. This is an interesting dynamic that is used decently throughout the game to accomplish some challenges.

Overall, I was particularly taken with the clever level design and figuring out how I could use my new powers to get around.

The less direct nature of the abilities gives the game a sort of Zelda-esque quality, especially its second incarnation aka The Adventure of Link. Going back to the slowness talk, it's more about game pacing which isn't so bad if everything is going well, but

whenever you're forced to go back or have to replay a section of the map again, it feels a little slow. Thankfully the game offers some "cheats" to mitigate this problem.

The first of these "tricks" is that when you die, there are no consequences other than going back to the last checkpoint you used. What I mean by this is that you can keep all found items and any exploration that was done without restarting after you die.

The second "cheat" is that the game has a nice "assist" mode, which is accessed in the menu before loading the game and includes the option to reappear at the beginning of the screen where you died. I highly recommend switching to this mode as the default, although it does make the game slightly easier.

The title has a gradual difficulty along its levels except that of the final dungeon, really a continuous massacre and almost nerve-wracking.

The title has been released for numerous next-gen consoles and a wide variety of S.O's since 2017, and it wasn't until August 2022 that it was also released for the NES in digital format.

It works correctly in emulation (tested on MESEN) and also correctly loaded on an everdrive and on real hardware.

Games like AA are the hardest to review, because I love so many things about them, but there are a few elements that didn't bring it (at least in my opinion) into the elite of new productions for the NES.

It offers fairly unique gameplay that you won't find anywhere else, if you like it, don't pass it up and forget about the few flaws I listed. It's a great game that could be perfect with just a few tweaks. All that's left is to wait for the sequel that the developers are preparing.

by **Carlo Nithaiah Del Mar Pirazzini**

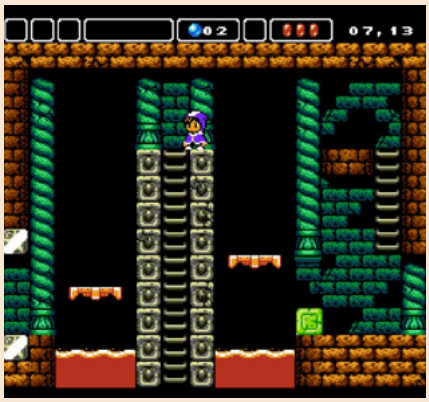
OUR FINAL SCORE

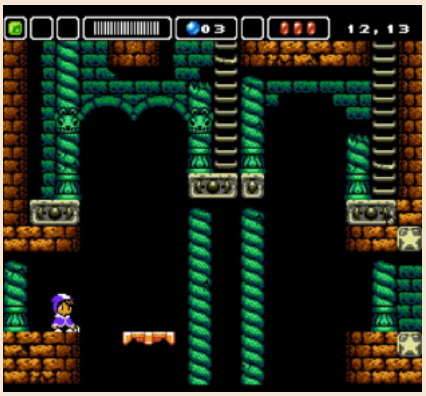
» Gameplay 90%

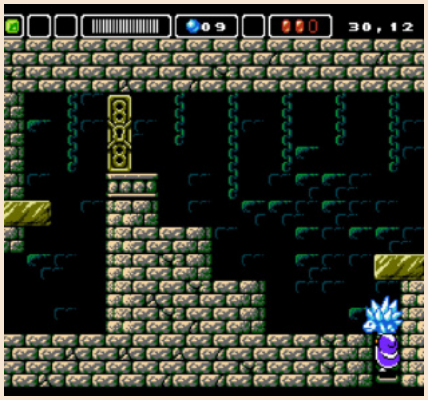
It is simple and well developed. The assistant mode is a pleasant discovery that will really help.

» Longevity 80%

Balanced difficulty until the final dungeon. Devastating! Some dynamics could have been developed better.







NEW GAME

KNIGHTS & SLIMES

Year: 2022
Editor: Monte Boyd
Genre: Platform
Plattform: Commodore 64
Web: https://monteboyd.itch.io/knights-and-slimes

Our kingdom is invaded by Slimes and, like any self-respecting hero, we will have the task of cleaning it up.

Knight and Slimes is a new title for C64 made by Monte Boyd that in 2021 had delighted us with Monster Catcher. It's a single-screen platformer divided into 4 game areas and several levels per area (the levels are random so they are always different).

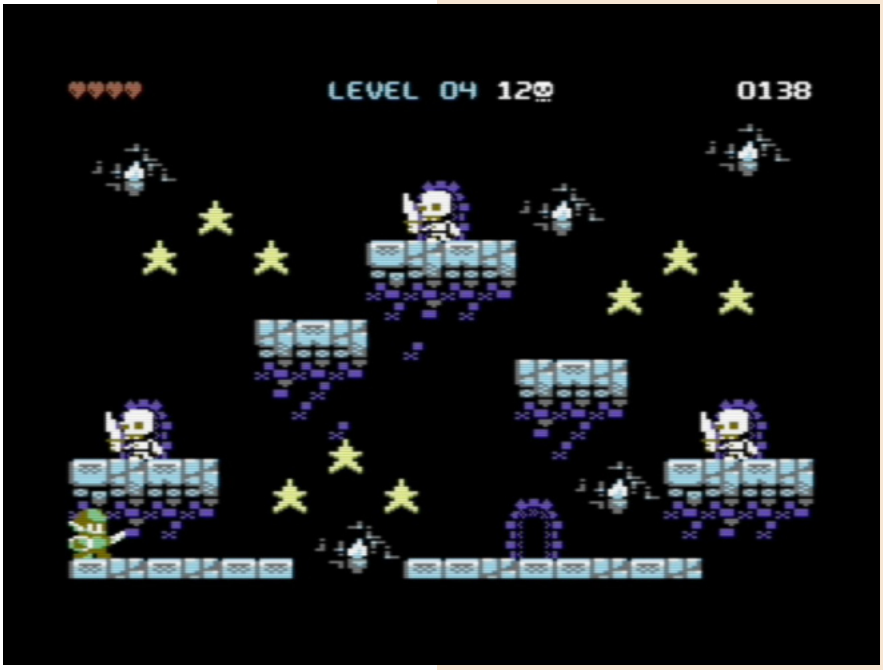
You can select 8 knights to take on the adventure. Essentially the characters are all similar, but they are well made and nice to look at and over time can gain new abilities through experience points accumulated in the levels.

The title has been realized in .CRT format that is in cartridge format. It's possible to play it on real hardware with easyflash. We have tested it on The C64 and on a Commodore 64 with easyflash and everything went smoothly, without problems.

The programming, graphics and sound accompaniment was beautifully done by Monte Boyd.

The developer really deserves to be commended for fielding a title based on originality and blending game mechanics from Bubble Bobble, Pang and Snow Bros.

The end result is not perfect but it is enjoyable. The 32 levels are well developed and well structured as a difficulty curve. The final monster is nice and pleasant to deal with even if it's not the challenge of the century and it's quick to figure out how to



OUR FINAL SCORE

» Gameplay 80%

Simple, balanced and fun.
I would have liked the two-player option; it would have increased the rating by 10 points.

» Longevity 80%

It is not difficult but it is played and left to be played pleasantly.

eliminate it.

The graphics are very nice with nice big and well made sprites. Maybe not too varied, but well done.

During the game I removed the accompanying music that, although well done, I found "annoying" and perhaps too little akin to the atmosphere of the game.

I liked the ability to be able to mark the password as it used to be through a simple code.

In short, it is a nice title that for the modest sum of $ 2.99 you can play and appreciate.

Another piece for the new production of titles for the glorious Commodore 64.

by **Carlo N. Del Mar Pirazzini**

LIVE A LIVE

Year: 1994

Editor: Square

Genre: ARPG

Platform: Super Nintendo

On the occasion of the Nintendo Switch re-release, we can't help but tell you about this gem of a game that went almost unnoticed in the West.
Live A Live is a role-playing game developed in 1994 by Square on the Super Famicom (the Super Nintendo in Japan).

The premise of this title is simple: Square brought together a bunch of famous mangaka by providing a role-playing game engine and asked them to make something epic.

The result is this title with about 20 hours of gameplay that makes Final Fantasy look like a sucker's game.

This is not a standard role-playing game. It consists of nine parts, each made by a different artist, and each with their own design choices.

The first eight chapters each focus on a single character, ranging from a young prehistoric caveman, to a ninja, to a cowboy, to a cute robot. Each chapter is different from the others and, as I said before, each with its own characteristics of well thought out designs.

Take for example the cave boy. At his time in history, they didn't have a spoken language, and so the entire chapter contains no dialogue (only one word is spoken the entire time).

The story is told through the images and actions of the character, which works surprisingly well. The caveman theme is even incorporated into the combat system: all the move names are simple sounds (BashBash or BangBang for example).

In stark contrast is the Oboro ninja chapter. A chapter focused on espionage and intrigue.

As piecemeal as the chapters may seem, they all have a coherent storyline that will fully engage us.

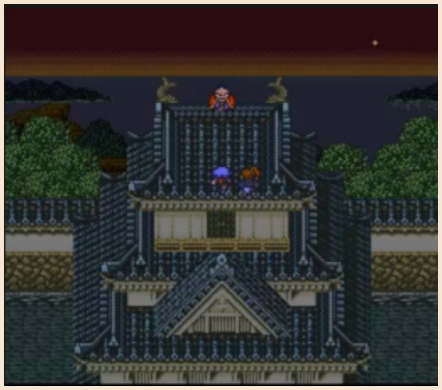
The battle system is the only thing the first seven chapters have in

OUR FINAL SCORE

» Gamepley 90%
Innovative in game concept and each chapter is different from the other. Simple and fun game system.

» Longevity 80%
It is one of those titles that is not easy to play and requires attention when playing it. The difficulty is well calibrated.

common. Battles take place in a small grid, using a turn-based system. When it's the character's turn we can move around the grid and prepare to attack, avoid the opponent and their blows.



The levels can be completed in any order and give access to the final two chapters.

The many mangaka involved include Kazuhiko Shimamoto (author of Skull Man and some Kamen Rider manga) and Gosho Aoyama who made Detective Conan.

At the closing lines I can say that they don't make video games like this anymore. Live A Live was and is an original, fun and well thought out title.

Too bad it wasn't translated upon its release into English, but you can find the patch to change the language.

Recommended.

by **Roberto Del Mar Pirazzini**

NEW GAME

ARKEGIS REVOLUTION

Year: 2020
Editor: Mega Cat Studios
Genre: Shoot em up
Plattform: Sega Megadrive
Web: https://arkagis.itch.io/arkagis-revolution

In the year 2612 men colonized most of known space. For decades the nation of Arkegis has been under a terrible dictatorial power. The Union of Space Colonies has sent an army to liberate the planet... however...

It soon became clear that the UCS was claiming the planet for itself and its army became the de facto new government and Commander Victor the new dictator.

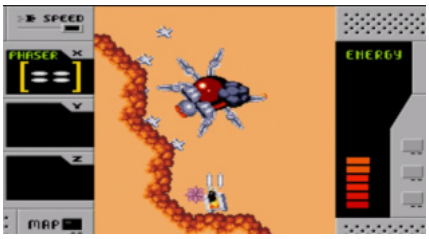
At the head of a handful of heroes, all that remains is us.

Arkegis is a title that, had it come out during the 16 bit console war would have driven Sega 16 bit users crazy.

Graphically it makes use of a mode 7 simil that really rotates everything that moves and does it really fast. It feels like you're on a Super Nintendo.

Our ship will move back and forth with the d-pad while the A and C buttons will control the direction. The control system is cumbersome but over time you get the hang of it and it becomes enjoyable.

While technically the product is commendable, from a playability and ultimate longevity standpoint it shows its side.



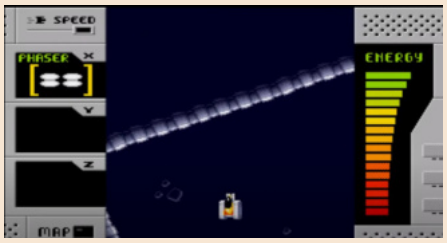
The game is adorable, but lacks variety (the levels are very similar) and a proper difficulty balance.

Simple enemies throughout the level and borderline insane boss fights. I like challenges, but this one is pretty unpleasant.

It's reminiscent of some past titles in this as well, but perhaps too high of a challenge in individual battles.

More equity would have raised the OUR FINAL SCORE a lot.

by **Carlo Nithaiah Del Mar Pirazzini**



OUR FINAL SCORE

» Gameplay 75%
Peculiar but compelling control system. Difficulty not well calibrated.

» Longevity 75%
The aforementioned difficulty shortens the life of the game.

NEW GAME

IMPOSSIBLE MISSION

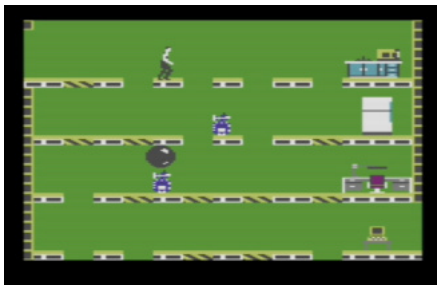
Year: 2022
Editor: Epyx/TCFS
Genre: Platform
Platform: Commodore PLUS/4
Web: http://plus4world.powweb.com/software/Impossible_Mission_Plus4

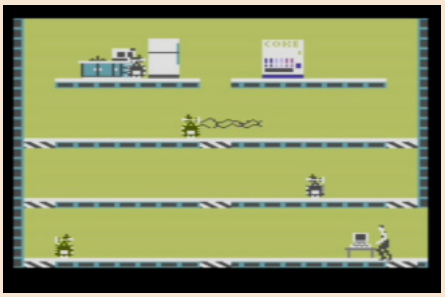
It's late at night and you're hunched over your Commodore. The lights are low, your eyes are glassy, when suddenly, as if from nowhere, a chilling voice rings out: "Another visitor. Stay awhile... Staaaaaay Forever!" You grip the joystick hard. On the screen, a man jumps from an elevator shaft and runs down a lonely hallway, his footsteps echoing through the empty building. Before him is an incredible test of endurance, intelligence, and agility in a battle for the survival of the human race.
Yes, we're playing Impossible Mission again and we're doing it on Commodore Plus/4 thanks to the port of TCFS and Csabo. We've been doing it for the last eight hours. We're tired, tense and immersed in the delirium of killer robots and puzzles.

Again, in this incarnation for Plus/4 this game has it all! Brilliantly animated, superb voice synthesis, fast and well converted graphics and some of the most exciting gameplay in video game history.
The task is always to save the world and to do that, you will have to avoid getting killed by killer robots, search for useful items and equipment.

This version is really a small free masterpiece that I recommend everyone to try. Nothing to envy to the famous version for the C64.
Neat sound, graphics well suited to the system that move fluidly and animate well. It really does have it all. Beautiful.

by **Carlo Nithaiah Del Mar Pirazzini**





OUR FINAL SCORE

» Gameplay 90%
Everything right and in the right place in this version as well. Simple and complete.

» Longevity 90%
A complex title where you have to squeeze your brains and take nothing for granted. It will keep you glued to the screen even on Plus/4.

NEW GAME

POWERS IN THE BASEMENT

Year: 2022

Editor: IlliterateCodeGames

Genre: Avventura

Platform: Windows/Linux/macOS

Your name is Will and you're 15 years old. You're just an ordinary kid: spoiled, lazy and slow.

In this adventure you are looking for your favorite heavy metal t-shirt, which has disappeared in the house in some mysterious way. You can't miss it! You must defend your reputation as an avid metalhead with your friends.

Your task will be to explore your home while trying to interact with your surroundings and understand what mysteries lurk in the spooky basement. All with your incredible phlegm.

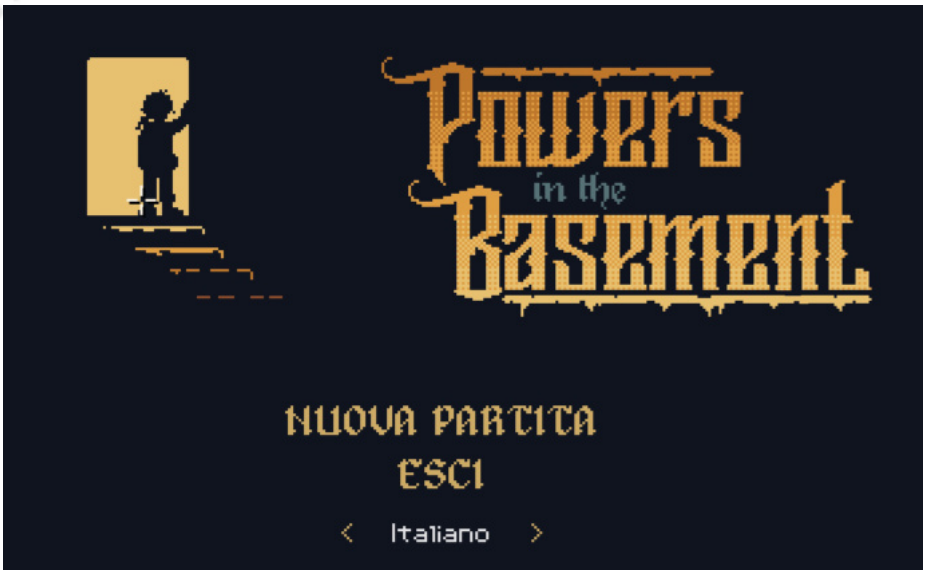
Powers of Basement is a tribute to the golden age of point-and-click adventures that were all the rage on Amiga and PC.

It's based on the style of Lucas' adventures for humor (very similar to the madcap Monkey Island style)

and the Simon the Sorcerer saga.

The verbal interface allows for total control and interaction with everything around us allowing for numerous actions while exploring.

All this is seasoned with a beautiful classic graphics (pixel art) super fluid and animated with care, an excellent musical accompaniment and a series



of challenging puzzles that will often put us in difficulty.
The game is about 6 hours long, with a very witty and surreal tone that can be played by everyone.

Personally I love this kind of homage to the great classics and I had a lot of fun playing it. At some points I laughed with gusto and the story, while bizarre, is followed with gusto.
The title is free but I suggest you donate a few euros to the cause of this small independent software house (totally Italian), they deserve it.
Downloadable title for Windows, Linux and Mac.
It would be great to see it on Amiga too in the future.
A good title indeed.

by **Carlo Nithaiah Del Mar Pirazzini**

OUR FINAL SCORE

» Gameplay 95%
A point-and-click title? In the year 2022? With old-fashioned graphics and a functional game system without annoying tutorials? Mine!

» Longevity 85%
It's not terribly long but it's damn enjoyable.

Freely downloadable from:
https://illiteratecodegames.itch.io/powers-in-the-basement

NEW GAME

RUBY & RUSTY
SAVE THE CROWS

Year: 2022
Editor: Max Oakland/Bitmap Soft
Genre: Platform
Platform: Game Boy Color
Web: https://www.bitmapsoft.co.uk/product/ruby-rusty-save-the-crows/

Ruby and Rusty are a tomato and a beet and live happily ever after on the farm with their parents, friendly crows and a scarecrow.

One Halloween, Mom put a strange witch costume on the scarecrow who turned, due to a curse, into a terrible evil witch.

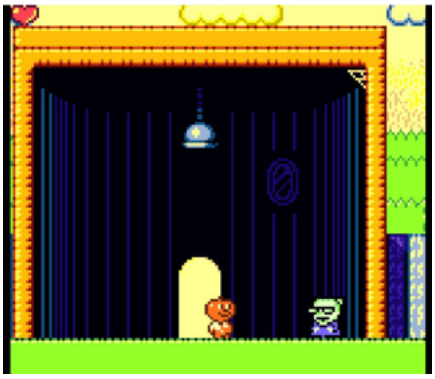
The terrible sorceress drove all the crows out of the county and little Ruby and Rusty will have to retrieve them by going around the farm.

The title is a colorful platformer made by Max Oakland on Game Boy Color. It uses a modified version of the Wink Engine. The product has good graphics with animation and excellent fluidity and a rather simple sound that doesn't annoy during gameplay.

You can download the rom and play it on original GBColor, Pocket and Light via everdrive. A physical version of the title is also available on the Bitmap Soft page with nice packaging.

The title seems to be suitable for a smaller audience and has a gradual difficulty that allows less experienced players to get into the game without facing too difficult levels right away. There is also a nice short tutorial to get you started.

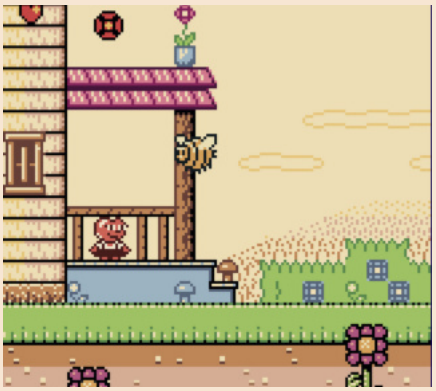
Each level can be tackled using the two plant siblings. In terms of gameplay not much changes, but it's a nice choice.

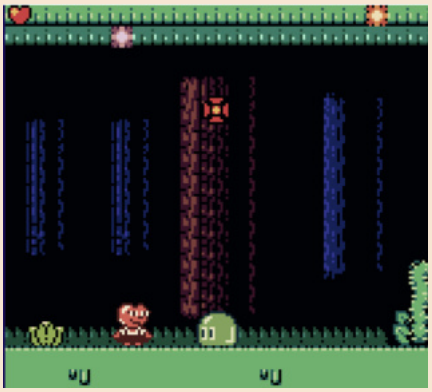


I highly recommend this product to anyone looking for a good title for their kids.

Fun and unpretentious.

by **Roberto Del Mar Pirazzini**





OUR FINAL SCORE

» Gameplay 80%
Simple and very straightforward. Intuitive and suitable for an audience of young players.

» Longevity 75%
Not difficult and well-structured difficulty curve. Not suitable for more seasoned players who will finish it in a short time.

NEW GAME

THUNDER PAW

Year: 2022
Editor: PSCD
Genre: Platform
Platform: Sega Megadrive
Web: https://pscdgames.itch.io/thunder-paw

A dog with a gun chasing cats, pigs and bears?

Thunder Paw intrigues with the crazy story, the strange protagonist and some interesting details but lacks character.

It is a 2D platform adventure. In each level we will have to recover bones, eliminate enemies and open the exit portal. The goal is to reach our parents kidnapped by the evil villains on duty. To do all this we will be armed with a

powerful gun. A difficult weapon to maneuver if you are a German shepherd puppy (yes, the protagonist is a puppy) given the powerful recoil that pushes back.

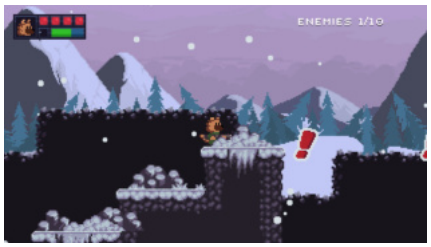
Firepower will improve from level to level by collecting certain gems, but the difference is minimal.

Something is missing. While the game's animations are immaculately done it lacks color. Everything deeply dark. Lacks variety in levels and detail. In the end each world is rather repetitive. It feels like you're seeing the same level over and over with the platforms moved around.

The enemies are pretty predictable though really funny and nicely animated.

Definitely more difficult the bosses

at the end of the world. Initially displace a little bit, but then I realized that each boss can be defeated by placing on the edge of the level and avoiding the fire that will shoot at us. It's a principle that actually applies to the whole game and makes it rather flat.



Too bad, more care in the game system and more variety would have taken it a bit higher.

by **Ingrid Poggiali**

OUR FINAL SCORE

» Gameplay 70%
It is not complicated,but it becomes boring due to too much repetitiveness of levels, enemies and bosses.

» Longevity 50%
Non-optimized difficulty curve. You finish early and don't pick it up again.

NEW GAME

JUNGLE JOE

Year: 2022
Editor: Vector 5 Games
Genre: Platform/Puzzle
Platform: Commodore 64
Web: https://vector5games.itch.io/jungle-joe

I find myself studying at Uncle Nith's house for my university exam, and in order to have some fun I asked for advice on a simple game that would keep me entertained for a few hours. Nith slipped me his Commodore 64 and this Jungle Joe.

It is a game with a very simple objective. We have to help Joe to make his way through the jungle by building pieces of stairs, collecting the wood to make it and crossing numerous dangers.

On the surface it all seems a piece of cake but as the levels go by I assure you that it will not be easy at all.
It's a title released this year for the Commodore 64 and I have to be honest I liked it.

It gives a few hours of play that allows you to relax in a constructive way (it's still a puzzle game).

Pretty graphically and pretty easy to play.

Download it and, if you want, contribute to help the developers with a small donation on the site.

Have a good summer.

by **Ingrid Poggiali**

OUR FINAL SCORE

» Gameplay 80%
Well-structured levels. The game also has a good instruction manual. Functional password system.

» Longevity 75%
The first few simple levels then raise the bar.

180

Year: 1986

Developer: Mastertronic

Genre: Sport

Patform: Commodore 64

After reading and enjoying the special issue, to say the least, of Retromagazine (those who haven't done it yet, run to remedy), we are fortunately or unfortunately at the umpteenth return from vacation. The days are a little shorter, the temperatures a little lower and although the humid Milanese heat gives no respite, the rain gives us the content with four drops.

I bet that many of you when they were on the beaches will have had a chance to play not only bocce, beach volleyball or the more recent paddle, but also darts. The game that I fished out of my collection and that I finished by winning against all opponents is 180, a title by Mastertronic that, thanks to its cheap and often undervalued line, has produced this game, which may have gone unnoticed, but is certainly worthy of consideration.

Why put a number as the title of a game? Simple, 180 is usually the score at which you start a game of darts. In this game however it will be many more and the aim is to get as high a score as possible to subtract from the initial score to get to zero. Oh, and don't forget that the last throw must end with a double, i.e. pointing the arrow towards the coloured spaces below the numbers, otherwise you risk going over...
We will face three funny opponents, caricature-style, increasingly skilled, until we reach the final where we will face an opponent who never misses a shot. Since I've always been generous, I suggest you memorise his shots and...

The sound consists of a cheerful little music, typical of these games, which we will hear only during the initial screen and in the opponent's turn. We will not hear it during our turn, since we need to concentrate, especially in the final challenge.

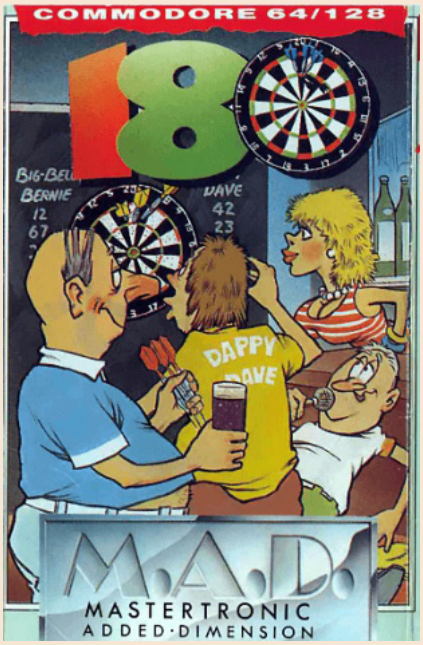
The gameplay, as in the vast majority of games, just requires habit and familiarity with the game system. Luckily your hand will not be shaky as in other similar games. In an evening with friends or family this game is pure fun as well as endless (but do not play girlfriends or scooters eh).

The graphics are nothing exceptional, just a shot with one hand, although during the opponent's turn we will see the background of an 80's pub with a strange bartender behind the bar intent on observing the game.

Before playing I suggest you read the rules of the darts on the net, I assure you that it is nothing complicated and remember that the goal is not to always hit the bull's eye, as mistakenly you might think, also because the center is not the maximum score on the dartboard; if you do the calculation of the doubles and triples you will find that 60 is the maximum score present. Do not fix only on it, however, otherwise you run the risk of overdoing, or make a higher score than required to close the game and you will have to start the round over.

Three opponents may seem little but you will recreate in a short time. Once you have beaten your opponent and have acquired the skills of a real shooter, you will surely want to challenge friends and relatives in pleasant evenings, hoping that all this does not become the cause of broken friendships. :-)
I might suggest a little game with the editorial staff or a tournament. Oh, I don't have a scooter or a girlfriend!

by **Daniele Brahimi**



OUR FINAL SCORE

» Gameplay 75%
It just takes getting the hang of it.

» Longevity 80%
Alone it might seem short, but with friends and family...

MALAIKA
PREHISTORIC QUEST

Anno: 2006
Editor: Karoshi
Genre: Platform game
Platform: MSX
Web: https://www.file-hunter.com/MSXdev/index.php?id=malaikaprehistoricquest

The game was first released to the public in 2006 in both digital and cartridge formats.
Born for the MSXDEV Competition in 2006 and is a platform game that pays homage to the atmosphere of the Super Mario saga.
In the role of Princess Malaika we will face numerous game worlds jumping, dodging, collecting bonuses and crushing with our mighty feet all the enemies with the aim of freeing our people prisoner of the villain on duty.
It 'a game technically curatissimo.

The graphics are colorful and well animated as well as the soundtrack is nice and catchy.

As we said this is a great tribute to Mario platformers and it shows. Easy to play but perhaps in the long run a bit 'monotonous.

A title suitable for fans of the genre.

by **Giampaolo Moraschi**

OUR FINAL SCORE

» Gameplay 85%
A nice plaftorm game. Well developed and very detailed.

» Longevity 70%
Monotonous and repetitive after a few games.

Retrocomputing goes mainstream: is it a good thing or...?

I've been wanting to talk about it for a few months because the conditions were already there for some time, but lately the phenomenon has definitely taken hold: retromputing has become to all intents and purposes a mainstream phenomenon with an almost constant presence in magazines, newspapers, TV and even radio.

The cue to write this fourth article was given to me by the article "***PC VINTAGE: THE CHALLENGE Commodore 64 vs ZX Spectrum an endless duel***" appeared on issue **378** of the Italian magazine **PC Professionale** in **September 2022**. The article in question is clearly aimed at a generalist audience, in fact it does not add anything new for an enthusiast, but it is undoubtedly interesting for its intended audience. The presence of such an article in a magazine dedicated to the latest news in technology, makes it clear that indeed the bank has been broken. Personally, although I am in favour of this openness to the general public, I am afraid of what the consequences might be.

On the purely economic side, who before was willing to give an old computer to a friend or an enthusiast, may think he has a little treasure in his hands and expect to be paid handsomely... The same can be said for magazines, books, games and anything that recalls the memory of an old computer. The same goes for those who still own licenses for games and programs of the '80s and '90s: they might think they have found a new seam of gold in a mine believed abandoned... It goes without saying that I think it's fair to pay for the use of other people's work, but everything must be put in the right perspective. As I wrote in an editorial a few issues ago, the enthusiast must not be considered as a cow to be milked for easy profit.

Regardless of the economic side, we have repeatedly noticed that those who start talking about retrocomputing or the history of computing, sometimes do so without a real knowledge of the subject, counting on the technical unpreparedness of the average reader. And this is something that creates indignation in those who try to make information in an accurate and correct way and in the most attentive readers. Last but not least: is this a passing fad or is it something that will last? If it is a passing fad, what will happen to all those machines, books, magazines, software and more that were bought on the wave of enthusiasm, once the fashion of the moment has passed? Those who work to preserve this material are surely fearful of it all.

And what do you think about it? Are you in favour of this new trend that seems to have definitely caught on also in the generalist field? Do you have the same fears as me? Or others that I haven't yet analyzed... Let us know.

Francesco Fiorentini

RetroMagazine World
Year 3 - Issue 17 - WINTER 2022

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