THE EDITOR'S GODZILLA

by Lenard R. Roach

AUTHOR, ARISE!

The Story Behind "Tabitha Arise!"

While passing through the church hall one Sunday, I happened to overhear some of the women talking by the door to the baptistery. What they were talking about struck a chord in me.

"Ladies, what are we going to do about a skit for Women's Day at the church?" asked the brunette to the other two that were present.

"I've been searching the Internet and found nothing that would meet our criteria," replied a black-haired beauty in return.

"We've got to find something," the brunette said in rebuttal. "Women's Day is next month."

"Maybe we could come up with something on our own?" the blonde of the group suggested.

"Maybe, but we'll need an idea and then some time to put it together," answered the brunette to the blonde. "Let's get the women together later this week and do some brainstorming."

The three women walked around me without acknowledging my existence. No matter. My writer's soul heard a challenge – to come up with an all-woman skit or play in less than a month and to present it to the women's group before that deadline. My blood started to boil. My creative thinking, long dormant due to my personal catastrophes, was moving faster than it ever had in a long time. I stood there and started to visualize the opening scene of the play.

A woman sitting on a sewing stool, who had labored through the night, stitching away at a piece of material, not realizing that the sun was coming up. She looks up from her sewing, because coming through the window, a beam from the sun begins to blind her. Then she realizes that she had worked all through the night. Yes, yes, YES!

I sped out of the church and into my car, only to stop right there in the driver's seat and come to a realization. Somehow I had to tie the image in my mind to a piece of Scripture. From where had I heard this story that I had imagined? Before I hit the word processor, I had to hit the Bible and try to discover where I had read that story – a woman working in fine materials. Something in me said to start searching in the Book of Acts. Acts was just as good a place as any to start looking for clues.

I started with Acts, chapter one, and slowly skimmed through the book quickly but methodically. I knew what I was looking for, but I didn't know where to look for it. In about an hour I made it all the way up to Acts, chapter nine, and didn't see one thing that would help. I was about to take a break and get a soda out of the refrigerator when I heard the Spirit say to my heart, "Check chapter nine." I sat back down in my easy chair and started to go over chapter nine.

The conversion of Saul. There certainly was no part for a woman to play in that scene. Then, verses 36 to 42 came up. The raising of Tabitha. "Now there was a disciple in Joppa named Tabitha, whose Greek name was Dorcas. She was a worker of fine linens and was known throughout the town as a doer of good deeds and acts of charity..."(v36).

Two bulls were playing cards and smoking weed
The steaks were high...

This was it! The woman that I saw in my daydream after I heard the women of the church talking to one another. I intently read the translated section that I had in my hands. She died. People mourned. Peter arrived and raised her from the dead. Yes! Every person in this tale could be a woman, except for the apostle Peter. He would have to be a man, no escaping that. In the house, did I have other translations about this particular passage of Scripture?

I had read from the New American Standard Bible. I looked around the house and found a copy of the Bible in the New International Version and read the passage, the NIV revealing a little more light. I dug around even more and found a copy in the New King James Version and read the passage from there. Even more information was brought to light. How about the Living Bible? I buzzed around the house and found a worn copy of the LB in a forgotten book shelf in the bedroom. Reading the LB text really gave me a good impression of where I should go with the story.

This was amazing! I began to feel like a little boy again at Christmas when Dad and Mom would give me a new train set.

My mind was bursting. I had to get this on paper, or at least in a word processor, before I lost the groove. I brought all the translations I had and laid them on the floor of a vacant bedroom that housed my old yet trustworthy Commodore 128 computer. Even though this machine was not as up to date as modern PC, it was still a computer with which I was most familiar. I quickly put a copy of GEOWrite into an old 5 1/4” disk drive, and with a few clicks of the mouse, I was on my way to putting down the first words of what was going to become my first ever full-length play.

Faster and faster, the scenes began to unravel in my mind. I was like a stenographer in a courtroom, taking down every word and action that came into my head. Sometimes, it didn't feel like I was doing the writing, but someone else was using my hands and keyboard to type in the proper words and actions needed to make the story come to life. Before I knew it, it was 11:00 pm that Sunday night. I missed evening services altogether, I did not eat all day, and I ignored the needs of my cats who had been rubbing themselves against my pant leg, asking for dinner. I glanced at what page number I was on. Page 26. I had composed half of an Act One in one day. I leaned back in my computer chair and stared at the text on the screen. Where had I been? I felt like I was on vacation. My thoughts had never been clearer. I wanted to continue, but fatigue was getting the better of me at that point. I had to feed the cats, turn in, and get some sort of sleep, so I could go to work at five o'clock Monday morning.

During the work week, I focused on nothing else but getting back to writing on my antique computer. I was no Shakespeare, but I wanted to get as much into the word processor as I could by the end of the week. Sadly, the strains of working on my feet for eight hours a day took its toll on me; when I got home from a day's labor, I kicked off my shoes and fell into my easy chair. I did manage to get in an hour or two on the play but not as furiously as I had done on the previous Sunday. When I got the weekend off, in my pajamas I sat at the word processor at first light and started to write again, slowly at first. I was constantly referring to the Bible on my computer desk, reading and re-reading Acts 9:36-42 to try and get into the groove that I had a week ago. It was hard.

Frustrated, I decided to read what I written the previous week. I was surprised at what things I had put down. I'd never spoken, let alone written, anything like this before. I saw some spelling and grammar mistakes that I made, and I corrected them. As I read, I could see the scenes develop in my mind. By the end of page 26, I was in the groove again and started pounding the living circuits out of the poor 35-year old Commodore computer. By five o'clock in the evening, I had Act One completely written out in first draft form.

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My instructor called this phase the “words to paper” draft. I didn't take time to go over Act One with a fine tooth comb. I felt the urge to go right into Act Two, but first dinner for myself and the cats.

After a brief repast, I went right into Act Two. The short break to eat didn't stop the flow. I hit Act Two like an avalanche. The computer must have been smoking as fast as I was slamming my fingers into the keys. This time I was going faster than I did with Act One, and by one o'clock in the morning on the next day, I had half of Act Two written. When I typed the word INTERMISSION into the text, my hands and arms fell limp to my side. My right leg had more sense than the rest of me and had gone to sleep long ago. The cats had passed out on the furniture in the living room about the same time as my leg. I saved my work onto disk and shut down the computer. I didn't realize how tired I was, but I got half the play written in one week. I guess I would show the brunette that I had been eavesdropping during her conversation, and I would give her what I had done so far.

The next Sunday morning I slept through church service, because I was so tired, but I did get to catch up with the brunette after the service and tell her what I had been doing and why I was doing it. I found out that the brunette's name was Sandy, the wife of the church's soundboard engineer, Van.

“That's wonderful,” Sandy said. “I would love to read what you have. Can you send it to me through email?”

“Sure,” I replied. “I'll get it out to you tomorrow.”

Oh, nuts! During all my feverish work, I totally forgot that my 1986 computer didn’t communicate well with modern PCs. I had to convert the Commodore GEOWrite text to PC .txt format. Thankfully, this oversight was thought about and solved a few years prior. Richard Estel, treasurer of the Fresno (California) Commodore User Group, had sent me a copy of a program that would allow an ancient Commodore computer to swap information between itself and a modern PC. The program was called “Big Blue Reader.” Big Blue Reader would take only a few minutes to change the Commodore text file over to a .txt format. Once that was done, it was a simple matter of taking the newly transposed text off the 3 1/2” disk and put that disk into drive A:/ found on the PC. Since my laptop came with an external 3 1/2” drive, it was easy to call off the text from the disk and put it into my PC word processor. In the space of half an hour, I had the first draft converted and emailed to Sandy's work email. Soon I would find out what she thought of the first half of the play.

The response came quicker than I thought. Sandy emailed me back by Wednesday and gave me the sad news…

“Lenard, the first half of your play was excellent and a pleasure to read, but I'm afraid that it is way too long and involves too many characters for us to use. I'm sorry but thanks for the effort.”

Dejected, I shut the lid to my laptop. All that work, all that inspiration, all that study wasted. Why was I writing this in the first place when all it was going to do was be rejected? I went into the computer room and sat down. Taking the disk that the play, I stared at it for a minute. With a deep sigh, I put the disk into a dust jacket, put it with the massive collection of Commodore 5.25” disks that I had in a storage box, and shut the lid. “Tabitha Arise” would never see the light of day.

That was February 2013. Let's move forward to 2022.

During the intervening time, a few of my books had been published on Amazon Book Place, most of them dealing with my coding adventures on that old Commodore machine that I still owned and used. The pandemic of 2020 had made these old machines more valuable than they ever were when they were new back in the 1980s, so I had

kept my machine in the best condition possible.

After my 2022 publication, “Load/Run,” I decided that I was out of ideas and would take a couple of years off to just enjoy life. The one thing that the February 2013 escapade taught me was that my writing was a pressure valve release mechanism. Whenever I needed to let off some steam, anxiety, or any other emotion, I sat down at my word processor and pounded the living daylights out of the PC. With seven books under my belt by 2022, it seemed that I'd done a lot of emotional release. Even newsletters and magazines, like The Interface, Commodore Free, and Reset 64, had gotten wind of my work and had made me a columnist on their respective staffs, all thanks to that one incident back in 2013. My old Commodore 128? I had used it to make out my checks and keep track of my bank book, but now I had my laptop PC and did most of my writing from my armchair.

One evening as I sat in my armchair, watching some old movies on YouTube and praying that my latest Commodore book release would be enjoyed by the masses, I thought about what I would like to do with my time. I had a June 2022 Commodore Los Angeles Super Show to attend in Burbank, California where I would be able to lecture, make sales, and give autographs. That was about all that I had planned, other than work, eat, and sleep for the year.

“Don't you have Tabitha Arise stored in a disk file? Dig it out and finish it.” I wasn't too sure if the voice was the Spirit of God or not, but I got up out of my easy chair and went into the computer room. Opening a storage cabinet built into the stand, I looked in and saw two old file boxes. Taking one out, I sat it down on the desktop and started rifling through the disks, reading each label and trying to remember what was on each particular disk. Many of them had skits and stories that I had written when my ex-wife and I were married, to help her out when she had the pre-schoolers and to teach 6 to 12 year olds about Jesus and the Bible by using me as a human narrator and an old puppet dog by the name of Theo. A couple of one-hour plays based on Christmas and lots and lots of games, but no Tabitha Arise in that box.

I put the first box back and pulled out the second. In it were more of the same – stories, skits, plays,and the occasional game or two. No Tabitha Arise in there, either. At first, I thought I had thrown the disk away in a bit of frustration, but I pressed myself to look further. On the top of the computer stand was a small stack of disks that I still used to keep track of bank transactions and accounts payable. I urged myself to look in that stack, but I already knew that the disk wasn't in the stack. Yet, I pulled them down and rifled through them as well. Just as I thought, Tabitha Arise wasn't in that stack either. I put everything away in its proper place, and disappointed I went back to my easy chair. The next day I was compelled to look again for Tabitha Arise. I followed a lead, went through all the disks again, and came back with the same results... no Tabitha Arise. I sat down in the living room and didn't bother with it again.

Each day for a month, I was preoccupied to go into the computer room, to rifle through the disks, and to try to find Tabitha Arise. The play simply no longer existed. I got so frustrated with this searching that I sat down one afternoon on a day off and made a complete examination. I removed each disk from its dust jacket, examined the files, and if I found nothing, I put the dust jacket back on the disk and put the disk back into the box. However, I did find some document disks that I had passed over which may have been good enough to turn into a book or at least be part of a book. I put those disks aside, planning to look at them later after this final search for Tabitha Arise was done. Last were the disks that sat in the cubby built into the desk, the disks I used to keep my personal financial records.

I did the same procedure – remove the dust jacket,

examine the disk, then return it to the stack. I wasted a whole afternoon looking through my disk files this way, but I was determined once and for all to get to the end and prove to that Tabitha Arise no longer existed.

When I picked up one particular disk, it felt thicker and heavier than the others. That wasn't right. I flopped the disk in the air, hoping it would flex with the flicking of my wrist, but it stayed solid. I examined the disk closely, and it appeared to have something stuck to the back of it. I used my fingernail to pry at the back. Sure enough, there was another disk stuck to the back of the disk. It was perfectly flush and uniform with the other disk, easy to be mistaken as a single disk. Upon peeling the disks apart, I got the read the label on the elusive disk. Tabitha Arise.

Tabitha Arise did exist! It had been stuck behind another disk all along! I let a whoop out that shook the walls of the computer room. My son Gabriel, who had been engrossed in a game, came out of his room to check on me.

“What was that all about?” he asked. “Are you all right?”

“Better than all right, son!” I screamed. “I found this cussin' disk! It was stuck perfectly behind another disk all this time! Yow!”

Gabriel looked at me like I lost my mind again. “That's great,” he said, “but I thought you may have hurt yourself.”

He went back into his room to continue gaming while I got my copy of GEOWrite out of its personal storage case, put it into the drive, and booted the C128. With a few onboard commands, I got back into GEOWrite and was reading the very same text that I had written nine years ago. Act One was all there. Hallelujah!

It took some time to transpose what I did have left onto a 3.5” disk and then move that data into .txt format using Big Blue Reader. The laptop, that did the previous transfer nine years ago, had met its death at the hands of one of my cats. The cat had pushed the laptop off the desk where I was working and onto my hard wooden floor. The poor cat didn't know that he had shattered the motherboard in that unit.

I went into Act Two, which was under a different file name on the disk, and started to go through its text. It seemed to have withstood the journey through time, but I saw a misspelling in the text. I made the correction and went to re-save the text. ERROR 1:21 was printed on the screen in a bold gray box. I knew what that meant. It was an indication that Act Two did not survive the journey across time, and due to the very age of the disk, it had started to lose its integrity. I had lost Act Two.

I sat there in my chair and decided at that moment to pray. “Lord, if you are really leading me to revive this old play then I'm going to need your help. The disk with play has lost its integrity. I can't rescue the data unless you intervene. Please lead me to my next course of action.”

I had a notion to hop on my email and contact the Fresno Commodore User Group. By this time I was editor-in-chief of their newsletter, The Interface. I asked club president Robert Bernardo if he had a way of rescuing corrupted files off a disintegrating disk. He got back to me almost immediately and suggested using a copy program like Maverick to try and recover the data. I had a copy of Maverick in my files, and I gave it a try. However, the disintegration that took Act Two also took down the Maverick copying program.

I was at a loss. I contacted Sandy via email and asked if she might have her copy of Tabitha Arise still on her hard drive, even after nine years. This was a long and desperate shot. It would be next to nil for Sandy to have that play anywhere. After I sent the email, I waited and prayed. The odds of Sandy still having that play would have to have been astronomical. Sandy sent me an email stating that the hard drive that had that play had been replaced long ago, but she would look

around.

No way but still I prayed. It was a Monday. There was no hurry on this, but for some reason I kept feeling an urgency to get this play done as soon as possible. By Thursday of the same week, I got an email back from Sandy with some attachments and a note that read, “I found these on one of my old hard drives. Is this what you are looking for?”

I downloaded the files and opened them in Wordpad. TABITHA ARISE ACT TWO. Great Caesar's salad! She had them! After nine years of being MIA, Sandy's search and recovery efforts produced the missing text! I was crying, literally, as I downloaded the files onto my PC and made a copy of the text to put onto a flash drive.

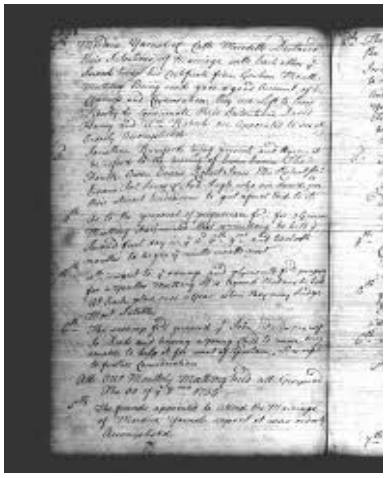
I immediately emailed and told her with many exclamation points that these were exactly the files that I was missing. “How did you so happen to have a copy of the play after all these years?” I wrote. The next day I got her answer.

“According to company policy, all communications, public or private, that comes across company email is to be saved without erasing. I have a lot of hard drives in my collection since I started with my company, so I searched through them and found the play. I hope it helps.”

A long shot led to a win. If I wanted this play to be finished, then I would have to write it just like I did back in 2013. I had a short break to take refresher course on what I put down in the word processor back in 2013. I then started working slowly on finishing up from where I left off, but this time I used my laptop and a flash drive; no offense to the Commodore computer in my computer room but I couldn't afford to lose this data again.

Though it took a couple of weeks of careful prayer, of studying Acts 9:36-42, and of writing, it seemed that I had a completed first draft of Tabitha Arise in no time.

I made copies of my work for a few people who would enjoy reading the story as is. Sandy, of course, would get a copy since she was the one instrumental in saving the play all those years ago. I made one for the pastor and the church secretary. I also made copies for my sisters-in-law who had been supportive of all my work ever since my wife left me. Finally, I made copies for my best friend and his wife.



MONTHLY MEETING REPORTS

by Robert Bernardo & Dick Estel

JULY 2022

A heat wave was tormenting the people of central California and was to spread across much of the nation over the next week. In Fresno the high on July 17 was 110 – not unprecedented but well above our normal mid-summer temperatures of 100 to 105.

Fortunately, the air conditioning inside the Panera Bread restaurant was working beyond what was needed - probably about 70 degrees. Wearing his usual summer t-shirt, Dick had emerged shivering from the May meeting and brought along a

lightweight, long-sleeve shirt which he wore throughout the July meeting. Robert, Roger, Dave and Bruce put up with the extreme cool or perhaps even enjoyed it.

The discussion just before and during lunch was warm but polite, as it always is no matter the outside conditions. Complaints were filed regarding stuff that used to be easy to find in stores but have now disappeared – a favorite brand of bottled water, Hi Ho crackers, Apple Time apple butter (nice and thick, not runny like what's available now), and other favorites.

The slow fading away of Sears was also lamented, and particularly their iconic Diehard batteries and Craftsman tools. Both are still available from other sellers, but the automatic go-to locations are gone. Sears does have two locations in our area, known as Sears Home Services, offering only appliance repair. It was noted that Pep Boys no longer does retail sales and is a service only company.

What has all this to do with Commodore computers? It just shows that we are Renaissance people with wide-ranging interests.

Getting down to business, Robert reported on the Commodore LA Super Show (CLASS). It was a success for those who attended, but there was a financial loss. Attendance in 2019 was 36; in 2021 26, and in 2022 16. It was speculated that skipping a year and other issues related to the pandemic reduced attendance. However, Robert received several donations after the show to help offset the loss, and the show will be back in 2023, hopefully in May.

Robert will be in Europe much of October, followed by attendance at AmiWest, conflicting with the normal date of our annual Club Dinner (formerly picnic). This event will now be held on October 30, 2022.

Dave brought a sample revision of the flyer that FCUG created years ago to hand out at shows and to interested persons. The original flyer was badly out of date, and Dave did a great job making it fit our current situation. We discussed possible ways to get out the word on the existence of our club. Some ideas included Vintage Days at Fresno State University and farmers' markets,

With the business meeting concluded we watched the presentation produced by Bernardo Studios for CLASS 2022, featuring Roger demonstrating and explaining the conversion of objects created in Gig-CAD to Blender. Both the star and producer did an excellent job.

As usual, our presence attracted the attention of a few other patrons. This time we talked with a gentleman who was very familiar with Atari products. His 12-year old nephew Michael was especially curious about our machines and was invited to participate in the demo of Dave's A500 Mini. The Mini came with 25 built-in games and many more can be downloaded. Michael played these unfamiliar games almost by instinct and also said he was a Super Mario fan.

Mario and Luigi appear to be immortal and are enjoyed by Dick's great grandsons, age 7 and 9, and obviously by many other kids who are much younger than Michael. Many of their parents are probably also younger than the Super Mario game.

For the rest of the meeting, Roger and Robert pulled up game after game to entertain Michael, Roger loading up games from his SD2IEC onto the club C128, which was in C64 mode, and Robert showing the latest games off his Ultimate 64, games like Zoomies, Gold Quest 6 Extended Version, Rowman, Poing, Space Chase, Ball-n-Chain, and Minijump. When Michael was through with all of those, Robert even brought an Atari 2600 gaming console that was given to him by Duncan MacDougall of The Other Group of Amigoids in San Jose. The Atari 2600 came with a few game cartridges, and Michael played each of them.

Two bulls were playing cards and smoking weed
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Michael promised to come to the next FCUG meeting, and we wondered if he would show up again. He was very much a shot in the club's arm with all his youthful enthusiasm.

AUGUST 2022

The August 2022 meeting featured the five who have become our regulars - Robert Bernardo, Roger Van Pelt, Dave Smith, Dick Estel, and Bruce Nieman. However, before everyone left for home, our membership had grown by one. Michael Calkin, age 12, who had sat in for some game play at our July meeting, became our newest member.

Michael joins a short line-up of youth members, including one who ran a software sales business as a teen and has continued into adulthood, and another who has gone on to design video games. Who knows what the future holds for Michael?

Robert brought us up to date on the Vintage Computer Festival West, which he had attended in Mountain View, CA, on August 6 and 7. Robert had two display tables with an Ultimate 64, a Mini PET, and an Amiga 500 with Vampire 500 v2 accelerator card. Under the table, he had a back-up Amiga 1200 with Blizzard 1260 accelerator board. His were the only Amigas at the show. Other people's displays included a bank of C64s, each computer running a classic game from a different part of Commodore's peak era. There was a bank of Commodore PETs, almost each model being on exhibit, and at another table was the recreation of the A4091 SCSI board for big-box Amigas. Next to Robert's tables, Duncan MacDougall of The Other Group of Amigoids had three tables of rare Japanese computers from the 80's and 90's that were not made for export, some of the computers being the competition to the Amiga at that time.

Leonard Tramiel, son of Commodore founder Jack Tramiel, was a featured speaker. His topics included the almost legendary wooden PET. This working computer was not shown to the public but was stored in a temperature and humidity-controlled room somewhere in the storage facilities of the Computer History Museum, the venue of VCF West. (Hopefully, the wooden PET is also protected from termites.)

Robert met others he had not seen in some time, like Amiga engineer Dale Luck, Ricardo Quesada who builds the wireless Unijoysticle and had attended the Commodore Vegas Expo, Gabriele Gorla of GGLabs whose company builds Commodore and Amiga add-on's, and Mike Hill who has developed PETpix and other devices. Robert had good conversations with all of them, including Leonard. It was like a reunion!

One VCF attendee had developed an interface to power a computer from his cell phone or USB power pack and had asked to test it on Robert's Amigas. Robert held his breath, but it worked with no harm to the units. It worked with its 4.0 amps on the A500 and newish Vampire 500 v2 accelerator board, but it did not produce the 4.4 amps required to power the A1200 and its older, power-hungry Blizzard 1260 accelerator board.

Robert brought one unexpected thing back from the 1,000 person event – Covid. Due to his being double-vaxxed and double-boosted, he had a quick recovery in 7 days and never had severe symptoms.

In late September Robert will make one of his regular trips to Europe, this time visiting Commodore clubs and users in England, Wales, Germany and the Netherlands. He was supposed to have gone in 2020, but Covid restrictions got in the way. It had been 5 years since his last visit to England and Wales and 8 years since his last visit to Germany and the Netherlands.

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Member Bruce commented that he was having trouble running/displaying games on his newly-updated Amiga 2000, the computer which had been updated to OS 3.1, had been given more memory, and had been given a second floppy drive by Duncan MacDougall. Robert told Bruce to bring the A2000 to the next meeting so that its problem could be examined.

For the end of the meeting and to quell Michael C.'s insatiable desire for gaming, on the Ultimate 64 Robert presented some classic and some of the latest C64 games, like Goshawk, Topsy Turvy, Onslaught 2064, Something Epic, Mutetus, Little Nippers, Turrican I and II, Sonic the Hedgehog, Cliffhanger, and Totoro 64. He even showed the demo – Comaland.

Michael complained that the eBay joypads that Robert was using were not responding correctly, and Robert confirmed that there was a delay or sometimes no response from them when used on the Ultimate 64. Perhaps the joypads were best used on a regular C64. Robert reminded himself to bring some regular joysticks for use on the U64.

THE JOY OF THE TRADITIONAL

by Guest Contributor babbajon

In the days before the "mighty" Internet, the only way we could keep track of new games, hardware reviews, and drool over what was coming up was through traditional magazines - and you know what? I still read them to this day. Magazines you see, were simple to "pick up and read". No chargers, no USB sockets, portable and easy to find your place in. Take them and soak up the sun in the garden, read them on the go, or simply run a nice warm bath and read them in there. Magazines were simple and no nonsense.

If, like me, you grew up in the eighties, you might have even spent all your paper round money on them. One magazine I used to love was "Your Computer" which ran from 1981 until right up until 1988. YC was a multi-format magazine that covered most, if not all of the (home) computers at that time. But, it wasn't just computer reviews. There were games that you could type in yourself (if only I had the patience!). There were free gifts such as "flexi" records that believe it or not, you could load from your hi-fi system.

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Your Computer magazine and record

Speaking of which, in the latter years, demo tapes and floppy discs adorned the front covers enabling you to check out the latest games! (And I never tired of collecting them). Many magazines such as ZZAP64 and Amiga User also contained playable demos of the first level of an impending game release as well as non commercial “gems” from the magazine itself.

These days, of course, you can always search online for information about your trusty Commodore machine or listen to podcasts and “swot up”* on it. But for me, I still sometimes prefer the joy of sitting down with a cuppa, feet up on the hearth and flicking through an old magazine. You see, that's the difference. With a magazine you didn't necessarily look up a particular piece of information or article but often just browsed aimlessly, hopping between the latest news, reading the game reviews, and admiring some of the amazing artwork from the advertisers. (Imagine and Ultimate Play the Game being two of my favourites)

So, the internet is truly a wonderful thing for us “old faithfuls” and we couldn't live without it now...but sometimes, just sometimes, it just doesn't scratch the itch we so often have to flick through and browse, and for that, the original magazines just can't be beaten!

- study a subject intensely

C128 PERFORMS POORLY WITH CP/M

Question: I have seen several claims of poor performance of the C128 when running CP/M and would like to better understand these claims, especially in comparison to other CP/M machines of the early to mid-1980s.

The C128 has a Z80A microprocessor clocked at 4MHz for running CP/M. This is the same processor and clock speed found in, for example, the TRS-80 Model 4. Both those machines were CP/M compatible, but I have seen claims that the 4MHz clock speed was not fully utilized by the Z80A in the C128. Specifically, I have seen it stated that the *C128 Z80A only runs at 4MHz half the time*. Is this statement true, and why should this be the case?

Also, are there any benchmark results published to substantiate poor C128 CP/M performance when compared to similar Z80A systems?

I'm Linards Ticmanis, the guy who put out the CPMFAST package in 1999 that has been mentioned several times... (although I go by the nickname TeaRex...). While creating that, I had to

take a deep look into the innards of C128 CP/M, so that I think I can say that I have a rather detailed understanding of the way it works internally (or I did have it over 20 years ago... I'm not excluding some failures of human memory here). I'm afraid there is some myth and half-truths in some of the other answers to this question.

Firstly, in C128 CP/M, writing to the 80-column screen does NOT go through the 8502 CPU as several others have asserted; the Z80 talks directly to the 8563 VDC (the 8502 is used by CP/M for several other things, such as disk I/O and printer output, but not for screen output and not for keyboard input either).

The reason why screen output in C128 CP/M is so slow is rather

1. The Digital Research-provided BDOS of CP/M 3.0 is much slower in doing basic character I/O than the BDOS of the more common CP/M 2.2; CP/M 3.0 does support much more complex I/O device reassignments where standard output can go to any possible set of up to 16 devices at the same time; this also means that for every character being written, it has to loop in a complicated, bit-shifting way over a 16-bit mask to determine which of 16 output device drivers to actually send the character to, and of course, it does all this in pure Intel 8080 code without making use of the Z80 specific instructions and registers.
2. The code in the C128's Commodore supplied CP/M BIOS (which for this purpose includes the 4KB of Z80 ROM code) is written in such a way that outputting normal printable characters such as letters or numbers (as opposed to control characters) follows the LONGEST path through the code (each character is compared to every possible control character before it is decided that it isn't one), even though it is the most common case by far.
3. C128 CP/M supports the bit-banging RS232 on the user port. Unlike in native or C64 mode, the RS232 is always enabled and set to 300 baud by default, which means that the interrupt (IRQ) rate is also much higher than in native mode; and the interrupt code for the Z80 does quite a bit of things, including scanning the full keyboard at the same rate. This wastes a lot of CPU time when RS232 is not used (i.e. practically always).
4. Bank switching between the user program (TPA in CP/M parlance) in bank 1 and the BIOS/BDOS/ROM/buffers in bank 0 happens VERY often in the C128 CP/M… several times per character. Although the impact of this is lower than the other three points above.
5. Access to the 80-column screen RAM is doubly indirect as indicated in other answers (you have to access the RAM indirectly through some registers of the VDC chip, which in turn are only indirectly accessible to the CPUs through a rather bottleneck-y approach - you write a register number to $D600, do a little check-for-the-readiness-flag-bit-to-be-set loop and then write a register value to $D601).
6. The biggie is, of course, the fact that the VIC-IIe is not put into fast mode when the Z80 is running, so that the Z80 runs at 4MHz for two cycles (one 8502 half-cycle) and then stops for two cycles (the other 8502 half-cycle), giving it an effective speed of just 2 MHz, which is just too low for CP/M 3.0 in practice, although it would be sort of enough for CP/M 2.2. The C128 CP/M source code (which was available from Commodore back in the day when you bought the

complete set of CP/M 3 manuals from them) contains multiple instances of code that switches the VIC-IIe between slow mode (for hardware access, e.g. access to the REU, and for switching between the two CPUs) and fast mode (for everything else); but it's all commented out, so it seems they aimed for that but couldn't get it working. I tried to mail the main developer, Von Ertwine, with a question about this back in the 90s but unfortunately never got an answer.

In practice, you CAN switch the VIC-IIe into fast mode while the Z80 is running; this causes a simple timing loop with interrupts disabled to in fact run somewhat faster (though not twice as fast), but crashes the system when you do much of anything beyond this. It would be really interesting if someone could check with a logic analyzer (which I don't have access to) what exactly happens signal-wise, especially to the Z80 clock signal, when you enable fast mode while the Z80 is running.

CPMFAST addresses the first three points above by establishing several short-cuts through the code for the common case (output of a printable character, to the 80 column screen only, without RS232 use) and also increases the disk buffer area so that fewer disk accesses are needed. It cannot do anything about the points numbered 4 through 6, though.

Why does the C128 perform poorly when running CP/M?

1. The Z80A was sort of an after-thought in the C128 design. Before release, it had been touted as "fully C64-compatible" (which the earlier C= Plus/4 was not). However, the C64 had a Z80 cartridge allowing it to run CP/M. For whatever reason the cartridge could not work on the C128, so they added the Z80 directly to the motherboard. At that point, they were already 2 months into their 5-month development cycle. (see reference #3 below)
2. I/O was doubly indirect. Actions such as reading from the keyboard and writing to the screen first went through the CP/M BIOS layer. Then it had to switch CPUs! From the Commodore 128 Programmer's Guide (PRG), page 500:

   The 8502 is responsible for most of the low-level I/O functions. The request for these functions is made through a set of mailboxes. Once the mailboxes are set up, the Z80 shuts down and the 8502 starts up (BIOS85). The 8502 looks at the command in the mailbox and performs the required task, sets the command status and shuts down. The Z80 is re-enabled; it then looks at the command status and takes the appropriate actions.
3. Updates to the screen were s-l-o-w. I believe this was due to the impact #2 had on interacting with the 8563 video controller. Although a *block mode* character transfer was possible, apparently the complexity of the dual-BIOS layers led to only one character being written to the screen per BIOS call. To write a character, two 8563 registers needed to be updated, which were the hardware pipeline to the 80-column video memory. That all amounts to a heckuva lot of overhead per character.
4. Some users only had the classic C64 model 1541 disk drive. This was already known for being very slow (to be fair, "faster than cassette"). The newer 1571 drive, released with the C128, was three to six times faster, had double the capacity, and supported several CP/M formats used by other manufacturers.

Some of these issues were clearly not due to

hardware limitations, but stemmed from a lack of optimization for the drivers used in CP/M. The engineers were on a tight schedule and implementing something that wasn't even part of the original C128 design. They would have had to rewrite the 8502 BIOS code in Z80 assembly language, but they were primarily hardware guys. I'm sure Commodore didn't want to spend extra money to optimize a feature they hadn't even asked for. So the simplest, most reliable route was to make calls to the already working and well-tested 8502 BIOS.

A 1999 update to C128 CP/M, by [me] Linards Ticmanis, addresses some of the CP/M driver performance limitations of the original and purports to improve 80-column screen updates by 75%.

http://www.commodore.ca/manuals/funet/cpm/sys/c128/system/cpmfast.zip

After fully reading reference #2, my understanding of the development bottleneck for the CP/M BIOS was clarified. The C128 team did have an excellent CP/M expert working off-site. It was never his goal to have the CP/M BIOS call the 8502 BIOS. Unfortunately the Commodore MOS group (the chip developers) had long-standing major problems delivering a working, stable, and reliable 8563 80-column video controller. This chip had been part of a Z8000 (16-bit version of Z80) Unix computer, the “C900", Commodore had once worked on, and apparently the chip had never been completed even for that use. Thus the 8563's fundamental design was based on an entirely different bus structure than the C128 offered.

The 8563 samples the C128 team received would tend to burn themselves up, arrive with documented deficiencies, and, in general, be altogether unreliable throughout most of the development process. The CP/M guy could not use current hardware. He had a board with an older 8563 revision that wouldn't burn itself up and mostly worked. (He had to keep it cool with an ice cube sat in a tray above it, though.) But ongoing changes to the chip must have kept invalidating his BIOS. My guess is at the last minute he was told something like, "Look, we'll eventually get the I/O working in house with the 8502 BIOS. You just make calls to that, and we'll make sure on our end that it eventually works right."

Z80A only runs at 4MHz half the time. Why should this be the case?

From page 575 of the *Programmer's Reference Guide*:

SYSTEM DESCRIPTION:

The Z80A, a 4MHz version of Zilog's standard Z80 processor, is included as an alternate processor in the C128 system. This allows the C128 to run the CPM 3.0 operating system at an effective speed of 2 MHz. The Z80 is interfaced to the 8502 bus interface and can access all the devices that the Z80 can access. The bus interface for the Z80 (the most complex part of the Z80 implementation) is described in this section, along with Z80's operation as a co-processor in the C128 system.

BUS INTERFACE:

Because a Z80 bus cycle is much different than a 65xx family bus cycle, a certain amount of interfacing is required for a Z80 to control a 65xx-type bus. Since the Z80 has built-in bus arbitration control lines, it is possible to isolate the Z80 by tri-stating its address lines. Thus, both the Z80 and the 8502 share common address lines.

The interfacing of the data lines is more complex. Because of the shared nature of the bus during Z80 mode, the Z80 must be isolated from the bus during AEC low. Thus, a tri-statable buffer must drive the processor bus during Z80 data writes. The reverse situation occurs during a Z80 read — the Z80 must not read things that are going on

during AEC low; it must latch the data that was present during AEC high. Thus, a transparent latch drives the data input to the Z80. It is gated by the Z80 read-enable output, and latched when the 1 MHz clock is low. It will be seen that the Z80 actually runs during AEC low, but that the data bus interfaces with it only during AEC high.

The AEC is a signal pin of the C128's memory management unit. It is defined on pages 584 and 585 of the *PRG*:

AEC: Address Enable Control. Indicates whether the 8502 processor or the VIC has access to the shared bus. When low, VIC or an external DMA has the bus and VA16 have the processor bus, and no pointer or BIOS translation takes place. This signal occupies pin 16.

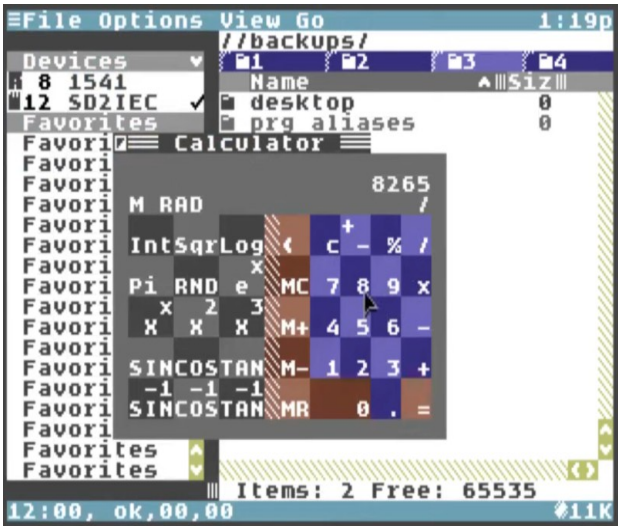
To put it bluntly, "*It's complicated*." The Z80A slowdown may be thought of as something like "wait states". Wait states are to allow a CPU running faster than memory to still operate, especially in an era before on-chip CPU caches alleviated the need for the CPU to access memory every (other) cycle. The problem on the C128 is that a 8502 CPU expects different things from its bus than a Z80 does. In the modern era, you can think of different motherboards being needed for different (yet current) '86 family CPUs. They can't just run the motherboards at slower and faster speeds and expect everything to work. Bil Herd and hintirs team had to work with **one** motherboard and **two** eely different CPUs.

Performance benchmarks?

I was not able to find actual benchmarks. There were several accounts of users lamenting the C128's CP/M speed, and especially its screen updating. IMO the perception of this mode being slow was much more to do with the I/O bottleneck than the effective 2 MHz clock rate of the Z80A. There had been lots of actual 2 MHz CP/M machines using the original Z80; there were few complaints about their speed. But imagine using a CP/M spreadsheet and actually observing one character at a time being written to the screen. It'd be kind of annoying.

New C64 OS Adds Modern Features

by Guest Contributor Byron Cockfield



The Commodore 64 was a revolutionary computer for its day and age. After four decades, though, it gets harder and harder to use these computers for anything more than educational or hobby electronics projects. Gregory Nacu is fiercly determined to challenge this idea, though, and has gone to great extremes to make this hardware still relevant in the modern age by writing a completely new operating system for Commodore machines. http://c64os.com

Known as C64OS, it squeezes everything it can out of the 8-bit processor and 64 Kb of memory. The new OS includes switchable desktop workspaces, a windowing system, draggable icons, a Mac-style menu bar at the top, and drop-down menus for the icons (known as aliases in the demonstrations). The file system is largely revamped as well and enables a more modern

directory system to be used. There are still some limitations like a screen resolution of 320×200 pixels and a fixed color palette which only allows for a handful of colors, but this OS might give Windows 3.1 a run for its money.

The project is still being actively developed but it has come a long way into a fairly usable state. It can be run on original hardware as well as long as you have a method of getting the image to the antique machine somehow. If not, the OS can likely run on any number of C64 emulators…

From the above website, Greg Nacu announced,

"Version 1.0 is planned for physical release in Summer 2022. You'll be able to purchase a copy right here on C64os.com/c64os when it becomes available."

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-The Small Print-

The Fresno Commodore User Group is a club whose members share an interest in Commodore 8-bit and Amiga computers. Our mailing address is 185 W. Pilgrim Lane, Clovis, CA 93612. We meet monthly in the meeting room of Panera Bread, 3590 West Shaw, Fresno, CA. The meetings generally include demonstrations, discussion, and individual help.

Dues are $12 for 12 months. New members receive a "New Member Disk" containing a number of useful Commodore 8-bit utilities. Members receive a subscription to The Interface newsletter, access to the public domain disk library, technical assistance, and reduced prices on selected software/hardware.

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Two bulls were playing cards and smoking weed
The steaks were high...