David Craig

From: Steven Weyhrich
Sent: Thursday, December 26, 2002 3:13 PM
To: David Craig
Subject: Fwd: Apple IIe question

Begin forwarded message:

> From: Rick Auricchio <rick@cfcl.com>
> Date: Wed Dec 18, 2002 12:08:09 PM US/Central
> To: Steven Weyhrich <sdweyhrich@mac.com>
> Subject: Re: Apple IIe question
>
>> Do you remember what parts of DOS 3.2.1 and 3.3 you worked on?
>
> DOS 3.2.1 was a patch to fix disk errors. In late '78 and through part of
> '79, Paul Lutus (developer of AppleWriter) had been experiencing I/O errors
> on his dual-floppy system. He was one of the few in the world with one,
> outside of Apple.
>
> One day, while running his test script (thank goodness he had one), I heard
> the "deselected" drive click during a switch from drive 1 to 2 (or 2 to 1,
> it doesn't matter). It turns out the head on that drive was stepping a
> little bit when it shouldn't have, thus positioning itself off-track. I
> don't recall why a recalibrate didn't recover, but it could be because the
> head was 1/2 track off and it got *some* data, but failed to get it all. I
> believe if you could read address mark headers you didn't recalibrate.
>
> I called Woz over, we looked at it, and he found a new capacitor on the
> motor-control board. Shugart had added this to smooth out the power without
> Apple's knowledge; he attached a scope and saw the power stayed up on the
> drive for perhaps 100mSec after it was deselected.
>
> The seek routine immediately began stepping the "new" drive head right
> after turning off the "old" drive. Because the power didn't shut off
> immediately to the old drive, its stepper had enough power to click a
> little bit.
>
> The problem didn't occur on older drives within Apple, because they didn't
> have that capacitor.
>
> Woz and I added a 150mSec delay to the start of the seek, so there was
> enough time for the old drive to really die. This delay was invisible,
> because the seek would still complete before the spindle motor was up to
> speed.
>
> That was DOS 3.2.1.
>
> ---
>

> For DOS 3.3, I integrated Woz's 16-sector disk "core routines."
>
>> Shephardson Microsystems did the majority of the work on the original
>> DOS 3
>
> Apple bought DOS from them.
>
>> Randy Wigginton and Steve Wozniak wrote the RWTS part of it.
>
> Correct. RWTS, Read-Write Track/Sector, was the main entry point of the
> "core routines," the floppy driver code.
>
>> I was also told that Dick Huston did work on modifying DOS 3.x.
>
> Dick maintained DOS in general, fixing bugs. DOS 3.1 had plenty; DOS 3.2
> fixed a lot of them. Dick also knew the core routines, so he perhaps helped
> with those too.
>
>
>> Also, legend had it (at least at one time) that there was no assembly
>> source file for DOS (at least on the Apple II), but that it was patched
>> via the mini-assembler. Is there any truth in that?
>
> Not true, but close. DOS source lived on an S-100 Z80 system, but I forget
> what kind. That's where Dick made the changes. Some time after I got the
> assembler in good shape on the Apple II, DOS got moved there. I don't
> recall who moved it over. Could've been me, could've been Dick, or perhaps
> John Arkley.
>
> GameBasic on the Apple I, predecessor of Integer Basic, was hand-entered in
> hex by Woz at parties. The Mini-Assembler came later than that...
>
>> David Craig told me that there was a secret in the Apple III called
>> "Devil Mode"
>
> "Satan Mode," a name I made up. Andy Hertzfeld discovered that you could
> use the /// as a II with access to the various features, IF you didn't
> require ALL the hardware compatibility that the "Apple II switch" enabled.
>
> Initial attempts to use it were risky, because there were occasional things
> you'd forget about and you'd just crash. He then created a "Satan Mode
> Boot" diskette, which I later used to run the SubLogic FS-1 flight
> simulator at the increased processor speed.
>
> I don't believe anyone bothered to try using bank-switching, extended
> indirect addressing, or 80-column video in Satan Mode; it was a novelty
> that was neat but didn't become very popular.
>
> Once you flipped the /// into II Emulation Mode, you couldn't flip it out
> without a reset, nor could you access any of the advanced features.
>
>> [made floppy driver] "correct", was it an issue of functioning
>> correctly
>
> Yes. It was in ROM so the system could boot. Dick Huston fixed "the last
> bug" and offered a $50 challenge to find another. Two days later I smugly