

## **Changing DOS 3.3 FileTypes in an Aztec C65 Version 3.2b DOS 3.3 Program**

When Aztec C65 Version 3.2b was released it offered support for standard “RAW” DOS 3.3 Binary (BIN) Programs as well as ProDOS 8 SYS programs (and ProDOS 8 BIN Programs to be launched in ProDOS’s BASIC.SYSTEM).

However, the RWTS (ReadWriteTrackSector) library function that had been provided with the earlier DOS 3.3 version of Aztec C65 was missing. Without rwts() it is not possible within DOS 3.3 to read the catalog sectors to list the files on a DOS 3.3 disk, nor to change the DOS 3.3 File Type in the catalog sector’s File Entries.

And so I decided to port the rwts() function from the earlier version to see if it would work with version 3.2b. It didn’t. In the end, I rewrote rwts() almost from scratch (mostly in C), and then wrote a menu-driven “RAW” DOS 3.3 utility called “chtype” which incorporates my new rwts() function into a working program which lists DOS 3.3 files and changes DOS 3.3 file types:

<http://www.aztecmuseum.ca/extras/CHTYPE.zip>

## **Reading the File Entries in a DOS 3.3 Catalog using RWTS**

Wikipedia describes RWTS as “the first layer” of the Apple DOS operating system and goes on to say that the Apple DOS File Manager was built on top of the RWTS layer:

[http://en.wikipedia.org/wiki/Apple\\_DOS](http://en.wikipedia.org/wiki/Apple_DOS)

Finding a file in the DOS 3.3 catalog sector is a bit of a chore. Before calling RWTS to read File Entries in a DOS 3.3 catalog, the VTOC (Volume Table of Contents) at track 17, sector 0 must be read (using RWTS) to find the first catalog sector. Then RWTS must be called to read each catalog sector in order to search through the File Entries in those sectors until the file is found. If you wish to change the DOS 3.3 File Type, it must be changed in the sector and written back to disk using RWTS.

Making a list of files (in whatever format) follows the same method as finding a file.

## **Assembly Language Routines**

My Aztec C65 version 3.2b rwts() function uses two tiny assembly language helper functions and my own sector buffers in the chtype program. I use structures pointing into the sector buffers to “drill-down” and “decode” and “recode” the information in the sector buffers.

## **Changing DOS 3.3 FileTypes in an Aztec C65 Version 3.2b ProDOS 8 Program**

It is also possible to read and write to a DOS 3.3 disk at the track and sector level from a ProDOS program using the ProDOS MLI (machine language interface).

Aztec C65 for ProDOS does not provide direct support for the READBLOCK and WRITEBLOCK ProDOS MLI calls. However C65 does provide a `_system()` interface for making ProDOS MLI calls.

After writing the `rwts()` function and the `chtype()` programs for C65 3.2b, I decided to write an equivalent function for reading and writing sectors on a DOS 3.3 disk from ProDOS in C65 3.2b using the `_system()` function in the Aztec C65 runtime library for ProDOS .

And so in the end, I first wrote a ProDOS function called `rwblock()` which reads and writes blocks to the ProDOS filing system and a function called `rwtsblock()` which calls `rwblock()` and performs the same reading and writing functionality for DOS 3.3 disks as the “RAW” DOS 3.3 `rwts()` function. I then wrote a ProDOS SYS program called “cat33.SYS” which incorporates my new `rwtsblock()` function into a working program which lists files on a DOS 3.3 disks. Finally I got even braver and wrote “`chtype33`” which is the ProDOS version of the “RAW” DOS 3.3 utility, and which incorporates my new `rwtsblock()` function into a working program which lists DOS 3.3 files and changes DOS 3.3 file types from ProDOS:

<http://www.aztecmuseum.ca/extras/READBLK.zip>

### **Reading the File Entries in a DOS 3.3 Catalog using READBLOCK**

Finding a file in the DOS 3.3 catalog sector from ProDOS involves the same method as using RWTS in DOS 3.3. Before calling READBLOCK to read File Entries in a DOS 3.3 catalog, the VTOC (Volume Table of Contents) at track 17, sector 0 must be read (using READBLOCK) to find the first catalog sector. Then READBLOCK must be called to read each catalog sector in order to search through the File Entries in those sectors until the file is found. If you wish to change the DOS 3.3 File Type, it must be changed in the block and written back to disk using WRITEBLOCK. Making a list of files (in whatever format) follows the same method as finding a file.

### **Additional Information for sector editing of DOS 3.3 Disks from Aztec C65**

Additional information and notes about all of this are provided in the source code for the functions and programs mentioned above. Working programs, disk images and source code are included in their respective downloads:

#### **DOS 3.3 RWTS example:**

<http://www.aztecmuseum.ca/extras/CHTYPE.zip>

#### **ProDOS 8 READBLOCK equivalent example (almost):**

<http://www.aztecmuseum.ca/extras/READBLK.zip>

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September 2013