

CoCoPAK[®]

User Manual

Ver. 1.0.0

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INTRODUCTION

What is CoCoPAK?

CoCoPAK is a Windows based utility used as a supplement to Roger Taylor's MicroSD Drive Pak cartridge for the Radio Shack Color Computer. This utility allows you to edit and manipulate information on SD cards **off line** using a standard card reader and a Windows XP based computer.

In it's first release, CoCoPAK gives you the tools to import/export RSDOS .DSK files, Add/Delete Partitions, import/export image files and much more. However, in an effort to get this software to you quickly, some advanced features have not been implemented yet. Future releases will include some of the following features:

Offline editing – The editing of disk images without the physical SD card installed. This will allow you to create partitions and disks off line and write to a complete image to the card all at once. This will reduce the write cycles of the card, thus prolonging it's life.

Compressed Partitions – This feature will allow a more efficient method of storing data on a card. This may require a firmware update of your MicroSD Drive Pak.

Full partition Export/Import – This feature is currently on hold until the compressed partition feature is fully implemented.

OS9 Directory Tree – It's also a plan to display OS9 directories on the main dialog. This will be implemented in Phase III of the project.

A Note to Vista (and above) Users

CoCoPAK is written to work on most Windows operating systems. However, users of Vista and later operating systems will not be able to use this software unless running it under XP emulation mode. Microsoft, in an effort to increase security, prevents sector level direct access to all drives including external and removable type media. Later versions of this software may correct this restriction but it would require circumventing security protocols inlayed by Microsoft.

Information about Flash Cards

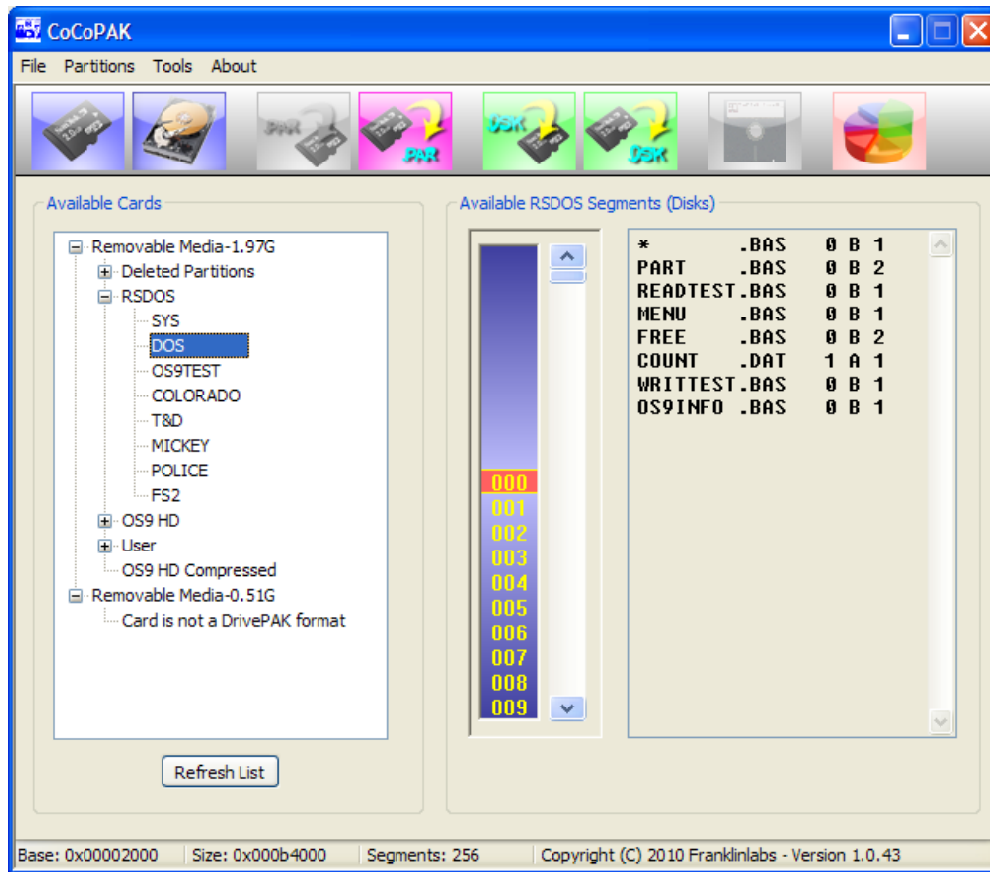
Flash media is a non-volatile memory that has grown in popularity over the years as a viable method for holding data in a small footprint with portability. Flash has been produced in many forms that have shrunk physically and grown in density (i.e. cards get smaller and memory size has increased).

These fantastic devices don't come without they're down side. Writing data to these devices is slow. A typical 2Gig card can take up to 15 minutes to completely write every sector. Additionally, flash has a limited number of write cycles. The number of write cycles has been greatly increased with techniques such as wear leveling. But eventually, the card will fail after repeated write cycles. So keep the write cycles to a minimum. Reading the card does not effect the life of the card.

The format stored on these cards is determined by the operating system. Typical formats are FAT16, FAT32, NTFS. The format used for the MicroSD DrivePak is a custom format

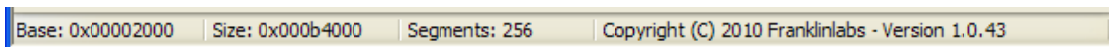
developed by Roger Taylor. This format is not compatible with any Microsoft based formats. Therefore, Microsoft operating systems cannot read the disk when formatted in this manner. This is why CoCoPAK was created.

MAIN DIALOG



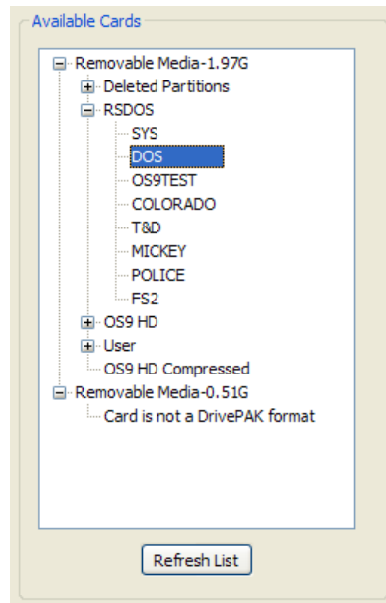
The Main Dialog

The main dialog is split into two sections. The left side is the partition tree. It shows the partitions contained on the card. The right side shows the selected RSDOS directory. On the bottom of the dialog are some informational sections. It shows the base address and size information of the selected partition. Additionally, it shows the number of drive segments located on a selected RSDOS directory.



Bottom Information Section

Partition Tree listing Area



The Partition Tree

The partition tree listing shows the partitions on all the detected cards connected to the computer. Up to 16 cards can be displayed at any one time. At the bottom of the tree area is a button labeled **REFRESH LIST**. This button causes the software to rescan the computer for new cards added.

This list will show only MicroSD Formatted partitions. Cards not formatted or formatted under a different system will display "This card is not a DrivePak Format".

Partition Types – There are currently 4 partition types available.

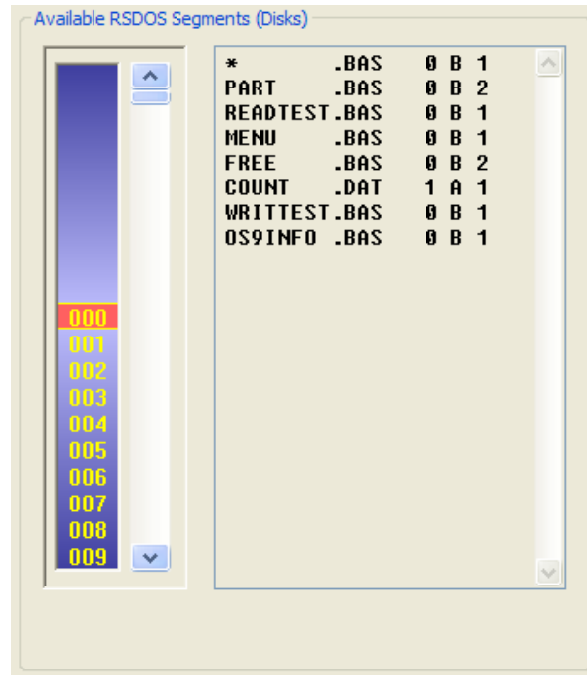
RSDOS – This partition type holds disk segments formatted in the CoCo's native RS DOS format. There can be up to 256 individual disk segments in a single RSDOS partition.

OS9 HD – This partition type is specific for OS9 type disks

USER – The user partition type is for custom partitions. Currently, it's used for very large OS9 partitions of 31meg or more.

COMPRESSED – All other partition types put a 256-byte sector image on the lower portion of the 512-byte sector of the card. Compressed format utilizes both upper and lower halves of the 512-byte card partition to increase efficiency. However, this release does not support this partition type but will in future releases.

RSDOS View Area



The RSDOS Segment Area

Disk Selection Wheel – With a RSDOS partition selected, the Disk selection wheel allows you to select one of up to 256 disk segments located in the RSDOS partition. Use the scroll bar to the right of the wheel to select the segment.

RSDOS Directory – To the right of the disk selection wheel is the RSDOS directory listing. This listing is similar to the listing you would see on a real CoCo when you type the DIR command.

Toolbar

The toolbar is separated into 4 sections. It's used as a quick access point to most commonly used functions that also exist in the drop down menu.



The Main Toolbar

Blue – This section is for importing and exporting complete card images.

Magenta¹ – This section allows the import and export of single partitions.

Green – This section allows the import and export of single RSDOS disk segments.

Orange¹ – This section is for partition and disk management.

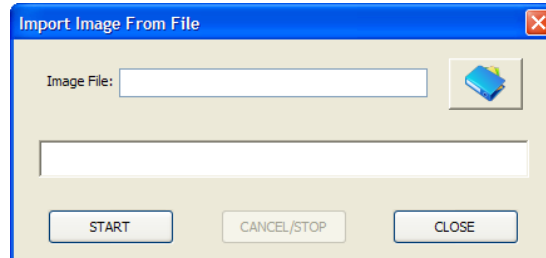
Note 1:

Some functions have been disabled but will be enabled in future releases.

DROP DOWN MENUS

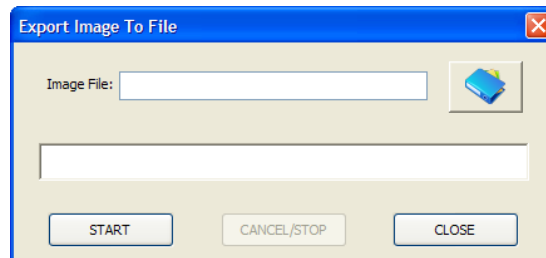
File Menu

Import Card Image – This function will import complete disk images (.IMG) files to a SD card. The data on the card will be destroyed so be sure to take precautions. The previous data cannot be recovered once this process begins. Also, the physical chip must be equal to or larger than the image size. This process could take up to 20 minutes



To use this function, press the folder button on the right or type in the path and filename to the image file. Press the START button to import the image. A status bar will show the progress. Note: a destination card must be selected in the partition tree listing area

Export Card Image – This function allow you to save the entire card to an image (.IMG) file. Be sure you have enough hard drive space to save this file. This process could take up to 15 minutes.

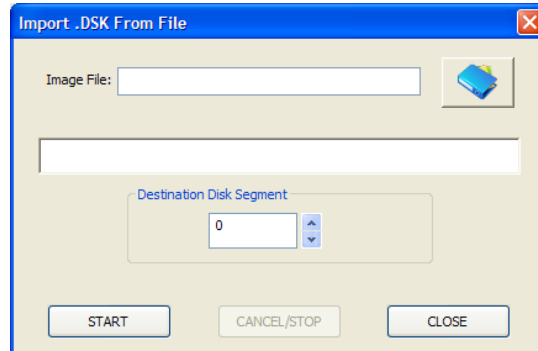


To use this function, press the folder button on the right or type in the path and filename to the image file. Press the START button to import the image. A status bar will show the progress.

Note:

A destination card must be selected in the partition tree listing area

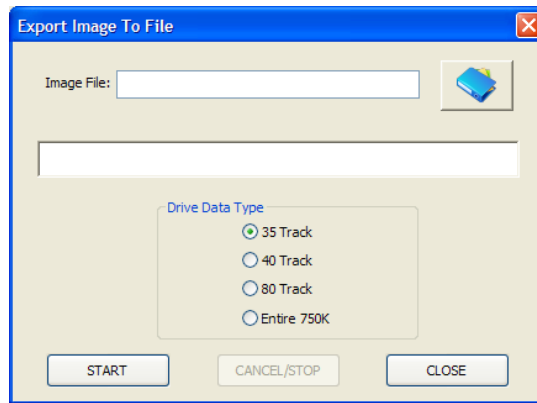
Import DSK To RSDOS Partition – This function will import 35, 40 80 or 160 track .DSK image files to any selected RSDOS partition segment. A RSDOS segment must be selected for this function to operate.



To use this function, select a RSDOS partition and use the segment wheel to select a destination segment. Use the folder button or type the complete path and filename to the source .DSK file to import. The Destination segment should display the selected segment. You can also change the segment at this time. Press START to proceed with the import of the .DSK file. A progress bar will display the status.

It is also possible to import OS9 .DSK files to an OS9 partition with some restrictions. *The OS9 partition must be the same size as the .DSK file (typically 0xb40). If the size is different, there may be card format corruption as no size check is made.* Select the destination partition and from the File->Import RSDOS .DSK file, select the OS9 formatted .DSK file.

Export DSK From RSDOS Partition – This function allows you to save a 35, 40, 80 or 160 track RSDOS DSK image file from a selected segment.



To use this function, select a RSDOS partition and use the segment wheel to select a destination segment. Use the folder button or type the complete path and filename to the destination .DSK file to export. Select the size of the .DSK file to export. Press START to proceed with the import of the .DSK file. A progress bar will display the status.

Note:

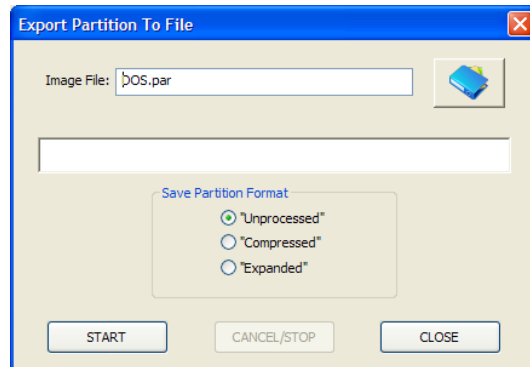
Selecting a smaller .DSK segment to save than what exists on the card will corrupt data.

Import Partition – This function allows you to import a complete partition to the card.

Note:

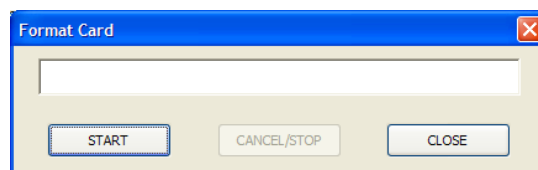
This function is not implemented yet in this release.

Export Partition – This function will save a complete partition to your PC. This feature will be used in conjunction with the import partition function above. Although this function is available in this release, there's no current method to import the partition back.



Note:
All partitions will export in standard 512-byte/sector format (uncompressed). Future releases will support compressed sector formatting.

Format Card (DrivePAK) – This function will format a SD card in the MicroSD DrivePAK format. It creates a two directories; SYS and DOS. The SYS directory must be present and is used by the OS and the DOS directory is a completely blank 256-segment partition. This function can take up to 10 minutes and will destroy all the data on the card.

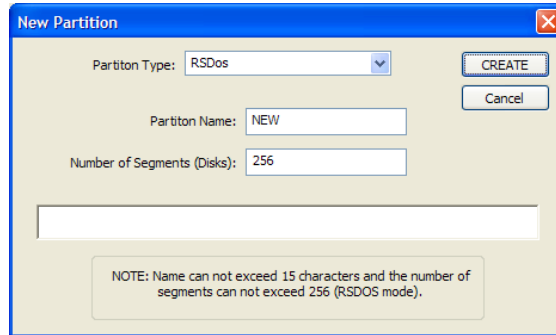


To use this function, simply press the Start key. A progress bar will indicate the current status of the format procedure.

Note:
Canceling this function mid term may cause the software to display a valid partition list but could fail when accessing. Be sure to reformat the card before using it.

Partitions Menu

Create a Partition – Allows the creation of a partition on the flash card.

A screenshot of a 'New Partition' dialog box. The dialog has a blue title bar with the text 'New Partition' and a close button. Inside, there are three input fields: 'Partition Type' with a dropdown menu showing 'RSDos', 'Partition Name' with the text 'NEW', and 'Number of Segments (Disks)' with the text '256'. To the right of these fields are two buttons: 'CREATE' and 'Cancel'. Below the input fields is a large empty text area. At the bottom, there is a note in a small box: 'NOTE: Name can not exceed 15 characters and the number of segments can not exceed 256 (RSDOS mode)'.

To use this function, first select the type of partition to be created. If RSDOS is chosen, type in the partition name and the number of segments (disks) to be created in this partition. Press the CREATE button to start the creation process. This process can take several minutes.

Other partition types can be created but are restricted to partition size with this release. OS9 HD restricted to 0xb40 and USE is restricted to 0x1e000 (30 Meg).

The name of the partition MUST be unique. The software will check for existing partitions before creating a new one.

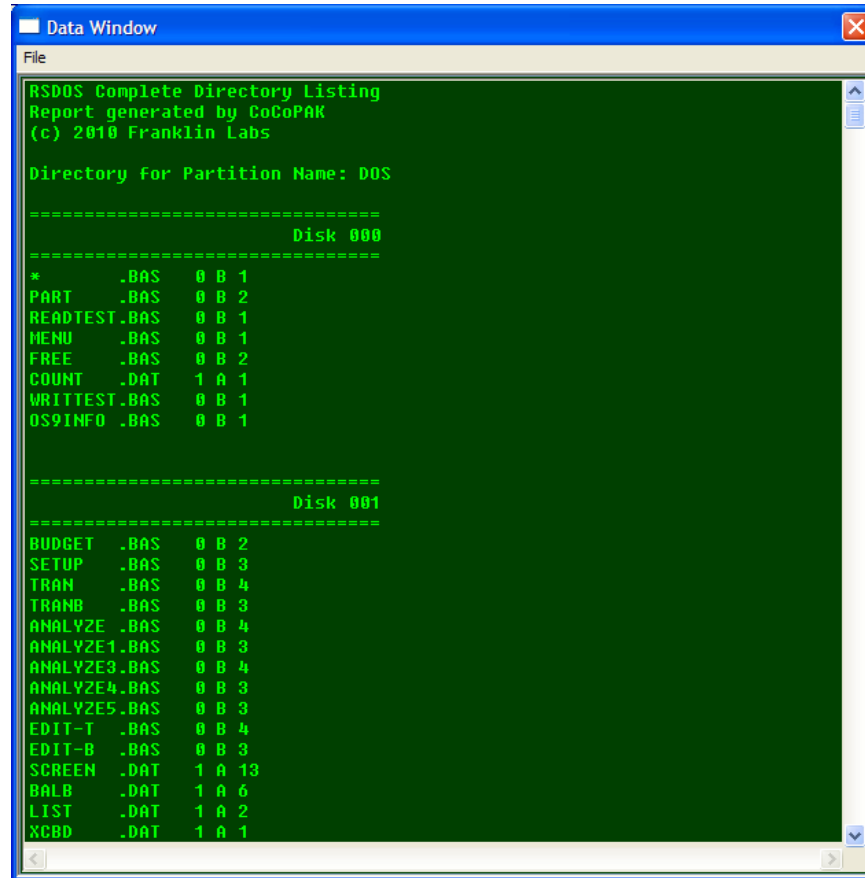
The software will first use deleted partition space to create the new partition. If a new partition is created that is smaller than the deleted partition size, this creates a fragmentation. This unused space is not recoverable on this release. Later releases will have a defragment utility to clean up fragmented space.

Delete a Partition Menu – This function deletes a selected partition from the partition table. The deleted partition will be marked and transferred to the Deleted Partition Tree section. The space is now available for use when making a new partition. There is no dialog associated with this function.

Format Selected Partition – This function will format a selected partition. It erases all the items in the partition and restores the sector data to a blank state.

Tools Menu

Partition List to File – This feature scans the card and displays the partition details for saving to a text document for reference.



```
Data Window
File
ASDOS Complete Directory Listing
Report generated by CoCoPAK
(c) 2010 Franklin Labs

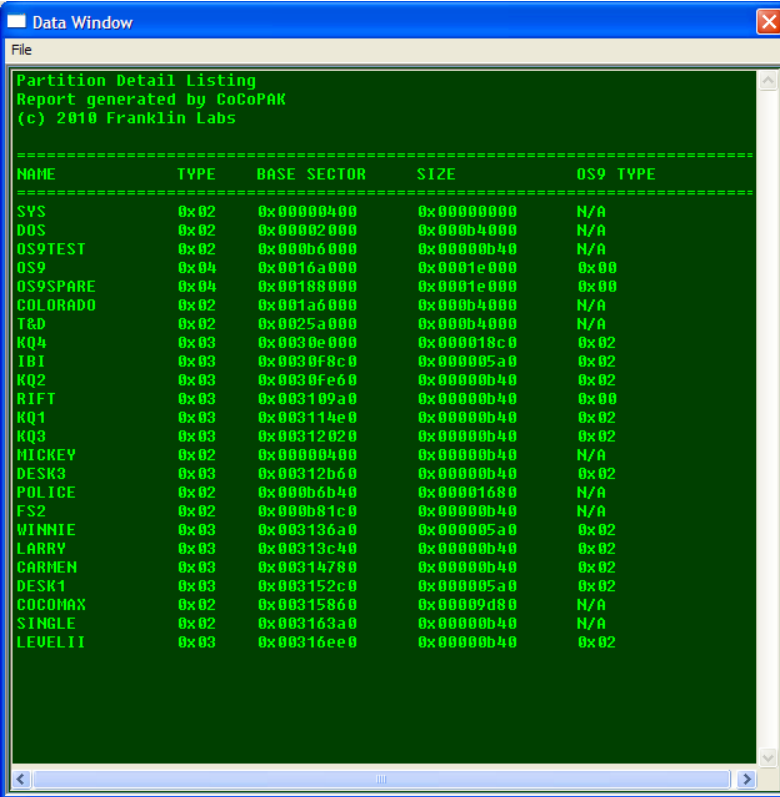
Directory for Partition Name: DOS

=====
Disk 000
=====
*      .BAS    0 0 1
PART   .BAS    0 0 2
READTEST.BAS  0 0 1
MENU   .BAS    0 0 1
FREE   .BAS    0 0 2
COUNT .DAT    1 A 1
WRITTEST.BAS  0 0 1
OS9INFO .BAS    0 0 1

=====
Disk 001
=====
BUDGET .BAS    0 0 2
SETUP   .BAS    0 0 3
TRAN    .BAS    0 0 4
TRANB   .BAS    0 0 3
ANALYZE .BAS    0 0 4
ANALYZE1.BAS  0 0 3
ANALYZE3.BAS  0 0 4
ANALYZE4.BAS  0 0 3
ANALYZE5.BAS  0 0 3
EDIT-T   .BAS    0 0 4
EDIT-B   .BAS    0 0 3
SCREEN  .DAT    1 A 13
BALB    .DAT    1 A 6
LIST    .DAT    1 A 2
XCBD    .DAT    1 A 1
```

This displayed information can be saved to a file as .TXT document by selecting the SAVE feature under the File menu.

RSDOS Directory Listing to File – This function will scan the selected RSDOS segments and displays the directories of all the valid disks. This data can then be saved to a file for future reference.

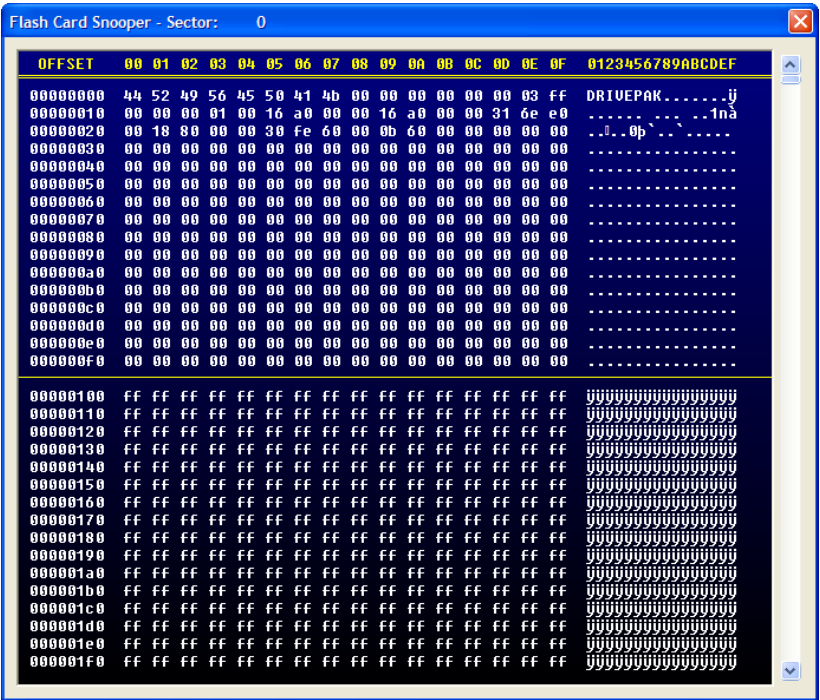


Partition Detail Listing
Report generated by CoCoPAK
(c) 2010 Franklin Labs

NAME	TYPE	BASE SECTOR	SIZE	OS9 TYPE
SYS	0x02	0x00000400	0x00000000	N/A
DOS	0x02	0x00002000	0x000b4000	N/A
OS9TEST	0x02	0x000b6000	0x00000b40	N/A
OS9	0x04	0x0016a000	0x0001e000	0x00
OS9SPARE	0x04	0x00188000	0x0001e000	0x00
COLORADO	0x02	0x001a6000	0x000b4000	N/A
T&D	0x02	0x0025a000	0x000b4000	N/A
KQ4	0x03	0x0030e000	0x000018c0	0x02
IB1	0x03	0x0030f8c0	0x000005a0	0x02
KQ2	0x03	0x0030fe60	0x00000b40	0x02
RIFT	0x03	0x003109a0	0x00000b40	0x00
KQ1	0x03	0x003114e0	0x00000b40	0x02
KQ3	0x03	0x00312020	0x00000b40	0x02
HICKEY	0x02	0x00000400	0x00000b40	N/A
DESK3	0x03	0x00312b60	0x00000b40	0x02
POLICE	0x02	0x000b6b40	0x00001680	N/A
FS2	0x02	0x000b81c0	0x00000b40	N/A
WINNIE	0x03	0x003136a0	0x000005a0	0x02
LARRY	0x03	0x00313c40	0x00000b40	0x02
CARMEN	0x03	0x00314780	0x00000b40	0x02
DESK1	0x03	0x003152c0	0x000005a0	0x02
COCOMAX	0x02	0x00315860	0x00009d80	N/A
SINGLE	0x02	0x003163a0	0x00000b40	N/A
LEVELII	0x03	0x00316ee0	0x00000b40	0x02

Similar to the RSDOS Directory listing, this displayed information can be saved to a file as .TXT document by selecting the SAVE feature under the File menu.

Card Snooper – The card Snooper tool allows you to inspect all the sectors of the card. Selecting a partition and calling Card Snooper will take you to the top of the partition. RSDOS partitions will automatically be offset to the first sector of the selected segment.



Card Wiper – This future function will allow you to totally wipe the card clean thus preparing it to be formatted with other OS formats.

About

Who is the author? I am an Electrical Engineer from Chicago with 35 years of programming under my belt. While in college, I bought a CoCo (original gray model) and was hooked on programming. I wrote my first machine language program for the CoCo by poking data into memory. Since the release of the MicroSD Drive PAK, I got my CoCo out of the attic and fired it up. Still works after all these years, amazing!

I am a licensed pilot and an avid musician. I played guitar in clubs in the Chicago area to get me through college. That's about it.