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DISK RECOVERY ("THE SCANNER")

Now you can continue using your diskettes after the dreaded message 'DISK I/O ERROR' appears without having to see the message again. THE SCANNER checks a diskette for bad sectors using a unique access technique for fast speed (approximately 19 seconds for the Bad Sector Scan on a 16-sector diskette, and 32 seconds on a 13-sector diskette). Messages are displayed throughout the testing, informing you exactly what is happening. When bad sectors are found, a 'BAD SECTOR' file is created. Thereafter, the bad sectors will not be accessed by DOS. THE SCANNER can use this 'BAD SECTOR' file in future checks.

Not only does THE SCANNER check and mark bad sectors, it also verifies all the files in the directory, telling which sectors are used by each file. If the file uses bad sectors, illegal track/sector combinations, or track/sectors used by other files, you will be asked if the file should be deleted. When the chosen options are completed, a map of the diskette's sector usage is displayed. The map shows which sectors are used, unused, and which are bad. Also, a report is given that includes: number of bad sectors, number of deleted files, number of sectors mismarked on the diskette, and the number of free sectors.

All of these checks are done without modifying the diskette's directory so you have the final word whether or not the diskette should be corrected.

Not only does DISK RECOVERY work with DOS 3.1, 3.2, 3.2.1, and 3.3, it can also be used with MUSE DOS. It is a MUST for SUPER-TEXT owners.

Hardware: APPLE II or APPLE II PLUS
1 or 2 DISK II Drives

Memory: 48K

Language: 6502 machine language

DOS: 3.1, 3.2, 3.2.1, or 3.3

Written by: Roger Tuttleman

Includes: Diskette & User Manual

Price: \$30.00

From:



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INTRODUCTION

THE SCANNER checks a diskette for bad sectors (those sectors that DOS cannot read), using a unique access technique for high speed. It creates a special TEXT file ('BAD SECTORS') in the diskette directory that prevents DOS from accessing these bad sectors. Thereafter, the bad sectors will not be accessed by the Disk Operating System. If a 'BAD SECTOR' file has already been created and the diskette is rechecked, the user has the option of using or not using the old 'BAD SECTOR' file. When the old 'BAD SECTOR' file is used, the bad sectors already found will not be checked. This not only speeds up the sector checking, but also means the disk drive will not have to re-seat to track 0 on previously found bad sectors. THE SCANNER shows the track and sector being checked and lists any track/sector that is ill-formatted.

THE SCANNER can also verify all the files in the directory. A list of the track/sector pairs that a file uses is displayed on the screen along with the file name. If the file's track/sector list contains bad sectors, illegal track/sector combinations, or track/sectors used by other files, the user will be asked if the file should be deleted.

After the options are completed, a map of the diskette's sector usage is displayed. The map shows which sectors are used, unused, and which are bad. Next, a report is given that includes: the number of bad sectors, the number of deleted files, number of sectors mismarked in the old VTOC, and the number of free sectors.

Until this time, no changes have been made to the actual directory. If all the sectors are correctly marked and no errors are found, the user is informed that the diskette is in fact good. Otherwise, the user is asked if he wants to update the directory of the diskette to reflect the corrections.

SETTING UP THE DISKETTE

THE SCANNER must be configured for the DOS that it will be used with. Boot a disk (preferably a Master) with the type DOS that you want to use THE SCANNER with. If you have the Language Card, you may want to load it with BASIC; next, insert THE SCANNER diskette into drive 1, then boot the diskette by typing 'PR#6' in BASIC or '6 CONTROL-P' from the monitor. IMMEDIATELY after pressing the 'RETURN' key, press the 'ESCAPE' key. The program will respond with:

CONFIGURE?

Answer with a 'Y'. THE SCANNER now asks if you want to save the Language Card. If you have a Language Card and have loaded it with BASIC, you may use THE SCANNER to 'QUICKLOAD' it. (The QUICKLOADER series from SENSIBLE SOFTWARE loads your choice of DOS, the Language Card, and the application program in under 9 seconds, 5 seconds without loading the Language Card.)

To save the Language Card, answer with the 'Y' key or use the 'N' key for Apples without the Language Card. DOS and the Language Card code is then saved to the diskette. The diskette is now automatically re-booted, and THE SCANNER is run. When the program is configured for 13-sector diskettes (DOS 3.1, 3.2 or 3.2.1), it will work with any of the 13-sector DOS's. The diskette must be reconfigured any time that you want to use it with the opposite type DOS (13-sector versus 16-sector types).

NOTE: IT IS ALWAYS BEST TO CONFIGURE THE DISKETTE FROM A DOS MASTER DISKETTE. DO NOT RUN ANY DISK UTILITY PROGRAMS BEFORE CONFIGURING THE SCANNER, as some of them do modify DOS causing unpredictable results.

USING THE SCANNER

Once THE SCANNER diskette has been configured for the DOS that is required, simply boot the diskette to run the program. An instruction page will be displayed on the screen. At the bottom of the screen, the message 'SLOT=6' (with the 6 in inverse video) will be displayed. The 'ESCape' key may now be pressed to exit the program. If your Disk Controller Card is located in slot 6, simply press the 'RETURN' key. If your controller card is in another slot, enter the slot number. If you mistakenly enter the wrong slot number, press the 'ESCape' key to return to the 'SLOT=6' question. Next, the drive number is requested. The default drive number is the last one accessed (initially drive 1). Enter either the number of the drive to be accessed, or 'RETURN' for the default drive.

THE SCANNER will now read the directory of the diskette into memory. If a 'DISK I/O ERROR' occurs during the reading of the directory, THE SCANNER cannot repair the diskette. Once the directory is read, the following message is displayed:

DO YOU WANT TO DO A:
C - COMPLETE CHECK, OR
R - REBUILD THE VTOC ONLY

SCANNING FOR BAD SECTORS

C - COMPLETE CHECK

If a 'BAD SECTOR' file has been previously created, you will be asked:

USE 'BAD SECTOR' FILE?

If you suspect that some or all of the old bad sectors may now be good, answer the question with an 'N'; otherwise, answer with a 'Y'. (Maybe you had the disk drive re-aligned or the head cleaned.) All sectors will be checked unless there is a 'BAD SECTOR' file on the diskette or if you answered 'N' to the bad sector file question. THE SCANNER uses a very fast method of accessing the sectors on the diskette and only takes 19 seconds to check a 16-sector diskette (about 30 seconds for a 13-sector diskette). Free sectors on 13-sector diskettes are OVERWRITTEN during the bad sector scan (all deleted files will be destroyed). A display of which sector is being checked is shown throughout the scan. If a bad sector is encountered, a message is printed informing you which track/sector is bad and whether it is presently marked free, used, or is a DOS sector. The search may be temporarily stopped or restarted by pressing any key other than the 'ESCape' key. Work on a diskette may be aborted by pressing the 'ESCape' key. After all the sectors have been checked, the number of bad sectors previously on the diskette and the total number of bad sectors now on the diskette will be reported:

OLD BAD SECTORS: 0
TOTAL BAD SECTORS: 0

'OLD BAD SECTORS' is the number of bad sectors previously found on the diskette (if using the bad sector file), while the 'TOTAL BAD SECTORS' is the 'OLD BAD SECTORS' plus the number of newly found bad sectors. If no new bad sectors are found, you will be asked if you still want to rebuild the VTOC (Volume Table of Contents). When bad sectors are found, all files in the directory will automatically be verified by rebuilding the VTOC. THE SCANNER can store a maximum of 122 bad sectors per diskette.

DOS for 13-sector diskettes does not write to any unused sectors, and a DISK I/O ERROR will result from any attempt to read from a sector that has not been written to previously. For this reason, THE SCANNER must write to free sectors on 13-sector diskettes. The VTOC is automatically rebuilt before the scanning for bad sectors is started. This only applies to 13-sector diskettes (DOS 3.1, 3.2, and 3.2.1).

REBUILDING THE VTOC

R - REBUILD THE VTOC

On track 11 (hex, 17 decimal), sector 0, DOS keeps a table of which sectors are used and which are free. Occasionally, the table (called the Volume Table of Contents) does not truly reflect the correct state of the sectors. THE SCANNER checks each file on the diskette for the following:

1. Valid track/sector lists. The first sector of each file is a list of track/sector pairs that the file uses. For very large files, there may be more than one track/sector list. THE SCANNER displays: the file name, then the track/sector which contains the list of track/sectors used by that file (enclosed in parentheses), followed by the actual track/sectors used by the file data. All tracks and sectors are displayed in hexadecimal.
2. Valid track/sectors used by the file. Bad track/sectors within the track/sector list are displayed on a separate line in inverse with the words 'BAD: TRK xx, SEC xx'.
3. Sectors shared by more than one file. If two or more files use the same sector on a track, the word 'ERR' will be displayed after the sectors involved. The file with the first occurrence of the sector will not be flagged.
4. Sectors mismarked in the old VTOC. Any sectors that were marked free in the old VTOC and that are used by a file will have an inverse space after the sector number.

When errors 1 through 3 occur, you will be asked if you want to delete the file. Answer with a 'Y' or 'N'. Once all the files in the directory have been checked, a map is displayed showing the status of all of the sectors on the diskette. Sectors presently not used are designated by a space, used sectors by an asterisk (*), and bad sectors by an inverse space (solid white square). When you are through viewing the map, press any key.

THE REPORT

After the VTOC has been rebuilt and the disk map displayed, THE SCANNER prints a report informing you of:

1. Number of previously found bad sectors (from the old 'BAD SECTOR' file).
2. Total number of bad sectors now on the diskette.
3. The number of files deleted during this run.
4. How many track/sector list errors have been found.
5. The number of sectors mismarked in the old VTOC.
6. How many sectors are free (currently not being used by a file or DOS).

If the sectors normally used by DOS (all the sectors on tracks 0 through 2) have previously been freed or a file has accidentally overwritten DOS, an informative note will be displayed. THE SCANNER fully supports diskettes with deleted DOS or freed, unused DOS sectors. For example, on a DOS 3.3 diskette, sector 9 through 15 on track 2 are not used by DOS. If you have modified the VTOC to free these sectors, THE SCANNER will remark them as free and still mark the other sectors used by DOS as used.

If no bad sectors have been found and all the files are all right on the diskette, THE SCANNER will inform you that the disk is good and return to the instruction page, or else you will be asked if you want to update the diskette to reflect the mentioned changes. No actual changes have been made to the diskette up to this point. Press the 'U' to perform the update.

THE 'RESET' KEY

The 'RESET' key is very often a serious problem to software. But if you have an AUTOSTART ROM, it can be used to your advantage in THE SCANNER. When the 'RESET' key is pressed, you will be returned to the instruction page, ready for another diskette. So, if you want to start the editing process over, just press the 'RESET' key. Do not press the 'RESET' key while the disk drive is turning.

If you have the old MONITOR ROM and you accidentally press the 'RESET' key, you must reboot THE SCANNER diskette. There are NO valid entry points back into the program.

SPECIAL NOTES

1. Due to the way 13-sector DOS works (DOS 3.1, 3.2, and 3.2.1), all free sectors will be OVERWRITTEN during the bad sector scan. Therefore, THE SCANNER automatically runs the REBUILD VTOC option BEFORE doing a bad sector scan on 13-sector diskettes.
2. On 13-sector diskettes, errors on track 0, sector A and track 2, sectors 9 through C will be ignored. The errors on track 2 normally occur on newly initialized diskettes. The error on track 0 is usually the result of running the program UPDATE 16. UPDATE 16 modifies a 13-sector diskette so that it can be booted on disk drives with the new or old EPROMs. A copy of UPDATE 16 may be obtained from many of the local Apple user groups.
3. When configuring THE SCANNER diskette, it is always best to use a DOS Master diskette. Do NOT run any disk utility programs before configuring THE SCANNER, as some of them do modify DOS causing unpredictable results.
4. Do not use THE SCANNER on protected software, it probably will not work (worse yet, it may destroy it). The only exception to this is MUSE DOS. THE SCANNER operates in the normal way on SUPER-TEXT diskettes, just follow the normal setup procedure.

DISCLAIMER

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HAPPY SCANNING