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SERIALIZATION AND DUPLICATION INSTRUCTIONS

All Information Presented Here is Proprietary to Digital Research

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Section 1: Overview

1.0 Overview

Both Serial8 and Serial16 are Beta Site test programs designed to duplicate and serialize Digital Research Inc. Software on a wide variety of microcomputers.

The programs were designed to simplify the operator interface by eliminating the need for several different duplication and serialization programs. In order to reduce the possibility of an incorrect source disk being used for duplication, both serialization programs require the operator to input the correct number of serial fields for each and every source diskette.

Section 2: Product Description

2.1 Serial8 Description

Serial8 is a program written in assembly language to run on CP/M-80 based systems. The program will copy and serialize all of Digital Research's Language and Graphic products. Serialization is accomplished by first scanning physical traits of the source diskette, including bytes/track, sector/track, sector skewing of the particular computer system and the number of reserved tracks. Next the diskette is scanned for blank tracks beginning with the innermost track. Blank tracks will not be included in the copy process in order to reduce copy time. The program also computes the amount of free memory to be used as a buffer area for track data. Because this area will probably be too small to hold the entire contents of the source diskette, the program computes the number of tracks that can be held at one time in the memory available, which is referred to as a "page". Pages are read from the source disk and written to the destination disk one at a time until the entire source diskette has been copied. Between the reading and the writing of the data the buffer area is searched for serial fields; when found the serial field is replaced with the current serial number. A running total of the serial fields found is kept, and at the end of the copy process, the total is compared with the total entered by the operator. If the two numbers do not match, the serialization process is terminated. At this point, diskette verification will occur if the operator has requested that option. The program keeps a running total of the diskettes produced; when this total is an exact multiple of the verification frequency entered by the operator, the data area of the source and destination diskettes will be compared track-by-track. If this fails serialization is terminated, otherwise the operator is prompted to remove the old destination diskette and insert a new diskette.

2.2 Serial16 Description

Serial16 is a program written in assembly language to run under CP/M-86 based systems, and it runs in the same manner as Serial8 (see Section 2.1 above).

Section 3: Hardware Requirements

3.1 Serial8

In order to duplicate software provided in this O.E.M. kit,

an eight bit microcomputer must be used. The microcomputer must meet the requirements listed below:

- o Z80, 8080 or 8085 microprocessor based
- o CP/M 2.0 or more recent operating system
- o 64k memory
- o At least two eight-inch flexible disk drives
- o Skew for a 128 byte/sector single density diskette must be 6

3.2 Serial16

In order to duplicate software provided in this O.E.M. kit, a sixteen bit microcomputer must be used. The microcomputer must meet the requirements listed below:

- o 8086 or 8088 microprocessor based
- o CP/M-86 operating system
- o At least 128k memory
- o At least two eight-inch flexible disk drives
- o Skew for a 128 byte/sector single density diskette must be 6

Section 4: Duplication Instructions

4.1 Serial8 Duplication Instructions

Operation of the eight bit serialization program is simple and straightforward. A step-by-step operations guide is listed below:

- o Boot system under CP/M .
- o Insert Serialization Diskette in any drive.
- o Call Serial8 program by entering <drive>:Serial8.

- o Program banner will appear; if this does not occur refer to support notes.
- o The operator is prompted for source drive (drive from which the master will be copied).
- o The operator replies with a letter code for source drive (A - P) followed by carriage return.
- o The operator is then prompted for the destination drive (drive to which master will be copied).
- o The operator enters A-P for destination drive required, followed by a carriage return.
- o The operator is prompted to insert source disk into selected source drive.
- o The operator inserts source (master) in drive selected, followed by a carriage return.
- o The source diskette is registered and the operator is informed of the sector skew factor. The operator is allowed to change the default skew factor; this feature has been included to reduce duplication time in certain cases. Some experimentation will be required to get the correct skew factor.
- o The operator answers 'Y' or 'N' for skew factor, if 'Y' the operator must enter the new skew factor desired followed by a carriage return.
- o After the skew factor has been assigned, Serial8 searches the source diskette for blank tracks. The blank tracks will not be copied in order to speed the duplication process.
- o The operator is prompted for the number of serial fields contained in the source diskette - the correct number of serial fields for the source diskette(s) will be provided with each kit. The operator enters the correct numbers of serial fields followed by a carriage return.
- o The operator is then prompted for the starting serial number; the operator enters the correct six digit serial number followed by a carriage return (serial numbers must be padded with zeros and right-justified).
- o The operator is prompted for diskette verification option. The verification option is a track-by-track data verification process. The operator can select a value between one and ninety-nine to verify every "xth"

diskettes, if verification is not desired the operator enters 'N'. All verification option entries must be followed by a carriage return.

- o The operator is now prompted to insert the first diskette in the destination drive previously selected. The operator inserts a new diskette in the destination drive followed by a carriage return.
- o Track reading and writing messages will be displayed on the terminal. When duplication has been completed, the operator will be prompted to remove the diskette and insert a new diskette. This process will repeat until the program is terminated by ^C.

4.2 Serial16 Duplication Instructions

Operation of the sixteen bit serialization program is simple and straightforward. A step-by-step operational guide is listed below:

- o Boot system under CP/M-86 .
- o Insert Serialization Diskette in any drive.
- o Call Serial16 program by entering <drive>:Serial16.
- o Program banner will appear; if this does not occur refer to support notes.
- o The operator is prompted for source drive (drive from which the master will be copied).
- o The operator replies with a letter code for source drive (A - P) followed by carriage return.
- o The operator is then prompted for the destination drive (drive to which master will be copied). The operator enters A-P for destination drive required followed by a carriage return.
- o The operator is prompted to insert source disk in selected source drive.
- o The operator inserts source (master) in drive selected followed by a carriage return.
- o The source diskette is registered and the operator is informed of the sector skew factor. The operator is allowed to change the default skew factor. This feature

has been included to reduce duplication time in certain cases. As with Serial8, some experimentation will be required to find the best skew factor.

- o The operator answers 'Y' or 'N' for skew factor. If 'Y' is entered, the operator must enter the new skew factor desired, followed by a carriage return.
- o After the skew factor has been assigned, Serial16 searches the source diskette for blank tracks. The blank tracks will not be copied in order to speed the duplication process.
- o The operator is prompted for the number of serial fields contained in the source diskette -- the correct number of serial fields on the source diskette(s) will be provided with each kit. The operator enters the correct number of serial fields followed by a carriage return.
- o The operator is then prompted for starting serial number, the operator enters the correct six digit serial number followed by a carriage return (serial numbers must be padded with zeros and right justified).
- o The operator is prompted for diskette verification option. The verification option is a track-by-track data verification process. The operator can select a value between one and ninety-nine to verify every "xth" diskette; if verification is not desired the operator enters 'N'. All verification option entries must be followed by a carriage return.
- o The operator is now prompted to insert the first diskette in the destination drive previously selected. The operator inserts new diskette in the destination drive followed by a carriage return.
- o Track reading and writing messages will be displayed on the terminal. When duplication has been completed, the operator will be prompted to remove the diskette and insert a new diskette. This process will repeat until the program is terminated by ^C.

Section 5: Modification Instructions

5.1 Serial8 Modification Instructions

Serial8 and Serial16 are written to serialize products which contain six-digit serial numbers. Some of the earlier products contain five-digit serial numbers. These include CBASIC and CB-80. With a few minor changes Serial8

and Serial16 can be made to serialize products with the shorter serial numbers. In the equate section of Serial8, at the top of the program, is a equate named ser\$def\$len. The value of ser\$def\$len must be changed from 6 to 5. In the data area at the end of the program is a variable called ser\$def, its value must be changed from 654321 to 65432. This program is setup for 8" disk drives. If you are going to use something different, the variable "last\$trk" in the data area of the program must be made changed. Use MAC to assemble this new program.

5.2 Serial16 Modifications

In the data area of the program is the variable ser_def. Its value must be changed from 654321 to 65432. As stated above, if you use drives different then 8" disk drives, the value of "last_trk" in the data area must be changed. Use GENMCD SERIAL16 DATA[M100] when creating the CMD file.

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