

CLONE II (version two) program for TRS-80 Level II
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CLONE II was designed as a method of copying programs that are either difficult to load by reason of poor quality duplication or impossible to duplicate by virtue of their format. CLONE II will copy virtually any program or data (except itself) without knowing anything about the data in question. All you need is a good load. On poorly duplicated material this alone can be difficult but once it is accomplished you can make as many first quality copies as you choose. It should be mentioned that the purpose of this ability is to allow users to protect their investment in vulnerable data and that duplication of copyrighted material for resale or even give-away is illegal.

CLONE II is a machine language program with a short Basic program to facilitate access to the machine code. They are both loaded at the same time with the SYSTEM command and the file name CLONE2. After loading, the computer will respond with an asterisk and a question mark. At this time you should hit the BREAK key, and enter RUN. You will then be given the choice of 3 options.

PART ONE: The first possibility is to load a SYSTEM tape. SYSTEM tapes in this case are defined as discrete programs normally loaded with the SYSTEM command, which have an execute address. That is, after the program is loaded you may hit "/ ENTER" and the program will start. To CLONE such a program, enter the number "1". The screen will clear and "OK" will be displayed in the upper left corner. Turn on the cassette and load in the program to be CLONED. Nothing will happen as the leader loads. As soon as the leader has ended, however, the file name of the program will be displayed at the top of the screen. Also, the asterisks will flash in the right-hand corner to indicate proper checksums are loading. At the same time, the stream of data will be displayed in ASCII format one byte after another across the video screen. If there is English text in the program it will be readable in the data. If the data is all machine code it will look like an assortment of alphanumeric and graphics characters. When the screen has been filled with this data it will start over at the top and continue writing out the information. You can get some indication of proper loading volume by this motion on the screen. It should be even and continuous for the duration of the program. If it is not the level is probably too low, the data is not loading properly, and a checksum error will be produced. If most of the data loaded is solid graphics characters your level is probably too high. These same rules apply to the loading of data in the second part of CLONE. When the program has been successfully loaded the execute address of the program being copied will be displayed. At this point you may hit ENTER to return to the command index and dump your program with the third part of CLONE.

NOTE: If CLONE computes a checksum error during loading, the tape recorder will shut off and the error will be indicated on the screen. If you are using a CTR-80 tape recorder there is evidently some chance that this will put a "pop" in the tape and prevent it from ever loading again. If your recorder does this, you should disconnect the automatic control of tape transport during CLONEing and any other time when a checksum error could shut it off in the middle of a program. Let the tape play through to its

end even though it isn't loading. There is probably no way to recover tapes damaged in this way. Always keep at least two copies.

PART TWO: The second part of CLONE II is used for copying data lists and any other data that does not end with an execute address. You may also CLONE SYSTEM tapes with this part but it is not as convenient as part 1. Basically, part two duplicates any data stream fed into it. Enter "2" and the screen will clear and "OK" will be displayed. Turn on the cassette and load the data. Nothing will happen as the leader loads. When the leader has finished, however, the data will be displayed one byte after another in ASCII form across the video screen as with part 1 of CLONE II. If the data has a file name it will be displayed at the beginning of this information. When the data has ended, the display will stop. Turn off the recorder and hit the RESET button on the back of the computer. If you DO NOT have an expansion interface connected you may now enter RUN and continue with part 3. If you DO have the expansion interface, you get an extra paragraph of instructions.

EXTRA PARAGRAPH: To begin with, you should not use CLONE with disks. It complicates matters and CLONE II is co-resident with DOS and Disk Basic. When you hit the RESET button also hold down the BREAK key. This will return you to MEMORY SIZE. Answer it with 17660. At this point, the data you are CLONEing is unaltered in the machine. The CLONE program is also unaltered for that matter. It is only inaccessible. What you must do now is load CLONE again. Now enter RUN and continue to part 3.

PART THREE: To dump the program or data stored in CLONE you should enter "3". CLONE will ask you how many times you want to dump the data. Get the recorder ready to record and answer this question. CLONE will proceed to save on tape the exact bit pattern that it received during loading. If you disconnect the automatic control of tape motion and have requested more than one copy, CLONE will leave a few seconds of empty space on the tape and make more copies of the same data. If you do not disconnect the automatic tape control all copies will be loaded end to end without a break. When it has finished, control will be returned to the command index.

At this point the bit pattern loaded (and dumped) is stored in memory starting at address 17937. Should you want to go in and change a file name or some other facet of the data you can do this by PEEKing and POKEing the proper point in memory. If you change the data in a SYSTEM tape however you will also upset the checksum and unless you know what you are doing and can compensate for this you may not accomplish much. (The file name does not affect the checksum.)

If you have any trouble loading this tape after trying various volume levels you may return it for a replacement. Since you won't be able to copy CLONE there is no time limit on this guarantee. If you have any suggestions or comments we would be interested in hearing from you.