RENUM

Line Renumbering Progam for LEVEL II BASIC

Catalog Number 26-2004

Radio Shack

TRS-80 MICRO COMPUTER SYSTEM

CUSTOM MANUFACTURED IN U.S.A. BY RADIO SHACK A DIVISION OF TANDY CORPORATION

RENUM is a RAM-based machine-language program that renumbers the lines in any LEVEL II BASIC program. The minimum equipment required to load and use RENUM consists of the following: LEVEL II TRS-80 CPU/ Keyboard (4K or more); Video Display; and a cassette recorder such as the CTR-41.

Typical uses of RENUM:

* Expanding or compressing line number ranges to make room for additional program lines.
* "Cleaning up" your finished program by converting to uniform line-number increments.
* Adapting existing subroutine line numbers to suit the particular program you plan to type in.

Note to TRSDOS Users:

To use RENUM, you must call up LEVEL II BASIC (in the DOS mode, type: BASIC2 ENTER). You may then follow the instructions in this booklet.

How to Load RENUM

You must first reserve memory for the machine-language program (so your BASIC program won't write over it during execution). To reserve memory, power-on the TRS-80 and answer the memory size question as follows:

If your TRS-80 has . . .	**MEMORY SIZE should be**
4K	19531
16K	31819
32K	48203
48K	64587

Note: The RENUM cassette package contains four programs – one for each TRS-80 memory size. Locate the appropriately labeled cassette, insert it into the recorder, and prepare the recorder to play the program.

To load RENUM from the cassette, type SYSTEM **ENTER** followed by the file name RENUM **ENTER**

When the program has loaded, a second *? will appear. (If the load is unsuccessful, a C will appear in the upper right of the Display. Check the recorder's volume setting and reload the program.) After loading the program successfully, press the **BREAK** key to return to BASIC.

You can now call the RENUM program at any time, by typing SYSTEM **ENTER** followed by a / and the *entry-point.* Determine the correct *entry-point* by adding 1 to the number you entered for MEMORY SIZE. For example, the *entry-point* for the 16K machine is 31820.

How to Use RENUM

RENUM lets you specify the first line number to be renumbered, the new line number for that line, and the increment to be used between all subsequent lines. You cannot renumber a block of lines in the middle of the program; beginning with the line number you choose, **all subsequent lines** will be renumbered.

Let's assume you have entered your BASIC program and you wish to renumber it. First determine the lowest line number you wish to change (referred to as OL#); the new line number you wish to assign to that line (referred to as NL#); and the increment to be used between all subsequent lines of your program (referred to as INC).

Call RENUM as described above (by typing SYSTEM **ENTER** / *entry-point* **ENTER**). The program will prompt you to enter OL#, NL#, and INC, one at a time. Simply type in the desired parameters and press **ENTER** after each one. If you press **ENTER** without first typing in a number, RENUM will assign a default value to that particular parameter:

Parameter	Default Value
OL#= **ENTER**	Ø (entire program will be renumbered)
NL#= **ENTER**	1Ø
INC= **ENTER**	1Ø

NOTE: To help you avoid mistakes, RENUM will only accept entries from the following keys: the digits Ø-9, backspace ←, **ENTER** and **BREAK** . Hitting **BREAK** during entry of the three parameters restarts the RENUM program. Furthermore, if the OL# you enter is not used in your program, renumbering will begin with the first line number greater than OL#. If there are no line numbers greater than or equal to OL#, an error will occur.

After you enter the last item, INC, RENUM will proceed to renumber your BASIC program. When the renumbering is completed, RENUM will return you to BASIC with a READY message.

The renumbered program will be ready to run as is. Not only the program line numbers, but also the line number references in your program text, will be renumbered correctly. That is, line numbers appearing in GOTO, GOSUB, THEN, ELSE, ON *n* GOTO, ON *n* GOSUB, ON ERROR GOTO, RESUME and ERL *relational operator* expressions will be properly changed to reference the new line numbers. ON ERROR GOTO Ø and RESUME Ø are special cases; the zeros in these expressions are not changed. (The numbers have a special meaning in these statements and should not be changed. See *LEVEL II Reference Manual,* Chapter 4.)

Sample Runs

First load the RENUM program and enter the following BASIC program.

```
10 GOTO 30
18 END
27 GOTO 18
30 GOTO 27
```

Now call RENUM (by typing SYSTEM **ENTER** *entry point* **ENTER** , and enter the following values.

```
OL# = ENTER
NL# = ENTER
INC = ENTER
```

The renumbered program will look like this:

```
10 GOTO 40
20 END
30 GOTO 20
40 GOTO 30
```

Using the original program, enter the following values.

```
OL# = 18
NL# = 12
INC = 2
```

The renumbered program will look like this:

```
10 GOTO 16
12 END
14 GOTO 12
16 GOTO 14
```

Error Messages

Two error messages may be generated during execution of RENUM: ILLEGAL FC (Illegal Function Call) and UL *line-number* IN *line-number.* ILLEGAL FC occurs when:

1) You try to create line numbers greater than 65529
2) You enter an INC of zero
3) The value of OL# is larger than the largest line number used in your program.
4) You attempt to change the **sequence** of program lines. For example, using the original program above (lines 1Ø, 18, 27 and 3Ø), if you entered OL#=18 and NL#=5, the effect would be to cause line 18 to precede line 1Ø. This would result in an ILLEGAL FC error. When an ILLEGAL FC error occurs, RENUM returns you to BASIC and your original program is unaffected.

UL *line-number* IN *line-number* occurs when your original program references a non-existent line number (for example, a GOTO 1ØØ when there is no line 1ØØ in the original program). In such a case, RENUM will not renumber the undefined line reference, but **will** renumber the rest of the program. The error message is just a warning to you that the original program contained an undefined line-number reference which could not be renumbered.

For example, consider the program:

```
100 INPUT X
110 IF X>10 GOTO 1000
120 PRINT X*3.14159
```

If you renumber the program with OL#=100, NL#=1000, and INC=10, the resulting program will be:

```
1000 INPUT X
1010 IF X>10 GOTO 1000
1020 PRINT X*3.14159
```

and an error message, UL 1000 IN 1010 , will be displayed (even though, in this case, renumbering "corrected" the undefined line reference).

If the undefined line reference inside the program is greater than 65529, it is not displayed in the error message; instead, UL IN *line-number* will be displayed.

NOTE: Using RENUM to renumber your program may increase or decrease the size of your program, depending on the values you enter for OL#, NL# and INC. This is because line references **in the program text** are stored in ASCII form, one byte per digit. Therefore a three-digit number will take up more room in the program text than will a two-digit number.

So if you plan to make your line numbers larger using the RENUM program, be sure that you have enough memory available to hold the expanded text. Otherwise your program might be lost.

NOTES

NOTES

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NOTE: Good data processing procedure dictates that the user test the program, run and test sample sets of data, and run the system in parallel with the system previously in use for a period of time adequate to insure that results of operation of the computer or program are satisfactory.

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PRINTED IN U.S.A.