PROGRAM FILE

Memotech Renumber

by J Waller

This program renumbers Basic line numbers, GOTOs, GOSUBs and RESTORESs. When run, the new starting line number and the increment required must be entered. The complete assembler program is then moved into high memory to make way for the program to be renumbered. This version is written for the MTX512, so the following changes are necessary to make it suitable for the MTX500:

Change the assembler code start address to 800F and all subsequent addresses should begin with 8, not 4.

Assembler line 400F (800F on the 500) must be LD HL,#801B.

Basic line 70 — 16411 becomes 32795, 16437 becomes 32821.

Basic line 90 — 16411 becomes 32795, 16412 becomes 32796.

Basic line 110 — 16415 becomes 32799, 16416 becomes 32800.

The renumbered program can be saved as usual.

```
10 GOSUB 70
20 CODE

400F          LD HL,#401B          ; From
4012          LD DE,#F000          ; To
4015          LD BC,877  ; No of Bytes
4018          LDIR
401A          RET
401B          DS 2        ; Starting LNO
401D          DS 2        ; Next LNO
401F          DS 2        ; Increment
4021          DS 5        ; New number st
ore
4026          DS 1        ; Digits in new
 LNO
4027          DS 1        ; Digits in old
 LNO
4028          DS 2        ; Tab. ptr
402A          DS 2        ; Tab. base
402C          DS 2        ; Line start
402E          DS 2        ; Byte store
4030          DS 2        ; LNO
4032          DS 2        ; Work area
4034          DS 2        ; Tab. top
4036          LD HL,(#F000)          ; Get s
tarting LNO
4039          LD (#F002),HL        ; Make
it next LNO
403C          LD HL,0
403F          LD (#F017),HL
4042          LD HL,(#FAA7)
4045          LD BC,100
4048          ADD HL,BC
4049          LD (#F00D),HL        ; Store
```

```
 tab ptr
404C          LD (#F00F),HL       ; Save
table base
404F          LD HL,(#FAAA)       ; Get l
ine start
4052          LD BC,(#FAA7)       ; BASTO
P
4056 LOOP:    LD (#F011),HL       ; Save
line start
4059          LD E,(HL)   ; Get bytes
405A          INC HL
405B          LD D,(HL)
405C          LD (#F013),DE       ; Save
bytes
4060          INC HL      ; Get
4061          LD E,(HL)   ; old
4062          INC HL      ; line
4063          LD D,(HL)   ; no.
4064          LD (#F015),DE       ; Save
line no.
4068 LOOP1:   OR A
4069          LD A,(HL)
406A          INC HL
406B          CP 150      ;GOTO
406D          JR Z,STORE
406F          CP 151      ; GOSUB
4071          JR Z,STORE
4073          CP 178      ; RESTORE
4075          JR Z,STORE
4077          CP 255      ; LINE END
4079          JR Z,LEND
407B          CP 194      ; ASSEM
407D          JR Z,ASSEM ; Ignore assemb
ler
407F          JR LOOP1
4081 ASSEM:   LD DE,(#F013)       ; Bytes
4085          LD HL,(#F011)       ; Get l
ine start
4088          ADD HL,DE
4089 LEND:    LD A,B
408A          CP H
408B          JR NZ,LOOP
408D          LD A,C
408E          CP L
408F          JR NZ,LOOP
4091          LD HL,(#F00D)       ; Tab.
ptr
4094          LD (#F019),HL       ; Save
tab. top
4097          JR STAGE2
4099 STORE:   OR A
409A          LD A,(HL)
409B          CP 44       ; COMMA
409D          JR Z,COMMA
409F          CP 58       ; COLON
40A1          JR Z,COLON
40A3          CP 195      ; ELSE
40A5          JR Z,COLON
40A7          CP 255      ; EOL
40A9          JR Z,EOL
40AB          OR A
40AC          LD A,(HL)
40AD          INC HL
40AE          SBC A,48
40B0          PUSH HL
40B1          PUSH BC
40B2          LD HL,(#F017)
40B5          ADD HL,HL
40B6          LD B,H
40B7          LD C,L
40B8          ADD HL,HL
40B9          ADD HL,HL
40BA          ADD HL,BC
40BB          LD D,0
40BD          LD E,A
40BE          ADD HL,DE
40BF          LD (#F017),HL       ; Runni
ng total
40C2 BACK:    POP BC
40C3          POP HL
40C4          JR STORE
40C6 COMMA:   INC HL
40C7          PUSH HL
40C8          PUSH BC
40C9          CALL #F0C8 ; **** PUT
40CC          JR BACK
40CE COLON:   INC HL
40CF          PUSH HL
40D0          PUSH BC
40D1          CALL #F0C8 ; *** PUT
40D4          POP BC
40D5          POP HL
40D6          JR LOOP1
40D8 EOL:     PUSH HL
40D9          PUSH BC
40DA          CALL #F0C8 ; **** PUT
40DD          POP BC
40DE          POP HL
40DF          INC HL
40E0          JR LEND
40E2          RET
40E3 PUT:     LD BC,(#F015)       ; Get o
ld line no.
40E7          LD IY,(#F00D)       ; Get t
ab ptr
40EB          LD (IY+0),C         ; Old L
NO
40EE          LD (IY+1),B         ;  into
 table
40F1          LD (IY+2),0         ; Clear
 marker byte
40F5          LD BC,(#F017)
40F9          LD (IY+3),C         ; GOTO
LNO
40FC          LD (IY+4),B         ;  into
 table
40FF          LD (IY+5),0         ; Clear
 marker byte
4103          LD DE,6
4106          ADD IY,DE   ; Inc tab. ptr
4108          LD (#F00D),IY       ; Save
tab. ptr
410C          LD HL,0
410F          LD (#F017),HL
4112          RET
4113 STAGE2:  LD HL,(#FAAA)       ; Main
Pointer
4116          LD (#F011),HL       ; Line
```

```
start
4119 LINE:   LD BC,(#F00F)       ; Bot o
f tab
411D         LD (#F00D),BC       ; Tab p
tr
4121         LD IX,(#F011)       ; Get m
ain ptr
4125         LD E,(IX+2)         ; Line
No
4128         LD D,(IX+3)         ; in DE
412B         LD (#F015),DE       ; Save
LNO
412F         LD DE,(#F002)       ; Get n
ew LNO
4133         LD (IX+2),E         ; New L
NO
4136         LD (IX+3),D         ; into
Line
4139         LD C,(IX+0)         ; Get B
ytes
413C         LD B,(IX+1)
413F         ADD IX,BC
4141         LD (#F011),IX       ; Save
ptr
4145 SEARCH: LD BC,(#F00F)       ; Get t
ab base
4149         LD DE,(#F019)       ; Get t
ab top
414D         LD A,B      ; Anything in
414E         CP D        ;  table?
414F         JR NZ,TAB   ; Yes
4151         LD A,C
4152         CP E
4153         JR NZ,TAB   ; Yes
4155         JR NOTAB    ; No
4157 TAB:    LD IY,(#F00D)       ; Get t
ab ptr
415B         LD C,(IY+0)         ; Get N
o
415E         LD B,(IY+1)         ; from
table
4161         LD A,B
4162         CP 0
4164         JR NZ,NONZ
4166         LD A,C
4167         CP 0
4169         JR NZ,NONZ
416B         JR TESTET   ; Number is 0
416D NONZ:   LD DE,(#F015)       ; Get L
NO
4171         LD A,B      ; Compare
4172         CP D        ; LNO
4173         JR NZ,TESTET        ; with
4175         LD A,C      ; Table
4176         CP E
4177         JR NZ,TESTET
4179         LD A,(IY+2)         ; Get m
arker byte
417C         CP 1        ; Set?
417E         JR Z,TESTET         ; Alrea
dy changed
4180         LD HL,(#F002)       ; Get n
ew LNO
4183         LD (IY+0),L         ; New L
ine No
4186         LD (IY+1),H         ;  into
 Table
4189         LD (IY+2),1         ; Set m
arker byte
418D TESTET: LD DE,3
4190         ADD IY,DE   ; Advance tab p
tr
4192         LD (#F00D),IY       ; Save
tab ptr
4196         LD BC,(#F00D)
419A         LD DE,(#F019)       ; Top o
f table
419E         LD A,D      ; Test for
419F         CP B        ; end of
41A0         JR NZ,TAB   ; table
41A2         LD A,E
41A3         CP C
41A4         JR NZ,TAB
41A6 NOTAB:  LD DE,(#F002)       ; Get n
ew LNO
41AA         LD HL,(#F004)       ; Get i
ncrement
41AD         ADD HL,DE   ; New LNO
41AE         LD (#F002),HL       ; Save
new LNO
41B1         LD HL,(#F011)       ; Get p
ointer
41B4         LD BC,(#FAA7)
41B8         LD A,H      ; Check
41B9         CP B        ; end
41BA         JP NZ,#F0FE         ; of **
** LINE
41BD         LD A,L      ; prog
41BE         CP C
41BF         JP NZ,#F0FE         ; *****
 LINE
41C2         JR STAGE3
41C4 DIV:    LD A,B      ; Dividend in A
C
41C5 DIV2:   LD HL,0     ; Divisor in DE
41C8         LD B,16
41CA LOOP16: RL C
41CC         RLA
41CD         ADC HL,HL
41CF         SBC HL,DE
41D1         JR NC,SKIP
41D3         ADD HL,DE
41D4 SKIP:   CCF
41D5         DJNZ LOOP16
41D7         RL C
41D9         RLA
41DA         LD B,A      ; Result in BC
41DB         RET         ; Remainder in
HL
41DC CALC:   PUSH IX
41DE         EXX
41DF         LD IX,#F006         ; Ten t
hou
41E3         LD DE,10000         ; First
 divisor
41E6         LD A,1      ; Count
41E8         PUSH AF     ; Save it
41E9         LD C,(IY+3)         ; Divid
```

```
end (new LNO)
41EC          LD B,(IY+4)          ;  in B
C
41EF REPDIV:  CALL #F1A9 ; DIV ***
41F2          POP AF       ; Get count
41F3          LD (IX+0),C          ; Save
result
41F6          INC IX
41F8          INC A        ; Inc count
41F9          CP 5         ; Done?
41FB          JR Z,LAST    ; Yes
41FD          PUSH AF      ; Save count
41FE          PUSH HL      ; Save remainde
r
41FF          PUSH DE      ; Change diviso
r
4200          POP BC       ;  to dividend
4201          LD DE,10     ; Divide diviso
r
4204          CALL #F1A9 ;  by 10   DIV
***
4207          LD B,A
4208          PUSH BC
4209          POP DE       ; New divisor
420A          POP BC       ; New dividend
420B          JR REPDIV
420D LAST:    LD (IX+0),L          ; Chang
e
4210          LD E,48      ;  binary
4212          LD B,5       ;  to
4214          LD C,0       ;  ASCII
4216          LD IX,#F006          ;  and
421A COUNT:   LD A,(IX+0)          ;  coun
t
421D          CP 0         ;  digits
421F          JR NZ,CHAR2
4221          LD A,B
4222          CP 1
4224          JR Z,CHAR
4226          INC IX
4228          DEC B
4229          JR COUNT
422B CHAR:    LD A,(IX+0)
422E CHAR2:   ADD A,E
422F          LD (IX+0),A
4232          INC IX
4234          INC C
4235          DJNZ CHAR
4237          LD A,C
4238          LD (#F00B),A         ; Chars
 in new LNO
423B          EXX
423C          POP IX
423E          RET
423F STAGE3:  LD BC,(#F00F)        ; Get t
ab base
4243          LD (#F00D),BC        ; Save
it
4247          LD DE,(#F019)        ; Get t
ab top
424B          LD A,B       ; Anything in
424C          CP D         ; table?
424D          JR NZ,YES
424F          LD A,C
4250          CP E
4251          JR NZ,YES
4253          RET
4254 YES:     LD IX,(#FAAA)        ; Main
ptr
4258 BACK2:   LD BC,(#F00D)        ; Tab p
tr
425C          LD DE,(#F019)        ; Table
 top
4260          LD A,D       ; Test for
4261          CP B         ; end of tab
4262          JR NZ,AGAIN
4264          LD A,E
4265          CP C
4266          JR NZ,AGAIN
4268          RET
4269 AGAIN:   LD IY,(#F00D)        ; Get t
ab ptr
426D          LD C,(IY+0)          ; Get l
ine no
4270          LD B,(IY+1)          ; from
table
4273          LD E,(IX+2)          ; Get
4276          LD D,(IX+3)          ; LNO
4279          LD A,D
427A          CP B
427B          JR NZ,NOMATCH
427D          LD A,E
427E          CP C
427F          JR NZ,NOMATCH
4281          JR MATCH
4283 NOMATCH: LD E,(IX+0)
4286          LD D,(IX+1)
4289          ADD IX,DE
428B          JR BACK2
428D MATCH:   PUSH IX      ; Line start
428F          POP HL       ;  into HL
4290          LD DE,4
4293          ADD HL,DE    ; Start of text
4294 LOOP2:   OR A
4295          LD A,(HL)
4296          INC HL
4297          CP 150       ; GOTO
4299          JR Z,FOUND
429B          CP 151       ; GOSUB
429D          JR Z,FOUND
429F          CP 178       ; RESTORE
42A1          JR Z,FOUND
42A3          CP 255       ; EOL
42A5          JR Z,BACK2
42A7          JR LOOP2
42A9 FOUND:   CALL #F1C1 ;  CALC ***
42AC          LD B,0
42AE REP:     OR A
42AF          LD A,(HL)
42B0          CP 44        ; COMMA
42B2          JR Z,COMMA2
42B4          CP 58        ; COLON2
42B6          JR Z,COLON2
42B8          CP 195       ; ELSE
42BA          JR Z,COLON2
42BC          CP 255
42BE          JR Z,EOL2
42C0          INC HL
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```
42C1          INC B       ; Count chars
42C2          LD A,B
42C3          LD (#F00C),A
42C6          JR REP
42C8 COMMA2:  CALL #F2BD ; WORK ****
42CB          INC HL
42CC          JR FOUND
42CE COLON2:  CALL #F2BD ; WORK ****
42D1          JR LOOP2
42D3 EOL2:    CALL #F2BD ; WORK ****
42D6          JR BACK2
42D8 WORK:    LD DE,6
42DB          ADD IY,DE
42DD          LD (#F00D),IY       ; Save
tab. ptr
42E1          PUSH HL
42E2          LD A,(#F00C)        ; Figur
es in old LNO
42E5          LD HL,#F00B         ; Figur
es in new LNO
42E8          SBC A,(HL)
42E9          POP HL
42EA          JR Z,SAME   ; Same number o
f figures
42EC          JR C,MORE   ; More figures
in new LNO
42EE          JR LESS     ; Fewer figures
 in new LNO
42F0 SAME:    CALL #F356 ; INSERT ***
42F3          RET
42F4 MORE:    LD (#F011),HL       ; Save
main ptr
 42F7          NEG
 42F9          LD HL,(#FAA7)       ; BASTO
P
 42FC          LD B,0
 42FE          LD C,A      ; Diff in BC
 42FF          ADD HL,BC
 4300          PUSH HL     ; BASTOP+Diff
 4301          LD L,(IX+0)
 4304          LD H,(IX+1)         ; Byte
count in HL
 4307          ADD HL,BC
 4308          LD (IX+0),L         ; New
 430B          LD (IX+1),H         ;  byte
  count
 430E          LD HL,(#FAA7)       ; BASTO
P
 4311          LD BC,(#F011)       ; Main
ptr
 4315          OR A
 4316          SBC HL,BC
 4318          LD D,0
 431A          LD E,1
 431C          ADD HL,DE
 431D          PUSH HL
 431E          POP BC      ; Bytes to move
 431F          LD HL,(#FAA7)       ; Old B
ASTOP
 4322          POP DE      ; New BASTOP
 4323          LD (#FAA7),DE       ; Store
  it
 4327          LDDR
 4329          LD HL,(#F011)       ; Resto
re ptr
 432C          CALL #F356 ; INSERT ***
 432F          RET
 4330 LESS:    LD (#F011),HL       ; Save
ptr
 4333          PUSH HL
 4334          LD B,0
 4336          LD C,A      ; Diff
 4337          OR A
 4338          SBC HL,BC
 433A          PUSH HL
 433B          LD HL,(#FAA7)       ; BASTO
P
 433E          OR A
 433F          SBC HL,BC
 4341          PUSH HL     ; New BASTOP
 4342          LD L,(IX+0)         ; Byte
count
 4345          LD H,(IX+1)         ;  in H
L
 4348          OR A
 4349          SBC HL,BC
 434B          LD (IX+0),L         ; New
 434E          LD (IX+1),H         ;  byte
  count
 4351          LD HL,(#FAA7)       ; BASTO
P
 4354          LD BC,(#F011)       ; Old p
tr
 4358          OR A
 4359          SBC HL,BC
 435B          LD D,0
 435D          LD E,1
 435F          ADD HL,DE
 4360          PUSH HL
 4361          POP BC      ; Bytes to move
 4362          POP HL
 4363          LD (#FAA7),HL       ; New B
ASTOP
 4366          LD HL,(#F011)       ; Old p
tr
 4369          POP DE      ; New ptr
 436A          LDIR
 436C          POP HL      ; Restore ptr
 436D          CALL #F356 ; INSERT ***
 4370          RET
 4371 INSERT:  LD A,(#F00C)        ; Figur
es in old LNO
 4374          LD B,A
 4375 ALIGN:   DEC HL
 4376          DJNZ ALIGN
 4378          LD B,5
 437A          LD DE,#F006
 437D WRITE:   LD A,(DE)
 437E          INC DE
 437F          CP 0
 4381          JR Z,SKIP2
 4383          LD (HL),A
 4384          INC HL
 4385 SKIP2:   DJNZ WRITE
 4387          RET
```

PROGRAM FILE

```
Symbols:
LEND     4089     STORE    4099
COMMA    40C6     COLON    40CE
EOL      40D8     BACK     40C2
LOOP     4056     PUT      40E3
LOOP1    4068     STAGE2   4113
SEARCH   4145     TESTET   418D
ASSEM    4081     NONZ     416D
TAB      4157     NOTAB    41A6
STAGE3   423F     YES      4254
BACK2    4258     AGAIN    4269
NOMATCH  4283     MATCH    428D
DIV      41C4     DIV2     41C5
LOOP16   41CA     SKIP     41D4
CALC     41DC     REPDIV   41EF
LAST     420D     COUNT    421A
CHAR2    422E     CHAR     422B
LOOP2    4294     FOUND    42A9
REP      42AE     COMMA2   42C8
COLON2   42CE     EOL2     42D3
SAME     42F0     MORE     42F4
LESS     4330     INSERT   4371
WRITE    437D     SKIP2    4385
ALIGN    4375     WORK     42D8
LINE     4119
```

```
30 CLS
40 PRINT "Now load Program to be renumb
ered and  press 'PLAY'": PRINT
50 PRINT : PRINT "Then key 'RAND USR(61
467)'"
60 PRINT : LOAD "": STOP
70 CLS : FOR I=16411 TO 16437: POKE I,0
: NEXT
80 INPUT "Starting Number ";START
90 POKE 16411,MOD(START,256): POKE 1641
2,INT(START/256)
100 PRINT : INPUT "Increment by ";INC
110 POKE 16415,MOD(INC,256): POKE 16416
,INT(INC/256)
120 RETURN
```