* 68KTCM.SRC - assembly language source code.
* 68KTCM.LST - source & object code listing.
* 68kTCM.OBJ - S record object file for downloading.

* Sample MC68000 program for controlling the
  Microbot Teachmover Robot Arm with the
  MEX68KECB MC68000 Educational Computer Board.

* This program moves a block from one position
  to a second position and returns the block to
  the original position.

* Connect the Robot Arm left serial port (as viewed
  from the front of the Robot Arm) to the
  Host Port 2 serial port using a special RS232
  male to male cable. Remember to press the TCM
  Reset button before running the program. This
  starts the TCM at the zero position.

* Assembled by the CUG3:ASM68K Cross Assembler
  on MTS.

* written by Steven J. Dombrowski 6/06/86

CR EQU $0D
ORG $6000

* Teachmover position commands.

POS1 DC.B '0STEP200,0,-246,0,0,0,600'
    DC.B CR
POS2 DC.B '0STEP200,0,0,-479,0,0,-479'
    DC.B CR
POS3 DC.B '0STEP200,-390,0,0,0,0,0'
    DC.B CR
POS4 DC.B '0STEP200,0,0,-89,89,0,0'
    DC.B CR
POS5 DC.B '0STEP200,0,260,0,0,0,0'
    DC.B CR
POS6 DC.B '0STEP200,0,0,130,0,0,159'
    DC.B CR
POS7 DC.B '0STEP200,0,0,0,0,-395'
    DC.B CR
POS8 DC.B '0STEP200,0,-643,-332,0,0,-332'
    DC.B CR
POS9 DC.B '0STEP200,0,810,0,0,0,0'
    DC.B CR
POS10 DC.B '0STEP200,0,0,0,187,-187,0'
    DC.B CR
POS11 DC.B '0STEP200,0,650,310,0,0,250'
    DC.B CR
POS12 DC.B '0STEP200,0,0,0,0,0,400'
    DC.B CR
POS13 DC.B '0STEP200,0,-524,-208,0,0,-208'
    DC.B CR
POS14 DC.B '0STEP200,-420,503,579,-98,98,5'
* Start of main program.

ORG $1000
CLR.L D2
MOVE.L #POS1,A5 1st command start addr.
MOVE.L #POS2,A6 End 1st string + 1.
BSR OUTPUT Branch to output subroutine.
MOVE.L #POS2,A5 2nd command.
MOVE.L #POS3,A6
BSR OUTPUT
MOVE.L #POS3,A5 3rd command.
MOVE.L #POS4,A6
BSR OUTPUT
MOVE.L #POS4,A5 4th command.
MOVE.L #POS5,A6
BSR OUTPUT
MOVE.L #POS5,A5 5th command.
MOVE.L #POS6,A6
BSR OUTPUT
MOVE.L #POS6,A5 6th command.
MOVE.L #POS7,A6
BSR OUTPUT
MOVE.L #POS7,A5 7th command.
MOVE.L #POS8,A6
BSR OUTPUT
MOVE.L #POS8,A5
MOVE.L  #POS8,A5          8th command.
MOVE.L  #POS9,A6
BSR     OUTPUT
MOVE.L  #POS9,A5          9th command.
MOVE.L  #POS10,A6
BSR     OUTPUT
MOVE.L  #POS10,A5         10th command.
MOVE.L  #POS11,A6
BSR     OUTPUT
MOVE.L  #POS11,A5         11th command.
MOVE.L  #POS12,A6
BSR     OUTPUT
MOVE.L  #POS12,A5         12th command.
MOVE.L  #POS13,A6
BSR     OUTPUT
MOVE.L  #POS13,A5         13th command.
MOVE.L  #POS14,A6
BSR     OUTPUT
MOVE.L  #POS14,A5         14th command.
MOVE.L  #POS15,A6
BSR     OUTPUT
MOVE.L  #POS15,A5         15th command.
MOVE.L  #POS16,A6
BSR     OUTPUT
MOVE.L  #POS16,A5         16th command.
MOVE.L  #POS17,A6
BSR     OUTPUT
MOVE.L  #POS17,A5         17th command.
MOVE.L  #POS18,A6
BSR     OUTPUT
MOVE.L  #POS18,A5         18th command.
MOVE.L  #POS19,A6
BSR     OUTPUT
MOVE.L  #POS19,A5         19th command.
MOVE.L  #POS20,A6
BSR     OUTPUT
MOVE.L  #POS20,A5         20th command.
MOVE.L  #POS21,A6
BSR     OUTPUT
MOVE.L  #POS21,A5         21st command.
MOVE.L  #POS22,A6
BSR     OUTPUT
MOVE.L  #POS22,A5         22nd command.
MOVE.L  #POS23,A6
BSR     OUTPUT
MOVE.L  #POS23,A5         23rd command.
MOVE.L  #POS24,A6
BSR     OUTPUT
MOVE.L  #POS24,A5         24th command.
MOVE.L  #POS25,A6
BSR     OUTPUT
MOVE.L  #POS25,A5         25th command.
MOVE.L  #POS26,A6
BSR     OUTPUT
MOVE.L  #POS26,A5         26th command.
MOVE.L  #POS27,A6
BSR    OUTPUT
MOVE.L #POS27,A5     27th command.
MOVE.L #POS28,A6
BSR    OUTPUT
MOVE.L #POS28,A5     last command.
MOVE.L #POS29,A6
BSR    OUTPUT
MOVE.B #228,D7      Return to TUTOR.
TRAP    #14          Program finished.

* Subroutine to output string to Robot.

* OUTPUT MOVE.B #242,D7 Load OUTPUT21 routine.
    TRAP    #14      Output string to port 2.
OUT  MOVE.B $10041,D2 Input ACIA2 status.
    CMP.B   #3,D2  Handshake frm TCM rcvd?
    BNE     OUT    Loop if not yet rcvd.
    CLR.L   D2    Clr for next handshake.
    RTS        Return to main program.
END