**Extra Class Activity 2.O – Reverse the elements of a vector**

**Study of program relocation. This extends the in class activity 3**

**Operators: BM - Performs a block move**

**Sample Lab:**

**TUTOR 1.32> MS 4AC4 'ABCDEFGHIJ'**

**TUTOR 1.32> .A0 00000000**

**TUTOR 1.32> MD 4ACE;DI DI**

**004ACE AAEB DC.W $AAEB**

**TUTOR 1.32> MD 4ACE;DI**

**004ACE AAEB DC.W $AAEB**

**TUTOR 1.32> MM 4ACE;DI**

**004ACE 41FAFFF4 LEA.L $004AC4(PC),A0**

**004AD2 10280000 MOVE.B 0(A0),D0**

**004AD6 12280001 MOVE.B 1(A0),D1**

**004ADA 14280002 MOVE.B 2(A0),D2**

**004ADE 16280003 MOVE.B 3(A0),D3**

**004AE2 18280004 MOVE.B 4(A0),D4**

**004AE6**

**004AE6 4E71 NOP**

**004AE8 116800090000 MOVE.B 9(A0),0(A0)**

**004AEE 116800080001 MOVE.B 8(A0),1(A0)**

**004AF4 116800070002 MOVE.B 7(A0),2(A0)**

**004AFA 116800060003 MOVE.B 6(A0),3(A0)**

**004B00 116800050004 MOVE.B 5(A0),4(A0)**

**004B06 4E71 NOP**

**004B08 MOVE.B D0, 9(A0)**

**004B08 11410008 MOVE.B D1,8(A0)**

**004B0C 11420007 MOVE.B D2,7(A0)**

**004B10 11430006 MOVE.B D3,6(A0)**

**004B14 11440005 MOVE.B D4,5(A0)**

**004B18 BFFF DC.W $BFFF ?.**

**TUTOR 1.32> BR 4B18**

**BREAKPOINTS**

**004B18 004B18**

**TUTOR 1.32> .D1 00000000**

**TUTOR 1.32> .D2 00000000**

**TUTOR 1.32> .D3 00000000**

**TUTOR 1.32> .D4 00000000**

**TUTOR 1.32> .D0 00000000**

**TUTOR 1.32> .PC 4ACE**

**TUTOR 1.32> TR**

**PHYSICAL ADDRESS=00004ACE**

**PC=00004AD2 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000000 D1=00000000 D2=00000000 D3=00000000**

**D4=00000000 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004AD2 10280000 MOVE.B 0(A0),D0**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004AD2**

**PC=00004AD6 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000000 D2=00000000 D3=00000000**

**D4=00000000 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004AD6 12280001 MOVE.B 1(A0),D1**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004AD6**

**PC=00004ADA SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000000 D3=00000000**

**D4=00000000 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004ADA 14280002 MOVE.B 2(A0),D2**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004ADA**

**PC=00004ADE SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000000**

**D4=00000000 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004ADE 16280003 MOVE.B 3(A0),D3**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004ADE**

**PC=00004AE2 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000000 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004AE2 18280004 MOVE.B 4(A0),D4**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004AE2**

**PC=00004AE6 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000045 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004AE6 4E71 NOP**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004AE6**

**PC=00004AE8 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000045 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004AE8 116800090000 MOVE.B 9(A0),0(A0)**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004AE8**

**PC=00004AEE SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000045 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004AEE 116800080001 MOVE.B 8(A0),1(A0)**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004AEE**

**PC=00004AF4 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000045 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004AF4 116800070002 MOVE.B 7(A0),2(A0)**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004AF4**

**PC=00004AFA SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000045 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004AFA 116800060003 MOVE.B 6(A0),3(A0)**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004AFA**

**PC=00004B00 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000045 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004B00 116800050004 MOVE.B 5(A0),4(A0)**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004B00**

**PC=00004B06 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000045 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004B06 4E71 NOP**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004B06**

**PC=00004B08 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000045 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004B08 11410008 MOVE.B D1,8(A0)**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004B08**

**PC=00004B0C SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000045 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004B0C 11420007 MOVE.B D2,7(A0)**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004B0C**

**PC=00004B10 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000045 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004B10 11430006 MOVE.B D3,6(A0)**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004B10**

**PC=00004B14 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000045 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004B14 11440005 MOVE.B D4,5(A0)**

**TUTOR 1.32:>**

**PHYSICAL ADDRESS=00004B14**

**AT BREAKPOINT**

**PC=00004B18 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=00000041 D1=00000042 D2=00000043 D3=00000044**

**D4=00000045 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00004AC4 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------004B18 BFFF DC.W $BFFF**

**TUTOR 1.32> MD 4AC4;DI**

**004AC4 4A49 DC.W $4A49**

**TUTOR 1.32> BM 4AC4 4B18 2000**

**TUTOR 1.32> MM 2000;DI**

**002000 4A49 DC.W $4A49 ?**

**002002 4847 SWAP.W D7 ?**

**002004 4645 NOT.W D5 ?**

**002006 4443 NEG.W D3 ?**

**002008 424A DC.W $424A ?**

**00200A 41FAFFF4 LEA.L $00002000(PC),A0 ?**

**00200E 10280000 MOVE.B 0(A0),D0 ?**

**002012 12280001 MOVE.B 1(A0),D1 ?**

**002016 14280002 MOVE.B 2(A0),D2 ?**

**00201A 16280003 MOVE.B 3(A0),D3 ?**

**00201E 18280004 MOVE.B 4(A0),D4 ?**

**002022 4E71 NOP ?**

**002024 116800090000 MOVE.B 9(A0),0(A0) ?**

**00202A 116800080001 MOVE.B 8(A0),1(A0) ?**

**002030 116800070002 MOVE.B 7(A0),2(A0) ?**

**002036 116800060003 MOVE.B 6(A0),3(A0) ?**

**00203C 116800050004 MOVE.B 5(A0),4(A0) ?**

**002042 4E71 NOP ?**

**002044 11410008 MOVE.B D1,8(A0) ?**

**002048 11420007 MOVE.B D2,7(A0) ?**

**00204C 11430006 MOVE.B D3,6(A0) ?**

**002050 11440005 MOVE.B D4,5(A0) ?**

**002054 BFFF DC.W $BFFF ?**

**002056 FFFF DC.W $FFFF ?**

**002058 FBFF DC.W $FBFF ?**

**00205A EFFF DC.W $EFFF ?.**

**TUTOR 1.32> BR 2054**

**BREAKPOINTS**

**004B18 004B18**

**002054 002054**

**TUTOR 1.32> .PC 200A**

**TUTOR 1.32> GO**

**PHYSICAL ADDRESS=0000200AAT BREAKPOINT**

**PC=00002054 SR=2700=.S7..... US=FFFF36FB SS=0000077A**

**D0=0000004A D1=00000049 D2=00000048 D3=00000047**

**D4=00000046 D5=FBAF3FF9 D6=FFFF7FFF D7=FFFF7FFB**

**A0=00002000 A1=FF7F3B7B A2=FFDF7FFF A3=FFFFFFFD**

**A4=FFFFFFFB A5=3B7B7EFF A6=FFFFFFFF A7=0000077A**

**--------------------002054 BFFF DC.W $BFFF**

**TUTOR 1.32> MD 2000 20**

**002000 4A 42 43 44 45 46 47 48 49 4A 41 FA FF F4 10 28 JBCDEFGHIJAz.t.(**

**002010 00 00 12 28 00 01 14 28 00 02 16 28 00 03 18 28 ...(...(...(...(**

**TUTOR 1.32>**

1. Lab 2.O Reverse the elements of a vector

DESCRIPTION

This lab is concerned with program relocatable code. PC relative addressing modes are useful here. In a multiple user environment, a user’s program should be capable of residing anywhere in memory. That is, user programs should be address independent.

The task here is to reverse the elements of a vector. The procedure is as follows:

1. Create a vector of the ASCII characters ‘A ... J’ at location $004AC4.
2. Construct a sequence of operations beginning at location $004ACE which will reverse the elements of the vector.
3. Display both the ASCII vector and the instructions.
4. Execute your program.
5. Display the vector to insure that it was indeed reversed.
6. Display your program in its new location and then execute it.
7. Display the vector to insure that it was again reversed. The vector should now be as it was initially, only in a new location.

In order for all of this to work, references to data must be PC relative. Turn in all items which you were asked to display along with your evaluation of the lab. Consider the consequences of not being able to relocate your programs or having to specify a particular memory address to ensure proper program execution.

SOURCE CODE

ORG $1500

START: ; first instruction of program

LEA.L $004AC4, A1

LEA.L $004ACE, A2

LEA.L $004AE0, A3

LEA.L $004AEA, A4

MOVE.B (A1)+, D0

MOVE.B -(A2), (A3)+

MOVE.B D0, -(A4)

MOVE.B (A1)+, D0

MOVE.B -(A2), (A3)+

MOVE.B D0, -(A4)

MOVE.B (A1)+, D0

MOVE.B -(A2), (A3)+

MOVE.B D0, -(A4)

MOVE.B (A1)+, D0

MOVE.B -(A2), (A3)+

MOVE.B D0, -(A4)

MOVE.B (A1)+, D0

MOVE.B -(A2), (A3)+

MOVE.B D0, -(A4)

; halt simulator

\* Variables and Strings

ORG $004AC4

DC.L 'ABCDEFGHIJ'

END START ; last line of source

OUTPUT IN TRACE MODE

//Memory Display before executing the program

00004AC0: FF FF FF FF 41 42 43 44 45 46 47 48 49 4A 00 00 ----ABCDEFGHIJ--

00004AD0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ----------------

00004AE0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ----------------

00004AF0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ----------------

00004B00: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ----------------

//Trace Mode

D0=00000000 D4=00000000 A0=00000000 A4=00000000 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00000000 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00000000 A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00000000 A7=01000000 SS=01000000

PC=00001500 Code=43F8 4AC4 Line= 9 LEA.L $004AC4, A1

//Loads the address $004AC4 into address register A1

D0=00000000 D4=00000000 A0=00000000 A4=00000000 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC4 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00000000 A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00000000 A7=01000000 SS=01000000

PC=00001504 Code=45F8 4ACE Line= 10 LEA.L $004ACE, A2

//Loads the address $004ACE into address register A2

D0=00000000 D4=00000000 A0=00000000 A4=00000000 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC4 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACE A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00000000 A7=01000000 SS=01000000

PC=00001508 Code=47F8 4AE0 Line= 11 LEA.L $004AE0, A3

//Loads the address $004AE0 into address register A3

D0=00000000 D4=00000000 A0=00000000 A4=00000000 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC4 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACE A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE0 A7=01000000 SS=01000000

PC=0000150C Code=49F8 4AEA Line= 12 LEA.L $004AEA, A4

//Loads the address $004AEA into address register A4

D0=00000000 D4=00000000 A0=00000000 A4=00004AEA T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC4 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACE A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE0 A7=01000000 SS=01000000

PC=00001510 Code=1019 Line= 14 MOVE.B (A1)+, D0

//Moves one byte of the contents in A1 into D0 and moves the pointer up by one byte.

D0=00000041 D4=00000000 A0=00000000 A4=00004AEA T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC5 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACE A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE0 A7=01000000 SS=01000000

PC=00001512 Code=16E2 Line= 15 MOVE.B -(A2), (A3)+

//Moves the pointer one byte left from the location of the A2, and puts one byte of that content into A3, and the pointer moves up by one byte.

D0=00000041 D4=00000000 A0=00000000 A4=00004AEA T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC5 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACD A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE1 A7=01000000 SS=01000000

PC=00001514 Code=1900 Line= 16 MOVE.B D0, -(A4)

//Moves the content in D0 to the location one byte down the original location of A4.

D0=00000041 D4=00000000 A0=00000000 A4=00004AE9 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC5 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACD A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE1 A7=01000000 SS=01000000

PC=00001516 Code=1019 Line= 18 MOVE.B (A1)+, D0

//Moves one byte of the contents in A1 into D0 and moves the pointer up by one byte.

D0=00000042 D4=00000000 A0=00000000 A4=00004AE9 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC6 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACD A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE1 A7=01000000 SS=01000000

PC=00001518 Code=16E2 Line= 19 MOVE.B -(A2), (A3)+

//Moves the pointer one byte left from the location of the A2, and puts one byte of that content into A3, and the pointer moves up by one byte.

D0=00000042 D4=00000000 A0=00000000 A4=00004AE9 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC6 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACC A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE2 A7=01000000 SS=01000000

PC=0000151A Code=1900 Line= 20 MOVE.B D0, -(A4)

//Moves the content in D0 to the location one byte down the original location of A4.

D0=00000042 D4=00000000 A0=00000000 A4=00004AE8 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC6 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACC A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE2 A7=01000000 SS=01000000

PC=0000151C Code=1019 Line= 22 MOVE.B (A1)+, D0

//Moves one byte of the contents in A1 into D0 and moves the pointer up by one byte.

D0=00000043 D4=00000000 A0=00000000 A4=00004AE8 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC7 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACC A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE2 A7=01000000 SS=01000000

PC=0000151E Code=16E2 Line= 23 MOVE.B -(A2), (A3)+

//Moves the pointer one byte left from the location of the A2, and puts one byte of that content into A3, and the pointer moves up by one byte.

D0=00000043 D4=00000000 A0=00000000 A4=00004AE8 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC7 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACB A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE3 A7=01000000 SS=01000000

PC=00001520 Code=1900 Line= 24 MOVE.B D0, -(A4)

//Moves the content in D0 to the location one byte down the original location of A4.

D0=00000043 D4=00000000 A0=00000000 A4=00004AE7 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC7 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACB A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE3 A7=01000000 SS=01000000

PC=00001522 Code=1019 Line= 26 MOVE.B (A1)+, D0

//Moves one byte of the contents in A1 into D0 and moves the pointer up by one byte.

D0=00000044 D4=00000000 A0=00000000 A4=00004AE7 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC8 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACB A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE3 A7=01000000 SS=01000000

PC=00001524 Code=16E2 Line= 27 MOVE.B -(A2), (A3)+

//Moves the pointer one byte left from the location of the A2, and puts one byte of that content into A3, and the pointer moves up by one byte.

D0=00000044 D4=00000000 A0=00000000 A4=00004AE7 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC8 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACA A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE4 A7=01000000 SS=01000000

PC=00001526 Code=1900 Line= 28 MOVE.B D0, -(A4)

//Moves the content in D0 to the location one byte down the original location of A4.

D0=00000044 D4=00000000 A0=00000000 A4=00004AE6 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC8 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACA A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE4 A7=01000000 SS=01000000

PC=00001528 Code=1019 Line= 30 MOVE.B (A1)+, D0

//Moves one byte of the contents in A1 into D0 and moves the pointer up by one byte.

D0=00000045 D4=00000000 A0=00000000 A4=00004AE6 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC9 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004ACA A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE4 A7=01000000 SS=01000000

PC=0000152A Code=16E2 Line= 31 MOVE.B -(A2), (A3)+

//Moves the pointer one byte left from the location of the A2, and puts one byte of that content into A3, and the pointer moves up by one byte.

D0=00000045 D4=00000000 A0=00000000 A4=00004AE6 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC9 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004AC9 A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE5 A7=01000000 SS=01000000

PC=0000152C Code=1900 Line= 32 MOVE.B D0, -(A4)

//Moves the content in D0 to the location one byte down the original location of A4.

D0=00000045 D4=00000000 A0=00000000 A4=00004AE5 T\_S\_\_INT\_\_\_XNZVC

D1=00000000 D5=00000000 A1=00004AC9 A5=00000000 SR=0010000000000000

D2=00000000 D6=00000000 A2=00004AC9 A6=00000000 US=00FF0000

D3=00000000 D7=00000000 A3=00004AE5 A7=01000000 SS=01000000

PC=0000152E Code= Line= 84 \* Variables and Strings

//End of executing the program.

//Memory Display after execution

00004AC0: FF FF FF FF 41 42 43 44 45 46 47 48 49 4A 00 00 ----ABCDEFGHIJ--

00004AD0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ----------------

00004AE0: 4A 49 48 47 46 45 44 43 42 41 FF FF FF FF FF FF JIHGFEDCBA------

00004AF0: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ----------------

00004B00: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF ----------------