Mode: All
Left file: D:\Source\github\CSS422_Hardware\Disassembler\UnitTests\Test_002.X68
Right file: D:\Source\github\CSS422_Hardware\Disassembler\Output.txt

```
*===========================================
» ===========================================
» ===========================
* Title      : Test_002
* Written by : CSS 422 Best Group
*
*   The CSS 422 Best Group is:
*       - Howie Catlin
*       - Kyle Dukart
*       - Colton Sellers
*
*
* Date       : 10-Nov-2019
*
* Description:
*   Test input file used to perform software v
» erification
*   and validation (i.e.: validation that the
» disassembler
*   is capable of converting hexidecimal to En
» glish,
*   verification that the the strings being tr
» anslated are
*   in fact correct).
*
*   First parts of this file attempt to prove
» that each
*   operation code is capable of being transla
» ted. The
*   registers D0, D7, A0, & A7 and hex values
» '0', '1', '5',
*   'A', and 'F' as edge cases most likely to
» uncover early
*   programming errors. This method exercises
» all opcodes,
*   but performs less addressing.
*
*   Later in the file, a brute-force matrix of
»  every-register
*   to-every-register is employed to verify th
» e Effective
*   Addressing code paths. This method uses fe
» wer op codes,
*   but performs more addressing.
*
*   Refer to the Test Plan and test matrix for
»  more
*   information.
*===========================================
» ===========================================
» ===========================
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(continued)

```
TESTIO
*--------------------------------------------
» --------------
* BCLR
*--------------------------------------------
» --------------
    BCLR        D0,D7                            111112  BCLR    D0, D7
    BCLR        D7,(A7)                          111114  BCLR    D7, (A7)
    BCLR        D0,(A0)+                         111116  BCLR    D0, (A0)+
    BCLR        D7,-(A7)                         111118  BCLR    D7, -(A7)
    BCLR        D0,$FFFF                         11111A  BCLR    D0, $FFFF
    BCLR        D7,$55555                        111120  BCLR    D7, $55555

*--------------------------------------------
» --------------
* ORI
*--------------------------------------------
» --------------
    ORI.W       #$1111,D0                        111126  ORI.W   #$1111, D0
    ORI.W       #$AAAA,(A0)+                     11112A  ORI.W   #$AAAA, (A0)+
    ORI.W       #$0000,-(A0)                     11112E  ORI.W   #$0000, -(A0)
    ORI.L       #$FFFFF,D0                       111132  ORI.L   #$FFFFF, D0
    ORI.L       #$55555,(A0)+                    111138  ORI.L   #$55555, (A0)+
    ORI.L       #$AAAAA,-(A0)                    11113E  ORI.L   #$AAAAA, -(A0)
*--------------------------------------------
» --------------
* CMPI
*--------------------------------------------
» --------------
    CMPI.W      #$1111,D0                        111144  CMPI.W  #$1111, D0
    CMPI.W      #$AAAA,(A0)+                     111148  CMPI.W  #$AAAA, (A0)+
    CMPI.W      #$0000,-(A0)                     11114C  CMPI.W  #$0000, -(A0)
    CMPI.L      #$FFFFF,D0                       111150  CMPI.L  #$FFFFF, D0
    CMPI.L      #$55555,(A0)+                    111156  CMPI.L  #$55555, (A0)+
    CMPI.L      #$AAAAA,-(A0)                    11115C  CMPI.L  #$AAAAA, -(A0)
*--------------------------------------------
» --------------
* MOVE.B
*--------------------------------------------
» --------------
    MOVE.B      #$0F,D0                          111162  MOVE.B  #F, D0
    MOVE.B      D7,(A7)                          111166  MOVE.B  D7, (A7)
    MOVE.B      D7,(A0)+                         111168  MOVE.B  D7, (A0)+
    MOVE.B      D0,-(A7)                         11116A  MOVE.B  D0, -(A7)
    MOVE.B      $1000,D0                         11116C  MOVE.B  $1000, D0
    MOVE.B      $10000,D0                        111170  MOVE.B  $10000, D0

    MOVE.W      #$AA,D0                          111176  MOVE.W  #$AA, D0
    MOVE.W      D7,A0                            11117A  MOVEA.W D7, A0
    MOVE.W      D7,(A7)                          11117C  MOVE.W  D7, (A7)
    MOVE.W      D0,(A0)+                         11117E  MOVE.W  D0, (A0)+
    MOVE.W      D7,-(A7)                         111180  MOVE.W  D7, -(A7)
```

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```
        MOVE.W          $5555,D0                  111182   MOVE.W  $5555, D0
        MOVE.W          $AAAAA,D0                 111186   MOVE.W  $AAAAA, D0
        MOVE.L          #$AA,D0                   11118C   MOVE.L  #$AA, D0
        MOVE.L          D0,A0                     111192   MOVEA.L D0, A0
        MOVE.L          D0,(A0)                   111194   MOVE.L  D0, (A0)
        MOVE.L          D0,(A0)+                  111196   MOVE.L  D0, (A0)+
        MOVE.L          D0,-(A0)                  111198   MOVE.L  D0, -(A0)
        MOVE.L          $1000,D0                  11119A   MOVE.L  $1000, D0
        MOVE.L          $10000,D0                 11119E   MOVE.L  $10000, D0


*---------------------------------------------
» --------------
*  MOVEA.W
*---------------------------------------------
» --------------


        MOVEA.W         D7,A0                     1111A4   MOVEA.W D7, A0
        MOVEA.W         (A0),A7                   1111A6   MOVEA.W (A0), A7
        MOVEA.W         (A0)+,A7                  1111A8   MOVEA.W (A0)+, A7
        MOVEA.W         -(A7),A0                  1111AA   MOVEA.W -(A7), A0
        MOVEA.W         $AAAA,A0                  1111AC   MOVEA.W $AAAA, A0
        MOVEA.W         $55555,A0                 1111B2   MOVEA.W $55555, A0
        MOVEA.L         D0,A0                     1111B8   MOVEA.L D0, A0
        MOVEA.L         D7,A0                     1111BA   MOVEA.L D7, A0
        MOVEA.L         (A7),A0                   1111BC   MOVEA.L (A7), A0
        MOVEA.L         (A0)+,A7                  1111BE   MOVEA.L (A0)+, A7
        MOVEA.L         -(A7),A0                  1111C0   MOVEA.L -(A7), A0
        MOVEA.L         $FFAA,A7                  1111C2   MOVEA.L $FFAA, A7
        MOVEA.L         $FFAA5,A0                 1111C8   MOVEA.L $FFAA5, A0
                                                  1111CE   NOP
                                                  1111D0   RTS


*---------------------------------------------
» --------------
*  NOP, RTS, ILLEGAL
*---------------------------------------------
» --------------
        NOP


        RTS


        ILLEGAL                                   1111D2   ILLEGAL
*---------------------------------------------
» --------------
*  LEA
*---------------------------------------------
» --------------
        LEA             (A7),A0                   1111D4   LEA             (A7), A0
        LEA             $FFAA,A0                  1111D6   LEA             $FFAA, A0
        LEA             $AA551,A7                 1111DC   LEA             $AA551, A7
                                                  1111E2   NEG.W   D0


*---------------------------------------------
» --------------
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```
* NEG                                        |
*---------------------------------------     |
» -------------                              |
    NEG         D0                           |
    NEG         (A6)                         | 1111E4  NEG.W   (A6)
    NEG         (A0)+                        | 1111E6  NEG.W   (A0)+
    NEG         -(A1)                        | 1111E8  NEG.W   -(A1)
    NEG         $AAFF                        | 1111EA  NEG.W   $AAFF
    NEG         $55FAA                       | 1111F0  NEG.W   $55FAA
                                             |
*---------------------------------------     |
» -------------                              |
* JSR                                        |
*---------------------------------------     |
» -------------                              |
    JSR         (A6)                         | 1111F6  JSR          (A6)
    JSR         $AAFF                        | 1111F8  JSR          $AAFF
    JSR         $55FAA                       | 1111FE  JSR          $55FAA
                                             |
*---------------------------------------     |
» -------------                              |
* MOVEM                                      |
*---------------------------------------     |
» -------------                              |
    MOVEM.L     D0-D7/A0-A6,-(A7)            | 111204  MOVEM.L D0-D7/A0-A7, -(A7)
    MOVEM.L     D0,-(A7)                     | 111208  MOVEM.L D0, -(A7)
    MOVEM.L     D1,-(A7)                     | 11120C  MOVEM.L D1, -(A7)
    MOVEM.L     D2,-(A7)                     | 111210  MOVEM.L D2, -(A7)
    MOVEM.L     D3,-(A7)                     | 111214  MOVEM.L D3, -(A7)
    MOVEM.L     D4,-(A7)                     | 111218  MOVEM.L D4, -(A7)
    MOVEM.L     D5,-(A7)                     | 11121C  MOVEM.L D5, -(A7)
    MOVEM.L     D6,-(A7)                     | 111220  MOVEM.L D6, -(A7)
    MOVEM.L     D7,-(A7)                     | 111224  MOVEM.L D7, -(A7)
    MOVEM.L     A0,-(A7)                     | 111228  MOVEM.L A0, -(A7)
    MOVEM.L     A1,-(A7)                     | 11122C  MOVEM.L A1, -(A7)
    MOVEM.L     A2,-(A7)                     | 111230  MOVEM.L A2, -(A7)
    MOVEM.L     A3,-(A7)                     | 111234  MOVEM.L A3, -(A7)
    MOVEM.L     A4,-(A7)                     | 111238  MOVEM.L A4, -(A7)
    MOVEM.L     A5,-(A7)                     | 11123C  MOVEM.L A5, -(A7)
    MOVEM.L     A6,-(A7)                     | 111240  MOVEM.L A6-A7, -(A7)
    MOVEM.L     A7,-(A7)                     | 111244  MOVEM.L A7, -(A7)
    MOVEM.L     D0-D7/A0-A6,-(A7)            | 111248  MOVEM.L D0-D7/A0-A7, -(A7)
    MOVEM.L     D0-D5/D7/A3-A6,-(A7)         | 11124C  MOVEM.L D0/D7/A3-A7, -(A7)
    MOVEM.L     D0/D2/D4/D6/A0/A2/A4/A6,-(A7)| 111250  MOVEM.L D0/D2/D4/D6/A0/A2/A4/A6-A7, -(
                                             | »  A7)
    MOVEM.L     D0-D2/D4/D6-D7/A0-A3/A5/A7,-(A| 111254  MOVEM.L D0/D4/D6-D7/A0/A5/A7, -(A7)
» 7)                                         |
    MOVEM.L     (A7)+,D0                     | 111258  MOVEM.W (A7)+, D0
    MOVEM.L     (A7)+,D1                     | 11125C  MOVEM.W (A7)+, D1
    MOVEM.L     (A7)+,D2                     | 111260  MOVEM.W (A7)+, D2
    MOVEM.L     (A7)+,D3                     | 111264  MOVEM.W (A7)+, D3
    MOVEM.L     (A7)+,D4                     | 111268  MOVEM.W (A7)+, D4
```

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```
    MOVEM.L      (A7)+,D5                  11126C  MOVEM.W (A7)+, D5
    MOVEM.L      (A7)+,D6                  111270  MOVEM.W (A7)+, D6
    MOVEM.L      (A7)+,D7                  111274  MOVEM.W (A7)+, D7
    MOVEM.L      (A7)+,A0                  111278  MOVEM.W (A7)+, A0
    MOVEM.L      (A7)+,A1                  11127C  MOVEM.W (A7)+, A1
    MOVEM.L      (A7)+,A2                  111280  MOVEM.W (A7)+, A2
    MOVEM.L      (A7)+,A3                  111284  MOVEM.W (A7)+, A3
    MOVEM.L      (A7)+,A4                  111288  MOVEM.W (A7)+, A4
    MOVEM.L      (A7)+,A5                  11128C  MOVEM.W (A7)+, A5
    MOVEM.L      (A7)+,A6                  111290  MOVEM.W (A7)+, A6-A7
    MOVEM.L      (A7)+,A7                  111294  MOVEM.W (A7)+, A7
    MOVEM.L      (A7)+,D0-D7/A0-A6         111298  MOVEM.W (A7)+, D0-D7/A0-A7
    MOVEM.L      (A7)+,D0-D5/D7/A3-A6      11129C  MOVEM.W (A7)+, D0/D7/A3-A7
    MOVEM.L      (A7)+,D0/D2/D4/D6/A0/A2/A4/A6   1112A0  MOVEM.W (A7)+, D0/D2/D4/D6/A0/A2/A4/A6
                                          »  -A7
    MOVEM.L      (A7)+,D0-D2/D4/D6-D7/A0-A3/A5/   1112A4  MOVEM.W (A7)+, D0/D4/D6-D7/A0/A5/A7
»  A7
*----------------------------------------------
»  --------------
*  SUBQ.x
*----------------------------------------------
»  --------------
    SUBQ.B       #1,D0                     1112A8  SUBQ.B   #1, D0
    SUBQ.B       #3,(A7)                   1112AA  SUBQ.B   #3, (A7)
    SUBQ.B       #4,(A0)+                  1112AC  SUBQ.B   #4, (A0)+
    SUBQ.B       #5,-(A0)                  1112AE  SUBQ.B   #5, -(A0)
    SUBQ.B       #6,$AAFF                  1112B0  SUBQ.B   #6, $AAFF
    SUBQ.B       #7,$AFAF5                 1112B6  SUBQ.B   #7, $AFAF5

    SUBQ.W       #1,D0                     1112BC  SUBQ.W   #1, D0
    SUBQ.W       #3,(A7)                   1112BE  SUBQ.W   #3, (A7)
    SUBQ.W       #4,(A0)+                  1112C0  SUBQ.W   #4, (A0)+
    SUBQ.W       #5,-(A0)                  1112C2  SUBQ.W   #5, -(A0)
    SUBQ.W       #6,$AAFF                  1112C4  SUBQ.W   #6, $AAFF
    SUBQ.W       #7,$AFAF5                 1112CA  SUBQ.W   #7, $AFAF5
    SUBQ.L       #1,D0                     1112D0  SUBQ.L   #1, D0
    SUBQ.L       #3,(A7)                   1112D2  SUBQ.L   #3, (A7)
    SUBQ.L       #4,(A0)+                  1112D4  SUBQ.L   #4, (A0)+
    SUBQ.L       #5,-(A0)                  1112D6  SUBQ.L   #5, -(A0)
    SUBQ.L       #6,$AAFF                  1112D8  SUBQ.L   #6, $AAFF
    SUBQ.L       #7,$AFAF5                 1112DE  SUBQ.L   #7, $AFAF5
*----------------------------------------------
»  --------------
*  DIVS
*----------------------------------------------
»  --------------
    DIVS         D0,D1                     1112E4  DIVS     D0, D1
    DIVS         (A1)+,D1                  1112E6  DIVS     (A1)+, D1
    DIVS         -(A2),D2                  1112E8  DIVS     -(A2), D2
    DIVS         #01,D1                    1112EA  DIVS     #$1, D1
    DIVS         $AAFF,D1                  1112EE  DIVS     $AAFF, D1
    DIVS         $FFAA5,D2                 1112F4  DIVS     $FFAA5, D2
```

Beyond Compare v4.2.10

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(continued)

```
*-----------------------------------------
» -------------
* OR
*-----------------------------------------
» -------------
    OR          D0,D1                         1112FA  OR.W    D0, D1
    OR          (A0),D0                       1112FC  OR.W    (A0), D0
    OR          (A0)+,D7                      1112FE  OR.W    (A0)+, D7
    OR          -(A7),D0                      111300  OR.W    -(A7), D0
    OR          #02,D1                        111302  OR.W    #$2, D1
*-----------------------------------------
» -------------
* SUB
*-----------------------------------------
» -------------
    SUB         D0,D1                         111306  SUB.W   D0, D1
    SUB         A0,D0                         111308  SUB.W   A0, D0
    SUB         (A0),D0                       11130A  SUB.W   (A0), D0
    SUB         (A0)+,D0                      11130C  SUB.W   (A0)+, D0
    SUB         -(A7),D1                      11130E  SUB.W   -(A7), D1
    SUB         #02,D1                        111310  SUBQ.W  #2, D1
    SUB         $AAFF,D0                      111312  SUB.W   $AAFF, D0
    SUB         $AFAF5,D1                     111318  SUB.W   $AFAF5, D1
*-----------------------------------------
» -------------
* CMP
*-----------------------------------------
» -------------
    CMP         D0,D1                         11131E  CMP.W   D0, D1
    CMP         A0,D0                         111320  CMP.W   A0, D0
    CMP         (A0),D0                       111322  CMP.W   (A0), D0
    CMP         (A0)+,D0                      111324  CMP.W   (A0)+, D0
    CMP         -(A7),D1                      111326  CMP.W   -(A7), D1
    CMP         #02,D1                        111328  CMP.W   #$2, D1
    CMP         $AAFF,D0                      11132C  CMP.W   $AAFF, D0
    CMP         $AFAF5,D1                     111332  CMP.W   $AFAF5, D1
*-----------------------------------------
» -------------
* EOR
*-----------------------------------------
» -------------
    EOR         D0,D1                         111338  EOR.W   D0, D1
    EOR         D0,(A0)                       11133A  EOR.W   D0, (A0)
    EOR         D0,(A0)+                      11133C  EOR.W   D0, (A0)+
    EOR         D0,-(A7)                      11133E  EOR.W   D0, -(A7)
    EOR.W       #$AAFF,D0                     111340  EORI.W  #$AAFF, D0
    EOR.L       #$AFAF5,D1                    111344  BCLR    #$A, D1
                                             111348  DATA    FAF5
*-----------------------------------------
» -------------
* MULS
*-----------------------------------------
```

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```
»  -------------
    MULS        D0,D1                  11134A  MULS     D0, D1
    MULS        (A0),D0                11134C  MULS     (A0), D0
    MULS        (A0)+,D0               11134E  MULS     (A0)+, D0
    MULS        -(A7),D1               111350  MULS     -(A7), D1
    MULS        #02,D1                 111352  MULS     #$2, D1
    MULS        $AAFF,D0               111356  MULS     $AAFF, D0
    MULS        $AFAF5,D1              11135C  MULS     $AFAF5, D1
*-----------------------------------------
»  -------------
*  ADD
*-----------------------------------------
»  -------------
    ADD         D0,D1                  111362  ADD.W           D0, D1
    ADD         D0,A0                  111364  ADDA.W  D0, A0
    ADD         (A0),D0                111366  ADD.W           (A0), D0
    ADD         (A0)+,D0               111368  ADD.W           (A0)+, D0
    ADD         -(A7),D1               11136A  ADD.W           -(A7), D1
    ADD         #02,D1                 11136C  ADDQ.W  #2, D1
    ADD         $AAFF,D0               11136E  ADD.W           $AAFF, D0
    ADD         $AFAF5,D1              111374  ADD.W           $AFAF5, D1
*-----------------------------------------
»  -------------
*  ADDA
*-----------------------------------------
»  -------------
    ADDA        D0,A0                  11137A  ADDA.W  D0, A0
    ADDA        D0,A0                  11137C  ADDA.W  D0, A0
    ADDA        (A0),A0                11137E  ADDA.W  (A0), A0
    ADDA        (A0)+,A0               111380  ADDA.W  (A0)+, A0
    ADDA        -(A7),A1               111382  ADDA.W  -(A7), A1
    ADDA        #02,A1                 111384  ADDQ.W  #2, A1
    ADDA        $AAFF,A0               111386  ADDA.W  $AAFF, A0
    ADDA        $AFAF5,A7              11138C  ADDA.W  $AFAF5, A7
*-----------------------------------------
»  -------------
*  ASR
*-----------------------------------------
»  -------------
    ASR         (A0)                   111392  ASR      (A0)
    ASR         (A7)+                  111394  ASR      (A7)+
    ASR         -(A0)                  111396  ASR      -(A0)
    ASR         $AFAF                  111398  ASR      $AFAF
    ASR         $FFAA550               11139E  ASR      $FFAA550
*-----------------------------------------
»  -------------
*  ASL
*-----------------------------------------
»  -------------
    ASL         (A0)                   1113A4  ASL      (A0)
    ASL         (A7)+                  1113A6  ASL      (A7)+
    ASL         -(A0)                  1113A8  ASL      -(A0)
```

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```
     ASL         $AFAF                    1113AA  ASL      $AFAF
     ASL         $FFAA550                 1113B0  ASL      $FFAA550


*------------------------------------------
» --------------
*  LSR
*------------------------------------------
» --------------
     LSR         (A0)                     1113B6  LSR      (A0)
     LSR         (A7)+                    1113B8  LSR      (A7)+
     LSR         -(A0)                    1113BA  LSR      -(A0)
     LSR         $AFAF                    1113BC  LSR      $AFAF
     LSR         $FFAA550                 1113C2  LSR      $FFAA550
*------------------------------------------
» --------------
*  LSL
*------------------------------------------
» --------------
     LSL         (A0)                     1113C8  LSL      (A0)
     LSL         (A7)+                    1113CA  LSL      (A7)+
     LSL         -(A0)                    1113CC  LSL      -(A0)
     LSL         $AFAF                    1113CE  LSL      $AFAF
     LSL         $FFAA550                 1113D4  LSL      $FFAA550
*------------------------------------------
» --------------
*  ROL
*------------------------------------------
» --------------
     ROL         (A0)                     1113DA  ROL      (A0)
     ROL         (A7)+                    1113DC  ROL      (A7)+
     ROL         -(A0)                    1113DE  ROL      -(A0)
     ROL         $AFAF                    1113E0  ROL      $AFAF
     ROL         $FFAA550                 1113E6  ROL      $FFAA550
*------------------------------------------
» --------------
*  ROR
*------------------------------------------
» --------------
     ROR         (A0)                     1113EC  ROR      (A0)
     ROR         (A7)+                    1113EE  ROR      (A7)+
     ROR         -(A0)                    1113F0  ROR      -(A0)
     ROR         $AFAF                    1113F2  ROR      $AFAF
     ROR         $FFAA550                 1113F8  ROR      $FFAA550
*------------------------------------------
» --------------
*  BRUTE-FORCE VERIFICATION
*------------------------------------------
» --------------
        ; D0 to all other data registers
     ADD         D0,D0                    1113FE  ADD.W           D0, D0
     ADD         D0,D1                    111400  ADD.W           D0, D1
     ADD         D0,D2                    111402  ADD.W           D0, D2
```

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ADD	D0,D3		111404	ADD.W	D0, D3
ADD	D0,D4		111406	ADD.W	D0, D4
ADD	D0,D5		111408	ADD.W	D0, D5
ADD	D0,D6		11140A	ADD.W	D0, D6
ADD	D0,D7		11140C	ADD.W	D0, D7
; D1 to all other data registers					
ADD	D1,D0		11140E	ADD.W	D1, D0
ADD	D1,D1		111410	ADD.W	D1, D1
ADD	D1,D2		111412	ADD.W	D1, D2
ADD	D1,D3		111414	ADD.W	D1, D3
ADD	D1,D4		111416	ADD.W	D1, D4
ADD	D1,D5		111418	ADD.W	D1, D5
ADD	D1,D6		11141A	ADD.W	D1, D6
ADD	D1,D7		11141C	ADD.W	D1, D7
; D2 to all other data registers					
ADD	D2,D0		11141E	ADD.W	D2, D0
ADD	D2,D1		111420	ADD.W	D2, D1
ADD	D2,D2		111422	ADD.W	D2, D2
ADD	D2,D3		111424	ADD.W	D2, D3
ADD	D2,D4		111426	ADD.W	D2, D4
ADD	D2,D5		111428	ADD.W	D2, D5
ADD	D2,D6		11142A	ADD.W	D2, D6
ADD	D2,D7		11142C	ADD.W	D2, D7
; D3 to all other data registers					
ADD	D3,D0		11142E	ADD.W	D3, D0
ADD	D3,D1		111430	ADD.W	D3, D1
ADD	D3,D2		111432	ADD.W	D3, D2
ADD	D3,D3		111434	ADD.W	D3, D3
ADD	D3,D4		111436	ADD.W	D3, D4
ADD	D3,D5		111438	ADD.W	D3, D5
ADD	D3,D6		11143A	ADD.W	D3, D6
ADD	D3,D7		11143C	ADD.W	D3, D7
; D4 to all other data registers					
ADD	D4,D0		11143E	ADD.W	D4, D0
ADD	D4,D1		111440	ADD.W	D4, D1
ADD	D4,D2		111442	ADD.W	D4, D2
ADD	D4,D3		111444	ADD.W	D4, D3
ADD	D4,D4		111446	ADD.W	D4, D4
ADD	D4,D5		111448	ADD.W	D4, D5
ADD	D4,D6		11144A	ADD.W	D4, D6
ADD	D4,D7		11144C	ADD.W	D4, D7
; D5 to all other data registers					
ADD	D5,D0		11144E	ADD.W	D5, D0
ADD	D5,D1		111450	ADD.W	D5, D1
ADD	D5,D2		111452	ADD.W	D5, D2
ADD	D5,D3		111454	ADD.W	D5, D3
ADD	D5,D4		111456	ADD.W	D5, D4
ADD	D5,D5		111458	ADD.W	D5, D5
ADD	D5,D6		11145A	ADD.W	D5, D6
ADD	D5,D7		11145C	ADD.W	D5, D7
; D6 to all other data registers					
ADD	D6,D0		11145E	ADD.W	D6, D0

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(continued)

ADD	D6,D1		111460	ADD.W	D6, D1
ADD	D6,D2		111462	ADD.W	D6, D2
ADD	D6,D3		111464	ADD.W	D6, D3
ADD	D6,D4		111466	ADD.W	D6, D4
ADD	D6,D5		111468	ADD.W	D6, D5
ADD	D6,D6		11146A	ADD.W	D6, D6
ADD	D6,D7		11146C	ADD.W	D6, D7
; D7 to all other data registers					
ADD	D7,D0		11146E	ADD.W	D7, D0
ADD	D7,D1		111470	ADD.W	D7, D1
ADD	D7,D2		111472	ADD.W	D7, D2
ADD	D7,D3		111474	ADD.W	D7, D3
ADD	D7,D4		111476	ADD.W	D7, D4
ADD	D7,D5		111478	ADD.W	D7, D5
ADD	D7,D6		11147A	ADD.W	D7, D6
ADD	D7,D7		11147C	ADD.W	D7, D7
; D0 to all other address registers					
ADD	D0,A0		11147E	ADDA.W	D0, A0
ADD	D0,A1		111480	ADDA.W	D0, A1
ADD	D0,A2		111482	ADDA.W	D0, A2
ADD	D0,A3		111484	ADDA.W	D0, A3
ADD	D0,A4		111486	ADDA.W	D0, A4
ADD	D0,A5		111488	ADDA.W	D0, A5
ADD	D0,A6		11148A	ADDA.W	D0, A6
ADD	D0,A7		11148C	ADDA.W	D0, A7
; D1 to all other address registers					
ADD	D1,A0		11148E	ADDA.W	D1, A0
ADD	D1,A1		111490	ADDA.W	D1, A1
ADD	D1,A2		111492	ADDA.W	D1, A2
ADD	D1,A3		111494	ADDA.W	D1, A3
ADD	D1,A4		111496	ADDA.W	D1, A4
ADD	D1,A5		111498	ADDA.W	D1, A5
ADD	D1,A6		11149A	ADDA.W	D1, A6
ADD	D1,A7		11149C	ADDA.W	D1, A7
; D2 to all other address registers					
»					
ADD	D2,A0		11149E	ADDA.W	D2, A0
ADD	D2,A1		1114A0	ADDA.W	D2, A1
ADD	D2,A2		1114A2	ADDA.W	D2, A2
ADD	D2,A3		1114A4	ADDA.W	D2, A3
ADD	D2,A4		1114A6	ADDA.W	D2, A4
ADD	D2,A5		1114A8	ADDA.W	D2, A5
ADD	D2,A6		1114AA	ADDA.W	D2, A6
ADD	D2,A7		1114AC	ADDA.W	D2, A7
; D3 to all other address registers					
ADD	D3,A0		1114AE	ADDA.W	D3, A0
ADD	D3,A1		1114B0	ADDA.W	D3, A1
ADD	D3,A2		1114B2	ADDA.W	D3, A2
ADD	D3,A3		1114B4	ADDA.W	D3, A3
ADD	D3,A4		1114B6	ADDA.W	D3, A4
ADD	D3,A5		1114B8	ADDA.W	D3, A5

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```
        ADD         D3,A6                  1114BA   ADDA.W   D3, A6
        ADD         D3,A7                  1114BC   ADDA.W   D3, A7
            ; D4 to all other address registers

        ADD         D4,A0                  1114BE   ADDA.W   D4, A0
        ADD         D4,A1                  1114C0   ADDA.W   D4, A1
        ADD         D4,A2                  1114C2   ADDA.W   D4, A2
        ADD         D4,A3                  1114C4   ADDA.W   D4, A3
        ADD         D4,A4                  1114C6   ADDA.W   D4, A4
        ADD         D4,A5                  1114C8   ADDA.W   D4, A5
        ADD         D4,A6                  1114CA   ADDA.W   D4, A6
        ADD         D4,A7                  1114CC   ADDA.W   D4, A7
            ; D5 to all other address registers

        ADD         D5,A0                  1114CE   ADDA.W   D5, A0
        ADD         D5,A1                  1114D0   ADDA.W   D5, A1
        ADD         D5,A2                  1114D2   ADDA.W   D5, A2
        ADD         D5,A3                  1114D4   ADDA.W   D5, A3
        ADD         D5,A4                  1114D6   ADDA.W   D5, A4
        ADD         D5,A5                  1114D8   ADDA.W   D5, A5
        ADD         D5,A6                  1114DA   ADDA.W   D5, A6
        ADD         D5,A7                  1114DC   ADDA.W   D5, A7
            ; D6 to all other address registers

        ADD         D6,A0                  1114DE   ADDA.W   D6, A0
        ADD         D6,A1                  1114E0   ADDA.W   D6, A1
        ADD         D6,A2                  1114E2   ADDA.W   D6, A2
        ADD         D6,A3                  1114E4   ADDA.W   D6, A3
        ADD         D6,A4                  1114E6   ADDA.W   D6, A4
        ADD         D6,A5                  1114E8   ADDA.W   D6, A5
        ADD         D6,A6                  1114EA   ADDA.W   D6, A6
        ADD         D6,A7                  1114EC   ADDA.W   D6, A7
            ; D7 to all other address registers

        ADD         D7,A0                  1114EE   ADDA.W   D7, A0
        ADD         D7,A1                  1114F0   ADDA.W   D7, A1
        ADD         D7,A2                  1114F2   ADDA.W   D7, A2
        ADD         D7,A3                  1114F4   ADDA.W   D7, A3
        ADD         D7,A4                  1114F6   ADDA.W   D7, A4
        ADD         D7,A5                  1114F8   ADDA.W   D7, A5
        ADD         D7,A6                  1114FA   ADDA.W   D7, A6
        ADD         D7,A7                  1114FC   ADDA.W   D7, A7


            ; values from all address registers to
»   A0
        ADD         (A0),A0                1114FE   ADDA.W   (A0), A0
        ADD         (A1),A0                111500   ADDA.W   (A1), A0
        ADD         (A2),A0                111502   ADDA.W   (A2), A0
        ADD         (A3),A0                111504   ADDA.W   (A3), A0
        ADD         (A4),A0                111506   ADDA.W   (A4), A0
        ADD         (A5),A0                111508   ADDA.W   (A5), A0
        ADD         (A6),A0                11150A   ADDA.W   (A6), A0
        ADD         (A7),A0                11150C   ADDA.W   (A7), A0
            ; values from all address registers to
»   A1
        ADD         (A0),A1                11150E   ADDA.W   (A0), A1
```

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```
        ADD         (A1),A1                 111510  ADDA.W  (A1), A1
        ADD         (A2),A1                 111512  ADDA.W  (A2), A1
        ADD         (A3),A1                 111514  ADDA.W  (A3), A1
        ADD         (A4),A1                 111516  ADDA.W  (A4), A1
        ADD         (A5),A1                 111518  ADDA.W  (A5), A1
        ADD         (A6),A1                 11151A  ADDA.W  (A6), A1
        ADD         (A7),A1                 11151C  ADDA.W  (A7), A1

        ; values from all address registers to
»   A2
        ADD         (A0),A2                 11151E  ADDA.W  (A0), A2
        ADD         (A1),A2                 111520  ADDA.W  (A1), A2
        ADD         (A2),A2                 111522  ADDA.W  (A2), A2
        ADD         (A3),A2                 111524  ADDA.W  (A3), A2
        ADD         (A4),A2                 111526  ADDA.W  (A4), A2
        ADD         (A5),A2                 111528  ADDA.W  (A5), A2
        ADD         (A6),A2                 11152A  ADDA.W  (A6), A2
        ADD         (A7),A2                 11152C  ADDA.W  (A7), A2
        ; values from all address registers to
»   A3
        ADD         (A0),A3                 11152E  ADDA.W  (A0), A3
        ADD         (A1),A3                 111530  ADDA.W  (A1), A3
        ADD         (A2),A3                 111532  ADDA.W  (A2), A3
        ADD         (A3),A3                 111534  ADDA.W  (A3), A3
        ADD         (A4),A3                 111536  ADDA.W  (A4), A3
        ADD         (A5),A3                 111538  ADDA.W  (A5), A3
        ADD         (A6),A3                 11153A  ADDA.W  (A6), A3
        ADD         (A7),A3                 11153C  ADDA.W  (A7), A3

        ; values from all address registers
» to A4
        ADD         (A0),A4                 11153E  ADDA.W  (A0), A4
        ADD         (A1),A4                 111540  ADDA.W  (A1), A4
        ADD         (A2),A4                 111542  ADDA.W  (A2), A4
        ADD         (A3),A4                 111544  ADDA.W  (A3), A4
        ADD         (A4),A4                 111546  ADDA.W  (A4), A4
        ADD         (A5),A4                 111548  ADDA.W  (A5), A4
        ADD         (A6),A4                 11154A  ADDA.W  (A6), A4
        ADD         (A7),A4                 11154C  ADDA.W  (A7), A4

        ; values from all address registers to
»   A5
        ADD         (A0),A5                 11154E  ADDA.W  (A0), A5
        ADD         (A1),A5                 111550  ADDA.W  (A1), A5
        ADD         (A2),A5                 111552  ADDA.W  (A2), A5
        ADD         (A3),A5                 111554  ADDA.W  (A3), A5
        ADD         (A4),A5                 111556  ADDA.W  (A4), A5
        ADD         (A5),A5                 111558  ADDA.W  (A5), A5
        ADD         (A6),A5                 11155A  ADDA.W  (A6), A5
        ADD         (A7),A5                 11155C  ADDA.W  (A7), A5

        ; values from all address registers to
```

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```
»   A6
    ADD           (A0),A6                    11155E  ADDA.W  (A0), A6
    ADD           (A1),A6                    111560  ADDA.W  (A1), A6
    ADD           (A2),A6                    111562  ADDA.W  (A2), A6
    ADD           (A3),A6                    111564  ADDA.W  (A3), A6
    ADD           (A4),A6                    111566  ADDA.W  (A4), A6
    ADD           (A5),A6                    111568  ADDA.W  (A5), A6
    ADD           (A6),A6                    11156A  ADDA.W  (A6), A6
    ADD           (A7),A6                    11156C  ADDA.W  (A7), A6

          ; values from all address registers to
»   A7
    ADD           (A0),A7                    11156E  ADDA.W  (A0), A7
    ADD           (A1),A7                    111570  ADDA.W  (A1), A7
    ADD           (A2),A7                    111572  ADDA.W  (A2), A7
    ADD           (A3),A7                    111574  ADDA.W  (A3), A7
    ADD           (A4),A7                    111576  ADDA.W  (A4), A7
    ADD           (A5),A7                    111578  ADDA.W  (A5), A7
    ADD           (A6),A7                    11157A  ADDA.W  (A6), A7
    ADD           (A7),A7                    11157C  ADDA.W  (A7), A7

          ; post-increment from all address regi
» sters to A0
    ADD           (A0)+,A0                   11157E  ADDA.W  (A0)+, A0
    ADD           (A1)+,A0                   111580  ADDA.W  (A1)+, A0
    ADD           (A2)+,A0                   111582  ADDA.W  (A2)+, A0
    ADD           (A3)+,A0                   111584  ADDA.W  (A3)+, A0
    ADD           (A4)+,A0                   111586  ADDA.W  (A4)+, A0
    ADD           (A5)+,A0                   111588  ADDA.W  (A5)+, A0
    ADD           (A6)+,A0                   11158A  ADDA.W  (A6)+, A0
    ADD           (A7)+,A0                   11158C  ADDA.W  (A7)+, A0

          ; post-increment from all address regi
» sters to A1
    ADD           (A0)+,A1                   11158E  ADDA.W  (A0)+, A1
    ADD           (A1)+,A1                   111590  ADDA.W  (A1)+, A1
    ADD           (A2)+,A1                   111592  ADDA.W  (A2)+, A1
    ADD           (A3)+,A1                   111594  ADDA.W  (A3)+, A1
    ADD           (A4)+,A1                   111596  ADDA.W  (A4)+, A1
    ADD           (A5)+,A1                   111598  ADDA.W  (A5)+, A1
    ADD           (A6)+,A1                   11159A  ADDA.W  (A6)+, A1
    ADD           (A7)+,A1                   11159C  ADDA.W  (A7)+, A1

          ; post-increment from all address regi
» sters to A2
    ADD           (A0)+,A2                   11159E  ADDA.W  (A0)+, A2
    ADD           (A1)+,A2                   1115A0  ADDA.W  (A1)+, A2
    ADD           (A2)+,A2                   1115A2  ADDA.W  (A2)+, A2
    ADD           (A3)+,A2                   1115A4  ADDA.W  (A3)+, A2
    ADD           (A4)+,A2                   1115A6  ADDA.W  (A4)+, A2
    ADD           (A5)+,A2                   1115A8  ADDA.W  (A5)+, A2
    ADD           (A6)+,A2                   1115AA  ADDA.W  (A6)+, A2
```

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```
    ADD         (A7)+,A2                    1115AC  ADDA.W  (A7)+, A2


        ; post-increment from all address regi
» sters to A3
    ADD         (A0)+,A3                    1115AE  ADDA.W  (A0)+, A3
    ADD         (A1)+,A3                    1115B0  ADDA.W  (A1)+, A3
    ADD         (A2)+,A3                    1115B2  ADDA.W  (A2)+, A3
    ADD         (A3)+,A3                    1115B4  ADDA.W  (A3)+, A3
    ADD         (A4)+,A3                    1115B6  ADDA.W  (A4)+, A3
    ADD         (A5)+,A3                    1115B8  ADDA.W  (A5)+, A3
    ADD         (A6)+,A3                    1115BA  ADDA.W  (A6)+, A3
    ADD         (A7)+,A3                    1115BC  ADDA.W  (A7)+, A3


        ; post-increment from all address regi
» sters to A4
    ADD         (A0)+,A4                    1115BE  ADDA.W  (A0)+, A4
    ADD         (A1)+,A4                    1115C0  ADDA.W  (A1)+, A4
    ADD         (A2)+,A4                    1115C2  ADDA.W  (A2)+, A4
    ADD         (A3)+,A4                    1115C4  ADDA.W  (A3)+, A4
    ADD         (A4)+,A4                    1115C6  ADDA.W  (A4)+, A4
    ADD         (A5)+,A4                    1115C8  ADDA.W  (A5)+, A4
    ADD         (A6)+,A4                    1115CA  ADDA.W  (A6)+, A4
    ADD         (A7)+,A4                    1115CC  ADDA.W  (A7)+, A4


        ; post-increment from all address regi
» sters to A5
    ADD         (A0)+,A5                    1115CE  ADDA.W  (A0)+, A5
    ADD         (A1)+,A5                    1115D0  ADDA.W  (A1)+, A5
    ADD         (A2)+,A5                    1115D2  ADDA.W  (A2)+, A5
    ADD         (A3)+,A5                    1115D4  ADDA.W  (A3)+, A5
    ADD         (A4)+,A5                    1115D6  ADDA.W  (A4)+, A5
    ADD         (A5)+,A5                    1115D8  ADDA.W  (A5)+, A5
    ADD         (A6)+,A5                    1115DA  ADDA.W  (A6)+, A5
    ADD         (A7)+,A5                    1115DC  ADDA.W  (A7)+, A5


        ; post-increment from all address regi
» sters to A6
    ADD         (A0)+,A6                    1115DE  ADDA.W  (A0)+, A6
    ADD         (A1)+,A6                    1115E0  ADDA.W  (A1)+, A6
    ADD         (A2)+,A6                    1115E2  ADDA.W  (A2)+, A6
    ADD         (A3)+,A6                    1115E4  ADDA.W  (A3)+, A6
    ADD         (A4)+,A6                    1115E6  ADDA.W  (A4)+, A6
    ADD         (A5)+,A6                    1115E8  ADDA.W  (A5)+, A6
    ADD         (A6)+,A6                    1115EA  ADDA.W  (A6)+, A6
    ADD         (A7)+,A6                    1115EC  ADDA.W  (A7)+, A6


        ; post-increment from all address reg
» isters to A7
    ADD         (A0)+,A7                    1115EE  ADDA.W  (A0)+, A7
    ADD         (A1)+,A7                    1115F0  ADDA.W  (A1)+, A7
    ADD         (A2)+,A7                    1115F2  ADDA.W  (A2)+, A7
    ADD         (A3)+,A7                    1115F4  ADDA.W  (A3)+, A7
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```
        ADD         (A4)+,A7                1115F6  ADDA.W  (A4)+, A7
        ADD         (A5)+,A7                1115F8  ADDA.W  (A5)+, A7
        ADD         (A6)+,A7                1115FA  ADDA.W  (A6)+, A7
        ADD         (A7)+,A7                1115FC  ADDA.W  (A7)+, A7

           ; pre-decrement from all address regis
»  ters to A0
        ADD         -(A0),A0                1115FE  ADDA.W  -(A0), A0
        ADD         -(A1),A0                111600  ADDA.W  -(A1), A0
        ADD         -(A2),A0                111602  ADDA.W  -(A2), A0
        ADD         -(A3),A0                111604  ADDA.W  -(A3), A0
        ADD         -(A4),A0                111606  ADDA.W  -(A4), A0
        ADD         -(A5),A0                111608  ADDA.W  -(A5), A0
        ADD         -(A6),A0                11160A  ADDA.W  -(A6), A0
        ADD         -(A7),A0                11160C  ADDA.W  -(A7), A0

           ; pre-decrement from all address regis
»  ters to A1
        ADD         -(A0),A1                11160E  ADDA.W  -(A0), A1
        ADD         -(A1),A1                111610  ADDA.W  -(A1), A1
        ADD         -(A2),A1                111612  ADDA.W  -(A2), A1
        ADD         -(A3),A1                111614  ADDA.W  -(A3), A1
        ADD         -(A4),A1                111616  ADDA.W  -(A4), A1
        ADD         -(A5),A1                111618  ADDA.W  -(A5), A1
        ADD         -(A6),A1                11161A  ADDA.W  -(A6), A1
        ADD         -(A7),A1                11161C  ADDA.W  -(A7), A1

           ; pre-decrement from all address regis
»  ters to A2
        ADD         -(A0),A2                11161E  ADDA.W  -(A0), A2
        ADD         -(A1),A2                111620  ADDA.W  -(A1), A2
        ADD         -(A2),A2                111622  ADDA.W  -(A2), A2
        ADD         -(A3),A2                111624  ADDA.W  -(A3), A2
        ADD         -(A4),A2                111626  ADDA.W  -(A4), A2
        ADD         -(A5),A2                111628  ADDA.W  -(A5), A2
        ADD         -(A6),A2                11162A  ADDA.W  -(A6), A2
        ADD         -(A7),A2                11162C  ADDA.W  -(A7), A2

           ; pre-decrement from all address regis
»  ters to A3
        ADD         -(A0),A3                11162E  ADDA.W  -(A0), A3
        ADD         -(A1),A3                111630  ADDA.W  -(A1), A3
        ADD         -(A2),A3                111632  ADDA.W  -(A2), A3
        ADD         -(A3),A3                111634  ADDA.W  -(A3), A3
        ADD         -(A4),A3                111636  ADDA.W  -(A4), A3
        ADD         -(A5),A3                111638  ADDA.W  -(A5), A3
        ADD         -(A6),A3                11163A  ADDA.W  -(A6), A3
        ADD         -(A7),A3                11163C  ADDA.W  -(A7), A3

           ; pre-decrement from all address regis
»  ters to A4
        ADD         -(A0),A4                11163E  ADDA.W  -(A0), A4
```

Left file: D:\Source\github\CSS422_Hardware\Disassembler\UnitTests\Test_002.X68
Right file: D:\Source\github\CSS422_Hardware\Disassembler\Output.txt
(continued)

```
    ADD         -(A1),A4                111640  ADDA.W  -(A1), A4
    ADD         -(A2),A4                111642  ADDA.W  -(A2), A4
    ADD         -(A3),A4                111644  ADDA.W  -(A3), A4
    ADD         -(A4),A4                111646  ADDA.W  -(A4), A4
    ADD         -(A5),A4                111648  ADDA.W  -(A5), A4
    ADD         -(A6),A4                11164A  ADDA.W  -(A6), A4
    ADD         -(A7),A4                11164C  ADDA.W  -(A7), A4

        ; pre-decrement from all address regis
» ters to A5
    ADD         -(A0),A5                11164E  ADDA.W  -(A0), A5
    ADD         -(A1),A5                111650  ADDA.W  -(A1), A5
    ADD         -(A2),A5                111652  ADDA.W  -(A2), A5
    ADD         -(A3),A5                111654  ADDA.W  -(A3), A5
    ADD         -(A4),A5                111656  ADDA.W  -(A4), A5
    ADD         -(A5),A5                111658  ADDA.W  -(A5), A5
    ADD         -(A6),A5                11165A  ADDA.W  -(A6), A5
    ADD         -(A7),A5                11165C  ADDA.W  -(A7), A5

        ; pre-decrement from all address regis
» ters to A6
    ADD         -(A0),A6                11165E  ADDA.W  -(A0), A6
    ADD         -(A1),A6                111660  ADDA.W  -(A1), A6
    ADD         -(A2),A6                111662  ADDA.W  -(A2), A6
    ADD         -(A3),A6                111664  ADDA.W  -(A3), A6
    ADD         -(A4),A6                111666  ADDA.W  -(A4), A6
    ADD         -(A5),A6                111668  ADDA.W  -(A5), A6
    ADD         -(A6),A6                11166A  ADDA.W  -(A6), A6
    ADD         -(A7),A6                11166C  ADDA.W  -(A7), A6

        ; pre-decrement from all address regis
» ters to A7
    ADD         -(A0),A7                11166E  ADDA.W  -(A0), A7
    ADD         -(A1),A7                111670  ADDA.W  -(A1), A7
    ADD         -(A2),A7
    ADD         -(A3),A7
    ADD         -(A4),A7
    ADD         -(A5),A7
    ADD         -(A6),A7
    ADD         -(A7),A7

        ; immediate to all data registers
    ADD         #01,D0
    ADD         #01,D1
    ADD         #01,D2
    ADD         #01,D3
    ADD         #01,D4
    ADD         #01,D5
    ADD         #01,D6
    ADD         #01,D7
        ; immediate to all address register
    ADD         #01,A0
```

Left file: D:\Source\github\CSS422_Hardware\Disassembler\UnitTests\Test_002.X68
Right file: D:\Source\github\CSS422_Hardware\Disassembler\Output.txt
(continued)

```
    ADD          #01,A1
    ADD          #01,A2
    ADD          #01,A3
    ADD          #01,A4
    ADD          #01,A5
    ADD          #01,A6
    ADD          #01,A7
        ; immediate to all address register va
» lues
    ADD          #01,(A0)
    ADD          #01,(A1)
    ADD          #01,(A2)
    ADD          #01,(A3)
    ADD          #01,(A4)
    ADD          #01,(A5)
    ADD          #01,(A6)
    ADD          #01,(A7)
        ; immediate to all address register wi
» th post increment
    ADD          #01,(A0)+
    ADD          #01,(A1)+
    ADD          #01,(A2)+
    ADD          #01,(A3)+
    ADD          #01,(A4)+
    ADD          #01,(A5)+
    ADD          #01,(A6)+
    ADD          #01,(A7)+
        ; immediate to all address register wi
» th pre-decrement
    ADD          #01,-(A0)
    ADD          #01,-(A1)
    ADD          #01,-(A2)
    ADD          #01,-(A3)
    ADD          #01,-(A4)
    ADD          #01,-(A5)
    ADD          #01,-(A6)
    ADD          #01,-(A7)
        ; absolute short to all data registers
    ADD          $01,D0
    ADD          $01,D1
    ADD          $01,D2
    ADD          $01,D3
    ADD          $01,D4
    ADD          $01,D5
    ADD          $01,D6
    ADD          $01,D7
        ; absolute long to all data registers
    ADD          $0A05,A0
    ADD          $0A05,A1
    ADD          $0A05,A2
    ADD          $0A05,A3
    ADD          $0A05,A4
```

Left file: D:\Source\github\CSS422_Hardware\Disassembler\UnitTests\Test_002.X68
Right file: D:\Source\github\CSS422_Hardware\Disassembler\Output.txt
(continued)

```
    ADD          $0A05,A5
    ADD          $0A05,A6
    ADD          $0A05,A7
*~Font name~Courier New~
*~Font size~10~
*~Tab type~1~
*~Tab size~4~
```