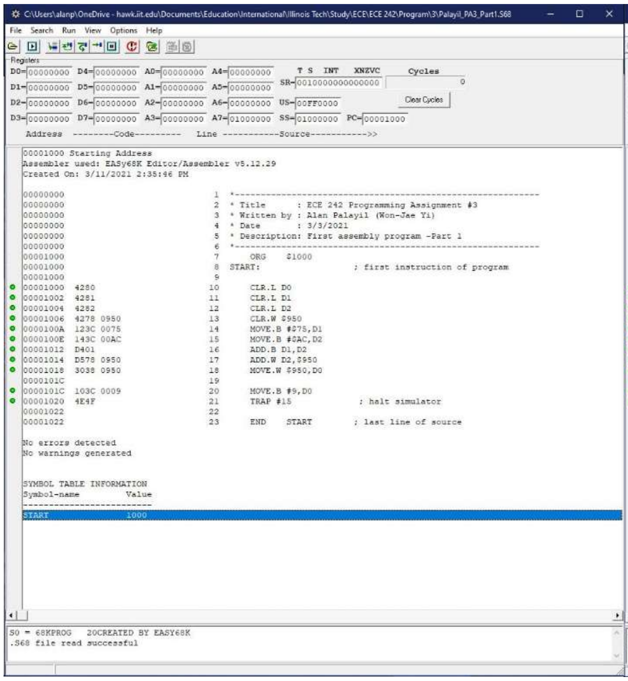
Alan Palayil

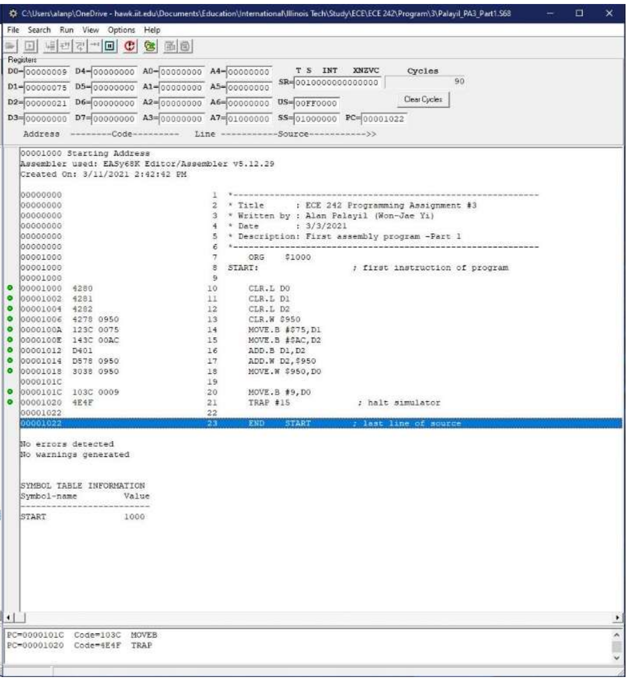
ECE 242 – Programming Assignment #3

6. Part 1 (Before Execution)


C:\Users\alanp\OneDrive - hawk.iit.edu\Documents\Education\International\Illinois Tech\Study\ECE\ECE 242\Program\3\Palayil_PA3_Part1.S68
File
Search
Run
View
Options
Help
Registers
Clear Cycles

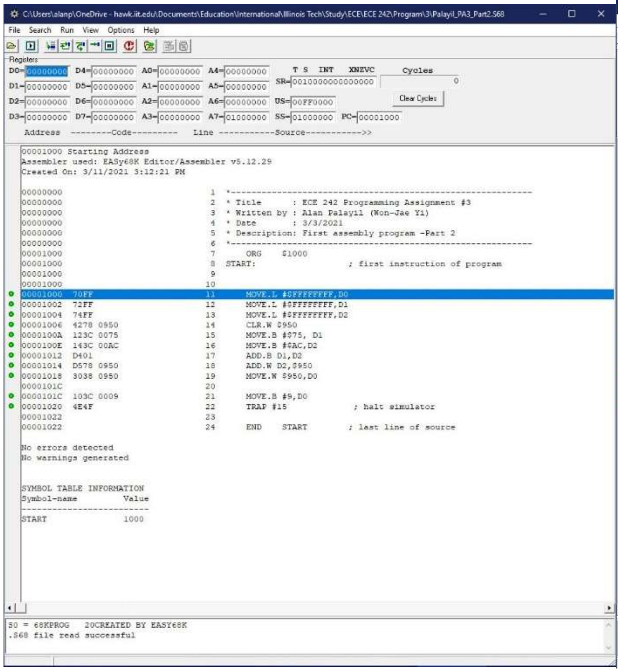
```
D0=00000000  D4=00000000  A0=00000000  A4=00000000      T S  INT   XNZVC       Cycles
D1=00000000  D5=00000000  A1=00000000  A5=00000000  SR=0010000000000000             0
D2=00000000  D6=00000000  A2=00000000  A6=00000000  US=00FF0000
D3=00000000  D7=00000000  A3=00000000  A7=01000000  SS=01000000  PC=00001000
  Address   --------Code---------   Line -----------Source----------->>

00001000 Starting Address
Assembler used: EASy68K Editor/Assembler v5.12.29
Created On: 3/11/2021 2:35:46 PM

00000000                         1  *-----------------------------------------------------------
00000000                         2  * Title      : ECE 242 Programming Assignment #3
00000000                         3  * Written by : Alan Palayil (Won-Jae Yi)
00000000                         4  * Date       : 3/3/2021
00000000                         5  * Description: First assembly program -Part 1
00000000                         6  *-----------------------------------------------------------
00001000                         7      ORG    $1000
00001000                         8  START:                     ; first instruction of program
00001000                         9
00001000  4280                  10      CLR.L D0
00001002  4281                  11      CLR.L D1
00001004  4282                  12      CLR.L D2
00001006  4278 0950             13      CLR.W $950
0000100A  123C 0075             14      MOVE.B #$75,D1
0000100E  143C 00AC             15      MOVE.B #$AC,D2
00001012  D401                  16      ADD.B D1,D2
00001014  D578 0950             17      ADD.W D2,$950
00001018  3038 0950             18      MOVE.W $950,D0
0000101C                        19
0000101C  103C 0009             20      MOVE.B #9,D0
00001020  4E4F                  21      TRAP #15              ; halt simulator
00001022                        22
00001022                        23      END    START         ; last line of source

No errors detected
No warnings generated

SYMBOL TABLE INFORMATION
Symbol-name         Value
-------------------------
START               1000

S0 = 68KPROG   20CREATED BY EASY68K
.S68 file read successful
```

(After Execution)


C:\Users\alanp\OneDrive - hawk.iit.edu\Documents\Education\International\Illinois Tech\Study\ECE\ECE 242\Program\3\Palayil_PA3_Part1.S68
File
Search
Run
View
Options
Help
Registers
Clear Cycles

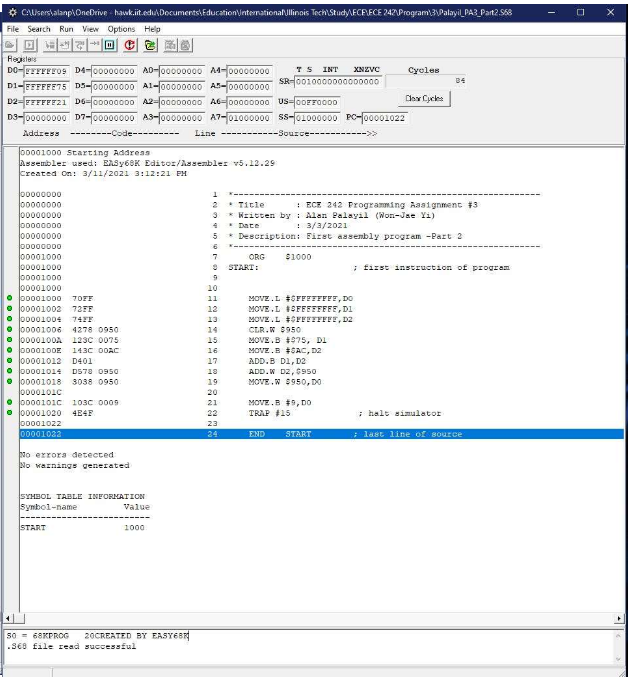
```
D0=00000009  D4=00000000  A0=00000000  A4=00000000      T S  INT   XNZVC       Cycles
D1=00000075  D5=00000000  A1=00000000  A5=00000000  SR=0010000000000000            90
D2=00000021  D6=00000000  A2=00000000  A6=00000000  US=00FF0000
D3=00000000  D7=00000000  A3=00000000  A7=01000000  SS=01000000  PC=00001022
  Address   --------Code---------   Line -----------Source----------->>

00001000 Starting Address
Assembler used: EASy68K Editor/Assembler v5.12.29
Created On: 3/11/2021 2:42:42 PM

00000000                         1  *-----------------------------------------------------------
00000000                         2  * Title      : ECE 242 Programming Assignment #3
00000000                         3  * Written by : Alan Palayil (Won-Jae Yi)
00000000                         4  * Date       : 3/3/2021
00000000                         5  * Description: First assembly program -Part 1
00000000                         6  *-----------------------------------------------------------
00001000                         7      ORG    $1000
00001000                         8  START:                     ; first instruction of program
00001000                         9
00001000  4280                  10      CLR.L D0
00001002  4281                  11      CLR.L D1
00001004  4282                  12      CLR.L D2
00001006  4278 0950             13      CLR.W $950
0000100A  123C 0075             14      MOVE.B #$75,D1
0000100E  143C 00AC             15      MOVE.B #$AC,D2
00001012  D401                  16      ADD.B D1,D2
00001014  D578 0950             17      ADD.W D2,$950
00001018  3038 0950             18      MOVE.W $950,D0
0000101C                        19
0000101C  103C 0009             20      MOVE.B #9,D0
00001020  4E4F                  21      TRAP #15              ; halt simulator
00001022                        22
00001022                        23      END    START         ; last line of source

No errors detected
No warnings generated

SYMBOL TABLE INFORMATION
Symbol-name         Value
-------------------------
START               1000

PC=0000101C  Code=103C  MOVEB
PC=00001020  Code=4E4F  TRAP
```

Part 2 (Before Execution)


C:\Users\alanp\OneDrive - hawk.iit.edu\Documents\Education\International\Illinois Tech\Study\ECE\ECE 242\Program\3\Palayil_PA3_Part2.S68
File
Search
Run
View
Options
Help
Registers
Clear Cycles

```
D0=00000000  D4=00000000  A0=00000000  A4=00000000      T S  INT   XNZVC       Cycles
D1=00000000  D5=00000000  A1=00000000  A5=00000000  SR=0010000000000000             0
D2=00000000  D6=00000000  A2=00000000  A6=00000000  US=00FF0000
D3=00000000  D7=00000000  A3=00000000  A7=01000000  SS=01000000  PC=00001000
  Address   --------Code---------   Line -----------Source----------->>

00001000 Starting Address
Assembler used: EASy68K Editor/Assembler v5.12.29
Created On: 3/11/2021 3:12:21 PM

00000000                         1  *-----------------------------------------------------------
00000000                         2  * Title      : ECE 242 Programming Assignment #3
00000000                         3  * Written by : Alan Palayil (Won-Jae Yi)
00000000                         4  * Date       : 3/3/2021
00000000                         5  * Description: First assembly program -Part 2
00000000                         6  *-----------------------------------------------------------
00001000                         7      ORG    $1000
00001000                         8  START:                     ; first instruction of program
00001000                         9
00001000                        10
00001000  70FF                  11      MOVE.L #$FFFFFFFF,D0
00001002  72FF                  12      MOVE.L #$FFFFFFFF,D1
00001004  74FF                  13      MOVE.L #$FFFFFFFF,D2
00001006  4278 0950             14      CLR.W $950
0000100A  123C 0075             15      MOVE.B #$75, D1
0000100E  143C 00AC             16      MOVE.B #$AC,D2
00001012  D401                  17      ADD.B D1,D2
00001014  D578 0950             18      ADD.W D2,$950
00001018  3038 0950             19      MOVE.W $950,D0
0000101C                        20
0000101C  103C 0009             21      MOVE.B #9,D0
00001020  4E4F                  22      TRAP #15              ; halt simulator
00001022                        23
00001022                        24      END    START         ; last line of source

No errors detected
No warnings generated

SYMBOL TABLE INFORMATION
Symbol-name         Value
-------------------------
START               1000

S0 = 68KPROG   20CREATED BY EASY68K
.S68 file read successful
```

(After Execution)


C:\Users\alanp\OneDrive - hawk.iit.edu\Documents\Education\International\Illinois Tech\Study\ECE\ECE 242\Program\3\Palayil_PA3_Part2.S68
File
Search
Run
View
Options
Help
Registers
Clear Cycles

```
D0=FFFFFF09  D4=00000000  A0=00000000  A4=00000000      T S  INT   XNZVC       Cycles
D1=FFFFFF75  D5=00000000  A1=00000000  A5=00000000  SR=0010000000000000            84
D2=FFFFFF21  D6=00000000  A2=00000000  A6=00000000  US=00FF0000
D3=00000000  D7=00000000  A3=00000000  A7=01000000  SS=01000000  PC=00001022
  Address   --------Code---------   Line -----------Source----------->>

00001000 Starting Address
Assembler used: EASy68K Editor/Assembler v5.12.29
Created On: 3/11/2021 3:12:21 PM

00000000                         1  *-----------------------------------------------------------
00000000                         2  * Title      : ECE 242 Programming Assignment #3
00000000                         3  * Written by : Alan Palayil (Won-Jae Yi)
00000000                         4  * Date       : 3/3/2021
00000000                         5  * Description: First assembly program -Part 2
00000000                         6  *-----------------------------------------------------------
00001000                         7      ORG    $1000
00001000                         8  START:                     ; first instruction of program
00001000                         9
00001000                        10
00001000  70FF                  11      MOVE.L #$FFFFFFFF,D0
00001002  72FF                  12      MOVE.L #$FFFFFFFF,D1
00001004  74FF                  13      MOVE.L #$FFFFFFFF,D2
00001006  4278 0950             14      CLR.W $950
0000100A  123C 0075             15      MOVE.B #$75, D1
0000100E  143C 00AC             16      MOVE.B #$AC,D2
00001012  D401                  17      ADD.B D1,D2
00001014  D578 0950             18      ADD.W D2,$950
00001018  3038 0950             19      MOVE.W $950,D0
0000101C                        20
0000101C  103C 0009             21      MOVE.B #9,D0
00001020  4E4F                  22      TRAP #15              ; halt simulator
00001022                        23
00001022                        24      END    START         ; last line of source

No errors detected
No warnings generated

SYMBOL TABLE INFORMATION
Symbol-name         Value
-------------------------
START               1000

S0 = 68KPROG   20CREATED BY EASY68K
.S68 file read successful
```

The first column are the address locations, second and third columns are the machine codes, fourth column is the line number, and fifth column is the code itself.

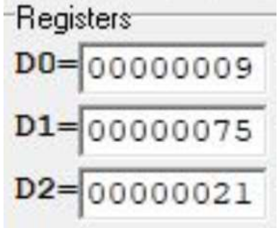
11.

D0: 00000009

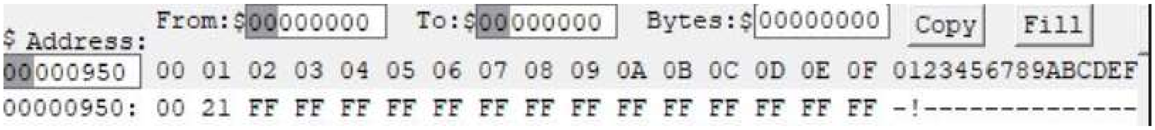
D1: 00000075

D2: 00000021

($950): 0021



D0=00000009
D1=00000075
D2=00000021



```
$ Address:  From:$00000000   To:$00000000   Bytes:$00000000
00000950    00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 0123456789ABCDEF
00000950:   00 21 FF FF FF FF FF FF FF FF FF FF FF FF FF FF -!--------------
```

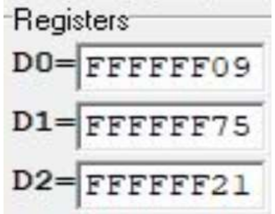
14.

D0: FFFFFF09

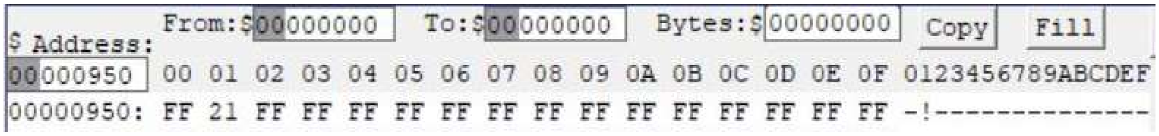
D1: FFFFFF75

D2: FFFFFF21

($950): FF21



D0=FFFFFF09
D1=FFFFFF75
D2=FFFFFF21



```
$ Address:  From:$00000000   To:$00000000   Bytes:$00000000
00000950    00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 0123456789ABCDEF
00000950:   FF 21 FF FF FF FF FF FF FF FF FF FF FF FF FF FF -!--------------
```

15. The difference between the codes in part 1 and part 2 are the way the registers are initialized. In part 1 the registered are just cleared to 00000000 while in part 2 the registers values are initialized (changed) to FFFFFFFF. So depending on the way the registers are initialized, the program's data can be changed just like how there's a difference in the data stored in the memory $950.