Hand Assembly Demo: Assembly Program

After the hand assembly, I moved to MS-DOS prompt to type all the things needed to input shown in figure 1. I entered from memory location 100 with the hexadecimal values from the hand assembly. I also entered the ASCII message for the program to output starting in memory locations 460 and 490. On the other hand, the memory location 456 use for storing the number of loops. Finally, I entered the values 05 and 09 to memory locations 454 and 455.

```
OF68:0100
           BA.BA
                    60.60
                             04.04
                                      B4.B4
                                              09.09
                                                       CD.CD
                                                                        BA.BA
                                                                21.21
OF68:0108
           90.90
                    04.04
                             B4.B4
                                      09.09
                                              CD.CD
                                                       21.21
                                                                B3.B3
                                                                         20.20
                    OE.OE
OF68:0110
           8A.8A
                             54.54
                                      04.04
                                              8A.8A
                                                       16.16
                                                                        04.04
                    D1.D1
OF68:0118
                                              FE.FE
                                                                56.56
                                                                        04.04
           28.28
                             7D.7D
                                      08.08
                                                       06.06
OF68:0120
                                              88.88
           00.00
                    D9.D9
                             EB.EB
                                      F6.F6
                                                       OE.OE
                                                                54.54
                                                                        04.04
OF68:0128
           BA.BA
                    56.56
                             04.04
                                      B4.B4
                                              09.09
                                                       CD.CD
                                                                        CD.CD
OF68:0130
           20.20
E460 "Hello, My name is Vigomar Kim Algador" Od Oa "$"
 E490 "Welcome to EEE174 / CpE185-LAB01 PART02 " Od 0a "$"
 E456 30 Od Oa "$"
E454
OF68:0454 1C.05
                    09.09
```

Figure 1. the whole information entered to the program.

Before running the program, I made sure that the data entered were correct with the use of dump command. I used dump command for memory locations 454, 455, 460 and 490 shown in figure 2.

```
·d454 455
OF68:0450
                                       05 09
 -d460
                48 65 6C 6C 6F 2C 20 4D-79 20 6E 61 6D 65 73 20 56 69 67 6F 6D 61-72 20 4B 69 6D 20 67 61 64 6F 72 0D 0A 24-33 ED AC 0A CO 74 57 65 6C 63 6F 6D 65 20-74 6F 20 45 45 45
OF68:0460
                                                                                          Hello, My name
                                                                              20 69
0F68:0470
                                                                              41 6C
                                                                                           s Vigomar Kim Al
OF68:0480
                                                                                           gadoř..$3....t.E
                             63 6F
                                      6D 65
70 45
0F68:0490
                    65
                                                                                          Welcome to EEE17
                34 20 2F
                                                        35 2D 4C 41 42
                                                                                           4 / CpE185-LAB01
                             20 43
                                              31-38
OF68:04A0
                            52 54 30 32 20-OD OA 24 00 74 1C 80 3C 83 3E DD E2 02-75 OA 80 3E E4 E3 3A 75 FF 5D 5A 59 5F-5E C3 83 3E DD E2 02 75
OF68:04B0
                20 50 41
                                                                                            PART02 ..$.t..<
                2E 74 47
                                                                                           .tG.>...u..>..:u
..4.]ZY_^..>...u
0F68:04C0
0F68:04D0
               03 E8 34 FF
-d490
                    65 6C 63 6F 6D 65 20-74 6F 20 45 45 45 20 2F 20 43 70 45 31-38 35 2D 4C 41 42
OF68:0490
                57
                                                                              31 37
                                                                                           Welcome to EEE17
                                 43 70 45
54 30 32
0F68:04A0
                34
                                                                                           4 / CpE185-LAB01
                             52 54
83 3E
                    50 41
                                                                00 74 1C
OF68:04B0
                20
                                               20-0D 0A 24
                                                                              80 3C
                                                                                            PART02 ..$.t..
                2E
                    74 47
0F68:04C0
                                      DD
                                          E2
                                               02-75 OA 80 3E
                                                                     E4 E3 3A 75
                                 5D 5A 59
3A 75 05
06 F7 C2
0F68:04D0
0F68:04E0
                        34
7C
00
                                                                     DD E2
03 F5
                03
                    E8
                                               5F-5E
                                                        C3 83
                                                                3E
                                                                              02
                                                                                           ..4.]ZY_^..>
                             FF
                                                        FF EB
75 D9
                                              E8-1E
                             01
                    80
                                                                 E8
                                                                                           . . | . : u . . .
                    E2
02
                                          C2
E2
                                                                 C7
                             74 06
                                               06-00
                                                                     04
                                                                          2E
DF68:04F0
                DΒ
                                                                               2A C6
                                                        CA
F68:0500
                             83
                                  06
                                      DD
                                               02-EB
                                                            03
                                                                 F5
                                                                     41
                                                                          8В
```

Figure 2. the content of the memory locations 454, 455, 460, 490.

After securing the correct data for the memory locations, I then checked the assembly program by using unassembled command. Here is the unassembled of the assembly program in figure 3.

100 10-			
-u100 12F			
OF68:0100	BA6004	MOV	DX,0460
OF68:0103	B409	MOV	AH,09
OF68:0105	CD21	INT	21
OF68:0107	BA9004	MOV	DX,0490
OF68:010A	B409	MOV	AH,09
OF68:010C	CD21	INT	21
OF68:010E	B320	MOV	BL,20
OF68:0110	8A0E5404	MOV	CL,[0454]
OF68:0114	8A165504	MOV	DL,[0455]
OF68:0118	28D1	SUB	CL,ĎL
OF68:011A	7D08	JGE	0124
OF68:011C	FE065604	INC	BYTE PTR [0456]
OF68:0120	00D9	ADD	CL,BL
OF68:0122	EBF6	JMP	011A
OF68:0124	880E5404	MOV	[0454],CL
OF68:0128	BA5604	MOV	DX,0456
OF68:012B	B409	MOV	AH,09
OF68:012D	CD21	INT	21
OF68:012F	CD20	INT	20

Figure 3. The list of unassembled program from memory location 0100 to 012F.

After checking everything, I now run the program using the go command. I entered "g=100" as I run from the memory location "100". The output shown in figure 4.

```
-g=100
Hello, My name is Vigomar Kim Algador
Welcome to EEE174 / CpE185-LAB01 PART02
1
Program terminated normally
```

Figure 4. The output of the program.