Week 7 Lab

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7.1.1.

`0x00000065`   This value is displayed because we are changing the value to hexadecimal (from decimal)

7.1.2.

`0x00000101` This value is displayed because we are changing the value to hexadecimal

7.1.3.

`0x00000005` This value is displayed because we are changing the value to hexadecimal (from binary)
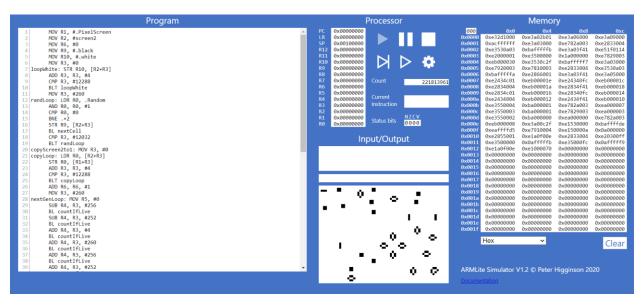
7.1.4.

No, it will not change. But the data inside the memory box will change.

7.2.1.

Because 4 bytes are used to represent each word.

7.3.1.

7.3.2.

The thing that shows up is the place that store the memory/value

7.3.3:

 - The blank lines and additional spaces will not be stored in the memory

- The comments will be coloured after the code is submitted.

- The line number, if the comment is added, will increase. Otherwise, will stay the same.

- If we replace the comma in the first line of code, an error will be displayed.

7.4.1.

Red: Next step

Black: Slow

7.4.2.

Increase the line being executed.

7.4.3.

The code before the break line will be executed.

7.5.1.

The MOV command is moving 1 into R0, then, ADD command is used to plus 8 with R0(1) and pass the value 9 (8+1) to R1

 When the SUB command is executed, R2(109) minus 25 and pass the value to R3

The value 84, which we are looking for is R3

7.5.2.

7.5.3.

```
1|     MOV R0,#300
2|     SUB R1,R0,#21
3|     ADD R2,R1,#5
4|     SUB R3,R2,#64
5|     SUB R4,R3,#18
6|     ADD R5,R4,#92
7|     MOV R7, R5
8|     HALT
```

Processor

PC	32
LR	0
SP	1048576
R12	0
R11	0
R10	0
R9	0
R8	0
R7	294
R6	0
R5	294
R4	202
R3	220
R2	284
R1	279
R0	300

Count   8

Current Instruction

Status bits   N Z C V
              0 0 0 0

Input/Output

Program HALTED. STOP, LOAD or EDIT

Memory

000	0x0	0x4	0x8	0xc
0x0000	3818917707	3795849237	3800113157	3795988544
0x0001	3796058130	3800322140	3785388037	3774873712
0x0002	0	0	0	0
0x0003	0	0	0	0
0x0004	0	0	0	0
0x0005	0	0	0	0
0x0006	0	0	0	0
0x0007	0	0	0	0
0x0008	0	0	0	0
0x0009	0	0	0	0
0x000a	0	0	0	0
0x000b	0	0	0	0
0x000c	0	0	0	0
0x000d	0	0	0	0
0x000e	0	0	0	0
0x000f	0	0	0	0
0x0010	0	0	0	0
0x0011	0	0	0	0
0x0012	0	0	0	0
0x0013	0	0	0	0
0x0014	0	0	0	0
0x0015	0	0	0	0
0x0016	0	0	0	0
0x0017	0	0	0	0
0x0018	0	0	0	0
0x0019	0	0	0	0
0x001a	0	0	0	0
0x001b	0	0	0	0
0x001c	0	0	0	0
0x001d	0	0	0	0
0x001e	0	0	0	0
0x001f	0	0	0	0

Decimal (unsigned) ▾

Clear

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Documentation

7.5.4.

```
1|    MOV R0,#60
2|    SUB R1,R0,#2
3|    ADD R2,R1,#5
4|    SUB R3,R2,#6
5|    SUB R4,R3,#1
6|    ADD R5,R4,#9
7|    MOV R7, R5
      HALT
```

Load Save Edit

```
PC        32
LR         0
SP    1048576
R12        0
R11        0
R10        0
R9         0
R8         0
R7        65    Count            8
R6         0
R5        65
R4        56    Current
R3        57    Instruction
R2        63
R1        58    Status bits   NZCV
R0        60                  0000
```

Input/Output

Program HALTED. STOP, LOAD or EDIT

```
000        0x0          0x4          0x8          0xc
0x0000  3818913852   3795849218   3800113157   3795988486
0x0001  3796058113   3800322057   3785388037   3774873712
0x0002       0            0            0            0
0x0003       0            0            0            0
0x0004       0            0            0            0
0x0005       0            0            0            0
0x0006       0            0            0            0
0x0007       0            0            0            0
0x0008       0            0            0            0
0x0009       0            0            0            0
0x000a       0            0            0            0
0x000b       0            0            0            0
0x000c       0            0            0            0
0x000d       0            0            0            0
0x000e       0            0            0            0
0x000f       0            0            0            0
0x0010       0            0            0            0
0x0011       0            0            0            0
0x0012       0            0            0            0
0x0013       0            0            0            0
0x0014       0            0            0            0
0x0015       0            0            0            0
0x0016       0            0            0            0
0x0017       0            0            0            0
0x0018       0            0            0            0
0x0019       0            0            0            0
0x001a       0            0            0            0
0x001b       0            0            0            0
0x001c       0            0            0            0
0x001d       0            0            0            0
0x001e       0            0            0            0
0x001f       0            0            0            0
```
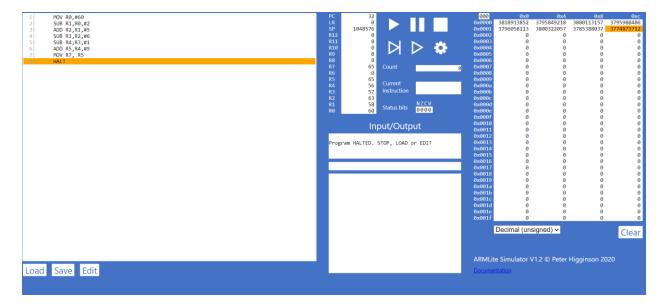
Decimal (unsigned) ⌄   Clear

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Documentation

7.5.5.

Program

```
1|    MOV R0, #12
2|    ADD R1, R0, #11
3|    ADD R2, R1, R0
4|    ADD R3, R2, R1
5|    MOV R4, #3
6|    AND R5, R4, #2
7|    MOV R6, #7
8|    SUB R7, R6, R5
9|    ADD R8, R7, R1
10|   ADD R9, R8, R1
11|   ADD R10, R3, R9
12|   SUB R11, R4, #2
13|   ADD R12, R10, R11
14|   HALT
```

Processor

```
PC          0
LR          0
SP    1048576
R12         0
R11         0
R10         0
R9          0
R8          0
R7          0    Count              0
R6          0
R5          0
R4          0    Current
R3          0    Instruction
R2          0
R1          0                   NZCV
R0          0    Status bits    0000
```

7.6.3.

The pattern is that negative number (in binary) is flipped , then add 1.

7.6.4.

Program

```
1    MOV R0, #1
2    MVN R1, R0
3    HALT
```

Load Save Edit

Processor

PC	12
LR	0
SP	1048576
R12	0
R11	0
R10	0
R9	0
R8	0
R7	0
R6	0
R5	0
R4	0
R3	0
R2	0
R1	-2
R0	1

Count   3

Current
Instruction

Status bits   N Z C V
               0 0 0 0

Input/Output

Program HALTED. STOP, LOAD or EDIT