Lab08

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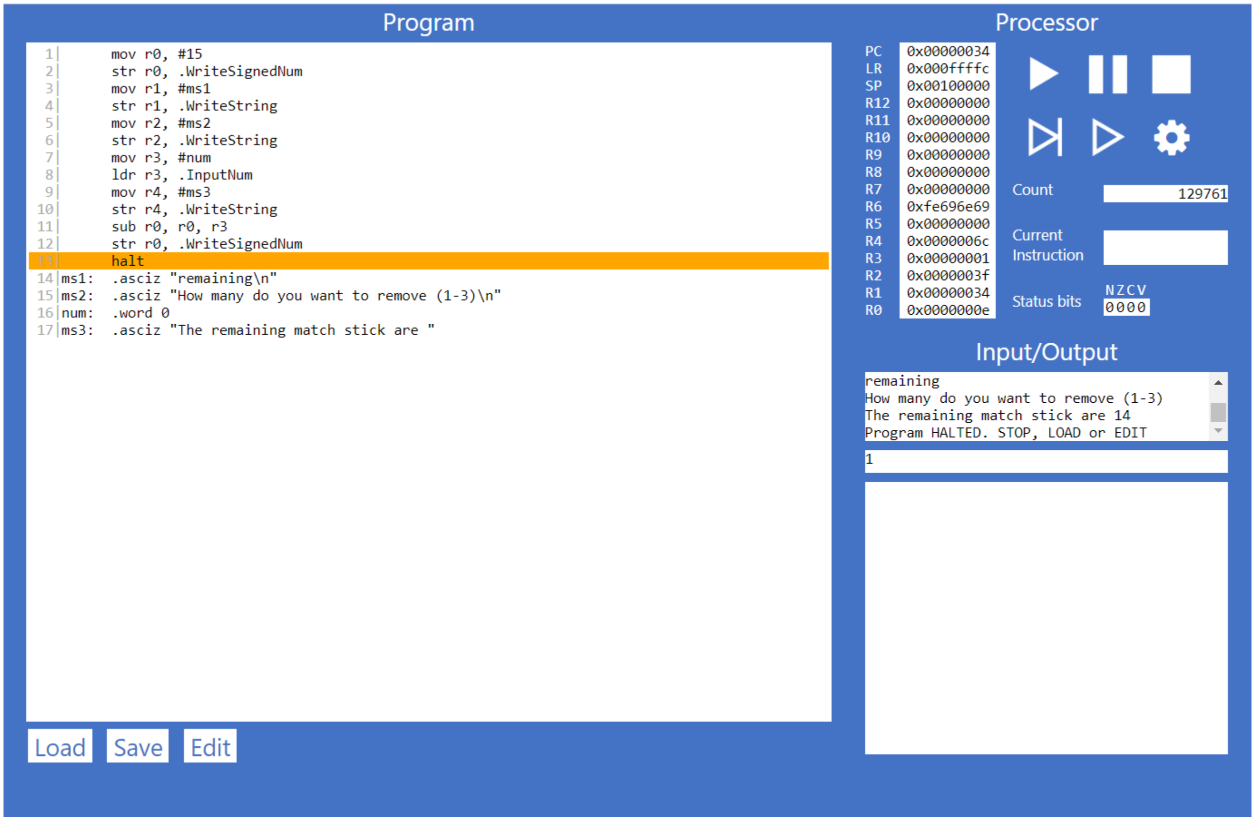
8.1.



```
        mov r0, #15
        str r0, .WriteSignedNum
        mov r1, #ms1
        str r1, .WriteString
        mov r2, #ms2
        str r2, .WriteString
        mov r3, #num
        ldr r3, .InputNum
        mov r4, #ms3
        str r4, .WriteString
        sub r0, r0, r3
        str r0, .WriteSignedNum
        halt
ms1:    .asciz "remaining\n"
ms2:    .asciz "How many do you want to remove (1-3)\n"
num:    .word 0
ms3:    .asciz "The remaining match stick are "
```

```
PC    0x00000034
LR    0x000ffffc
SP    0x00100000
R12   0x00000000
R11   0x00000000
R10   0x00000000
R9    0x00000000
R8    0x00000000
R7    0x00000000
R6    0xfe696e69
R5    0x00000000
R4    0x0000006c
R3    0x00000001
R2    0x0000003f
R1    0x00000034
R0    0x0000000e
```

Count 129761

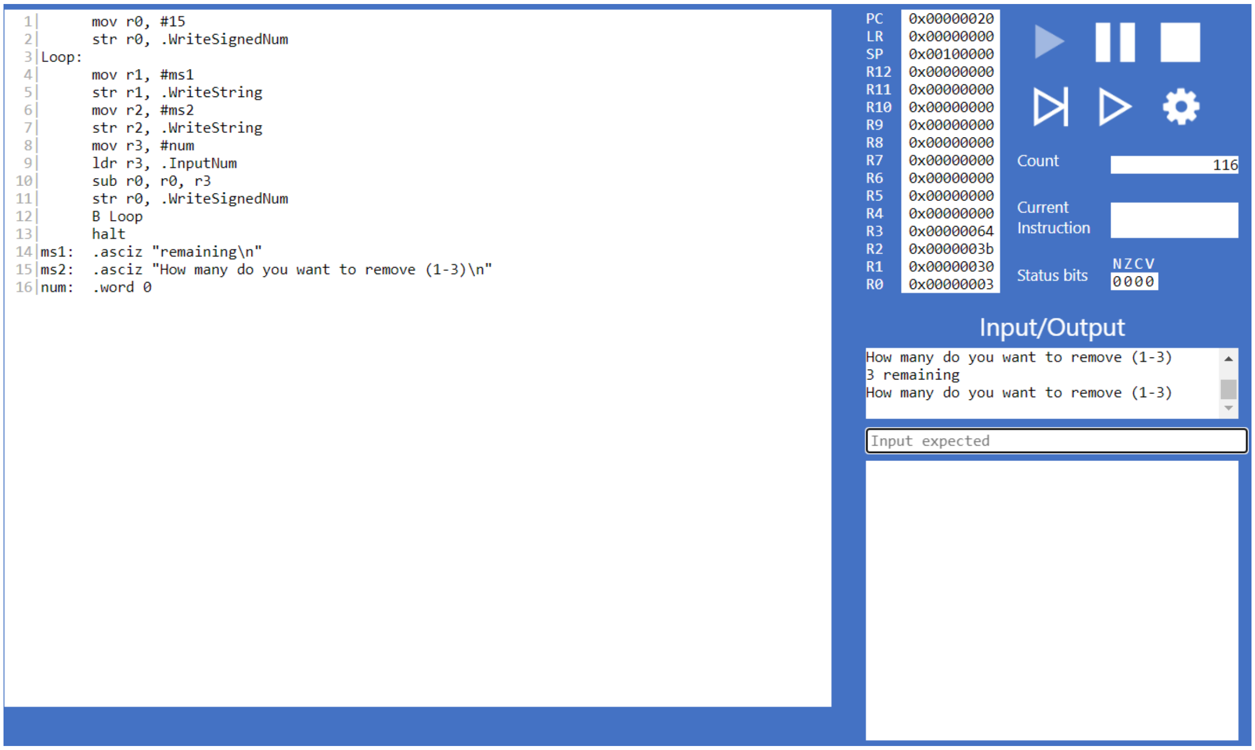
Current Instruction

Status bits NZCV 0000

```
remaining
How many do you want to remove (1-3)
The remaining match stick are 14
Program HALTED. STOP, LOAD or EDIT
```

```
1
```

8.2.



```
        mov r0, #15
        str r0, .WriteSignedNum
Loop:
        mov r1, #ms1
        str r1, .WriteString
        mov r2, #ms2
        str r2, .WriteString
        mov r3, #num
        ldr r3, .InputNum
        sub r0, r0, r3
        str r0, .WriteSignedNum
        B Loop
        halt
ms1:    .asciz "remaining\n"
ms2:    .asciz "How many do you want to remove (1-3)\n"
num:    .word 0
```

PC	0x00000020
LR	0x00000000
SP	0x00100000
R12	0x00000000
R11	0x00000000
R10	0x00000000
R9	0x00000000
R8	0x00000000
R7	0x00000000
R6	0x00000000
R5	0x00000000
R4	0x00000000
R3	0x00000064
R2	0x0000003b
R1	0x00000030
R0	0x00000003

Count 116

Current Instruction

Status bits NZCV 0000

Input/Output

```
How many do you want to remove (1-3)
3 remaining
How many do you want to remove (1-3)
```

Input expected

The values entered must be between 1 and 3

⇨ We can use CMP and BLT

8.2.2

N and Z bit should be set to 1 if the instruction is executed. Otherwise, when the entered value is less than 3, only N bit is set, as we compared the entered value with 3, so the result in this case will obviously negative.

Full Code

```
mov r0, #15

Loop:

    str r0 ,.WriteSignedNum

    mov r1 ,#ms1

    str r1 ,.WriteString

    mov r2, #ms2

    B Loop2

select:

    str r0 ,.WriteSignedNum

    mov r1 ,#ms1
    str r1, .WriteString
    mov r7 , #ms4
    str r7 , .WriteString
select_again:
    LDR R6, .Random
    AND R6, R6, #3
    CMP R6, #0
    BGT select2
    B select_again
select2:
    CMP R6 , R0
    BGT select
    SUB R0 , R0 , R6
    CMP R0, #0
    BEQ prompt1
    BGT Loop
prompt1:
    mov r12, #ms5
    str r12, .WriteString
    halt
prompt2:
    mov r12, #ms6
    str r12, .WriteString
    halt
Loop2:
    str r2, .WriteString
    mov r3, #num
    ldr r3, .InputNum
    cmp r3 , #1
    blt Loop2
    b condition1
condition1:
    cmp r3, #3
    bgt Loop2
    b condition2
condition2:
    sub r0 , r0 , r3
    cmp r0 , #0
    beq prompt2
    bgt select
    mov r5, #ms3
    str r5, .WriteString
    halt
ms1:  .asciz "remaining\n"
ms2:  .asciz "How many do you want to remove (1-3)?\n\n"
ms3:  .asciz "There are no sticks left!\n"
ms4:  .asciz "___Computer Turn___\n"
ms5:  .asciz "\nWin \n\n "
ms6:  .asciz "\nLose\n\n"
num:  .word 0
```