

Bonus point assignment – week 4

Like the factorial example, you can also implement the calculation of a power of 2 in assembly. For example you want to calculate $2^4 = 16$. Use iteration to calculate the result. Store the result in r0.

Main:

```
mov r1, #2
```

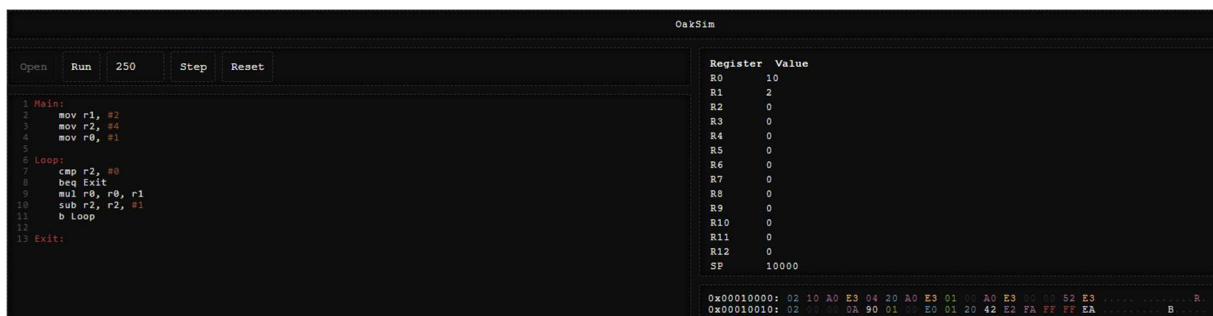
```
mov r2, #4
```

Loop:

End:

Complete the code. See the PowerPoint slides of week 4.

Screenshot of the completed code here.



The screenshot shows the OakSim assembly simulator interface. The main window displays the assembly code for calculating 2^4 using iteration. The code is as follows:

```
1 Main:
2   mov r1, #2
3   mov r2, #4
4   mov r0, #1
5
6 Loop:
7   cmp r2, #0
8   beq Exit
9   mul r0, r0, r1
10  sub r2, r2, #1
11  b Loop
12
13 Exit:
```

On the right side, the Register Value table shows the state of the registers:

Register	Value
R0	10
R1	2
R2	0
R3	0
R4	0
R5	0
R6	0
R7	0
R8	0
R9	0
R10	0
R11	0
R12	0
SP	10000

At the bottom, the memory dump shows the current state of memory, with the first few lines highlighted in red:

```
0x00010000: 02 10 A0 E3 04 20 A0 E3 01 00 A0 E3 00 00 52 E3 .....R.
0x00010010: 02 00 00 0A 90 01 00 E0 01 20 42 E3 FA FF FF EA .....B
0x00010020:
```