## A_Cube: Perform A ${ }^{3}$

Calculate $A^{\wedge} 3$ where $A$ is an 8 -bit unsigned variable. The result is placed into 24 -bit variable $C$. The 24-bit result is saved using little endian byte ordering.
$\mathrm{C} 2: \mathrm{C1}: \mathrm{CO}=\mathrm{A}^{\wedge} 3$
Simulation of the multiplication problem $50^{3}$. The answer should equal 125,000 (0x2625A0).


| Watch |  |  |  |  | $\times$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Name | Value |  | Type |  |  | Location |
| A | 50 '2' |  | SRAM Lo | ation |  | 0x0100 |
| C | 0x00 '' |  | SRAM Lo | ation |  | 0x0101 [ |
| Memory $\times$ |  |  |  |  |  |  |
| Data | $\checkmark$ | 8/16 | abc. | Address: | $0 \times 100$ |  |
| 000100 00010A 000114 | 0000 | $000$ |  |  |  | - |
|  | $\begin{array}{ll} 00 & 00 \\ 00 & 00 \end{array}$ | $\begin{array}{ll} 0 & 00 \\ 0 & 00 \end{array}$ | $\begin{array}{lll} 00 & 00 & 00 \\ 00 & 00 & 00 \end{array}$ |  |  |  |
|  | $\begin{array}{ll} 00 & 00 \\ \text { no } \end{array}$ | 200 | $\begin{array}{llll} 00 & 00 & 00 \\ \text { an no } \end{array}$ |  |  |  |

Figure 1: Start of program with A initialized to $0 \times 32\left(50_{10}\right)$ by double click on variable A on the Watch and enter "50"


Figure 2: After performing calculation of $A^{\wedge} 3$ (by performing $A^{\wedge} 2$ with command "mul r26, r26"and $A^{\wedge} 2^{*} A$ with subroutine muls16x8_24), result of C0 is $0 x 48$

```
.CSEG
A_Cubed:
    lds r26,A ; load
    mul r26,r26
    movw r25:r24, r1:r0
    rcall muls16x8_24
    sts C,r2 ; least significant byte (little end)
    sts C+1,r3 ; most significant byte (big end)
&|ls c+2,r4
    rjmp A_Cubed
```

Figure 3: Result of C 1 is $0 \times \mathrm{E} 8$

```
.CSEG
A_Cubed:
    lds r26,A ; load
    lds r26,A ; load
    movw r25:r24, r1:r0
    rcall muls16x8_24
    sts C,r2 ; least significant byte (little end)
    sts C,r2 ; least significant byte (little end)
    sts C+2, r4
H}\mathrm{ rjmp A_Cubed
\(\Leftrightarrow \quad\) rjmp A_Cubed
```

Figure 4: Result of C2 is $0 \times 01$. End of program with the result is $0 \times 01 \mathrm{E} 848\left(125,000_{10}\right)$ containing in C2:C1:C0.

