úterý 24. ledna 2023 21:02

0×18

$1 \cdot 16^1 + 8 \cdot 16^0$

$16 + 8 = 24$

$a = -128$

$b = -a$

$c = a + b$

HW1

sobota 11. března 2023 14:32

1120	96	96	96	96	32	0				
1024	512	256	128	64	32	16	8	4	2	1
2^{10}	2^9	2^8	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
1	0	0	0	1	1	0	0	0	0	

Untitled_1

	byte address in memory			
	0x00400000	0x00400001	0x00400002	0x00400003
bytes in order **little endian**	42 ✔	58 ✔	13 ✔	67 ✔
bytes in order **big endian**	67 ✔	13 ✔	58 ✔	42 ✔

	32-bit FP : 32bit binary representation in IEEE 754 floating-point standard	
Number	31 bit - main scale bit (MSB)	(LSB) low scale bit 0
-1.216658e-017	10100011011000000110111100001101 ✔	
2.922851e-014	00101001000000111010001000101101 ✔	
-2.61136180238e- ✔	1000 1001 0101 1000 1111 0001 1000 0110	
1.2b - For diplayed **32-bit FP**, select a proper description that is as close as possible.		
+ denormalized 32-bit FP ✔	0000 0000 0001 0110 1010 1111 1101 0010	
- infinity ✔	1111 1111 1000 0000 0000 0000 0000 0000	
zero ✔	0000 0000 0000 0000 0000 0000 0000 0000	

INTEGER MULTIPLICATION / CELOČÍSELNÉ NÁSOBENÍ

2.1 ALGORITHM OF INTEGER MULTIPLICATION / ALGORITMUS CELOČÍSELNÉHO NÁSOBENÍ

A. Consider a 16-bit architecture. Calculate C = A * B operation for A and B integer numbers. Fill missing cells in the table.
Uvažujte 16-bitovou architekturu. Pro hodnoty **A** a **B** realizujte operaci C=A*B. Doplňte následující tabulku

	A	B	C=A*B
hexadecimal	0x0B24	0x000E	9878 ✔
decimal	2852 ✔	14 ✔	39928 ✔

B. Add the steps of C=A*B calculation in binary representation.
Doplňte kroky výpočtu součinu C=A*B v binární reprezentaci.
Write binary numbers (because spaces are ignored, pad addend binaries with trailing 0s)
Psáte binární číslo. (jelikož se mezery ignorují , u sčítanců doplňte koncové 0)

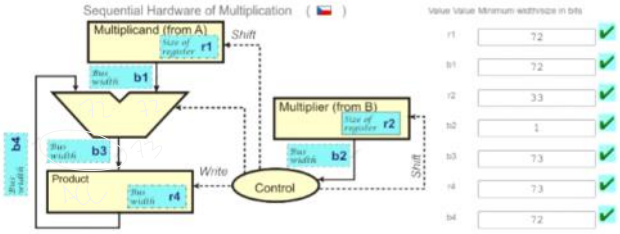
multiplicand A=	0000101100100100 ✔
multiplier B=	0000000000001110 ✔
1st addend	0000000000000000 ✔
2nd addend	0001011001001000 ✔
3rd addend	0010110010010000 ✔
4th addend	0101100100100000 ✔
sum of the addends equal to C=A*B	1001101111111000 ✔

INTEGER MULTIPLICATION / CELOČÍSELNÉ NÁSOBENÍ

2.2 SIMPLE SEQUENTIAL MULTIPLIER / JEDNODUCHÁ SEKVENČNÍ NÁSOBIČKA

Create efficient sequential multiplier signals. In the following table, specify the minimum sizes of registers and minimum bus widths required for multiplying A integer wide **40** bits (multiplicand) and B integer wide **33** bits (multiplier).
Sestavte úspornou sekvenční násobičku. Doplňte do následujícího obrázku minimální velikosti registrů a šířky sběrnic, potřebné pro činnost sekvenční násobičky, která bude násobit binární čísla **A** o šířce **40** bitů (násobence) binárními čísly **B** o šířce **33** bitů (násobitelé).

Sequential Hardware of Multiplication ( )



	Value	Value Minimum width/size in bits
r1		72 ✔
b1		72 ✔
r2		33 ✔
b2		1 ✔
b3		73 ✔
r4		73 ✔
b4		72 ✔

	Float point numbers (as float numbers)	Shifted **24bit** fractions of float point numbers just before their addition (as hexadecimal numbers)	Common exponent 2^e just before their addition (write e as signed decimal)
A1	**2.000321e+005**	C35806 ✔	17 ✔
B1	**5.097656e-001**	20 ✔	
A1+B1	200032.59375 ✔		
A2	**4.000323e+005**	C3540A ✔	18 ✔
B2	**8.007813e-002**	2 ✔	
A2+B2	400032.375 ✔		

A1 | 2,000321e+005 | 2^{17}
B1 | 5,097656e-001 | 2^{-1}

1 0 0 0 0 1 1 0 1 0 1 1 0 0 0 0 0 0 0 0 1 1 0

8,001285e+005

0,000005332031 e+005

8,0,0,1,2,9,1332031 e+005

8,001284,1332031

4,001283000000

0,1582031

4,001284,1582031

0,0,1,0,0,0,5,097656e-001

1.0001 0000 0000 0000 0000 0000

1 0 1 0000 XXXXXXXXXXXXXXXXX

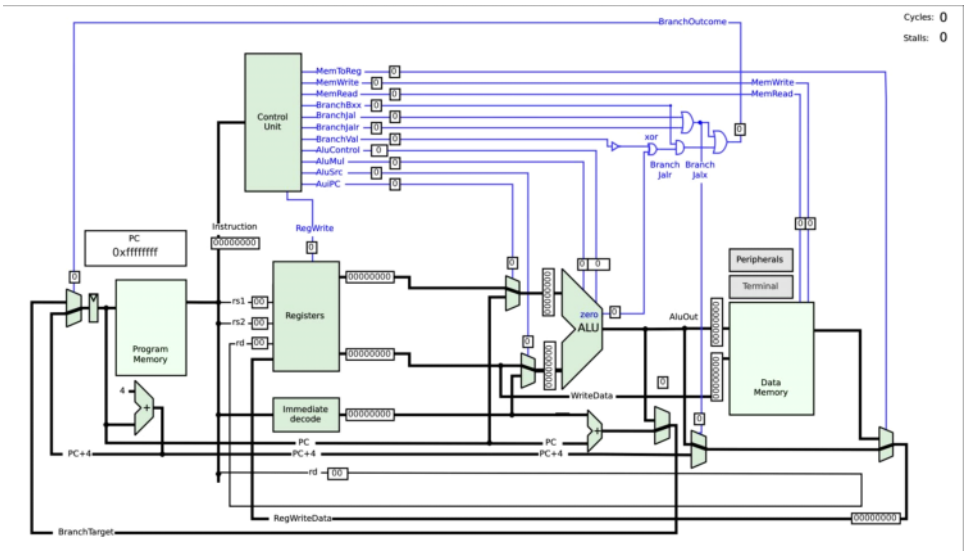
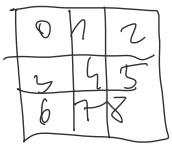
1.01 0000

Cv4

úterý 14. března 2023 15:21

$800 + 70 \cdot 200 = 14800 = 14{,}8\,\mu s$ — -70%

$800 \cdot 1\,ns + 200 \cdot (5\,ns + 0{,}2 \cdot 70\,ns) = 4{,}6\,\mu s$

Cv7

úterý 4. dubna 2023 15:17