

Σχεδίαση Ψηφιακών Συστημάτων

 2^{η} ομαδική εργασία

Μέλη:

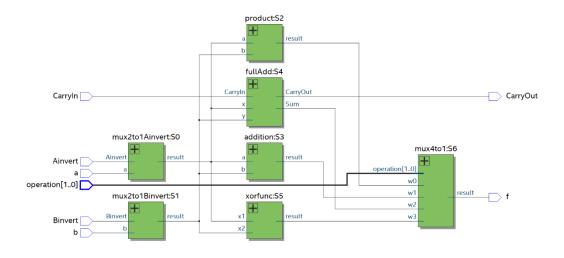
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Οδυσσέας Τζαμάκος p3210196 <u>p3210196@aueb.gr</u>

Ευάγγελος Μαρκουλάκης p3210115 <u>p3210115@aueb.gr</u>

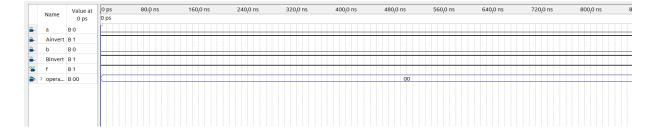
1ο μέρος:

RTL viewer



Κυματομορφές:

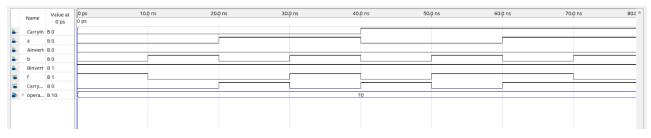
AND

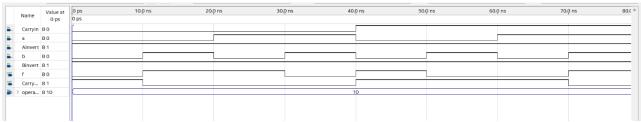


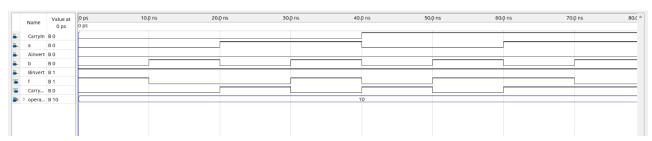
	Name		0 ps 0 ps	80.0 ns	160 _i 0 ns	240 _i 0 ns	320 ₁ 0 ns 4	00 ₁ 0 ns 480 ₁	0 ns 560 ₁ 0 i	ns 640 ₁ 0 ns	720 _i 0 ns	800 _i 0 ns 8
in	a	ВО	о рз									
in_	Ainvert	B 1										
in.	b Binvert	B 0										
out		во										
	opera	B 00							00			
		ı										
			0 ps	80.0 ns	160 ₁ 0 ns	240 ₁ 0 ns	320 _i 0 ns 40	00 ₁ 0 ns 480 ₁ 0	ns 560 _i 0 n	s 640 ₁ 0 ns	720 ₁ 0 ns	800 ₁ 0 ns 8
	Name	0 ps	0 ps									
in_	a Ainvert	B 0 B 0										
<u>In</u> _		В 0										
out	Binvert f	B 1 B 0										
	opera								00			
		Value at	0 ps	80.0 ns	160 ₁ 0 ns	240 ₁ 0 ns	320 ₁ 0 ns 400	0 ₁ 0 ns 480 ₁ 0 i	ns 560 _i 0 ns	640 ₁ 0 ns	720 ₁ 0 ns	800 ₁ 0 ns 8
in	Name	0 ps	0 ps									
in-	a Ainvert	B 0 B 0										
in_		В 0										
in- out	Binvert f	B 0 B 0										
=									00			
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							U	N				
	Name	Value at	0 ps	80.0 ns	160 _, 0 ns	240.0 ns	320 _i 0 ns	400 _i 0 ns	480 _i 0 ns	560 _i 0 ns	640 _i 0 ns 720	0,0 ns 800,0 ns
in		0 ps	0 ps 0 ps	80.0 ns	160,0 ns	240,0 ns			480 ₁ 0 ns	560 ₁ 0 ns	540 _, 0 ns 720	0,0 ns 800,0 ns
in-	Name a Ainvert	0 ps B 0		80.Q ns	160 _i 0 ns	240 ₁ 0 ns			480,0 ns	560 _, 0 ns	540 _, 0 ns 720	0,0 ns 800,0 ns
in-	a Ainvert b	0 ps B 0 t B 0 B 0		80.Q ns	160 _, 0 ns	240,0 ns			480,0 ns	560,0 ns	540 _i 0 ns 720	0,0 ns 800,0 ns
in-	a Ainvert	0 ps B 0 B 0 B 0		80.Q ns	160,0 ns	240,0 ns			480 ₁ 0 ns	560 ₁ 0 ns	540 ₁ 0 ns 720	0,0 ns 800,0 ns
in-	a Ainvert b Binvert	0 ps 8 0 8 0 8 0 8 1 8 1		80.Q ns	160 _, 0 ns	240,0 ns			480,0 ns	560 ₁ 0 ns (540 ₁ 0 ns 720	0,0 ns 800,0 ns
in-	a Ainvert b Binvert f	0 ps 8 0 8 0 8 0 8 1 8 1		80.Q ns	160,0 ns	240,0 ns				560,0 ns (540 ₀ 0 ns 720	0,0 ns 800,0 ns
in-	a Ainvert b Binvert f	0 ps 8 0 8 0 8 0 8 1 8 1		80.0 ns	160,0 ns	240,0 ns				560,0 ns (540 ₀ 0 ns 720	0,0 ns 800,0 ns
in-	a Ainvert b Binvert f	0 ps 8 0 8 0 8 0 8 1 8 1		80.0 ns	160,0 ns	240,0 ns				560,0 ns (540 ₀ 0 ns 720	0,0 ns 800,0 ns
in-	a Ainvert b Binvert f	0 ps B 0 t B 0 B 0 : B 1 B 1	o ps				320,0 ns	400,0 ns	01			
in-	a Ainvert b Binvert f	0 ps B0 t B0 B0 B1 B1 B1	o ps	80.0 ns	160,0 ns	240,0 ns						0,0 ns 800,0 ns
	a Ainvert b Binvert f opera	0 ps B0 t B0 B0 B1 B1 B1 B1	o ps				320,0 ns	400,0 ns	01			
	a Ainvert b Binvert f opera Name a Ainvert	0 ps 8 0 8 0 8 0 8 0 8 0 8 0 8 1 8 1 8 1 8 0 7 0 8 0 8 0 8 0 8 0 8 0 8 0 8 0 8 0	o ps				320,0 ns	400,0 ns	01			
	a Ainvert b Binvert f oopera Name a Ainvert b	0 ps B 0 t B 0 t B 0 t B 1 B 1 B 1 Value at 0 ps B 0 t B 1 B 0	o ps				320,0 ns	400,0 ns	01			
	a Ainvert b Binvert f opera Name a Ainvert	0 ps B 0 t B 0 t B 0 t B 1 B 1 B 1 Value at 0 ps B 0 t B 1 B 0	o ps				320,0 ns	400,0 ns	01			
in i	a Ainvert b Binvert f oopera Name a Ainvert b Binvert	Ops BO BO BO BO BO CO BO CO BO CO BO CO BO CO BO	o ps				320,0 ns	400,0 ns	01			
in i	a Ainvert b Binvert f opera Name a Ainvert b Binvert f	Ops BO BO BO BO BO CO BO CO BO CO BO CO BO CO BO	o ps				320,0 ns	400,0 ns	01 480 ₀ 0 ns			
in i	a Ainvert b Binvert f opera Name a Ainvert b Binvert f	Ops BO BO BO BO BO CO BO CO BO CO BO CO BO CO BO	o ps				320,0 ns	400,0 ns	01 480 ₀ 0 ns			
in i	a Ainvert b Binvert f opera Name a Ainvert b Binvert f	Ops BO BO BO BO BO CO BO CO BO CO BO CO BO CO BO	o ps				320,0 ns	400,0 ns	01 480 ₀ 0 ns			
	a Ainvert b Binvert f opera Name a Ainvert b Binvert f	Ops BO BO BO BO BO CO BO CO BO BO CO BO BO CO BO	o ps				320,0 ns	400,0 ns	01 480 ₀ 0 ns			
	a Ainvert b Binvert f o opera Name a Ainvert b Binvert f	Ops BO BO BO BO BO BO BO CO BO Value at Ops BO BO BO BO BO BO BO Value at Ops BO CO BO BO CO BO CO	0 ps 0 ps 0 ps				320,0 ns	400,0 ns	01 480 ₀ 0 ns	560 ₀ 0 ns	640 ₀ 0 ns 720	
	a Ainvert b Binvert f o opera	O ps B O B O B O B O B O B O B O B O B O B O	O ps O ps O ps	80.Q ns	160,0 ns	240,0 ns	320,0 ns	400,0 ns	480 ₀ 0 ns	560 ₀ 0 ns	640 ₀ 0 ns 720	0,0 ns 800,0 ns
	a Ainvert b Binvert f o opera Name a Ainvert b Binvert f	Ops BO BO BO BO BO BO BO CO BO	0 ps 0 ps 0 ps	80.Q ns	160,0 ns	240,0 ns	320,0 ns	400,0 ns	480 ₀ 0 ns	560 ₀ 0 ns	640 ₀ 0 ns 720	0,0 ns 800,0 ns
	a Ainvert b Binvert f opera	Ops 80 180 180 180 181 181 181 180 180 180	0 ps 0 ps 0 ps	80.Q ns	160,0 ns	240,0 ns	320,0 ns	400,0 ns	480 ₀ 0 ns	560 ₀ 0 ns	640 ₀ 0 ns 720	0,0 ns 800,0 ns
	a Ainvert b Binvert f b Sinvert f b Sinver	Ops BO Ops BO Value at Ops BO BI BI BO Value at Ops BO BI BO BI BO Value at Ops BO BI	0 ps 0 ps 0 ps	80.Q ns	160,0 ns	240,0 ns	320,0 ns	400,0 ns	480 ₀ 0 ns	560 ₀ 0 ns	640 ₀ 0 ns 720	0,0 ns 800,0 ns
	a Ainvert b Binvert f opera	Ops BO Ops BO Ops BO Value at Ops BO Composition Compo	0 ps 0 ps 0 ps	80.Q ns	160,0 ns	240,0 ns	320,0 ns	400,0 ns	480 ₀ 0 ns	560 ₀ 0 ns	640 ₀ 0 ns 720	0,0 ns 800,0 ns
	a Ainvert b Binvert f Name a Ainvert b Sinvert f Name a Ainvert b Sinvert f	Ops BO Ops BO Ops BO Value at Ops BO Composition Compo	0 ps 0 ps 0 ps	80.Q ns	160,0 ns	240,0 ns	320,0 ns	400,0 ns	480,0 ns	560 ₀ 0 ns	640 ₀ 0 ns 720	0,0 ns 800,0 ns
	a Ainvert b Binvert f Name a Ainvert b Sinvert f Name a Ainvert b Sinvert f	Ops BO Ops BO Ops BO Value at Ops BO Company C	0 ps 0 ps 0 ps	80.Q ns	160,0 ns	240,0 ns	320,0 ns	400,0 ns	480,0 ns	560 ₀ 0 ns	640 ₀ 0 ns 720	0,0 ns 800,0 ns
	a Ainvert b Binvert f Name a Ainvert b Sinvert f Name a Ainvert b Sinvert f	Ops BO Ops BO Ops BO Value at Ops BO Company C	0 ps 0 ps 0 ps	80.Q ns	160,0 ns	240,0 ns	320,0 ns	400,0 ns	480,0 ns	560 ₀ 0 ns	640 ₀ 0 ns 720	0,0 ns 800,0 ns

	Name	Value at 0 ps	0 ps 0 ps	8	30.0 ns	16	50 ₁ 0 n	S	240 _i 0	ns		320,	0 ns		400),0 n	;	4	80,0	ns ns		560),0 n	s	64	0,0 n	S		7.	20,0	ns		800	0,0 r	15
in	a	во	3								П						П	I	П							П				П			I	П	I
in	Ainvert	В 0															П			П						П				П					
in_	b	В 0																																	
in	Binvert	во																																	
out	f	В 0															Ш											i	Ш	ш					
>	opera	B 01																		01	1														\pm

FullAdder

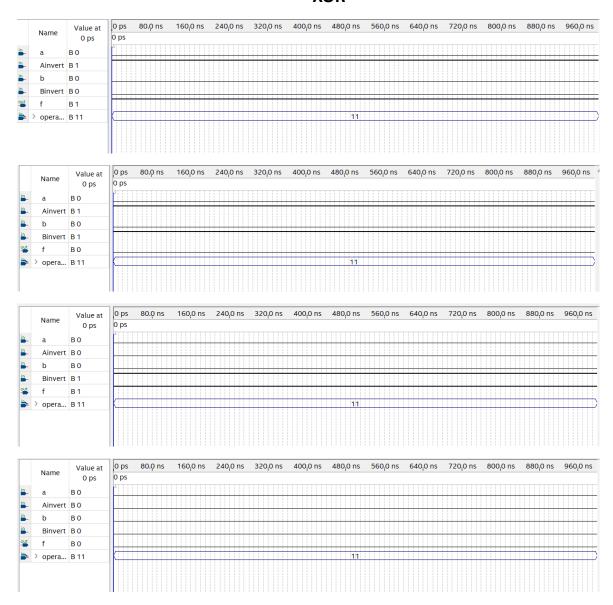






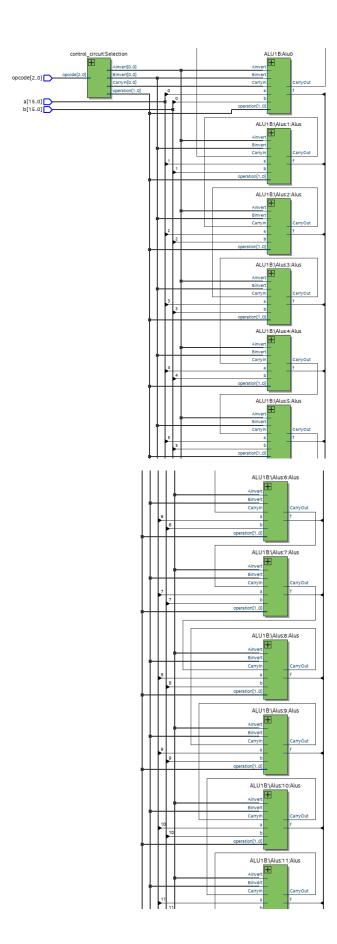
	Name		0 ps 10.0 r	ns 20.0 ns	30.0 ns	40.0 ns	50.Q ns	60.0 ns	70.0 ns	80.0
	Carryin		o pa							
		во								
	Ainvert	ВО								
		B 0								
	Binvert									
		B 0					_			
	Carry opera					10				
1	opera	B 10				10				

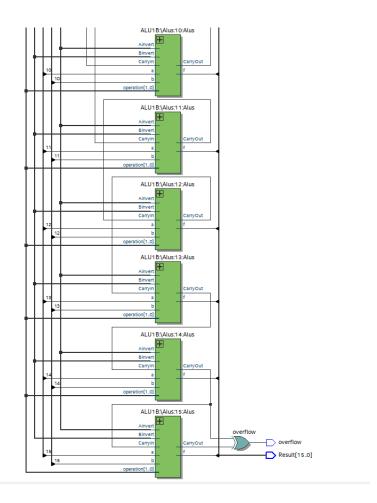
XOR



2° μέρος:

RTL viewer





Κυματομορφές:

i)

	Name	Value at 0 ps	
<u> </u>	> a	B 011011	011011001101
=	> b	B 001001	0010011100011100
>	> opcode	B 010	010
\$	> Result	B 100100	1001001111101001
	Name	Value at	
		0 ps	100100110011
	> a	0 ps B 100100	1001001100110011 0010011100011100
-		0 ps B 100100 B 001001	1001001100110011 0010011100011100 010

Name	Value at 0 ps	
≥ > a	B 011011	011011001101
⇒ > b	B 001001	0010011100011100
> opcode	B 011	011
👺 > Result	B 010001	0100010110110001
Name	Value at 0 ps	
	0 ps	
	B 100100	100100110011
> a		1001001100110011 0010011100011100
	B 100100 B 001001	
b > b > opcode	B 100100 B 001001	0010011100011100

	Name	Value at 0 ps	
>	a	B 100100	1001001100001010
>	b	B 010101	0101010101010001
>	opcode	B 000	000
5 >	Result	B 000100	000100010000000

	Name	Value at 0 ps	
-	> a	B 100100	1001001100001010
-	> b	B 010101	010101010100001
-	> opcode	B 001	001
**	> Result	B 110101	11010111011011

iii)

	Name	0 ps	
-	> a	B 101100	1011001101101
-	> b	B 111101	11110101010001
-	> opcode	B 101	101
*	> Result	B 010011	0100111011111110

≥ > a	0 ps B 101100	1011001100101101
	D 101100	1011001101101
> b	B 111101	1111010101010001
> opc	pcode B 100	100
Res	esult B 000010	0000100010000010
> Res	esult B 000010	0000100010000010

	Name	Value at 0 ps	
-	> a	B 101100	1011001100101101
<u> </u>	> b	В 111101	1111010101010001
-	> opcode	B 110	110
**	> Result	B 010001	0100011001111100